MINUTES
TOWN OF AMHERST
AMHERST PLANNING BOARD MEETING
September 22, 2022
6:30 PM

ROLL CALL

Attendee Name	Organization	Title	Status	Arrived
Robert J. Gilmour	Town of Amherst	Chair	Present	
Michael Chmiel	Town of Amherst	Board Member	Present	
Harbinder Gill	Town of Amherst	Board Member	Present	
Dal Giuliani	Town of Amherst	Board Member	Present	
Brittany Lee Penberthy	Town of Amherst	Board Member	Present	
Joseph P. Raffaele Jr.	Town of Amherst	Board Member	Absent	
Carrie H. Kahn	Town of Amherst	Board Member	Absent	
Brian Kulpa	Town of Amherst	Supervisor	Present	
Martin Polowy	Town of Amherst	Sr. Deputy Town Attorney	Present	
Dan Howard	Town of Amherst	Planning Director	Present	
Daniel J. Ulatowski	Town of Amherst	Assistant Planning Director/ZEO	Present	
Scott Marshall	Town of Amherst	Principal Planner	Present	
Thomas J. Voigt	Town of Amherst	Assistant Planner	Present	
Amy Carrato	Town of Amherst	Community Development Assistant	Present	

Note: There will be no public hearing or opportunity to speak for the projects listed under the Unfinished Business section of this agenda.

Please note the following time limits for speakers at public hearings:

- **Presentation by Petitioner: 15 minutes**
- **Rebuttal by neighborhood/resident spokesperson: 15 minutes**
- **Individual speakers: 3 minutes**

PUBLIC HEARINGS

SITE PLANS & RELIEF FROM CONDITIONS OF SITE PLANS

1. PROPOSED SAWYER'S LANDING MIXED USE DEVELOPMENT, SP-2021-05
Property located at 1081 North French Road (portion) (NCD) (Muir Woods Site A)
Sawyer's Landing LLC, Petitioner

May 20, 2021

No comments were heard on this proposal. The Petitioner requested an adjournment. Mr. Giuliani moved to adjourn. The motion was seconded by Mr. Chmiel and carried. Ayes 7, Noes 0.

June 24, 2021

No comments were heard on this proposal. The Petitioner requested an adjournment. Ms. Penberthy moved to adjourn and remove from the agenda until such time as the petitioner requests placement on a future agenda. The motion was seconded by Mr. Gill and carried. Ayes 6, Noes 0, Absent 1 (Gelber).

January 13, 2022

No comments were heard on this proposal. The Petitioner requested an adjournment. Mr Giuliani moved to adjourn until the February Planning Board meeting. The motion was seconded by Mr. Gill and carried. Ayes 4, Noes 0, Absent 3 (Chmiel, Gelber, Raffaele).

February 17, 2022

No comments were heard on this proposal. The Petitioner requested an adjournment. Mr. Giuliani moved to adjourn until the March Planning Board meeting. The motion was seconded by Ms. Penberthy and carried. Ayes 6, Noes 0, Absent 1 (Gill).

September 22, 2022

Proposal to construct a mixed-use project on the vacant Site 'A' of the Muir Woods development, to include 30,000 sq. ft. of commercial space, 246 residential units, and 494 parking spaces, as follows:

- Two 4-story mixed-use buildings close to Dodge Road, each with 15,000 sq. ft. of commercial space and 50 apartment units (100 units),
- 4-story, 36 unit apartment building in the northwest portion of the site.
- 22, 2-story duplex townhomes (44 units) in the central northwest portion of the site.
- 27 duplex homes on small (30'x110' interior lot or 40'x 100' corner lot) lots with 2-car garages (54 units) in the central northeast portion of the site,
- Two 1-story 6 unit apartment buildings with attached garages (12 units) in the northeast portion of the site.

Sean Hopkins, Esq., Hopkins Sorgi & McCarthy PLLC, represented the petitioner, explained the proposal and was available to answer questions from the Board. William Severyn, Severyn Development, was also present.

In response to the Board's questions, Mr. Severyn stated Severyn Development has similar projects near Canisus College, this proposed development used similar floor plans as previous developments, the exterior is nicer, it fills a void in the community for the possibility of multi-generational living arrangements, the demographics of the two mixed use buildings in this development will most likely be single, professional adults over 55, and a blended demographic for the rest of the development which will make this a well-rounded community, and rents will be approximately $1,400 a month ($195-$215 a square foot).

No further comments were heard on this proposal. The hearing was closed.

Following discussion, Mr. Chmiel moved to approve the request based on the resolution. The motion was seconded by Mr. Giuliani and carried. Ayes 5, Noes 0, Absent 2 (Kahn, Raffaele).

RESULT:	**APPROVED [UNANIMOUS]**
MOVER:	Michael Chmiel, Board Member
SECONDER:	Dal Giuliani, Board Member
AYES:	Gilmour, Chmiel, Gill, Giuliani, Penberthy
ABSENT:	Raffaele Jr., Kahn

SUBDIVISIONS & RELIEF FROM CONDITIONS OF SUBDIVISIONS

2. SEQR HEARING FOR A PROPOSED 8-LOT SUBDIVISION, SUB-2022-01PP
Property located at 468 Harding Road
Harding Road LLC, Petitioner

Proposal to subdivide 1.44± acres into 8 lots in order to allow construction of eight single-family residences. Proposed lots are along existing public streets (Harding Road and McKinley Avenue) and includes the extensions of water and sanitary sewer service. Subdivision is comprised of 6 internal lots being a minimum of 50 feet in width by 132 feet in depth, and 2 corner lots being 78± feet in width and 132 feet in depth.

Jeffrey Palumbo, Esq., Block. Longo, LaMarca & Brzezinski, represented the petitioner, explained the proposal and was available to answer questions from the Board.

In response to the Board's questions, Mr. Palumbo stated the number of lots in the subdivison is required for the SEQR process.

Judson Paige, 375 Harding Road; Mark Bechtel, 442 Harding Road; Suzanne Paige, 375 Harding Road; Jennifer Colwell, 435 McKinley Avenue and Frank Cascino, 381 Harding Road spoke in opposition of the proposal.

No further comments were heard on this proposal. The hearing was closed.

Following discussion, Mr. Chmiel moved to approve the Negative Declaration. The motion was seconded by Mr. Giuliani and failed. Ayes 3, Noes 2 (Gill, Penberthy), Absent 2 (Kahn, Raffaele).

Ms. Penberthy moved to approve the Negative Declaration based on a 6 lot subdivison. The motion was seconded by Mr. Gill. The motion was withdrawn by Ms. Penberthy.

Ms. Penberthy moved to adjourn the proposal. The motion was seconded by Mr. Gill and carried. Ayes 5, Noes 0, Absent 2 (Kahn, Raffaele).

RESULT:	**ADJOURNED [UNANIMOUS]**	**Next: 10/20/2022 6:30 PM**
MOVER:	Brittany Lee Penberthy, Board Member	
SECONDER:	Harbinder Gill, Board Member	
AYES:	Gilmour, Chmiel, Gill, Giuliani, Penberthy	
ABSENT:	Raffaele Jr., Kahn	

REZONING & RELIEF FROM CONDITIONS OF REZONINGS

3. REQUEST TO REZONE 7.43± ACRES FROM RD TO CTR-8, Z-2022-02
Property located at 1400-1404 & 1408-1416 Sweet Home Road
North Forest Development LLC, Petitioner

June 16, 2022
No comments were heard on this proposal. Mr. Giuliani moved to adjourn the proposal. The motion was seconded by Mr. Chmiel and carried. Ayes 7, Noes 0.

May 19, 2022
No comments were heard on this proposal. Mr. Chmiel moved to adjourn the proposal. The motion was seconded by Ms. Penberthy and carried. Ayes 6, Noes 0, Absent 1 (Giuliani).

September 22, 2022
The purpose of this request is to allow for subsequent development of a mixed-use project consisting of 500± residential units and 10,000± square feet of commercial/retail space.

Sean Hopkins, Esq., Hopkins Sorgi & McCarthy PLLC, represented the petitioner, explained the proposal and was available to answer questions from the Board. Roy Jordan was also present.

In response to the Board's questions, Mr. Hopkins stated this development could be a mix of market rate apartments and student housing but will most likely be student housing.

No further comments were heard on this proposal. The hearing was closed.

Following discussion, Mr. Giuliani moved to approve the request based on the resolution. The motion was seconded by Mr. Chmiel and carried. Ayes 5, Noes 0, Absent 2 (Kahn, Raffaele).

RESULT:	**APPROVED [UNANIMOUS]**
MOVER:	Dal Giuliani, Board Member
SECONDER:	Michael Chmiel, Board Member
AYES:	Gilmour, Chmiel, Gill, Giuliani, Penberthy
ABSENT:	Raffaele Jr., Kahn

4. REQUEST TO REZONE 6.27± ACRES OF LAND FROM GB TO DC-5, Z-2022-07
Property located at a portion of 4110-4120 Sheridan Drive
Sheridan Commons, LLC, Petitioner

September 22, 2022
No comments were heard on this proposal.

Mr. Giuliani moved to adjourn the proposal at the petitioners request. The motion was seconded by Ms. Penberthy and carried. Ayes 5, Noes 0, Absent 2 (Kahn, Raffaele).

RESULT:	**ADJOURNED [UNANIMOUS]**	**Next: 10/20/2022 6:30 PM**
MOVER:	Dal Giuliani, Board Member	
SECONDER:	Brittany Lee Penberthy, Board Member	
AYES:	Gilmour, Chmiel, Gill, Giuliani, Penberthy	
ABSENT:	Raffaele Jr., Kahn	

5. REQUEST TO REMOVE A DECLARATION OF RESTRICTIONS IMPOSED AS PART OF A REZONING DECISION, Z-1996-32A
Property located at 4110-4120 Sheridan Drive
Sheridan Commons LLC, Petitioner

September 22, 2022
No comments were heard on this proposal.

Ms. Penberthy moved to adjourn the proposal at the petitioners request. The motion was seconded by Mr. Chmiel and carried. Ayes 5, Noes 0, Absent 2 (Kahn, Raffaele).

RESULT:	**ADJOURNED [UNANIMOUS]**	**Next: 10/20/2022 6:30 PM**
MOVER:	Brittany Lee Penberthy, Board Member	
SECONDER:	Michael Chmiel, Board Member	
AYES:	Gilmour, Chmiel, Gill, Giuliani, Penberthy	
ABSENT:	Raffaele Jr., Kahn	

MISCELLANEOUS

6. THE AMHERST URBAN RENEWAL AGENCY'S BOULEVARD CENTRAL DISTRICT URBAN RENEWAL PLAN, SR-2022-05
Town of Amherst, Petitioner

The Boulevard Central District Urban Renewal Plan provides a framework for the potential revitalization and redevelopment of various properties located in what the Town Board, as the Amherst Urban Renewal Agency (AURA), has designated as an Urban Renewal Area in accordance with Article 15 of the General Municipal Laws of New York State.

Brian Kulpa, Town Supervisor, explained the proposal and was available to answer questions from the Board.

No further comments were heard on this proposal. The hearing was closed.

Following discussion, Ms. Penberthy moved to approve the request based on the resolution. The motion was seconded by Mr. Giuliani and carried. Ayes 5, Noes 0, Absent 2 (Kahn, Raffaele).

RESULT:	**APPROVED [UNANIMOUS]**
MOVER:	Brittany Lee Penberthy, Board Member
SECONDER:	Dal Giuliani, Board Member
AYES:	Gilmour, Chmiel, Gill, Giuliani, Penberthy
ABSENT:	Raffaele Jr., Kahn

7. REQUEST TO AMEND THE BICENTENNIAL COMPREHENSIVE PLAN FOR 22.78± ACRES OF LAND FROM COMMERCIAL OFFICE TO MEDIUM RESIDENTIAL, BCPA-2022-05
Property located at 2360-2370 Wehrle Drive (portion)
Omni Smart Living, Petitioner

Proposal to amend the Towns Comprehensive Plan to recommend a land use that allows for the future development of a senior living community.

Jeffrey Palumbo, Esq., Block. Longo, LaMarca & Brzezinski, represented the petitioner, explained the proposal and was available to answer questions from the Board. Gary Palace, Omni Smart Living, was also present.

Bob Shaw, 162 Berkley Road; James O'Donnell, 81 Oakwood Drive; and Bob Reynolds, 142 Ferndale Road spoke in opposition of the proposal.

No further comments were heard on this proposal. The hearing was closed.

Following discussion, Ms. Penberthy moved to approve the request based on the resolution. The motion was seconded by Mr. Giuliani and carried. Ayes 5, Noes 0, Absent 2 (Kahn, Raffaele).

RESULT:	**APPROVED [UNANIMOUS]**
MOVER:	Brittany Lee Penberthy, Board Member
SECONDER:	Dal Giuliani, Board Member
AYES:	Gilmour, Chmiel, Gill, Giuliani, Penberthy
ABSENT:	Raffaele Jr., Kahn

OTHER COMMUNICATIONS

None

All public hearings are completed and closed at the termination of public discussion for each agenda item unless otherwise specified by the Chair.

UNFINISHED BUSINESS

Note: All public hearings have been completed. There will be no public hearings for items listed under this section.

SITE PLANS & RELIEF FROM CONDITIONS OF SITE PLANS

None

SUBDIVISIONS & RELIEF FROM CONDITIONS OF SUBDIVISIONS

None

REZONING & RELIEF FROM CONDITIONS OF REZONINGS

None

MISCELLANEOUS

None

OTHER COMMUNICATIONS

None

DIRECTOR'S REPORT

MINUTES APPROVAL

Mr. Chmiel moved to approve the minutes. The motion was seconded by Mr. Giuliani and carried. Ayes 5, Noes 0, Absent 2 (Kahn, Raffaele).

ADJOURNMENT

The Planning Board meeting of September 22, 2023 was adjourned at 7:55 pm.

Amherst Planning Board
5583 Main Street
Williamsville, NY 14221

Meeting: 09/22/22 06:30 PM
Department: Planning
Category: Site Plan and Relief from Conditions of Site Plan
Prepared By: Bryan Fadel
Initiator: Dan Howard
Sponsors:
DOC ID: 23057

ADOPTED

PLANNING BOARD ITEM (ID # 23057)

Proposed Sawyer's Landing Mixed Use Development, Sp-2021-05

Property located at 1081 North French Road (portion) (NCD) (Muir Woods Site A)
Sawyer's Landing LLC, Petitioner

May 20, 2021

No comments were heard on this proposal. The Petitioner requested an adjournment. Mr. Giuliani moved to adjourn. The motion was seconded by Mr. Chmiel and carried. Ayes 7, Noes 0.

June 24, 2021

No comments were heard on this proposal. The Petitioner requested an adjournment. Ms. Penberthy moved to adjourn and remove from the agenda until such time as the petitioner requests placement on a future agenda. The motion was seconded by Mr. Gill and carried. Ayes 6, Noes 0, Absent 1 (Gelber).

January 13, 2022

No comments were heard on this proposal. The Petitioner requested an adjournment. Mr Giuliani moved to adjourn until the February Planning Board meeting. The motion was seconded by Mr. Gill and carried. Ayes 4, Noes 0, Absent 3 (Chmiel, Gelber, Raffaele).

February 17, 2022

No comments were heard on this proposal. The Petitioner requested an adjournment. Mr. Giuliani moved to adjourn until the March Planning Board meeting. The motion was seconded by Ms. Penberthy and carried. Ayes 6, Noes 0, Absent 1 (Gill).

September 22, 2022

Proposal to construct a mixed-use project on the vacant Site 'A' of the Muir Woods development, to include 30,000 sq. ft. of commercial space, 246 residential units, and 494 parking spaces, as follows:

- Two 4-story mixed-use buildings close to Dodge Road, each with 15,000 sq. ft. of commercial space and 50 apartment units (100 units),
- 4-story, 36 unit apartment building in the northwest portion of the site.
- 22, 2-story duplex townhomes (44 units) in the central northwest portion of the site.
- 27 duplex homes on small (30'x110' interior lot or 40'x 100' corner lot) lots with 2-car garages (54 units) in the central northeast portion of the site,

- Two 1-story 6 unit apartment buildings with attached garages (12 units) in the northeast portion of the site.

Sean Hopkins, Esq., Hopkins Sorgi & McCarthy PLLC, represented the petitioner, explained the proposal and was available to answer questions from the Board. William Severyn, Severyn Development, was also present.

In response to the Board's questions, Mr. Severyn stated Severyn Development has similar projects near Canisus College, this proposed development used similar floor plans as previous developments, the exterior is nicer, it fills a void in the community for the possibility of multi-generational living arrangements, the demographics of the two mixed use buildings in this development will most likely be single, professional adults over 55, and a blended demographic for the rest of the development which will make this a well-rounded community, and rents will be approximately $1,400 a month ($195-$215 a square foot).

No further comments were heard on this proposal. The hearing was closed.

Following discussion, Mr. Chmiel moved to approve the request based on the resolution. The motion was seconded by Mr. Giuliani and carried. Ayes 5, Noes 0, Absent 2 (Kahn, Raffaele).

HISTORY:

05/20/21	**Planning Board**	**ADJOURNED**	**Next: 08/18/22**
06/24/21	**Planning Board**	**ADJOURNED**	**Next: 08/19/21**
01/13/22	**Planning Board**	**ADJOURNED**	**Next: 02/17/22**
02/17/22	**Planning Board**	**ADJOURNED**	**Next: 09/22/22**

ATTACHMENTS:

- SP-2021-05_application_052021 (PDF)
- SP-2021-05_drawings_052021 (PDF)
- SP-2021-05_Draft_Resolution_052021 (PDF)
- SP-2021-05_application_061721 (PDF)
- SP-2021-05_drawings_061721 (PDF)
- SP-2021-05_adjournment_052021 (PDF)
- SP-2021-05_adjournment_062421 (PDF)
- SP-2021-05_application_011322 (PDF)
- SP-2021-05_drawings_011322 (PDF)
- SP-2021-05_draft resolution_011322 (PDF)
- SP-2021-05_adjournment_011322 (PDF)
- SP-2021-05_application_021722 (PDF)
- SP-2021-05_drawings_021722 (PDF)
- SP-2021-05_draft resolution_021722 (PDF)
- SP-2021-05 adjournment letter 021721 (PDF)
- SP-2021-05_application_092222 (PDF)
- SP-2021-05_drawings_092222 (PDF)
- SP-2021-05_draft resolution_092222 (PDF)
- SP-2021-05 signed resolution 092222 (PDF)

RESULT:	**APPROVED [UNANIMOUS]**
MOVER:	Michael Chmiel, Board Member
SECONDER:	Dal Giuliani, Board Member
AYES:	Gilmour, Chmiel, Gill, Giuliani, Penberthy
ABSENT:	Joseph P. Raffaele Jr., Carrie H. Kahn

Application for Site Plan Approval 1021 North French Road [Including Subdivision of Project Site] - Proposed Mixed-Use Project - Site "A" of Muir Woods Property
Applicant: Sawyers Landing LLC

Prepared By: Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221
Tel: 510-4338
E-mail: shopkins@hsr-legal.com

TOWN OF AMHERST PLANNING DEPARTMENT

Application for Major Site Plan Review

For Official Use

File #: SP-2021-05 **Acreage** 17.42 **Fee $** 13,315.00

Address Verified by Assessor's Office
VERIFIED BY DATE

Site Plan Review

		Fill In Applicable Fees
1 acre or less	$1,250.00	$1,250.00
Each Additional acre or fraction thereof	$ 650.00/acre	$11,050.00
Amendments to Site Plans	$1,200.00	
Request for Relief of / or Change to Conditions of Site Plan Approval	$1,200.00	
Request for Extension of Site Plan Approval	$ 450.00	
Stormwater Pollution Prevention Plan		
1-4.99 Acres	$ 500.00	
5-10 Acres	$ 750.00	
>10 Acres	$1,000.00	$1,000.00
Affidavit Fee for Public Hearing	$ 15.00	$15.00
	TOTAL FEE:	$ 13,315.00

Materials Received by Planning Department
RECEIVED BY DATE

RECEIVED FEB 22 2021 TOWN OF AMHERST PLANNING DEPT.

Materials Accepted by Town Clerk & Fee Paid
ACCEPTED BY DATE

To Be Completed By Applicant

Petitioner: Name: Sawyers Landing LLC c/o Sean W. Hopkins, Esq.

Address: 5500 Main Street, Suite 343

Williamsville, New York 14221

city state zip code

Phone: 510-4338 Fax: _____ E Mail: shopkins@hsr-legal.com

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Representative (Architect, Engineer, Landscape Architect, Surveyor, or Attorney):

Name: Christopher Wood, P.E.

Address: Carmina Wood Morris DPC

483 Main Street, Suite 600

Buffalo (city) New York (state) 14203 (zip code)

Phone: 842-3165 [Ext. 103] Fax: 842-0263

E Mail: cwood@cwm-ae.com

Project Location (must be verified by Town Assessor's Office):

Address: Portion of 1081 North French Road

SBL No(s): 40.08-3-13.1/A

Project Name: Proposed Mixed-Use Project

Project Description:

See attached Exhibit "2" for Project Description. The layout of the proposed mixed-use project to be located on the New Community District - General Commercial ("NCD-GC") zoned property at 1081 North French Road as depicted on the Overall Site Plan [Drawing C-100] prepared by Carmina Wood Morris DPC. A reduced size copy of the Overall Site Plan is provided at Exhibit "3". and a reduced size copy of the Site Plan [Drawing C-101] is provided at Exhibit "4". The proposed mixed-use project includes the subdivision of the 17.42 acre Project Site into 52 parcels as depicted on the Parcel Map [Drawing C-102] prepared by Carmina Wood Morris DPC. A reduced size copy of the Parcel Map [Drawing C-102] is provided at Exhibit "5".

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

If this petition is an amendment to a previously approved site plan, please describe the proposed changes (include type and size of existing structures and number of existing parking spaces):

Not Applicable.

Gross Floor Area (non-residential):	0 existing	30,000 sq. ft. proposed	30,000 sq. ft. total
Number of Residential Units:	0 existing	206 proposed	206 total
Number of Parking Spaces:	0 existing	505 proposed	505 total

Acreage of Parcel: 17.42 Acres

Frontage on Public Roads: The proposed parcel will have approximately 1,120 ft. on Dodge Road and approximately 120 ft. of frontage on Sweet Home Road.

Existing Zoning District(s) NCD-GC

[Note: A completed Part 1 of the Full Environmental Assessment Form prepared pursuant to the State Environmental Quality Review Act ("SEQRA") is attached as Exhibit "1" of this Site Plan Application.]

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Town of Amherst Planning Department 5583 Main Street Williamsville-NY-14221
(716) 631-7051- Fax: (716) 631-7153

Exhibit 1 – Part 1 of the Full Environmental Assessment Form prepared pursuant to the State Environmental Quality Review Act ("SEQRA") with attached Page 5[a] and Attachments "A" and "B"

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Full Environmental Assessment Form Part 1 - Project and Setting

Prepared By: Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221
Tel: 716.510-4338
E-mail: shopkins@hsr-legal.com

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project: Proposed Mixed-Use Project - Site A of Muir Woods		
Project Location (describe, and attach a general location map): Portion of 1081 North French Road - Town of Amherst - Erie County		
Brief Description of Proposed Action (include purpose or need): The proposed action consists of a request for Site Plan Approval [including the subdivision of the Project Site] for a mixed use project consisting of 2 four story mixed-use buildings [15,000 sq. ft of commercial space and 50 units per building], 47 two-family town homes on individual lots and 2 single-story apartment buildings [6 units per building] along with all related site improvements depicted on the fully engineered plans prepared by Carmina Wood Morris DPC. A reduced size copy of the Overall Site Plan [Drawing C-100] is provided at Exhibit "3". The action has been defined broadly to include all required discretionary approvals and permits as well as all site improvements including the proposed driveway connections to Dodge Road, access aisles, parking spaces, driveways, wetland impacts, lighting, landscaping, on-site storm water management improvements, sanitary sewer and water lines and connections and all other required utility improvements. The project purpose is to develop Site "A" of overall Muir Woods Project Site as a mixed-use project. The proposed mixed-use project is a Type I action pursuant to SEQRA and the Town Board issued an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") on October 19, 2020 to allow mixed-use development of the Project Site. On October 19, 2020, the Town Board also adopted a resolution to amend the Town's Comprehensive to designate the Project Site as appropriate for mixed-use.		
Name of Applicant/Sponsor: Sawyers Landing LLC c/o Sean Hopkins, Esq.	Telephone: 716.510-4338 E-Mail: shopkins@hsr-legal.com	
Address: 5500 Main Street, Suite 343		
City/PO: Williamsville, NY	State: NY	Zip Code: 14221
Project Contact (if not same as sponsor; give name and title/role):	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:
Property Owner (if not same as sponsor): Ciminelli Muir Woods, LLC c/o Adam Faeth, Esq.	Telephone: 716.631-8000 E-Mail: afaeth@ciminelli.com	
Address: 50 Fountain Plaza, Suite 500		
City/PO: Buffalo	State: NY	Zip Code: 14202

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees ☑Yes ☐No	Sewage Works Corporation and PIPs	To be determined
b. City, Town or Village Planning Board or Commission ☑Yes ☐No	Planning Board - Site Plan Approval [includes Subdivision Approval - 52 lots]	February 22, 2021
c. City, Town or Village Zoning Board of Appeals ☐Yes ☑No		
d. Other local agencies ☑Yes ☐No	Building Department - Building Permits; Amherst IDA [PILOT, etc.]	To be determined
e. County agencies ☑Yes ☐No	ECPDW - Highway Work Permit; ECWA - Water; ECHD - Sewer and Water	To be determined
f. Regional agencies ☐Yes ☑No		
g. State agencies ☑Yes ☐No	NYSDEC - Amended Wetland Permit; DSCA Approval, Sewage Work Corp. & SPDES Permit	Amended Wetland Permit issued on 12/24/20; To be determined.
h. Federal agencies ☑Yes ☐No	USACE - Amended Wetland Permit [Pending]	July 1, 2020

i. Coastal Resources.

i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐Yes ☑No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☑Yes ☐No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☑Yes ☐No

If Yes, identify the plan(s):

NYS Heritage Areas:West Erie Canal Corridor [Note: The project will not have any impacts on the West Erie Canal Corridor.]

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes ☑No

If Yes, identify the plan(s):

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C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
Site "A" of the Muir Woods property is zoned New Community District - Neighborhood District ("NCD-ND") pursuant to the Town of Amherst Zoning Map.

b. Is the use permitted or allowed by a special or conditional use permit? ☐ Yes ☑ No

c. Is a zoning change requested as part of the proposed action? ☐ Yes ☑ No
If Yes,
i. What is the proposed new zoning for the site?

C.4. Existing community services.

a. In what school district is the project site located? Sweet Home Central School District

b. What police or other public protection forces serve the project site?
Town of Amherst Police Department

c. Which fire protection and emergency medical services serve the project site?
Volunteer Fire Department

d. What parks serve the project site?
Various Town Parks including Nature View Park

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)?Mixed-use project consisting of 2 four-story buildings with 15,000 sq. ft. of 1st floor commercial space and 50 apartments per building; 47 two-family townhomes; and two six-unit single-story apartment buildings.

b. a. Total acreage of the site of the proposed action? 28.47 acres
b. Total acreage to be physically disturbed? 17.0 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 326 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % Units:

d. Is the proposed action a subdivision, or does it include a subdivision? ☑ Yes ☐ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
The 45 two-family townhome buildings will consist of individual lots and mixed-use buildings may consist of separate parcels.
ii. Is a cluster/conservation layout proposed? ☐ Yes ☐ No
iii. Number of lots proposed? 52 [47 lots for the two-family townhomes]
iv. Minimum and maximum proposed lot sizes? Minimum 3300 sf Maximum 6.81 Acres

e. Will the proposed action be constructed in multiple phases? ☑ Yes ☐ No
i. If No, anticipated period of construction: ____ months
ii. If Yes:
- Total number of phases anticipated 3-4
- Anticipated commencement date of phase 1 (including demolition) Fall month 2021 year
- Anticipated completion date of final phase July month 2024 year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases:
The infrastructure necessary for each phase will be installed to ensure compliance with applicable technical standards including those for stormwater management.

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f. Does the project include new residential uses? ☑ Yes ☐ No
If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase		20		50
At completion of all phases		47		112

The build-out of the residential components will be based on market conditions.

g. Does the proposed action include new non-residential construction (including expansions)? ☑ Yes ☐ No
If Yes, There will be 15,000 sq. ft. of commercial space in each of the two 4-story mixed-use buildings.
i. Total number of structures 2
ii. Dimensions (in feet) of largest proposed structure: 55' height; 80' width; and 225' length
iii. Approximate extent of building space to be heated or cooled: 30,000 square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☑ Yes ☐ No
If Yes,
i. Purpose of the impoundment: Storm water management
ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☑ Other specify: Storm water runoff from impervious surfaces.
iii. If other than water, identify the type of impounded/contained liquids and their source.
N/A
iv. Approximate size of the proposed impoundment. Volume: ____ million gallons; surface area: 1.5 acres
v. Dimensions of the proposed dam or impounding structure: N/A height; ____ length
vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):
Impoundment area is an excavation consisting of earth fill.

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐ Yes ☑ No
If Yes:
i. What is the purpose of the excavation or dredging?
ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?
- Volume (specify tons or cubic yards):
- Over what duration of time?

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.
iv. Will there be onsite dewatering or processing of excavated materials? ☐ Yes ☐ No
If yes, describe.
v. What is the total area to be dredged or excavated? ____ acres
vi. What is the maximum area to be worked at any one time? ____ acres
vii. What would be the maximum depth of excavation or dredging? ____ feet
viii. Will the excavation require blasting? ☐ Yes ☐ No
ix. Summarize site reclamation goals and plan:

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☑ Yes ☐ No
If Yes:
i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): The proposed mixed-use project will result in 4.89 acres of impacts to federal wetlands (reduction of 7.87 acres), 1.20 acres of impacts to NYSDEC Freshwater Wetlands (reduction of 8.26 acres) and 3.65 acres of impacts to regulated 100 ft. Adjacent Areas of of the NYSDEC Freshwater Wetlands (reduction of .55 acres).

[The New York State Department of Environmental Conservation issued an Amended Wetland Permit on December 24, 2020. A copy of the Amended Wetland Permit is provided at Exhibit "8".]

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ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

iii. Will the proposed action cause or result in disturbance to bottom sediments? ☐Yes ☑No
If Yes, describe:

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☑No
If Yes:

- acres of aquatic vegetation proposed to be removed:
- expected acreage of aquatic vegetation remaining after project completion:
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access):
- proposed method of plant removal:
- if chemical/herbicide treatment will be used, specify product(s):

v. Describe any proposed reclamation/mitigation following disturbance:

c. Will the proposed action use, or create a new demand for water? ☑Yes ☐No
If Yes:

i. Total anticipated water usage/demand per day: 50,820 gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑Yes ☐No
If Yes:

- Name of district or service area: ECWA Consolidated Water District
- Does the existing public water supply have capacity to serve the proposal? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No
- Do existing lines serve the project site? ☑Yes ☐No

iii. Will line extension within an existing district be necessary to supply the project? ☐Yes ☑No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project:
- Source(s) of supply for the district:

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐Yes ☐No
If, Yes:

- Applicant/sponsor for new district:
- Date application submitted or anticipated:
- Proposed source(s) of supply for new district:

v. If a public water supply will not be used, describe plans to provide water supply for the project:

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑Yes ☐No
If Yes:

i. Total anticipated liquid waste generation per day: 50,820 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each):
Sanitary wastewater

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑Yes ☐No
If Yes:

- Name of wastewater treatment plant to be used: Tonawanda Creek Wastewater Treatment Plant
- Name of district: Town of Amherst Consolidated Sanitary Sewer District
- Does the existing wastewater treatment plant have capacity to serve the project? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No

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- Do existing sewer lines serve the project site? ☑Yes ☐No
- Will a line extension within an existing district be necessary to serve the project? ☐Yes ☑No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☑No

If Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑Yes ☐No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or 8.0 acres (impervious surface)

_____ Square feet or 28.47 acres (parcel size)

ii. Describe types of new point sources. Parking lots and roof tops

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

Stormwater runoff will be conveyed into the on-site stormwater management system to be installed per the applicable stringent stormwater quality and quantity standards of the NYS Department of Environmental Conservation ("NYSDEC")

- If to surface waters, identify receiving water bodies or wetlands: NYSDEC & Federal wetlands on the east portion of the Project Site.
- Will stormwater runoff flow to adjacent properties? ☐Yes ☑No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☑Yes ☐No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☑No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:

- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

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h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? ☐Yes ☑No A Traffic Impact Study was prepared by SRF Associates DPC dated August 3, 2020 and 4 copies have been submitted with the Site Plan Application dated February 22, 2020.

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐Weekend ☐ Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): _____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☑Yes ☐No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: _____

To be determined

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):

National Grid

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐Yes ☑No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 7:00 to 7:00
- Saturday: 8:00 to 6:00
- Sunday: As needed
- Holidays: Not Applicable

ii. During Operations:

- Monday - Friday: 8:00 to 11:00
- Saturday: 8:00 to 11:00
- Sunday: 8:00 to 10:00
- Holidays: 8:00 to 10:00

The hours of operation during "During Operations" as listed above apply to the first floor commercial space in the two mixed-use buildings. The hours are estimates since the tenants that will lease the first floor commercial space including both office and retail tenants have not yet been identified.

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m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

Construction activities will include the use of construction equipment during daytime hours that will exceed ambient background noise levels. The construction related noise impacts are a temporary unavoidable impact.

ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☑ No

Describe:

n. Will the proposed action **have outdoor lighting?** ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

Lighting will be installed in compliance with the lighting standards contained in the Town of Amherst Zoning Code. There will not be any lighting spillover onto contiguous properties.

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☑ No

Describe:

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures:

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally, describe the proposed storage facilities:

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☑ Yes ☐ No

If Yes:

i. Describe proposed treatment(s):

Potential use of lawn fertilizer and pesticides on maintained portions of property in accordance with applicable standards for application and use of lawn fertilizer and pesticides.

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☑ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☑ Yes ☐ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: 2 tons per week (unit of time)
- Operation : 2 tons per week (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: wood and metal waste may be recycled by the contract at their discretion
- Operation: Town of Amherst recycling program will be followed

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: approved NYSDEC landfill via contractor or private disposal company
- Operation: approved NYSDEC landfill via private disposal company

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s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☑ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)
☑ Forest ☐ Agriculture ☐ Aquatic ☑ Other (specify): Wetlands

ii. If mix of uses, generally describe:

There are mixture of uses in the vicinity of the Project Site including residential uses to the north in the Bucyrus Heights Subdivision, an elementary school, apartments and office buildings on Sweet Home Road and permanent open space to the east of Site "A".

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	0	8.0	+ 8.0
• Forested	12.17	1.87	-10.3
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	0	0	0
• Agricultural (includes active orchards, field, greenhouse etc.)	0	0	0
• Surface water features (lakes, ponds, streams, rivers, etc.)	0	0	0
• Wetlands (freshwater or tidal)	16.3	10.2	- 6.1
• Non-vegetated (bare rock, earth or fill)	0	0	0
• Other Describe: Greenspace, Landscaping, Pond	0	8.4	+8.4

The categories as listed above include the large wetland area subject to the jurisdiction of both the NYSDEC and USACE consisting of approximately 9.81 acres that was previously approved for development by the Town Board that will consist of Permanent Open Space to be donated to the Town of Amherst.

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c. Is the project site presently used by members of the community for public recreation? ☐Yes ☑No
i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☑Yes ☐No
If Yes,
i. Identify Facilities:
1. Heritage Heights Elementary School (Sweet Home School District- 2545 Sweet Home Road); 2. Creative Play Learning Center (Private Day Care Facility- 647 Dodge Road); and 3. Four Seasons Child Care & Preschool (Private Day Care Facility- 1639 North French Road).

e. Does the project site contain an existing dam? ☐Yes ☑No
If Yes:
i. Dimensions of the dam and impoundment:
- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____
iii. Provide date and summarize results of last inspection:
_____
_____

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐Yes ☑No
If Yes:
i. Has the facility been formally closed? ☐Yes ☐No
- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:
_____
_____

iii. Describe any development constraints due to the prior solid waste activities: _____
_____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐Yes ☑No
If Yes:
i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:
_____
_____

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐Yes ☑No
If Yes:
i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐Yes ☐No
☐ Yes – Spills Incidents database — Provide DEC ID number(s): _____
☐ Yes – Environmental Site Remediation database — Provide DEC ID number(s): _____
☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures: _____
_____
_____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐Yes ☑No
If yes, provide DEC ID number(s): _____

iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):
_____
_____

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v. Is the project site subject to an institutional control limiting property uses? ☐ Yes ☑ No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐ Yes ☐ No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? >5 feet

b. Are there bedrock outcroppings on the project site? ☐ Yes ☑ No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____ %

c. Predominant soil type(s) present on project site:

Getzville silt loam	94 %
Swormville clay loam	6 %
	%

d. What is the average depth to the water table on the project site? Average: >5 feet

e. Drainage status of project site soils:
☐ Well Drained: _____ % of site
☐ Moderately Well Drained: _____ % of site
☑ Poorly Drained 100 % of site

f. Approximate proportion of proposed action site with slopes:
☑ 0-10%: 100 % of site
☐ 10-15%: _____ % of site
☐ 15% or greater: _____ % of site

g. Are there any unique geologic features on the project site? ☐ Yes ☑ No
If Yes, describe: _____

h. Surface water features.
i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☑ Yes ☐ No
ii. Do any wetlands or other waterbodies adjoin the project site? ☑ Yes ☐ No
If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.
iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑ Yes ☐ No
iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name Federal Waters, NYS Wetland Approximate Size NYS Wetland (in a...
- Wetland No. (if regulated by DEC) TE-33

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐ Yes ☑ No
If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐ Yes ☑ No

j. Is the project site in the 100-year Floodplain? ☐ Yes ☑ No

k. Is the project site in the 500-year Floodplain? ☑ Yes ☐ No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐ Yes ☑ No
If Yes:
i. Name of aquifer: _____

The proposed mixed-use project will result in 4.89 acres of impacts to federal wetlands (reduction of 7.87 acres), 1.20 acres of impacts to NYSDEC Freshwater Wetlands (reduction of 8.26 acres) and 3.65 acres of impacts to regulated 100 ft. Adjacent Areas of NYSDEC Freshwater Wetlands (reduction of .55 acres). A copy of the Amended Wetland Permit issued by the New York State Department of Environmental Conservation authorizing the impacts to the NYSDEC Freshwater Wetlands and the regulated 100 ft. Adjacent Area to accommodate the proposed mixed-use project on Site A of the Muir Woods property is provided at Attachment "A" of this Part 1 of the Full Environmental Assessment Form.

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m. Identify the predominant wildlife species that occupy or use the project site:
Typical suburban species

n. Does the project site contain a designated significant natural community? ☐Yes ☑No
If Yes:
i. Describe the habitat/community (composition, function, and basis for designation):
ii. Source(s) of description or evaluation:
iii. Extent of community/habitat:
- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐Yes ☑No

If Yes:
i. Species and listing (endangered or threatened):

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☑Yes ☐No

If Yes:
i. Species and listing:
Spiny Softshell - The Project Sponsor does not believe that Spiny Softshell is present on Site A of the Muir Woods property.

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐Yes ☑No
If yes, give a brief description of how the proposed action may affect that use:

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐Yes ☑No
If Yes, provide county plus district name/number:

b. Are agricultural lands consisting of highly productive soils present? ☐Yes ☑No
i. If Yes: acreage(s) on project site?
ii. Source(s) of soil rating(s):

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐Yes ☑No
If Yes:
i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature
ii. Provide brief description of landmark, including values behind designation and approximate size/extent:

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐Yes ☑No
If Yes:
i. CEA name:
ii. Basis for designation:
iii. Designating agency and date:

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e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? ☑ Yes ☐ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: Eligible property:Heritage Heights Elementary School

iii. Brief description of attributes on which listing is based:

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☑ Yes ☐ No

[Ccopy of the No Impact Determination letter issued by the NYSOPRP dated October 10, 2001 is provided at Attachment "B".]

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s):

ii. Basis for identification:

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☐ Yes ☑ No

If Yes:

i. Identify resource:

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.):

iii. Distance between project and resource: _____ miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation:

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

Documentation evaluating potential adverse environmental impacts pursuant to the State Environmental Quality Review Act ("SEQRA") including the fully engineered plans prepared by Carmina Wood Morris DPC have been submitted with the Site Plan Application.

G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name: Sawyers Landing LLC Date: February 22, 2021

Signature _____ Title Attorney for Project Sponsor

Sean W. Hopkins, Esq.

PRINT FORM

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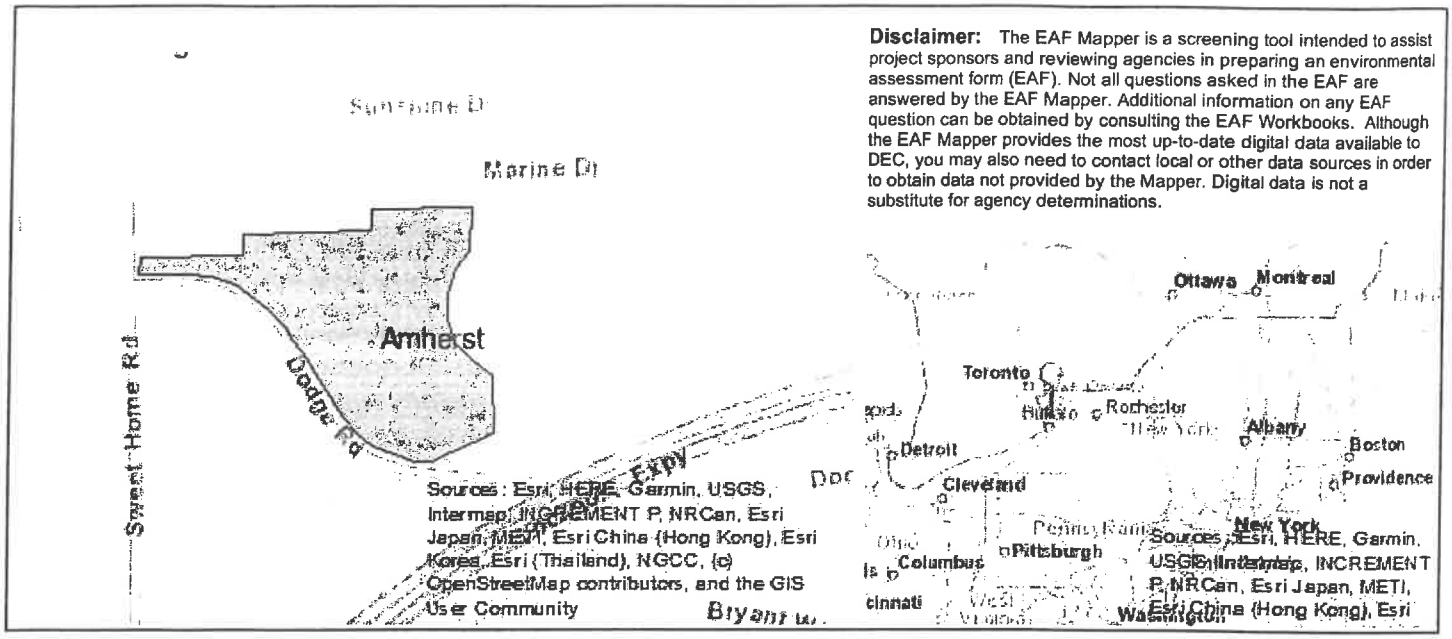
EAF Mapper Summary Report

Thursday, June 18, 2020 8:50 AM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.

B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Yes - Digital mapping data are not available for all Special Planning Districts. Refer to EAF Workbook.
C.2.b. [Special Planning District - Name]	NYS Heritage Areas:West Erie Canal Corridor
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	Yes
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.iv [Surface Water Features - Wetlands Name]	Federal Waters, NYS Wetland
E.2.h.iv [Surface Water Features - Wetlands Size]	NYS Wetland (in acres):34.6
E.2.h.iv [Surface Water Features - DEC Wetlands Number]	TE-33
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	No

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E.2.k. [500 Year Floodplain]	Yes
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	No
E.2.o. [Endangered or Threatened Species]	No
E.2.p. [Rare Plants or Animals]	Yes
E.2.p. [Rare Plants or Animals - Name]	Spiny Softshell
E.3.a. [Agricultural District]	No
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Yes - Digital mapping data for archaeological site boundaries are not available. Refer to EAF Workbook.
E.3.e.ii [National or State Register of Historic Places or State Eligible Sites - Name]	Eligible property:Heritage Heights Elementary School
E.3.f. [Archeological Sites]	Yes
E.3.i. [Designated River Corridor]	No

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TOWN OF AMHERST ATTACHMENT
State Environmental Quality Review
ENVIRONMENTAL ASSESSMENT FORM
Proposed Mixed-Use Project - Portion of 1081 North French Road

1. For each applicable category of proposed new structures, including additions to existing structures, provide the following information for all soil types on the project site (*according to Soil Survey of Erie County, NY; Table 11, Building Site Development, pp 294-305):*

Soil Name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Getzville Silt Loam	Severe	Severe	Severe	Severe	Moderate
Swormville Clay Loam	Severe	Severe	Severe	Severe	Severe

2. If the Soil survey indicates either "severe" or "moderate" suitability for the proposed types of construction, a geotechnical and hydrological analysis based on one test per 3.5 acres of project area must be provided (per Town Board resolution, 3/17/03, amended 6/16/03).

   _____ Geotechnical report attached _____ Not applicable

   [Note: 3 copies of the Geotechnical Report that has been ordered for the relevant portion of 1081 North French Road to be developed as a mixed-use project will be submitted to the Planning Department. A comprehensive Geotechnical Report for the entire overall Muir Woods Property was previously submitted.

3. Is your property located: On Youngs Road between Dodge and Klein Roads? ☐ Yes ■ No
   On Wehrle Dr. between Spindrift Dr. and Oakwood Rd? ☐ Yes ■ No

   If so, the property may be within an area of the Town that is affected by a moratorium on connections to the sanitary sewer system.

4. Are there alternative locations on the site for this project? ☐ Yes ■ No

5. Location and size of real property owned by petitioner within one (1) mile of subject proposal:
   X Not Applicable

6. Are you aware of current or future plans or intentions by others in the Town of Amherst to develop property within 1000± ft. of the present project request: ■ Yes No

   Describe A student housing community is proposed on property to the east of the Project Site commonly referred to as Site "B" of Muir Woods.

   (Potential environmental impacts from adjacent or nearby projects undergoing the approval process will receive a coordinated environmental review to determine cumulative effects on common receivers (e.g. traffic and drainage corridors) and other relevant environmental concerns.)

7. Maximum number of vehicular trips to be generated per peak hour upon completion of project 106
   Source: Traffic Impact Study prepared by SRF Associates DPC dated August 3, 2020. 3 copies of the Traffic Impact Study have been submitted with the Site Plan Application.
8. Will blasting occur during construction? ☐ Yes ■ No

9. Does the project propose to connect and be tributary to the public sanitary sewer system? ■ Yes ☐ No

10. Proposed net additional gallons per day (gpd) of sanitary sewer discharge upon completion of project:
    50,820 average flow 203,280 peak flow.

    (Average flows of 2,500 gpd or greater will require an Engineer's Report that includes a detailed downstream sewer capacity analysis and the identification of and commitment to required I/I offset work during peak wastewater flow conditions.)

11. Based on the Town's *2011 Reconnaissance Level Survey of Historic Resources,* is your property 'blue-rated' for historic significance? Yes ■ No
    [There are not any buildings located on the Project Site.]

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Attachment "A" of Part 1 of Full Environmental Assessment Form - Amended Wetland Permit Issued by the New York State Separtment of Environmental Conservation dated December 24, 2020

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

PERMIT

Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
Ciminelli Muir Woods LLC
50 Fountain Plaza, Suite 500
Buffalo, NY 14202
(716) 631-8000

Facility:
MUIR WOODS DEVELOPMENT
1121 N French Rd
Amherst, NY 14228

Facility Location: in AMHERST in ERIE COUNTY
Facility Principal Reference Point: NYTM-E: 191.586 NYTM-N: 4770.823
Latitude: 43°01'38.9" Longitude: 78°47'07.2"

Authorized Activity: Construction of a mixed-use project named "Muir Woods" consisting of approximately two 4-story mixed-use buildings consisting of commercial space and residential units, 90 two-family townhouses and 2 six-unit apartment buildings, approximately 133 detached single-family residential units and 515 cottage-style and apartment-style housing units with various amenities; and gas, electric, sanitary, potable water and storm water (the necessary infrastructure), while maintaining open space on approximately 224 acres in the Audubon New Community District. The Muir Woods project property is a 326 acre site bounded by the Lockport Expressway (Interstate Route 990) and Dodge Road on the south, Sweet Home Road on the west, North French Road on the north and Campbell Boulevard on the east. The project will result in permanent impacts to approximately 2.39 acres of State regulated wetlands (TE-22, TE-23 and TE-34), and 11.38 acres of State regulated 100 foot wide wetland adjacent area. As mitigation for those impacts the project includes creation of 19.58 acres of in-kind and out-of-kind wetlands on-site, in six areas, to replace the functions and benefits of the impacted wetlands. There will be 4.3 acres of stream channel enhancement on-site as mitigation for State wetland regulated adjacent area impacts. The project also includes construction at 520 Campbell Road property as detailed on plan sheets referenced in Natural Resource Condition No. 4.

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Permit Authorizations

Freshwater Wetlands - Under Article 24
Permit ID 9-1422-00398/00001

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

Water Quality Certification - Under Section 401 - Clean Water Act
Permit ID 9-1422-00398/00002

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: DAVID S DENK, Regional Permit Administrator
Address: NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY 14203 -2915

Authorized Signature: David S. Denk Digitally signed by David S. Denk DN: cn=David S. Denk, o=NYS DEC, ou=Div. of Env. Permits, email=david.denk@dec.ny.gov, c=US Date: 2020.12.24 10:29:47 -05'00' Date ___/___/___

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: FRESHWATER WETLANDS; WATER QUALITY CERTIFICATION

1. **No Work Prior to Approval of Legal Instrument for Preservation of Undeveloped Areas of Site** No work authorized by this permit may begin until the Department approves a legal instrument, such as a deed restriction and/or conservation easement, that will preserve in perpetuity the natural resource values of the undeveloped areas of the site. This condition does not apply to the 520 Campbell Boulevard property.

2. **Declaration of Restrictions 520 Campbell Boulevard Property** A Declaration of Restrictions permanently prohibiting any future development of the 6.88 acres of jurisdictional federal wetlands and portion of the upland area on 520 Campbell Boulevard as depicted on the Wetland Restriction Exhibit Map must be incorporated into the deeds for lots 1 – 12 and 21. By 60 days after Water Quality Certification issuance, the permittee shall file with the real property records of the Erie County Clerk`s Office, the deed for each applicable lot containing this notice. The permittee shall within two weeks following the filing of the deed(s) submit proof of filing from the County Clerk's Office

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showing the Liber and page number at which the deed notice was filed and the date of filing for one of the affected lots to: Regional Permit Administrator, NYSDEC Region 9 Headquarters, 270 Michigan Ave, Buffalo, NY 14203-2915.

3. **Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by Ciminelli Development Company, Inc. and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009.

4. **Conformance with Plans Site B** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include the "Concept Plan - Muir Woods" dated 08 November 2019 amended to show Conifer Planting Area (attached).

5. **Conformance with Plans - 520 Campbell Boulevard** All activities authorized by this permit for the 520 Campbell Boulevard property must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans include those sheets entitled: The Preserve at Muir Woods (DEC Planting Exhibit, DEC Earthwork Exhibit and the Wetland Restriction Exhibit) by Greenman-Pedersen, Inc. dated May 2018.

6. **Conformance with Plans Site A** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include Drawing C-100 dated July 20, 2020 and received by this Department on August 10, 2020.

7. **Future Phases** Prior to development of Muir Woods Sites A and B, the permittee must obtain specific approval of engineered plans for Sites A and B to ensure compliance with the terms and condition of this permit, the approved wetland mitigation plans and the most current Findings Statement for the overall Muir Woods Project issued pursuant to the State Environmental Quality Review Act. The permittee shall submit the engineered plans for the development of Sites A and B for review by the Department simultaneous with submission of such engineered plans to the Town of Amherst. If required by the Department, the permittee shall make any necessary modifications to the engineered plans to ensure compliance with the terms and conditions of this permit, the approved wetland mitigation plans and the most current Findings Statement.

8. **Permit Conditions Prevail over Plans** If any condition of this permit conflicts with the approved plans noted in Condition Number 1, the permit conditions shall prevail over the plans unless specific written approval for such a change is obtained from this Department prior to implementation.

9. **Pre-construction Meeting to Review Permit** Prior to commencing work at the project site, the permittee shall schedule a pre-construction meeting with Department staff (Contact: Mr. David Denk, Regional Permit Administrator, NYSDEC, Division of Environmental Permits, Telephone : 716/851- 7165 and/or Mr. Charles P. Rosenburg, NYSDEC, Division of Fish and Wildlife, Telephone: 716/851-7010) and selected contractors to review the conditions contained in this permit.

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10. Mark Areas of No Disturbance on the Muir Woods Site Grade stakes and/or other appropriate measures (substantial contractor fencing, perhaps in combination with necessary silt fencing) shall be used to ensure that no equipment enters identified areas of no disturbance within the immediate area under construction (i.e.- Site A, Site B, Site C or Site D) on the Muir Woods project site. Boundaries of the on-site mitigation areas shall likewise be marked to define the limits of that work.

11. Install Controls Along Limits of Disturbance Before any soil is disturbed within a specific Site Development Area, as detailed in Condition #6 above, the permittee shall install securely anchored silt fencing and/or continuous staked hay bales along the limits-of-disturbance as shown on the plans or drawings referenced in this permit. Such erosion and sedimentation controls shall be maintained until unpaved portions of the subject site are stabilized by a self-sustaining cover of vegetation that is adequate to prevent erosion and sedimentation on and off the site. Sediment which has accumulated at the controls shall be removed periodically as necessary during the construction period. Before the controls are removed, the permittee shall remove all sediment that has accumulated at the controls.

12. Work Within Ares Depicted on Plans All construction activity, including operation of machinery, excavation, filling, grading, clearing of vegetation, disposal of waste, street paving and stockpiling of material must take place within the Site Development Areas or mitigation areas as depicted on the project plans referenced by this permit. Construction activity is prohibited within areas to be left in a natural condition or locations on the property not within the Site Development Areas or mitigation areas designated by this permit. Disturbance to the wetlands and their regulated 100 foot wide adjacent areas shall be strictly limited to the work areas identified in the plans, and specifically the MAP SHOWING WETLAND IMPACT AREAS - NEW YORK STATE WETLANDS, and APPENDIX M - PROPOSED ON-SITE MITIGATION PLAN.

13. Invasive Species (Non-Native Vegetation) To prevent the unintentional introduction or spread of invasive species, the permittee must ensure that all construction equipment is cleaned of mud, seeds, vegetation and other debris before entering any approved Site Development Areas within State regulated wetlands or their 100 foot wide adjacent areas, as well as all on-site wetland mitigation areas.

14. Prevention of Invasive Species The permittee shall prevent the establishment of invasive species (purple loosestrife, Phragmites, reed canary-grass, Japanese knotweed, glossy buckthorn and common buckthorn) across all disturbed areas within the wetland mitigation area for five growing seasons. If any of these invasive species become established, monitoring and treatment may be extended for an additional 5 years at the Department's discretion.

15. Wetland Mitigation is Mandatory Completion of all freshwater wetland mitigation is mandatory regardless of whether or not construction proceeds to completion. The required mitigation must be completed by the expiration date of this permit. Mitigation will be subject to remediation, if necessary, pursuant to Condition #16 below. All mitigation areas shall be monitored for a period of ten (10) years or until the mitigation is deemed successful by this Department. Monitoring reports shall be prepared for the first four (4) years after construction of the mitigation areas and every other year (years 6, 8 and 10) thereafter. This Department may, at its discretion, modify the 10-year monitoring period and/or monitoring report requirement at any time. Monitoring reports shall be submitted to Mr. Charles P. Rosenburg, Habitat Manager, NYSDEC, Bureau of Ecosystem Health, 270 Michigan Avenue, Buffalo, NY 14203-2915 Telephone: 716/851-7024.

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16. **On-Site Mitigation to be in Accordance with Mitigation Plan** The on-site mitigation shall be in accordance with Appendix M - Proposed On-Site Wetland Mitigation for Muir Woods prepared by Earth Dimensions, Inc. revised May 25, 2009 and with the modifications shown in Exhibit 22 of the July 20, 2020 application binder.

17. **Planting Row of Native Conifers** The permittee shall plant a row of native conifer trees in the location shown on the attached plan. The tree plantings must be a minimum of 6 feet tall, spaced 15 feet apart, and must be planted no later than October 15th following the completion of construction of the adjacent apartment units.

18. **Survival Rate for Mitigation Plantings** The permittee shall prepare a care, maintenance, inspection, and replacement schedule for the tree and shrub plantings described in the mitigation plan to ensure an 85% survival rate for five growing seasons. This condition includes all on-site landscape "buffer" plantings.

19. **Herbicides, Pesticides in Wetland or Adjacent Area** The use of herbicides and other pesticides in State regulated wetlands or their 100 foot wide adjacent areas is a regulated activity and may only be conducted pursuant to a valid Article 33 Pesticides Permit.

20. **Requirement for SPDES General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities** Since development of the Muir Woods site in the Town of Amherst will involve land disturbance of one (1) or more acres, the permittee is required to obtain coverage under State Pollutant Discharge Elimination System (SPDES) General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities. A Notice of Intent (NOI) is required to be sent to NYSDEC, Division of Water, 625 Broadway, 4th Floor, Albany, New York 12233-3505, Telephone: 518/402-8111 and approved before construction commences. Alternatively, an eNOI may be filed electronically as described on the Department's website. The General Permit GP-0-15-002 and NOI form are available on the Department's website at www.dec.state.ny.us.

21. **Visibly Turbid Discharges Prohibited** Visibly turbid discharges from project dewatering operations, excavation and grading activities are strictly prohibited to any "water body" (pond, wetland, stream or water course). Any such discharges shall be (1) retained in an appropriately maintained upland settling basin, filtered through crushed stone, sand, filter fabric fences, hay bales etc., or (2) directed to a grassy area sufficiently distant from any water body to preclude such entry.

22. **Stockpiling of Soil** Stockpiling of excavated soil is prohibited at locations within any portion of the TE-22, TE-23 and TE-34 Wetlands or their regulated 100 foot wide adjacent areas, or within any mapped 100-year floodplain beyond the Site Development Areas or mitigation areas identified in the plans.

23. **Stabilize Disturbed Areas** All areas of soil disturbance resulting from this project shall be seeded with an appropriate perennial grass seed and mulched with straw, or hydro-seeded. Mulch shall be maintained until suitable vegetative cover is established.

24. **Temporary Mulch, Final Seeding** If seeding is impracticable due to the time of year, a temporary mulch shall be applied and final seeding shall be performed at the earliest opportunity when weather conditions favor germination and growth.

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25. **Disposal of Material** Any non-merchantable tree and brush debris, demolition debris, excess construction materials, and/or excess excavated materials shall be immediately and completely disposed of on an approved upland site more than 100 feet from any regulated freshwater wetland. These materials shall be suitably stabilized so as not to re-enter any water body, wetland, or wetland adjacent area; and must be disposed of in accordance with all local, state, and federal statutes, regulations, or ordinances.

26. **Placement of Interpretive Signs Required** Permanent interpretive signs shall be placed at various wetland boundary locations throughout the Muir Woods project site . The permittee shall submit a proposal for the signs to the Department for approval. The interpretive signs shall be a minimum of 12 inches by 12 inches and shall be placed on permanent posts.

27. **Annual Project Inspection / Meeting** The permittee shall schedule an annual inspection/meeting to update Department staff on project progress and compliance with conditions of this permit for the on-site wetland mitigation area.

28. **Wetland Monuments** Monuments shall be placed every 200 feet along the outer edge of the wetland preservation areas. The monuments shall be 30" long, 5/8" rebar and cap embedded flush and in the center of the top exposed surface of concrete in a minimum 4 inch diameter, 4.5 foot long section of PVC Schedule 40 drain pipe filled with concrete, extending vertically1.5 to 2 feet above existing grade at each location. The caps shall say "Conservation Area Marker, Do Not Disturb". These monuments are to be permanently maintained.

29. **Wetland Boundaries** The boundaries of the TE-22, TE-23 and TE-34 Wetlands shall be fixed for the period of this permit (expires November 30, 2024). At that time, new boundary delineations for those wetlands will be required by this Department (to be performed or confirmed by a Department Biologist). Since project activities will be subject to the updated wetland boundary delineations and pertinent regulations at that time, any future permit modification (if necessary) would be reviewed based on the updated delineations and pertinent regulations. As such, modifications to the current project plan may be necessary depending upon the updated wetland delineations and permit regulations in effect at that time.

30. **State Not Liable for Damage** The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

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31. **State May Order Removal or Alteration of Work** If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

32. **State May Require Site Restoration** If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may lawfully require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.

33. **Precautions Against Contamination of Waters** All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. **Water Quality Certification** The authorized project, as conditioned pursuant to the Certificate, complies with Section 301, 302, 303, 306, and 307 of the Federal Water Pollution Control Act, as amended and as implemented by the limitations, standards, and criteria of state statutory and regulatory requirements set forth in 6 NYCRR Section 608.9(a). The authorized project, as conditioned, will also comply with applicable New York State water quality standards, including but not limited to effluent limitations, best usages and thermal discharge criteria, as applicable, as set forth in 6 NYCRR Parts 701, 702, 703, and 704.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. **Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

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The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. Relationship of this Permit to Other Department Orders and Determinations Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. Applications For Permit Renewals, Modifications or Transfers The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY14203 -2915

4. Submission of Renewal Application The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Freshwater Wetlands, Water Quality Certification.

5. Permit Modifications, Suspensions and Revocations by the Department The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

a. materially false or inaccurate statements in the permit application or supporting papers;

b. failure by the permittee to comply with any terms or conditions of the permit;

c. exceeding the scope of the project as described in the permit application;

d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;

e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. Permit Transfer Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification
The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit
The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits
The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights
This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Attachment "B" of Part 1 of Full Environmental Assessment Form - No Impact Determination Letter Issued by Ruth Pierpont, Director, New York State Office of Parks, Recreation and Historic Preservation, dated October 10, 2001

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

NEW YORK STATE
Bernadette Castro
Commissioner

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189

518-237-8643

October 10, 2001

Carolyn A. Pierce
CCRG
105 Robie Avenue
Buffalo, New York 14214

Dear Ms. Pierce:

Re: SEQRA
Muir Woods Mixed-Use Development
Amherst/Erie County
01PR0345

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Parks, Recreation and Historic Preservation Law, Section 14.09.

Based upon this review, it is the OPRHP's opinion that your project will have No Impact upon cultural resources in or eligible for inclusion in the State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Director

RLP:cmp

RECEIVED
OCT 16 2001
CIMINELLI DEVELOPMENT COMPANY, INC.

An Equal Opportunity/Affirmative Action Agency
printed on recycled paper

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Exhibit 2 – Description of the Proposed Mixed-Use Project on a Portion of 1081 North French Road [Site "A" of the Muir Woods Property]

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

EXHIBIT 2 OF SITE PLAN APPLICATION

DESCRIPTION OF PROPOSED MIXED-USE PROJECT TO BE LOCATION ON A PORTION OF 1081 NORTH FRENCH ROAD [SITE "A" OF MUIR WOODS PROPERTY]

The proposed project consists of a mixed-use project on a portion of 1081 North French Road [Site "A" of Muir Woods Property] (the "Project Site"). The Project Site is properly zoned for the proposed mixed-use project. The mixed-use project consists of 2 four-story mixed-use buildings [15,000 sq. ft. of 1st floor commercial space and 50 units per building], 47 two-family town homes on individual lots, and 2 single-story apartment buildings [6 units per building] along with all related site improvements depicted on the fully engineered plans prepared by Christopher Wood, P.E. of Carmina Wood Morris DPC submitted with this Site Plan Application. A reduced size copy of the Overall Site Plan [Drawing C-100] is provided at Exhibit "3". The Elevation Plans as prepared by Sutton Architecture PLLC are provided at Exhibit "8". The fully engineered plans for the mixed-use project consist of the following:

- Cover Sheet;
- Topographic Survey;
- Boundary Survey;
- Demolition & Erosion Control Plan [Drawing C-001];
- Demolition & Erosion Control Details Plan [Drawing C-002];
- Overall Site Plan [Drawing C-100];
- Site Plan [Drawing C-101];
- Parcel Map [Drawing C-102];
- Site Details Plan [Drawing C-103];
- Site Details Plan [Drawing C-104];
- Grading Plan [Drawing C-200];
- Storm Drainage Plan [Drawing C-300];
- Storm Drainage Details Plan [Drawing C-301];

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

- Storm Drainage Plan [Drawing C-302];
- Storm Drainage Details Plan [Drawing C-303];
- Storm Drainage Details Plan [Drawing C-304];
- Utility Plan [Drawing C-400];
- Sanitary Sewer Details Plan [Drawing C-401];
- Sanitary Sewer Details Plan [Drawing C-402];
- Sanitary Sewer General Notes Plan [Drawing C-403];
- Sanitary Sewer Testing Notes Plan [Drawing C-404];
- Water Details Plan [Drawing C-405];
- Water Details & Notes Plan [Drawing C-407];
- Insulated Enclosure Detail Plan [Drawing C-408]; and
- Landscape Plan as Prepared by Robert Walter, RLA [Drawing L-100]

For purposes of the review process, the proposed mixed-use project has been defined broadly to include all required discretionary approvals and permits as well as all site improvements including the proposed driveway connections to Dodge Road, access aisles, parking spaces, driveways, wetland impacts, lighting, landscaping, on-site storm water management improvements, sanitary sewer and water lines and connections and all other required utility improvements.[1] The project purpose is to develop Site "A" of overall Muir Woods Project Site as an innovative mixed-use project on property that has been designated for development for several decades. The proposed mixed-use project is a Type I action pursuant to SEQRA. The Town Board issued an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") on October 19, 2020 to allow mixed-use development of the Project Site.[2]

[1] A completed Part 1 of the Full Environmental Assessment Form with attached Page 5[a] and Attachments "A" and "B" is provided at Exhibit "1".

[2] A copy Resolution 2020-791 as adopted by the Town of Amherst Town Board on October 19, 2020 for the purpose of Issuing an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") for allowing mixed-use development on the Project Site is provided at Exhibit "9".

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Additionally, on October 19, 2020, the Town Board also adopted a resolution to amend the Town's Comprehensive to designate the Project Site as appropriate for mixed-use.[3]

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

[3] A copy of Resolution 2020-792 as Adopted by the Town of Amherst Town Board on October 19, 2020 for the purpose of approving an Amendment to the Town of Amherst Comprehensive Plan to accommodate mixed-use development on the Project Site is provided at Exhibit "10".

Exhibit 3 – Reduced Size Copy of Overall Site Plan [Drawing C-100] as Prepared by Christopher Wood, P.E., of Carmina Wood Morris DPC

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

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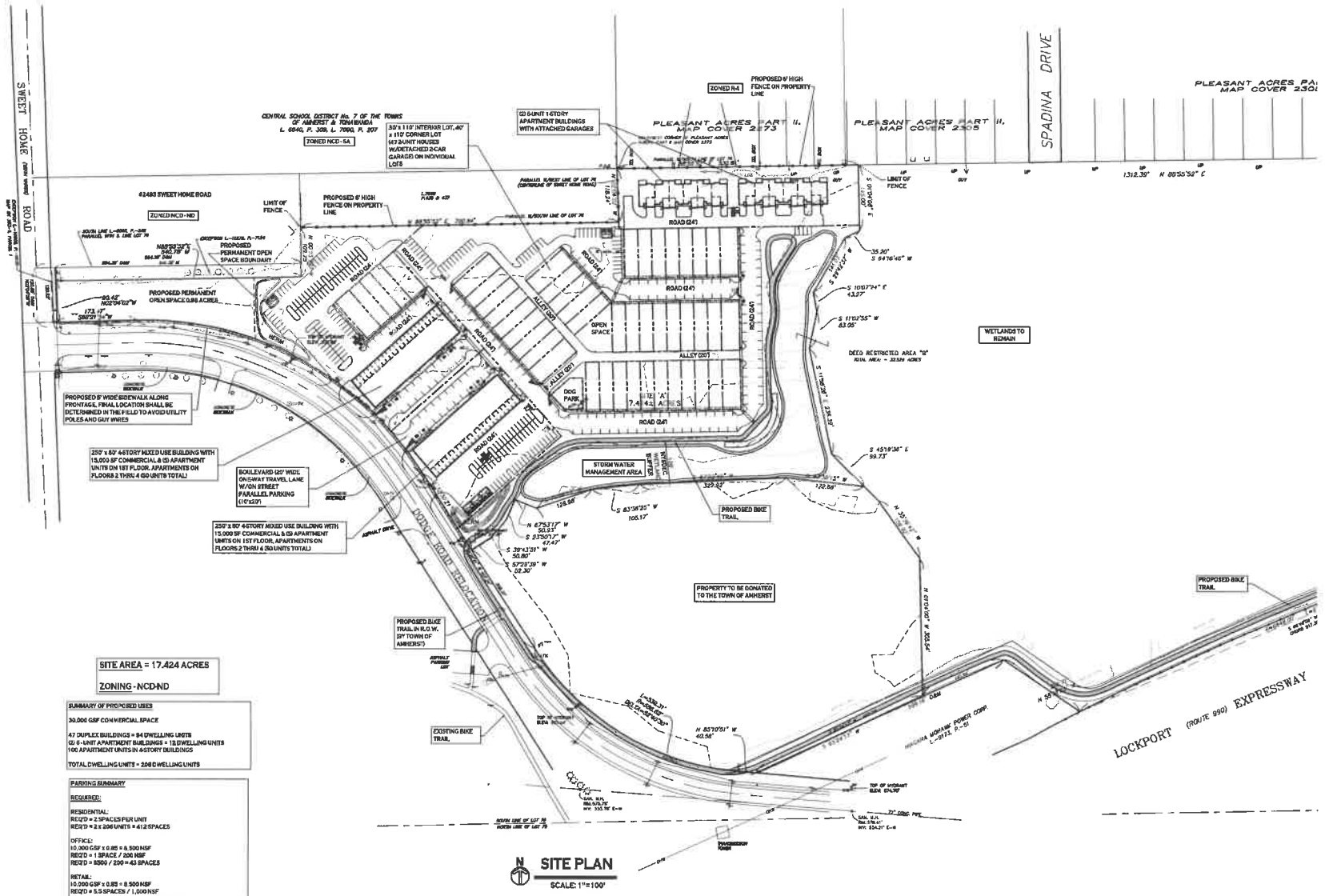
© Carmina Wood Morris DPC



Carmina Wood Morris DPC
497 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0283

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

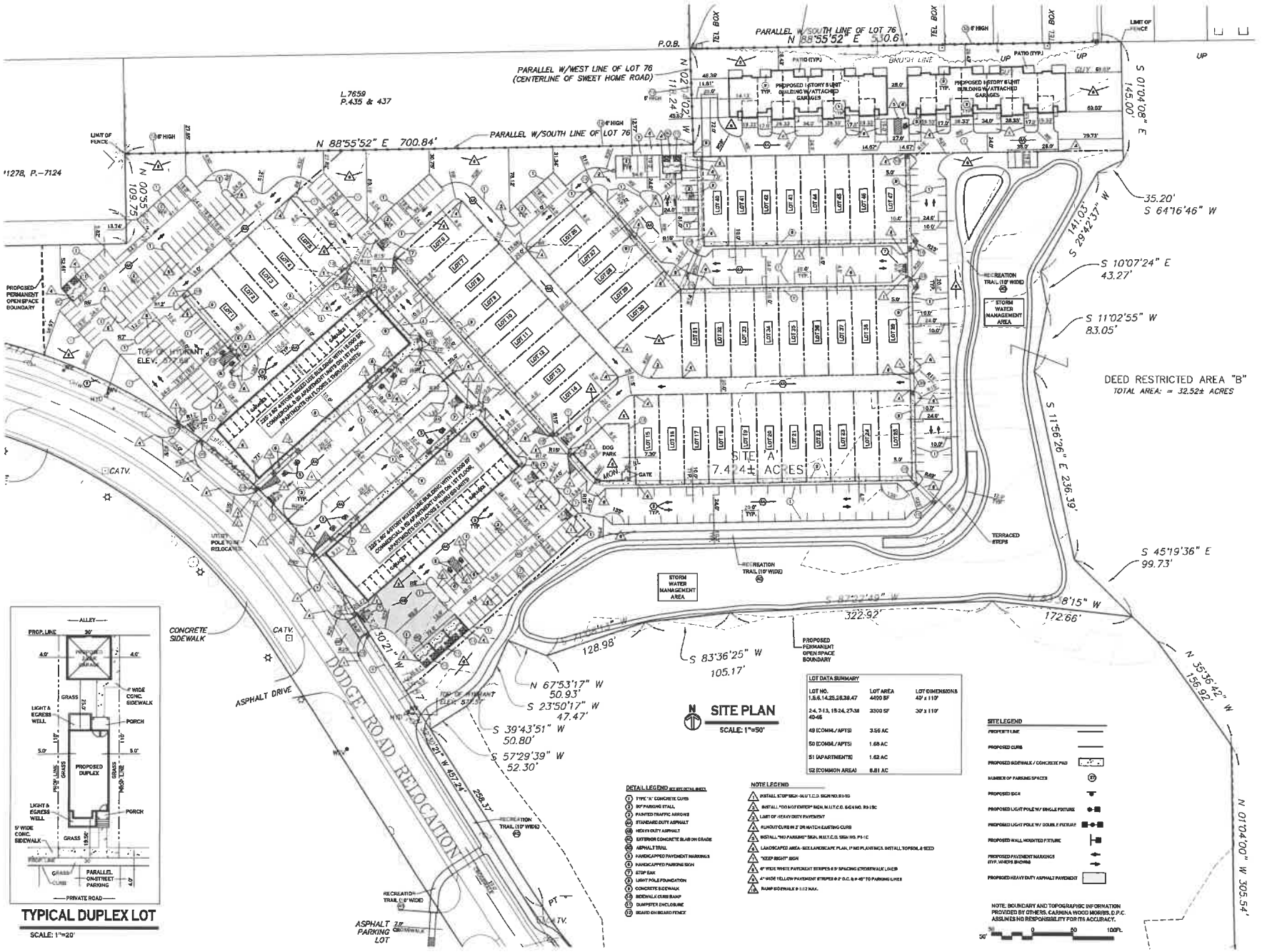
DRAWING NAME:
Overall Site Plan

DRAWING NO.
C-100
Project no.: 21.011

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Exhibit 4 – Reduced Size Copy of Site Plan [Drawing C-101] as Prepared by Christopher Wood, P.E., of Carmina Wood Morris DPC

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)



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Carmina Wood Morris
487 Main Street, Suite 500
Buffalo, New York 14203
P 716.842.2185
F 716.842.0263

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

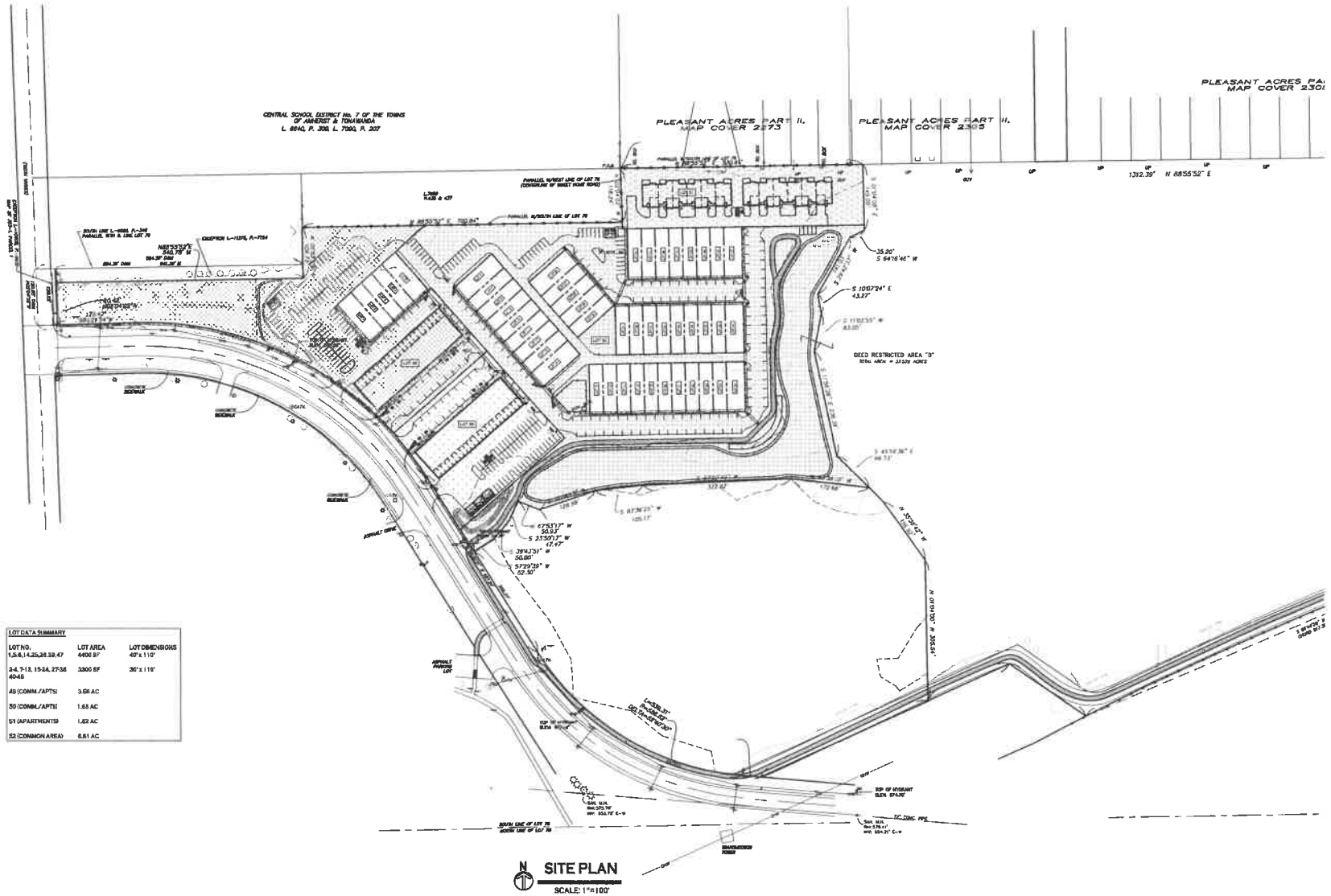
DRAWING NAME:
Site Plan

DRAWING NO.
C-101
Project no.: 21.011

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Exhibit 5 – Reduced Size Copy of Parcel Map [Drawing C-102] as Prepared by Christopher Wood, P.E., of Carmina Wood Morris DPC

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)



LOT DATA SUMMARY		
LOT NO. 1,5,6,14,25,26,39,47	LOT AREA 4400 SF	LOT DIMENSIONS 40' x 110'
2-4, 7-13, 15-24, 27-38, 40-46	3300 SF	30' x 110'
49 (COMM./APTS)	3.56 AC	
50 (COMM./APTS)	1.65 AC	
51 (APARTMENTS)	1.62 AC	
52 (COMMON AREA)	6.51 AC	

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 0 100 200FT.

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Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York, 14203
P 716.842.3148
F 716.842.0263

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

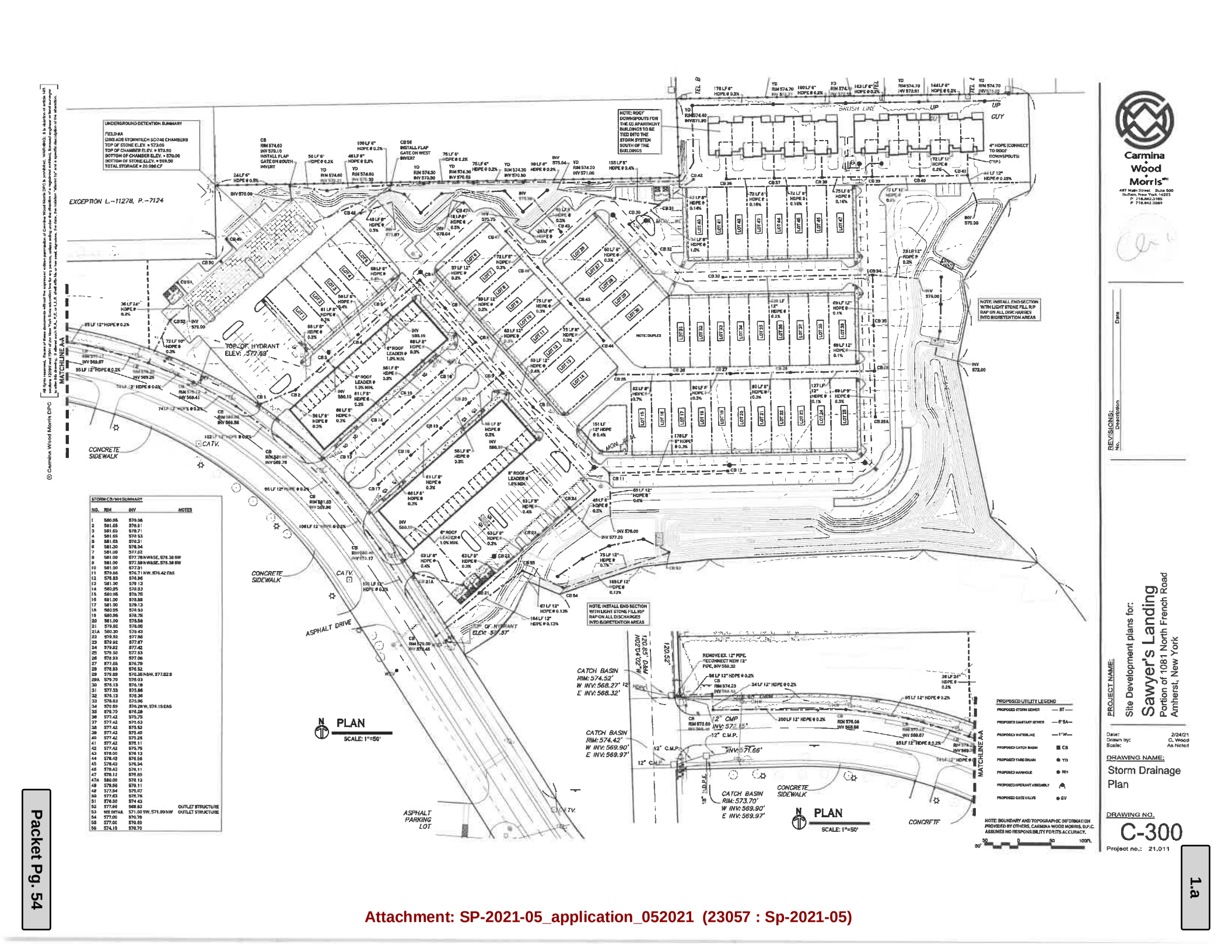
DRAWING NAME:
Parcel Map

DRAWING NO.
C-102

Project no.: 21.011

Exhibit 6 – Reduced Size Copy of Storm Drainage Plan [Drawing C-300] as Prepared by Christopher Wood, P.E., of Carmina Wood Morris DPC

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)



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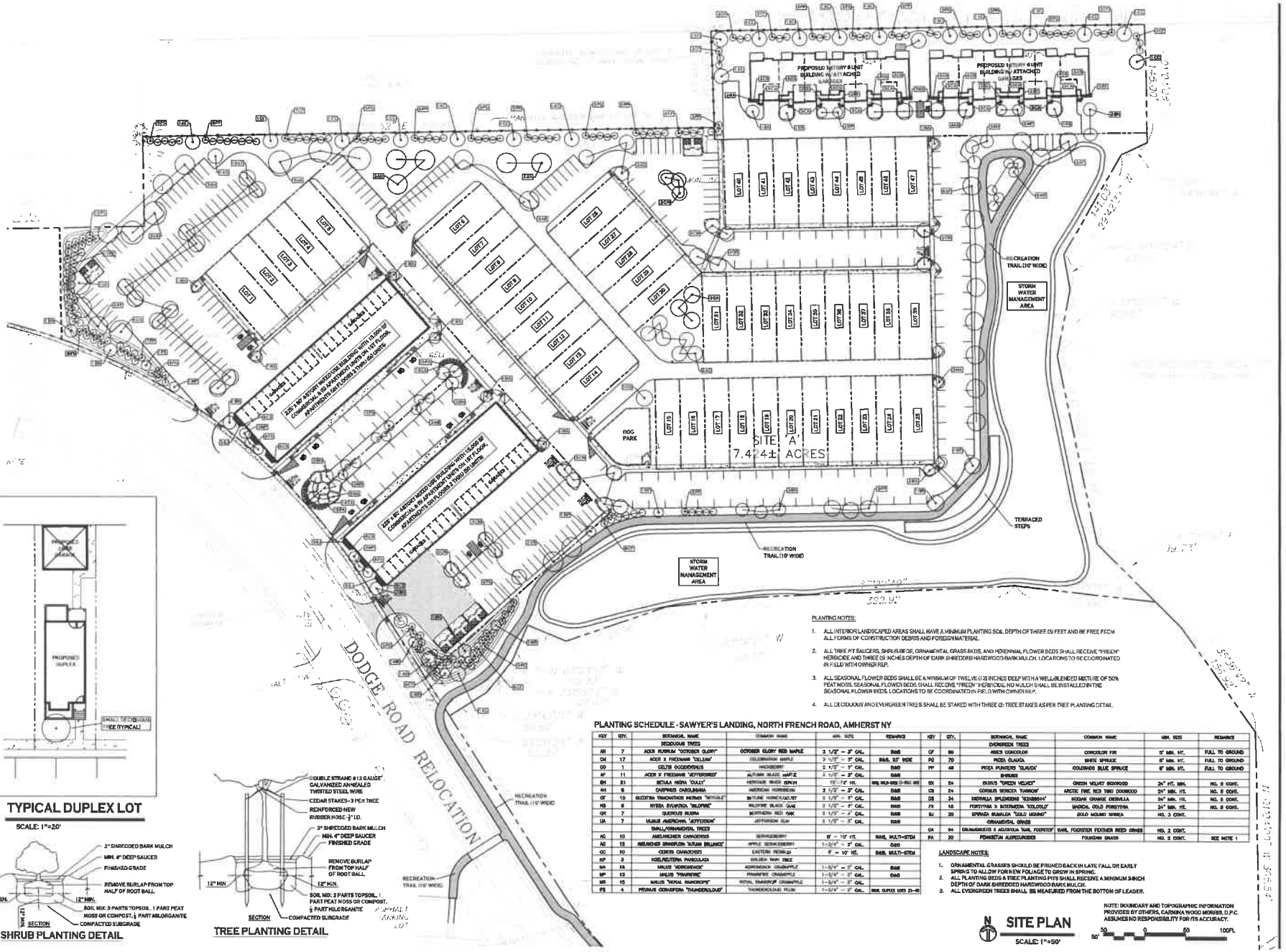
Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Exhibit 7 – Reduced Size Copy of Landscape Plan [Drawing L-100] as Prepared by Robert Walter, Registered Landscape Architect

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)



PLANTING NOTES:

1. ALL INTERIOR LANDSCAPED AREAS SHALL HAVE A MINIMUM PLANTING SOIL DEPTH OF THREE (3) FEET AND BE FREE FROM ALL FORMS OF CONSTRUCTION DEBRIS AND FOREIGN MATERIAL.
2. ALL TREE PIT SAUCERS, SHRUB BEDS, ORNAMENTAL GRASS BEDS, AND HERENNIAL FLOWER BEDS SHALL RECEIVE "PRIEN" HERBICIDE AND THREE (3) INCHES DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
3. ALL SEASONAL FLOWER BEDS SHALL BE A MINIMUM OF TWELVE (12) INCHES DEEP WITH A WELL-BLENDED MIXTURE OF 50% PEAT MOSS. SEASONAL FLOWER BEDS SHALL RECEIVE "PRIEN" HERBICIDE. NO MULCH SHALL BE INSTALLED IN THE SEASONAL FLOWER BEDS. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
4. ALL DECIDUOUS AND EVERGREEN TREES SHALL BE STAKED WITH THREE (3) TREE STAKES AS PER TREE PLANTING DETAIL.

PLANTING SCHEDULE - SAWYER'S LANDING, NORTH FRENCH ROAD, AMHERST NY

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		DECIDUOUS TREES			
AR	7	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	2 1/2" – 3" CAL.	B&B
CM	17	ACER X FREEMANII 'CELZAM'	CELEBRATION MAPLE	2 1/2" – 3" CAL.	B&B, 12' WIDE
CO	1	CELTIS OCCIDENTALIS	HACKBERRY	2 1/2" – 3" CAL.	B&B
KF	11	ACER X FREEMANII 'KEFREEDOM'	AUTUMN BLAZE MAPLE	2 1/2" – 3" CAL.	B&B
GH	21	GLEDITSIA TRIACANTHOS INERMIS 'SHADEMASTER'	HONEYLOCUST	10'-12' HT.	B&B, MULTI-STEM
NH	9	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2 1/2" – 3" CAL.	B&B
QR	10	GLEDITSIA TRIACANTHOS INERMIS 'SKYLINE'	SKYLINE HONEYLOCUST	2 1/2" – 3" CAL.	B&B
NS	6	NYSSA SYLVATICA 'WILDFIRE'	WILDFIRE BLACK GUM	2 1/2" – 3" CAL.	B&B
QR	7	QUERCUS RUBRA	NORTHERN RED OAK	2 1/2" – 3" CAL.	B&B
UA	7	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2 1/2" – 3" CAL.	B&B
		SMALL ORNAMENTAL TREES			
AC	10	AMELANCHIER CANADENSIS	SERVICEBERRY	8' – 10' HT.	B&B, MULTI-STEM
AG	12	AMELANCHIER GRANDIFLORA 'AUTUMN BRILLIANCE'	APPLE SERVICEBERRY	1-3/4" – 2" CAL.	B&B
CC	10	CERCIS CANADENSIS	EASTERN REDBUD	8' – 10' HT.	B&B, MULTI-STEM
KP	3	KOELREUTERIA PANICULATA	GOLDEN RAIN TREE		
MA	16	MALUS 'ADIRONDACK'	ADIRONDACK CRABAPPLE	1-3/4" – 2" CAL.	B&B
MP	12	MALUS 'PRAIRIFIRE'	PRAIRIFIRE CRABAPPLE	1-3/4" – 2" CAL.	B&B
MR	15	MALUS 'ROYAL RAINDROPS'	ROYAL RAINDROPS CRABAPPLE	1-3/4" – 2" CAL.	
PS	4	PRUNUS SERRASFERA 'THUNDERCLOUD'	THUNDERCLOUD PLUM	1-3/4" – 2" CAL.	B&B, SUPER VARS 25-45
		EVERGREEN TREES			
CF	80	ABIES CONCOLOR	CONCOLOR FIR	5' MIN. HT.	FULL TO GROUND
PG	70	PICEA GLAUCA	WHITE SPRUCE	5' MIN. HT.	FULL TO GROUND
PP	48	PICEA PUNGENS 'GLAUCA'	COLORADO BLUE SPRUCE	5' MIN. HT.	FULL TO GROUND
		SHRUBS			
BX	24	BUXUS 'GREEN VELVET'	GREEN VELVET BOXWOOD	24" MIN. MIN.	NO. 5 CONT.
CS	24	CORNUS SERICEA 'FARROW'	ARCTIC FIRE RED TWIG DOGWOOD	24" MIN. HT.	NO. 5 CONT.
DS	34	DIERVILLA SPLENDENS 'G2X86544'	KODIAN ORANGE DIERVILLA	24" MIN. HT.	NO. 5 CONT.
FX	18	FORSYTHIA X INTERMEDIA 'KOLGOLD'	MAGICAL GOLD FORSYTHIA	24" MIN. HT.	NO. 5 CONT.
SJ	20	SPIRAEA JAPONICA 'GOLD MOUND'	GOLD MOUND SPIREA	NO. 3 CONT.	
		ORNAMENTAL GRASS			
CA	84	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	NO. 3 CONT.	
PA	30	PENNISETUM ALOPECUROIDES	FOUNTAIN GRASS	NO. 2 CONT.	SEE NOTE 1

LANDSCAPE NOTES:

1. ORNAMENTAL GRASSES SHOULD BE PRUNED BACK IN LATE FALL OR EARLY SPRING TO ALLOW FOR NEW FOLIAGE TO GROW IN SPRING.
2. ALL PLANTING BEDS & TREE PLANTING PITS SHALL RECEIVE A MINIMUM 3-INCH DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH.
3. ALL EVERGREEN TREES SHALL BE MEASURED FROM THE BOTTOM OF LEADER.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

N

SITE PLAN

SCALE: 1"=50'

50' 0 50' 100'FT.

TYPICAL DUPLEX LOT

SCALE: 1"=20'

SHRUB PLANTING DETAIL

TREE PLANTING DETAIL

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Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0251

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/9/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Landscape Plan

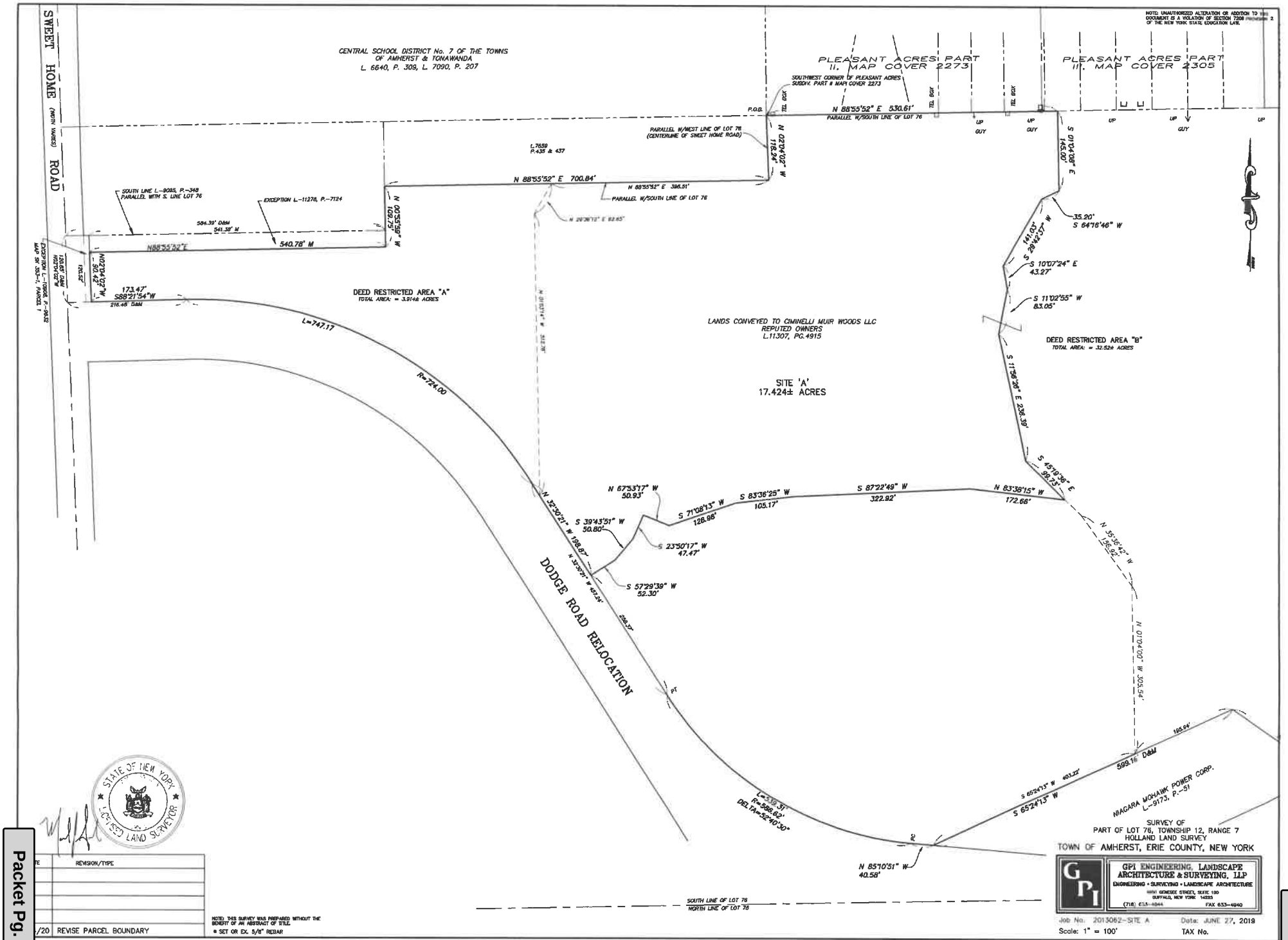
DRAWING NO.
L-100

Project no.: 21.011

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Exhibit 6 – Reduced Size Copy of Storm Drainage Plan [Drawing C-300] as Prepared by Christopher Wood, P.E., of Carmina Wood Morris DPC

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

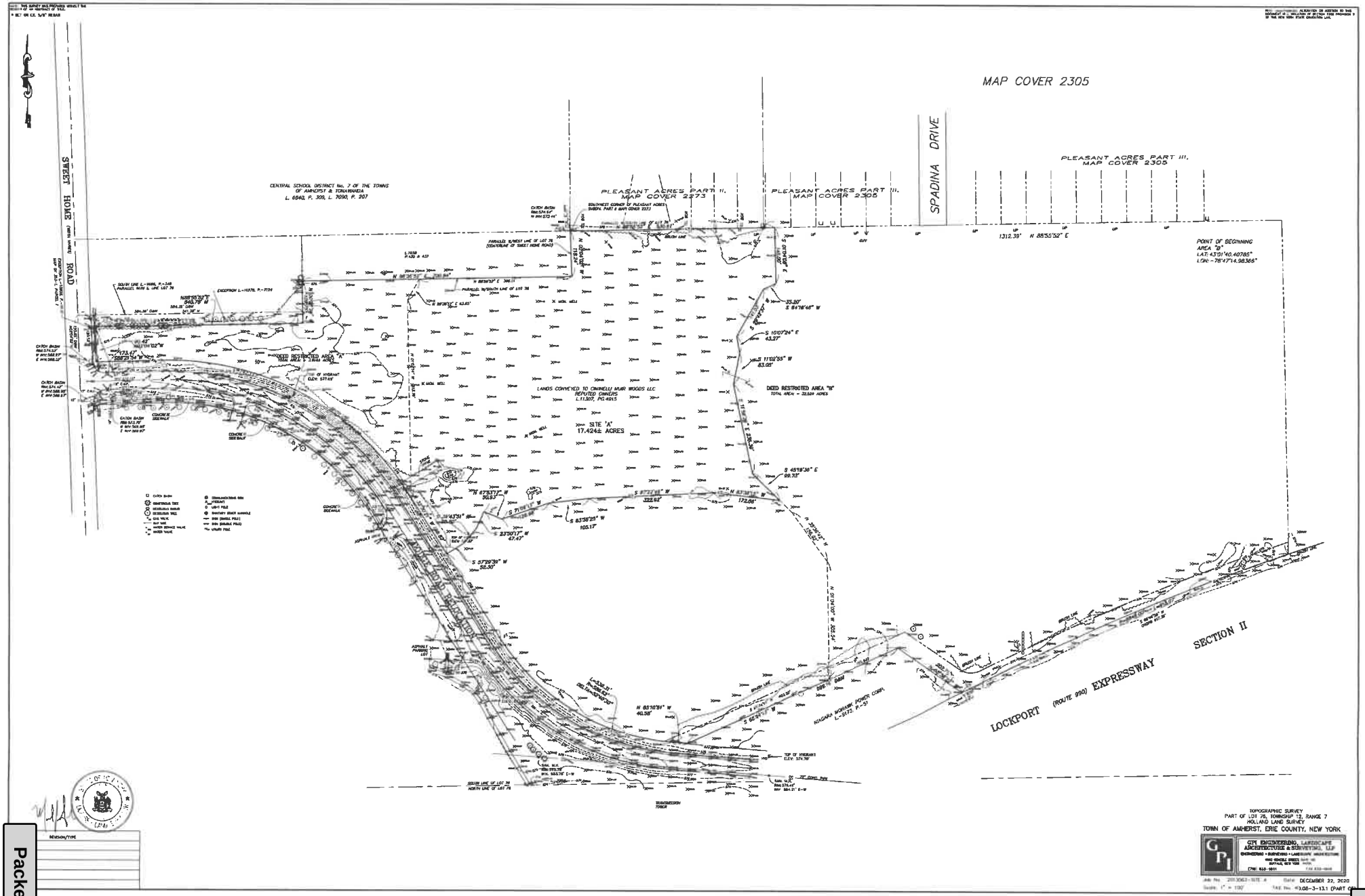
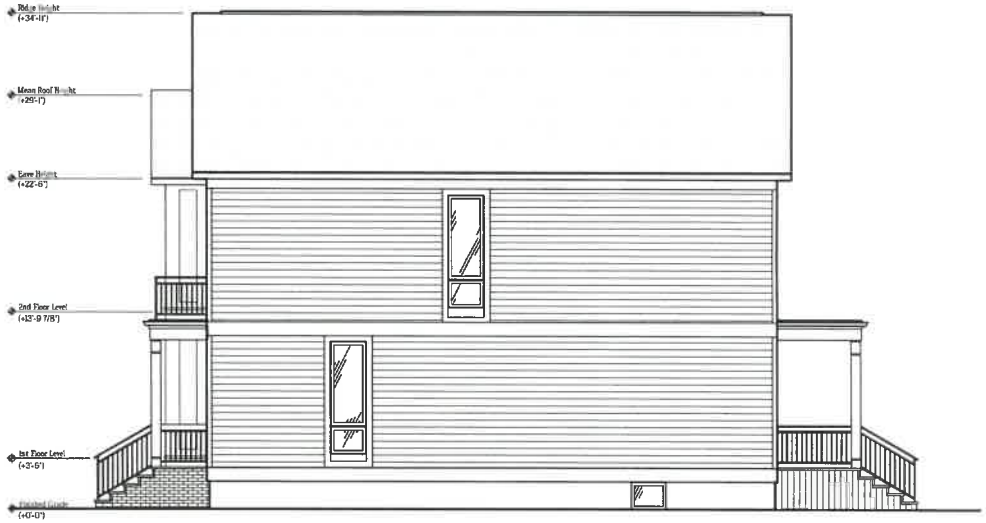

MAP COVER 2305
SPADINA DRIVE
PLEASANT ACRES PART II, MAP COVER 2273
PLEASANT ACRES PART III, MAP COVER 2305
PLEASANT ACRES PART III, MAP COVER 2305
CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA L. 6840, P. 309, L. 7090, P. 207
SWEET HOME ROAD
SITE 'A' 17.424± ACRES
LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC REPUTED OWNERS L.11307, Pg.4915
DEED RESTRICTED AREA "A" TOTAL AREA = 2.844 ACRES
DEED RESTRICTED AREA "B" TOTAL AREA = 32.529 ACRES
POINT OF BEGINNING AREA 79+ LAT: 43°01'40.40785" LON: -78°47'14.98386"
LOCKPORT (ROUTE 990) EXPRESSWAY
SECTION II
NIAGARA MOHAWK POWER CORP. L.-9173, P.-51
TOPOGRAPHIC SURVEY
PART OF LOT 78, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK
GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
DECEMBER 22, 2020

Exhibit 8 – 11" x 17" Size Copies of Elevation Plans for Two-Family Townhomes on Individual Lots, Six-Unit Single-Story Buildings and Four-Story Mixed Use Buildings as Prepared by Sutton Architecture PLLC

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)



Front Elevation



Right Elevation

1/4" = 1'-0"



Rear Elevation

1/4" = 1'-0"



Left Elevation

1/4" = 1'-0"

SEVERYN DEVELOPMENT
BETTER BUILT HOMES
Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing
Two Family

Portion Of 1081 North French Road Amherst, NY
2/23/21

SUTTON architecture
"Design 2 Build"
5409 Main Street
716-932-7156

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)



South Elevation

1/8" = 1'-0"



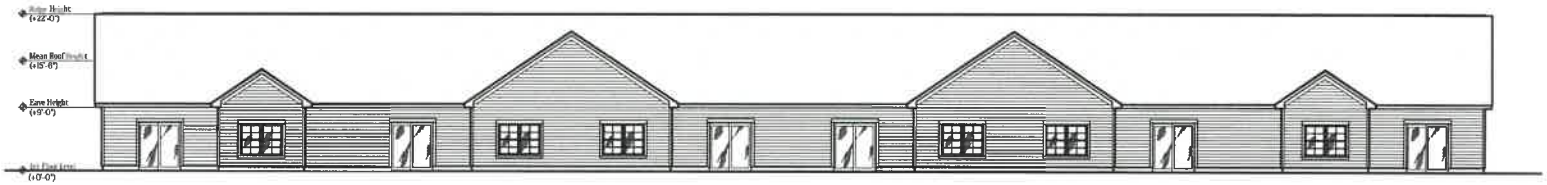
East Elevation

1/8" = 1'-0"



West Elevation

1/8" = 1'-0"



North Elevation

1/8" = 1'-0"

SEVERYN DEVELOPMENT
BETTER BUILT HOMES

Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing
6 Unit Multifamily

Portion Of 1081 North French Road Amherst, NY
2/23/21

SUTTON architecture
"Design 2 Build"
5409 Main Street
716-932-7156

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)



North Elevation

1/8" = 1'-0"



South Elevation

1/8" = 1'-0"

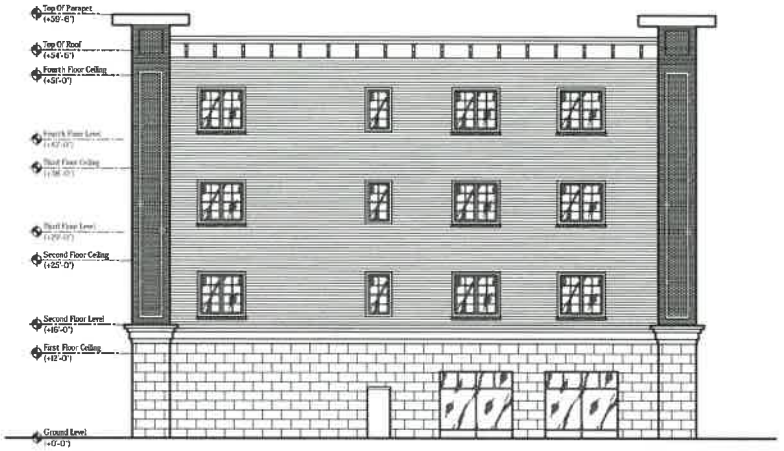
SEVERYN DEVELOPMENT
BETTER BUILT HOMES
Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing
4 Story Mixed Use

Portion Of 1081 North French Road Amherst, NY
2/23/21

SUTTON architecture
"Design 2 Build"
5409 Main Street
716-832-7158

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)



East Elevation

1/8" = 1'-0"



West Elevation

1/8" = 1'-0"

SD SEVERYN DEVELOPMENT
BETTER BUILT HOMES
Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing

4 Story Mixed Use

Portion Of 1081 North French Road Amherst, NY

2/23/21

SUTTON architecture
"Design 2 Build"
5409 Main Street
716-932-7156

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Exhibit 9 – Resolution 2020-791 as Adopted by the Town of Amherst Town Board on October 19, 2020 for the Purpose of Issuing an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") for Mixed-Use Development on 1081 North French Road [Site "A" of Muir Woods Property]

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Amherst Town Board
5583 Main Street
Williamsville, NY 14221
www.amherst.ny.us

Francina J. Spoth
Town Clerk

Meeting: 10/19/20 07:00 PM
Department: Town Clerk
Initiated by: **Kathleen Cooper**
Co-Sponsored by:

DOC ID: 22383 **RESOLUTION 2020-791** **ROLL CALL VOTE (ADOPTED)**

Amendment to the SEQR Findings Statement for "Muir Woods - Site A" (1081 N. French Road)

Amendment to the SEQR Findings Statement for
"Muir Woods - Site A"
[1081 North French Road (NCD); Z-2002-09C]

RESOLVED, that pursuant to 6NYCRR Part 617 (SEQR) and Town Code Section 104, as amended, that the requirements of SEQR have been completed, and be it further

RESOLVED, that pursuant to NYS Town Law Section 272-a, the Town Board concurs with the findings of the Planning Board as stated in their resolution of August 20, 2020 to amend the "Development Program" within the SEQR Findings Statement approved by the Town Board on August 5, 2020 to permit "Site A" located at the western end of the overall Muir Woods site located at 1081 North French Road (NCD) to be developed as a mixed-use residential/commercial project instead of flex office/R&D buildings.

RESOLVED, that Ciminelli Muir Woods, LLC has offered to donate to the Town approximately 43 acres of Permanent Open Space located between Site "A" and Site "B" of the Overall Muir Wood Property as depicted on a plan prepared by Greenman-Pedersen Consulting Engineers Inc. dated October 13, 2020;

RESOLVED, the approximately 43 acres of Permanent Open Space includes a portion of the Muir Woods Project with frontage on Dodge Road and is also contiguous to the southern boundary of a portion of the Bucyrus Heights Subdivision and the approximately 43 acres of Permanent Open Space includes extensive existing vegetation and also includes wetlands subject to the jurisdiction of the United States Army Corps of Engineers ("USACE") and wetlands and regulated 100 ft. adjacent areas subject to the jurisdiction of the New York State Department of Environmental Conservation ("NYSDEC"); and

RESOLVED, the Town Board hereby finds as follows: i.) Acquisition of the approximately 43 acres of Permanent Open Space on the Muir Woods Project Site is consistent with the Conceptual Land Use Plan for the Town contained at Figure 6 of the adopted Bicentennial Comprehensive Plan that designates this acreage as "Recreation, Open Space & Gateways"; and, ii.) Acquisition of the approximately 43 acres of Permanent Open Space on the Muir Woods Project Site as described herein will result in benefits to the Town and its residents including homeowners in the Bucyrus Heights Subdivision.

RESOLVED, the Town Board has evaluated the potential adverse environmental impacts associated with the acquisition of the 43 acres of Permanent Open Space and determined that such acquisition will not result in any potentially significant adverse environmental impacts.

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

RESOLVED, that the Town Board hereby authorizes the acquisition of the approximately 43 acres of Permanent Open Space on the Muir Woods Project Site as described herein via a donation from Ciminelli Muir Woods, LLC subject to the following terms and conditions:

1. The adoption of this resolution by the Town Board for the purpose of acquiring the Permanent Open Space described herein does not include the Town Board designating the Permanent Open Space as "parkland". The Town Board shall adopt a separate resolution in the future if it determines designating the Permanent Open Space as "parkland" is appropriate.

2. Ciminelli Muir Woods, LLC, its successors and assigns, shall retain an easement with respect to the approximately 43 acres of Permanent Open Space for the purpose of completing required wetland mitigation and wetland mitigation monitoring in accordance with the terms and conditions contained in wetland permits issued by the USACE and the NYSDEC. Upon the USACE and the NYSDEC determining that the required wetland mitigation has been completed to their satisfaction and the expiration of the monitoring period, the easement shall terminate.

3. Prior to the recording of a deed from Ciminelli Muir Woods, LLC to the Town of Amherst for the purpose of conveying ownership of the Permanent Open Space as described herein, a Declaration of Restrictive Covenants shall be recorded at the Erie County Clerk's Office for the restricting the use of the approximately 43 acres of Permanent Open Space in accordance with the terms and conditions of wetland permits issued by the USACE and the NYSDEC and also for the purpose of prohibiting future development of the approximately 43 acres of Permanent Open Space.

4. Ciminelli Muir Woods, LLC shall be responsible for the expenses associated with the preparation of a survey and an Abstract of Title for the Permanent Open Space as described herein and the recording fees for the deed to be recorded at the Erie County Clerk's Office.

5. The documentation required to effectuate the transfer of the Permanent Open Space as described herein and to comply with the above conditions shall be subject to review and approval by the Town Attorney's Office.

6. The Supervisor is authorized to execute any documentation required to effectuate the acquisition of the 43 acres of Permanent Open Space in accordance with the terms and conditions contained in this resolution.

10/06/2020

A motion to open the public hearing was made by Supervisor Kulpa, seconded by Councilmember Lavin and unanimously approved 4-0. The public hearing was opened at 7:51 PM.

Sean W. Hopkins, Esq., presented for both resolution #791 and #792 and answered questions from the Board.

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

There were no speakers from the public, therefore Supervisor Kulpa moved to adjourn the public hearing and set a Decision Date for October 19th. The motion was seconded by Councilmember Lavin and unanimously approved 4-0. The public hearing was adjourned at 8:13 PM.

10/19/2020

A motion to open the public hearing was made by Supervisor Kulpa, seconded by Councilmember Lavin and unanimously approved 5-0. The public hearing was opened at 7:18 PM.

Sean W. Hopkins, Esq., presented under Res #792.

There were no speakers from the public, therefore Supervisor Kulpa moved to close the public hearing, seconded by Councilmember Lavin and unanimously approved 5-0. The public hearing was closed at 7:20 PM.

A motion to adopt the amended SEQR Findings Statement was made by Supervisor Kulpa, seconded by Deputy Supervisor Berger and approved via Roll Call vote 4-1 (nay, Bucki).

RESULT:	**ROLL CALL VOTE (ADOPTED) [4 TO 1]**
MOVER:	Brian J. Kulpa, Supervisor
SECONDER:	Jacqualine Berger, Deputy Supervisor
AYES:	Kulpa, Berger, Lavin, Szukala
NAYS:	Bucki

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Exhibit 10 – Resolution 2020-792 as Adopted by the Town of Amherst Town Board on October 19, 2020 for the Purpose of Approving an Amendment to the Town of Amherst Comprehensive Plan

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Amherst Town Board
5583 Main Street
Williamsville, NY 14221
www.amherst.ny.us

Francina J. Spoth
Town Clerk

Meeting: 10/19/20 07:00 PM
Department: Town Clerk
Initiated by: **Kathleen Cooper**
Co-Sponsored by:

DOC ID: 22366 **RESOLUTION 2020-792** **ROLL CALL VOTE (ADOPTED)**

Amendment to the Comprehensive Plan for "Muir Woods - Site A" (1081 N. French Road)

Amendment to the Comprehensive Plan for
"Muir Woods - Site A"
[1081 North French Road (NCD); BCPA-2020-02]

RESOLVED, that pursuant to 6NYCRR Part 617 (SEQR) and Town Code Section 104, as amended, that the requirements of SEQR have been completed, and be it further

RESOLVED, that pursuant to NYS Town Law Section 272-a and Section 11.6 of the Town Comprehensive Plan, the Town Board concurs with the findings of the Planning Board as stated in their resolution of August 20, 2020 to amend the Conceptual Land Use Plan (Figure 6) and the University Focal Planning Area (Figure 21) of the Comprehensive Plan for "Muir Woods - Site A" located at 1081 North French Road (NCD) to permit mixed-use residential/commercial use on Site A.

For additional information (copy & paste link):
https://share.amherst.ny.us:443/docman/doc_files_list.php?hash=uaaidrb0hpn0mkelzsugvr62

10/06/2020
A motion to open the public hearing was made by Supervisor Kulpa, seconded by Councilmember Lavin and unanimously approved 4-0. The public hearing was opened at 7:51 PM.

Sean W. Hopkins, Esq., presented for both resolution #791 and #792 and answered questions from the Board.

There were no speakers from the public, therefore Supervisor Kulpa moved to adjourn the public hearing and set a Decision Date for October 19th. The motion was seconded by Councilmember Lavin and unanimously approved 4-0. The public hearing was adjourned at 8:13 PM.

10/19/2020
A motion to open the public hearing was made by Supervisor Kulpa, seconded by Deputy Supervisor Berger and unanimously approved 5-0. The public hearing was opened at 7:07 PM.

Sean W. Hopkins, Esq., presented.

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

There were no speakers from the public, therefore Supervisor Kulpa moved to close the public hearing, seconded by Deputy Supervisor Berger and unanimously approved 5-0. The public hearing was closed at 7:18 PM.

A motion to approve the Negative Declaration was made by Supervisor Kulpa, seconded by Deputy Supervisor Berger and approved 4-1 (nay, Bucki). A motion to adopt the resolution was made by Supervisor Kulpa, seconded by Deputy Supervisor Berger and approved via Roll Call vote 4-1 (nay, Bucki).

RESULT:	**ROLL CALL VOTE (ADOPTED) [4 TO 1]**
MOVER:	Brian J. Kulpa, Supervisor
SECONDER:	Jacqualine Berger, Deputy Supervisor
AYES:	Kulpa, Berger, Lavin, Szukala
NAYS:	Bucki

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

HSM

February 26, 2021

Ellen Kost, AICP, Assistant Planning Director
Town of Amherst Planning Department
5583 Main Street
Williamsville, NY 14221

Re: Proposed Mixed Use Project - Site A of Muir Woods [SP-2021-05]
Portion of 1081 North French Road – Town of Amherst
File No. 10024.12

Dear Ellen:

Attached as Exhibit "1" is a copy of the Amended Wetland Permit [LRB-2001-00067] issued by the United States Army Corps of Engineers ("USACE") on February 25, 2021 authorizing impacts to 6.089 acres of federal wetlands [reduction of 6.921 acres of previously authorized impacts to federal wetlands] in order to accommodate the mixed-use development of Site "A" of the Muir Woods Property in accordance with the project layout depicted on the Concept Site Plan prepared by Christopher Wood, P.E. of Carmina Wood Morris DPC attached as Sheet 1 of 3.

Please feel free to call me at 510-4338 or via e-mail if you have any questions regarding this letter or the Amended Wetland Permit issued by the USACE on February 25, 2021 or the status of the pending request for Major Site Plan Approval for the proposed mixed-use project.

Thank you for your continued cooperation.

Sincerely,

HOPKINS SORGI & MCCARTHY PLLC

Sean W. Hopkins, Esq.

cc: Adam Faeth, Esq., Ciminelli Real Estate Corporation [Via e-mail and mail]
William Severyn, Severyn Development Inc. [Via e-mail and mail]
Christopher Wood, P.E., Carmina Wood Morris DPC [Via e-mail]
Scott J. Livingstone, Earth Dimensions, Inc. [Via e-mail]
Jody Celeste, Earth Dimensions, Inc. [Via e-mail]

HOPKINS SORGI & MCCARTHY PLLC
Attorneys at Law
5500 Main Street, Suite 343 • Williamsville, New York 14221
Direct: 716-510-4338 • E-mail: shopkins@hsr-legal.com • www.hsr-legal.com

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Exhibit 1 – Amended Wetland Permit Issued by the United States Army Corps of Engineers dated February 25, 2021

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

DEPARTMENT OF THE ARMY
BUFFALO DISTRICT, CORPS OF ENGINEERS
1776 NIAGARA STREET
BUFFALO, NEW YORK 14207-3199

February 25, 2021

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

Mr. Adam Faeth
Development Manager
Ciminelli Muir Woods LLC
350 Essjay Road Suite 101
Williamsville, NY 14221

Dear Mr. Faeth:

This is in reply to your submittal dated July 20, 2020 in which you requested a modification of Department of the Army Permit No. LRB-2001-00067. The project is located on a 326-acre parcel in the Town of Amherst, Erie County, New York. Specifically, you seek authorization to change the proposed use of an area identified as Site A from research and development and flex office space to a mixed-use commercial and residential development. This includes two 4-story mixed-use buildings, two-family townhouses, 6-unit apartment buildings, and a recreational trail to connect Site A with Site B. Wetland impacts have been reduced from 13.01 acres to 6.089 acres in Site A. A reduction of 6.921 acres. In addition, because of the reconfigured project including the significant reduction of wetland impacts, you have requested that the requirement of off-site compensatory mitigation be removed. Lastly, you have requested that 134 acres of the overall Muir Woods site located northeast of Site B, is donated to the Town of Amherst. This area will remain as open space in perpetuity. Permit compliance with mitigation requirements will remain as it currently is on the 134-acre site as a responsibility of Ciminelli Muir Woods LLC.

A Public Notice was published and coordinated with agencies and adjacent property owners using standard procedures. No comments were received as a result of the Public Notice. Based upon our evaluation, I concluded your request will not result in any unacceptable environmental or navigational impacts. Therefore, I am modifying Department of the Army permit No. LRB-2001-00067 to reflect the changes outlined in your request and identified on the attached drawings. All other terms and conditions of Permit No. LRB-2001-00067 remain in full force and effect.

Sheets 1, 2, and 3 of 3 are hereby made part of Permit No. LRB-2001-00067. Sheet 1 of 3 of this modification is an update to Sheets 2, 3, and 5 of 6 of the original permit. Sheet 2 and 3 of 3 of this modification are updates to Sheet 5 of 6 of the original permit. In addition, the following Special Conditions No. 6 and 8 of Permit No. LRB-2001-00067 are modified so that they no

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

longer include the requirement of off-site compensatory mitigation, as indicated below with the original and the following modified condition:

1. Special Condition Number 6: As mitigation to compensate for unavoidable and permanent impacts to 17.83 acres of Federal wetlands and 1.29 acres of Federal tributaries (approximately 5227 linear feet), the permittee shall create, at a minimum; 26.91 acres of wetland on-site, and 27.37 acres of wetland off-site. In addition, the permittee shall enhance 4.3 acres of tributary (approximately 2630 linear feet) on-site, all in accordance with the approved on-site and off-site mitigation plan that is made part of this permit. The mitigation area must be constructed in accordance with the approved plan as well as all permit conditions.

   Modified Special Condition Number 6: As mitigation to compensate for unavoidable and permanent impacts to 10.91 acres of Federal wetlands and 1.29 acres of Federal tributaries (approximately 5227 linear feet), the permittee shall create, at a minimum; 26.91 acres of wetland on-site. In addition, the permittee shall enhance 4.3 acres of tributary (approximately 2630 linear feet) on-site, all in accordance with the approved on-site mitigation plan that is made part of this permit. The mitigation area must be constructed in accordance with the approved plan as well as all permit conditions.

2. Special Condition Number 8: The approved compensatory mitigation must be in strict conformance with the plans approved by the Corps of Engineers. Such approved plans were prepared by Ciminelli Development Company, Incorporated and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009, including the Proposed On-Site Wetland Mitigation Plan, and the Proposed Off-Site Wetland Mitigation Plan dated November 16, 2009. The stated mitigation plans are hereby incorporated into and made part of the permit as Attachments 1 and 2. The permittee shall implement the mitigation in accordance with the plans and all permit conditions. Where permit conditions differ from the mitigation plan, the permit conditions shall be the ruling condition.

   Modified Special Condition Number 8: The approved compensatory mitigation must be in strict conformance with the plans approved by the Corps of Engineers. Such approved plans were prepared by Ciminelli Development Company, Incorporated and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009, including the Proposed On-Site Wetland Mitigation Plan dated November 16, 2009. The stated on-site mitigation plan is hereby incorporated into and made part of the permit as Attachments 1. The permittee shall implement the mitigation in accordance with the plans and all permit conditions. Where permit conditions differ from the mitigation plan, the permit conditions shall be the ruling condition.

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

Questions pertaining to this matter should be directed to Martin Crosson at 716-879-4346, by writing to the following address: U.S. Army Corps of Engineers, 1776 Niagara Street, Buffalo, New York 14207 or by E-mail at: martin.h.crosson@usace.army.mil

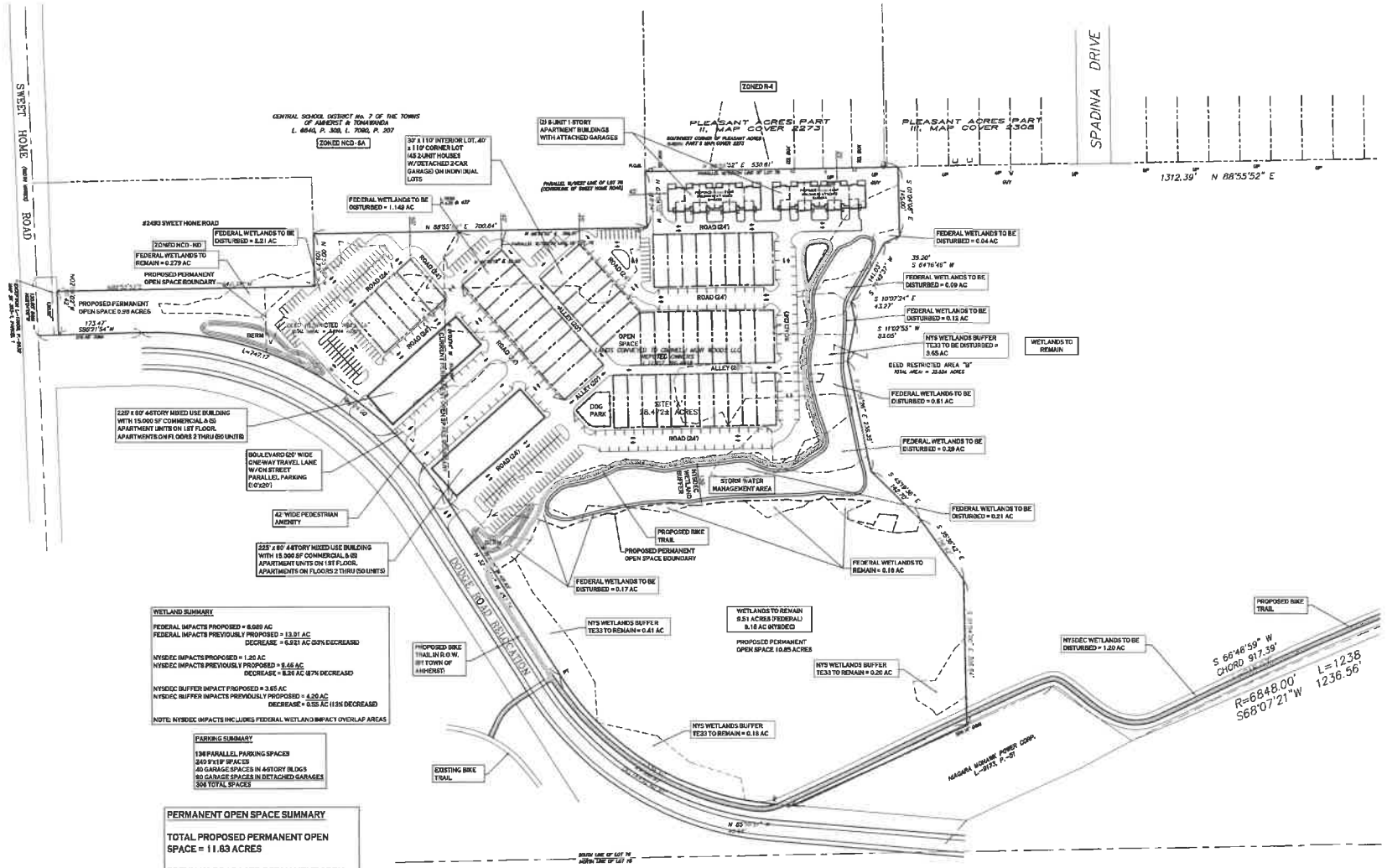
BY AUTHORITY OF THE SECRETARY OF THE ARMY

Steven V. Metivier

For: Mark Scalabrino
Acting Chief, Regulatory Branch

Enclosures

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)



N SITE PLAN
SCALE: 1"=100'

Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 1 of 3

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS. CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200FT.

© Carmina Wood Morris DPC All rights reserved. Reuse of these documents without the expressed written permission of Carmina Wood Morris DPC is prohibited. WARNING: It is a violation of article 145 sections 7209(2) and 7301 of the New York State education law for any person, unless acting under the direction of a registered architect, licensed engineer or land surveyor to alter this drawing. If altered such R.A., P.E. or L.L.S. shall affix his or her seal, signature, the date, the notation "altered by" and a specific description of the alteration.

Carmina Wood Morris
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0061

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Muir Woods Site "A"
Sweet Home & Dodge Road
Amherst, New York

Date: 7/1/20
Drawn by: C. Wood
Scale: As Noted

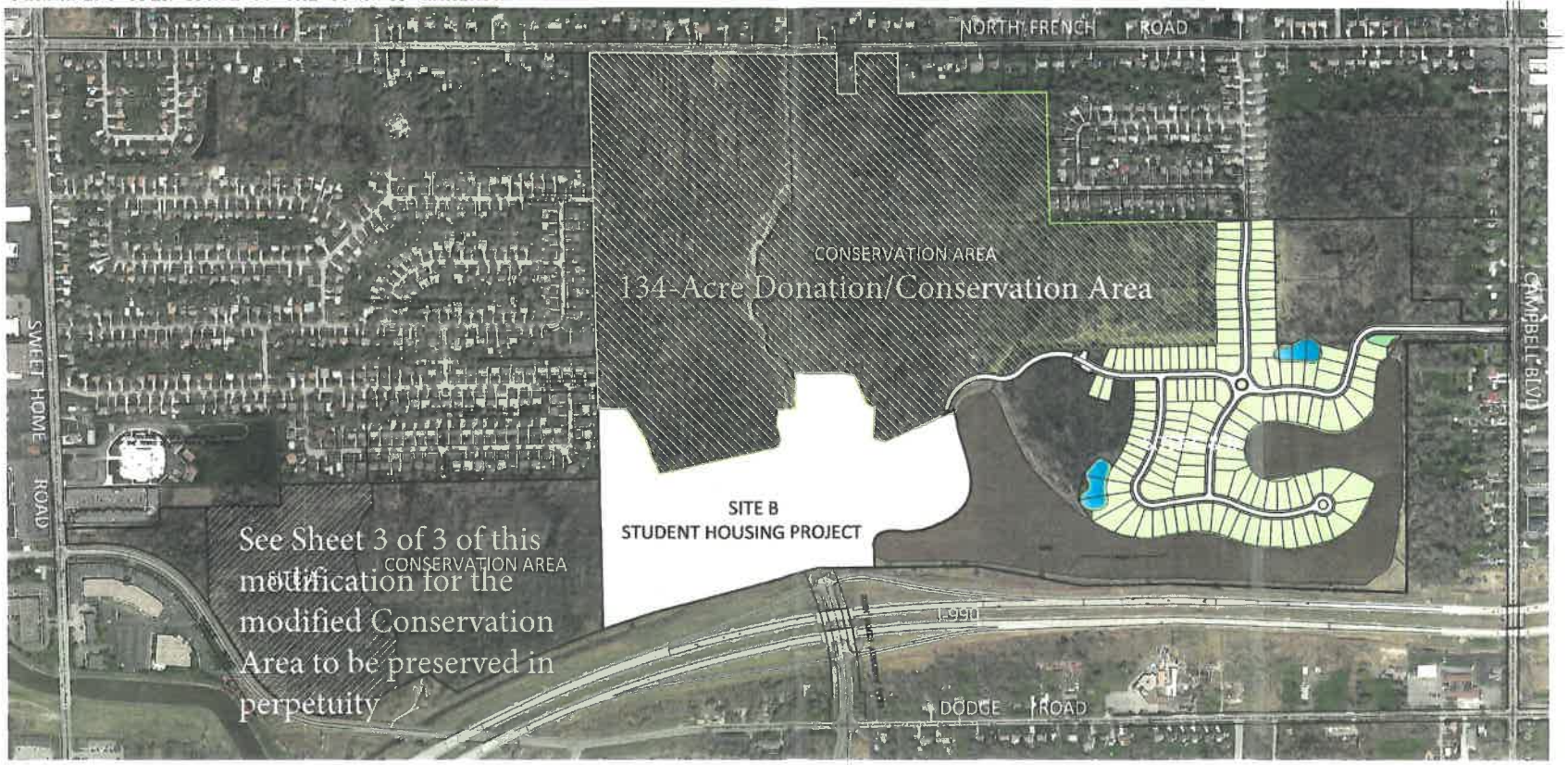
DRAWING NAME:
Concept Site Plan

DRAWING NO.
C-100
Project no.: 19.192

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

MUIR WOODS OVERALL PROJECT AREA

PROPOSED DONATION OF APPROXIMATELY 134 ACRES OF
PERMANENT OPEN SPACE TO THE TOWN OF AMHERST

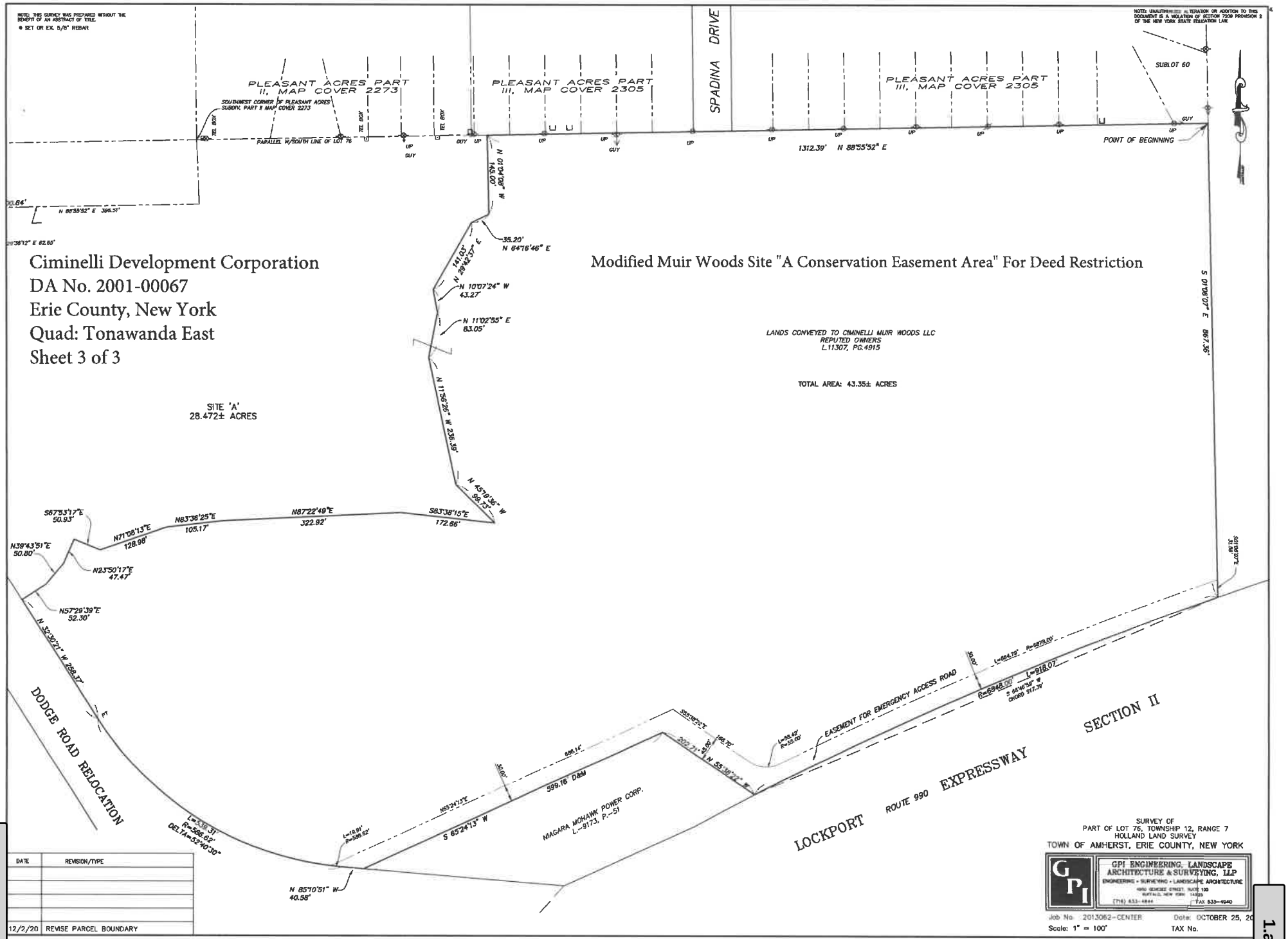


CONSERVATION AREA TO BE DONATED

Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 2 of 3

GPI GREENMAN-PEDERSEN, INC. CONSULTING ENGINEERS ENGINEERING • SURVEYING • PLANNING

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

HSM

December 26, 2020

Ellen Kost, AICP, Assistant Planning Director
Town of Amherst Planning Department
5583 Main Street
Williamsville, NY 14221

Re: Proposed Mixed Use Project - Site A of Muir Woods [Z-2002-09C & BCPA-2020-02]
Portion of 1081 North French Road
Applicant/Project Sponsor: Ciminelli Real Estate Corporation
File No. 10024.12

Dear Ellen:

Attached as Exhibit "1" is a copy of the Amended Wetland Permit [Permit No. 9-1422-00398/0001] issued by the New York State Department of Environmental Conservation ("NYSDEC") on December 24, 2020 authorizing the impacts to NYSDEC Freshwater Wetlands and the associated regulated 100 ft. Adjacent Area in order to accommodate the mixed-use development of Site "A" of the Muir Woods Property in accordance with the project layout depicted on the Concept Site Plan prepared by Christopher Wood, P.E. of Carmina Wood Morris DPC.

Attached as Exhibit "2" is a copy of the Public Notice of the United States Army Corps of Engineers ("USACE") dated December 21, 2020. The comment period on the pending requested Amended Wetland Permit being sought from the USACE expires on January 11, 2021. The Project Sponsor anticipates receiving an Amended Wetland Permit from the USACE by the end of January.

Please feel free to call me at 510-4338 or via e-mail if you have any questions regarding this letter or the Amended Wetland Permit issued by the NYSDEC on December 24, 2020 or the status of the mixed-use project.

Thank you for your continued cooperation.

Sincerely,

HOPKINS SORGI & MCCARTHY PLLC

Sean W. Hopkins, Esq.

cc: Adam Faeth, Esq., Ciminelli Real Estate Corporation [Via e-mail and mail]
William Severyn, Severyn Development Inc. [Via e-mail and mail]
Christopher Wood, P.E., Carmina Wood Morris DPC [Via e-mail]

HOPKINS SORGI & MCCARTHY PLLC
Attorneys at Law
5500 Main Street, Suite 343 • Williamsville, New York 14221
Direct: 716-510-4338 • E-mail: shopkins@hsr-legal.com • www.hsr-legal.com

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Scott J. Livingstone, Earth Dimensions, Inc. [Via e-mail]
Jody Celeste, Earth Dimensions, Inc. [Via e-mail]

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Exhibit 1 – Amended Wetland Permit Issued by the NYS Department of Environmental Conservation dated December 24, 2020

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 9
270 Michigan Avenue, Buffalo, NY 14203-2915
P: (716) 851-7165 I F: (716) 851-7168
www.dec.ny.gov

December 24, 2020

Mr. Adam Faeth
Ciminelli Real Estate Corporation
50 Fountain Plaza, Suite 500
Buffalo, New York 14202

Muir Woods Development – "Site A"
Permit Transmittal Letter
Permit No. 9-1422-00398/00001

Dear Mr. Faeth:

Enclosed is your permit which was issued in accordance with applicable provisions of the Environmental Conservation Law. The permit is valid for only that project, activity or operation expressly authorized. If modifications are desired after permit issuance, you must submit the proposed revisions and receive written approval from the Permit Administrator prior to initiating any change. If the Department determines that the modification represents a material change in the scope of the authorized project, activity, operation or permit conditions, you will be required to submit a new application for permit.

Please review all permit conditions carefully. In particular, identify your initial responsibilities under this permit in order to assure timely action if required. Since failure to comply precisely with permit conditions may be treated as a violation of the environmental conservation law, you are requested to provide a copy of the permit to the project contractor, facility operator, and other persons directly responsible for permit implementation (if any).

If you have any questions, please contact this office at the above address.

Respectfully,
David S. Denk
Regional Permit Administrator

Enclosure
ecc: NYSDEC Law Enforcement
Maureen Brady, NYSDEC Office of General Counsel
Mr. Chuck Rosenburg, NYSDEC Division of Fish and Wildlife
Mr. Martin Crossen, USACOE
Sean Hopkins, Esq., Hopkins Sorgi & McCarthy PLLC

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

PERMIT
Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
Ciminelli Muir Woods LLC
50 Fountain Plaza, Suite 500
Buffalo, NY 14202
(716) 631-8000

Facility:
MUIR WOODS DEVELOPMENT
1121 N French Rd
Amherst, NY 14228

Facility Location: in AMHERST in ERIE COUNTY
Facility Principal Reference Point: NYTM-E: 191.586 NYTM-N: 4770.823
Latitude: 43°01'38.9" Longitude: 78°47'07.2"

Authorized Activity: Construction of a mixed-use project named "Muir Woods" consisting of approximately two 4-story mixed-use buildings consisting of commercial space and residential units, 90 two-family townhouses and 2 six-unit apartment buildings, approximately 133 detached single-family residential units and 515 cottage-style and apartment-style housing units with various amenities; and gas, electric, sanitary, potable water and storm water (the necessary infrastructure), while maintaining open space on approximately 224 acres in the Audubon New Community District. The Muir Woods project property is a 326 acre site bounded by the Lockport Expressway (Interstate Route 990) and Dodge Road on the south, Sweet Home Road on the west, North French Road on the north and Campbell Boulevard on the east. The project will result in permanent impacts to approximately 2.39 acres of State regulated wetlands (TE-22, TE-23 and TE-34), and 11.38 acres of State regulated 100 foot wide wetland adjacent area. As mitigation for those impacts the project includes creation of 19.58 acres of in-kind and out-of-kind wetlands on-site, in six areas, to replace the functions and benefits of the impacted wetlands. There will be 4.3 acres of stream channel enhancement on-site as mitigation for State wetland regulated adjacent area impacts. The project also includes construction at 520 Campbell Road property as detailed on plan sheets referenced in Natural Resource Condition No. 4.

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Permit Authorizations

Freshwater Wetlands - Under Article 24
Permit ID 9-1422-00398/00001

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

Water Quality Certification - Under Section 401 - Clean Water Act
Permit ID 9-1422-00398/00002

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: DAVID S DENK, Regional Permit Administrator
Address: NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY 14203 -2915

Authorized Signature: David S. Denk Digitally signed by David S. Denk DN: cn=David S. Denk, o=NYS DEC, ou=Div. of Env. Permits, email=david.denk@dec.ny.gov, c=US Date: 2020.12.24 10:29:47 -05'00' Date ___/___/___

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: FRESHWATER WETLANDS; WATER QUALITY CERTIFICATION

1. **No Work Prior to Approval of Legal Instrument for Preservation of Undeveloped Areas of Site** No work authorized by this permit may begin until the Department approves a legal instrument, such as a deed restriction and/or conservation easement, that will preserve in perpetuity the natural resource values of the undeveloped areas of the site. This condition does not apply to the 520 Campbell Boulevard property.

2. **Declaration of Restrictions 520 Campbell Boulevard Property** A Declaration of Restrictions permanently prohibiting any future development of the 6.88 acres of jurisdictional federal wetlands and portion of the upland area on 520 Campbell Boulevard as depicted on the Wetland Restriction Exhibit Map must be incorporated into the deeds for lots 1 – 12 and 21. By 60 days after Water Quality Certification issuance, the permittee shall file with the real property records of the Erie County Clerk`s Office, the deed for each applicable lot containing this notice. The permittee shall within two weeks following the filing of the deed(s) submit proof of filing from the County Clerk's Office

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showing the Liber and page number at which the deed notice was filed and the date of filing for one of the affected lots to: Regional Permit Administrator, NYSDEC Region 9 Headquarters, 270 Michigan Ave, Buffalo, NY 14203-2915.

3. **Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by Ciminelli Development Company, Inc. and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009.

4. **Conformance with Plans Site B** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include the "Concept Plan - Muir Woods" dated 08 November 2019 amended to show Conifer Planting Area (attached).

5. **Conformance with Plans - 520 Campbell Boulevard** All activities authorized by this permit for the 520 Campbell Boulevard property must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans include those sheets entitled: The Preserve at Muir Woods (DEC Planting Exhibit, DEC Earthwork Exhibit and the Wetland Restriction Exhibit) by Greenman-Pedersen, Inc. dated May 2018.

6. **Conformance with Plans Site A** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include Drawing C-100 dated July 20, 2020 and received by this Department on August 10, 2020.

7. **Future Phases** Prior to development of Muir Woods Sites A and B, the permittee must obtain specific approval of engineered plans for Sites A and B to ensure compliance with the terms and condition of this permit, the approved wetland mitigation plans and the most current Findings Statement for the overall Muir Woods Project issued pursuant to the State Environmental Quality Review Act. The permittee shall submit the engineered plans for the development of Sites A and B for review by the Department simultaneous with submission of such engineered plans to the Town of Amherst. If required by the Department, the permittee shall make any necessary modifications to the engineered plans to ensure compliance with the terms and conditions of this permit, the approved wetland mitigation plans and the most current Findings Statement.

8. **Permit Conditions Prevail over Plans** If any condition of this permit conflicts with the approved plans noted in Condition Number 1, the permit conditions shall prevail over the plans unless specific written approval for such a change is obtained from this Department prior to implementation.

9. **Pre-construction Meeting to Review Permit** Prior to commencing work at the project site, the permittee shall schedule a pre-construction meeting with Department staff (Contact: Mr. David Denk, Regional Permit Administrator, NYSDEC, Division of Environmental Permits, Telephone : 716/851- 7165 and/or Mr. Charles P. Rosenburg, NYSDEC, Division of Fish and Wildlife, Telephone: 716/851-7010) and selected contractors to review the conditions contained in this permit.

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10. Mark Areas of No Disturbance on the Muir Woods Site Grade stakes and/or other appropriate measures (substantial contractor fencing, perhaps in combination with necessary silt fencing) shall be used to ensure that no equipment enters identified areas of no disturbance within the immediate area under construction (i.e.- Site A, Site B, Site C or Site D) on the Muir Woods project site. Boundaries of the on-site mitigation areas shall likewise be marked to define the limits of that work.

11. Install Controls Along Limits of Disturbance Before any soil is disturbed within a specific Site Development Area, as detailed in Condition #6 above, the permittee shall install securely anchored silt fencing and/or continuous staked hay bales along the limits-of-disturbance as shown on the plans or drawings referenced in this permit. Such erosion and sedimentation controls shall be maintained until unpaved portions of the subject site are stabilized by a self-sustaining cover of vegetation that is adequate to prevent erosion and sedimentation on and off the site. Sediment which has accumulated at the controls shall be removed periodically as necessary during the construction period. Before the controls are removed, the permittee shall remove all sediment that has accumulated at the controls.

12. Work Within Ares Depicted on Plans All construction activity, including operation of machinery, excavation, filling, grading, clearing of vegetation, disposal of waste, street paving and stockpiling of material must take place within the Site Development Areas or mitigation areas as depicted on the project plans referenced by this permit. Construction activity is prohibited within areas to be left in a natural condition or locations on the property not within the Site Development Areas or mitigation areas designated by this permit. Disturbance to the wetlands and their regulated 100 foot wide adjacent areas shall be strictly limited to the work areas identified in the plans, and specifically the MAP SHOWING WETLAND IMPACT AREAS - NEW YORK STATE WETLANDS, and APPENDIX M - PROPOSED ON-SITE MITIGATION PLAN.

13. Invasive Species (Non-Native Vegetation) To prevent the unintentional introduction or spread of invasive species, the permittee must ensure that all construction equipment is cleaned of mud, seeds, vegetation and other debris before entering any approved Site Development Areas within State regulated wetlands or their 100 foot wide adjacent areas, as well as all on-site wetland mitigation areas.

14. Prevention of Invasive Species The permittee shall prevent the establishment of invasive species (purple loosestrife, Phragmites, reed canary-grass, Japanese knotweed, glossy buckthorn and common buckthorn) across all disturbed areas within the wetland mitigation area for five growing seasons. If any of these invasive species become established, monitoring and treatment may be extended for an additional 5 years at the Department's discretion.

15. Wetland Mitigation is Mandatory Completion of all freshwater wetland mitigation is mandatory regardless of whether or not construction proceeds to completion. The required mitigation must be completed by the expiration date of this permit. Mitigation will be subject to remediation, if necessary, pursuant to Condition #16 below. All mitigation areas shall be monitored for a period of ten (10) years or until the mitigation is deemed successful by this Department. Monitoring reports shall be prepared for the first four (4) years after construction of the mitigation areas and every other year (years 6, 8 and 10) thereafter. This Department may, at its discretion, modify the 10-year monitoring period and/or monitoring report requirement at any time. Monitoring reports shall be submitted to Mr. Charles P. Rosenburg, Habitat Manager, NYSDEC, Bureau of Ecosystem Health, 270 Michigan Avenue, Buffalo, NY 14203-2915 Telephone: 716/851-7024.

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16. **On-Site Mitigation to be in Accordance with Mitigation Plan** The on-site mitigation shall be in accordance with Appendix M - Proposed On-Site Wetland Mitigation for Muir Woods prepared by Earth Dimensions, Inc. revised May 25, 2009 and with the modifications shown in Exhibit 22 of the July 20, 2020 application binder.

17. **Planting Row of Native Conifers** The permittee shall plant a row of native conifer trees in the location shown on the attached plan. The tree plantings must be a minimum of 6 feet tall, spaced 15 feet apart, and must be planted no later than October 15th following the completion of construction of the adjacent apartment units.

18. **Survival Rate for Mitigation Plantings** The permittee shall prepare a care, maintenance, inspection, and replacement schedule for the tree and shrub plantings described in the mitigation plan to ensure an 85% survival rate for five growing seasons. This condition includes all on-site landscape "buffer" plantings.

19. **Herbicides, Pesticides in Wetland or Adjacent Area** The use of herbicides and other pesticides in State regulated wetlands or their 100 foot wide adjacent areas is a regulated activity and may only be conducted pursuant to a valid Article 33 Pesticides Permit.

20. **Requirement for SPDES General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities** Since development of the Muir Woods site in the Town of Amherst will involve land disturbance of one (1) or more acres, the permittee is required to obtain coverage under State Pollutant Discharge Elimination System (SPDES) General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities. A Notice of Intent (NOI) is required to be sent to NYSDEC, Division of Water, 625 Broadway, 4th Floor, Albany, New York 12233-3505, Telephone: 518/402-8111 and approved before construction commences. Alternatively, an eNOI may be filed electronically as described on the Department's website. The General Permit GP-0-15-002 and NOI form are available on the Department's website at www.dec.state.ny.us.

21. **Visibly Turbid Discharges Prohibited** Visibly turbid discharges from project dewatering operations, excavation and grading activities are strictly prohibited to any "water body" (pond, wetland, stream or water course). Any such discharges shall be (1) retained in an appropriately maintained upland settling basin, filtered through crushed stone, sand, filter fabric fences, hay bales etc., or (2) directed to a grassy area sufficiently distant from any water body to preclude such entry.

22. **Stockpiling of Soil** Stockpiling of excavated soil is prohibited at locations within any portion of the TE-22, TE-23 and TE-34 Wetlands or their regulated 100 foot wide adjacent areas, or within any mapped 100-year floodplain beyond the Site Development Areas or mitigation areas identified in the plans.

23. **Stabilize Disturbed Areas** All areas of soil disturbance resulting from this project shall be seeded with an appropriate perennial grass seed and mulched with straw, or hydro-seeded. Mulch shall be maintained until suitable vegetative cover is established.

24. **Temporary Mulch, Final Seeding** If seeding is impracticable due to the time of year, a temporary mulch shall be applied and final seeding shall be performed at the earliest opportunity when weather conditions favor germination and growth.

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25. **Disposal of Material** Any non-merchantable tree and brush debris, demolition debris, excess construction materials, and/or excess excavated materials shall be immediately and completely disposed of on an approved upland site more than 100 feet from any regulated freshwater wetland. These materials shall be suitably stabilized so as not to re-enter any water body, wetland, or wetland adjacent area; and must be disposed of in accordance with all local, state, and federal statutes, regulations, or ordinances.

26. **Placement of Interpretive Signs Required** Permanent interpretive signs shall be placed at various wetland boundary locations throughout the Muir Woods project site . The permittee shall submit a proposal for the signs to the Department for approval. The interpretive signs shall be a minimum of 12 inches by 12 inches and shall be placed on permanent posts.

27. **Annual Project Inspection / Meeting** The permittee shall schedule an annual inspection/meeting to update Department staff on project progress and compliance with conditions of this permit for the on-site wetland mitigation area.

28. **Wetland Monuments** Monuments shall be placed every 200 feet along the outer edge of the wetland preservation areas. The monuments shall be 30" long, 5/8" rebar and cap embedded flush and in the center of the top exposed surface of concrete in a minimum 4 inch diameter, 4.5 foot long section of PVC Schedule 40 drain pipe filled with concrete, extending vertically1.5 to 2 feet above existing grade at each location. The caps shall say "Conservation Area Marker, Do Not Disturb". These monuments are to be permanently maintained.

29. **Wetland Boundaries** The boundaries of the TE-22, TE-23 and TE-34 Wetlands shall be fixed for the period of this permit (expires November 30, 2024). At that time, new boundary delineations for those wetlands will be required by this Department (to be performed or confirmed by a Department Biologist). Since project activities will be subject to the updated wetland boundary delineations and pertinent regulations at that time, any future permit modification (if necessary) would be reviewed based on the updated delineations and pertinent regulations. As such, modifications to the current project plan may be necessary depending upon the updated wetland delineations and permit regulations in effect at that time.

30. **State Not Liable for Damage** The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

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31. **State May Order Removal or Alteration of Work** If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

32. **State May Require Site Restoration** If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may lawfully require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.

33. **Precautions Against Contamination of Waters** All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. **Water Quality Certification** The authorized project, as conditioned pursuant to the Certificate, complies with Section 301, 302, 303, 306, and 307 of the Federal Water Pollution Control Act, as amended and as implemented by the limitations, standards, and criteria of state statutory and regulatory requirements set forth in 6 NYCRR Section 608.9(a). The authorized project, as conditioned, will also comply with applicable New York State water quality standards, including but not limited to effluent limitations, best usages and thermal discharge criteria, as applicable, as set forth in 6 NYCRR Parts 701, 702, 703, and 704.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. **Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

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The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. **Relationship of this Permit to Other Department Orders and Determinations** Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. **Applications For Permit Renewals, Modifications or Transfers** The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY14203 -2915

4. **Submission of Renewal Application** The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Freshwater Wetlands, Water Quality Certification.

5. **Permit Modifications, Suspensions and Revocations by the Department** The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

a. materially false or inaccurate statements in the permit application or supporting papers;

b. failure by the permittee to comply with any terms or conditions of the permit;

c. exceeding the scope of the project as described in the permit application;

d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;

e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. **Permit Transfer** Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

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NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification
The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit
The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits
The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights
This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

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Exhibit 2 – Public Notice as Published by the United States Army Corps of Engineers dated December 21, 2020

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Public Notice

U.S. Army Corps
of Engineers
Buffalo District
CELRB-TDR

Applicant: Ciminelli Real Estate Corporation

Published: December 21, 2020
Expires: January 11, 2021

Application No: 2001-00067 (2020 Site A Modification)
Section: New York

All written comments should reference the above Application No. and be addressed to:
Attn: Martin Crosson
U.S. Army Corps of Engineers, Buffalo District
1776 Niagara Street
Buffalo, NY 14207

THE PURPOSE OF THIS PUBLIC NOTICE IS TO SOLICIT COMMENTS FROM THE PUBLIC REGARDING THE WORK DESCRIBED BELOW. NO DECISION HAS BEEN MADE AS TO WHETHER OR NOT A PERMIT WILL BE ISSUED AT THIS TIME.

Application for Permit Modification under Authority of Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act (33 U.S.C. 1344).

APPLICANT: Ciminelli Real Estate Corporation/Ciminelli Muir Woods, LLC ("Ciminelli"). Ciminelli has requested a modification to an existing permit described below.

WATERWAY & LOCATION: approximately 98 acres of Federal wetlands, a 32 acre lake and approximately 4.4 acres of tributaries have been previously identified as jurisdictional on the 326 acre parcel permitted for development known as "Muir Woods". The permitted project is located in the Town of Amherst, County of Erie and State of New York.

LATITUDE & LONGITUDE: Latitude North: 43°01'46"
Longitude West: -78°46'33"

EXISTING CONDITIONS: On May 14, 2012 a permit was issued to Ciminelli for placement of fill into 17.83 acres of Federal wetland and 1.29 acres of federally regulated tributaries for the multi-use development known as "Muir Woods". The current jurisdictional determination remains valid until the existing permit expiration date of November 30, 2024.

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PROPOSED MODIFICATION: Ciminelli proposes to modify the existing permit to change the proposed use of the area identified as Site A of the "Muir Woods" site. Under the existing permit, Site A was to consist of research and development and flex office space. The applicant is currently proposing to change the previously proposed use of Site A to a mixed-use commercial and residential development. The concept plan for the proposed project includes two 4-story mixed-use buildings, in addition to two-family townhouses and 6-unit apartment buildings. Also in association with the proposed changes, a new recreational bike/walking trail that will enter Site A from the southeast connection with Site B ultimately connecting to the rest of the on-site trail system and the Town's recreational trail that connects to the North Campus of the University of Buffalo and the Ellicott Creek Trailway system. The applicant has indicated these modifications are necessary due to changes in economic conditions in the real estate market, and also due to their consideration of input from the Town of Amherst municipal boards and the local public.

PROJECT PURPOSE
Basic: Construction of a multi-use development.
Overall: Modification of an existing permitted Ciminelli construction project by changing the proposed use of Site A of the Muir Woods site to the planned development from Research and Development and flex office space to mixed-use commercial and residential development with associated amenities on Site A due to market changes and consideration of the Town of Amherst municipal boards and local public input.

Water Dependency Determination: As with the existing permit, this newly proposed modification resulting in changes in project purpose and use within Site A, impacts to waters of the US have been determined to not be water dependent. Therefore, alternatives that do not require impacts to US waters are presumed to exist. The applicant adequately demonstrated that US waters have been avoided and minimized to the greatest extent practicable. As a result, wetland impacts have been reduced from the currently permitted 13.010 acres to 6.089 in Site A.

Mitigation: The currently permitted wetland impact in Site A is 13.010 acres. The new proposed impact to Site A wetlands are 6.089 acres resulting in a reduction in wetland impacts by 6.921 acres. As a result of the decrease in wetland impacts in Site A, the previously approved off-site mitigation consisting of creation of 27.37 acres of wetland habitat in the Town of Newstead has been proposed to be removed as a permit requirement. The previously approved and currently permitted on-site mitigation for Site A consisting of creation of approximately 10.47 acres of wetland remains unchanged. In addition, the increase in avoided wetland area and the reduction in developed area proposed in Site A results in an increase to the amount of wetland area to be preserved on-site as permanent open space from 3.91 acres to 11.83 acres.

Location and details of the above described work are shown on the attached maps and drawings.

Comments or questions pertaining to the work described in this notice should reference the Application Number and be directed to the attention of Martin Crosson, who can be contacted at the above address, by calling (716) 879-4346, or by e-mail at: martin.h.crosson@usace.army.mil. A lack of response will be interpreted as meaning that there is no objection to the work as proposed.

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Comments submitted in response to this notice will be fully considered during the public interest review for this permit application. All written comments will be made a part of the administrative record which is available to the public under the Freedom of Information Act. The Administrative Record, or portions thereof, may also be posted on a Corps of Engineers internet web site. Due to resource limitations, this office will normally not acknowledge the receipt of comments or respond to individual letters of comment.

Any individual may request a public hearing by submitting their written request, stating the specific reasons for holding a hearing, in the same manner and time period as other comments.

Pursuant to Section 106 of the National Historic Preservation Act, this proposed modification to Site A does not constitute an action that requires additional consultation with the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP). In a letter dated September 10, 2009 NYSOPRHP indicated the proposed project will have No Effect upon cultural resources in or eligible for inclusion in the National Registers of Historic Places. The proposed modification does not change the previously considered permit area or determination.

Pursuant to Section 7 of the Endangered Species Act (16 U.S.C. 1531), the Corps of Engineers has concluded consultation with the USFWS to evaluate potential impacts to the northern long-eared bat (NLEB). The Corps has previously determined that the project may affect the NLEB, but that the scope of the work falls within the parameters of the 4(d) Rule. Therefore, consultation has concluded. The existing permit for the project included the entire Site A area. This proposed modification does not constitute an action that requires further coordination or consideration under the Endangered Species Act (16 U.S.C. 1531).

Pursuant to Section 401(d) of the Clean Water Act, A Water Quality Certification will be issued or waived for this proposed project modification by the State of New.

Public hearings for the purposes of the Corps permit program will be held when the District Commander determines he can obtain additional information, not available in written comments, that will aid him in the decision-making process for this application. A Corps hearing is not a source of information for the general public, nor a forum for the resolution of issues or conflicting points of view (witnesses are not sworn, and cross examination is prohibited). Hearings will not be held to obtain information on issues unrelated to the work requiring a permit, such as property ownership, neighbor disputes, or the behavior or actions of the public or applicant on upland property not regulated by the Department of the Army. Information obtained from a public hearing is given no greater weight than that obtained from written comments. Therefore, you should not fail to make timely written comments because a hearing might be held.

The decision to approve or deny this permit modification request will be based on an evaluation of the probable impact, including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may

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be relevant to the proposal will be considered including the cumulative effects thereof; among these are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, flood plain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and in general, the needs and welfare of the people.

The Corps of Engineers is soliciting comments from the public; Federal, state and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

SIGNED

Diane C. Kozlowski
Chief, Regulatory Branch

NOTICE TO POSTMASTER: It is requested that this notice be posted continuously and conspicuously for 20 days from the date of issuance.

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Traffic Impact Study

for the proposed

Muir Woods - Site A
Proposed Mixed-Use Project
1081 North French Road

Town of Amherst
Erie County, New York
August 3, 2020

Project No. 40027

Prepared For:

Ciminelli Real Estate Corporation
350 Essjay Road
Williamsville, New York 14221

Prepared By:

SRF Associates
www.srfa.net
Transportation Planning / Engineering / Design

3495 Winton Place
Building E, Suite 110
Rochester, New York 14623

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A5. LEVEL OF SERVICE CALCULATIONS – 2022 BACKGROUND CONDITIONS
A6. LEVEL OF SERVICE CALCULATIONS – FULL DEVELOPMENT CONDITIONS

LIST OF REFERENCES

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2. New York State Department of Transportation (NYSDOT) Traffic Data Viewer. 2020. Retrieved from https://www.dot.ny.gov/tdv.
3. Trip Generation, Tenth Edition. Institute of Transportation Engineers. Washington, DC. 2017.
4. Traffic Impact Study for Submittal to Town of Amherst The Hub Amherst. Kimley-Horn of New York, P.C. 2017.
5. Traffic Impact Study for Access Modification Report For Break in Access Application For Northerly Extension of John James Audubon Parkway As A Town of Amherst Roadway. GPI Engineering. 2020.

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EXECUTIVE SUMMARY

OVERVIEW

The purpose of this report is to identify and evaluate the potential traffic impacts associated with the proposed development of Site "A" of the overall Muir Woods Property as a mixed-use project. Site "A" of the Muir Woods Property consists of approximately 28.47 acres located 1081 North French Road in the Town of Amherst, Erie County, New York ("Project Site"). The Applicant is seeking to amend the Amended Findings Statement issued by the Town of Amherst Town Board ("Town Board") pursuant to the State Environmental Quality Review Act ("SEQRA") on August 5, 2019 to accommodate a change of the previously proposed use of the Project Site as 237,000 sq. ft. of flex office and R&D space to a mixed-use project as described in this report and depicted on the Concept Site Plan prepared by Carmina Wood Morris DPC.

The operating characteristics of the proposed access points and impacts to the adjacent roadway network are identified and mitigating measures, if any, are provided to minimize capacity or safety concerns.

In an effort to define traffic impact, this analysis establishes existing base traffic conditions, projects background traffic flow including area growth and/or additional traffic resulting from new development in the area, and determines the traffic operations that would result the full development of the proposed mixed-use project.

The Project Site consists of vacant land and is located along the north side of Dodge Road, west of Interstate 990, in the Town of Amherst, Erie County, New York. Surrounding the proposed development is residential development and Heritage Heights Elementary School to the north, vacant land to the east, offices to the south, and a medical plaza to the west. Land uses in the vicinity of the Project Site include residential, office, medical, and educational uses. The study area consists of the following intersections:

- Dodge Road/Sweet Home Road
- Dodge Road/ North Forest Road

Access to the Project Site will be provided via three proposed driveways connecting to Dodge Road as follows: one full access driveway located at the southerly/easterly end of the Project Site, one full access driveway located at the northerly/westerly end of the Project Site, and a driveway separated by a 42 ft. wide median which has been designed to be a pedestrian amenity area (i.e. one driveway is enter-only and the other is exit only).

Construction of the proposed mixed-use project is anticipated to be completed within two years. Town of Amherst officials were contacted to discuss projects within the study area that are under construction and/or approved. Three projects were identified that are either under construction, approved for construction, or completed after data was collected in 2017: The Hub Amherst at 2949 North Forest Road, a student housing community on Site "B" of the overall Muir Woods Property, and a mixed-use building at 315 Campbell Boulevard.

Traffic related to full build out of The Hub Development was used to develop the 2020 base traffic volumes. Additional traffic related to the proposed student housing community on Site "B" of the Muir Woods Property has been added to the base traffic volumes at the study area intersections. To account for normal increases in background traffic growth including the mixed-use building 315 Campbell @ Dodge, as well as any other unforeseen developments in the project study area, a growth rate of 1% per year has been applied to the base traffic volumes. This growth rate is

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based upon historical traffic growth derived from NYSDOT traffic volume data for the area as well as consideration of the approved projects previously mentioned.

CONCLUSIONS & RECOMMENDATIONS

This study evaluates the potential traffic impacts resulting from the Muir Woods Site A Development. This study also provides the Town of Amherst and other governmental agencies with detailed information providing a hard look at potential traffic impacts for the purpose of the environmental review of the proposed mixed-use project pursuant to the State Environmental Quality Review Act ("SEQRA").

Based upon the analyses, the results indicate that the proposed mixed-use project will not have significant adverse traffic impacts on the existing roadway network. The following sets forth conclusions based upon the results of the analyses:

1. The proposed mixed-use project is expected to generate approximately 47 entering/85 exiting vehicle trips during the AM peak hour and 106 entering/82 exiting vehicle trips during the PM peak hour.

2. The proposed mixed-use project will not result in any potentially significant adverse traffic impacts to the study area intersections. No mitigation is warranted at the study area intersections as a result of the proposed mixed-use project.

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I. INTRODUCTION

The purpose of this report is to identify the potential traffic impacts associated with the proposed Muir Woods Site A Development in the Town of Amherst, Erie County, New York. The operating characteristics of the proposed access points and impacts to the adjacent roadway network are identified and mitigating measures, if any, are provided to minimize capacity or safety concerns.

In an effort to define traffic impact, this analysis establishes 2020 existing base traffic conditions, projects background traffic flow including area growth and/or additional traffic resulting from new development in the area, and determines the traffic operations that would result from full development of the proposed project.

II. LOCATION

The proposed mixed-use project is located along the north side of Dodge Road, west of Interstate 990, in the Town of Amherst, Erie County, New York. The site is currently vacant. Surrounding the proposed development is residential development and Heritage Heights Elementary School to the north, vacant land to the east, offices to the south, and a medical plaza to the west. Land uses in the vicinity of the project site include residential, office, medical, and educational uses. The study area consists of the following existing intersections:

- Dodge Road/Sweet Home Road
- Dodge Road/ North Forest Road

The site location and study area are shown in **Figure 1** (all figures are included at the end of the report).

III. EXISTING HIGHWAY SYSTEM

The following information outlined in **Table I** provides a description of the existing roadway network within the project study area.

TABLE I: EXISTING HIGHWAY SYSTEM

ROADWAY	ROUTE[1]	FUNC. CLASS[2]	JURIS.[3]	SPEED LIMIT[4]	# OF TRAVEL LANES[5]	TRAVEL PATTERN/ DIRECTION	EST. AADT[6]	AADT SOURCE[7]
Dodge Road (from Sweet Home Road to Campbell Road)	CR 45	Minor Arterial	ECDPW	40	2	Two-way/ East-West	7,058	NYSDOT (2016)
Sweet Home Road (from N Ellicott Road to Commerce Drive)	CR 301	Minor Arterial	ECDPW	45	4	Two-way/ North-South	22,713	NYSDOT (2016)
Sweet Home Road (from Commerce Drive to N French Road)	CR 301	Minor Arterial	ECDPW	45	4	Two-way/ North-South	16,008	NYSDOT (2016)

Notes:

1. "CR" = County Route.

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2. State Functional Classification of Roadway: Urban.
3. Jurisdiction: "ECDPW" = Erie County Department of Public Works.
4. Posted or Statewide Limit in Miles per Hour (MPH).
5. Excludes turning/auxiliary lanes developed at intersections.
6. Estimated Annual Average Daily Traffic (AADT) in Vehicles per Day (vpd).
7. "NYSDOT" = New York Department of Transportation. Source (Year). Obtained volumes represent the most recent available data.

Figure 2 illustrates the lane geometry at each of the study intersections and the AADT/ADT volumes on the study roadways.

IV. EXISTING TRAFFIC CONDITIONS

A. Peak Intervals for Analysis

Given the functional characteristics of the land uses proposed for the Project Site (residential, office and retail), the peak hours selected for analysis are the weekday commuter AM and PM peaks. The combination of site traffic and adjacent through traffic produces the greatest demand during these time periods.

B. Existing Traffic Volume Data

Historical weekday commuter AM (7:00-9:00 AM) and PM (4:00-6:00 PM) peak hour volumes were obtained from the Greater Buffalo Niagara Regional Transportation Council (GRBNRTC) and the Traffic Impact Statement for The Hub Amherst at the study area intersections, as noted in *Section II*, on Tuesday February 28, 2017 and Monday, July 17, 2017. The peak hour traffic periods generally occurred between 7:30-8:30 AM and 4:45-5:45 PM at the study intersections. Given the current traffic situation due to business restrictions resulting from COVID-19, it is not possible to collect more current traffic data.

All turning movement count data was collected on a typical weekday. The traffic volumes were reviewed to confirm the accuracy and relative balance of the collective traffic counts. Traffic volumes were adjusted to reflect 2020 traffic conditions by adding traffic associated with any developments (e.g. The Hub residential development) that have been constructed or are currently under construction since the data collection in 2017. The 2020 weekday AM and PM peak hour base volumes used for analysis purposes in this study are reflected in **Figure 3**.

C. Field Observations

Signal timing information was obtained by the Town of Amherst at the signalized intersection within the study area to determine peak hour phasing plans and phase durations during each interval.

D. Existing Crash History Analysis

Crash data has been requested from local agencies and an analysis will be provided once all data is received.

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V. FUTURE AREA DEVELOPMENT AND LOCAL GROWTH

Construction of the proposed mixed-use project is anticipated to be completed within two years. Town of Amherst officials were contacted to discuss projects within the study area that are under construction and/or approved. Three projects were identified that are either under construction, approved for construction, or completed after data was collected in 2017: The Hub Amherst at 2949 North Forest Road, a student housing project on Site "B" of the Muir Woods Property , and a mixed-use building at 315 Campbell Boulevard.

Traffic related to full build out of The Hub Development was used to develop the 2020 base traffic volumes. Additional traffic related to the proposed student housing project on Site "B" of the Muir Woods Property has been added to the base traffic volumes at the study area intersections. To account for normal increases in background traffic growth including the mixed-use building 315 Campbell Boulevard, as well as any other unforeseen developments in the project study area, a growth rate of one percent (1%) per year has been applied to the base traffic volumes. This growth rate is based upon historical traffic growth derived from NYSDOT traffic volume data for the area as well as consideration of the approved projects previously mentioned. The 2022 background traffic volumes are depicted in **Figure 4** for the build out time period.

VI. PROPOSED DEVELOPMENT

A. Description

The proposed mixed-use project will construct:

- (45) 2-unit attached townhomes
- (2) 6-unit 1-story apartment buildings
- (2) 4-story mixed-use buildings with (12) commercial units and (5) apartment units on the 1st floor; apartments on floors 2-4 (50 units total)

An estimated 1,875 square feet (SF) per commercial tenant for the 12 commercial units. Of the 12 units, it is estimated that 8 units will consist of retail use and 4 units will consist of general office space. Access to the Project Site will be provided via three proposed driveways connecting to Dodge Road as follows: one full access driveway located at the southerly/easterly end of the site, one full access driveway located at the northerly/westerly end of the site, and a one-way couple separated by a 42 ft wide pedestrian amenity area (i.e. one driveway is enter-only and the other is exit only).

B. Site Traffic Generation

The volume of traffic generated by a site is dependent on the intended land use and size of the development. Trip generation is an estimate of the number of trips generated by a specific building or land use. These trips represent the volume of traffic entering and exiting the development. Trip Generation, 10th Edition is used as a reference for this information. Data published by the ITE is the nationally accepted standard for generating trips for new uses. The trip rate for the peak hour of the generator may or may not coincide in time or volume with the trip rate for the peak hour of adjacent street traffic. Volumes generated during the peak hour of adjacent street traffic, in this case, the weekday AM and PM peaks, represent a more critical volume when analyzing the capacity of the system; those intervals will provide the basis of this analysis. All trip generation information has been included in the appendix.

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Table II summarizes the volume of projected site trips during the weekday AM and PM peak hours.

TABLE II
SITE GENERATED TRIPS

DESCRIPTION	ITE LUC	SIZE/ UNITS	AM PEAK HOUR		PM PEAK HOUR	
			ENTER	EXIT	ENTER	EXIT
Houses w/ 2- Car Detached Garage	210	90 units	17	50	56	33
1-Story Apartments	220	12 units	1	5	6	3
4-Story Apartment Units	221	100 units	9	25	27	17
General Office Building	710	15,000 SF	14	2	2	14
Variety/Retail Store	814	15,000 SF	6	3	15	15
		Total Site Trips	***47***	***85***	***106***	***82***

Notes:
1. "ITE LUC" = ITE Land Use Code.

The proposed mixed-use project is expected to generate approximately 47 entering/85 exiting vehicle trips during the AM weekday peak hour and 106 entering/82 exiting vehicle trips during the PM weekday peak hour.

C. Site Traffic Distribution

The cumulative effect of site traffic on the transportation network is dependent on the origins and destinations of that traffic and the location of the access drive serving the Project Site.

The proposed arrival/departure distribution of traffic to be generated at this site is considered a function of several parameters, including the following:

- Employment centers in the local area and region;
- Population centers in the local area and region;
- Proximity and access to Interstate 990;
- Proximity to the North Campus of the University at Buffalo;
- Site access drive locations and internal roadway circulation;
- Existing highway network;
- Existing traffic patterns; and
- Existing traffic conditions and controls

Based on these parameters, **Figure 6** shows the anticipated trip distribution patterns for the proposed development. **Figure 7** illustrates the peak hour of site-generated traffic based on those percentages for the proposed development.

VII. FULL DEVELOPMENT VOLUMES

The projected design hour traffic volumes were developed for the weekday AM and PM peak hours by combining the future background traffic conditions (Figure 4), and projected site generated for the proposed development (Figure 7) to yield the total traffic conditions expected under full development conditions. **Figure 8** illustrate the total weekday AM and PM peak hour

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volumes anticipated for the proposed mixed-use project under full development conditions respectively.

VIII. CAPACITY ANALYSIS

Capacity analysis is a technique used for determining a measure of effectiveness for a section of roadway and/or intersection based on the number of vehicles during a specific time period. The measure of effectiveness used for the capacity analysis is referred to as a Level of Service (LOS). Levels of Service are calculated to provide an indication of the amount of delay that a motorist experiences while traveling along a roadway or through an intersection. Since the most amount of delay to motorists usually occurs at intersections, capacity analysis typically focuses on intersections, as opposed to highway segments.

Six Levels of Service are defined for analysis purposes. They are assigned letter designations, from "A" to "F", with LOS "A" representing the best conditions and LOS "F" the worst. Suggested ranges of service capacity and an explanation of Levels of Service are included in the Appendix.

The standard procedure for capacity analysis of signalized and un-signalized intersections is outlined in the Highway Capacity Manual (HCM 2016) published by the Transportation Research Board. Traffic analysis software, Synchro 10, which is based on procedures and methodologies contained in the HCM, was used to analyze operating conditions at study area intersections. The procedure yields a Level of Service (LOS) based on the HCM as an indicator of how well intersections operate.

Existing base and background operating conditions during the peak study periods are evaluated to determine a basis for comparison with the projected future conditions. The future traffic conditions generated by the proposed development under Phase I and full build out were analyzed to assess the operations of the intersections in the study area. Capacity results for existing, background, and full development conditions are listed in **Table III**. The discussion following the table summarizes capacity conditions. All capacity analysis calculations are included in the Appendices.

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TABLE III: CAPACITY ANALYSIS RESULTS

INTERSECTION	2020 BASE CONDITIONS				2022 BACKGROUND CONDITIONS				FULL BUILD CONDITIONS			
	AM		PM		AM		PM		AM		PM	
Sweet Home Road / Commerce Drive/Dodge Road (S)												
EB left - Commerce Road	D	40.5	C	30.3	D	41.1	C	30.9	D	41.1	C	32.1
EB thru/right - Commerce Drive	B	14.2	E	77.7	B	14.3	F	88.5	B	15.0	F	100.2
WB left- Dodge Road	C	27.7	F	191.3	C	28.0	F	*	C	29.3	F	*
WB thru/right - Dodge Road	E	76.4	B	19.3	F	86.8	B	19.9	F	106.8	C	22.9
NB left - Sweet Home Road	C	31.5	C	32.4	C	33.3	C	34.3	C	33.3	C	34.8
NB thru/right - Sweet Home Road	C	20.9	B	18.8	C	21.0	B	19.2	C	21.2	C	20.5
SB left - Sweet Home Road	B	17.6	B	10.1	B	19.0	B	10.3	C	21.2	B	11.9
SB thru/right - Sweet Home Road	C	30.0	C	32.2	C	30.8	C	33.8	C	30.7	C	33.7
Overall LOS	***C***	***34.0***	***D***	***37.6***	***D***	***36.3***	***D***	***40.3***	***D***	***40.4***	***D***	***47.7***
Dodge Road / Proposed North Driveway (U)												
SEB thru/left - Dodge Road	N/A				N/A				A	8.3	A	8.5
SWB - Proposed North Driveway									B	14.9	B	14.9
Dodge Road / Proposed Middle Exit Only Driveway (U)												
SWB - Proposed Middle Exit Only Driveway	N/A				N/A				B	13.3	B	13.4
Dodge Road / Proposed South Driveway (U)												
SEB thru/left - Dodge Road	N/A				N/A				A	8.2	A	8.5
SWB - Proposed South Driveway									C	16.2	C	16.1
Dodge Road / North ForestRoad (U)												
WB thru/left - Dodge Road	A	9.2	A	8.3	A	9.3	A	8.4	A	9.5	A	8.6
NB - North Forest Road	D	27.5	D	28.6	D	31.1	E	35.9	E	39.6	F	59.6

NOTES:

1. A(2.8) = Level of Service (Delay in seconds per vehicle)
2. (U) = Unsignalized
3. N/A = Approach does not exist and/or was not analyzed during this condition
4. F(*) = Delay greater than 200 seconds per vehicle

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Sweet Home Rd/Commerce Drive-Dodge Road

All approaches operate at LOS "D" or better during the AM and PM peak hours under all conditions with the exception of the westbound through/right turn movement which operates at LOS "F" under background and future conditions during the AM peak hour; in addition the westbound left turn and the eastbound through/right turn movements also operate at LOS "F" under background conditions during the PM peak hour. The southbound left turn movement is projected to change from LOS "B" to "C" between background and full development conditions during the AM peak hour. No other changes in LOS are projected as a result of the development. The existing traffic signal is fully actuated and will automatically adjust, within the set parameters, to accommodate the additional traffic. No mitigation is warranted or recommended at this intersection as a result of the proposed development.

Dodge Road/Proposed Driveways

All of the proposed driveways are projected to operate at LOS "C" or better during both peak hours under full development conditions.

Dodge Road/North Forest Road

All approaches operate at LOS "D" or better during the AM peak hour under the existing base and background conditions. During the PM peak hour, the northbound approach operates at LOS "E" under background conditions. Under full development conditions, the northbound approach is projected to operate at LOS "E" during the AM peak hour and LOS "F" with delays on the order of 59.6 seconds per vehicle during the PM peak hour. The development will add 7(16) northbound left turns during the AM(PM) peak hours. The traffic volumes that are exiting northbound North Forest Road are relatively small and a traffic signal is not warranted at this location. No mitigation is warranted or recommended at this intersection as a result of the proposed development.

IX. CONCLUSIONS

This study evaluates the potential traffic impacts resulting from the Muir Woods Site A Development. This study also provides the Town of Amherst and other governmental agencies with detailed information providing a hard look at potential traffic impacts for the purpose of the environmental review of the proposed mixed-use project pursuant to the State Environmental Quality Review Act ("SEQRA").

Based upon the analyses, the results indicate that the proposed mixed-use project will not have significant adverse traffic impacts on the existing roadway network. The following sets forth conclusions based upon the results of the analyses:

1. The proposed mixed-use project is expected to generate approximately 47 entering/85 exiting vehicle trips during the AM peak hour and 106 entering/82 exiting vehicle trips during the PM peak hour.

2. The proposed mixed-use project will not result in any potentially significant adverse traffic impacts to the study area intersections. No mitigation is warranted at the study area intersections as a result of the proposed mixed-use project.

X. FIGURES

Figures 1 through 8 are included on the following pages.

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

FIGURE 1 - SITE LOCATION AND STUDY AREA



Legend

- Study Intersection
- Proposed Driveway
- Site Location
- Study Area

PROPOSED MUIR WOODS SITE A DEVELOPMENT

TOWN OF AMHERST, NY

0 250 500 1000

Feet

N

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Transportation

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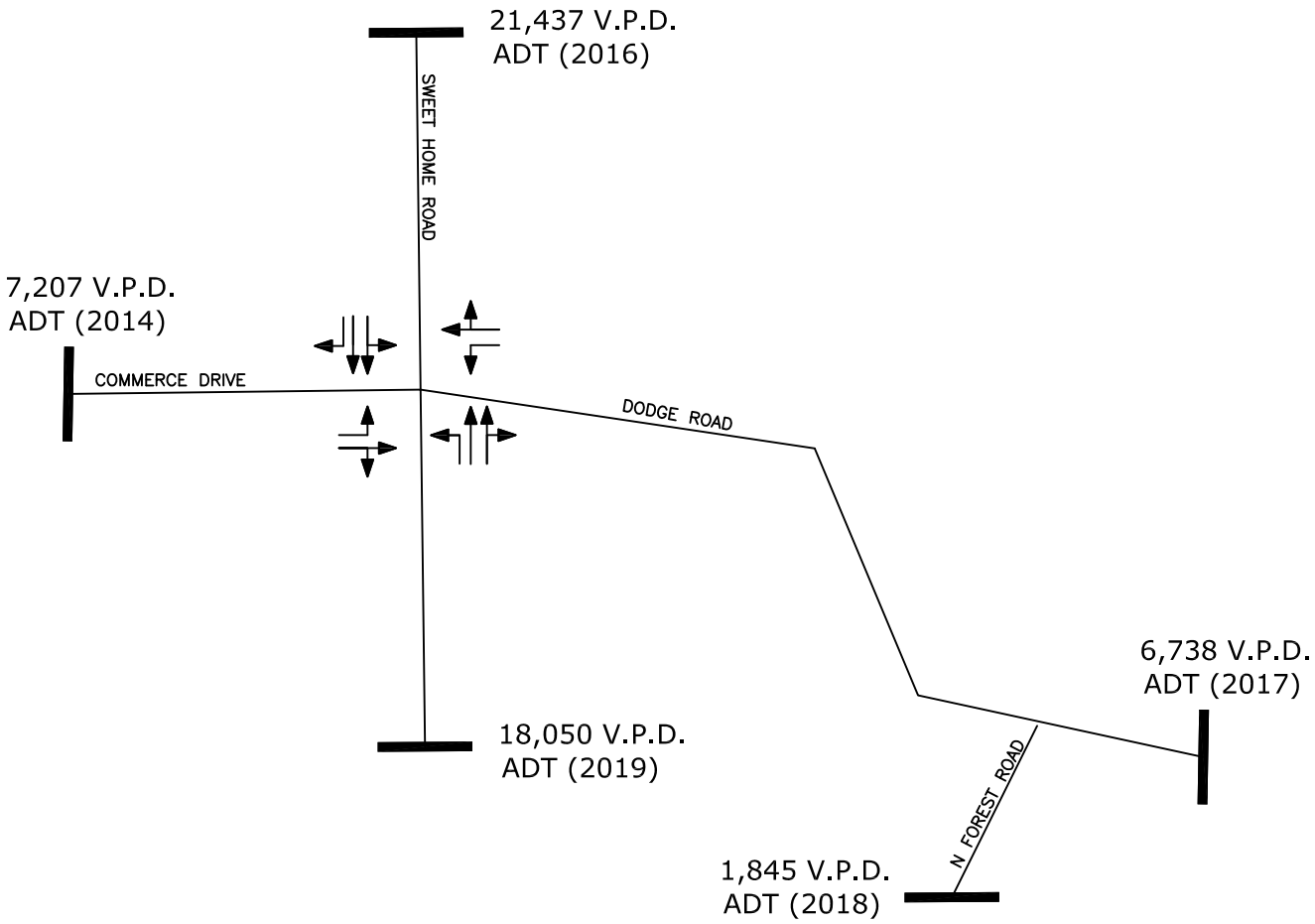

NOTES:
1. All counts by NYSDOT
2. V.P.D. = Vehicles per Day

PROJECT NO: 40047

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N
NOT TO SCALE

FIGURE 2

LANE GEOMETRY &
AVERAGE DAILY TRAFFIC

PROPOSED MUIR WOODS SITE A,
TOWN OF AMHERST, NY

KEY

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

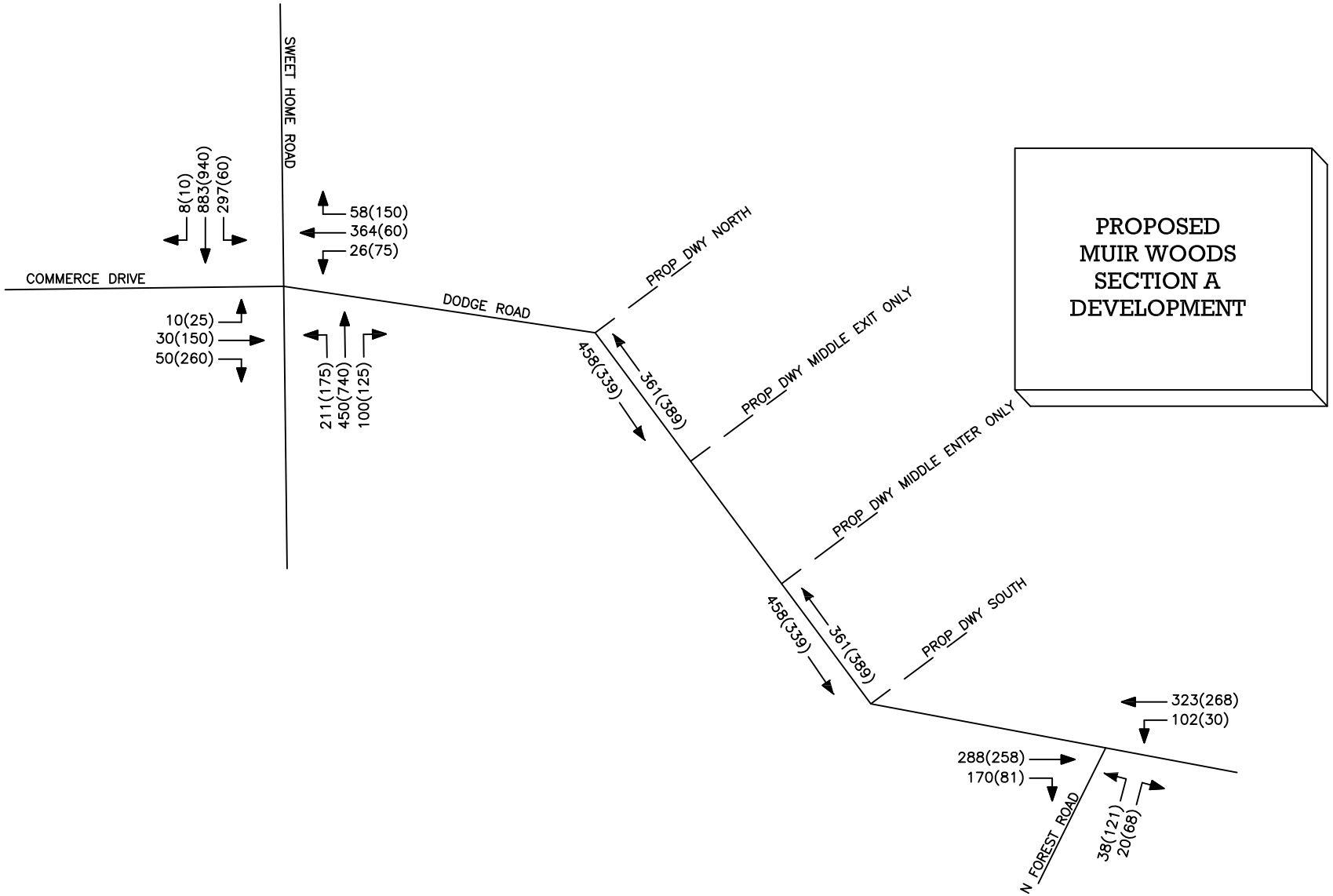

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FIGURE 3

PEAK HOUR VOLUMES
2020 BASE CONDITIONS

PROPOSED MUIR WOODS SITE A,
TOWN OF AMHERST, NY

KEY

00(00) = AM(PM)

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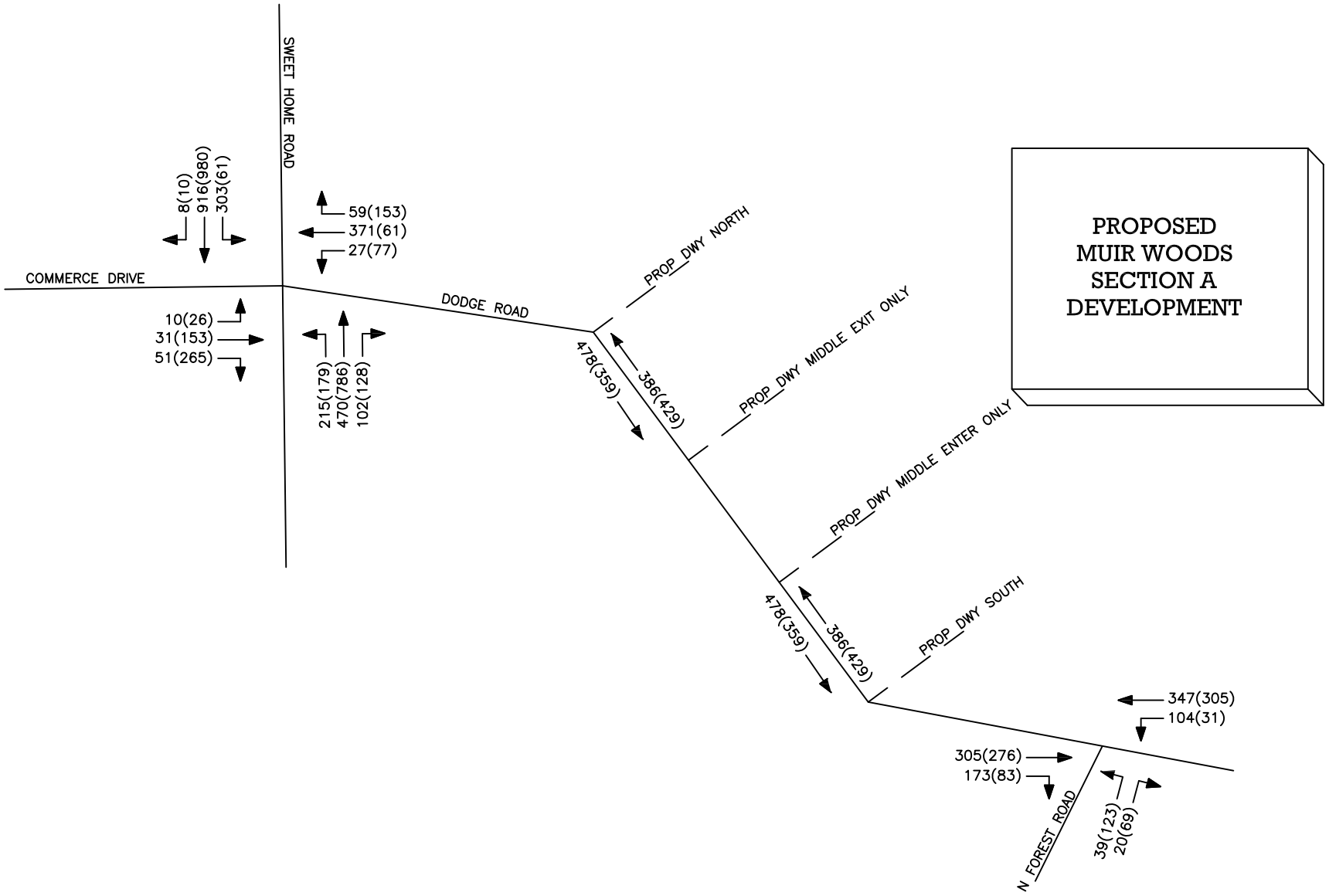

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NOT TO SCALE

FIGURE 4

PEAK HOUR VOLUMES
2022 BACKGROUND CONDITIONS

PROPOSED MUIR WOODS SITE A,

KEY

00(00) = AM(PM)

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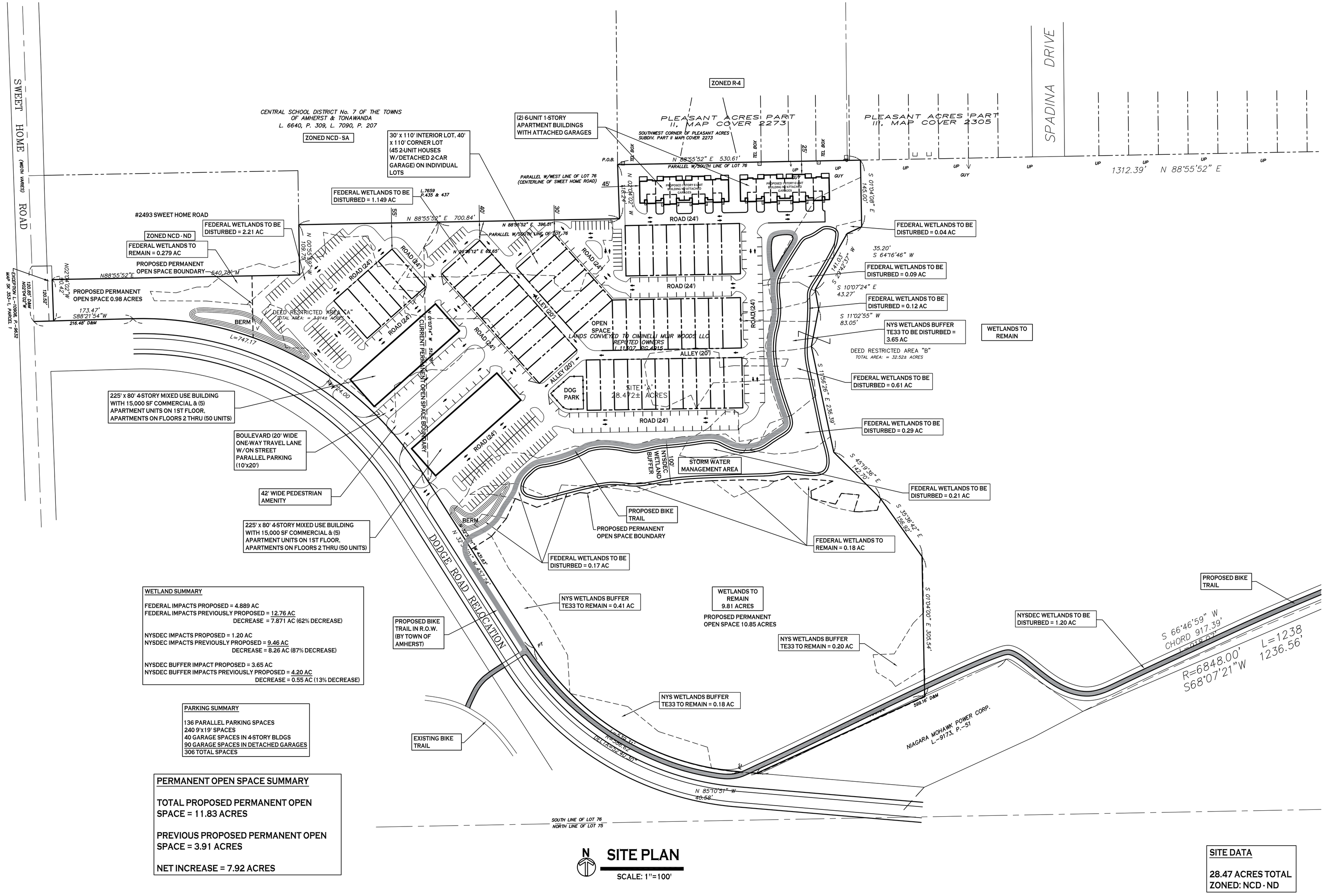

SITE PLAN

SCALE: 1"=100'

WETLAND SUMMARY

FEDERAL IMPACTS PROPOSED = 4.889 AC
FEDERAL IMPACTS PREVIOUSLY PROPOSED = 12.76 AC
DECREASE = 7.871 AC (62% DECREASE)

NYSDEC IMPACTS PROPOSED = 1.20 AC
NYSDEC IMPACTS PREVIOUSLY PROPOSED = 9.46 AC
DECREASE = 8.26 AC (87% DECREASE)

NYSDEC BUFFER IMPACT PROPOSED = 3.65 AC
NYSDEC BUFFER IMPACTS PREVIOUSLY PROPOSED = 4.20 AC
DECREASE = 0.55 AC (13% DECREASE)

PARKING SUMMARY

136 PARALLEL PARKING SPACES
240 9'x19' SPACES
40 GARAGE SPACES IN 4-STORY BLDGS
90 GARAGE SPACES IN DETACHED GARAGES
306 TOTAL SPACES

PERMANENT OPEN SPACE SUMMARY

TOTAL PROPOSED PERMANENT OPEN SPACE = 11.83 ACRES

PREVIOUS PROPOSED PERMANENT OPEN SPACE = 3.91 ACRES

NET INCREASE = 7.92 ACRES

SITE DATA

28.47 ACRES TOTAL
ZONED: NCD - ND

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

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REVISIONS:
No. Description Date

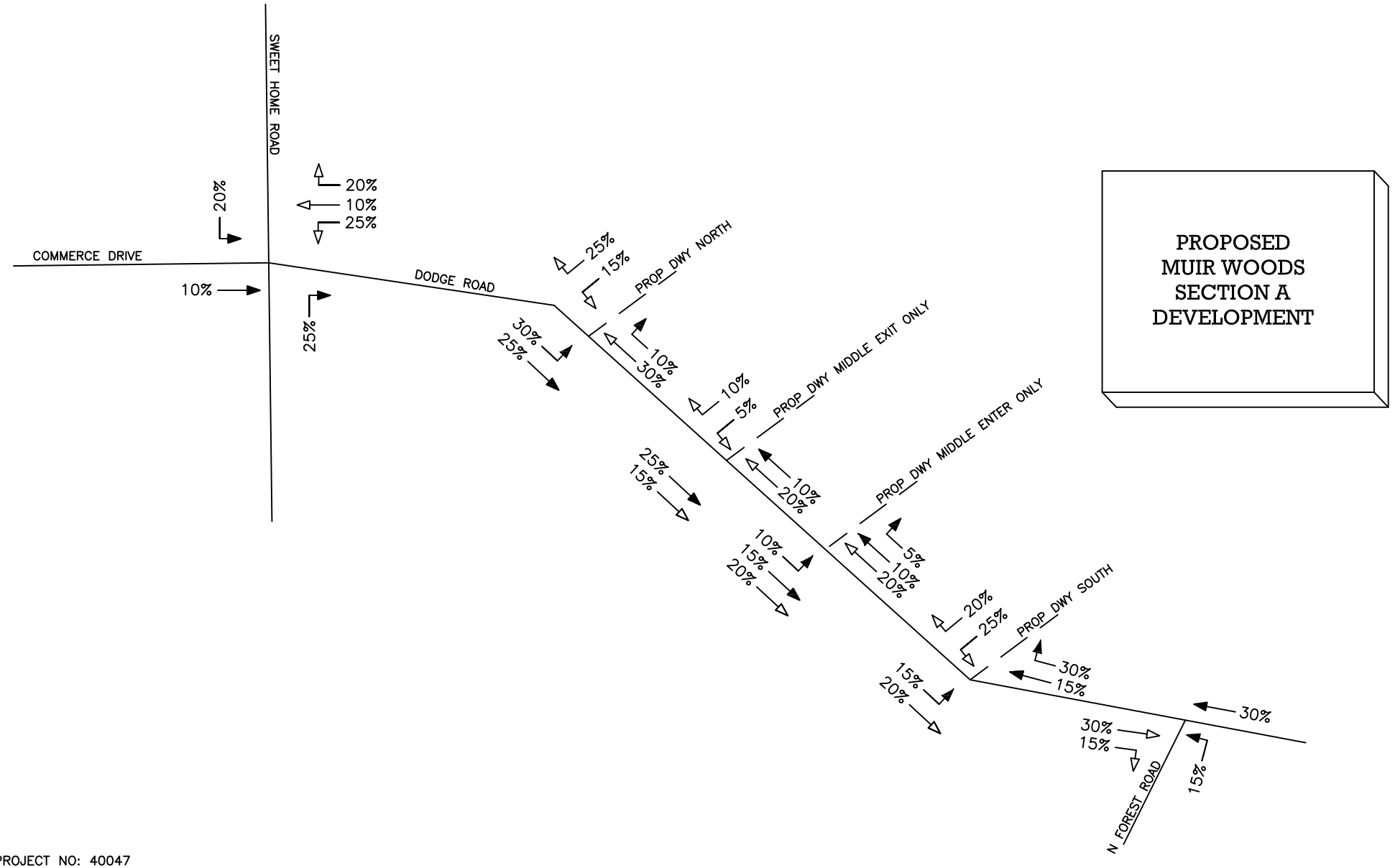
PROJECT NAME:
Site Development plans for:
Muir Woods Site "A"
Sweet Home & Dodge Road
Amherst, New York

Date: 7/1/20
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Concept Site Plan

DRAWING NO.
C-100

Project no.: 19.192



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N
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FIGURE 6

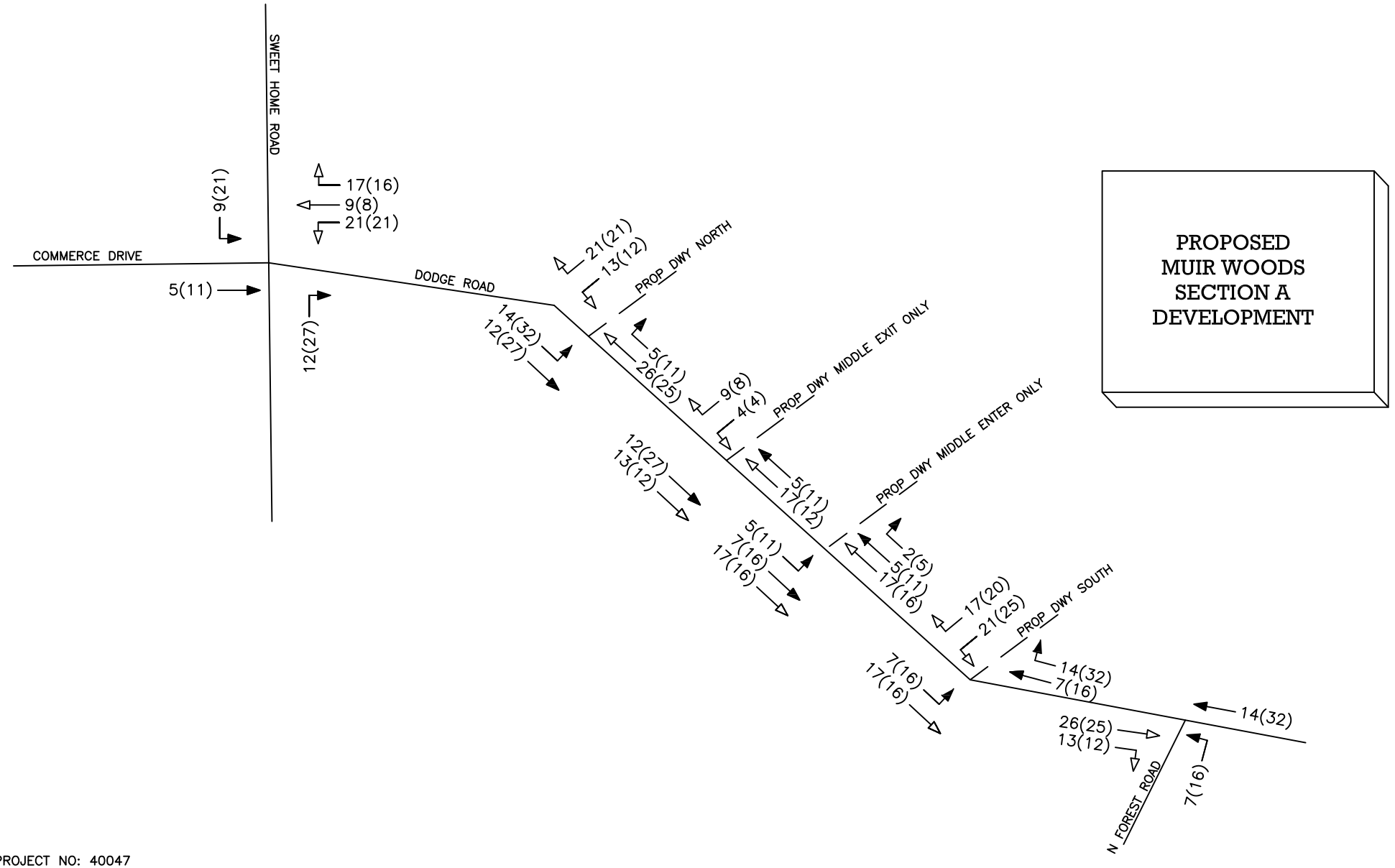
TRIP DISTRIBUTION

PROPOSED MUIR WOODS SITE A,
TOWN OF AMHERST, NY

KEY

00(00) = AM(PM)
ENTERING TRIPS →
EXITING TRIPS →

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)



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N
NOT TO SCALE

FIGURE 7

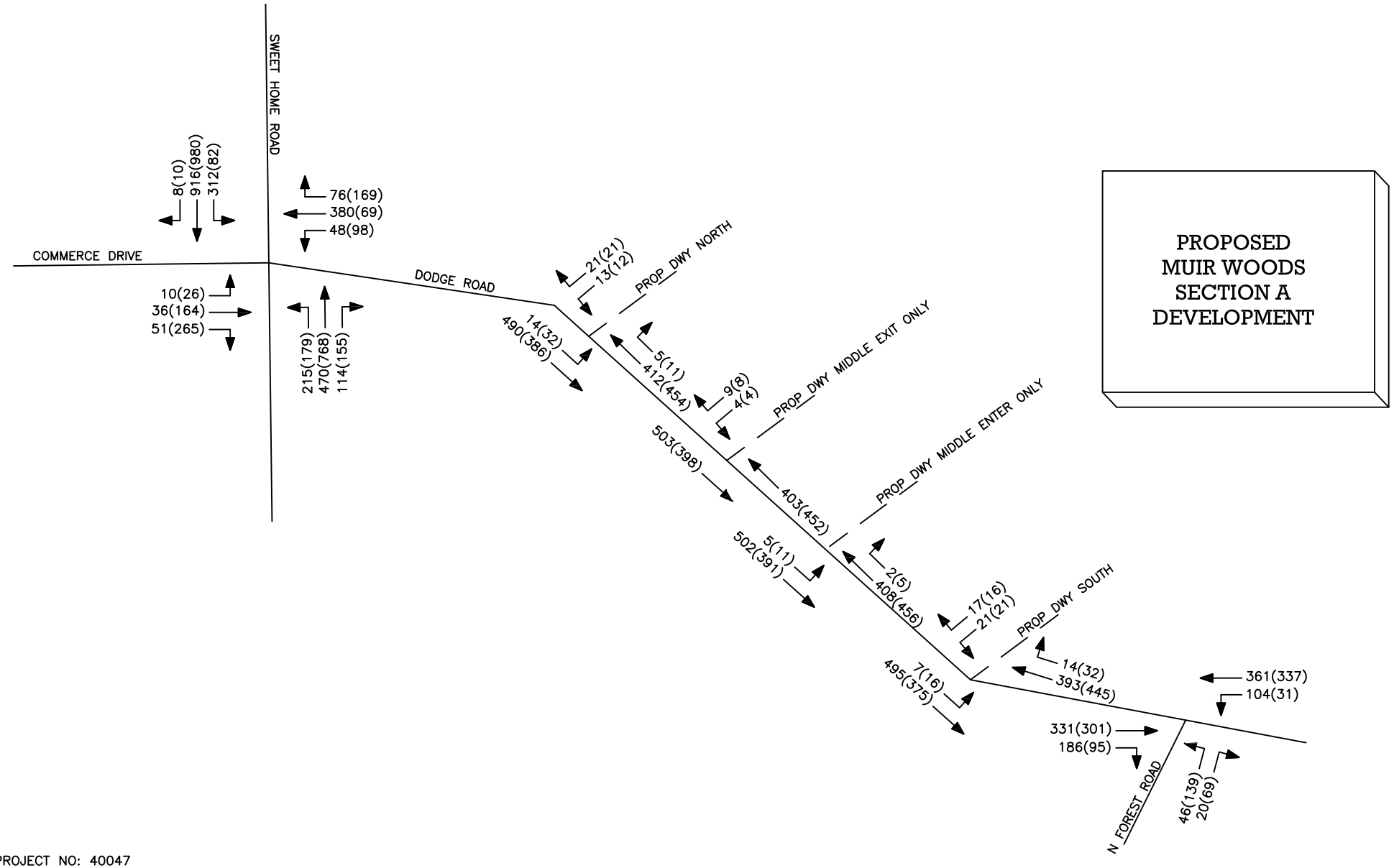
SITE GENERATED TRIPS

PROPOSED MUIR WOODS SITE A,
TOWN OF AMHERST, NY

KEY

00(00) = AM(PM)
ENTERING TRIPS →
EXITING TRIPS →

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)



PROJECT NO: 40047

SRF ASSOCIATES
Transportation Planning / Engineering / Design
www.srfa.net / (585) 272-4660

N
NOT TO SCALE

FIGURE 8

PEAK HOUR VOLUMES
FULL DEVELOPMENT CONDITIONS

PROPOSED MUIR WOODS SITE A,
TOWN OF AMHERST, NY

KEY

00(00) = AM(PM)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

APPENDICES

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

A1

Collected Traffic Volume Data

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

TRI-STATE TRAFFIC DATA

www.TSTData.com
184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Amherst, NY
N Forest Rd/Dodge Rd
Tuesday, February 28, 2017
Location: 43.023716, -78.788008

Count Name: N Forest Rd/Dodge Rd
Site Code:
Start Date: 02/28/2017
Page No: 1

Turning Movement Data

Start Time	Dodge Rd Westbound					North Forest Rd Northbound					Dodge Rd Eastbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
7:00 AM	32	3	0	0	35	2	12	0	0	14	21	30	0	0	51	100
7:15 AM	51	5	0	0	56	1	8	0	0	9	23	37	0	0	60	125
7:30 AM	77	15	0	0	92	4	10	0	0	14	54	55	0	0	109	215
7:45 AM	101	41	0	0	142	5	5	0	0	10	53	85	0	0	138	290
Hourly Total	261	64	0	0	325	12	35	0	0	47	151	207	0	0	358	730
8:00 AM	83	19	0	0	102	2	5	0	0	7	37	53	0	0	90	199
8:15 AM	59	25	0	0	84	6	14	0	0	20	24	59	0	0	83	187
8:30 AM	37	10	0	0	47	3	12	0	0	15	32	45	0	0	77	139
8:45 AM	44	14	0	0	58	4	14	0	1	18	26	50	0	0	76	152
Hourly Total	223	68	0	0	291	15	45	0	1	60	119	207	0	0	326	677
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	56	8	0	0	64	35	35	0	0	70	20	37	0	0	57	191
4:15 PM	51	2	0	0	53	13	30	0	0	43	16	44	0	0	60	156
4:30 PM	58	5	0	0	63	16	34	0	0	50	19	51	0	0	70	183
4:45 PM	45	5	0	0	50	7	25	0	0	32	18	61	0	0	79	161
Hourly Total	210	20	0	0	230	71	124	0	0	195	73	193	0	0	266	691
5:00 PM	84	6	0	0	90	32	38	0	0	70	22	86	0	0	108	268
5:15 PM	78	11	0	0	89	10	22	0	0	32	19	55	0	0	74	195
5:30 PM	39	3	0	0	42	4	23	0	0	27	11	67	0	0	78	147
5:45 PM	53	3	0	0	56	3	17	0	0	20	15	37	0	0	52	128
Hourly Total	254	23	0	0	277	49	100	0	0	149	67	245	0	0	312	738
6:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Grand Total	949	175	0	0	1124	147	304	0	1	451	410	852	0	0	1262	2837
Approach %	84.4	15.6	0.0	-	-	32.6	67.4	0.0	-	-	32.5	67.5	0.0	-	-	-
Total %	33.5	6.2	0.0	-	39.6	5.2	10.7	0.0	-	15.9	14.5	30.0	0.0	-	44.5	-
Lights	936	175	0	-	1111	144	303	0	-	447	408	841	0	-	1249	2807
% Lights	98.6	100.0	-	-	98.8	98.0	99.7	-	-	99.1	99.5	98.7	-	-	99.0	98.9
Buses	8	0	0	-	8	3	1	0	-	4	2	8	0	-	10	22
% Buses	0.8	0.0	-	-	0.7	2.0	0.3	-	-	0.9	0.5	0.9	-	-	0.8	0.8
Trucks	5	0	0	-	5	0	0	0	-	0	0	3	0	-	3	8
% Trucks	0.5	0.0	-	-	0.4	0.0	0.0	-	-	0.0	0.0	0.4	-	-	0.2	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

TRI-STATE TRAFFIC DATA

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610-466-1469
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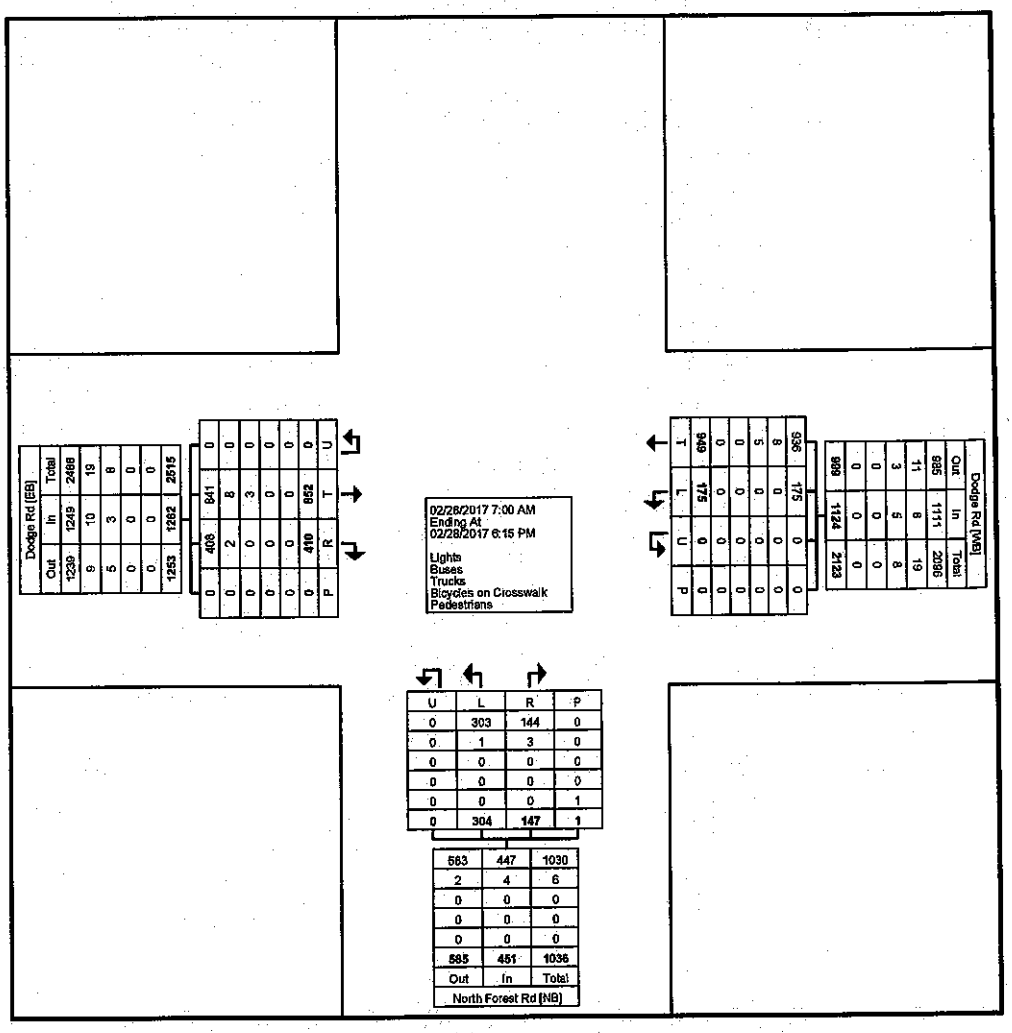
Amherst, NY
N Forest Rd/Dodge Rd
Tuesday, February 28, 2017
Location: 43.023716, -78.788008

Count Name: N Forest Rd/Dodge Rd
Site Code:
Start Date: 02/28/2017
Page No: 2



Dodge Rd (EB)		
Out	In	Total
1239	1249	2488
9	10	19
5	3	8
0	0	0
0	0	0
1253	1262	2515

U	T	R	P
0	841	408	0
0	8	2	0
0	3	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	852	410	0
0	8	2	0

T	L	U	P
849	175	0	0
0	0	0	0
5	0	0	0
8	0	0	0
936	175	0	0

Dodge Rd (WB)		
Out	In	Total
885	1111	1996
11	8	19
3	5	8
0	0	0
989	1124	2123

U	L	R	P
0	303	144	0
0	1	3	0
0	0	0	0
0	0	0	0
0	0	0	1
0	304	147	1

583	447	1030
2	4	6
0	0	0
0	0	0
0	0	0
585	451	1036
Out	In	Total
North Forest Rd (NB)		

Turning Movement Data Plot

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

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Amherst, NY
N Forest Rd/Dodge Rd
Tuesday, February 28, 2017
Location: 43.023716, -78.788008

Count Name: N Forest Rd/Dodge Rd
Site Code:
Start Date: 02/28/2017
Page No: 3

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Dodge Rd Westbound					North Forest Rd Northbound					Dodge Rd Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	
7:30 AM	77	15	0	0	92	4	10	0	0	14	54	55	0	0	109	215
7:45 AM	101	41	0	0	142	5	5	0	0	10	53	85	0	0	138	290
8:00 AM	83	19	0	0	102	2	5	0	0	7	37	53	0	0	90	199
8:15 AM	59	25	0	0	84	6	14	0	0	20	24	59	0	0	83	187
Total	320	100	0	0	420	17	34	0	0	51	168	252	0	0	420	891
Approach %	76.2	23.8	0.0	-	-	33.3	66.7	0.0	-	-	40.0	60.0	0.0	-	-	-
Total %	35.9	11.2	0.0	-	47.1	1.9	3.8	0.0	-	5.7	18.9	28.3	0.0	-	47.1	-
PHF	0.792	0.610	0.000	-	0.739	0.708	0.607	0.000	-	0.638	0.778	0.741	0.000	-	0.761	0.768
Lights	318	100	0	-	418	15	33	0	-	48	168	248	0	-	416	882
% Lights	99.4	100.0	-	-	99.5	88.2	97.1	-	-	94.1	100.0	98.4	-	-	99.0	99.0
Buses	1	0	0	-	1	2	1	0	-	3	0	2	0	-	2	6
% Buses	0.3	0.0	-	-	0.2	11.8	2.9	-	-	5.9	0.0	0.8	-	-	0.5	0.7
Trucks	1	0	0	-	1	0	0	0	-	0	0	2	0	-	2	3
% Trucks	0.3	0.0	-	-	0.2	0.0	0.0	-	-	0.0	0.0	0.8	-	-	0.5	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

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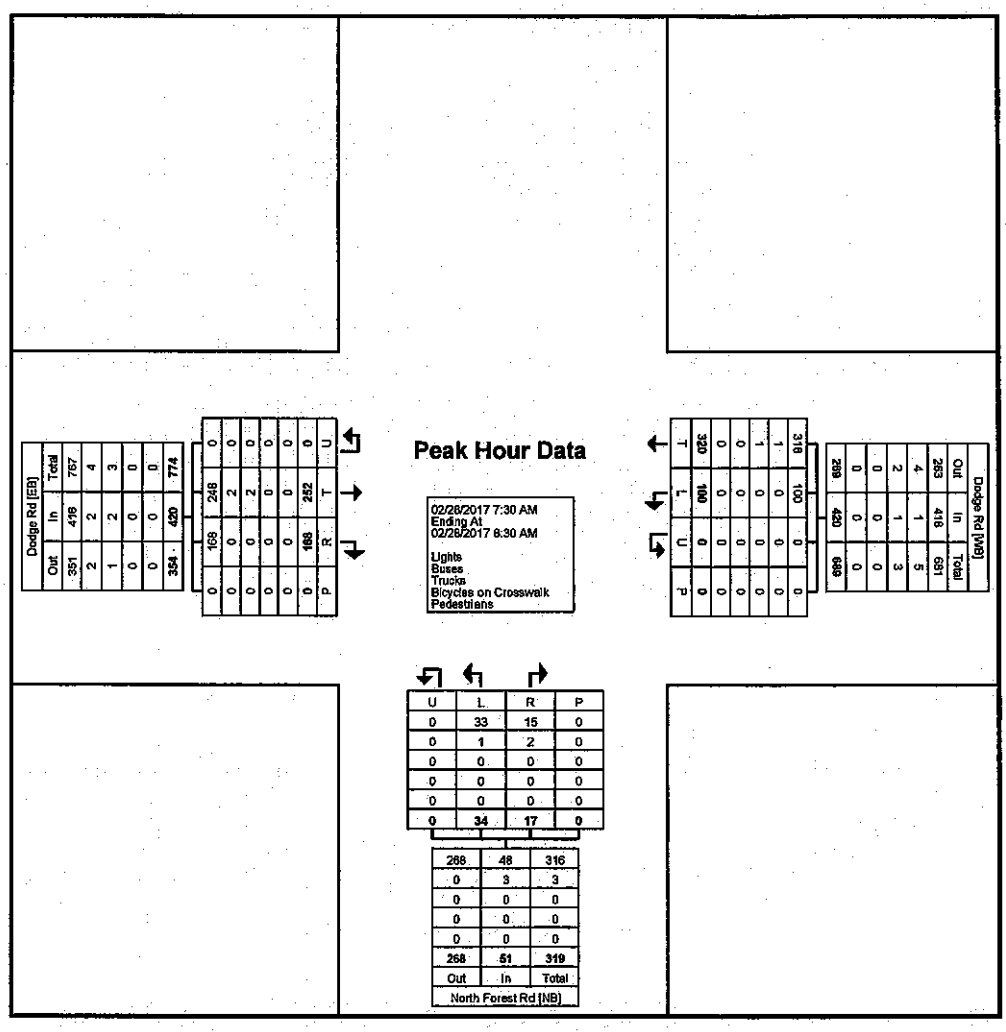

Turning Movement Peak Hour Data Plot (7:30 AM)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

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Amherst, NY
N Forest Rd/Dodge Rd
Tuesday, February 28, 2017
Location: 43.023716, -78.788008

Count Name: N Forest Rd/Dodge Rd
Site Code:
Start Date: 02/28/2017

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Dodge Rd Westbound					North Forest Rd Northbound					Dodge Rd Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	
4:30 PM	58	5	0	0	63	16	34	0	0	50	19	51	0	0	70	183
4:45 PM	45	5	0	0	50	7	25	0	0	32	18	61	0	0	79	161
5:00 PM	84	6	0	0	90	32	38	0	0	70	22	86	0	0	108	268
5:15 PM	78	11	0	0	89	10	22	0	0	32	19	55	0	0	74	195
Total	265	27	0	0	292	65	119	0	0	184	78	253	0	0	331	807
Approach %	90.8	9.2	0.0	-	-	35.3	64.7	0.0	-	-	23.6	76.4	0.0	-	-	-
Total %	32.8	3.3	0.0	-	36.2	8.1	14.7	0.0	-	22.8	9.7	31.4	0.0	-	41.0	-
PHF	0.789	0.614	0.000	-	0.811	0.508	0.783	0.000	-	0.657	0.886	0.735	0.000	-	0.766	0.753
Lights	265	27	0	-	292	65	119	0	-	184	78	253	0	-	331	807
% Lights	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

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Count Name: N Forest Rd/Dodge Rd
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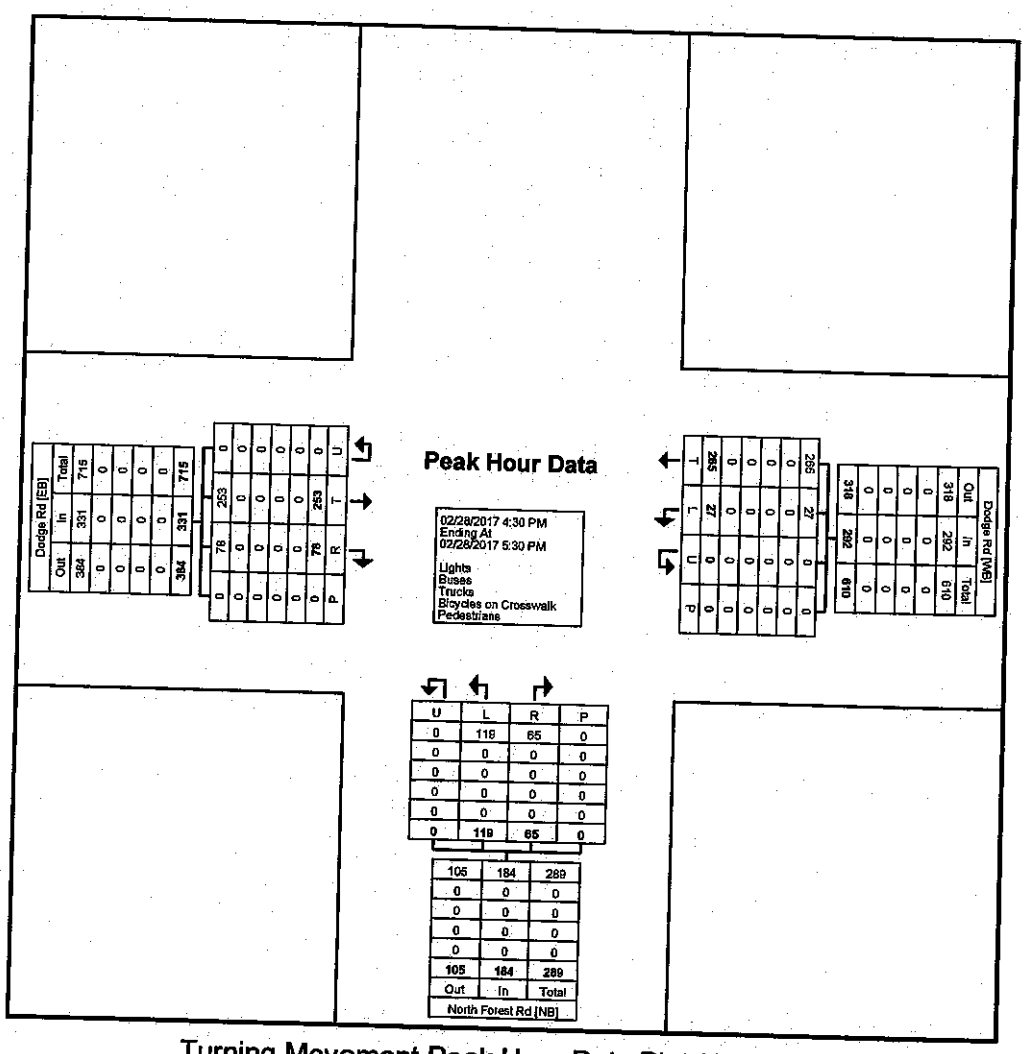
Page No: 6



Turning Movement Peak Hour Data Plot (4:30 PM)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

TIS - THE HUB - 2949 N. FOREST
KIMLEY-HORN, 3/2017

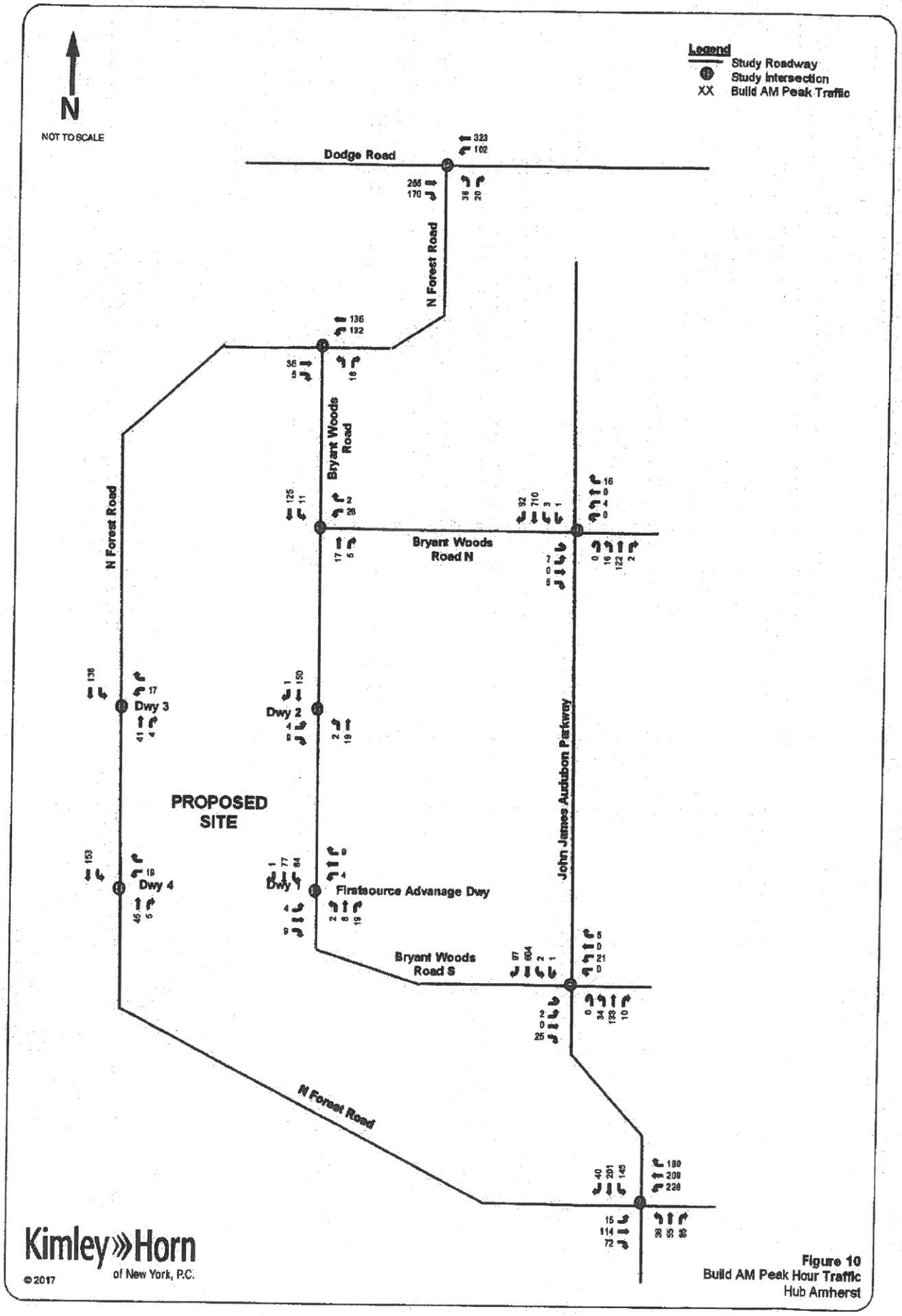


Figure 10
Build AM Peak Hour Traffic
Hub Amherst

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

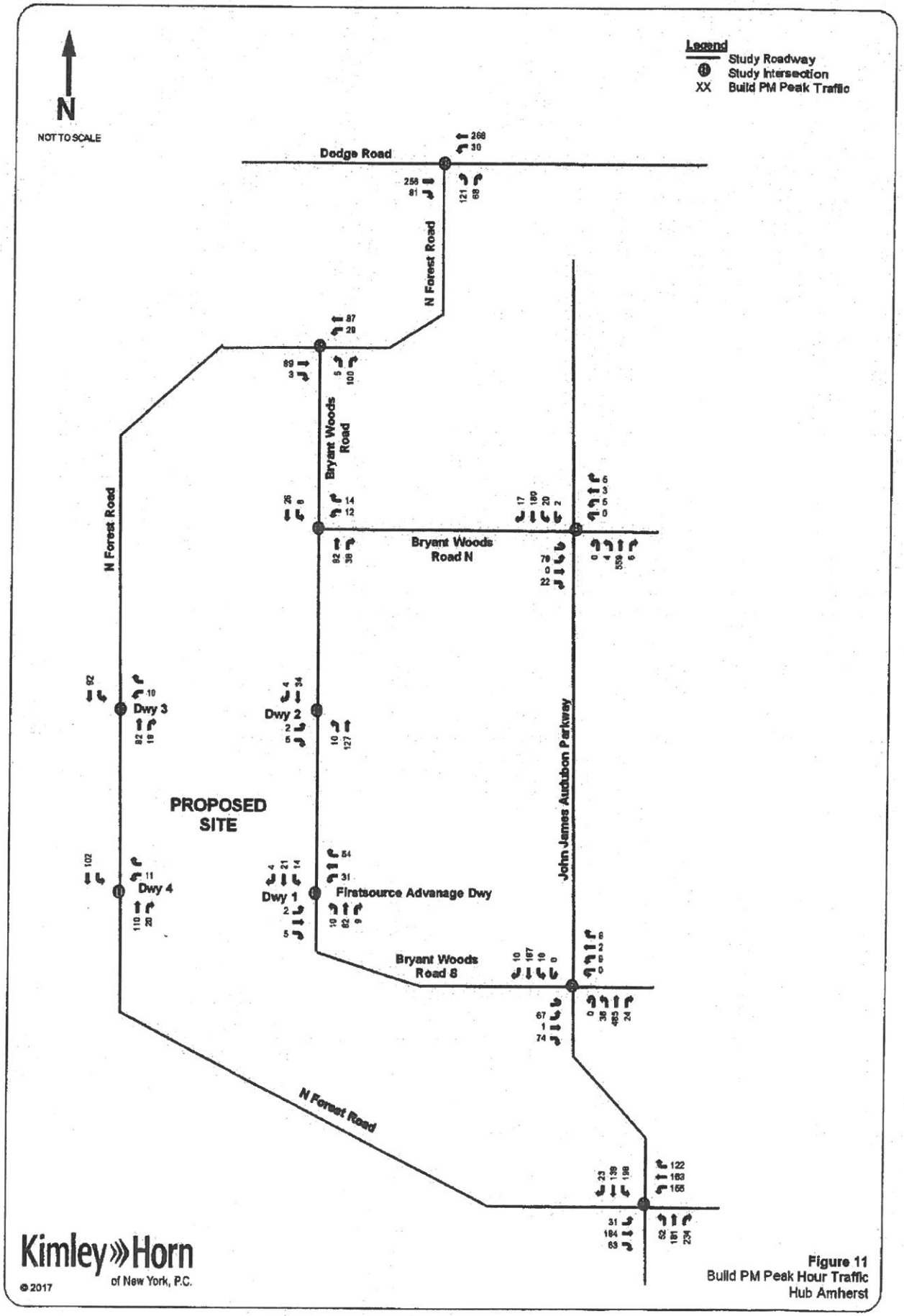


Figure 11
Build PM Peak Hour Traffic
Hub Amherst

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Peak Hour Data for Intersection

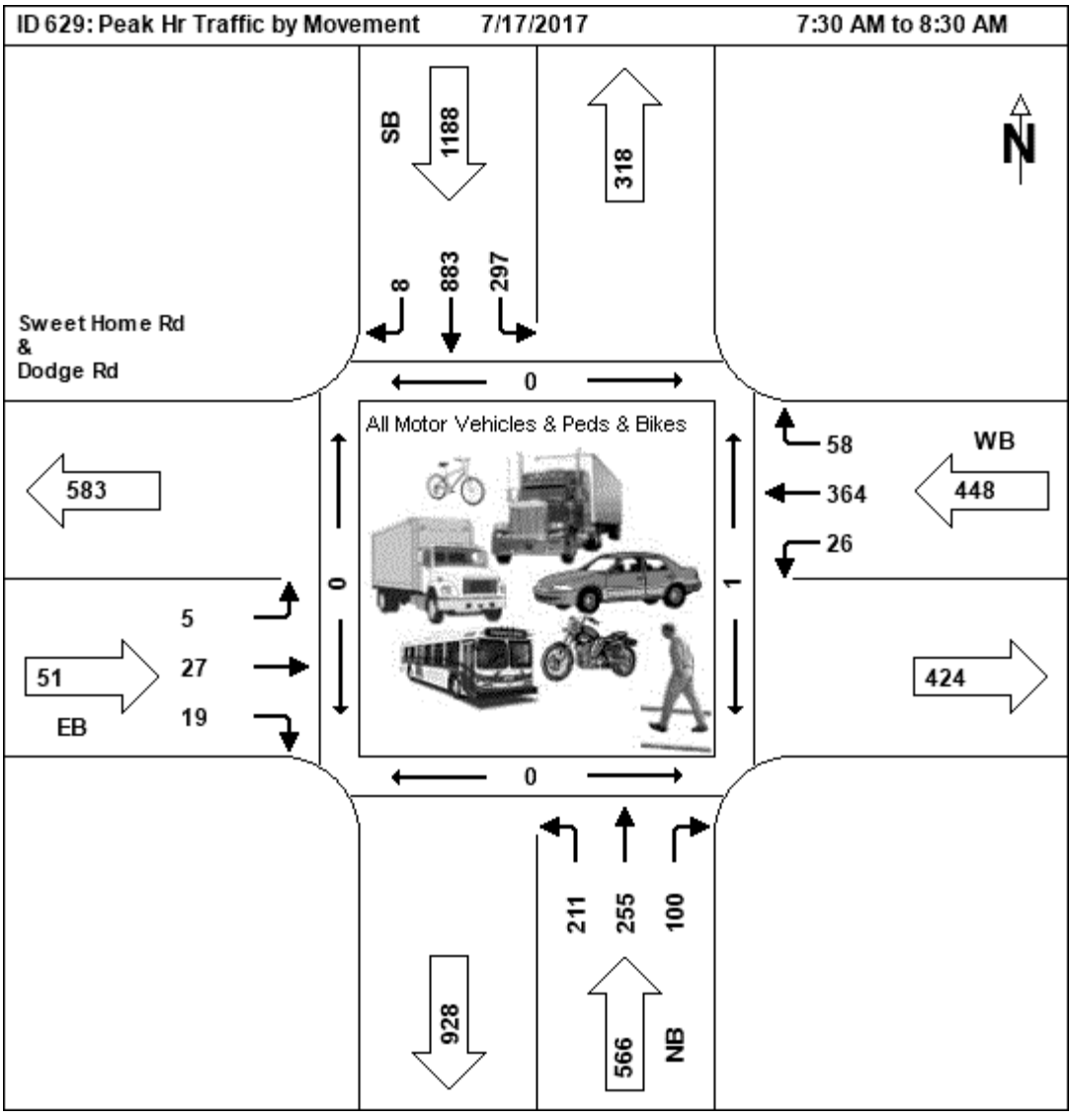
Int ID: 629
Community: Amherst
Road 1: Sweet Home Rd
Road 2: Dodge Rd
Corridor: NA
Road 3: Commerce Dr
Road 4:

|<< < > >>| 1-2 of 2

AM Peak Hour
07/17/2017

Start Time	NB Left	NB Thru	NB Right	NB Ped	NB App Total	EB Left	EB Thru	EB Right	EB Ped	EB App Total	SB Left	SB Thru	SB Right	SB Ped	SB App Total	WB Left	WB Thru	WB Right	WB Ped	WB App Total	Int Total
7:30 AM	65	54	17	1	136	3	14	4	0	21	60	290	2	0	352	3	97	11	0	111	620
7:45 AM	50	69	31	0	150	0	3	0	0	3	75	196	0	0	271	6	120	8	0	134	558
8:00 AM	49	66	25	0	140	1	5	4	0	10	66	175	2	0	243	10	72	22	0	104	497
8:15 AM	47	66	27	0	140	1	5	11	0	17	96	222	4	0	322	7	75	17	0	99	578
Total	211	255	100	1	566	5	27	19	0	51	297	883	8	0	1188	26	364	58	0	448	2253
PHF	0.81	0.92	0.81		0.94	0.42	0.48	0.43		0.61	0.77	0.76	0.50		0.84	0.65	0.76	0.66		0.84	
HV %	6	4	6			60	0	32			1	3	0			12	1	2			

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes



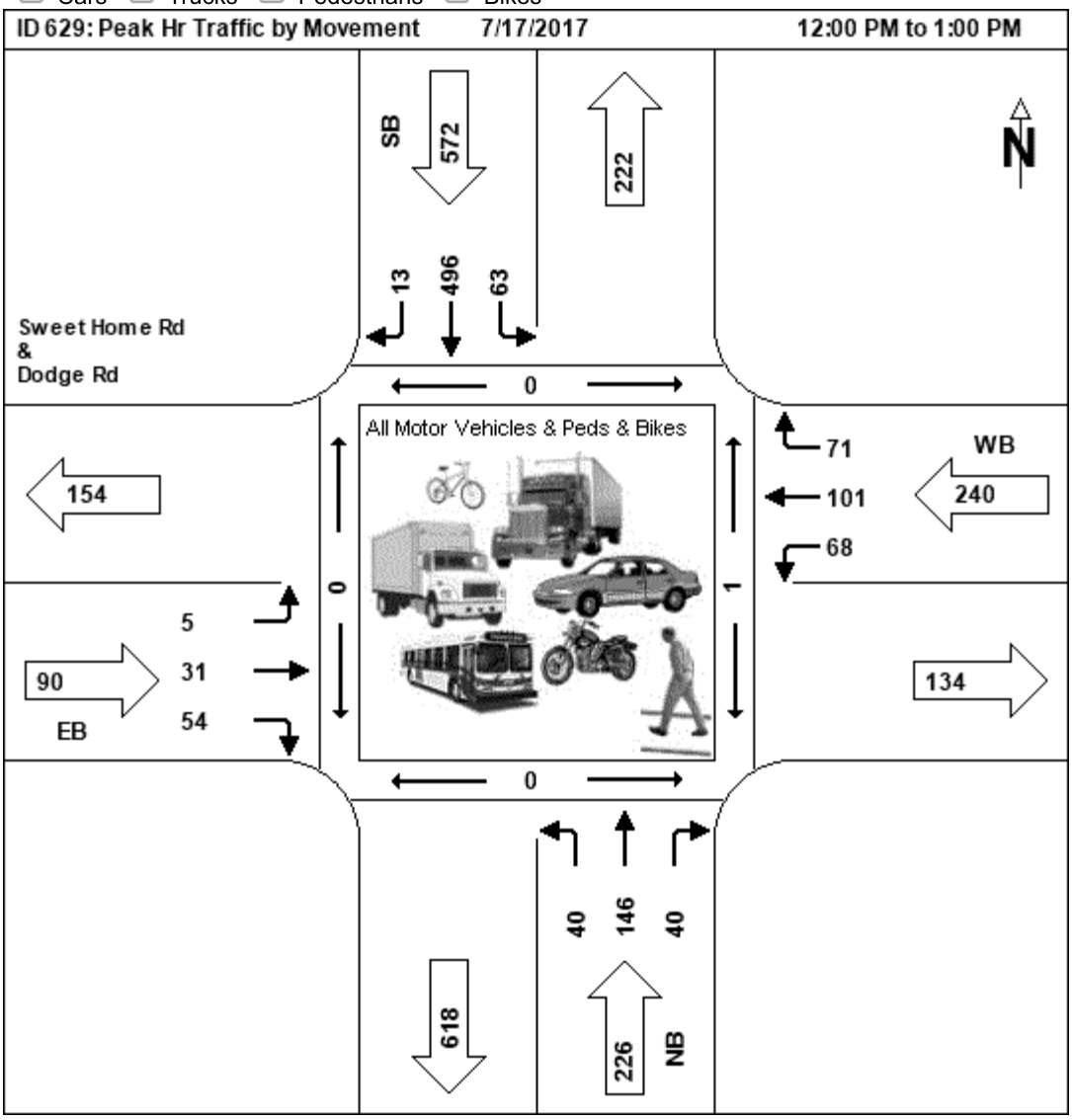
Midday Peak Hour
07/17/2017

Start Time	NB Left	NB Thru	NB Right	NB Ped	NB App Total	EB Left	EB Thru	EB Right	EB Ped	EB App Total	SB Left	SB Thru	SB Right	SB Ped	SB App Total	WB Left	WB Thru	WB Right	WB Ped	WB App Total	Int Total

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

12:00 PM	6	34	11	1	51	0	6	12	0	18	20	127	4	0	151	26	19	26	0	71	291
12:15 PM	10	15	4	0	29	5	16	13	0	34	17	110	2	0	129	12	23	26	0	61	253
12:30 PM	3	34	10	0	47	0	5	14	0	19	19	120	3	0	142	11	24	11	0	46	254
12:45 PM	21	63	15	0	99	0	4	15	0	19	7	139	4	0	150	19	35	8	0	62	330
Total	40	146	40	1	226	5	31	54	0	90	63	496	13	0	572	68	101	71	0	240	1128
PHF	0.48	0.58	0.67		0.57	0.25	0.48	0.90		0.66	0.79	0.89	0.81		0.95	0.65	0.72	0.68		0.85	
HV %	13	8	5			20	3	4			2	2	0			1	0	1			

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes

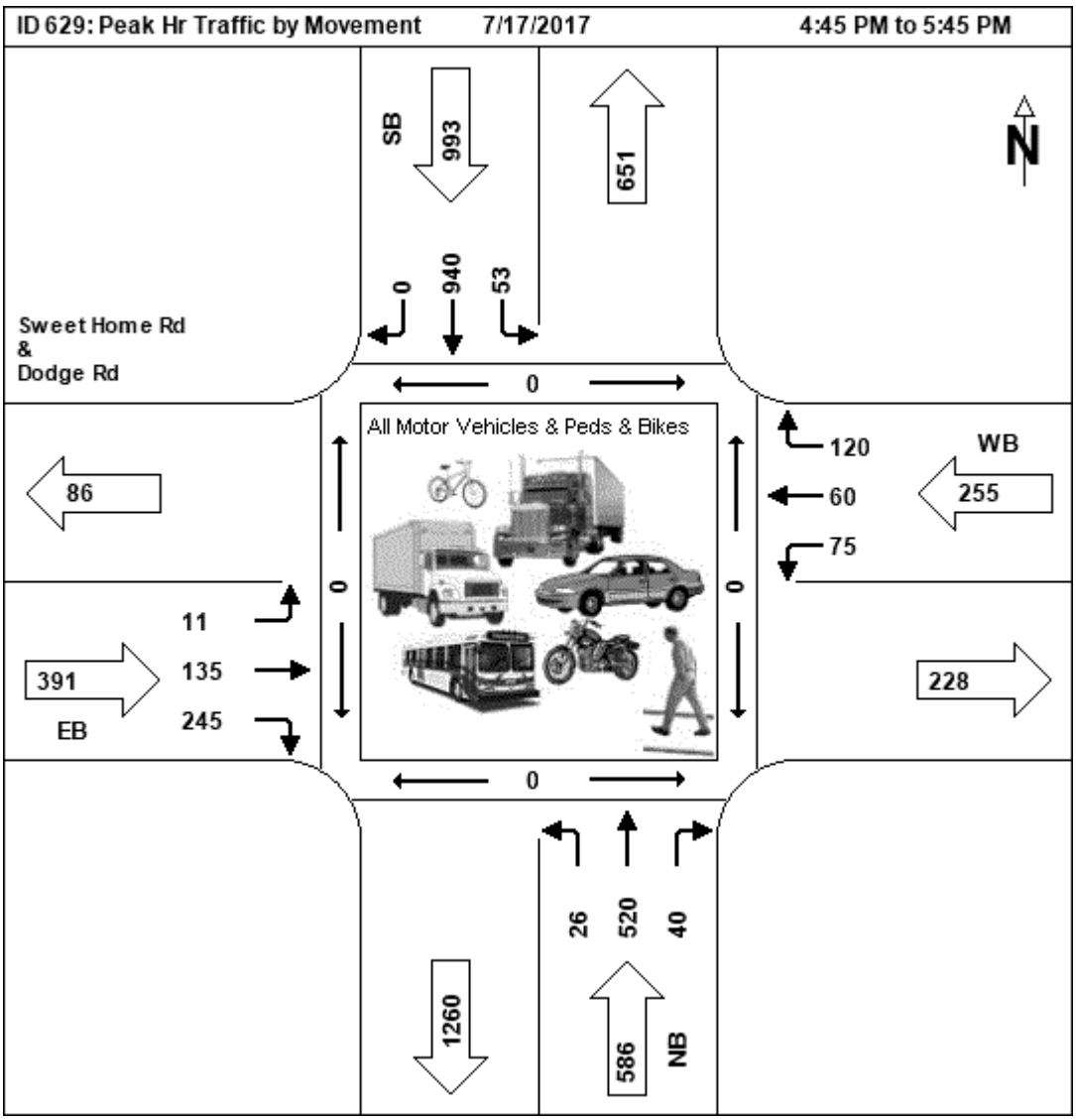


PM Peak Hour
07/17/2017

	NB					EB					SB					WB					
Start Time	Left	Thru	Right	Ped	App Total	Left	Thru	Right	Ped	App Total	Left	Thru	Right	Ped	App Total	Left	Thru	Right	Ped	App Total	Int Total
4:45 PM	8	132	12	0	152	2	28	51	0	81	24	190	0	0	214	30	22	21	0	73	520
5:00 PM	5	119	6	0	130	4	51	116	0	171	10	258	0	0	268	20	22	50	0	92	661
5:15 PM	7	149	10	0	166	4	27	34	0	65	14	266	0	0	280	18	10	21	0	49	560
5:30 PM	6	119	12	0	137	1	27	44	0	72	5	226	0	0	231	7	6	28	0	41	481
Total	26	519	40	0	585	11	133	245	0	389	53	940	0	0	993	75	60	120	0	255	2222
PHF	0.81	0.87	0.83		0.88	0.69	0.65	0.53		0.57	0.55	0.88			0.89	0.63	0.68	0.60		0.69	
HV %	12	1	5			18	2	1			0	1				0	2	1			

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

A2

Miscellaneous Traffic Data and Calculations

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

STATION: **531020**

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR294** ROAD NAME: **NORTH FOREST RD** FROM: **1.0 N OF NY263** TO: **DODGE RD** COUNTY: **Erie**
DIRECTION: Northbound FACTOR GROUP: 30 REC. SERIAL #: W699 FUNC. CLASS: 16 TOWN: **AMHERST**
STATE DIR CODE: 6 WK OF YR: 16 PLACEMENT: .57m S of Bryant Woods S NHS: no LION#:
DATE OF COUNT: 04/19/2015 @ REF MARKER: JURIS: Village BIN:
NOTES LANE 1: North ADDL DATA: Class Speed CC Stn: RR CROSSING:
COUNT TYPE: VEHICLES BATCH ID: DOT-SJWR5Cww17a CARS HPMS SAMPLE: 3010446
COUNT TAKEN BY: ORG CODE: TTG INITIALS: DKS PROCESSED BY: ORG CODE: DOT INITIALS: SJW

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	W																											
2	T																											
3	F																											
4	S																											
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15	W																											
16	T																											
17	F																											
18	S																											
19	S																											
20	M	**2**	**0**	**0**	**0**	**1**	**4**	**12**	**48**	**64**	**42**	**59**	**47**	**74**	**74**	**68**	**100**	**94**	**82**	**63**	**32**	**41**	**20**	**17**	**11**	955	100	15
21	T	**3**	**0**	**1**	**0**	**0**	**1**	**11**	**48**	**43**	**39**	**47**	**66**	**77**	**69**	**81**	**114**	**96**	**98**	**72**	**37**	**40**	**22**	**13**	**8**	986	114	15
22	W	**5**	**1**	**1**	**2**	**2**	**1**	**12**	**48**	**55**	**42**	**46**	**58**	**81**	**59**	**79**	**97**	**98**	**82**	**56**	**47**	**35**	**27**	**23**				
23	T																											
24	F																											
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29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																								ADT
4	**0**	**1**	**1**	**1**	**1**	**12**	**48**	**54**	**41**	**51**	**57**	**77**	**67**	**76**	**104**	**96**	**87**	**64**	**39**	**39**	**23**	**18**	**10**	**971**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
3	71	2	65	104	11%	1.000	1.047	**AADT 927**

ROAD #: **CR294** ROAD NAME: **NORTH FOREST RD** FROM: **1.0 N OF NY263** TO: **DODGE RD** COUNTY: **Erie**
STATION: **531020** STATE DIR CODE: **6** PLACEMENT: **.57m S of Bryant Woods S** **DATE OF COUNT: 04/19/2015**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

STATION: **531020**

New York State Department of Transportation
Traffic Count Hourly Report

ROAD #: **CR CR294** ROAD NAME: **NORTH FOREST RD** FROM: **1.0 N OF NY263** TO: **DODGE RD** COUNTY: **Erie**
DIRECTION: Southbound FACTOR GROUP: 30 REC. SERIAL #: W805 FUNC. CLASS: 16 TOWN: **AMHERST**
STATE DIR CODE: 7 WK OF YR: 16 PLACEMENT: .57m S of Bryant Woods S NHS: no LION#:
DATE OF COUNT: 04/19/2015 @ REF MARKER: JURIS: Village BIN:
NOTES LANE 1: South ADDL DATA: Class Speed CC Stn: RR CROSSING:
COUNT TYPE: VEHICLES BATCH ID: DOT-SJWR5Cww17a CLASS HPMS SAMPLE: 3010446
COUNT TAKEN BY: ORG CODE: TTG INITIALS: dks PROCESSED BY: ORG CODE: DOT INITIALS: SJW

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	W																											
2	T																											
3	F																											
4	S																											
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13	M																											
14	T																											
15	W																											
16	T																											
17	F																											
18	S																											
19	S																											
20	M	**1**	**1**	**1**	**1**	**1**	**11**	**42**	**77**	**104**	**51**	**48**	**44**	**53**	**52**	**71**	**69**	**104**	**79**	**50**	**23**	**18**	**13**	**12**	**3**	929	104	8
21	T	**1**	**1**	**2**	**0**	**0**	**12**	**42**	**84**	**91**	**53**	**56**	**55**	**67**	**63**	**60**	**56**	**85**	**97**	**44**	**28**	**15**	**10**	**7**	**9**	938	97	17
22	W	**1**	**1**	**1**	**2**	**1**	**13**	**41**	**72**	**87**	**57**	**51**	**55**	**63**	**51**	**54**	**66**	**79**	**96**	**56**	**31**	**16**	**15**	**12**				
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24	F																											
25	S																											
26	S																											
27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
1	**1**	**2**	**1**	**0**	**12**	**42**	**78**	**94**	**54**	**52**	**51**	**61**	**55**	**62**	**64**	**89**	**91**	**50**	**27**	**16**	**13**	**10**	**6**	**932**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
3	71	2	65	94	10%	1.000	1.047	**AADT 890**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

STATION: **534232**

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR45** ROAD NAME: **DODGE RD**
DIRECTION: Eastbound FACTOR GROUP: 30
STATE DIR CODE: 6 WK OF YR: 32
DATE OF COUNT: 08/07/2017
NOTES LANE 1: EB 1 Lane - 40 mph

COUNT TAKEN BY: ORG CODE: MBN INITIALS: APV

FROM: **SWEET HOME RD** TO: **NY 270 CAMPBELL BLVD**
REC. SERIAL #: Y110 FUNC. CLASS: 16
PLACEMENT: 450 FEET EAST OF AUDUBON PK NHS: no
@ REF MARKER: JURIS: Village
ADDL DATA: Class Speed CC Stn:
COUNT TYPE: AXLE PAIRS BATCH ID: DOT-R05c32aMBN0000-2017

PROCESSED BY: ORG CODE: DOT INITIALS: CW

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	T																											
2	W																											
3	T																											
4	F																											
5	S																											
6	S																											
7	M																		472	223	157	142	81	43	41			
8	T	23	10	6	6	4	17	55	207	272	174	158	216	271	230	243	301	447	457	249	168	165	116	61	41	3897	457	17
9	W	27	14	6	7	3	13	69	195	244	172	177	212	283	268	250	319	412	437	234	185	162	133	51	37	3910	437	17
10	T	18	10	7	5	6	8	60	158	204	154	182	202	301	264	267	326	438	436	228	158	152	114	66	46	3810	438	16
11	F	27	8	13	8	6	16	64	172																			
12	S																											
13	S																											
14	M																											
15	T																											
16	W																											
17	T																											
18	F																											
19	S																											
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23	W																											
24	T																											
25	F																											
26	S																											
27	S																											
28	M																											
29	T																											
30	W																											
31	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

24	10	8	6	5	14	62	183	240	167	172	210	285	254	253	315	432	450	234	167	155	111	55	41	ADT 3853

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
4	87	4	87	450	12%	1.000	1.100	**AADT 3503**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR45** ROAD NAME: **DODGE RD**
DIRECTION: Westbound FACTOR GROUP: 30
STATE DIR CODE: 7 WK OF YR: 32
DATE OF COUNT: 08/07/2017
NOTES LANE 1: WB 1 Lane - 40 mph

COUNT TAKEN BY: ORG CODE: MBN INITIALS: APV

FROM: **SWEET HOME RD** TO: **NY 270 CAMPBELL BLVD**
REC. SERIAL #: Y110 FUNC. CLASS: 16
PLACEMENT: 450 FEET EAST OF AUDUBON PK NHS: no
@ REF MARKER: JURIS: Village
ADDL DATA: Class Speed CC Stn:
COUNT TYPE: AXLE PAIRS BATCH ID: DOT-R05c32aMBN0000-2017

PROCESSED BY: ORG CODE: DOT INITIALS: CW

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	T																											
2	W																											
3	T																											
4	F																											
5	S																											
6	S																											
7	M																		250	150	104	92	61	38	18			
8	T	**17**	**5**	**2**	**7**	**8**	**27**	**124**	**380**	**419**	**243**	**185**	**169**	**293**	**250**	**231**	**233**	**211**	**287**	**189**	**121**	**109**	**66**	**54**	**17**	3647	419	8
9	W	**9**	**5**	**6**	**6**	**13**	**22**	**125**	**348**	**424**	**225**	**194**	**200**	**202**	**243**	**280**	**212**	**234**	**268**	**206**	**133**	**102**	**68**	**59**	**15**	3599	424	8
10	T	**16**	**3**	**1**	**7**	**9**	**31**	**120**	**335**	**390**	**219**	**208**	**208**	**208**	**243**	**285**	**225**	**252**	**261**	**187**	**127**	**106**	**68**	**50**	**26**	3585	390	8
11	F	**11**	**5**	**5**	**3**	**11**	**27**	**111**	**302**																			
12	S																											
13	S																											
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31	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
13	**4**	**4**	**6**	**10**	**27**	**120**	**341**	**411**	**229**	**196**	**192**	**234**	**245**	**265**	**223**	**232**	**266**	**183**	**121**	**102**	**66**	**50**	**19**	**3559**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
5	87	5	87	411	12%	1.000	1.100

ESTIMATED

AADT
3235

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

1.a

STATION: **534822**

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Northbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 23
DATE OF COUNT: 06/03/2019
NOTES LANE 0: North

COUNT TAKEN BY: ORG CODE: TTG INITIALS: DKS

FROM: **COMMERCE DRIVE**
REC. SERIAL #: W807
PLACEMENT: 151' N of Sunshine Dr
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS

PROCESSED BY: ORG CODE: DOT INITIALS: JH

TO: **N FRENCH RD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05V23aTTG5196HPMS SAMPLE:

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	S																											
2	S																											
3	M																**774**	**1037**	**1082**	**627**	**443**	**469**	**345**	**209**	**140**			
4	T	**69**	**39**	**23**	**11**	**18**	**46**	**199**	**447**	**506**	**431**	**399**	**484**	**556**	**524**	**607**	**754**	**1009**	**977**	**661**	**468**	**428**	**347**	**201**	**141**	9345	1009	16
5	W	**83**	**50**	**29**	**19**	**27**	**43**	**207**	**467**	**509**	**430**	**409**	**541**	**597**	**521**	**671**	**841**	**1058**	**958**	**630**	**444**	**451**	**358**	**195**	**135**	9673	1058	16
6	T	**89**	**37**	**19**	**18**	**19**	**69**	**186**	**466**	**515**	**474**	**403**	**509**	**563**	**563**	**658**	**825**	**1015**	**1079**	**699**	**549**	**498**	**378**	**235**				
7	F																											
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28	F																											
29	S																											
30	S																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																									ADT
79	**41**	**24**	**16**	**21**	**52**	**194**	**454**	**503**	**439**	**399**	**504**	**565**	**529**	**637**	**788**	**1017**	**1011**	**645**	**470**	**456**	**352**	**207**	**137**	**9540**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	80	4	80	1017	11%	0.987	1.113

ESTIMATED (one way)

AADT
8571

ROAD #: **CR301** ROAD NAME: **SWEET HOME RD** FROM: **COMMERCE DRIVE** TO: **N FRENCH RD** COUNTY: **Erie**
STATION: **534822** STATE DIR CODE: **1** PLACEMENT: **151' N of Sunshine Dr** **DATE OF COUNT: 06/03/2019**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Southbound FACTOR GROUP: 30
STATE DIR CODE: 2 WK OF YR: 23
DATE OF COUNT: 06/03/2019
NOTES LANE 0: South

FROM: **COMMERCE DRIVE**
REC. SERIAL #: R314
PLACEMENT: 151' N of Sunshine Dr
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS

TO: **N FRENCH RD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05V23aTTG5196HPMS SAMPLE:

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:

COUNT TAKEN BY: ORG CODE: TTG INITIALS: DKS
PROCESSED BY: ORG CODE: DOT INITIALS: JH

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	S																											
2	S																											
3	M																**699**	**811**	**832**	**567**	**382**	**321**	**258**	**169**	**84**			
4	T	**43**	**33**	**20**	**20**	**51**	**171**	**524**	**1071**	**994**	**566**	**536**	**553**	**542**	**550**	**618**	**636**	**794**	**850**	**622**	**297**	**303**	**219**	**180**	**95**	10288	1071	7
5	W	**55**	**29**	**17**	**25**	**42**	**175**	**509**	**1093**	**1076**	**641**	**534**	**616**	**658**	**581**	**586**	**741**	**804**	**788**	**592**	**379**	**319**	**248**	**132**	**88**	10728	1093	7
6	T	**51**	**28**	**12**	**19**	**45**	**168**	**510**	**1095**	**978**	**632**	**570**	**657**	**697**	**639**	**635**	**714**	**823**	**897**	**616**	**377**	**315**	**308**	**189**				
7	F																											
8	S																											
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29	S																											
30	S																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																									ADT
49	**30**	**16**	**21**	**45**	**169**	**507**	**1072**	**1003**	**605**	**540**	**601**	**624**	**582**	**605**	**689**	**797**	**831**	**591**	**354**	**310**	**255**	**166**	**88**	**10550**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	80	4	80	1072	10%	0.987	1.113

ESTIMATED (one way)

AADT
9479

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

STATION: **536335**

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Northbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 15
DATE OF COUNT: 04/06/2020
NOTES LANE 1: North
NOTES LANE 2: North
COUNT TAKEN BY: ORG CODE: TTG INITIALS: JB

FROM: **N ELLICOTT RD**
REC. SERIAL #: W796
PLACEMENT: 605ft N of N Ellicott Creek
@ REF MARKER:
ADDL DATA: Class Speed
COUNT TYPE: VEHICLES
PROCESSED BY: ORG CODE: DOT INITIALS: CPA

TO: **COMMERCE DRIVE**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05C15cTTG5196

COUNTY: **Erie**
TOWN:
LION#:
BIN: 3367090
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M															**393**	**465**	**479**	**413**	**323**	**216**	**173**	**102**	**83**	**53**			
7	T	**35**	**23**	**26**	**24**	**22**	**64**	**243**	**301**	**262**	**259**	**316**	**328**	**380**	**389**	**430**	**478**	**462**	**403**	**294**	**237**	**166**	**120**	**81**	**65**	5408	478	15
8	W	**30**	**26**	**25**	**16**	**18**	**87**	**235**	**303**	**264**	**225**	**242**	**286**	**320**	**329**	**353**	**467**	**400**	**397**	**318**	**242**	**183**	**135**	**90**	**75**	5066	467	15
9	T	**40**	**22**	**24**	**22**	**23**	**78**	**231**	**270**	**258**	**239**	**266**	**294**	**346**	**309**	**418**	**419**	**477**	**421**	**284**	**231**	**146**	**114**	**96**	**72**	5100	477	16
10	F	**44**	**29**	**25**	**26**	**19**	**53**	**164**	**213**	**248**	**199**																	
11	S																											
12	S																											
13	M																											
14	T																											
15	W																											
16	T																											
17	F																											
18	S																											
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20	M																											
21	T																											
22	W																											
23	T																											
24	F																											
25	S																											
26	S																											
27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																								ADT
37	**25**	**25**	**22**	**20**	**70**	**218**	**272**	**258**	**230**	**275**	**303**	**349**	**342**	**398**	**457**	**454**	**408**	**305**	**232**	**167**	**118**	**88**	**66**	**5139**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
5	92	5	92	457	9%	1.000	1.054

ESTIMATED

AADT
4876

ROAD #: **CR301** ROAD NAME: **SWEET HOME RD** FROM: **N ELLICOTT RD** TO: **COMMERCE DRIVE** COUNTY: **Erie**
STATION: **536335** STATE DIR CODE: **1** PLACEMENT: **605ft N of N Ellicott Creek** **DATE OF COUNT: 04/06/2020**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD** FROM: **N ELLICOTT RD** TO: **COMMERCE DRIVE** COUNTY: **Erie**

DIRECTION: Southbound FACTOR GROUP: 30 REC. SERIAL #: JH88 FUNC. CLASS: 16 TOWN:

STATE DIR CODE: 2 WK OF YR: 15 PLACEMENT: 605ft N of N Ellicott Creek NHS: no LION#:

DATE OF COUNT: 04/06/2020 @ REF MARKER: JURIS: Village BIN: 3367090

NOTES LANE 1: South ADDL DATA: Class Speed CC Stn: RR CROSSING:

NOTES LANE 2: South COUNT TYPE: VEHICLES BATCH ID: DOT-R05C15cTTG5196 HPMS SAMPLE:

COUNT TAKEN BY: ORG CODE: TTG INITIALS: JB PROCESSED BY: ORG CODE: DOT INITIALS: CPA

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M															**404**	**497**	**481**	**434**	**284**	**212**	**129**	**97**	**72**	**69**			
7	T	**31**	**29**	**9**	**16**	**27**	**86**	**208**	**320**	**270**	**294**	**276**	**331**	**371**	**388**	**428**	**472**	**470**	**384**	**262**	**229**	**133**	**86**	**70**	**82**	5272	472	15
8	W	**35**	**21**	**15**	**15**	**28**	**88**	**220**	**300**	**264**	**272**	**320**	**266**	**314**	**227**	**248**	**298**	**282**	**248**	**187**	**129**	**97**	**70**	**44**	**58**	4046	320	10
9	T	**25**	**17**	**11**	**12**	**17**	**52**	**122**	**173**	**154**	**137**	**186**	**198**	**222**	**212**	**224**	**308**	**256**	**281**	**165**	**153**	**91**	**74**	**41**	**48**	3179	308	15
10	F	**25**	**9**	**13**	**13**	**20**	**38**	**116**	**194**	**135**	**149**																	
11	S																											
12	S																											
13	M																											
14	T																											
15	W																											
16	T																											
17	F																											
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26	S																											
27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
29	**19**	**12**	**14**	**23**	**66**	**166**	**247**	**206**	**213**	**261**	**265**	**302**	**276**	**326**	**394**	**372**	**337**	**224**	**181**	**112**	**82**	**57**	**64**	**4248**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
5	92	5	92	394	9%	1.000	1.054

ESTIMATED

AADT

4030

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

STATION: **534822**

New York State Department of Transportation
Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Northbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 28
DATE OF COUNT: 07/05/2016
NOTES LANE 0: NB 2 lane - 45 mph

COUNT TAKEN BY: ORG CODE: CSE INITIALS: CDM

FROM: **COMMERCE DRIVE**
REC. SERIAL #: 1867
PLACEMENT: 525 ft N of Bucyrus Dr
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS

PROCESSED BY: ORG CODE: MBN INITIALS: AHL

TO: **N FRENCH RD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05MBN-28-5-July-6-2016

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	F																											
2	S																											
3	S																											
4	M																											
5	T											397	468	580	510	566	692	905	889	578	443	430	359	229	159			
6	W	73	44	20	17	22	45	168	374	471	384	409	448	529	483	557	696	887	1021	711	498	442	371	225	192	9087	1021	17
7	T	96	51	22	20	21	60	154	375	494	367	368	439	526	522	602	639	856	931	582	459	434	361	270	167	8816	931	17
8	F	105	57	27	25	36	53	138	358	407																		
9	S																											
10	S																											
11	M																											
12	T																											
13	W																											
14	T																											
15	F																											
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17	S																											
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24	S																											
25	M																											
26	T																											
27	W																											
28	T																											
29	F																											
30	S																											
31	S																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
91	51	23	21	26	53	153	369	457	376	391	452	545	505	575	676	883	947	624	467	435	364	241	173	8898

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	71	4	71	947	11%	1.000	1.093

ESTIMATED (one way)

AADT
8141

ROAD #: **CR301** ROAD NAME: **SWEET HOME RD** FROM: **COMMERCE DRIVE** TO: **N FRENCH RD** COUNTY: **Erie**
STATION: **534822** STATE DIR CODE: **1** PLACEMENT: **525 ft N of Bucyrus Dr** **DATE OF COUNT: 07/05/2016**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

STATION: **534822**

New York State Department of Transportation
Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Southbound FACTOR GROUP: 30
STATE DIR CODE: 2 WK OF YR: 28
DATE OF COUNT: 07/05/2016
NOTES LANE 0: SB 2 lane - 45 mph

COUNT TAKEN BY: ORG CODE: CSE INITIALS: CDM

FROM: **COMMERCE DRIVE**
REC. SERIAL #: 1867
PLACEMENT: 525 ft N of Bucyrus Dr
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS

PROCESSED BY: ORG CODE: MBN INITIALS: AHL

TO: **N FRENCH RD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05MBN-28-5-July-6-2016

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	F																											
2	S																											
3	S																											
4	M																											
5	T											470	454	539	500	503	502	618	686	463	376	257	240	176	126			
6	W	56	33	9	16	32	135	372	705	742	499	460	444	525	530	497	544	627	705	507	365	306	289	206	108	8712	742	8
7	T	60	32	19	17	33	124	387	685	746	501	501	484	551	523	521	558	629	700	497	385	286	255	203	103	8800	746	8
8	F	65	31	30	28	35	111	354	655	571																		
9	S																											
10	S																											
11	M																											
12	T																											
13	W																											
14	T																											
15	F																											
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17	S																											
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26	T																											
27	W																											
28	T																											
29	F																											
30	S																											
31	S																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
60	32	19	20	33	123	371	682	686	500	477	461	538	518	507	535	625	697	489	375	283	261	195	112	8599

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	71	4	71	697	8%	1.000	1.093

ESTIMATED (one way)

AADT
7867

ROAD #: **CR301** ROAD NAME: **SWEET HOME RD** FROM: **COMMERCE DRIVE** TO: **N FRENCH RD** COUNTY: **Erie**
STATION: **534822** STATE DIR CODE: **2** PLACEMENT: **525 ft N of Bucyrus Dr** **DATE OF COUNT: 07/05/2016**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

STATION: **534232**

New York State Department of Transportation
Traffic Count Hourly Report

ROAD #: **CR CR45** ROAD NAME: **DODGE RD**
DIRECTION: Eastbound FACTOR GROUP: 30
STATE DIR CODE: 6 WK OF YR: 46
DATE OF COUNT: 11/07/2016
NOTES LANE 1: One Lane EB - 35 MPH

COUNT TAKEN BY: ORG CODE: TTG INITIALS: DKS

FROM: **SWEET HOME RD**
REC. SERIAL #: EZ53
PLACEMENT: 850' E of Audubon Pkwy
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS
PROCESSED BY: ORG CODE: R05 INITIALS: RPJ

TO: **NY 270 CAMPBELL BLVD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05V46aTTG5196

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	T																											
2	W																											
3	T																											
4	F																											
5	S																											
6	S																											
7	M															**269**	**339**	**457**		**259**	**156**		**60**	**53**	**27**			
8	T	**37**	**11**	**6**	**3**	**4**	**20**												**482**	**264**	**153**	**114**	**75**	**55**	**30**			
9	W	**16**	**11**	**5**	**6**	**6**	**19**	**47**	**184**	**175**	**128**	**138**	**211**	**256**	**193**	**233**	**330**	**484**	**513**	**212**	**143**	**134**	**76**	**61**	**45**	3626	513	17
10	T	**16**	**7**	**2**	**6**	**5**	**17**	**53**	**204**	**170**	**144**	**152**	**213**	**250**	**220**	**268**	**365**	**466**	**447**	**226**	**159**	**141**	**94**	**62**	**43**	3730	466	16
11	F	**30**																										
12	S																											
13	S																											
14	M																											
15	T																											
16	W																											
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27	S																											
28	M																											
29	T																											
30	W																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
25	**10**	**4**	**5**	**5**	**19**	**49**	**191**	**170**	**134**	**143**	**209**	**250**	**203**	**254**	**341**	**463**	**475**	**237**	**151**	**128**	**75**	**57**	**36**	**3634**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
5	70	5	70	475	13%	0.987	1.017

ESTIMATED

AADT
3573

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR45** ROAD NAME: **DODGE RD**
DIRECTION: Westbound FACTOR GROUP: 30
STATE DIR CODE: 7 WK OF YR: 46
DATE OF COUNT: 11/07/2016
NOTES LANE 1: One Lane WB - 35 MPH

COUNT TAKEN BY: ORG CODE: TTG INITIALS: DKS

FROM: **SWEET HOME RD**
REC. SERIAL #: EZ96
PLACEMENT: 850' E of Audubon Pkwy
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS
PROCESSED BY: ORG CODE: R05 INITIALS: RPJ

TO: **NY 270 CAMPBELL BLVD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05V46aTTG5196

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	AM 12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	PM 12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	T																											
2	W																											
3	T																											
4	F																											
5	S																											
6	S																											
7	M															233	227	267		162	127		54	33	19			
8	T	**9**	**6**	**2**	**10**	**9**	**34**												**329**	**165**	**105**	**91**	**48**	**40**	**21**			
9	W	**7**	**7**	**2**	**14**	**7**	**38**	**138**	**416**	**453**	**239**	**188**	**168**	**207**	**226**	**250**	**227**	**241**	**275**	**178**	**103**	**81**	**63**	**43**	**14**	3585	453	8
10	T	**10**	**5**	**1**	**9**	**14**	**37**	**144**	**421**	**469**	**222**	**187**	**175**	**209**	**212**	**227**	**213**	**250**	**254**	**178**	**120**	**70**	**64**	**38**	**16**	3545	469	8
11	F	**9**																										
12	S																											
13	S																											
14	M																											
15	T																											
16	W																											
17	T																											
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26	S																											
27	S																											
28	M																											
29	T																											
30	W																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																									ADT
9	**6**	**2**	**11**	**10**	**36**	**139**	**413**	**455**	**227**	**186**	**170**	**205**	**216**	**234**	**219**	**250**	**282**	**169**	**113**	**80**	**56**	**38**	**18**	**3544**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
5	70	5	70	455	13%	0.987	1.017	**AADT 3485**

ROAD #: **CR45** ROAD NAME: **DODGE RD** FROM: **SWEET HOME RD** TO: **NY 270 CAMPBELL BLVD** COUNTY: **Erie**
STATION: **534232** STATE DIR CODE: **7** PLACEMENT: **850' E of Audubon Pkwy** **DATE OF COUNT: 11/07/2016**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

STATION: 535024

New York State Department of Transportation
Roadway Traffic Count Hourly Report

ROUTE/ROAD:	COMMERCE DR	FROM:	WOODRIDGE DR	TO:	SWEET HOME RD	REGION-COUNTY:	5-ERIE
FED DIR CODE:	3, 7	REF. MARKER:		FUNC. CLASS:	19 - U Local System	MUNI:	Amherst-Town-0019
ST DIR CODE:	7	END MILEPOST:	.82	FACTOR GROUP:	30	BIN:	
DOT ID:	157446	LANES BY DIR:	1 East 1 West	CC STN:		RR CROSSING:	
BEGIN DATE:	9/21/2014	WEEK OF YEAR:	38	ADDL DATA:		HPMS SAMPLE:	
NOTES 1:	West	PLACEMENT:	.2m E of John Glenn DR	JURISDICTION:	03-Town	1 WAY CODE:	
NOTES 2:						COUNT TYPE:	Vehicle
TAKEN BY:	TTG-DKS	PROCESSED BY:	DOT-VJR	BATCH ID:	DOT-R5 WW39A	SPEED LIMIT:	

DATE	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	DAILY TOTAL	HIGH COUNT	HIGH HOUR
9/21, Sun																	**82**	**77**	**96**	**81**	**42**	**34**	**28**	**12**	452		
9/22, Mon	**13**	**7**	**4**	**3**	**28**	**66**	**336**	**761**	**730**	**393**	**330**	**457**	**486**	**431**	**429**	**673**	**855**	**684**	**321**	**185**	**154**	**82**	**34**	**35**	7497	855	16-17
9/23, Tue	**28**	**5**	**45**	**6**	**36**	**69**	**347**	**783**	**739**	**414**	**319**	**330**	**491**	**397**	**374**	**650**	**842**	**707**	**351**	**226**	**137**	**72**	**35**	**28**	7431	842	16-17
9/24, Wed	**24**	**14**	**42**	**6**	**31**	**61**	**351**	**761**	**721**	**414**	**288**	**355**	**467**	**408**	**447**	**646**	**785**	**759**	**322**	**215**	**127**	**88**	**39**	**36**	7407	785	16-17
9/25, Thu	**22**	**11**	**37**	**8**	**27**	**77**	**336**																		518		
AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6 AM to Fri Noon)																									**AWDT**		
	25	**10**	**41**	**7**	**31**	**69**	**343**	**768**	**730**	**407**	**312**	**381**	**481**	**412**	**417**	**656**	**827**	**717**	**331**	**209**	**139**	**81**	**36**	**33**	7463		

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY Roadway High Hour	Roadway % of day	East High Hour	East % of day	West High Hour	West % of day
4	87	3	73	827	11.1	578	14.2	431	12.7

ESTIMATED AADT		
Roadway	East	West
7027	3821	3206

FACTOR

Month	Seasonal	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Axl
9	1.06	1.00	1.00	1.00	1.00	1.00			1.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

New York State Department of Transportation

EB Traffic Count Hourly Report

STATION: 535024

ROUTE/ROAD:	COMMERCE DR	FROM:	WOODRIDGE DR	TO:	SWEET HOME RD	REGION-COUNTY:	5-ERIE
FED DIR CODE:	3	REF. MARKER:		FUNC. CLASS:	19 - U Local System	MUNI:	Amherst-Town-0019
ST DIR CODE:	7	END MILEPOST:	.82	FACTOR GROUP:	30	BIN:	
DOT ID:	157446	LANES BY DIR:	1 East	CC STN:		RR CROSSING:	
BEGIN DATE:	9/21/2014	WEEK OF YEAR:	38	ADDL DATA:		HPMS SAMPLE:	
NOTES 1:	West	PLACEMENT:	.2m E of John Glenn DR	JURISDICTION:	03-Town	1 WAY CODE:	
NOTES 2:						COUNT TYPE:	Vehicle
TAKEN BY:	TTG-DKS	PROCESSED BY:	DOT-VJR	BATCH ID:	DOT-R5 WW39A	SPEED LIMIT:	

DATE	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	DAILY TOTAL	HIGH COUNT	HIGH HOUR
9/21, Sun																	**39**	**33**	**38**	**49**	**21**	**12**	**10**	**5**	207		
9/22, Mon	**5**	**1**	**2**	**1**	**9**	**26**	**65**	**334**	**289**	**185**	**176**	**304**	**261**	**213**	**214**	**406**	**583**	**509**	**192**	**123**	**78**	**31**	**13**	**21**	4041	583	16-17
9/23, Tue	**22**	**4**	**41**	**1**	**14**	**25**	**74**	**351**	**315**	**193**	**149**	**186**	**266**	**208**	**179**	**402**	**602**	**534**	**213**	**132**	**68**	**31**	**11**	**16**	4037	602	16-17
9/24, Wed	**20**	**12**	**39**	**1**	**13**	**20**	**80**	**354**	**292**	**192**	**147**	**199**	**258**	**203**	**224**	**402**	**550**	**577**	**179**	**132**	**67**	**40**	**18**	**20**	4039	577	17-18
9/25, Thu	**17**	**7**	**34**	**2**	**10**	**32**	**72**																		174		
AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6 AM to Fri Noon)																									**AWDT**		
	20	**8**	**38**	**1**	**12**	**26**	**73**	**346**	**299**	**190**	**157**	**230**	**262**	**208**	**206**	**403**	**578**	**540**	**195**	**129**	**71**	**34**	**14**	**19**	4058		

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY Roadway High Hour	Roadway % of day	East High Hour	East % of day	West High Hour	West % of day	ESTIMATED AADT Roadway	East	West
4	87	3	73	827	11.1	578	14.2	431	12.7	7027	3821	3206

FACTOR

Month	Seasonal	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Axl
9	1.06	1.00	1.00	1.00	1.00	1.00			1.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

STATION: 535024

New York State Department of Transportation
WB Traffic Count Hourly Report

ROUTE/ROAD:	COMMERCE DR	FROM:	WOODRIDGE DR	TO:	SWEET HOME RD	REGION-COUNTY:	5-ERIE
FED DIR CODE:	7	REF. MARKER:		FUNC. CLASS:	19 - U Local System	MUNI:	Amherst-Town-0019
ST DIR CODE:	7	END MILEPOST:	.82	FACTOR GROUP:	30	BIN:	
DOT ID:	157446	LANES BY DIR:	1 West	CC STN:		RR CROSSING:	
BEGIN DATE:	9/21/2014	WEEK OF YEAR:	38	ADDL DATA:		HPMS SAMPLE:	
NOTES 1:	West	PLACEMENT:	.2m E of John Glenn DR	JURISDICTION:	03-Town	1 WAY CODE:	
NOTES 2:						COUNT TYPE:	Vehicle
TAKEN BY:	TTG-DKS	PROCESSED BY:	DOT-VJR	BATCH ID:	DOT-R5 WW39A	SPEED LIMIT:	

DATE	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	DAILY TOTAL	HIGH COUNT	HIGH HOUR
9/21, Sun																	**43**	**44**	**58**	**32**	**21**	**22**	**18**	**7**	245		
9/22, Mon	**8**	**6**	**2**	**2**	**19**	**40**	**271**	**427**	**441**	**208**	**154**	**153**	**225**	**218**	**215**	**267**	**272**	**175**	**129**	**62**	**76**	**51**	**21**	**14**	3456	441	08-09
9/23, Tue	**6**	**1**	**4**	**5**	**22**	**44**	**273**	**432**	**424**	**221**	**170**	**144**	**225**	**189**	**195**	**248**	**240**	**173**	**138**	**94**	**69**	**41**	**24**	**12**	3394	432	07-08
9/24, Wed	**4**	**2**	**3**	**5**	**18**	**41**	**271**	**407**	**429**	**222**	**141**	**156**	**209**	**205**	**223**	**244**	**235**	**182**	**143**	**83**	**60**	**48**	**21**	**16**	3368	429	08-09
9/25, Thu	**5**	**4**	**3**	**6**	**17**	**45**	**264**																		344		
AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6 AM to Fri Noon)																									**AWDT**		
	5	**2**	**3**	**5**	**19**	**43**	**270**	**422**	**431**	**217**	**155**	**151**	**220**	**204**	**211**	**253**	**249**	**177**	**137**	**80**	**68**	**47**	**22**	**14**	3405		

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY Roadway High Hour	Roadway % of day	East High Hour	East % of day	West High Hour	West % of day	ESTIMATED AADT Roadway	East	West
4	87	3	73	827	11.1	578	14.2	431	12.7	7027	3821	3206

FACTOR

Month	Seasonal	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Axl
9	1.06	1.00	1.00	1.00	1.00	1.00			1.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Northbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 44
DATE OF COUNT: 10/24/2016
NOTES LANE 1: North
NOTES LANE 2: North
COUNT TAKEN BY: ORG CODE: TTG INITIALS: JM

FROM: **N ELLICOTT RD**
REC. SERIAL #: GC47
PLACEMENT: 654ft N of N Ellicott Creek
@ REF MARKER:
ADDL DATA: Class Speed
COUNT TYPE: VEHICLES
PROCESSED BY: ORG CODE: DOT INITIALS: SJW

TO: **COMMERCE DRIVE**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05C44aTTG5196

COUNTY: **Erie**
TOWN:
LION#:
BIN: 3367090
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	S																											
2	S																											
3	M																											
4	T																											
5	W																											
6	T																											
7	F																											
8	S																											
9	S																											
10	M																											
11	T																											
12	W																											
13	T																											
14	F																											
15	S																											
16	S																											
17	M																											
18	T																											
19	W																											
20	T																											
21	F																											
22	S																											
23	S																											
24	M																				**551**	**457**	**315**	**218**	**155**			
25	T	**95**	**35**	**29**	**38**	**46**	**131**	**528**	**977**	**1072**	**621**	**470**	**562**	**659**	**616**	**761**	**837**	**1028**	**1036**	**714**	**520**	**461**	**360**	**232**	**156**	11984	1072	8
26	W	**87**	**42**	**14**	**36**	**41**	**120**	**507**	**931**	**1085**	**628**	**527**	**554**	**618**	**722**	**758**	**852**	**1058**	**1061**	**744**	**555**	**425**	**426**	**251**	**161**	12203	1085	8
27	T	**93**	**37**	**25**	**42**	**40**	**142**	**488**	**951**	**1036**	**600**	**492**	**506**	**588**	**599**	**693**	**862**	**982**	**1040**	**630**	**540**	**454**	**365**	**282**	**188**	11675	1040	17
28	F	**98**	**56**	**37**	**43**	**40**	**111**	**446**	**959**	**988**	**626**																	
29	S																											
30	S																											
31	M																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
93	**42**	**26**	**40**	**42**	**126**	**492**	**954**	**1045**	**619**	**496**	**541**	**622**	**646**	**737**	**850**	**1023**	**1046**	**696**	**542**	**449**	**366**	**246**	**165**	**11904**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	87	4	87	1046	9%	1.000	1.074

ESTIMATED

AADT
11084

ROAD #: **CR301** ROAD NAME: **SWEET HOME RD** FROM: **N ELLICOTT RD** TO: **COMMERCE DRIVE** COUNTY: **Erie**
STATION: **536335** STATE DIR CODE: **1** PLACEMENT: **654ft N of N Ellicott Creek** **DATE OF COUNT: 10/24/2016**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

STATION: **536335**

New York State Department of Transportation
Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD** FROM: **N ELLICOTT RD** TO: **COMMERCE DRIVE** COUNTY: **Erie**
DIRECTION: Southbound FACTOR GROUP: 30 REC. SERIAL #: L442 FUNC. CLASS: 16 TOWN:
STATE DIR CODE: 2 WK OF YR: 44 PLACEMENT: 654ft N of N Ellicott Creek NHS: no LION#:
DATE OF COUNT: 10/24/2016 @ REF MARKER: JURIS: Village BIN: 3367090
NOTES LANE 1: South ADDL DATA: Class Speed CC Stn: RR CROSSING:
NOTES LANE 2: South COUNT TYPE: VEHICLES BATCH ID: DOT-R05C44aTTG5196 HPMS SAMPLE:
COUNT TAKEN BY: ORG CODE: TTG INITIALS: MJ PROCESSED BY: ORG CODE: DOT INITIALS: SJW

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	S																											
2	S																											
3	M																											
4	T																											
5	W																											
6	T																											
7	F																											
8	S																											
9	S																											
10	M																											
11	T																											
12	W																											
13	T																											
14	F																											
15	S																											
16	S																											
17	M																											
18	T																											
19	W																											
20	T																											
21	F																											
22	S																											
23	S																											
24	M																				**399**	**311**	**182**	**134**	**102**			
25	T	**69**	**25**	**16**	**24**	**51**	**179**	**474**	**943**	**769**	**596**	**571**	**643**	**718**	**609**	**625**	**1000**	**1321**	**1416**	**779**	**448**	**300**	**211**	**146**	**121**	12054	1416	17
26	W	**57**	**23**	**24**	**40**	**51**	**179**	**485**	**1005**	**901**	**661**	**630**	**647**	**771**	**713**	**752**	**1206**	**1380**	**1346**	**870**	**459**	**302**	**274**	**166**	**118**	13060	1380	16
27	T	**83**	**42**	**20**	**29**	**70**	**156**	**527**	**1040**	**912**	**650**	**572**	**592**	**808**	**663**	**688**	**983**	**1331**	**1307**	**742**	**489**	**337**	**227**	**167**	**125**	12560	1331	16
28	F	**58**	**43**	**18**	**35**	**45**	**162**	**447**	**952**	**841**	**664**																	
29	S																											
30	S																											
31	M																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
67	**33**	**20**	**32**	**54**	**169**	**483**	**985**	**856**	**643**	**591**	**627**	**766**	**662**	**688**	**1063**	**1344**	**1356**	**797**	**449**	**312**	**224**	**153**	**116**	**12490**

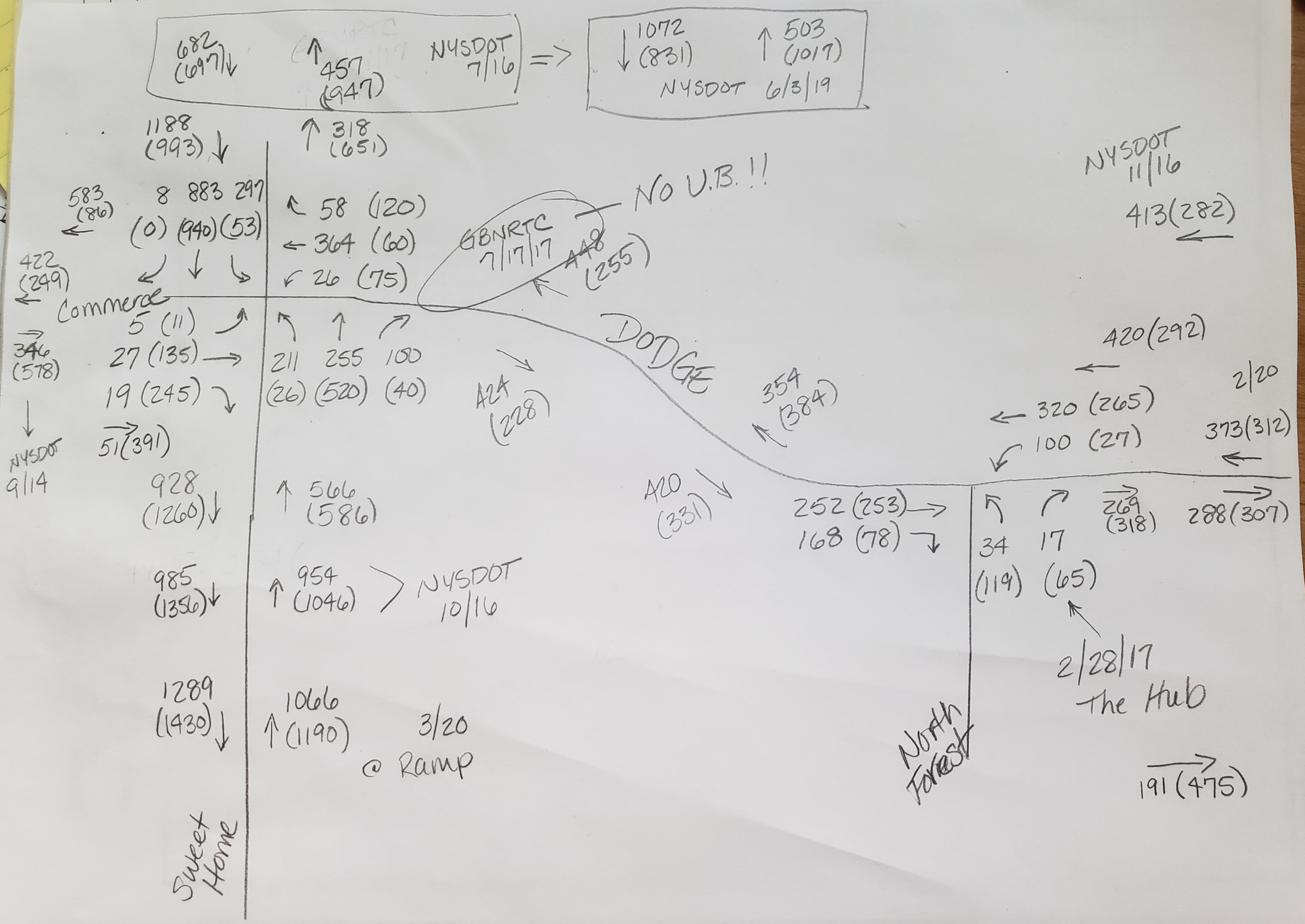
DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	87	4	87	1356	11%	1.000	1.074

ESTIMATED

AADT
11629

ROAD #: **CR301** ROAD NAME: **SWEET HOME RD** FROM: **N ELLICOTT RD** TO: **COMMERCE DRIVE** COUNTY: **Erie**
STATION: **536335** STATE DIR CODE: **2** PLACEMENT: **654ft N of N Ellicott Creek** **DATE OF COUNT: 10/24/2016**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)



682 (697)
457 (947)
NYSDOT 7/16
1072 (831)
503 (1017)
NYSDOT 6/3/19
1188 (993)
318 (651)
583 (86)
8 883 297
(0) (940) (53)
58 (120)
364 (60)
26 (75)
GBNRTC 7/17/17
NO U.B.!!
448 (255)
NYSDOT 11/16
413 (282)
422 (249)
Commerce
5 (11)
27 (135)
19 (245)
346 (578)
211 255 100
(26) (520) (40)
DODGE
420 (292)
2/20
354 (384)
320 (265)
100 (27)
373 (312)
424 (228)
51 (391)
NYSDOT 9/14
928 (1260)
566 (586)
420 (331)
252 (253)
168 (78)
34 (119)
17 (65)
269 (318)
288 (307)
985 (1356)
954 (1046)
NYSDOT 10/16
2/28/17
The Hub
1289 (1430)
1066 (1190)
3/20
@ Ramp
North Forest
191 (475)
Sweet Home

SRF ASSOCIATES
www.srfa.net
Transportation Planning / Engineering / Design

Muir Woods Site A, Town of Amherst, NY
Documentation of Ambient Traffic Volume Growth

Roadway	Segment starts at	Segment end at	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Annual Growth
North Forest Road	1.0 N of NY263/Turtle Creek Apt DWY	Dodge Road								2,189			1,809		1,825	1,845		-2.81%
Dodge Road	Sweet Home Road	NY270 Campbell Road					6,363			5,440				7,058	6,738			0.72%
Sweet Home Road	Commerce Drive	North French Road			16,280				16,606		15,052			16,008			18,050	0.86%
Sweet Home Road	N Ellicott Road	Commerce Drive	23,552		21,115			21,021						21,437				-0.78%
Commerce Drive	Woodbridge Road	Sweet Home Road										7,027						

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

PROJECT DETAILS

Project Name:	Muir Woods	Type of Project:	
Project No:		City:	
Country:		Built-up Area(Sq.ft):	
Analyst Name:	Amy Dake	Clients Name:	
Date:	6/22/2020	ZIP/Postal Code:	
State/Province:		No. of Scenarios:	2
Analysis Region:			

SCENARIO SUMMARY

Scenarios	Name	No. of Land Uses	Phases of Development	No. of Years to Project Traffic	User Group	Estimated New Vehicle Trips		
						Entry	Exit	Total
Scenario - 1	AM Peak Hour	5	1	0		47	85	132
Scenario - 2	PM Peak Hour	5	1	0		106	82	181

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Scenario - 1

Scenario Name: AM Peak Hour

User Group:

Dev. phase: 1

No. of Years to Project Traffic : 0

Analyst Note:

Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method / Rate/Equation	Entry / Split%	Exit / Split%	Total
210 - Single-Family Detached Housing	General Urban/Suburban	Dwelling Units	90	Weekday, Peak Hour of Adjacent Street Traffic,	Average	17	50	67
Data Source: Trip Gen Manual, 10th Ed +					0.74	25%	75%	
220 - Multifamily Housing (Low-Rise)	General Urban/Suburban	Dwelling Units	12	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LOG)	1	5	6
Data Source: Trip Gen Manual, 10th Ed +					Ln(T) =0.95Ln(X) - 0.51	23%	77%	
221 - Multifamily Housing (Mid-Rise) [Private]	General Urban/Suburban	Dwelling Units	100	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LOG)	9	25	34
Data Source: Trip Gen Manual, 10th Ed +					Ln(T) =0.98Ln(X) - 0.98	26%	74%	
710 - General Office Building	General Urban/Suburban	1000 Sq. Ft. GFA	15	Weekday, Peak Hour of Adjacent Street Traffic,	Average	14	2	17
Data Source: Trip Gen Manual, 10th Ed +					1.16	86%	14%	
875 - Department Store	General Urban/Suburban	1000 Sq. Ft. GFA	15	Weekday, Peak Hour of Adjacent Street	Average	6	3	9
Data Source: Trip Gen Manual, 10th Ed +					0.58	64%	36%	

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
210 - Single-Family Detached Housing	100	100	1	1	25	75
220 - Multifamily Housing (Low-Rise)	100	100	1	1	23	77
221 - Multifamily Housing (Mid-Rise) [Private]	100	100	1	1	26	74
710 - General Office Building	100	100	1	1	86	14
875 - Department Store	100	100	1	1	64	36

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
210 - Single-Family Detached Housing	17	50	0	0	17	50
	67		0		67	
220 - Multifamily Housing (Low-Rise)	1	5	0	0	1	5
	6		0		6	
221 - Multifamily Housing (Mid-Rise) [Private]	9	25	0	0	9	25
	34		0		34	
710 - General Office Building	15	2	0	0	14	2
	17		0		17	
875 - Department Store	6	3	0	0	6	3
	9		0		9	

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
210 - Single-Family Detached Housing	17	50	67
220 - Multifamily Housing (Low-Rise)	1	5	6

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221 - Multifamily Housing (Mid-Rise) [Private]	9	25	34
710 - General Office Building	14	2	17
875 - Department Store	6	3	9

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	47	85	132
External Vehicle Trips	47	85	132
New Vehicle Trips	47	85	132

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Scenario - 2

Scenario Name: PM Peak Hour
User Group:
Dev. phase: 1
No. of Years to Project Traffic : 0
Analyst Note:
Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method / Rate/Equation	Entry / Split%	Exit / Split%	Total
210 - Single-Family Detached Housing	General Urban/Suburban	Dwelling Units	90	Weekday, Peak Hour of Adjacent Street Traffic,	Average	56	33	89
Data Source: Trip Gen Manual, 10th Ed +					0.99	63%	37%	
220 - Multifamily Housing (Low-Rise)	General Urban/Suburban	Dwelling Units	12	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LOG)	6	3	9
Data Source: Trip Gen Manual, 10th Ed +					Ln(T) =0.89Ln(X) - 0.02	63%	37%	
221 - Multifamily Housing (Mid-Rise)	General Urban/Suburban	Dwelling Units	100	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LOG)	27	17	44
Data Source: Trip Gen Manual, 10th Ed +					Ln(T) =0.96Ln(X) - 0.63	61%	39%	
710 - General Office Building	General Urban/Suburban	1000 Sq. Ft. GFA	15	Weekday, Peak Hour of Adjacent Street Traffic,	Average	2	14	17
Data Source: Trip Gen Manual, 10th Ed +					1.15	16%	84%	
875 - Department Store [Private]	General Urban/Suburban	1000 Sq. Ft. GFA	15	Weekday, Peak Hour of Adjacent Street	Average	15	15	30
Data Source: Trip Gen Manual, 10th Ed +					1.95	50%	50%	

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
210 - Single-Family Detached Housing	100	100	1	1	63	37
220 - Multifamily Housing (Low-Rise)	100	100	1	1	63	37
221 - Multifamily Housing (Mid-Rise)	100	100	1	1	61	39
710 - General Office Building	100	100	1	1	16	84
875 - Department Store [Private]	100	100	1	1	50	50

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
210 - Single-Family Detached Housing	56	33	0	0	56	33
	89		0		89	
220 - Multifamily Housing (Low-Rise)	6	3	0	0	6	3
	9		0		9	
221 - Multifamily Housing (Mid-Rise)	27	17	0	0	27	17
	44		0		44	
710 - General Office Building	3	14	0	0	2	14
	17		0		17	
875 - Department Store [Private]	15	15	0	0	15	15
	30		0		30	

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
210 - Single-Family Detached Housing	56	33	89
220 - Multifamily Housing (Low-Rise)	6	3	9

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221 - Multifamily Housing (Mid-Rise)	27	17	44
710 - General Office Building	2	14	17
875 - Department Store [Private]	15	15	30

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	106	82	188
External Vehicle Trips	106	82	188
New Vehicle Trips	106	82	188

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PROPOSED MUIR WOODS SECTION A
TOWN OF AMHERST, NY
AM PEAK

Fig 3 Fig 4 Fig 6 Fig 7 Fig 8

Num of yrs: 2

LOCATION NUMBER	INTERSECTION DESCRIPTION	2020 Existing Volume	2022 Bkgd Vol 1.00%	Muir Woods Site B	2022 Bkgrd Volume	Proposed Muir Woods Section A Enter Dist. %	Exit Dist. %	Trips IN 47	Trips OUT 85	Total Site Trips	FULL Build Volumes
1	Sweet Home Road Dodge Road/Commerce Drive										
	SR	8	8		8						8
	ST	883	901	15	916						916
	SL	297	303		303	20%		9		9	312
	WR	58	59		59		20%		17	17	76
	WT	364	371		371		10%		9	9	380
	WL	26	27		27		25%		21	21	48
	NR	100	102		102	25%		12		12	114
	NT	450	459	11	470						470
	NL	211	215		215						215
	ER	50	51		51						51
	ET	30	31		31	10%		5		5	36
	EL	10	10		10						10
2	Dodge Road Proposed North Driveway										
	SR						25%		21	21	21
	ST										
	SL						15%		13	13	13
	WR					10%		5		5	5
	WT	361	368	18	386		30%		26	26	412
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	458	467	11	478	25%		12		12	490
	EL					30%		14		14	14
3	Dodge Road Proposed Middle Out Driveway										
	SR						10%		9	9	9
	ST										
	SL						5%		4	4	4
	WR										
	WT	361	368	18	386	10%	15%	5	13	17	403
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	458	467	11	478	25%	15%	12	13	25	503
	EL										
4	Dodge Road Proposed Middle In Driveway										
	SR										
	ST										
	SL										
	WR					5%		2		2	2
	WT	361	368	18	386	10%	20%	5	17	22	408
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	458	467	11	478	15%	20%	7	17	24	502
	EL					10%		5		5	5
5	Dodge Road Proposed South Driveway										
	SR						20%		17	17	17
	ST										
	SL						25%		21	21	21
	WR					30%		14		14	14
	WT	361	368	18	386	15%		7		7	393
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	458	467	11	478		20%		17	17	495
	EL					15%		7		7	7
6	Dodge Road North Forest Road										
	SR										
	ST										
	SL										
	WR										
	WT	323	329	18	347	30%		14		14	361
	WL	102	104		104						104
	NR	20	20		20						20
	NT										
	NL	38	39		39	15%		7		7	46
	ER	170	173		173		15%		13	13	186
	ET	288	294	11	305		30%		26	26	331
	EL										

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PROPOSED MUIR WOODS SECTION A
TOWN OF AMHERST, NY
PM PEAK

Fig 3 Fig 4 Fig 6 Fig 7 Fig 8

Num of yrs: 2

LOCATION NUMBER	INTERSECTION DESCRIPTION	2020 Existing Volume	2022 Bkgd Vol 1.00%	Muir Woods Site B	2022 Bkgrd Volume	Proposed Muir Woods Section A Enter Dist. %	Proposed Muir Woods Section A Exit Dist. %	Proposed Muir Woods Section A Trips IN 106	Proposed Muir Woods Section A Trips OUT 82	Total Site Trips	FULL Build Volumes
1	Sweet Home Road Dodge Road/Commerce Drive										
	SR	10	10		10						10
	ST	940	959	21	980						980
	SL	60	61		61	20%		21		21	82
	WR	150	153		153		20%		16	16	169
	WT	60	61		61		10%		8	8	69
	WL	75	77		77		25%		21	21	98
	NR	125	128		128	25%		27		27	155
	NT	740	755	13	768						768
	NL	175	179		179						179
	ER	260	265		265						265
	ET	150	153		153	10%		11		11	164
	EL	25	26		26						26
2	Dodge Road Proposed North Driveway										
	SR						25%		21	21	21
	ST										
	SL						15%		12	12	12
	WR					10%		11		11	11
	WT	389	397	32	429		30%		25	25	454
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	339	346	13	359	25%		27		27	386
	EL					30%		32		32	32
3	Dodge Road Proposed Middle Out Driveway										
	SR						10%		8	8	8
	ST										
	SL						5%		4	4	4
	WR										
	WT	389	397	32	429	10%	15%	11	12	23	452
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	339	346	13	359	25%	15%	27	12	39	398
	EL										
4	Dodge Road Proposed Middle In Driveway										
	SR										
	ST										
	SL										
	WR					5%		5		5	5
	WT	389	397	32	429	10%	20%	11	16	27	456
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	339	346	13	359	15%	20%	16	16	32	391
	EL					10%		11		11	11
5	Dodge Road Proposed South Driveway										
	SR						20%		16	16	16
	ST										
	SL						25%		21	21	21
	WR					30%		32		32	32
	WT	389	397	32	429	15%		16		16	445
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	339	346	13	359		20%		16	16	375
	EL					15%		16		16	16
6	Dodge Road North Forest Road										
	SR										
	ST										
	SL										
	WR										
	WT	268	273	32	305	30%		32		32	337
	WL	30	31		31						31
	NR	68	69		69						69
	NT										
	NL	121	123		123	15%		16		16	139
	ER	81	83		83		15%		12	12	95
	ET	258	263	13	276		30%		25	25	301
	EL										

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SWEET HOME/DODGE/COMMERCE

Phase Times (next/2/2/2, next/2/2/7/6) E/W									
	1	2	3	4	5	6 SB	7	8	
Movement	SBL	NB			NBL	[redacted]		[redacted]	
Minimum Green	10	40	0	0	10	40	0	15	0 - 255 sec.
Passage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 sec.
Yellow	3.2	4.3	0.0	0.0	3.2	4.3	0.0	3.9	0.0 - 25.5 sec.
Red Clearance	1.1	1.4	0.0	0.0	1.1	1.4	0.0	1.8	0.0 - 25.5 sec. or 0 - 255 sec.
Max 1	20	45	0	0	20	45	0	30	0 - 255 sec
Max 2	0	0	0	0	0	0	0	0	0 - 255 sec
Walk	0	7	0	0	0	7	0	7	0 - 255 sec
Ped Clear	0	15	0	0	0	15	0	15	0 - 255 sec
Seconds Per Actuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 sec.
Time Before Reduction	0	0	0	0	0	0	0	0	0 - 255 sec
Time to Reduce	0	0	0	0	0	0	0	0	0 - 255 sec
Minimum Gap	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0 - 25.5 sec.
Max Variable Initial	0	0	0	0	0	0	0	0	0 - 255 sec
Max Extend	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 sec.
Auto Max	0	0	0	0	0	0	0	0	0 - 255 sec
Inhibit Min Yellow									X = On
Red Decimal Off									X = On

Other Controller Functions (next/2/2/9)									
Phase -->	1	2	3	4	5	6	7	8	
Inhibit Simultaneous Gap Out									X = On
Last Car Passage	2	0 = recall phase, 1 = last car passage, 2 = NOT recall - Not last car passage							
Red Revert (+2seconds)	0.0	0 - 25.5 sec.							
Auto Ped Clear		X = On							
Flashing Don't Walk Thru Yellow		X = On							
Soft Recall / Red Rest Delay	0.0	0 - 25.5 sec.							
Change Sequence	X	X = On (After a download with a power on - off cycle)							
Phase -->	1	2	3	4	5	6	7	8	
Red Clear Extension Detector	0	0	0	0	0	0	0	0	0 = none 1 - 32 = detector 1 - 32
Red Clear Extension Red Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0 - 25.5 sec.

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A3

Level of Service:
Criteria and Definitions

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Level of Service Criteria

Highway Capacity Manual 2016

SIGNALIZED INTERSECTIONS

Level of Service is a qualitative measure describing operational conditions within a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. Level of Service for signalized intersections is defined in terms of delay specifically, average total delay per vehicle for a 15 minute analysis period. The ranges are as follows:

Level of Service	Control Delay per vehicle (seconds)
A	< 10
B	10 – 20
C	20 – 35
D	35 – 55
E	55 – 80
F	>80

UNSIGNALIZED INTERSECTIONS

Level of Service for unsignalized intersections is also defined in terms of delay. However, the delay criteria are different from a signalized intersection. The primary reason for this is driver expectation that a signalized intersection is designed to carry higher volumes than an unsignalized intersection. The total delay threshold for any given Level of Service is less for an unsignalized intersection than for a signalized intersection. The ranges are as follows:

Level of Service	Control Delay per vehicle (seconds)
A	< 10
B	10 – 15
C	15 – 25
D	25 – 35
E	35 - 50
F	>50

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A4

Level of Service Calculations: Existing Conditions

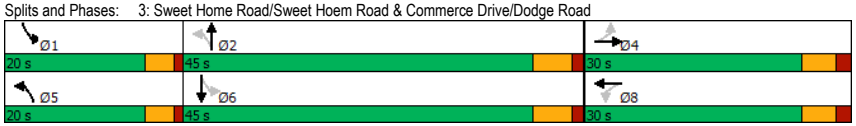
Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	30	50	26	364	58	211	450	100	297	883	8
Future Volume (vph)	10	30	50	26	364	58	211	450	100	297	883	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.906			0.979			0.973			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1128	1434	0	1612	1839	0	1703	3366	0	1787	3502	0
Flt Permitted	0.163			0.693			0.117			0.308		
Satd. Flow (perm)	194	1434	0	1176	1839	0	210	3366	0	579	3502	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		62			8			34			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	60%	0%	32%	12%	1%	2%	6%	4%	6%	1%	3%	0%
Adj. Flow (vph)	12	37	62	32	449	72	260	556	123	367	1090	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	99	0	32	521	0	260	679	0	367	1100	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.5	24.5		24.5	24.5		49.5	34.2		49.0	34.0	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.56	0.39		0.56	0.39	
v/c Ratio	0.23	0.22		0.10	1.01		0.74	0.51		0.72	0.82	
Control Delay	40.5	14.2		27.7	76.4		31.5	20.9		17.6	30.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	40.5	14.2		27.7	76.4		31.5	20.9		17.6	30.0	
LOS	D	B		C	E		C	C		B	C	
Approach Delay		17.0			73.5			23.8			26.9	
Approach LOS		B			E			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 88.2			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 34.0		Intersection LOS: C	
Intersection Capacity Utilization 72.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	288	170	102	323	38	20
Future Volume (vph)	288	170	102	323	38	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.950				0.953	
Flt Protected				0.988	0.968	
Satd. Flow (prot)	1783	0	0	1863	1753	0
Flt Permitted				0.988	0.968	
Satd. Flow (perm)	1783	0	0	1863	1753	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Adj. Flow (vph)	374	221	132	419	49	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	595	0	0	551	75	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.5%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	288	170	102	323	38	20
Future Vol, veh/h	288	170	102	323	38	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	374	221	132	419	49	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	595	0	1168	485
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	683	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	991	-	216	586
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	505	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	991	-	178	586
Mov Cap-2 Maneuver	-	-	-	-	178	-
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	417	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	27.5
HCM LOS			D

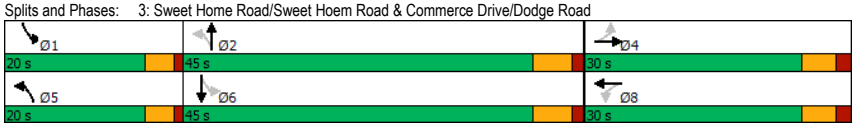
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	234	-	-	991	-
HCM Lane V/C Ratio	0.322	-	-	0.134	-
HCM Control Delay (s)	27.5	-	-	9.2	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.3	-	-	0.5	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	150	260	75	60	150	175	740	125	60	940	10
Future Volume (vph)	25	150	260	75	60	150	175	740	125	60	940	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.905			0.893			0.978			0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1530	1696	0	1805	1675	0	1612	3476	0	1805	3567	0
Flt Permitted	0.435			0.164			0.095			0.188		
Satd. Flow (perm)	700	1696	0	312	1675	0	161	3476	0	357	3567	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		88			127			24			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	18%	2%	1%	0%	2%	1%	12%	1%	5%	0%	1%	0%
Adj. Flow (vph)	33	197	342	99	79	197	230	974	164	79	1237	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	539	0	99	276	0	230	1138	0	79	1250	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.4	24.4		24.4	24.4		55.8	45.4		45.0	36.6	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.62	0.50		0.50	0.41	
v/c Ratio	0.17	1.03		1.18	0.51		0.73	0.65		0.27	0.86	
Control Delay	30.3	77.7		191.3	19.3		32.4	18.8		10.1	32.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	30.3	77.7		191.3	19.3		32.4	18.8		10.1	32.2	
LOS	C	E		F	B		C	B		B	C	
Approach Delay		75.0			64.7			21.1			30.9	
Approach LOS		E			E			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 90.3			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 37.6		Intersection LOS: D	
Intersection Capacity Utilization 81.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	258	81	30	268	121	68
Future Volume (vph)	258	81	30	268	121	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.968				0.951	
Flt Protected				0.995	0.969	
Satd. Flow (prot)	1839	0	0	1890	1751	0
Flt Permitted				0.995	0.969	
Satd. Flow (perm)	1839	0	0	1890	1751	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	344	108	40	357	161	91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	452	0	0	397	252	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.1%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	6.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	258	81	30	268	121	68
Future Vol, veh/h	258	81	30	268	121	68
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	344	108	40	357	161	91

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	452	0	835	398
Stage 1	-	-	-	-	398	-
Stage 2	-	-	-	-	437	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1119	-	340	656
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	655	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1119	-	325	656
Mov Cap-2 Maneuver	-	-	-	-	325	-
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	626	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	28.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	397	-	-	1119	-
HCM Lane V/C Ratio	0.635	-	-	0.036	-
HCM Control Delay (s)	28.6	-	-	8.3	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	4.2	-	-	0.1	-

A5

Level of Service Calculations: Background Conditions

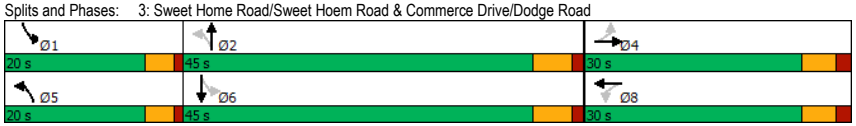
Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	31	51	27	371	59	215	470	102	303	916	8
Future Volume (vph)	10	31	51	27	371	59	215	470	102	303	916	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.906			0.979			0.973			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1128	1435	0	1612	1839	0	1703	3366	0	1787	3502	0
Flt Permitted	0.163			0.692			0.112			0.298		
Satd. Flow (perm)	194	1435	0	1174	1839	0	201	3366	0	561	3502	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		63			8			33			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	60%	0%	32%	12%	1%	2%	6%	4%	6%	1%	3%	0%
Adj. Flow (vph)	12	38	63	33	458	73	265	580	126	374	1131	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	101	0	33	531	0	265	706	0	374	1141	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.5	24.5		24.5	24.5		51.2	35.6		50.2	35.1	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.57	0.40		0.56	0.39	
v/c Ratio	0.23	0.23		0.10	1.05		0.75	0.52		0.75	0.83	
Control Delay	41.1	14.3		28.0	86.8		33.3	21.0		19.0	30.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	41.1	14.3		28.0	86.8		33.3	21.0		19.0	30.8	
LOS	D	B		C	F		C	C		B	C	
Approach Delay		17.1			83.4			24.3			27.9	
Approach LOS		B			F			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 89.6			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.05			
Intersection Signal Delay: 36.3		Intersection LOS: D	
Intersection Capacity Utilization 73.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	305	173	104	347	39	20
Future Volume (vph)	305	173	104	347	39	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.951				0.954	
Flt Protected				0.989	0.968	
Satd. Flow (prot)	1784	0	0	1865	1755	0
Flt Permitted				0.989	0.968	
Satd. Flow (perm)	1784	0	0	1865	1755	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Adj. Flow (vph)	396	225	135	451	51	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	621	0	0	586	77	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.0%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	305	173	104	347	39	20
Future Vol, veh/h	305	173	104	347	39	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	396	225	135	451	51	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	621	0	1230	509
Stage 1	-	-	-	-	509	-
Stage 2	-	-	-	-	721	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	969	-	198	568
Stage 1	-	-	-	-	608	-
Stage 2	-	-	-	-	485	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	969	-	161	568
Mov Cap-2 Maneuver	-	-	-	-	161	-
Stage 1	-	-	-	-	608	-
Stage 2	-	-	-	-	395	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	31.1
HCM LOS			D

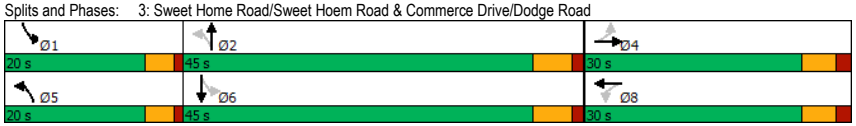
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	213	-	-	969	-
HCM Lane V/C Ratio	0.36	-	-	0.139	-
HCM Control Delay (s)	31.1	-	-	9.3	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.5	-	-	0.5	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	153	265	77	61	153	179	768	128	61	980	10
Future Volume (vph)	26	153	265	77	61	153	179	768	128	61	980	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.905			0.893			0.979			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1530	1696	0	1805	1675	0	1612	3480	0	1805	3571	0
Flt Permitted	0.421			0.164			0.093			0.174		
Satd. Flow (perm)	678	1696	0	312	1675	0	158	3480	0	331	3571	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		88			128			24			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	18%	2%	1%	0%	2%	1%	12%	1%	5%	0%	1%	0%
Adj. Flow (vph)	34	201	349	101	80	201	236	1011	168	80	1289	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	550	0	101	281	0	236	1179	0	80	1302	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.4	24.4		24.4	24.4		57.2	46.6		46.2	37.7	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.62	0.51		0.50	0.41	
v/c Ratio	0.19	1.07		1.23	0.52		0.75	0.66		0.29	0.89	
Control Delay	30.9	88.5		206.8	19.9		34.3	19.2		10.3	33.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	30.9	88.5		206.8	19.9		34.3	19.2		10.3	33.8	
LOS	C	F		F	B		C	B		B	C	
Approach Delay		85.1			69.3			21.7			32.5	
Approach LOS		F			E			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 91.6			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.23			
Intersection Signal Delay: 40.3		Intersection LOS: D	
Intersection Capacity Utilization 83.7%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	276	83	31	305	123	69
Future Volume (vph)	276	83	31	305	123	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.969				0.951	
Flt Protected				0.995	0.969	
Satd. Flow (prot)	1841	0	0	1890	1751	0
Flt Permitted				0.995	0.969	
Satd. Flow (perm)	1841	0	0	1890	1751	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	368	111	41	407	164	92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	479	0	0	448	256	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.4%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	8.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	276	83	31	305	123	69
Future Vol, veh/h	276	83	31	305	123	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	368	111	41	407	164	92

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	479	0	913	424
Stage 1	-	-	-	-	424	-
Stage 2	-	-	-	-	489	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1094	-	306	634
Stage 1	-	-	-	-	664	-
Stage 2	-	-	-	-	621	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1094	-	291	634
Mov Cap-2 Maneuver	-	-	-	-	291	-
Stage 1	-	-	-	-	664	-
Stage 2	-	-	-	-	591	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	35.9
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	361	-	-	1094	-
HCM Lane V/C Ratio	0.709	-	-	0.038	-
HCM Control Delay (s)	35.9	-	-	8.4	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	5.2	-	-	0.1	-

A6

Level of Service Calculations: Full Build Conditions

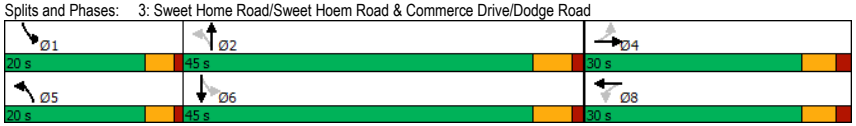
Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	36	51	48	380	76	215	470	114	312	916	8
Future Volume (vph)	10	36	51	48	380	76	215	470	114	312	916	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		150	0		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.912			0.975			0.971			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1128	1458	0	1612	1831	0	1703	3358	0	1787	3502	0
Flt Permitted	0.163			0.688			0.113			0.285		
Satd. Flow (perm)	194	1458	0	1167	1831	0	203	3358	0	536	3502	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		63			10			38			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	60%	0%	32%	12%	1%	2%	6%	4%	6%	1%	3%	0%
Adj. Flow (vph)	12	44	63	59	469	94	265	580	141	385	1131	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	107	0	59	563	0	265	721	0	385	1141	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.5	24.5		24.5	24.5		50.8	35.3		50.5	35.1	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.57	0.39		0.56	0.39	
v/c Ratio	0.23	0.24		0.18	1.11		0.75	0.54		0.77	0.83	
Control Delay	41.1	15.0		29.3	106.8		33.3	21.2		21.2	30.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	41.1	15.0		29.3	106.8		33.3	21.2		21.2	30.7	
LOS	D	B		C	F		C	C		C	C	
Approach Delay		17.7			99.5			24.5			28.3	
Approach LOS		B			F			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 89.6			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 40.4		Intersection LOS: D	
Intersection Capacity Utilization 75.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	331	186	104	361	46	20
Future Volume (vph)	331	186	104	361	46	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.951				0.959	
Flt Protected				0.989	0.966	
Satd. Flow (prot)	1784	0	0	1865	1760	0
Flt Permitted				0.989	0.966	
Satd. Flow (perm)	1784	0	0	1865	1760	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Adj. Flow (vph)	430	242	135	469	60	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	672	0	0	604	86	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.3%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	331	186	104	361	46	20
Future Vol, veh/h	331	186	104	361	46	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	430	242	135	469	60	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	672	0	1290	551
Stage 1	-	-	-	-	551	-
Stage 2	-	-	-	-	739	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	928	-	182	538
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	476	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	928	-	146	538
Mov Cap-2 Maneuver	-	-	-	-	146	-
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	382	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	39.6
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	187	-	-	928	-
HCM Lane V/C Ratio	0.458	-	-	0.146	-
HCM Control Delay (s)	39.6	-	-	9.5	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	2.2	-	-	0.5	-

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	14	490	412	5	13	21
Future Volume (vph)	14	490	412	5	13	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999		0.916	
Flt Protected		0.999			0.981	
Satd. Flow (prot)	0	1861	1861	0	1674	0
Flt Permitted		0.999			0.981	
Satd. Flow (perm)	0	1861	1861	0	1674	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		240	235		405	
Travel Time (s)		5.5	5.3		9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	533	448	5	14	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	548	453	0	37	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.6

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	14	490	412	5	13	21
Future Vol, veh/h	14	490	412	5	13	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	533	448	5	14	23

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	453	0	-	0	1014	451
Stage 1	-	-	-	-	451	-
Stage 2	-	-	-	-	563	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1108	-	-	-	264	608
Stage 1	-	-	-	-	642	-
Stage 2	-	-	-	-	570	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1108	-	-	-	259	608
Mov Cap-2 Maneuver	-	-	-	-	259	-
Stage 1	-	-	-	-	630	-
Stage 2	-	-	-	-	570	-

Approach	SE	NW	SW
HCM Control Delay, s	0.2	0	14.9
HCM LOS			B

Minor Lane/Major Mvmt	NWT	NWR	SEL	SETSWLn1	
Capacity (veh/h)	-	-	1108	-	401
HCM Lane V/C Ratio	-	-	0.014	-	0.092
HCM Control Delay (s)	-	-	8.3	0	14.9
HCM Lane LOS	-	-	A	A	B
HCM 95th %tile Q(veh)	-	-	0	-	0.3

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	0	503	403	0	4	9
Future Volume (vph)	0	503	403	0	4	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.904	
Flt Protected					0.986	
Satd. Flow (prot)	0	1863	1863	0	1660	0
Flt Permitted					0.986	
Satd. Flow (perm)	0	1863	1863	0	1660	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		235	240		378	
Travel Time (s)		5.3	5.5		8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	547	438	0	4	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	547	438	0	14	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.2

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	0	503	403	0	4	9
Future Vol, veh/h	0	503	403	0	4	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	547	438	0	4	10

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	985	438
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	547	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	275	619
Stage 1	0	-	-	0	651	-
Stage 2	0	-	-	0	580	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	275	619
Mov Cap-2 Maneuver	-	-	-	-	275	-
Stage 1	-	-	-	-	651	-
Stage 2	-	-	-	-	580	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	NWT	SETSWLn1
Capacity (veh/h)	-	- 447
HCM Lane V/C Ratio	-	- 0.032
HCM Control Delay (s)	-	- 13.3
HCM Lane LOS	-	- B
HCM 95th %tile Q(veh)	-	- 0.1

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	5	502	408	2	0	0
Future Volume (vph)	5	502	408	2	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999			
Flt Protected						
Satd. Flow (prot)	0	1863	1861	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	1861	0	0	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		240	291		382	
Travel Time (s)		5.5	6.6		8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	546	443	2	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	551	445	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.7%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	7	495	393	14	21	17
Future Volume (vph)	7	495	393	14	21	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.995		0.941	
Flt Protected		0.999			0.973	
Satd. Flow (prot)	0	1861	1853	0	1706	0
Flt Permitted		0.999			0.973	
Satd. Flow (perm)	0	1861	1853	0	1706	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		291	117		311	
Travel Time (s)		6.6	2.7		7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	538	427	15	23	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	546	442	0	41	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 41.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.7

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	7	495	393	14	21	17
Future Vol, veh/h	7	495	393	14	21	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	538	427	15	23	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	442	0	-	0	989	435
Stage 1	-	-	-	-	435	-
Stage 2	-	-	-	-	554	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1118	-	-	-	274	621
Stage 1	-	-	-	-	653	-
Stage 2	-	-	-	-	575	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1118	-	-	-	271	621
Mov Cap-2 Maneuver	-	-	-	-	271	-
Stage 1	-	-	-	-	646	-
Stage 2	-	-	-	-	575	-

Approach	SE	NW	SW
HCM Control Delay, s	0.1	0	16.2
HCM LOS			C

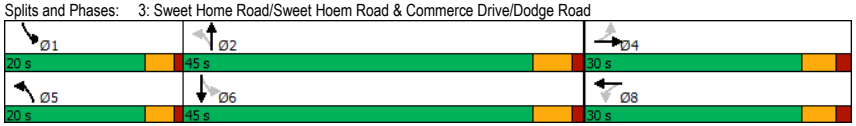
Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	1118	-	362
HCM Lane V/C Ratio	-	-	0.007	-	0.114
HCM Control Delay (s)	-	-	8.2	0	16.2
HCM Lane LOS	-	-	A	A	C
HCM 95th %tile Q(veh)	-	-	0	-	0.4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	164	265	98	69	169	179	768	155	82	980	10
Future Volume (vph)	26	164	265	98	69	169	179	768	155	82	980	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		150	0		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.907			0.894			0.975			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1530	1700	0	1805	1677	0	1612	3462	0	1805	3571	0
Flt Permitted	0.369			0.164			0.093			0.153		
Satd. Flow (perm)	594	1700	0	312	1677	0	158	3462	0	291	3571	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		82			124			30			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	18%	2%	1%	0%	2%	1%	12%	1%	5%	0%	1%	0%
Adj. Flow (vph)	34	216	349	129	91	222	236	1011	204	108	1289	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	565	0	129	313	0	236	1215	0	108	1302	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.4	24.4		24.4	24.4		57.1	45.8		47.0	37.7	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.62	0.50		0.51	0.41	
v/c Ratio	0.22	1.10		1.57	0.58		0.75	0.70		0.39	0.88	
Control Delay	32.1	100.2		333.9	22.9		34.8	20.5		11.9	33.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	32.1	100.2		333.9	22.9		34.8	20.5		11.9	33.7	
LOS	C	F		F	C		C	C		B	C	
Approach Delay		96.4			113.7			22.8			32.0	
Approach LOS		F			F			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 91.5			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.57			
Intersection Signal Delay: 47.7		Intersection LOS: D	
Intersection Capacity Utilization 85.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	301	95	31	337	139	69
Future Volume (vph)	301	95	31	337	139	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.968				0.955	
Flt Protected				0.996	0.968	
Satd. Flow (prot)	1839	0	0	1892	1756	0
Flt Permitted				0.996	0.968	
Satd. Flow (perm)	1839	0	0	1892	1756	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	401	127	41	449	185	92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	528	0	0	490	277	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	13

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	301	95	31	337	139	69
Future Vol, veh/h	301	95	31	337	139	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	401	127	41	449	185	92

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	528	0	996	465
Stage 1	-	-	-	-	465	-
Stage 2	-	-	-	-	531	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1049	-	273	602
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	594	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1049	-	259	602
Mov Cap-2 Maneuver	-	-	-	-	259	-
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	563	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	59.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	319	-	-	1049	-
HCM Lane V/C Ratio	0.869	-	-	0.039	-
HCM Control Delay (s)	59.6	-	-	8.6	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	7.9	-	-	0.1	-

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	32	386	454	11	12	21
Future Volume (vph)	32	386	454	11	12	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.997		0.914	
Flt Protected		0.996			0.982	
Satd. Flow (prot)	0	1855	1857	0	1672	0
Flt Permitted		0.996			0.982	
Satd. Flow (perm)	0	1855	1857	0	1672	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		240	235		405	
Travel Time (s)		5.5	5.3		9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	420	493	12	13	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	455	505	0	36	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 56.8%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.9

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	32	386	454	11	12	21
Future Vol, veh/h	32	386	454	11	12	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	420	493	12	13	23

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	505	0	-	0	989	499
Stage 1	-	-	-	-	499	-
Stage 2	-	-	-	-	490	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1060	-	-	-	274	572
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	616	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1060	-	-	-	262	572
Mov Cap-2 Maneuver	-	-	-	-	262	-
Stage 1	-	-	-	-	584	-
Stage 2	-	-	-	-	616	-

Approach	SE	NW	SW
HCM Control Delay, s	0.7	0	14.9
HCM LOS			B

Minor Lane/Major Mvmt	NWT	NWR	SEL	SETSWLn1
Capacity (veh/h)	-	-	1060	- 400
HCM Lane V/C Ratio	-	-	0.033	- 0.09
HCM Control Delay (s)	-	-	8.5	0 14.9
HCM Lane LOS	-	-	A	A B
HCM 95th %tile Q(veh)	-	-	0.1	- 0.3

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑		Y	
Traffic Volume (vph)	0	398	452	0	4	8
Future Volume (vph)	0	398	452	0	4	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.907	
Flt Protected					0.985	
Satd. Flow (prot)	0	1863	1863	0	1664	0
Flt Permitted					0.985	
Satd. Flow (perm)	0	1863	1863	0	1664	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		235	240		378	
Travel Time (s)		5.3	5.5		8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	433	491	0	4	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	433	491	0	13	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.2

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑		Y	
Traffic Vol, veh/h	0	398	452	0	4	8
Future Vol, veh/h	0	398	452	0	4	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	433	491	0	4	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	924	491
Stage 1	-	-	-	-	491	-
Stage 2	-	-	-	-	433	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	299	578
Stage 1	0	-	-	0	615	-
Stage 2	0	-	-	0	654	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	299	578
Mov Cap-2 Maneuver	-	-	-	-	299	-
Stage 1	-	-	-	-	615	-
Stage 2	-	-	-	-	654	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	13.4
HCM LOS			B

Minor Lane/Major Mvmt	NWT	SETSWLn1
Capacity (veh/h)	-	- 441
HCM Lane V/C Ratio	-	- 0.03
HCM Control Delay (s)	-	- 13.4
HCM Lane LOS	-	- B
HCM 95th %tile Q(veh)	-	- 0.1

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	11	391	456	5	0	0
Future Volume (vph)	11	391	456	5	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999			
Flt Protected		0.999				
Satd. Flow (prot)	0	1861	1861	0	0	0
Flt Permitted		0.999				
Satd. Flow (perm)	0	1861	1861	0	0	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		240	291		382	
Travel Time (s)		5.5	6.6		8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	425	496	5	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	437	501	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.8%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	16	375	445	32	21	16
Future Volume (vph)	16	375	445	32	21	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.991		0.943	
Flt Protected		0.998			0.972	
Satd. Flow (prot)	0	1859	1846	0	1707	0
Flt Permitted		0.998			0.972	
Satd. Flow (perm)	0	1859	1846	0	1707	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		291	117		311	
Travel Time (s)		6.6	2.7		7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	408	484	35	23	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	425	519	0	40	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 42.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.8

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	16	375	445	32	21	16
Future Vol, veh/h	16	375	445	32	21	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	408	484	35	23	17

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	519	0	-	0	944	502
Stage 1	-	-	-	-	502	-
Stage 2	-	-	-	-	442	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1047	-	-	-	291	569
Stage 1	-	-	-	-	608	-
Stage 2	-	-	-	-	648	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1047	-	-	-	285	569
Mov Cap-2 Maneuver	-	-	-	-	285	-
Stage 1	-	-	-	-	595	-
Stage 2	-	-	-	-	648	-

Approach	SE	NW	SW
HCM Control Delay, s	0.3	0	16.1
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	1047	-	363
HCM Lane V/C Ratio	-	-	0.017	-	0.111
HCM Control Delay (s)	-	-	8.5	0	16.1
HCM Lane LOS	-	-	A	A	C
HCM 95th %tile Q(veh)	-	-	0.1	-	0.4

Packet P

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STORMWATER POLLUTION PREVENTION PLAN for CONSTRUCTION ACTIVITIES

Sawyer's Landing

Dodge & Sweet Home Road
Town of Amherst, Erie County, New York

Prepared for

Sawyer's Landing LLC

c/o Severyn Development
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February 2021



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101 SCOPE

A. **PURPOSE:** Sawyer's Landing LLC (SL) has placed an emphasis on following the New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit for Stormwater Discharges from Construction Activity governing storm water discharges during construction, and in accordance with erosion control practices. The Contractor's participation in this program is mandatory and its non-compliance is subject to various remedies, including without limitation, monetary set-offs, withholding payments; reimbursement for costs, expenses (including reasonable attorney's fees), fines and civil penalties incurred by SL; and/or liquidated damages. This section provides a descriptive explanation of SL's Storm Water Pollution Prevention Program and required Contractor participation.

The Engineer of record for this project certifies that this SWPPP meets the requirements and is in compliance with the New York State Stormwater Management Design Manual and latest NYSDEC Phase II stormwater regulation requirements.

B. **SPDES General Permit for Stormwater Discharges from Construction Activity:** Regulations promulgated by the NYSDEC to regulate the discharge of storm water from construction activities on sites where more than one (1) acre of soil is disturbed. One of the ways to comply with these regulations for affected sites is to request coverage under the General Permit for Construction Activities for New York State. In order to use the General Permit, a Notice of Intent (NOI) form must be completed and electronically submitted to the NYSDEC at least 5 business days prior to any earth-disturbing activities (this time frame may increase to 60 business days if a full review of the SWPPP is determined necessary by the NYSDEC) and a Storm Water Pollution Prevention Plan (SWPPP) for the site must be prepared and followed during the construction activities. Once a copy of the SPDES permit is received from NYSDEC after filing, it will be included in Appendix L of this report.

Approval from a regulated, traditional land use control MS4:

1. An **owner or operator** of a construction activity that is <u>not</u> subject to the requirements of a regulated, traditional land use control MS4 must first develop a SWPPP in accordance with all applicable requirements of this permit and then submit a completed NOI form to the NYSDEC.

2. An **owner or operator** of a construction activity that is subject to the requirements of a regulated, traditional land use control MS4 must first

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develop a SWPPP in accordance with all applicable requirements of this permit and then have its SWPPP reviewed and accepted by the MS4 prior to submitting the NOI to the NYSDEC. The **owner or operator** shall have the "MS4 SWPPP Acceptance" form signed by the principal executive officer or ranking elected official from the regulated, traditional land use control MS4, or by a duly authorized representative of that person, and then submit that form along with the NOI to the address referenced under "Notice of Intent (NOI) Submittal".

C. **RESPONSIBILITIES OF THE CONTRACTOR:** The Contractor shall manage the discharge of storm water from the site in accordance with the NYSDEC General Permit for Construction Activities conditions and the following provisions of this section. The Operator shall be responsible for conducting the storm water management practices in accordance with the permit. The Contractor shall be responsible for providing **qualified inspector**s to conduct the inspections required by the SWPPP. The Contractor shall be responsible for any enforcement action taken or imposed by federal, state, or local agencies, including the cost of fines, construction delays, and remedial actions resulting from the Contractor's failure to comply with the permit provisions. It shall be the responsibility of the Contractor to make any changes to the SWPPP necessary when the Contractor or any of his subcontractors elects to use borrow or fill or material storage sites, either contiguous to or remote from the construction site, when such sites are used solely for this construction site. Such sites are considered to be part of the construction site covered by the permit and this SWPPP. Off-site borrow, fill, or material storage sites which are used for multiple construction projects are not subject to this requirement, unless specifically required by state or local jurisdictional entity regulations. The Contractor should consider this requirement in negotiating with earthwork subcontractors, since the choice of an off-site borrow, fill, or material storage site may impact their duty to implement, make changes to, and perform inspections required by the SWPPP for the site.

D. **NOTICE OF INTENT:** The Operator has petitioned the NYSDEC for coverage under the storm water discharges during construction at this site to be covered by the SPDES General Permit for Construction Activity for the State of New York. A Notice of Intent (NOI) for coverage under this permit has been filed by the Operator. The SWPPP must be prepared prior to submittal of the NOI form. The Operator will require the Contractor to be a co-permittee with the Operator. The Contractor will be required to post the NOI at the construction site along with any building permits.

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E. **CONTRACTOR CERTIFICATION & TRAINING:** Proof of Training/Certification of the Contractor's Designated individual shall be kept on site at all times.

F. **REQUIREMENTS FOR THE GENERAL CONTRACTOR AND SUBCONTRACTOR(S):** The General Contractor and Subcontractor(s) shall sign the "Contractor's Certification Statement" (located in the Appendix of this report) verifying they have been instructed on how to comply with and fully understand the requirements of the SPDES General Permit for Construction Activity for the State of New York and the SWPPP. These certifications must be signed, by a responsible corporate officer or other party meeting the "Signatory Requirements" of the SPDES General Permit, on behalf of each entity, prior to the beginning of any construction activities.

G. **STORM WATER POLLUTION PREVENTION PROGRAM LOCATION REQUIREMENTS:** The SWPPP is meant to be a working document that shall be maintained at the site of the Construction Activities at all times throughout the project, shall be readily available upon request by the Operator's personnel or NYSDEC or any other agency with regulatory authority over storm water issues, and shall be kept on-site until the site complies with the Final Stabilization section of this document. A sign or other notice must be posted near the main entrance of the construction site which contains a completed NOI, the location of the SWPPP and the name and phone number of a contact person responsible for scheduling SWPPP viewing times, and any other state specific requirements.

H. **INSPECTIONS AND RECORD-KEEPING:**

A. **General Construction Site Inspection and Maintenance Requirements**

1. The **owner or operator** must ensure that all erosion and sediment control practices and all post-construction stormwater management practices identified in the SWPPP are maintained in effective operating condition at all times.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York, or protect the public health and safety and/or the environment.

B. **Owner or operator Maintenance Inspection Requirements**

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1. The **owner or operator** shall inspect, in accordance with the requirements in the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, the erosion and sediment controls identified in the SWPPP to ensure that they are being maintained in effective operating condition at all times.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the **owner or operator** can stop conducting the maintenance inspections. The **owner or operator** shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of the General Permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the **owner or operator** can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved final stabilization and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. **Qualified inspector Inspection Requirements**

The **owner or operator** shall have a **qualified inspector** conduct site inspections in conformance with the following requirements:

Note: The **trained contractor** identified in Part III.A.6 of the General Permit **cannot** conduct the **qualified inspector** site inspections unless they meet the **qualified inspector** qualifications included in Appendix A of the General Permit. In order to perform these inspections, the trained contractor would have to be a:

- Licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- Registered Landscape Architect, or
- Someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape

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Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity.

1. A **qualified inspector** shall conduct site inspections for all construction activities identified in Tables 1 and 2 of Appendix B of the General Permit, with the exception of:

   a. The construction of a single family residential subdivision with 25% or less impervious cover at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C of the General Permit and not directly discharging to one of the 303(d) segments listed in Appendix E of the General Permit;

   b. The construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E of the General Permit;

   c. Construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

   d. Construction activities located in the watersheds identified in Appendix D of the General Permit that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the **qualified inspector** shall conduct site inspections in accordance with the following timetable:

   a. For construction sites where soil disturbance activities are on-going, the **qualified inspector** shall conduct a site inspection at least once every seven (7) calendar days.

   b. For construction sites where soil disturbance activities are on-going and the **owner or operator** has received authorization in accordance with Part II.C.3 of the General Permit to **disturb greater than five (5) acres** of soil at any one time, the **qualified inspector**

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shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

c. For construction sites where soil disturbance activities have been **temporarily suspended (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas**, the **qualified inspector** shall conduct a site inspection at least once every thirty (30) calendar days. The **owner or operator** shall notify the Regional Office stormwater contact person (see contact information in Appendix F of the General Permit) or, in areas under the jurisdiction of a regulated, traditional land use control MS4, the MS4 (provided the MS4 is not the **owner or operator** of the construction activity) in writing prior to reducing the frequency of inspections.

d. For construction sites where **soil disturbance activities have been shut down with partial project completion**, the **qualified inspector** can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved final stabilization and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The **owner or operator** shall notify the Regional Office stormwater contact person or, in areas under the jurisdiction of a regulated, traditional land use control MS4, the MS4 (provided the MS4 is not the **owner or operator** of the construction activity). in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the **owner or operator** shall have the **qualified inspector** perform a final inspection and certify that all disturbed areas have achieved final stabilization, and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "Final Stabilization" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The **owner or operator** shall then submit the completed NOT form to the address in Part II.A.1 of the General Permit.

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3. At a minimum, the **qualified inspector** shall inspect all erosion and sediment control practices to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved final stabilization, all points of discharge to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the construction site, and all points of discharge from the construction site.

4. The **qualified inspector** shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

   a. Date and time of inspection;

   b. Name and title of person(s) performing inspection;

   c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

   d. A description of the condition of the runoff at all points of discharge from the construction site. This shall include identification of any discharges of sediment from the construction site. Include discharges from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

   e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the construction site which receive runoff from disturbed areas. This shall include identification of any discharges of sediment to the surface waterbody;

   f. Identification of all erosion and sediment control practices that need repair or maintenance;

   g. Identification of all erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

   h. Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection;

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i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s); and

k. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The **qualified inspector** shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The **qualified inspector** shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The **qualified inspector** shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the **qualified inspector** shall notify the **owner or operator** and appropriate contractor or subcontractor identified in Part III.A.6. of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the **qualified inspector**. Pursuant to Part II.C.2 of the General Permit, the inspection reports shall be maintained on site with the SWPPP.

Record Retention - The **owner or operator** shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the site achieves final stabilization. This period may be extended by the Department, in its sole discretion, at any time upon written notification.

l. **SWPPP MODIFICATIONS:** The inspection report should also identify if any revisions to the SWPPP are warranted due to unexpected conditions. The SWPPP is meant

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to be a dynamic working guide that is to be kept current and amended whenever there is a change in design, construction, operation, or maintenance at the construction site that has or could have a significant effect on the discharge of pollutants or when the plan proves to be ineffective in eliminating or significantly minimizing pollutant discharges. The Contractor's failure to modify or report deficiencies to the Operator will result in the Contractor being liable for fines and construction delays resulting from any federal, state, or local agency enforcement action.

J. **FINAL STABILIZATION AND TERMINATION OF PERMIT COVERAGE:** A site can be considered finally stabilized when all soil disturbing activities have been completed and a uniform perennial vegetative cover with a density of **85%** for the unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures have been established and the facility no longer discharges storm water associated with construction activities and a Notice of Termination (NOT) form filed by the Operator(s) with the NYSDEC. The Operator's Project Manager must complete the NOT. The NOT must be signed by the signatory (or equivalent position) on the NOI and subsequently submitted to the appropriate agency. The Operator's Project Manager must provide a completed copy of the NOT to the Contractor for inclusion in the SWPPP, which will then be optically scanned into the final SWPPP document as required. This filing terminates coverage under the General Permit and terminates the Contractor's responsibility to implement the SWPPP, but the requirements of the SWPPP, including periodic inspections, must be continued until the NOT is filed. The **owner or operator** shall also have the **qualified inspector** perform a final site inspection prior to signing and submitting the NOT to the Department. The local MS4/Stormwater Management Officer must also sign the NOT and may require a final site inspection to be completed prior to. Final payment and/or the release of retainage will be withheld until all provisions of the SWPPP have been submitted, completed and accepted by the Operator.

102 PROJECT NAME AND LOCATION

Sawyer's Landing

Dodge Road

Town of Amherst, County of Erie, New York

Easting: 190681.1

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Northing: 4770798.8

Estimated Area of Site ≈ 17.4 acres

Estimated Area to be disturbed by Construction Activities ≈ 16.4 acres

A general location map is included as Appendix A.

103 OPERATOR'S NAME AND ADDRESS

Sawyer's Landing LLC

c/o Severyn Development

43 Central Avenue

Lancaster, NY 14086

Contact Person: William Severyn

Telephone: 716–818-0207

104 PROJECT DESCRIPTION

This project is a development of a 17.4 acre site located on the north side of Dodge Road, west of Sweet Home Road in the Town of Amherst. Both Dodge Road and Sweet Home Road are Erie County roads. Proposed is the construction of a mixed use development to include (2) 4-story buildings with a total of 30,000 sf of commercial and 100 apartments, (47) duplex lots and (2) 1-story apartment buildings with a total of 12 units. A bike trail will be constructed on site, this trail will connect to the existing Town of Amherst bike trail on the south side of Dodge Road. The approximately 1 acre westerly portion will remain undisturbed and be deed restricted as permanent open space. The site is currently undeveloped consisting of woods and overgrown brush/grass. NYSDEC and Federal wetlands were delineated on site by Earth Dimensions, Inc. Approximately 6.1 acres of Federal and 1.2 acres of NYSDEC wetlands have been permitted to be impacted. The proposed site development area to be disturbed for this project is approximately 16.4 acres.

Soil disturbing activities will include:

A. Construction of temporary construction exit points

B. Clearing & grubbing of the site within disturbance limits

C. Installation of detention basins, bioretention areas including topsoil & seed

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D. Installation of storm sewer pipes and inlets

E. Construction of utilities

F. Construction of curb and parking lot

G. Final grading & landscaping

H. Construction of building

This project is owned by Sawyer's Landing LLC and will be developed by the same. The work area consists of approximately 16.4 acres for which erosion and sediment controls have been developed and fully addressed in this written plan and the Erosion and Sediment Control Plans. See the construction documents for additional details.

105 RUNOFF COEFFICIENT, SOILS, AND RAINFALL INFORMATION

The initial runoff curve number for the pre-construction site is "CN" = 78. The post-construction runoff curve number for the site will be "CN" = 91. The site is 17.4 acres of which approximately 16.4 acres will be disturbed by construction activities.

See soils information located in Appendix H.

The site is in Erie County, which receives an average of approximately 45 inches rainfall annually with the highest amounts of rainfall received in the months of May thru September. Annual snow for this area is approximately 120 inches.

106 WATERS

The runoff generated from this site will discharge to the storm system on Dodge Road which is tributary to Ellicott Creek.

107 INDIAN COUNTRY LANDS

This project is not located on Indian Lands.

108 ENDANGERED AND THREATENED SPECIES

No endangered or threatened species have been determined to be on the site.

109 CRITICAL HABITAT

See section 108 above.

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110 HISTORIC PLACES

The assessed property is shown on the NYSHPO map as an archeologically sensitive area. A NYSHPO "no effect" letter is included in Appendix I.

111 WETLANDS AND/OR OTHER SURFACE WATERS

Federal and NYSDEC wetlands were delineated on site by Earth Dimensions, Inc. Approximately 6.1 acres of Federal and 1.2 acres of NYSDEC wetlands have been permitted to be impacted. The USACOE and NYSDEC wetland permits are included in Appendix K of this report.

112 EROSION AND SEDIMENT CONTROLS

112.1 STABILIZATION PRACTICES

Stabilization practices for this site include:

A. Land clearing activities shall be done only in areas where earthwork will be performed and shall progress as earthwork is needed.

B. Use of stabilization method for all slopes with a slope greater than 1V:3H.

C. Permanent seeding and planting of all unpaved areas using the hydromulching grass seeding technique.

D. Mulching exposed areas.

E. Vegetation preservation in undisturbed areas.

F. Frequent watering to minimize wind erosion during construction.

a. **For sites where 5 acres or more are disturbed at any one time**: In areas where soil disturbance activity has been temporarily or permanently ceased, temporary and/or permanent soil stabilization measures shall be installed and/or implemented within seven (7) days from the date the soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the most current version of the New York Standards and Specifications for Erosion and Sediment Control.

b. The **owner or operator** shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

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c. The **owner or operator** shall install any additional measures needed to protect water quality.

112.2 STRUCTURAL PRACTICES

Structural practices for this site include:

A. Inlet protection using a method detailed in the Construction Documents.

B. Perimeter protection using temporary silt fence/silt sock or silt sock.

C. Outlet protection using rip-rap stone and end sections.

D. Stabilized Construction Entrance.

E. Temporary stone wash off areas.

F. Storm sewer, curb/gutter.

G. Sediment traps and basins.

112.3 SEQUENCE OF MAJOR ACTIVITIES

The Contractor will be responsible for implementing the following erosion control and storm water management control measures. The Contractor may designate these tasks to certain subcontractors as he sees fit, but the ultimate responsibility for implementing these controls and ensuring their proper functioning remains with the Contractor. The order of activities will be as follows:

A. Construct temporary construction exits at locations shown on the Demolition & Erosion Control Plan Sheet.

B. Install perimeter silt fence/silt socks/silt sock in the locations shown on the Demolition & Erosion Control Plan Sheet.

C. Clear & Grub site.

D. Installation of detention basin to act as sediment basin.

E. Commence site grading.

F. If less than 5 acres of the site have been disturbed and construction activity has ceased for more than 14 days, temporarily seed and water to stabilize this area. If more than 5 acres of the site have been disturbed and construction activity has ceased for more than 7 days, temporarily seed and water to stabilize this area.

G. Installation of proposed utilities.

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H. Install base material as required for pavement/buildings.

I. Finalize pavement subgrade preparation.

J. Construction of buildings.

K. Construct all curb, drainage inlets, storm sewer pipes and storm sewer manholes, as shown on the plans. Install temporary inlet protection at the locations of all inlets.

L. Dust control.

L. Remove inlet protection around inlets and manholes no more than 48 hours prior to placing stabilized base course.

N. Carry out final grading and seeding and planting.

O. Install bioretention areas (do not install bioretention soil or underdrains until surrounding area is stabilized).

P. Clean storm system following construction, clean detention basin of any silt and return to design grades.

Q. Remove silt fencing/silt sock only after all paving is complete and exposed surfaces are stabilized.

R. Remove temporary construction exits only prior to pavement construction in these areas.

Note: Sediment control storage during construction (traps & basins) during construction shall be 134 cy per acre of disturbance per NYSDEC requirements.

112.4 STORM WATER MANAGEMENT

The existing site is generally flat and slopes west with portions sloping east. The portion that slopes west settles in a low area and once the capacity of that area is exceeded, sheet flow continues towards Sweet Home Road and is collected by an existing 12" pipe on the north side of Dodge Road. This pipe flows to the Erie County system on Sweet Home Road. The portion that flows east flows to the offsite wetlands.

Currently Dodge Road does not have a drainage system. A series of catch basins and pipes will be installed in the green area on the north side of Dodge Road to collect the road drainage. The west portion of this system will connect to the existing closed drainage system on Sweet Home Road. The east portion will discharge to the Ellicott Creek diversion channel using and existing discharge point. This new system will also convey the proposed discharge from the site as described below.

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The proposed onsite storm sewer system consists of smooth interior and perforated HDPE pipes connected by a series of catch basins, manholes and yard drains. The site is split into a storm water management area on the east and west sides.

West Side

The west side of the site has (2) bioretention areas which portions of the westerly area will discharge to. These bioretention areas along with the remainder of the west portion of the site will discharge to the underground detention area. Note that the yard drains installed along the north property line discharge to the underground detention area. An outlet structure in the SW portion of this area will control runoff to at or below existing runoff flow rates. The discharge from the outlet control structure will discharge to the new system on Dodge Road which flows to the Sweet Home Road system.

Underground Detention Summary

(286) ADS Stormtech SC-740 chambers
Top of stone elev. = 573.00
Top of chamber elev. = 572.50
Bottom of chamber elev. = 570.00
Bottom of stone elev. = 569.50
Total storage = 18,574 CF

Event	Ex. Discharge	Pro. Discharge	Elev.
1 yr	0.87 cfs	0.33 cfs	570.29
2 yr	1.34 cfs	0.68 cfs	570.46
5 yr	2.14 cfs	1.05 cfs	570.79
10 yr	2.94 cfs	1.28 cfs	571.13
25 yr	4.34 cfs	1.61 cfs	571.73
50 yr	5.69 cfs	3.61 cfs	572.23
100 yr	7.33 cfs	4.83 cfs	572.92

East Side

The east side of the site has a bioretention area and wet detention pond which this portion of the site discharges to. The NE portion of the site discharges to a forebay which spills into the main micropool portion of the wet detention basin. The SE portion of the site discharges to the bioretention area which also spills into the main micropool portion of the site. An outlet control structure is located in

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the SE portion of the micropool and controls the discharge from this storm water management area. Spillways are also located on the east portion of the micropool which will discharge to the existing wetlands to the east in order to not cut off all flow from this site into this area. The discharge from the outlet control structure will discharge to the new system on Dodge Road which flows to the Ellicott Creek diversion channel.

The bioretention areas and wet detention pond for the project area are sized to provide 100% of the required Runoff Reduction Volume (RRv) and Water Quality Volume (WQv) treatment for the overall site in accordance with Chapter 4 of the NYSDEC Stormwater design manual. The soils in the vicinity of the bioretention areas are mainly USDA hydrologic group 'D' and therefore the system will be installed with underdrains per NYSDEC requirements. The bioretention areas will consist of 6" and 8" perforated HDPE underdrains in 12" of drainage gravel, followed by filter fabric and 18" minimum of planting soil. Overflow yard drains will be installed to allow 6" maximum temporary ponding for RRv treatment. The east bioretention area (area #3) spills into the wet detention pond and the underdrain pipe ties together with the pond discharge and flows to Dodge Road. The east bioretention areas (areas #1 & #2) have a catch basin to act as the spillway and this catch basin and the underdrain pipes discharge to the underground detention area.

Storm Water Management Area Summary

Forebay
Top of basin elev. = 576.80
Permanent water elev. = 575.00
Aquatic bench elev. = 574.50
Bottom of basin elev. = 569.00

Micropool
Top of basin elev. = 576.80
Permanent water elev. = 575.00
Aquatic bench elev. = 574.50
Bottom of basin elev. = 563.00

Overall Storm Water Summary

WQv Provided = 152,678 cf (pond)
WQv Provided = 6,948 cf (bioretention)
WQv Provided = 159,626 cf (total)

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Bioretention Area Summary:

Area	Rim Elev.	Bottom Elev.	Area
1	574.50	574.00	2,300 sf
2	574.50	574.00	2,600 sf
3	575.50	575.00	11,000 sf
		Total Provided =	15,900 sf

Water Quality Summary:
WQv req'd = 28,804 cf (0.661 ac-ft)
RRv min. req'd = 5,518 cf (0.127 ac-ft)
RRv provided = 8,662 cf (0.199 ac-ft)
WQv provided = 159,626 cf (3.665 ac-ft)
Total RRv + WQv provided = 8,662 cf + 159,626 cf = 168,287 cf (3.868 ac-ft)

Detention: Comparison of the existing 1-year vs. the proposed 1-year runoff
Comparison of the existing 10-year vs. the proposed 10-year runoff
Comparison of the existing 100-year vs. the proposed 100-year runoff

Storm pipes: 10-year storm

Refer to the engineer's report in Appendix N for additional details.

113 OTHER CONTROLS

113.1 OFF-SITE VEHICLE TRACKING

A stabilized construction exit will be provided to help reduce vehicle tracking of sediments. Existing paved areas will remain as long as possible and will be used for vehicle wash areas and to further aid in the reduction of vehicle tracking of sediments. The paved streets adjacent to the site entrance shall be inspected daily and swept as necessary to remove any excess mud, dirt, or rock tracked from the site. Dump trucks hauling material to/from the construction site will be covered with a tarpaulin. The job site superintendent will be responsible for seeing that these procedures are followed.

113.2 EXCAVATION SPOIL MATERIALS

Excavation spoil materials are generated during the excavation of the development's building and utilities installation. These materials must be properly managed to prevent them from contributing to storm water discharges. The materials generated from the development of this project will be hauled off-site or stockpiled for re-use in designated areas which will have temporary erosion &

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sediment control measures installed. Any removal from site will be done under the necessary permits required by the local governing agencies.

113.3 DUST CONTROL

Minimizing wind erosion and controlling dust will be accomplished by one or more of the following methods:

A. Frequent watering of excavation and fill areas.

B. Providing gravel or paving at entrance/exit drives, parking areas and transit paths.

113.4 WASTE DISPOSAL

If needed, all waste materials will be collected and stored in securely lidded metal dumpsters rented from an approved waste management company. The dumpster will comply with all local and state solid waste management regulations.

All trash and construction debris from the site will be deposited in the dumpsters. The dumpsters will be emptied when full and then hauled to a NYSDEC approved landfill for proper disposal. No construction waste will be buried on-site. All personnel will be instructed regarding the correct procedures for waste disposal.

113.5 SANITARY WASTE

If needed, portable toilet units or field offices with toilet facilities connected to the municipal sanitary sewer will be used for sanitary purposes. All portable toilet units will be emptied a minimum of once per week by a licensed portable facility provided in compliance with local and state regulations.

113.6 CONCRETE WASTE FROM CONCRETE TRUCKS

A. Emptying of excess unhardened concrete and/or washout from concrete delivery trucks will be allowed on the job site, but in either (1) specifically designated diked areas which have been prepared to prevent contact between concrete and/or washout and storm water which will be discharged from the site or (2) in locations where waste concrete will be poured into forms to make rip-rap or other useful concrete products.

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B. Hardened waste concrete from the designated diked areas described above will be disposed of in accordance with applicable local and state regulations with regards to disposal of construction debris.

113.7 HAZARDOUS SUBSTANCES & HAZARDOUS WASTE

A. All hazardous waste materials will be disposed of by the Contractor in the manner specified by local, state, and/or federal regulations and by the manufacturer of such products. Site personnel will be instructed in these practices by the job superintendent, who will also be responsible for seeing these practices are followed. Material Safety Data Sheets (MSDS's) for each substance with hazardous properties that is used on the job site will be obtained and used for the proper management of potential wastes that may result from these products. An MSDS will be posted in the immediate area where such products are stored and/or used and another copy of each MSDS will be maintained in the SWPPP file at the job site construction office. Each employee who must handle a substance with hazardous properties will be instructed on the use of MSDS sheets and the specific information in the applicable MSDS for the product he/she is using, particularly regarding spill control techniques.

B. The contractor will implement the Spill Prevention Control and Countermeasures (SPCC) Plan found within this SWPPP and will train all personnel in the proper cleanup and handling of spilled materials. No spilled hazardous materials of hazardous wastes will be allowed to come in contact with storm water discharges. If such contact occurs, the storm water discharge shall be contained on site until appropriate measures in compliance with state and federal regulations are taken to dispose of such contaminated storm water. It shall be the responsibility of the job superintendent to properly train all personnel in the use of the SPCC plan.

C. Any spills of hazardous materials which are in excess of the Reportable Quantities as defined by the EPA regulations shall be immediately reported to the EPA National Response Center at 1-100-424-1102. From SWPPP-9 "Reportable Quantity Release Form" must be filled out.

D. In order to minimize the potential for a spill of hazardous materials to come in contact with storm water, the following steps will be implemented:

1. All materials with hazardous properties (such as pesticides, petroleum products, fertilizers, detergents, construction chemicals,

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acids, paints, paint solvents, cleaning solvents, additives for soil stabilization, concrete curing compounds and additives, etc.) will be stored in a secure location, under cover, when not in use.

2. The minimum practical quantity of all such materials will be kept on the job site.

3. A spill control and containment kit (containing for example, absorbent such as kitty litter or sawdust, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided at the storage site.

4. All of the product in a container will be used before the container is disposed of. All such containers will be triple rinsed with water prior to disposal. The rinse water used in these containers will be disposed of in a manner in compliance with state and federal regulations and will not be allowed to mix with storm water discharges.

5. All products will be stored in and used from the original container with the original product label.

6. All products will be used in strict compliance with instructions on the product label.

7. The disposal of excess or used products will be in strict compliance with instructions on the product label.

113.8 CONTAMINATED SOILS

A. Any contaminated soils (resulting from spills of materials with hazardous properties) which may result from construction activities will be contained and cleaned up immediately in accordance with the procedures given in the Spill Prevention Control and Countermeasures (SPCC) Plan and in accordance with applicable state and federal regulations.

B. The job site superintendent will be responsible for seeing that these procedures are followed.

114 COMPLIANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS

The Contractor will obtain copies of any and all local and state regulations which are applicable to storm water management, erosion control, and

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pollution minimization at this job site and will comply fully with such regulations. The Contractor will submit written evidence of such compliance if requested by the Operator or any agent of a regulatory body. The Contractor will comply with all conditions of the SPDES General Permit for Construction Activity for the State of New York, including the conditions related to maintaining the SWPPP and evidence of compliance with the SWPPP at the job site and allowing regulatory personnel access to the job site and to records in order to determine compliance.

The SWPPP for this site development project requires regulated MS4 approval from the Town of Amherst. All changes to the SWPPP must be approved by the Town of Amherst prior to applying changes to the SWPPP in the field.

115 INSPECTION AND MAINTENANCE PROCEDURES

The following inspection and maintenance practices will be used to maintain erosion and sediment controls and stabilization measures.

1. All control measures will be inspected by the owner/operator at least weekly and shall continue until the site complies with the Final Stabilization section of this document (See Section 116).

2. All control measures will be inspected by a Qualified Professional at least weekly and shall continue until the site complies with the Final Stabilization section of this document (See Section 116).

3. All measures will be maintained in good working order; if repairs or other measures are found to be necessary, they will be initiated within 24 hours of report.

4. Built up sediment will be removed from silt fence/silt sock when it has reached one-third the height of the fence.

5. Silt fence/silt socks will be inspected for depth of sediment, tears, etc., to see if the fabric is securely attached to the fence posts, and to see that the fence posts are securely in the ground.

6. Temporary and permanent seeding and all other stabilization measures will be inspected for bare spots, washouts, and healthy growth.

7. A maintenance inspection report will be made after each inspection. Copies of the report forms to be completed by the inspector are included in this SWPPP.

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8. The job site superintendent will be responsible for selecting and training the individuals who will be responsible for these inspections, maintenance and repair activities, and filling out inspection and maintenance reports.

9. Personnel selected for the inspection and maintenance responsibilities will receive training from the job site superintendent. They will be trained in all the inspection and maintenance practices necessary for keeping the erosion and sediment controls that are used onsite in good working order. They will also be trained in the completion of, initiation of actions required by, and the filing of the inspection forms. Documentation of this personnel training will be kept on site with the SWPPP.

10. Disturbed areas and materials storage areas will be inspected for evidence of or potential for pollutants entering stormwater systems.

11. Report to the NYSDEC within 24 hours any noncompliance with the SWPPP that will endanger public health or the environment. Follow up with a written report within 5 days of the noncompliance event. The following events require 24 hour reporting: a) any unanticipated bypass which exceeds any effluent limitation in the permit, b) any upset which exceeds any effluent limitation in the permit, and c) a violation of a maximum daily discharge limitation for any of the pollutants listed by the NYSDEC in the permit to be reported within 24 hours. The written submission must contain a description of the non-compliance and its cause; the period of non-compliance, including exact dates and times, and if the non-compliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the non-compliance.

12. Releases of hazardous substances or oil in excess of reportable quantities (as established under 40 CFR 110, 40 CFR 117 or 40 CFR 302) must be reported.

Upon completion of construction, the property owner is responsible for ensuring that the stormwater facilities are regularly inspected and maintained. Maintenance and inspection procedures are as follows.

1. On a quarterly basis and following significant rainfall events or snow-melts, perform the following:

    - Inspect catch basins, storm manholes, yard drains, storm piping and stormwater pond for debris and accumulation of sediment.

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- Remove and properly dispose of any collected debris and sediment in accordance with applicable state, federal and local regulations.
- Flush piping with water if necessary to remove accumulated sediment.
- Bioretention areas shall be maintained per the NYSDEC Maintenance and Management Checklist included in this SWPPP.
- Check all stone outfall structures for erosion and re-stone if necessary to prevent further erosion.
- Inspect grassed/landscaped areas for un-vegetated areas or areas with less than 85% healthy stand of grass and reseed and mulch as necessary. Water daily if reseeded in July and August.
- A record of all inspections should be kept.

2. Maintain all lawn areas by regular mowing, including the grassed slopes of the stormwater pond and any grass swales. Any eroded areas shall be regarded, seeded and mulched immediately.

116 INSPECTION AND MAINTENANCE REPORT FORMS

Once installation of any required or optional erosion control device or measure has been implemented, inspections shall be performed by a Qualified Professional at least once every seven (7) calendar days. For construction sites where soil disturbance activities are on-going and the **owner or operator** has received authorization in accordance with Part II.C.3 of the General Permit to disturb greater than five (5) acres of soil at any one time, the **qualified inspector** shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days. The owner and contractor shall obtain from the MS4 an approval for disturbing more than five-acres at any given time. For construction sites where active construction has been suspended, inspection frequency under the general permit can be reduced to once every 30 days, provided temporary stabilization measures have been applied to all disturbed areas. The forms found in this SWPPP shall be used by the inspectors to inventory and report the condition of each measure to assist in maintaining the erosion and sediment control measures in good working order.

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These report forms shall become an integral part of the SWPPP and shall be made readily accessible to governmental inspection officials, the Operator's Engineer, and the Operator for review upon request during visits to the project site. In addition, copies of the reports shall be provided to any of these persons, upon request, via mail or facsimile transmission. Inspection and maintenance report forms are to be maintained by the permittee for five years following the final stabilization of the site.

117 OTHER RECORD-KEEPING REQUIREMENTS

The Contractor shall keep the following records related to construction activities at the site:

- Dates when major grading activities occur and the areas which were graded
- Dates and details concerning the installation of structural controls
- Dates when construction activities cease in an area
- Dates when an areas is stabilized, either temporarily or permanently
- Dates of rainfall and the amount of rainfall
- Dates and descriptions of the character and amount of any spills of hazardous materials
- Records of reports filed with regulatory agencies if reportable quantities of hazardous materials spilled

118 SPILL PREVENTION CONTROL AND COUNTERMEASURES (SPCC) PLAN

118.1 MATERIALS COVERED

The following materials or substances are expected to be present onsite during construction:

- Concrete/Additives/Wastes
- Cleaning solvents
- Sanitary wastes
- Detergents
- Petroleum based products
- Paints/Solvents
- Pesticides
- Solid and construction wastes
- Acids

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- Fertilizers
- Soil stabilization additives

118.2 MATERIAL MANAGEMENT PRACTICES

The following are the material management practices that will be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff. The job site superintendent will be responsible for ensuring that these procedures are followed.

A. Good Housekeeping

The following good housekeeping practices will be followed onsite during the construction project.

1. An effort will be made to store only enough products required to do the job.
2. All materials stored onsite will be stored in a neat, orderly manner and, if possible, under a roof or in a containment area. At a minimum, all containers will be stored with their lids on when not in use. Drip pans shall be provided under all dispensers.
3. Products will be kept in their original containers with the original manufacturer's label in legible condition.
4. Substances will not be mixed with one another unless recommended by the manufacturer.
5. Whenever possible, all of a product will be used up before disposing of the container.
6. Manufacturer's recommendations for proper use and disposal will be followed.
7. The job site superintendent will be responsible for daily inspections to ensure proper use and disposal of materials.

B. Hazardous Products

These practices will be used to reduce the risks associated with hazardous materials. Material Safety Data Sheets (MSDS's) for each substance with hazardous properties that is used on the job site will be obtained and used for the proper management of potential wastes that may result from

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these products. An MSDS will be posted in the immediate area where such product is stored and/or used and another copy of each MSDS will be maintained in the SWPPP file at the job site construction trailer office. Each employee who must handle a substance with hazardous properties will be instructed on the use of MSDS sheets and the specific information in the applicable MSDS for the product he/she is using, particularly regarding spill control techniques.

1. Products will be kept in original containers with the original labels in legible condition.

2. Original labels and material safety data sheets (MSDS's) will be procured and used for each material.

3. If surplus product must be disposed of, manufacturer's or local/state/federal recommended methods for proper disposal will be followed.

4. A spill control and containment kit (containing for example, absorbent such as kitty litter or sawdust, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided at the storage site.

5. All of the product in a container will be used before the container is disposed of. All such containers will be triple rinsed with water prior to disposal. The rinse water used in these containers will be disposed of in a manner in compliance with state and federal regulations and will not be allowed to mix with storm water discharges.

C. Hazardous Waste

All hazardous waste materials will be disposed of by the Contractor in the manner specified by local, state, and/or federal regulations and by the manufacturer of such products. Site personnel will be instructed in these practices by the job site superintendent, who will also be responsible for seeing that these practices are followed.

D. Product Specific Practices

The following product specific practices will be followed on the job site.

1. Petroleum Products

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All onsite vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers which are clearly labeled. Any petroleum storage tanks stored onsite will be located within a containment area that is designed with an impervious surface between the tank and the ground. The secondary containment must be designed to provide a containment volume that is equal to 110% of the volume of the largest tank. Drip pans shall be provided for all dispensers. Any asphalt substances used onsite will be applied according to the manufacturer's recommendations. The location of any fuel tanks and/or equipment storage areas must be identified on a plan by the contractor once the locations have been determined.

2. Fertilizers

Fertilizers will be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer will be worked in the soil to limit exposure to stormwater. Storage will be in a covered shed. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.

3. Paints, Paint Solvents, and Cleaning Solvents

All containers will be tightly sealed and stored when not in use. Excess paint and solvents will not be discharged to the storm sewer system but will be properly disposed of according to manufacturer's instructions or state and federal regulations.

4. Concrete Wastes

Concrete trucks will be allowed to wash out or discharge surplus concrete or drum wash water on the site, but only in either (1) specifically designated diked areas which have been prepared to prevent contact between the concrete and/or wash out and storm water which will be discharged from the site or (2) in locations where waste concrete can be poured into forms to make riprap or other useful concrete products.

The hardened residue from the concrete wash out diked areas will be disposed of in the same manner as other non-hazardous construction waste materials or may be broken up and used on site

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as deemed appropriate by the Contractor. The job site superintendent will be responsible for seeing that these procedures are followed.

All concrete wash out areas will be located in an area where the likelihood of the area contributing to storm water discharges is negligible. If required, additional BMPs must be implemented to prevent concrete wastes from contributing to storm water discharges. The location of concrete wash out area(s) must be identified on a plan by the contractor once the locations have been determined. In addition, a standard detail on the construction of the concrete wash out shall be included on this plan.

E. Solid and Construction Wastes

All waste materials will be collected and stored in an appropriately covered container and/or securely lidded metal dumpster rented from a local waste management company which must be a solid waste management company licensed to do business in New York and the Town of Amherst. The dumpster will comply with all local and state solid waste management regulations.

All trash and construction debris from the site will be deposited in the dumpster. The dumpster will be emptied a minimum of twice per week or more often if necessary, and the trash will be hauled to a landfill approved by the NYSDEC. No construction waste materials will be buried on site. All personnel will be instructed regarding the correct procedures for waste disposal.

All waste dumpsters and roll-off containers will be located in an area where the likelihood of the containers contributing to storm water discharges is negligible. If required, additional BMPs must be implemented, such as sandbags around the base, to prevent wastes from contributing to storm water discharges. The location of waste dumpsters and roll-off containers must be identified on a plan by the contractor once the locations have been determined.

F. Sanitary Wastes

Portable toilet units or field offices with toilet facilities connected to the municipal sanitary sewer will be used for sanitary purposes. All portable

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toilet units will be emptied a minimum of once per week by a licensed portable facility provided in compliance with local and state regulations.

All sanitary waste units will be located in an area where the likelihood of the unit contributing to storm water discharges is negligible. If required, additional BMPs must be implemented, such as sandbags around the base, to prevent wastes from contributing to storm water discharges. The location of sanitary waste units must be identified on a plan by the contractor once the locations have been determined.

G. Contaminated Soils

Any contaminated soils (resulting from spills of materials with hazardous properties) which may result from construction activities will be contained and cleaned up immediately in accordance with the procedures given in the Materials Management Plan and in accordance with applicable state and federal regulations.

118.3 SPILL PREVENTION AND RESPONSE PROCEDURES

The Contractor will train all personnel in the proper handling and cleanup of spilled materials. No spilled hazardous materials or hazardous wastes will be allowed to come in contact with storm water discharges. If such contact occurs, the storm water discharge will be contained on site until appropriate measures in compliance with state and federal regulations are taken to dispose of such contaminated storm water. It shall be the responsibility of the job site superintendent to properly train all personnel in spill prevention and clean up procedures.

A. In order to minimize the potential for a spill of hazardous materials to come into contact with storm water, the following steps will be implemented:

1. All materials with hazardous properties (such as pesticides, petroleum products, fertilizers, detergents, construction chemicals, acids, paints, paint solvents, cleaning solvents, additives for soil stabilization, concrete curing compounds and additives, etc.) will be stored in a secure location, with their lids on, preferably under cover, when not in use.

2. The minimum practical quantity of all such materials will be kept on the job site.

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3. A spill control and containment kit (containing, for example, absorbent materials, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided at the storage site.

4. Manufacturer's recommended methods for spill cleanup will be clearly posted and site personnel will be trained regarding these procedures and the location of the information and cleanup supplies.

B. In the event of a spill, the following procedures should be followed

1. All spills will be cleaned up immediately after discovery.

2. The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with the hazardous substances.

3. The project manager and the Engineer of Record will be notified immediately.

   Spills of toxic or hazardous materials will be reported to the appropriate federal, state, and/or local government agency, regardless of the size of the spill. Spills of amounts that exceed Reportable Quantities of certain substances specifically mentioned in federal regulations (40 CFR 110, 40 CFR 117, and 40 CFR 302) must be immediately reported to the EPA National Response Center, telephone 1-100-424-1102. From SWPPP-9 "Reportable Quantity Release Form" must be filled out.

4. If the spill exceeds a Reportable Quantity, the SWPPP must be modified within seven (7) calendar days of knowledge of the discharge to provide a description of the release, the circumstances leading to the release, and the date of the release. The plans must identify measures to prevent the recurrence of such releases and to respond to such releases.

C. The job site superintendent will be the spill prevention and response coordinator. He will designate the individuals who will receive spill prevention and response training. These individuals will each become responsible for a particular phase of prevention and response. The names

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of these personnel will be posted in the material storage area and in the office trailer onsite.

119 CONTROL OF NON-STORM WATER DISCHARGES

Certain types of discharges are allowable under the NYSDEC SPDES General Permit for Construction Activity for the State of New York, and it is the intent of this SWPPP to allow such discharges. These types of discharges will be allowed under the conditions that no pollutants will be allowed to come in contact with the water prior to or after its discharge. The control measures which have been outlined previously in this SWPPP will be strictly followed to ensure that no contamination of these non-storm water discharges takes place. The following allowable non-storm water discharges which may occur at the job site include:

A. Discharges from firefighting activities.

B. Fire hydrant flushings (see note below)

C. Waters used to wash vehicles or control dust in order to minimize offsite sediment tracking.

D. Routine external building washdown which does not use detergents.

E. Pavement wash waters where spills or leaks of hazardous materials have not occurred or detergents have not been used.

F. Air conditioning condensate.

G. Springs or other uncontaminated groundwater, including dewatering ground water infiltration.

H. Foundation or footing drains where no contamination with process materials such as solvents is present.

Note: The Contractor shall discharge any super-chlorinated water from water distribution pipe disinfection activities into sanitary sewer system.

120 STORM WATER CONTROL FACILITY MAINTENANCE

Upon completion of construction, SL shall be responsible for maintenance of the storm sewer system and all ponds, bioretention areas, etc. per a Stormwater Maintenance Agreement to the Town of Amherst that shall be filed with the County of Erie.

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The frequency of inspections for the bioretention areas shall match the frequencies listed on the "Bioretention Operation, Maintenance and Management Inspection Checklist" in Appendix O of the SWPPP.

The proposed catch basins, as per section 115, shall be inspected 4 times per year for removal of floatable debris. Any silt buildup over 6" in depth shall be removed and disposed of properly off-site.

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Appendix A

Site Location Map

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Stormwater Interactive Map



The coordinates of the point you clicked on are:

UTM 18	**Easting:**	190681.063	**Northing:**	4770798.806
Longitude/Latitude	**Longitude:**	-78.796	**Latitude:**	43.027

The approximate address of the point you clicked on is:
26-42 Dodge Rd, Getzville, New York, 14068

County: Erie
Town: Amherst
USGS Quad: TONAWANDA EAST

DEC Administrative Boundaries

Region 9:
(Western New York) Allegany, Chautauqua, Cattaraugus, Erie, Niagara and Wyoming counties. For more information visit http://www.dec.ny.gov/about/617.html.

Regulated MS4s

UA 2000: 11350
Standard: Buffalo
Municipality: AMHERST
SWIS: 142200
Regulated: Automatic

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Appendix B

NYSDEC Notice of Intent (NOI)

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NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR _____ (for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-20-001

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-

RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)
Sawyer's Landing LLC

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
Severyn

Owner/Operator Contact Person First Name
Will

Owner/Operator Mailing Address
43 Central Ave

City
Lancaster

State
NY

Zip
14086 -

Phone (Owner/Operator)
716 - 912 - 0969

Fax (Owner/Operator)
___ - ___ - ____

Email (Owner/Operator)
williamseverynny@gmail.com

FED TAX ID
__ - _____ (not required for individuals)

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Project Site Information

Project/Site Name
Sawyer's Landing

Street Address (NOT P.O. BOX)
Dodge Road

Side of Street
● North ○ South ○ East ○ West

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Amherst

State NY | Zip 14228 - | County Erie | DEC Region 9

Name of Nearest Cross Street
Sweet Home Road

Distance to Nearest Cross Street (Feet)
0

Project In Relation to Cross Street
○ North ○ South ● East ○ West

Tax Map Numbers
Section-Block-Parcel
40.08-3-13.1

Tax Map Numbers

1. Provide the Geographic Coordinates for the project site. To do this, go to the NYSDEC Stormwater Interactive Map on the DEC website at:

https://gisservices.dec.ny.gov/gis/stormwater/

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located the centroid of your project site, go to the bottom right hand corner of the map for the X, Y coordinates. Enter the coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)
-7 8796
Ex. -73.749

Y Coordinates (Northing)
43027
Ex. 42.652

2. What is the nature of this construction project?

● **New Construction**

○ **Redevelopment with increase in impervious area**

○ **Redevelopment with no increase in impervious area**

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3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use	Post-Development Future Land Use
● FOREST	○ SINGLE FAMILY HOME
○ PASTURE/OPEN LAND	○ SINGLE FAMILY SUBDIVISION
○ CULTIVATED LAND	○ TOWN HOME RESIDENTIAL
○ SINGLE FAMILY HOME	○ MULTIFAMILY RESIDENTIAL
○ SINGLE FAMILY SUBDIVISION	○ INSTITUTIONAL/SCHOOL
○ TOWN HOME RESIDENTIAL	○ INDUSTRIAL
○ MULTIFAMILY RESIDENTIAL	○ COMMERCIAL
○ INSTITUTIONAL/SCHOOL	○ MUNICIPAL
○ INDUSTRIAL	○ ROAD/HIGHWAY
○ COMMERCIAL	○ RECREATIONAL/SPORTS FIELD
○ ROAD/HIGHWAY	○ BIKE PATH/TRAIL
○ RECREATIONAL/SPORTS FIELD	○ LINEAR UTILITY (water, sewer, gas, etc.)
○ BIKE PATH/TRAIL	○ PARKING LOT
○ LINEAR UTILITY	○ CLEARING/GRADING ONLY
○ PARKING LOT	○ DEMOLITION, NO REDEVELOPMENT
○ OTHER	○ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
	● OTHER

Number of Lots:

Mixed use

***Note:** for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

Total Site Area	Total Area To Be Disturbed	Existing Impervious Area To Be Disturbed	Future Impervious Area Within Disturbed Area
17.4	16.4	0.0	8.0

5. Do you plan to disturb more than 5 acres of soil at any one time? ● Yes ○ No

6. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	B	C	D
%	%	%	100 %

7. Is this a phased project? ○ Yes ● No

8. Enter the planned start and end dates of the disturbance activities.

Start Date: 7/1/2021 – End Date: 7/1/2022

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9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.

Name

Ellicott Creek

9a. Type of waterbody identified in Question 9?

- ○ Wetland / State Jurisdiction On Site (Answer 9b)
- ○ Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 9b)
- ○ Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ● Stream / Creek Off Site
- ○ River On Site
- ○ River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ○ Other Type Off Site

9b. How was the wetland identified?

- ○ Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ○ Other (identify)

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001? ○ Yes ● No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001? ○ Yes ● No

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? ○ Yes ● No
If no, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ○ Yes ● No
If Yes, what is the acreage to be disturbed?

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ○ Yes ● No

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15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ● Yes ○ No ○ Unknown

16. What is the name of the municipality/entity that owns the separate storm sewer system?

Erie County

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ Yes ● No ○ Unknown

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law? ○ Yes ● No

19. Is this property owned by a state authority, state agency, federal government or local government? ○ Yes ● No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) ○ Yes ● No

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? ● Yes ○ No

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)? ● Yes ○ No
If No, skip questions 23 and 27-39.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? ● Yes ○ No

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24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ● **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer
Carmina Wood Morris DPC

Contact Name (Last, Space, First)
Wood Christopher

Mailing Address
487 Main St

City
Buffalo

State Zip
NY 14127-

Phone
716-842-3165

Fax
716-842-0263

Email
cwood@cwm-ae.com

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name
Christopher

MI

Last Name
Wood

Signature

Date
03 / 03 / 2021

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25. Has a construction sequence schedule for the planned management practices been prepared? ● Yes ○ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ● Check Dams
- ○ Construction Road Stabilization
- ● Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ○ Sediment Basin
- ○ Sediment Traps
- ● Silt Fence
- ● Stabilized Construction Entrance
- ● Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ○ Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ● Mulching
- ● Protecting Vegetation
- ○ Recreation Area Improvement
- ● Seeding
- ○ Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ○ Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ○ Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ○ Retaining Wall
- ○ Riprap Slope Protection
- ○ Rock Outlet Protection
- ○ Streambank Protection

Other

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Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

- ● **Preservation of Undisturbed Areas**
- ● **Preservation of Buffers**
- ○ **Reduction of Clearing and Grading**
- ○ **Locating Development in Less Sensitive Areas**
- ○ **Roadway Reduction**
- ○ **Sidewalk Reduction**
- ○ **Driveway Reduction**
- ○ **Cul-de-sac Reduction**
- ○ **Building Footprint Reduction**
- ○ **Parking Reduction**

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

- ● All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).
- ○ Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

0.661 **acre-feet**

29. Identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required(#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

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Table 1 - Runoff Reduction (RR) Techniques and Standard Stormwater Management Practices (SMPs)

	Total Contributing Area (acres)		Total Contributing Impervious Area (acres)
RR Techniques (Area Reduction)			
● Conservation of Natural Areas (RR-1)	1.0	and/or	0.0
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)		and/or	
○ Tree Planting/Tree Pit (RR-3)		and/or	
○ Disconnection of Rooftop Runoff (RR-4)		and/or	
RR Techniques (Volume Reduction)			
○ Vegetated Swale (RR-5)			
○ Rain Garden (RR-6)			
○ Stormwater Planter (RR-7)			
○ Rain Barrel/Cistern (RR-8)			
○ Porous Pavement (RR-9)			
○ Green Roof (RR-10)			
Standard SMPs with RRv Capacity			
○ Infiltration Trench (I-1)			
○ Infiltration Basin (I-2)			
○ Dry Well (I-3)			
○ Underground Infiltration System (I-4)			
● Bioretention (F-5)	4.0		3.0
○ Dry Swale (O-1)			
Standard SMPs			
○ Micropool Extended Detention (P-1)			
○ Wet Pond (P-2)			
○ Wet Extended Detention (P-3)			
○ Multiple Pond System (P-4)			
● Pocket Pond (P-5)	3.0		4.0
○ Surface Sand Filter (F-1)			
○ Underground Sand Filter (F-2)			
○ Perimeter Sand Filter (F-3)			
○ Organic Filter (F-4)			
○ Shallow Wetland (W-1)			
○ Extended Detention Wetland (W-2)			
○ Pond/Wetland System (W-3)			
○ Pocket Wetland (W-4)			
○ Wet Swale (O-2)			

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Table 2 - Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Alternative SMP	Total Contributing Impervious Area (acres)
○ Hydrodynamic	
○ Wet Vault	
○ Media Filter	
○ Other [ ]	

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Name

Manufacturer

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

Total RRv provided

0.199 **acre-feet**

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28).

○ **Yes** ● **No**

If Yes, go to question 36.
If No, go to question 32.

32. Provide the Minimum RRv required based on HSG.
[Minimum RRv Required = (P)(0.95)(Ai)/12, Ai=(S)(Aic)]

Minimum RRv Required

0.127 **acre-feet**

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

● **Yes** ○ **No**

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

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33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRv Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question 29.

WQv Provided

3.664 **acre-feet**

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRv provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a). 3.863

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? ● **Yes** ○ **No**

If Yes, go to question 36.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.

CPv Required

0.42 **acre-feet**

CPv Provided

0.42 **acre-feet**

36a. The need to provide channel protection has been waived because:

○ Site discharges directly to tidal waters or a fifth order or larger stream.

○ Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (37a), if applicable.

Total Overbank Flood Control Criteria (Qp)

Pre-Development

4.34 **CFS**

Post-development

3.63 **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development

7.33 **CFS**

Post-development

4.38 **CFS**

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37a. The need to meet the Qp and Qf criteria has been waived because:

- ○ Site discharges directly to tidal waters or a fifth order or larger stream.
- ○ Downstream analysis reveals that the Qp and Qf controls are not required

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? ● Yes ○ No

If Yes, Identify the entity responsible for the long term Operation and Maintenance

Sawyer's Landing LLC

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required(#28). (See question 32a) This space can also be used for other pertinent project information.

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40. Identify other DEC permits, existing and new, that are required for this project/facility.

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Solid Waste
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ● Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers
- ○ Stream Bed or Bank Protection / Article 15
- ○ Endangered or Threatened Species(Incidental Take Permit)
- ○ Individual SPDES
- ○ SPDES Multi-Sector GP NYR
- ○ Other
- ● None

41. Does this project require a US Army Corps of Engineers Wetland Permit? ● Yes ○ No
If Yes, Indicate Size of Impact. .

42. Is this project subject to the requirements of a regulated, traditional land use control MS4? ● Yes ○ No
(If No, skip question 43)

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ● Yes ○ No

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. NYR

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Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name: Will

MI:

Print Last Name: Severyn

Owner/Operator Signature: William T Severyn

Date: 03/03/2021

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Appendix C

MS4 SWPPP Acceptance Form

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NYS Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit

*(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information	
1. Owner/Operator Name:	Sawyer's Landing LLC
2. Contact Person:	Will Severyn
3. Street Address:	43 Central Ave
4. City/State/Zip:	Lancaster, NY 14086
II. Project Site Information	
5. Project/Site Name:	Sawyer's Landing
6. Street Address:	Dodge Road
7. City/State/Zip:	Amherst, NY 14228
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information	
8. SWPPP Reviewed by:	
9. Title/Position:	
10. Date Final SWPPP Reviewed and Accepted:	
IV. Regulated MS4 Information	
11. Name of MS4:	
12. MS4 SPDES Permit Identification Number: NYR20A	
13. Contact Person:	
14. Street Address:	
15. City/State/Zip:	
16. Telephone Number:	

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MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

Date:

VI. Additional Information

(NYS DEC - MS4 SWPPP Acceptance Form - January 2015)

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Appendix D

NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity Permit No. GP-0-20-001

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70

of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

1-23-20

Authorized Signature

Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

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Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;

2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State.*

3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

*Discharge*s authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the *Stormwater Pollution Prevention Plan* ("SWPPP") the reason(s) for the

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deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:

   (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharge*s;

   (ii) Control stormwater *discharge*s, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;

   (iii) *Minimize* the amount of soil exposed during *construction activity*;

   (iv) *Minimize* the disturbance of *steep slopes*;

   (v) *Minimize* sediment *discharge*s from the site;

   (vi) Provide and maintain *natural buffer*s around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharge*s, unless *infeasible*;

   (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;

   (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and

   (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.

b. **Soil Stabilization**. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments

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listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

c. **Dewatering**. *Discharges* from *dewatering* activities, including *discharges* from *dewatering* of trenches and excavations, must be managed by appropriate control measures.

d. **Pollution Prevention Measures**. Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards.* At a minimum, such measures must be designed, installed, implemented and maintained to:

(i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;

(ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and

(iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

e. **Prohibited *Discharges*.** The following *discharges* are prohibited:

(i) Wastewater from washout of concrete;

(ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

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(iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;

(iv) Soaps or solvents used in vehicle and equipment washing; and

(v) Toxic or hazardous substances from a spill or other release.

f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices ("SMPs") are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

(i) Runoff Reduction Volume ("RRv"): Reduce the total Water Quality Volume ("WQv") by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

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For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site discharges directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria ("Qp"): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria ("Qf"): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

b. *Sizing Criteria* for *New Development* in Enhanced Phosphorus Removal Watershed

(i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be

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calculated in accordance with the criteria in Section 10.3 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible*.

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site *discharge*s directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

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c. Sizing Criteria for Redevelopment Activity

(i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.

(1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or

(2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or

(3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or

(4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

(ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iii) *Overbank* Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

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d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharges* necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;

2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharges* authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharges* authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharges* will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

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E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharges*; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.

3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: "Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned"; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharges* from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.

4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **not** authorized by this permit:

1. *Discharges* after *construction activities* have been completed and the site has undergone *final stabilization*;

2. *Discharges* that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;

3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;

4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

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operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;

6. *Construction activities* for residential, commercial and institutional projects:

   a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

7. *Construction activities* for linear transportation projects and linear utility projects:

   a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

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8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:

   a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.

      - 1-5 acres of disturbance - 20 feet
      - 5-20 acres of disturbance - 50 feet
      - 20+ acres of disturbance - 100 feet, or

   b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
      (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
      (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
      (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
      (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or

   c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

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(i) No Affect
(ii) No Adverse Affect
(iii) Executed Memorandum of Agreement, or

d. Documentation that:

(i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharges* from *construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the "MS4 SWPPP Acceptance" form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.

3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of *Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4* . This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

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B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (http://www.dec.ny.gov/). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

   NOTICE OF INTENT
   NYS DEC, Bureau of Water Permits
   625 Broadway, 4th Floor
   Albany, New York 12233-3505

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.

3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.

4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.

2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:

   a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (http://www.dec.ny.gov/) for more information,

   b. where required, all necessary Department permits subject to the *Uniform Procedures Act ("UPA")* (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators* of *construction activities* that are required to obtain *UPA* permits

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must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

c. the final SWPPP has been prepared, and

d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.

3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

   a. For *construction activities* that are not subject to the requirements of a *regulated, traditional land use control MS4*:

      (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or

      (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has not been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;

      (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

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b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:

(i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed "*MS4* SWPPP Acceptance" form, or

(ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed "MS4 SWPPP Acceptance" form.

4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination ("NOT") has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor's or subcontractor's certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land*

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use control MS4, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

a. The *owner or operator* shall have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.

c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

d. The *owner or operator* shall install any additional site-specific practices needed to protect water quality.

e. The *owner or operator* shall include the requirements above in their SWPPP.

4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..

5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.

6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

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regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of *a construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

   An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4,* the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.

2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

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operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.

2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.

3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.

4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:

    a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

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b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*;

c. to address issues or deficiencies identified during an inspection by the *qualified inspector,* the Department or other regulatory authority; and

d. to document the final construction conditions.

5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.

6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor.* The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

   The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

   "I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with

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the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharges* from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:

   a. Background information about the scope of the project, including the location, type and size of project

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b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge*(s);

c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);

d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;

e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;

f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;

g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;

h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;

i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection

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schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;

k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and

l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

   Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

   The post-construction stormwater management practice component of the SWPPP shall include the following:

   a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

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b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;

c. A Stormwater Modeling and Analysis Report that includes:
   (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;

   (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;

   (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;

   (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;

   (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and

   (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;

d. Soil testing results and locations (test pits, borings);

e. Infiltration test results, when required; and

f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

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3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria,* Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators* of *construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators* of the *construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

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begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- New York State Erosion and Sediment Control Certificate Program holder
- Registered Landscape Architect, or
- someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:

   a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located

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in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:

a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.

b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

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d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization,* and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.B.1 of this permit.

e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization,* all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site*, and all points of *discharge* from the *construction site*.

4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

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a. Date and time of inspection;

b. Name and title of person(s) performing inspection;

c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

d. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This shall include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;

f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;

g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;

i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);

k. Identification and status of all corrective actions that were required by previous inspection; and

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l. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the *qualified inspector.* Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.

2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:

   a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

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b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;

c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.

d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.

3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.

4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the "MS4 Acceptance" statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector*'s final site inspection certification(s) required in Part V.A.3. of this permit.

5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:

a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

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b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),

c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,

d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

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Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator,* its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to $37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

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E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit , or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:

    a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

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(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(i) the chief executive officer of the agency, or

(ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

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superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.

3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.

4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4,* or by a duly authorized representative of that person.

   It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

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include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge*(s), the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner's or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

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3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.

4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.

2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

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R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

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APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

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Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property –means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both "sewage" and "stormwater".

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for "*Construction Activity(ies)*" also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for "*Commence (Commencement of) Construction Activities*" and "*Larger Common Plan of Development or Sale*" *also.*

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system

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and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

Embankment –means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department's rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

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Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term "plan" in "larger common plan of development or sale" is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same "common plan" is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State;
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a *combined sewer*; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer –means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

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New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

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Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

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SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

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Steep Slope – means land area designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint sources*. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint sources*, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

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training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

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APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single family home not located in one of the watersheds listed in Appendix C or not *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E
- Construction of a barn or other *agricultural building*, silo, stock yard or pen.

The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects
- Pond construction
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover
- Cross-country ski trails and walking/hiking trails
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

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Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

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Table 2

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

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Table 2 (Continued)

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover,* and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

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APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River - Figure 1
- Onondaga Lake Watershed - Figure 2
- Greenwood Lake Watershed -Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

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Appendix C

Figure 1 - New York City Watershed East of the Hudson

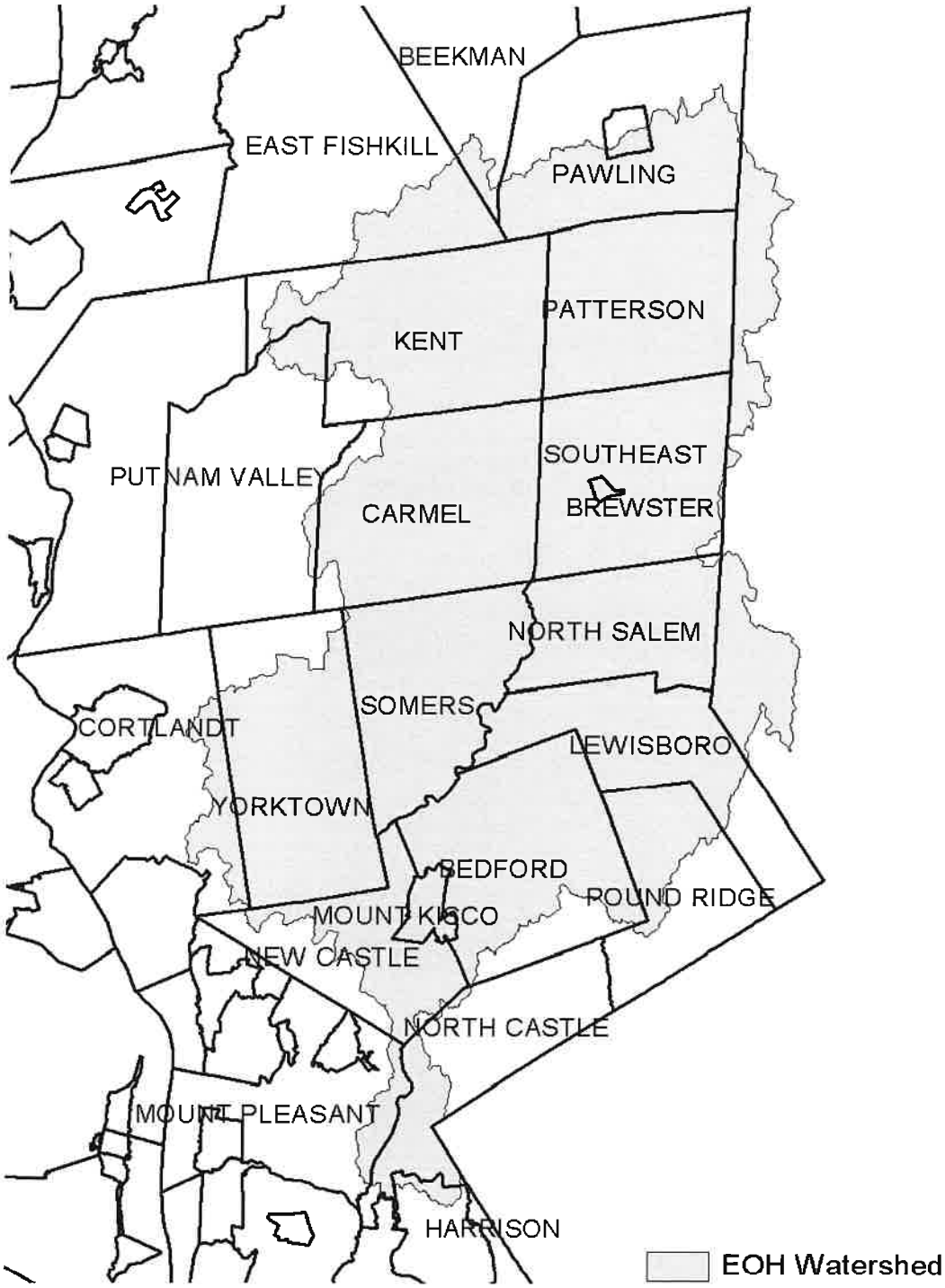

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Figure 2 - Onondaga Lake Watershed



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Figure 3 - Greenwood Lake Watershed



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Figure 4 - Oscawana Lake Watershed

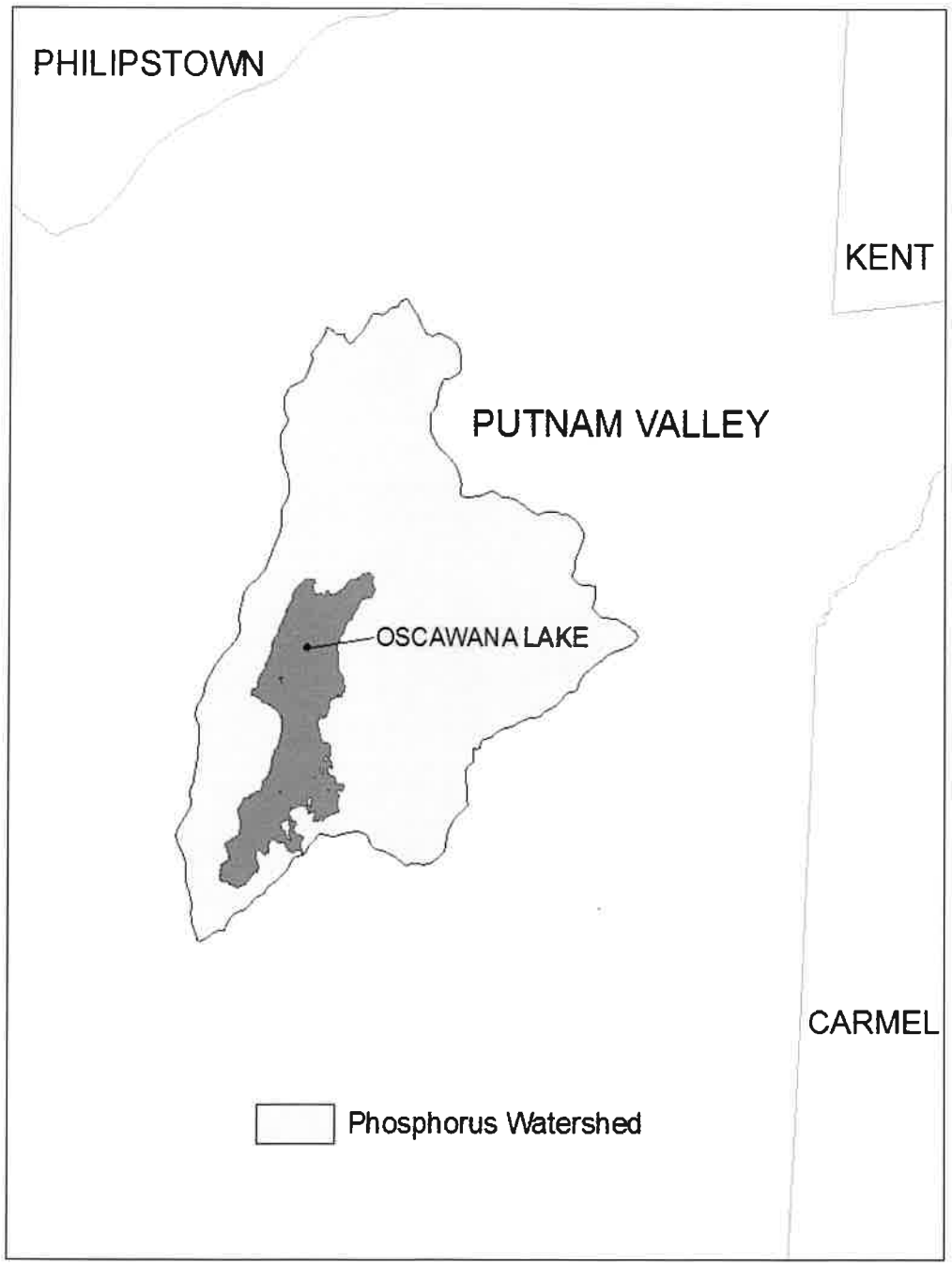

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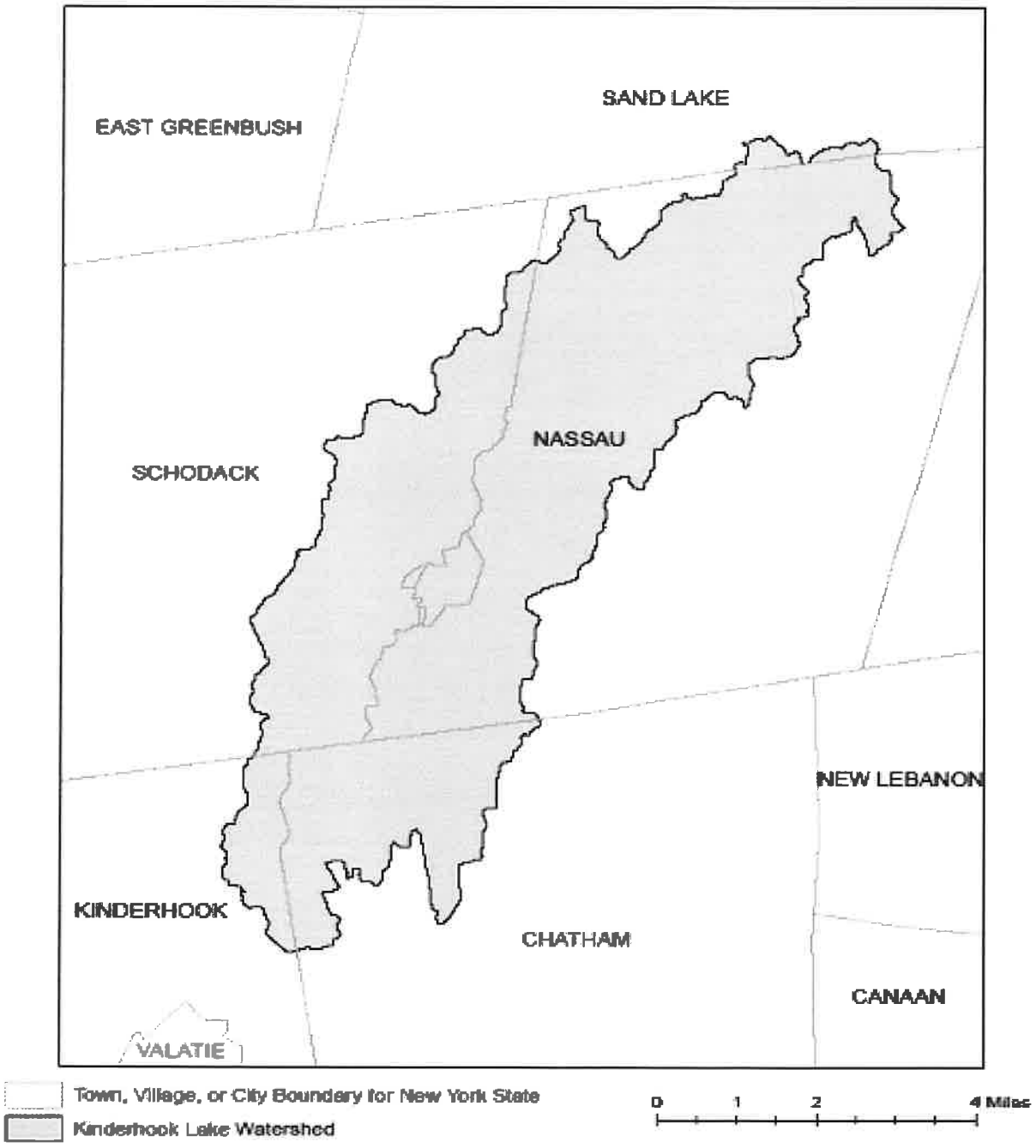
Figure 5 - Kinderhook Lake Watershed



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APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River - See Figure 1 in Appendix C

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APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

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APPENDIX F – List of NYS DEC Regional Offices

Region	Covering the following counties:	Division of Environmental Permits (DEP) Permit Administrators	Division of Water (DOW) Water (SPDES) Program
1	Nassau and Suffolk	50 Circle Road Stony Brook, NY 11790 Tel. (631) 444-0365	50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0405
2	Bronx, Kings, New York, Queens and Richmond	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4997	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4933
3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester	21 South Putt Corners Road New Paltz, NY 12561-1696 Tel. (845) 256-3059	100 Hillside Avenue, Suite 1w White Plains, NY 10603 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1150 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2069	1130 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	1115 State Route 86, Po Box 296 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, NY 12885-1172 Tel. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Appendix E

Forms

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

STORM WATER POLLUTION PREVENTION PLAN
CONTRACTOR'S CERTIFICATION STATEMENT

Sawyer's Landing

CONTRACTOR'S CERTIFICATION:

"I certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP for the construction site identified in such SWPPP as a condition of authorization to discharge storm water. I also understand that the operator must comply with the terms and conditions of the New York State Pollutant Discharge Elimination System (SPDES) general permit for storm water discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards."

Note: The contractor shall have at least one NYSDEC trained individual onsite at all times when earthwork and other SWPPP associated work is being performed from each contractor(s) and subcontractor(s). Each contractor(s) and subcontractor(s) shall provide copies of these individuals' certifications to the Town of Amherst.

Name: _____
(Print)

Signature: _____

Title: _____

Company Name: _____

Address: _____

Telephone Number: _____

Date: _____

Scope of Services: _____

Trained Individual(s) Responsible for Implementation: _____

This form must be signed by a responsible corporate officer or other party meeting the "Signatory Requirements" of the NYSDEC SPDES General Permit

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

SWPPP Preparer Certification Form

SPDES General Permit for Stormwater Discharges From Construction Activity (GP-0-20-001)

Project Site Information

Project/Site Name

Sawyer's Landing

Owner/Operator Information

Owner/Operator (Company Name/Private Owner/Municipality Name)

Sawyer's Landing LLC

Certification Statement – SWPPP Preparer

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Christopher		Wood
First name	MI	Last Name

Signature

3/3/21
Date

Revised: January 2020

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Owner/Operator Certification Form

SPDES General Permit For Stormwater Discharges From Construction Activity (GP-0-20-001)

Project/Site Name: Sawyer's Landing

eNOI Submission Number: _____

eNOI Submitted by: ☐ Owner/Operator ☑ SWPPP Preparer ☐ Other

Certification Statement - Owner/Operator

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Owner/Operator First Name M.I. Last Name

William T Severyn

Signature

3/3/21

Date

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Appendix F

NYSDEC Notice of Termination (NOT)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505
(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ___ ___ ___ ___ ___ ___

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person: | 4a.Telephone:

4b. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. □ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP. ***Date final stabilization completed** (month/year): _____

9b. □ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ___ ___ ___ ___ ___ ___
(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. □ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? □ yes □ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? □ yes □ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

_____

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? □ yes □ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

□ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.

□ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).

□ For post-construction stormwater management practices that are privately owned, a mechanism is in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the owner or operator's deed of record.

□ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university or hospital), government agency or authority, or public utility; policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____ (acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? □ yes □ no

(If Yes, complete section VI - "MS4 Acceptance" statement

V. Additional Information/Explanation:

(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:

Title/Position:

Signature:	Date:

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued	
VII. Qualified Inspector Certification - Final Stabilization:	
I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:
VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):	
I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:
IX. Owner or Operator Certification	
I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2015)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Appendix G

Construction Documents

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York
SITE DEVELOPMENT DRAWINGS

AGENCIES

ENGINEERING DEPARTMENT
NAME/TITLE: JEFFERY BURROUGHS, P.E. – TOWN ENGINEER
COMPANY/DEPT: TOWN OF AMHERST ENGINEERING DEPARTMENT
ADDRESS: 1100 NORTH FOREST ROAD
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716-631-7154

PLANNING & ZONING DEPARTMENT
NAME/TITLE: DANIEL HOWARD – PLANNING DIRECTOR
COMPANY/DEPT: TOWN OF AMHERST PLANNING DEPARTMENT
ADDRESS: 5583 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716-631-7051

LAND SURVEYOR
NAME/TITLE:
COMPANY/DEPT: GPI ENGINEERING, LANDSCAPE ARCHITECTURE SURVEYING, LLP
ADDRESS: 4950 GENESEE STREET, SUITE 100
BUFFALO, NEW YORK 14225
TELEPHONE 716-633-4844

UTILITIES

NATURAL GAS
COMPANY/DEPT: NATIONAL FUEL GAS CORP.
ADDRESS: 6363 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716-857-7000

TELEPHONE COMPANY
COMPANY/DEPT: VERIZON
ADDRESS: 65 FRANKLIN STREET
BUFFALO, NEW YORK 14203
TELEPHONE 716-840-8748

CABLE COMPANY
COMPANY/DEPT: TIME WARNER
ADDRESS: 789 CHURCH ROAD
WEST SENECA, NEW YORK
TELEPHONE 716-558-8615

ELECTRIC COMPANY
COMPANY/DEPT: NATIONAL GRID
ADDRESS: 144 KENSINGTON AVENUE
BUFFALO, NEW YORK 14214
TELEPHONE 716-236-2738

WATER
COMPANY/DEPT: ERIE COUNTY WATER AUTHORITY
ADDRESS: 3030 UNION ROAD
CHEEKTOWAGA, NEW YORK 14227
TELEPHONE 716-684-1510

DIG SAFELY NEW YORK
TELEPHONE 1-800-962-7962

OWNER/DEVELOPER

NAME: Sawyer's Landing LLC
ADDRESS 43 Central Ave Suite #300
Lancaster, NY 14086

TELEPHONE 716 818-0207

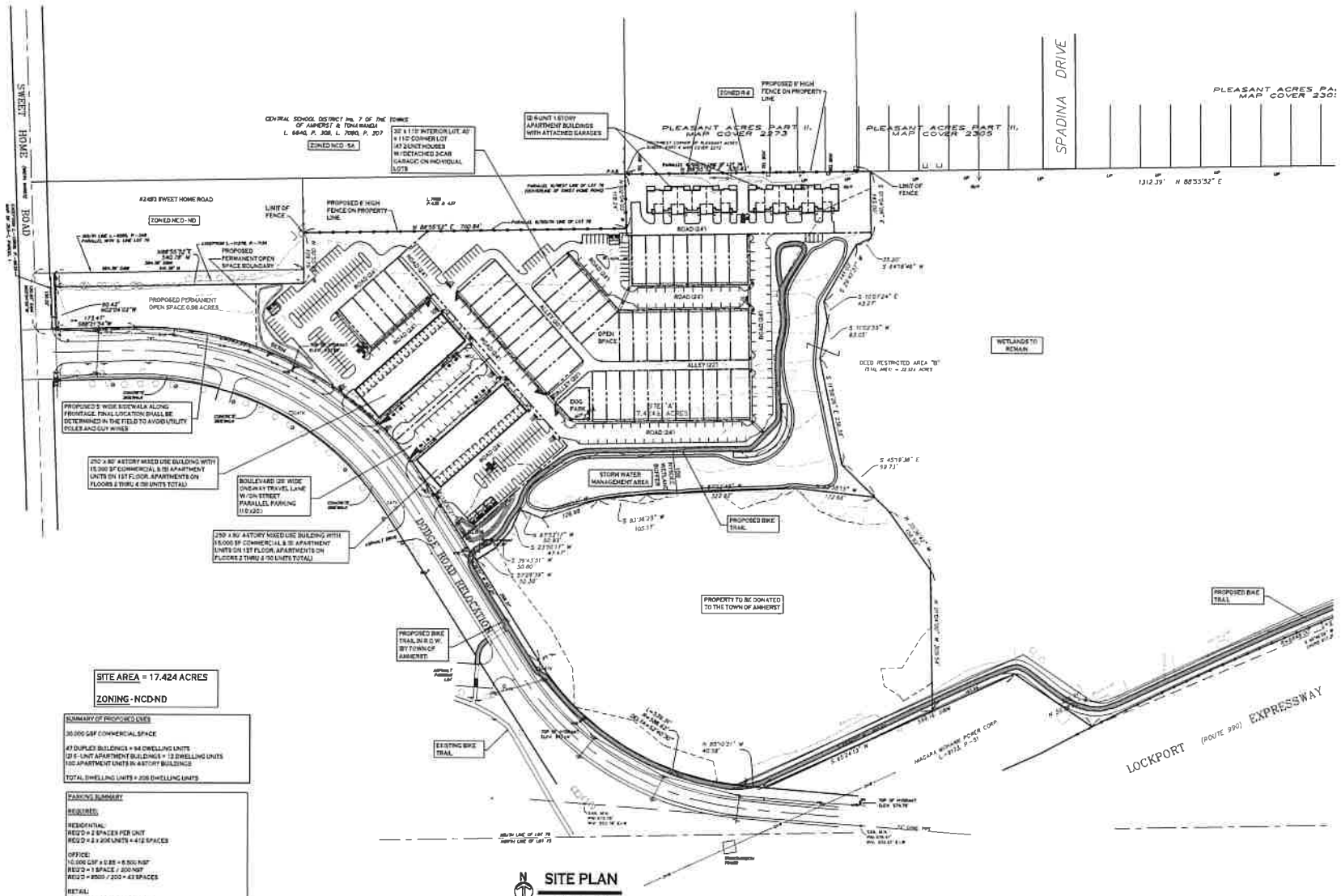
ENGINEER

Carmina • Wood • Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

FEBRUARY 2021

DWG NO.	DRAWING TITLE
–	COVER SHEET
–	TOPOGRAPHIC MAP
–	BOUNDARY SURVEY
C-001	DEMOLITION & EROSION CONTROL PLAN
C-002	DEMOLITION & EROSION CONTROL DETAILS
C-100	OVERALL SITE PLAN
C-101	SITE PLAN
C-102	PARCEL MAP
C-103	SITE DETAILS
C-104	SITE DETAILS
C-200	GRADING PLAN
C-300	STORM DRAINAGE PLAN
C-301	STORM DRAINAGE DETAILS
C-302	STORM DRAINAGE DETAILS
C-303	STORM DRAINAGE DETAILS
C-400	UTILITY PLAN
C-401	SANITARY SEWER DETAILS
C-402	SANITARY SEWER DETAILS
C-403	SANITARY SEWER GENERAL NOTES
C-404	SANITARY SEWER TESTING NOTES
C-405	WATER DETAILS
C-406	WATER DETAILS
C-407	WATER DETAILS & NOTES
C-408	INSULATED ENCLOSURE DETAIL
L-100	LANDSCAPE PLAN

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)



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REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

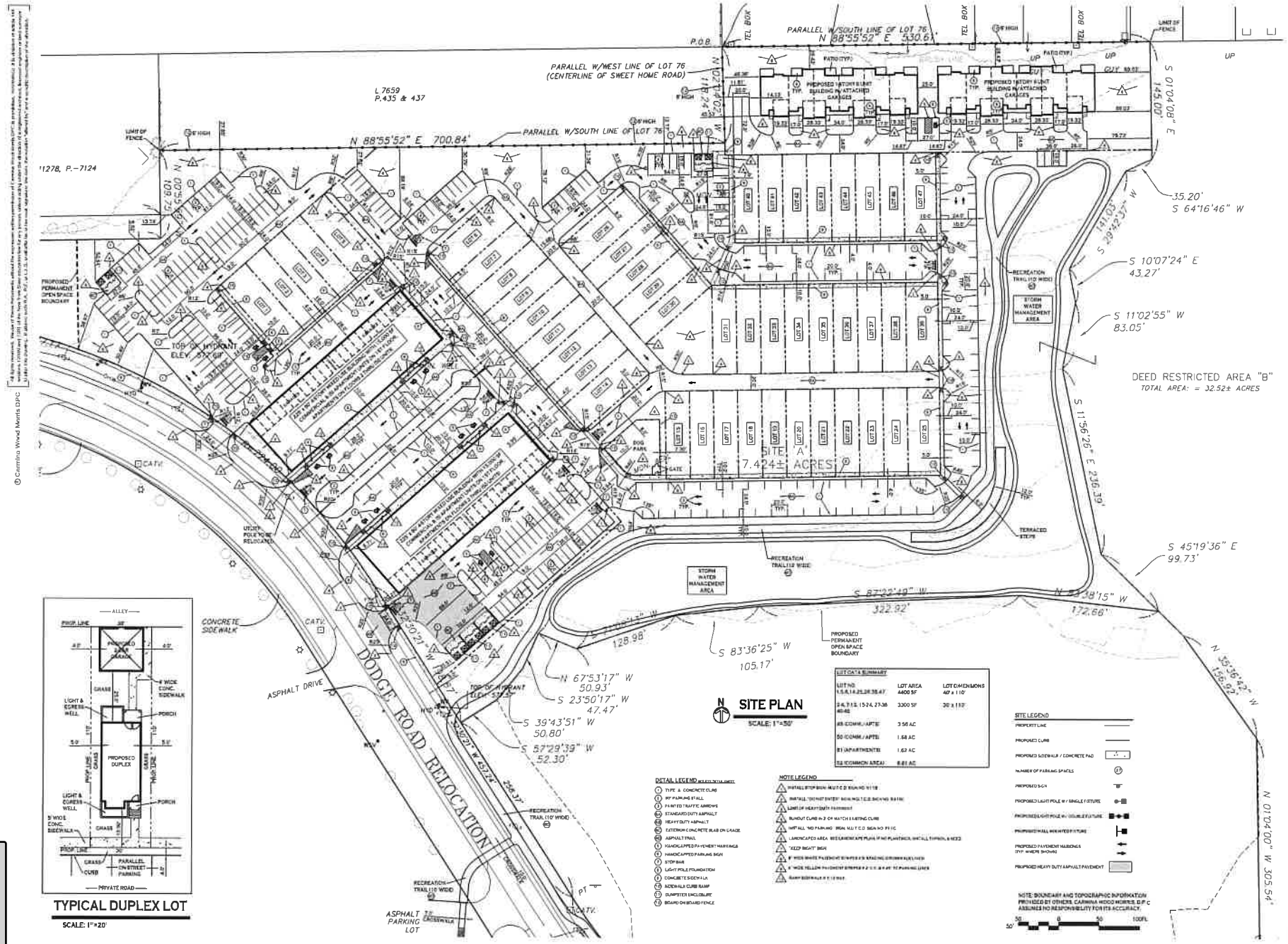
Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Overall Site Plan

DRAWING NO.
C-100

Project no.: 21.011

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)



TYPICAL DUPLEX LOT
SCALE: 1"=20'

SITE PLAN
SCALE: 1"=50'

LOT DATA SUMMARY		
LOT NO.	LOT AREA	LOT DIMENSIONS
1-5, 8, 14, 21, 28, 35, 47	4400 SF	40' x 110'
6-7, 9-13, 15-24, 27-36, 48-46	3300 SF	30' x 110'
48 (COMM./APTS)	3.56 AC	
50 (COMM./APTS)	1.58 AC	
51 (APARTMENTS)	1.62 AC	
52 (COMMON AREA)	8.81 AC	

DETAIL LEGEND
1. TYPE 'A' CONCRETE CURB
2. 90° PARKING STALL
3. PAINTED TRAFFIC ARROWS
4. STANDARD DUTY ASPHALT
5. HEAVY DUTY ASPHALT
6. EXTERIOR CONCRETE SLAB ON GRADE
7. ASPHALT TRAIL
8. HANDICAPPED PAVEMENT MARKINGS
9. HANDICAPPED PARKING SIGN
10. STOP BAR
11. LIGHT POLE FOUNDATION
12. CONCRETE SIDEWALK
13. SIDEWALK CURB RAMP
14. DUMPSTER ENCLOSURE
15. BOARD ON BOARD FENCE

NOTE LEGEND

SITE LEGEND
PROPERTY LINE
PROPOSED CURB
PROPOSED SIDEWALK / CONCRETE PAD
NUMBER OF PARKING SPACES
PROPOSED SIGN
PROPOSED LIGHT POLE W/ SINGLE FIXTURE
PROPOSED LIGHT POLE W/ DOUBLE FIXTURE
PROPOSED WALL MOUNTED FIXTURE
PROPOSED PAVEMENT MARKINGS (TYP. WHERE SHOWN)
PROPOSED HEAVY DUTY ASPHALT PAVEMENT

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS. CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50 0 50 100FT

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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

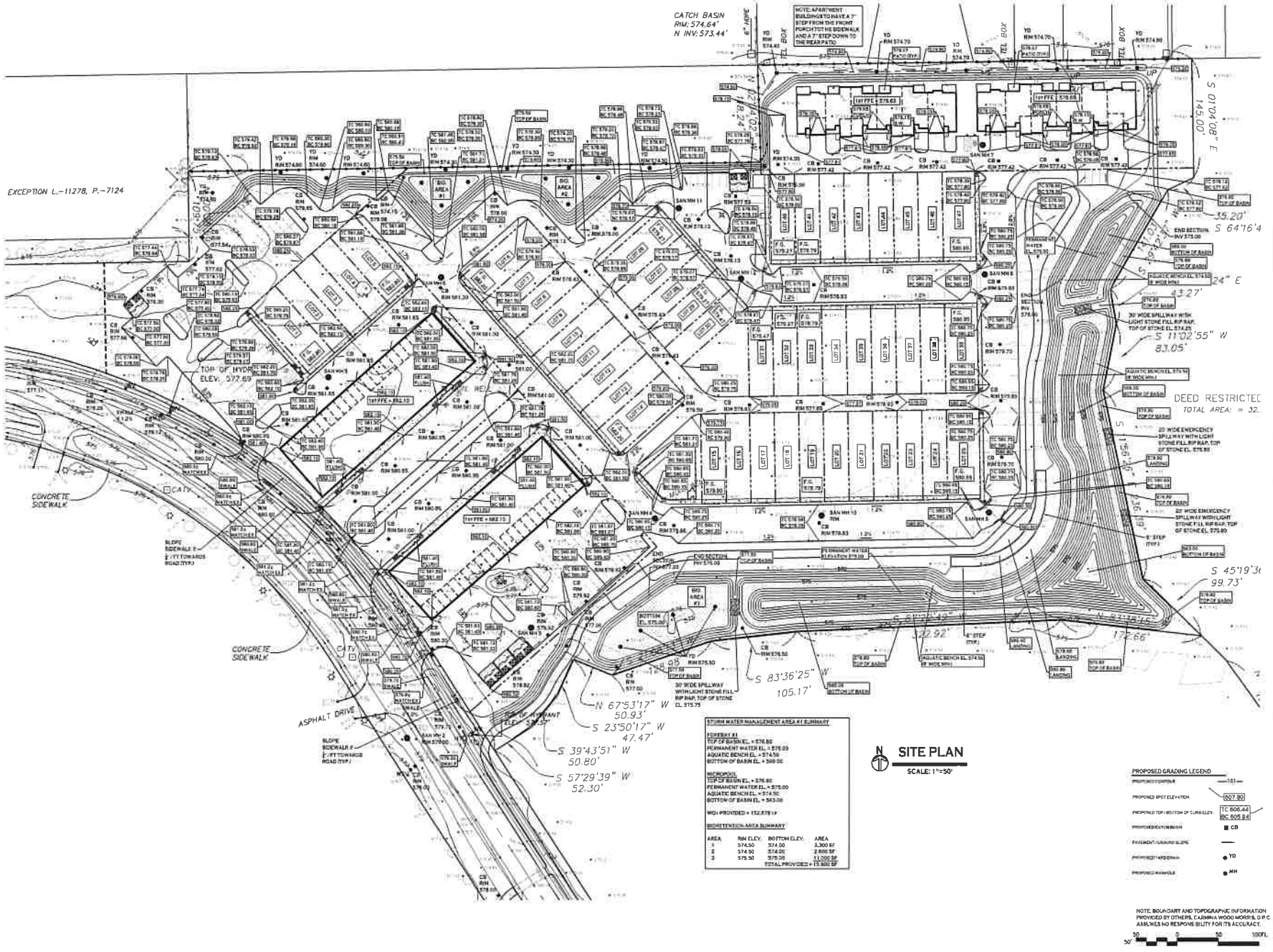
Date: 3/24/21
Drawn by: C. Wood
Scale: As Plotted

DRAWING NAME:
Site Plan

DRAWING NO.
C-101

Project no.: 21.01

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)



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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As noted

DRAWING NAME:
Grading Plan

DRAWING NO.
C-200

Project no.: 21.011

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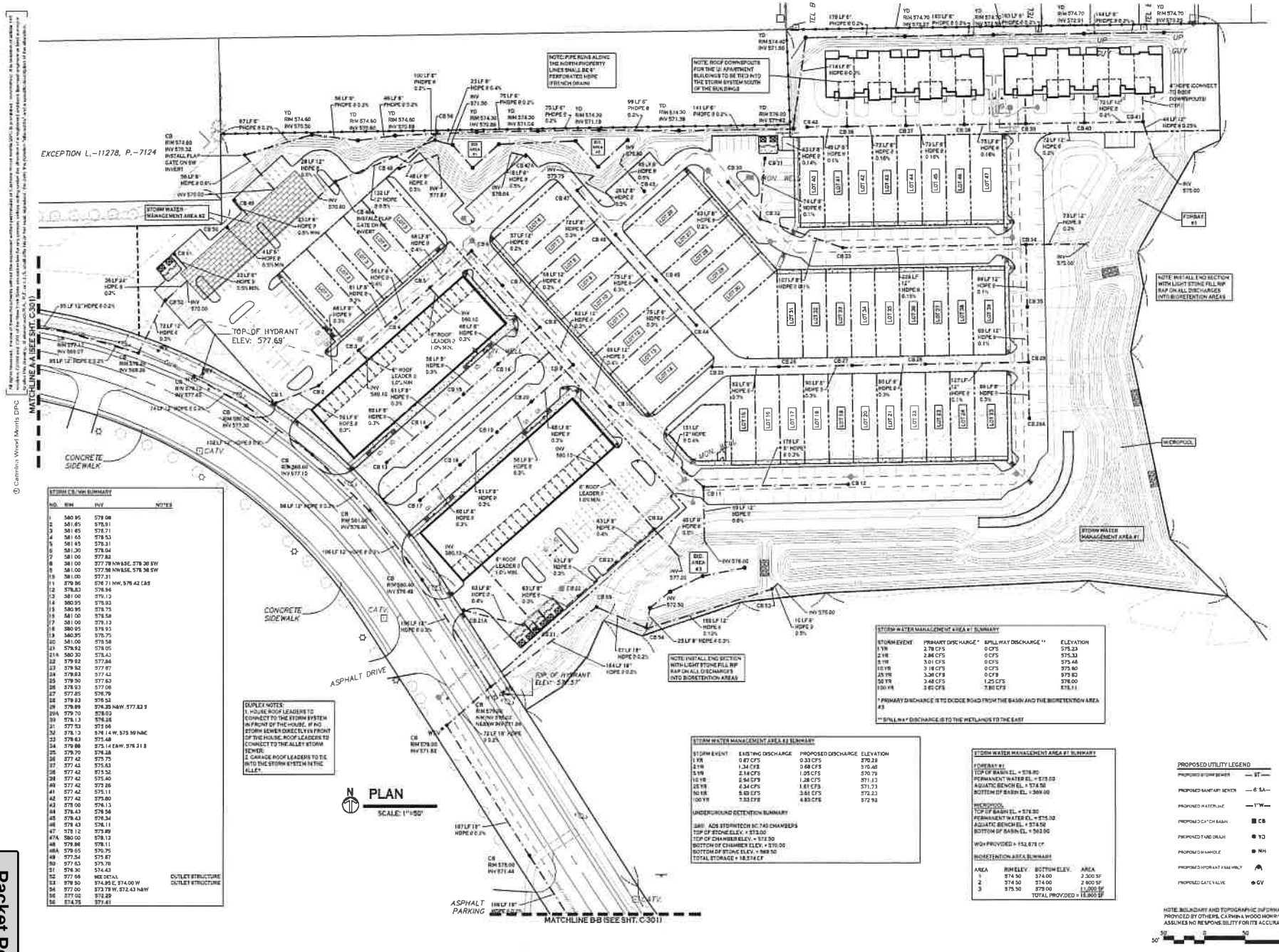

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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

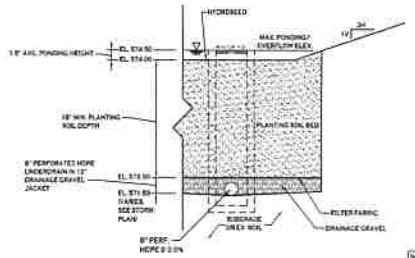
DRAWING NAME:
Storm Drainage Plan

DRAWING NO.
C-300

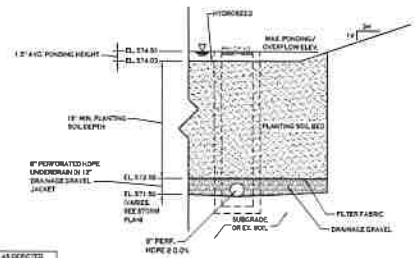
Project no.: 21.011

Packet Pg. 322

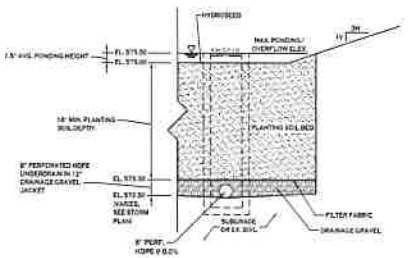
1.a



BIORETENTION AREA #1



BIORETENTION AREA #2



BIORETENTION AREA #3

NOTE: AS DEPICTED TYPICAL ON ALL BIORETENTION AREAS, PROPOSED GRADE IN BIORETENTION AREAS IS SET 6" ABOVE EXISTING GRADE ELEVATIONS ARE TO BE SET 6" ABOVE PROPOSED GRADE IN BIORETENTION AREAS.

BIORETENTION AREA - TYPICAL SECTIONS

NOT TO SCALE

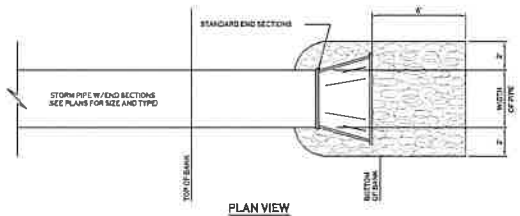
NOTES:
1. FILTER FABRIC TO BE NON-WOVEN CLASS 'C', MIRAFI 140 N OR APPROVED EQUIVALENT.
2. MULCH TO BE SHREDDED HARDWOOD, AGED 12 MONTHS MIN.
3. DRAINAGE GRAVEL TO MEET AASHTO M-43, NO. 57, SIZE 0.25" TO 0.75".
4. CONTRACTOR TO PROVIDE PLANTING SOIL SUBMITTAL SPECIFICATION FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.

NOTE: PLANTING SOIL SHALL BE LOAM/SAND MIX CONTAINING A MINIMUM OF 35 TO 55% SAND BY VOLUME AND LESS THAN 25% CLAY. SOIL SHOULD FALL WITHIN USCS TYPES SM OR SL WITH PERMEABILITY OF AT LEAST 0.5 FEET PER DAY. SOIL SHOULD BE FREE FROM STONES, STUMPS, ROOTS OR OTHER WOODY MATERIAL OVER 1" IN DIAMETER. PLACEMENT OF THE PLANTING SOIL SHOULD BE IN LIFTS OF 12" TO 18", LOOSELY COMPACTED.

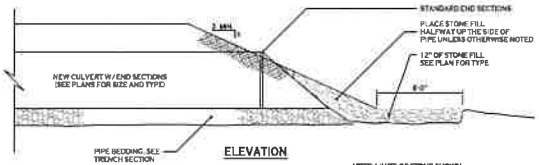
CHARACTERISTICS SHALL BE:
PH RANGE: 5.2 - 7.00
ORGANIC MATTER: 1.5 - 4.0%
MAGNESIUM: 35 LBS PER ACRE MIN.
PHOSPHERUS: 75 LBS PER ACRE MIN
POTASSIUM: 85 LBS PER ACRE MIN.
SOLUBLE SALTS: 500 PPM
CLAY: 10 TO 25%
SILT: 30 TO 55%
SAND: 35 TO 60%

BIO-RETENTION AREA SEEDING SPEC (NORTHEAST WETLAND GRASS SEED MIX):

SEED MIXTURE	VARIETY	PERCENT BY NO. OF SEEDS
CREEPING BENTGRASS	AGROSTIS STOLONIFERA	33.0
TUFTED HAIRGRASS	POA TRIVIALIS	17.0
MEADOW FOXTAIL	ALOPECURUS PRATENSIS	11.0
SWAMP TIMOTHY	MUHLENBERGIA	4.5
DEERTONGUE	PANICUM CLANDESTINUM	4.5



PLAN VIEW

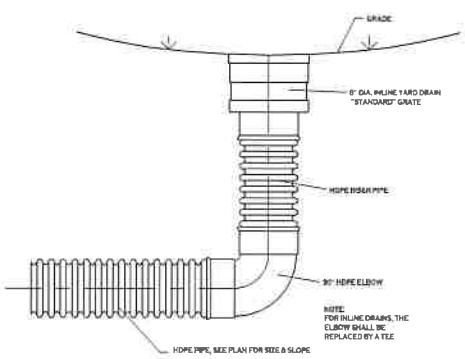


ELEVATION

NOTE: LIMITS OF STONE SHOWN ARE MINIMUMS. PLAN MAY INDICATE GREATER LIMITS

TYPICAL PIPE OUTLET W/ END SECTION & RIP RAP

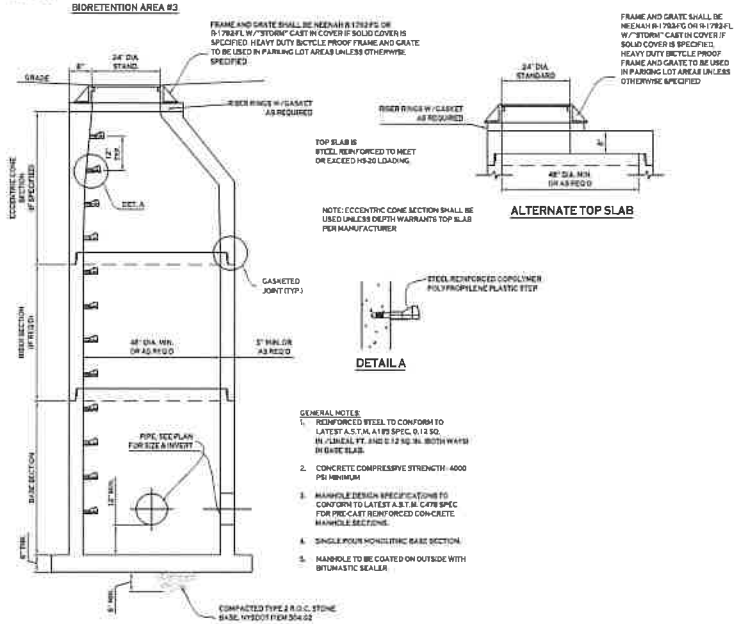
NOT TO SCALE



NOTE: FOR INLINE DRAINS, THE ELBOW SHALL BE REPLACED BY A TEE

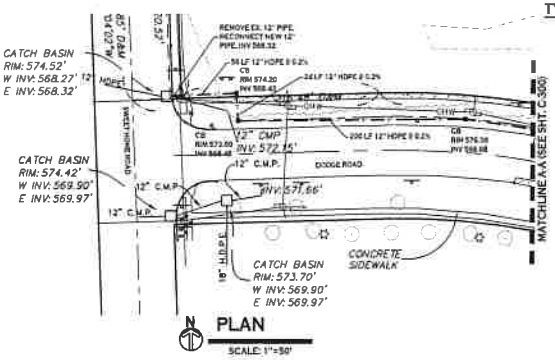
NOTE: SEE TYPICAL TRENCH SECTION FOR BEDDING REQUIREMENTS

TYPICAL YARD DRAIN DETAIL



TYPICAL STORM MANHOLE DETAIL

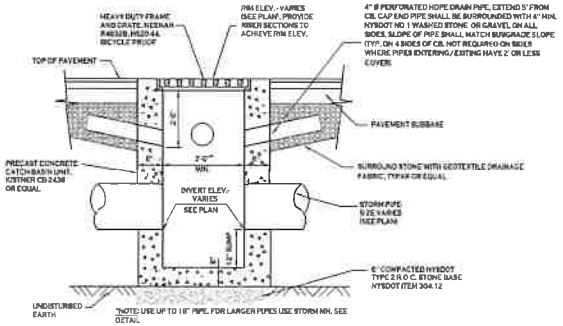
NOT TO SCALE



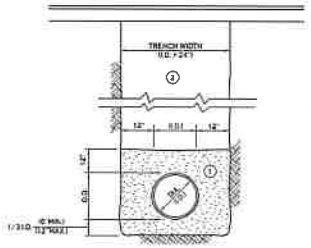
N PLAN

SCALE: 1"=50'





TYPICAL PRECAST CATCH BASIN
NOT TO SCALE



NOTES:
A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.
C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.
D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT | 1995 EDITION)

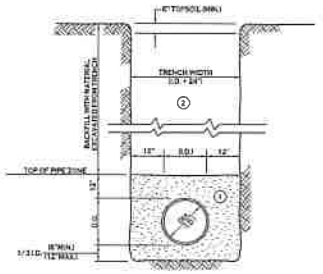
1. NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703.02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL (1)

2. TYPE 2 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYDOT SECTION 304.2.02 TYPE 2. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN TWO INCHES AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL (2)

STORM SEWER TRENCH SECTION IN PAVED AREAS
NOT TO SCALE



NOTES:
A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.
C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.
D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

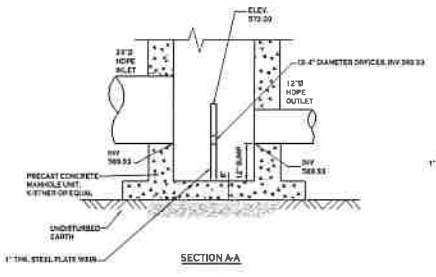
PIPE BEDDING MATERIAL (NYSDOT | 1995 EDITION)

1. NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703.02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL (1)

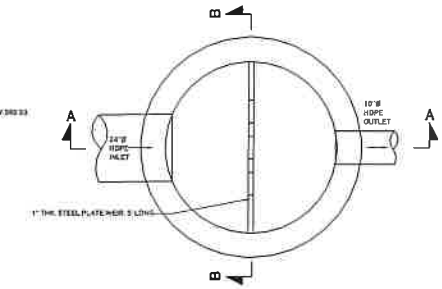
2. BACKFILL MATERIAL SHALL BE NATIVE SOIL CONTAINING NO UNSUITABLE MATERIAL COMPACTED IN 6" LIFTS.

STORM SEWER TRENCH SECTION IN UNPAVED AREAS
NOT TO SCALE



SECTION A-A

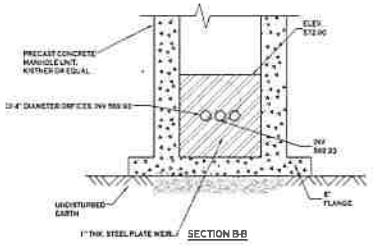
NOTES:
1. FASTEN STEEL PLATE TO CB WALL WITH ANGLE CLIPS AND BOLTS
2. STEEL PLATE, ANGLE CLIPS, AND BOLTS TO BE HOT DIPPED GALVANIZED



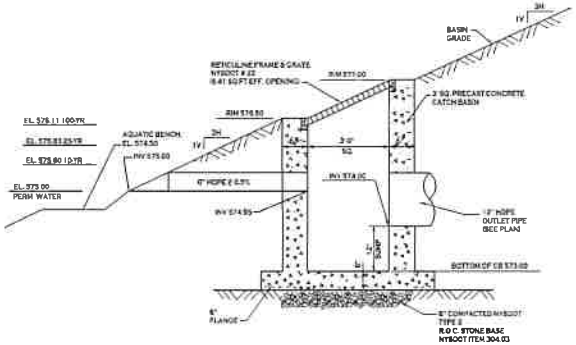
PLAN

*NOTE: USE 5'-0" I.D. MANHOLE

OUTLET CONTROL STRUCTURE - CB 52
NOT TO SCALE



SECTION B-B



DETENTION BASIN OUTLET STRUCTURE - CB 53
N.T.S.

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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Storm Drainage Details

DRAWING NO.
C-302

Project no.: 21,011

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

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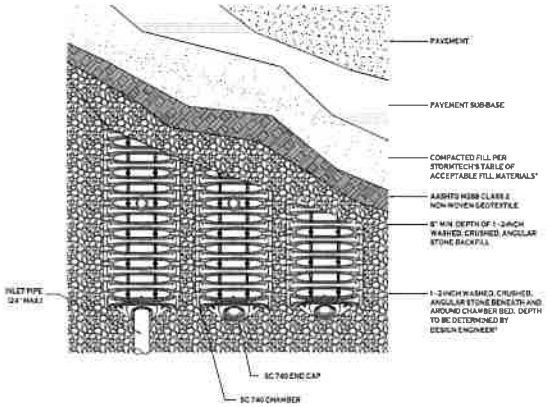


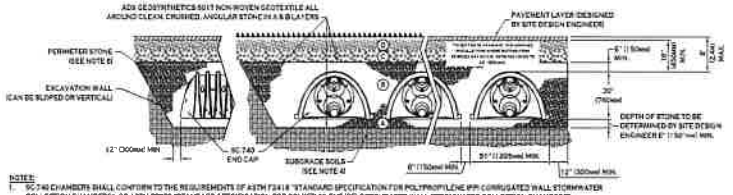
STORMTECH SC-740 CHAMBER SYSTEM PLAN VIEW DETAIL

NOT TO SCALE

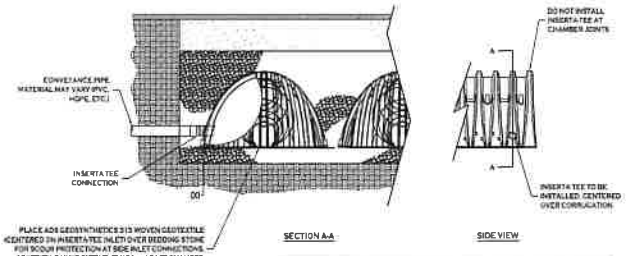
ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION/DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1]: A-1, A-2-4, A-3 OR AASHTO M43[1]: 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,500 lbs (89 kN).
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1]: 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1]: 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[4]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43 STONE)".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS



NOTES:
1. SC-740 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
6. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION



NOTE:
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
MC-3500	12" (300 mm)	6" (150 mm)
MC-4500	12" (300 mm)	8" (200 mm)

INSERTA TEE FITTINGS AVAILABLE FOR SOR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON

INSERTA TEE DETAIL

NOT TO SCALE

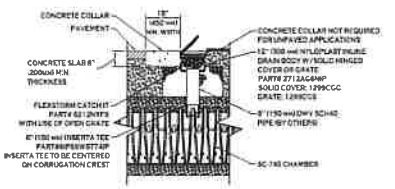
INSPECTION AND MAINTENANCE
STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
A. INSPECTION PORTS (IF PRESENT)
A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
B. ALL ISOLATOR ROWS
B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
○ MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
○ FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 rad) OR MORE IS PREFERRED
B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES:
1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



SC-740 6" INSPECTION PORT DETAIL

NOT TO SCALE

Carmina Wood Morris
487 Main Street Suite 500
Buffalo, New York 14203
P: 716.842.3180
F: 716.842.0293

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

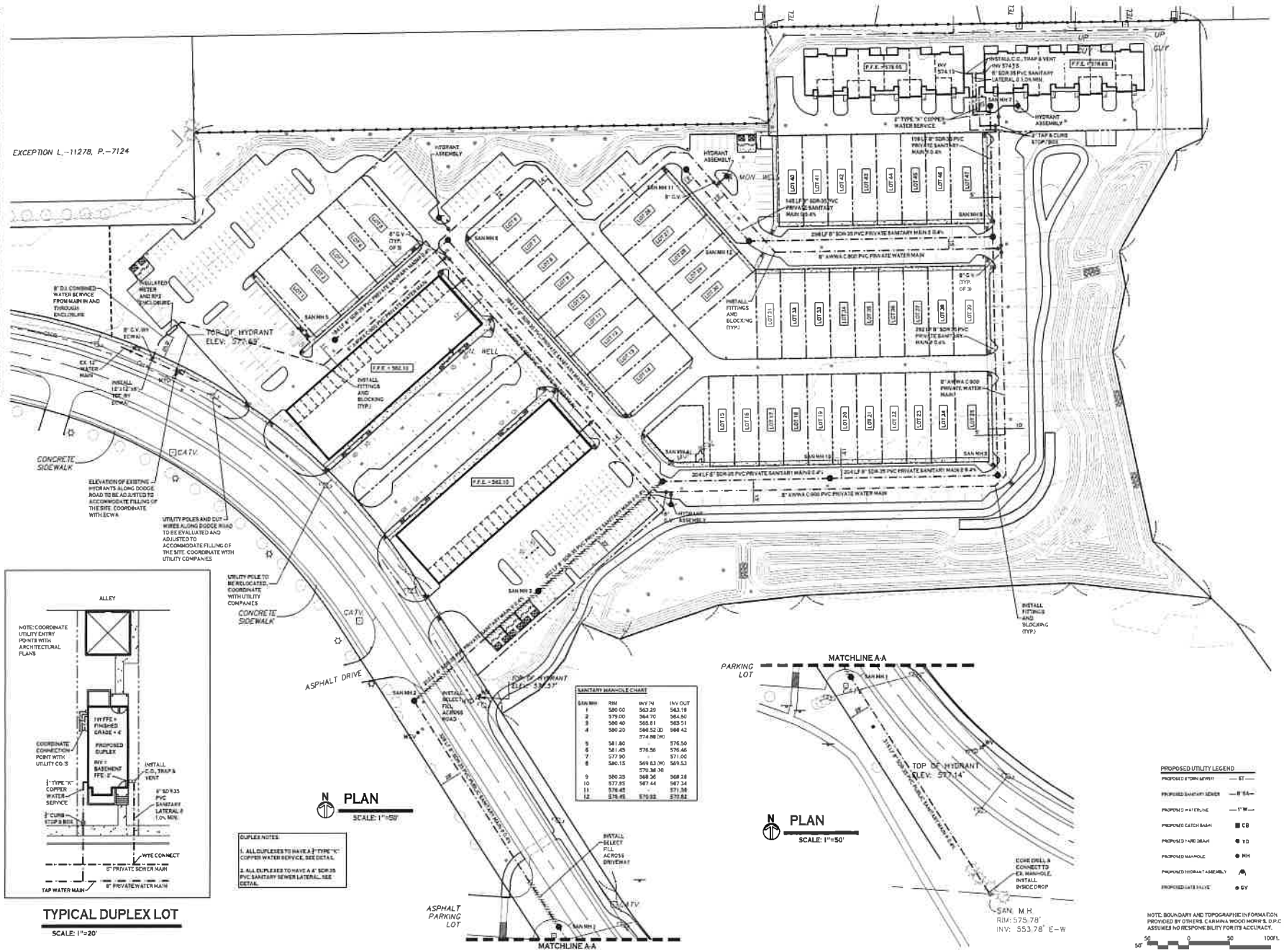
Date: 2/15/21
Drawn by: 2/24/21
Scale: As Noted

DRAWING NAME:
Storm Drainage Details

DRAWING NO.
C-303

Project no: 21,011

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)



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Carmina Wood Morris DPC

REVISIONS:
No. Description Date

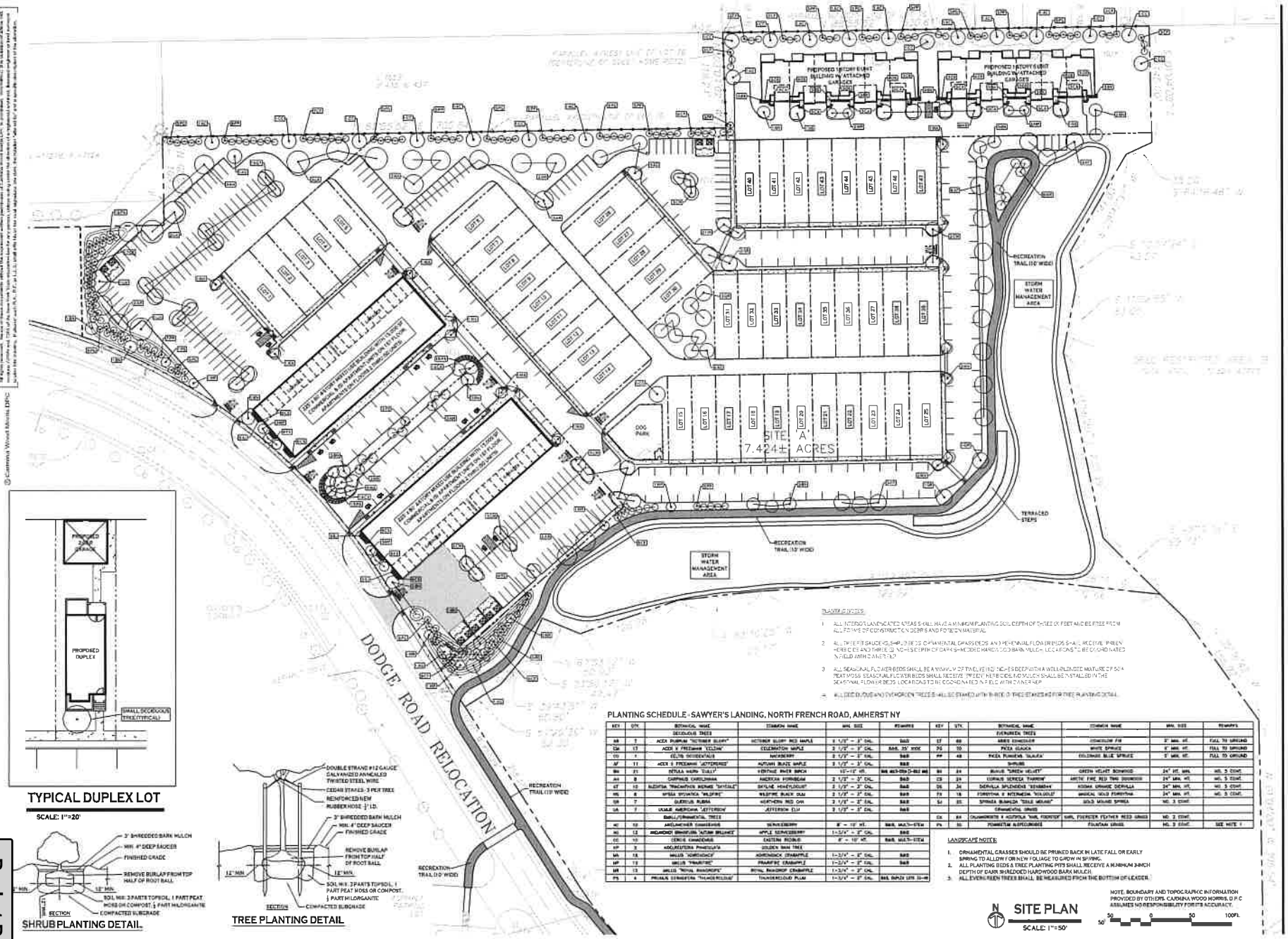
PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Utility Plan

DRAWING NO.
C-400

Project no.: 21,011



PLANTING NOTES:

1. ALL INTERIOR LANDSCAPED AREAS SHALL HAVE A MINIMUM PLANTING SOIL DEPTH OF THREE (3) FEET AND BE FREE FROM ALL FORMS OF CONSTRUCTION DEBRIS AND FOREIGN MATERIAL.
2. ALL TREE PITS AND SHRUB BEDS, ORNAMENTAL GRASS BEDS AND PERENNIAL FLOWER BEDS SHALL RECEIVE PRE-EMERGENT HERBICIDE AND THREE (3) INCHES DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH. LOCATIONS TO BE CLEARLY DELINEATED IN FIELD WITH CAMERON.
3. ALL SEASONAL FLOWER BEDS SHALL BE A MINIMUM OF TWELVE (12) INCHES DEEP WITH A WELL-BLENDED MIXTURE OF 50% PEAT MOSS. SEASONAL FLOWER BEDS SHALL RECEIVE PRE-EMERGENT HERBICIDE. NO MULCH SHALL BE INSTALLED IN THE SEASONAL FLOWER BEDS. LOCATIONS TO BE COORDINATED IN FIELD WITH CAMERON.
4. ALL DECIDUOUS AND EVERGREEN TREES SHALL BE STAKED WITH THREE (3) TREE STAKES AND FOR TREE PLANTING DETAIL.

PLANTING SCHEDULE - SAWYER'S LANDING, NORTH FRENCH ROAD, AMHERST NY

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		DECIDUOUS TREES			
AR	7	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	2 1/2" – 3" CAL.	B&B
CM	17	ACER X FREEMANII 'CELZAM'	CELEBRATION MAPLE	2 1/2" – 3" CAL.	B&B, 25' WIDE
CO	1	CELTIS OCCIDENTALIS	HACKBERRY	2 1/2" – 3" CAL.	B&B
AF	11	ACER X FREEMANII 'AUTUMN BLAZE'	AUTUMN BLAZE MAPLE	2 1/2" – 3" CAL.	B&B
BN	21	BETULA NIGRA 'DURA-1'	HERITAGE RIVER BIRCH	10'-12' HT.	B&B, MULTI-STEM
AA	8	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2 1/2" – 3" CAL.	B&B
GT	10	GLEDITSIA TRIACANTHOS INERMIS 'SKYCOLE'	SKYLINE HONEYLOCUST	2 1/2" – 3" CAL.	B&B
WS	8	MYRICA SYRIANICA 'WILDFIRE'	WILDFIRE BLACK OLIVE	2 1/2" – 3" CAL.	B&B
QR	7	QUERCUS RUBRA	NORTHERN RED OAK	2 1/2" – 3" CAL.	B&B
UA	7	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2 1/2" – 3" CAL.	B&B
		EARLY ORNAMENTAL TREES			
AC	12	AMELANCHIER CANADENSIS	SERVICEBERRY	8' – 10' HT.	B&B, MULTI-STEM
MS	13	MALUS X 'SPRINZAM'	APPLE SERVICEBERRY	1-3/4" – 2" CAL.	B&B
CC	10	CERCIS CANADENSIS	EASTERN REDBUD	8' – 10' HT.	B&B, MULTI-STEM
KP	3	KOELREUTERIA PANICULATA	GOLDEN RAIN TREE		
MA	18	MALUS 'ADIRONDACK'	ADIRONDACK CRABAPPLE	1-3/4" – 2" CAL.	B&B
MP	13	MALUS 'PRAIRIFIRE'	PRAIRIFIRE CRABAPPLE	1-3/4" – 2" CAL.	B&B
MR	13	MALUS 'ROYAL RAINDROPS'	ROYAL RAINDROP CRABAPPLE	1-3/4" – 2" CAL.	
PS	4	PRUNUS SERRULATA 'THUNDERCLOUD'	THUNDERCLOUD PLUM	1-3/4" – 2" CAL.	B&B, SIMILAR LOTS 33-46
		EVERGREEN TREES			
AB	69	ABIES CONCOLOR	CONCOLOR FIR	5' MIN. HT.	FULL TO GROUND
PG	10	PICEA GLAUCA	WHITE SPRUCE	6' MIN. HT.	FULL TO GROUND
PP	48	PICEA PUNGENS 'GLAUCA'	COLORADO BLUE SPRUCE	5' MIN. HT.	FULL TO GROUND
		SHRUBS			
BM	24	BUXUS 'GREEN VELVET'	GREEN VELVET BOXWOOD	24" HT. MIN.	MO. 3 CONT.
CS	24	CORNUS SERICEA 'FARROW'	ARCTIC FIRE RED TWIG DOGWOOD	24" MIN. HT.	MO. 3 CONT.
DS	24	DIERVILLA SPLENDENS 'SEIBERT4'	KODIAK ORANGE DIERVILLA	24" MIN. HT.	MO. 3 CONT.
FX	18	FORSYTHIA X INTERMEDIA 'BOUCLE'	MAGICAL GOLD FORSYTHIA	24" MIN. HT.	MO. 3 CONT.
SJ	35	SPIRAEA JAPONICA 'GOLD MOUND'	GOLD MOUND SPIREA	MO. 3 CONT.	
		ORNAMENTAL GRASS			
CK	84	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	MO. 2 CONT.	
PA	30	PENNISETUM ALOPECUROIDES	FOUNTAIN GRASS	MO. 3 CONT.	SEE NOTE 1

LANDSCAPE NOTES:

1. ORNAMENTAL GRASSES SHOULD BE PRUNED BACK IN LATE FALL OR EARLY SPRING TO ALLOW FOR NEW FOLIAGE TO GROW IN SPRING.
2. ALL PLANTING BEDS & TREE PLANTING PITS SHALL RECEIVE A MINIMUM 3-INCH DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH.
3. ALL EVERGREEN TREES SHALL BE MEASURED FROM THE BOTTOM OF LEADER.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS. CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR IT'S ACCURACY.

N SITE PLAN
SCALE: 1"=50'

50 0 50 100FT.

TYPICAL DUPLEX LOT
SCALE: 1"=20'

SHRUB PLANTING DETAIL

TREE PLANTING DETAIL

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487 Main Street - Suite 500
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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/9/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Landscape Plan

DRAWING NO.
L-100
Project no.: 21.011

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Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Appendix H

Soils Information

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Soil Map—Erie County, New York



Map Scale: 1:3,590 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Erie County, New York
Survey Area Data: Version 20, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 26, 2019—Oct 10, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ge	Getzville silt loam	27.2	87.5%
Ld	Lamson mucky very fine sandy loam	1.8	5.7%
Sw	Swormville clay loam	2.1	6.8%
Totals for Area of Interest		**31.1**	**100.0%**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Appendix I

SHPO Information

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189
518-237-8643

Bernadette Castro
Commissioner

October 10, 2001

Carolyn A. Pierce
CCRG
105 Robie Avenue
Buffalo, New York 14214

Dear Ms. Pierce:

Re: SEQRA
Muir Woods Mixed-Use Development
Amherst/Erie County
01PR0345

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Parks, Recreation and Historic Preservation Law, Section 14.09.

Based upon this review, it is the OPRHP's opinion that your project will have No Impact upon cultural resources in or eligible for inclusion in the State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Director

RLP:cmp

RECEIVED
OCT 16 2001
CIMINELLI DEVELOPMENT COMPANY, INC.

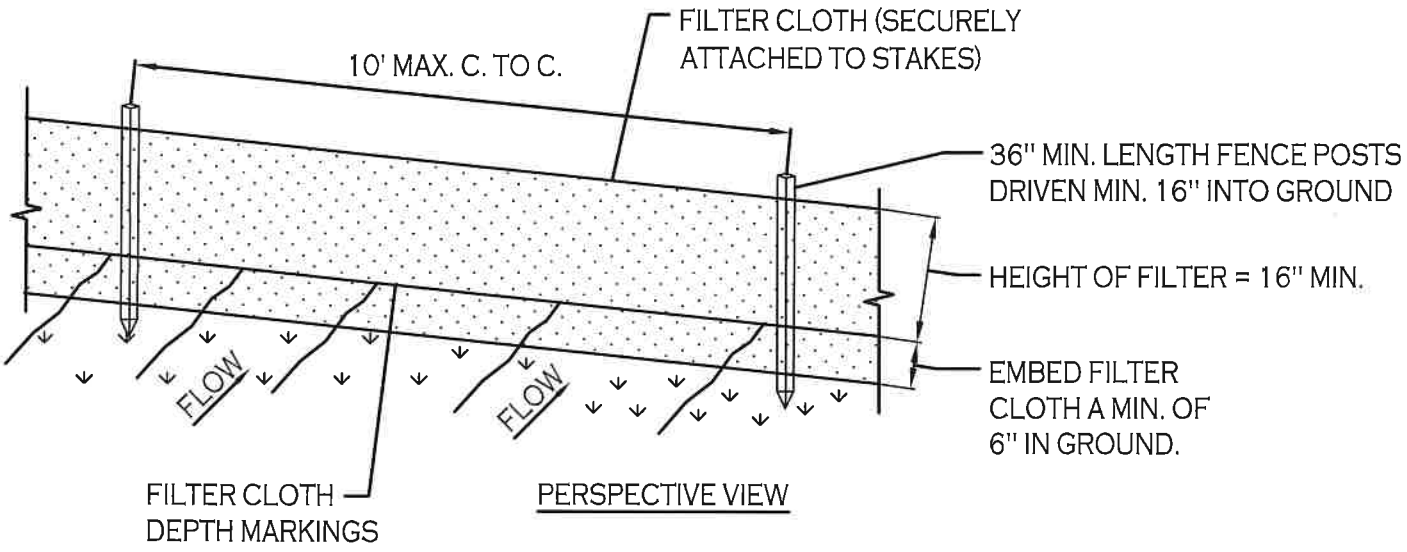
An Equal Opportunity/Affirmative Action Agency
printed on recycled paper

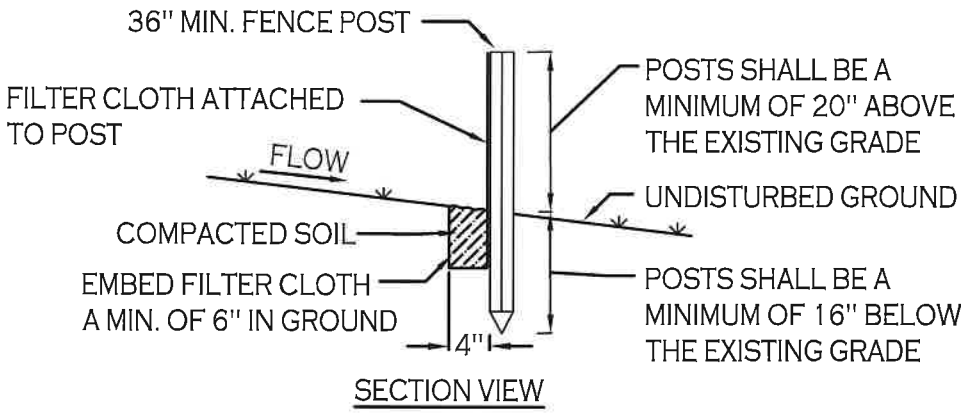
Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Appendix J

Standard Erosion Control Details

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)





CONSTRUCTION SPECIFICATIONS

1. WOVEN FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.

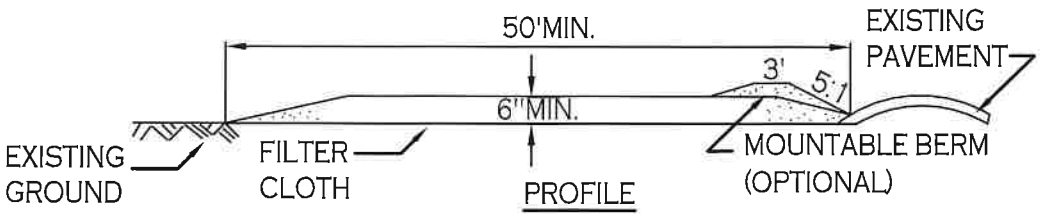
2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.

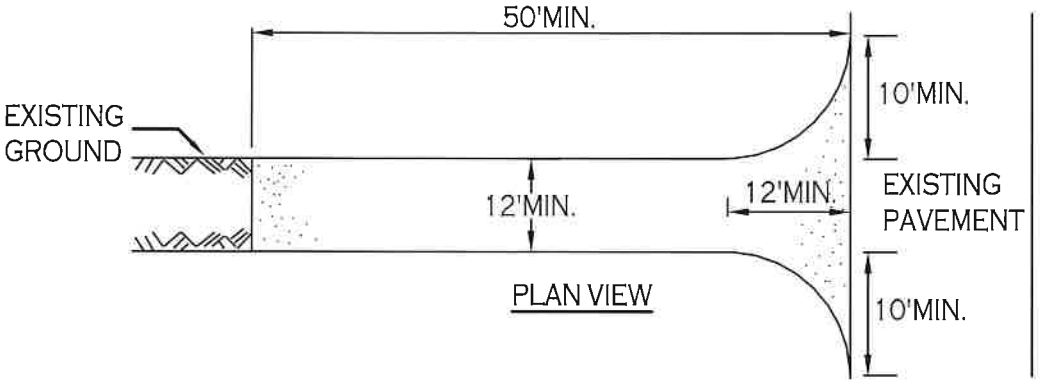
3. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

SILT FENCE DETAIL

NOT TO SCALE

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)





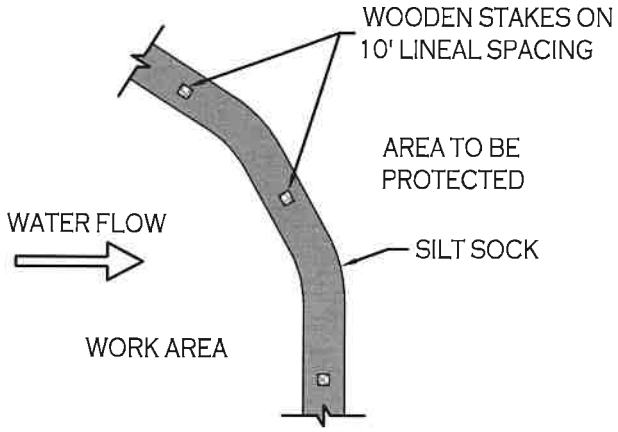
CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

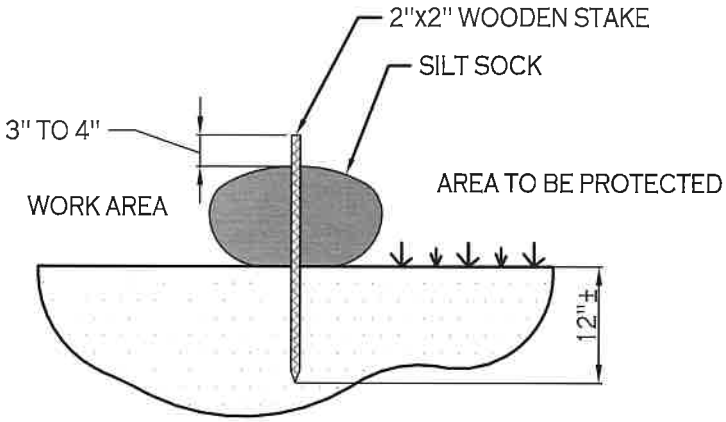
STABILIZED CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)



PLAN VIEW



SECTION VIEW

NOTES:

CONTRACTOR SHALL INSPECT AND MAINTAIN SILT SOCK AS NEEDED DURING THE DURATION OF CONSTRUCTION PROJECT.

CONTRACTOR SHALL REMOVE SEDIMENT COLLECTED AT THE BASE OF THE SILT SOCK WHEN IT HAS REACHED $\frac{1}{2}$ OF THE EXPOSED HEIGHT OF THE SILT SOCK. ALTERNATIVELY, RATHER THAN CREATE A SOIL DISTURBING ACTIVITY, THE ENGINEER MAY CALL FOR ADDITIONAL SILT SOCK TO BE ADDED AT AREAS OF HIGH SEDIMENTATION, PLACED IMMEDIATELY ON TOP OF THE EXISTING SEDIMENT LADEN SILT SOCK.

SILT SOCK DETAIL

NOT TO SCALE

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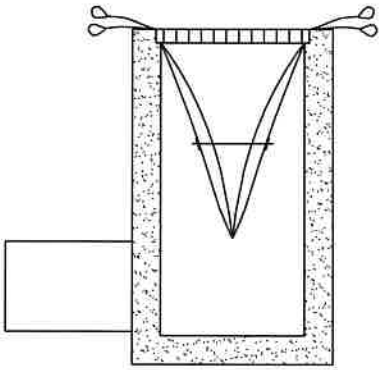
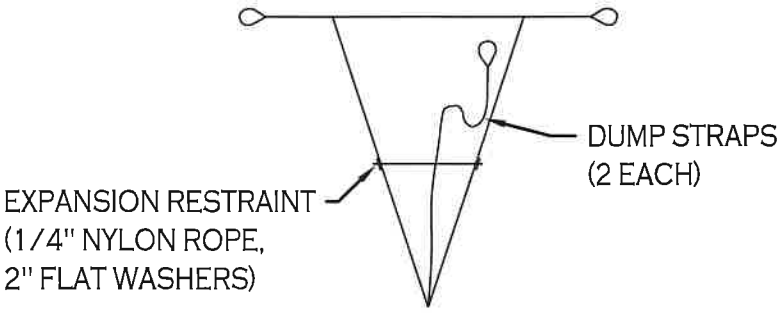
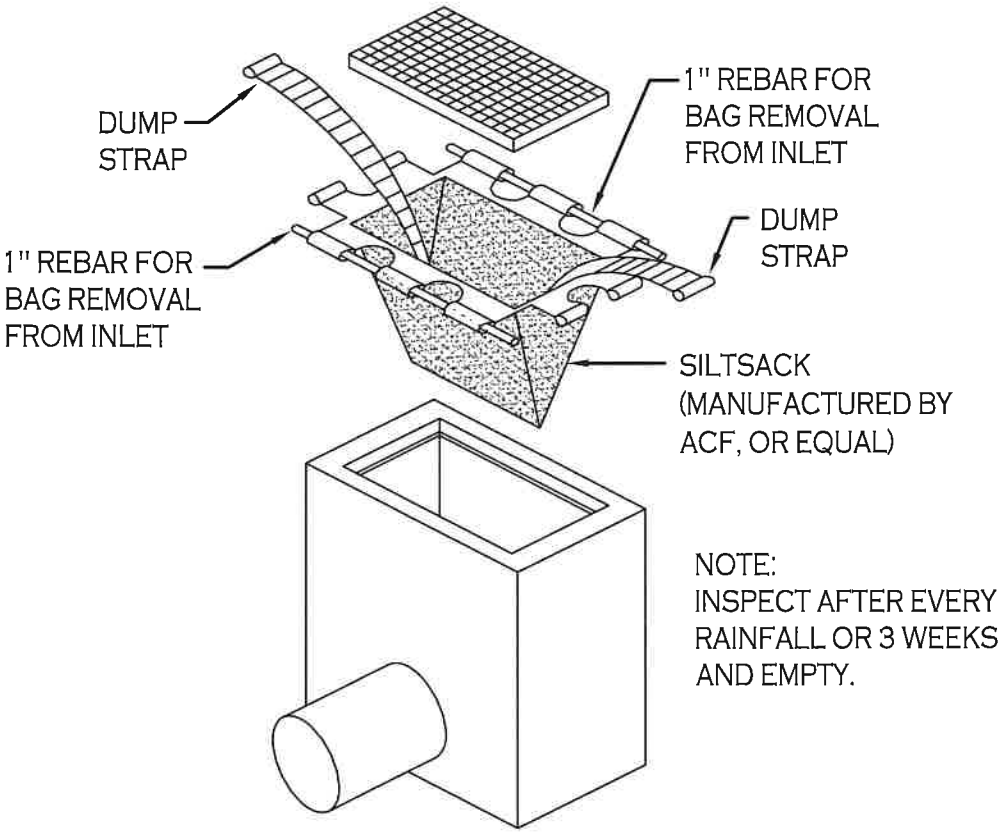


INSTALLATION DETAIL



BAG DETAIL



SILT SACK DETAIL

NOT TO SCALE

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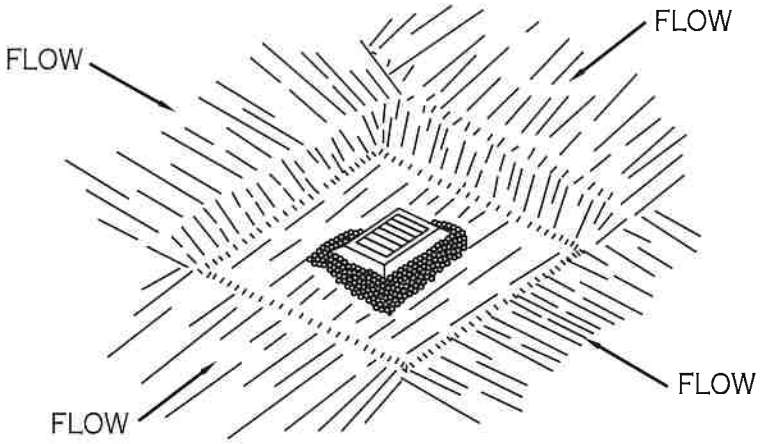
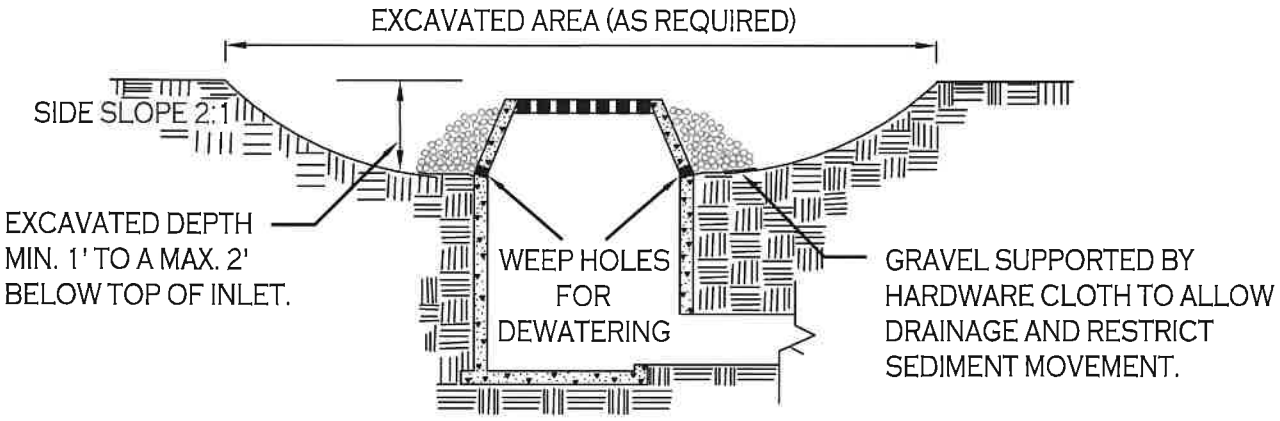




CONSTRUCTION SPECIFICATIONS

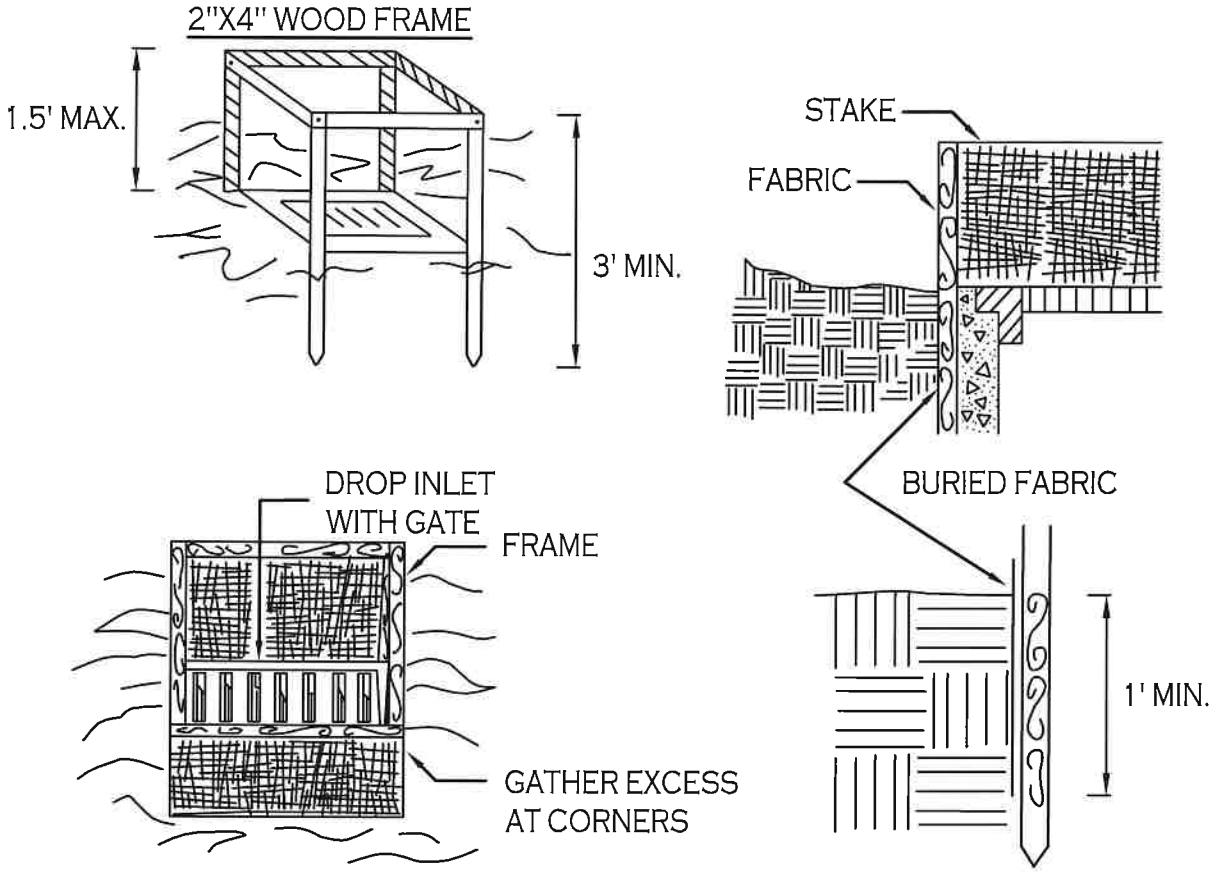
1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER EXCAVATION.
2. GRADE APPROACH TO THE INLET UNIFORMLY AROUND THE BASIN.
3. WEEP HOLES SHALL BE PROTECTED BY GRAVEL.
4. UPON STABILIZATION OF CONTRIBUTING DRAINAGE AREA, SEAL WEEP HOLES, FILL BASIN WITH STABLE SOIL TO FINAL GRADE, COMPACT IT PROPERLY AND STABILIZE WITH PERMANENT SEEDING.

MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 1

NOT TO SCALE

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)



CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.

2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.

3. STAKE MATERIALS WILL BE STANDARD 2" x 4" WOOD OR EQUIVALENT. METAL WITH A MINIMUM LENGTH OF 3 FEET.

4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.

5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.

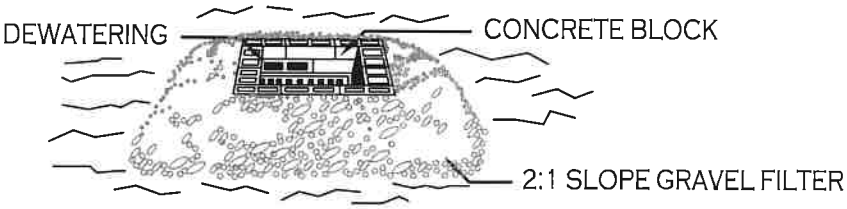
6. A 2" x 4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.

MAXIMUN DRAINAGE AREA 1 ACRE

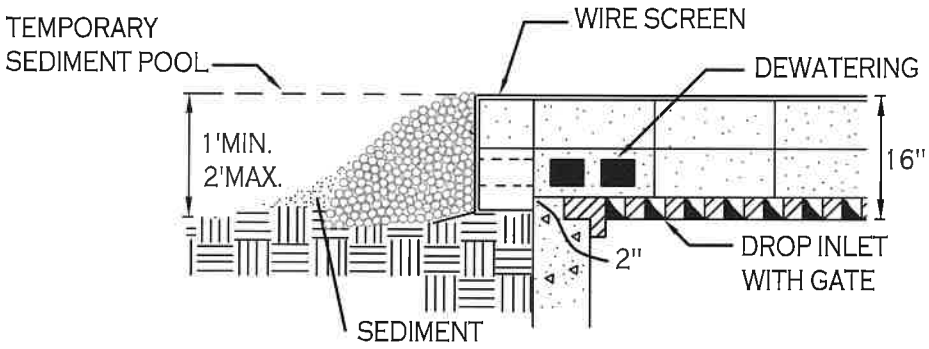
INLET PROTECTION DETAIL 2

NOT TO SCALE

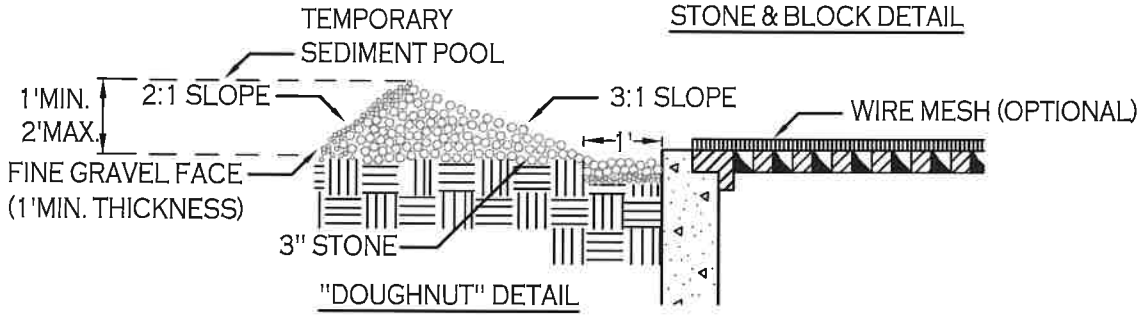
Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)



STONE & BLOCK PLAN VIEW



STONE & BLOCK DETAIL



"DOUGHNUT" DETAIL

CONSTRUCTION SPECIFICATIONS

1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE FOR DEWATERING. FOUNDATION SHALL BE 2 INCHES MINIMUM BELOW REST OF INLET AND BLOCKS SHALL BE PLACED AGAINST INLET FOR SUPPORT.

2. HARDWARE CLOTH OR 1/2" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.

3. USE CLEAN STONE OR GRAVEL 1/2-3/4 INCH IN DIAMETER PLACED 2 INCHES BELOW TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER.

4. FOR STONE STRUCTURES ONLY, A 1 FOOT THICK LAYER OF THE FILTER STONE WILL BE PLACED AGAINST THE 3 INCH STONE AS SHOWN ON THE DRAWINGS.

MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 3

NOT TO SCALE

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Appendix K

Wetland Permits

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 9
270 Michigan Avenue, Buffalo, NY 14203-2915
P: (716) 851-7165 I F: (716) 851-7168
www.dec.ny.gov

December 24, 2020

Mr. Adam Faeth
Ciminelli Real Estate Corporation
50 Fountain Plaza, Suite 500
Buffalo, New York 14202

Muir Woods Development – "Site A"
Permit Transmittal Letter
Permit No. 9-1422-00398/00001

Dear Mr. Faeth:

Enclosed is your permit which was issued in accordance with applicable provisions of the Environmental Conservation Law. The permit is valid for only that project, activity or operation expressly authorized. If modifications are desired after permit issuance, you must submit the proposed revisions and receive written approval from the Permit Administrator prior to initiating any change. If the Department determines that the modification represents a material change in the scope of the authorized project, activity, operation or permit conditions, you will be required to submit a new application for permit.

Please review all permit conditions carefully. In particular, identify your initial responsibilities under this permit in order to assure timely action if required. Since failure to comply precisely with permit conditions may be treated as a violation of the environmental conservation law, you are requested to provide a copy of the permit to the project contractor, facility operator, and other persons directly responsible for permit implementation (if any).

If you have any questions, please contact this office at the above address.

Respectfully,
David S. Denk
Regional Permit Administrator

Enclosure
ecc: NYSDEC Law Enforcement
Maureen Brady, NYSDEC Office of General Counsel
Mr. Chuck Rosenburg, NYSDEC Division of Fish and Wildlife
Mr. Martin Crossen, USACOE
Sean Hopkins, Esq., Hopkins Sorgi & McCarthy PLLC

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

PERMIT
Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
Ciminelli Muir Woods LLC
50 Fountain Plaza, Suite 500
Buffalo, NY 14202
(716) 631-8000

Facility:
MUIR WOODS DEVELOPMENT
1121 N French Rd
Amherst, NY 14228

Facility Location: in AMHERST in ERIE COUNTY
Facility Principal Reference Point: NYTM-E: 191.586 NYTM-N: 4770.823
Latitude: 43°01'38.9" Longitude: 78°47'07.2"

Authorized Activity: Construction of a mixed-use project named "Muir Woods" consisting of approximately two 4-story mixed-use buildings consisting of commercial space and residential units, 90 two-family townhouses and 2 six-unit apartment buildings, approximately 133 detached single-family residential units and 515 cottage-style and apartment-style housing units with various amenities; and gas, electric, sanitary, potable water and storm water (the necessary infrastructure), while maintaining open space on approximately 224 acres in the Audubon New Community District. The Muir Woods project property is a 326 acre site bounded by the Lockport Expressway (Interstate Route 990) and Dodge Road on the south, Sweet Home Road on the west, North French Road on the north and Campbell Boulevard on the east. The project will result in permanent impacts to approximately 2.39 acres of State regulated wetlands (TE-22, TE-23 and TE-34), and 11.38 acres of State regulated 100 foot wide wetland adjacent area. As mitigation for those impacts the project includes creation of 19.58 acres of in-kind and out-of-kind wetlands on-site, in six areas, to replace the functions and benefits of the impacted wetlands. There will be 4.3 acres of stream channel enhancement on-site as mitigation for State wetland regulated adjacent area impacts. The project also includes construction at 520 Campbell Road property as detailed on plan sheets referenced in Natural Resource Condition No. 4.

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Permit Authorizations

Freshwater Wetlands - Under Article 24
Permit ID 9-1422-00398/00001

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

Water Quality Certification - Under Section 401 - Clean Water Act
Permit ID 9-1422-00398/00002

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: DAVID S DENK, Regional Permit Administrator
Address: NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY 14203 -2915

Authorized Signature: David S. Denk Digitally signed by David S. Denk DN: cn=David S. Denk, o=NYS DEC, ou=Div. of Env. Permits, email=david.denk@dec.ny.gov, c=US Date: 2020.12.24 10:29:47 -05'00' Date ___/___/___

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: FRESHWATER WETLANDS; WATER QUALITY CERTIFICATION

1. **No Work Prior to Approval of Legal Instrument for Preservation of Undeveloped Areas of Site** No work authorized by this permit may begin until the Department approves a legal instrument, such as a deed restriction and/or conservation easement, that will preserve in perpetuity the natural resource values of the undeveloped areas of the site. This condition does not apply to the 520 Campbell Boulevard property.

2. **Declaration of Restrictions 520 Campbell Boulevard Property** A Declaration of Restrictions permanently prohibiting any future development of the 6.88 acres of jurisdictional federal wetlands and portion of the upland area on 520 Campbell Boulevard as depicted on the Wetland Restriction Exhibit Map must be incorporated into the deeds for lots 1 – 12 and 21. By 60 days after Water Quality Certification issuance, the permittee shall file with the real property records of the Erie County Clerk`s Office, the deed for each applicable lot containing this notice. The permittee shall within two weeks following the filing of the deed(s) submit proof of filing from the County Clerk's Office

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

showing the Liber and page number at which the deed notice was filed and the date of filing for one of the affected lots to: Regional Permit Administrator, NYSDEC Region 9 Headquarters, 270 Michigan Ave, Buffalo, NY 14203-2915.

3. **Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by Ciminelli Development Company, Inc. and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009.

4. **Conformance with Plans Site B** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include the "Concept Plan - Muir Woods" dated 08 November 2019 amended to show Conifer Planting Area (attached).

5. **Conformance with Plans - 520 Campbell Boulevard** All activities authorized by this permit for the 520 Campbell Boulevard property must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans include those sheets entitled: The Preserve at Muir Woods (DEC Planting Exhibit, DEC Earthwork Exhibit and the Wetland Restriction Exhibit) by Greenman-Pedersen, Inc. dated May 2018.

6. **Conformance with Plans Site A** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include Drawing C-100 dated July 20, 2020 and received by this Department on August 10, 2020.

7. **Future Phases** Prior to development of Muir Woods Sites A and B, the permittee must obtain specific approval of engineered plans for Sites A and B to ensure compliance with the terms and condition of this permit, the approved wetland mitigation plans and the most current Findings Statement for the overall Muir Woods Project issued pursuant to the State Environmental Quality Review Act. The permittee shall submit the engineered plans for the development of Sites A and B for review by the Department simultaneous with submission of such engineered plans to the Town of Amherst. If required by the Department, the permittee shall make any necessary modifications to the engineered plans to ensure compliance with the terms and conditions of this permit, the approved wetland mitigation plans and the most current Findings Statement.

8. **Permit Conditions Prevail over Plans** If any condition of this permit conflicts with the approved plans noted in Condition Number 1, the permit conditions shall prevail over the plans unless specific written approval for such a change is obtained from this Department prior to implementation.

9. **Pre-construction Meeting to Review Permit** Prior to commencing work at the project site, the permittee shall schedule a pre-construction meeting with Department staff (Contact: Mr. David Denk, Regional Permit Administrator, NYSDEC, Division of Environmental Permits, Telephone : 716/851- 7165 and/or Mr. Charles P. Rosenburg, NYSDEC, Division of Fish and Wildlife, Telephone: 716/851-7010) and selected contractors to review the conditions contained in this permit.

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10. Mark Areas of No Disturbance on the Muir Woods Site Grade stakes and/or other appropriate measures (substantial contractor fencing, perhaps in combination with necessary silt fencing) shall be used to ensure that no equipment enters identified areas of no disturbance within the immediate area under construction (i.e.- Site A, Site B, Site C or Site D) on the Muir Woods project site. Boundaries of the on-site mitigation areas shall likewise be marked to define the limits of that work.

11. Install Controls Along Limits of Disturbance Before any soil is disturbed within a specific Site Development Area, as detailed in Condition #6 above, the permittee shall install securely anchored silt fencing and/or continuous staked hay bales along the limits-of-disturbance as shown on the plans or drawings referenced in this permit. Such erosion and sedimentation controls shall be maintained until unpaved portions of the subject site are stabilized by a self-sustaining cover of vegetation that is adequate to prevent erosion and sedimentation on and off the site. Sediment which has accumulated at the controls shall be removed periodically as necessary during the construction period. Before the controls are removed, the permittee shall remove all sediment that has accumulated at the controls.

12. Work Within Ares Depicted on Plans All construction activity, including operation of machinery, excavation, filling, grading, clearing of vegetation, disposal of waste, street paving and stockpiling of material must take place within the Site Development Areas or mitigation areas as depicted on the project plans referenced by this permit. Construction activity is prohibited within areas to be left in a natural condition or locations on the property not within the Site Development Areas or mitigation areas designated by this permit. Disturbance to the wetlands and their regulated 100 foot wide adjacent areas shall be strictly limited to the work areas identified in the plans, and specifically the MAP SHOWING WETLAND IMPACT AREAS - NEW YORK STATE WETLANDS, and APPENDIX M - PROPOSED ON-SITE MITIGATION PLAN.

13. Invasive Species (Non-Native Vegetation) To prevent the unintentional introduction or spread of invasive species, the permittee must ensure that all construction equipment is cleaned of mud, seeds, vegetation and other debris before entering any approved Site Development Areas within State regulated wetlands or their 100 foot wide adjacent areas, as well as all on-site wetland mitigation areas.

14. Prevention of Invasive Species The permittee shall prevent the establishment of invasive species (purple loosestrife, Phragmites, reed canary-grass, Japanese knotweed, glossy buckthorn and common buckthorn) across all disturbed areas within the wetland mitigation area for five growing seasons. If any of these invasive species become established, monitoring and treatment may be extended for an additional 5 years at the Department's discretion.

15. Wetland Mitigation is Mandatory Completion of all freshwater wetland mitigation is mandatory regardless of whether or not construction proceeds to completion. The required mitigation must be completed by the expiration date of this permit. Mitigation will be subject to remediation, if necessary, pursuant to Condition #16 below. All mitigation areas shall be monitored for a period of ten (10) years or until the mitigation is deemed successful by this Department. Monitoring reports shall be prepared for the first four (4) years after construction of the mitigation areas and every other year (years 6, 8 and 10) thereafter. This Department may, at its discretion, modify the 10-year monitoring period and/or monitoring report requirement at any time. Monitoring reports shall be submitted to Mr. Charles P. Rosenburg, Habitat Manager, NYSDEC, Bureau of Ecosystem Health, 270 Michigan Avenue, Buffalo, NY 14203-2915 Telephone: 716/851-7024.

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16. **On-Site Mitigation to be in Accordance with Mitigation Plan** The on-site mitigation shall be in accordance with Appendix M - Proposed On-Site Wetland Mitigation for Muir Woods prepared by Earth Dimensions, Inc. revised May 25, 2009 and with the modifications shown in Exhibit 22 of the July 20, 2020 application binder.

17. **Planting Row of Native Conifers** The permittee shall plant a row of native conifer trees in the location shown on the attached plan. The tree plantings must be a minimum of 6 feet tall, spaced 15 feet apart, and must be planted no later than October 15th following the completion of construction of the adjacent apartment units.

18. **Survival Rate for Mitigation Plantings** The permittee shall prepare a care, maintenance, inspection, and replacement schedule for the tree and shrub plantings described in the mitigation plan to ensure an 85% survival rate for five growing seasons. This condition includes all on-site landscape "buffer" plantings.

19. **Herbicides, Pesticides in Wetland or Adjacent Area** The use of herbicides and other pesticides in State regulated wetlands or their 100 foot wide adjacent areas is a regulated activity and may only be conducted pursuant to a valid Article 33 Pesticides Permit.

20. **Requirement for SPDES General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities** Since development of the Muir Woods site in the Town of Amherst will involve land disturbance of one (1) or more acres, the permittee is required to obtain coverage under State Pollutant Discharge Elimination System (SPDES) General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities. A Notice of Intent (NOI) is required to be sent to NYSDEC, Division of Water, 625 Broadway, 4th Floor, Albany, New York 12233-3505, Telephone: 518/402-8111 and approved before construction commences. Alternatively, an eNOI may be filed electronically as described on the Department's website. The General Permit GP-0-15-002 and NOI form are available on the Department's website at www.dec.state.ny.us.

21. **Visibly Turbid Discharges Prohibited** Visibly turbid discharges from project dewatering operations, excavation and grading activities are strictly prohibited to any "water body" (pond, wetland, stream or water course). Any such discharges shall be (1) retained in an appropriately maintained upland settling basin, filtered through crushed stone, sand, filter fabric fences, hay bales etc., or (2) directed to a grassy area sufficiently distant from any water body to preclude such entry.

22. **Stockpiling of Soil** Stockpiling of excavated soil is prohibited at locations within any portion of the TE-22, TE-23 and TE-34 Wetlands or their regulated 100 foot wide adjacent areas, or within any mapped 100-year floodplain beyond the Site Development Areas or mitigation areas identified in the plans.

23. **Stabilize Disturbed Areas** All areas of soil disturbance resulting from this project shall be seeded with an appropriate perennial grass seed and mulched with straw, or hydro-seeded. Mulch shall be maintained until suitable vegetative cover is established.

24. **Temporary Mulch, Final Seeding** If seeding is impracticable due to the time of year, a temporary mulch shall be applied and final seeding shall be performed at the earliest opportunity when weather conditions favor germination and growth.

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25. **Disposal of Material** Any non-merchantable tree and brush debris, demolition debris, excess construction materials, and/or excess excavated materials shall be immediately and completely disposed of on an approved upland site more than 100 feet from any regulated freshwater wetland. These materials shall be suitably stabilized so as not to re-enter any water body, wetland, or wetland adjacent area; and must be disposed of in accordance with all local, state, and federal statutes, regulations, or ordinances.

26. **Placement of Interpretive Signs Required** Permanent interpretive signs shall be placed at various wetland boundary locations throughout the Muir Woods project site . The permittee shall submit a proposal for the signs to the Department for approval. The interpretive signs shall be a minimum of 12 inches by 12 inches and shall be placed on permanent posts.

27. **Annual Project Inspection / Meeting** The permittee shall schedule an annual inspection/meeting to update Department staff on project progress and compliance with conditions of this permit for the on-site wetland mitigation area.

28. **Wetland Monuments** Monuments shall be placed every 200 feet along the outer edge of the wetland preservation areas. The monuments shall be 30" long, 5/8" rebar and cap embedded flush and in the center of the top exposed surface of concrete in a minimum 4 inch diameter, 4.5 foot long section of PVC Schedule 40 drain pipe filled with concrete, extending vertically1.5 to 2 feet above existing grade at each location. The caps shall say "Conservation Area Marker, Do Not Disturb". These monuments are to be permanently maintained.

29. **Wetland Boundaries** The boundaries of the TE-22, TE-23 and TE-34 Wetlands shall be fixed for the period of this permit (expires November 30, 2024). At that time, new boundary delineations for those wetlands will be required by this Department (to be performed or confirmed by a Department Biologist). Since project activities will be subject to the updated wetland boundary delineations and pertinent regulations at that time, any future permit modification (if necessary) would be reviewed based on the updated delineations and pertinent regulations. As such, modifications to the current project plan may be necessary depending upon the updated wetland delineations and permit regulations in effect at that time.

30. **State Not Liable for Damage** The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

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31. **State May Order Removal or Alteration of Work** If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

32. **State May Require Site Restoration** If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may lawfully require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.

33. **Precautions Against Contamination of Waters** All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. **Water Quality Certification** The authorized project, as conditioned pursuant to the Certificate, complies with Section 301, 302, 303, 306, and 307 of the Federal Water Pollution Control Act, as amended and as implemented by the limitations, standards, and criteria of state statutory and regulatory requirements set forth in 6 NYCRR Section 608.9(a). The authorized project, as conditioned, will also comply with applicable New York State water quality standards, including but not limited to effluent limitations, best usages and thermal discharge criteria, as applicable, as set forth in 6 NYCRR Parts 701, 702, 703, and 704.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. **Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. **Relationship of this Permit to Other Department Orders and Determinations** Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. **Applications For Permit Renewals, Modifications or Transfers** The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY14203 -2915

4. **Submission of Renewal Application** The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Freshwater Wetlands, Water Quality Certification.

5. **Permit Modifications, Suspensions and Revocations by the Department** The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

a. materially false or inaccurate statements in the permit application or supporting papers;

b. failure by the permittee to comply with any terms or conditions of the permit;

c. exceeding the scope of the project as described in the permit application;

d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;

e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. **Permit Transfer** Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification
The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit
The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits
The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights
This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

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DEPARTMENT OF THE ARMY
BUFFALO DISTRICT, CORPS OF ENGINEERS
1776 NIAGARA STREET
BUFFALO, NEW YORK 14207-3199

February 25, 2021

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

Mr. Adam Faeth
Development Manager
Ciminelli Muir Woods LLC
350 Essjay Road Suite 101
Williamsville, NY 14221

Dear Mr. Faeth:

This is in reply to your submittal dated July 20, 2020 in which you requested a modification of Department of the Army Permit No. LRB-2001-00067. The project is located on a 326-acre parcel in the Town of Amherst, Erie County, New York. Specifically, you seek authorization to change the proposed use of an area identified as Site A from research and development and flex office space to a mixed-use commercial and residential development. This includes two 4-story mixed-use buildings, two-family townhouses, 6-unit apartment buildings, and a recreational trail to connect Site A with Site B. Wetland impacts have been reduced from 13.01 acres to 6.089 acres in Site A. A reduction of 6.921 acres. In addition, because of the reconfigured project including the significant reduction of wetland impacts, you have requested that the requirement of off-site compensatory mitigation be removed. Lastly, you have requested that 134 acres of the overall Muir Woods site located northeast of Site B, is donated to the Town of Amherst. This area will remain as open space in perpetuity. Permit compliance with mitigation requirements will remain as it currently is on the 134-acre site as a responsibility of Ciminelli Muir Woods LLC.

A Public Notice was published and coordinated with agencies and adjacent property owners using standard procedures. No comments were received as a result of the Public Notice. Based upon our evaluation, I concluded your request will not result in any unacceptable environmental or navigational impacts. Therefore, I am modifying Department of the Army permit No. LRB-2001-00067 to reflect the changes outlined in your request and identified on the attached drawings. All other terms and conditions of Permit No. LRB-2001-00067 remain in full force and effect.

Sheets 1, 2, and 3 of 3 are hereby made part of Permit No. LRB-2001-00067. Sheet 1 of 3 of this modification is an update to Sheets 2, 3, and 5 of 6 of the original permit. Sheet 2 and 3 of 3 of this modification are updates to Sheet 5 of 6 of the original permit. In addition, the following Special Conditions No. 6 and 8 of Permit No. LRB-2001-00067 are modified so that they no

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Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

longer include the requirement of off-site compensatory mitigation, as indicated below with the original and the following modified condition:

1. Special Condition Number 6: As mitigation to compensate for unavoidable and permanent impacts to 17.83 acres of Federal wetlands and 1.29 acres of Federal tributaries (approximately 5227 linear feet), the permittee shall create, at a minimum; 26.91 acres of wetland on-site, and 27.37 acres of wetland off-site. In addition, the permittee shall enhance 4.3 acres of tributary (approximately 2630 linear feet) on-site, all in accordance with the approved on-site and off-site mitigation plan that is made part of this permit. The mitigation area must be constructed in accordance with the approved plan as well as all permit conditions.

   Modified Special Condition Number 6: As mitigation to compensate for unavoidable and permanent impacts to 10.91 acres of Federal wetlands and 1.29 acres of Federal tributaries (approximately 5227 linear feet), the permittee shall create, at a minimum; 26.91 acres of wetland on-site. In addition, the permittee shall enhance 4.3 acres of tributary (approximately 2630 linear feet) on-site, all in accordance with the approved on-site mitigation plan that is made part of this permit. The mitigation area must be constructed in accordance with the approved plan as well as all permit conditions.

2. Special Condition Number 8: The approved compensatory mitigation must be in strict conformance with the plans approved by the Corps of Engineers. Such approved plans were prepared by Ciminelli Development Company, Incorporated and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009, including the Proposed On-Site Wetland Mitigation Plan, and the Proposed Off-Site Wetland Mitigation Plan dated November 16, 2009. The stated mitigation plans are hereby incorporated into and made part of the permit as Attachments 1 and 2. The permittee shall implement the mitigation in accordance with the plans and all permit conditions. Where permit conditions differ from the mitigation plan, the permit conditions shall be the ruling condition.

   Modified Special Condition Number 8: The approved compensatory mitigation must be in strict conformance with the plans approved by the Corps of Engineers. Such approved plans were prepared by Ciminelli Development Company, Incorporated and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009, including the Proposed On-Site Wetland Mitigation Plan dated November 16, 2009. The stated on-site mitigation plan is hereby incorporated into and made part of the permit as Attachments 1. The permittee shall implement the mitigation in accordance with the plans and all permit conditions. Where permit conditions differ from the mitigation plan, the permit conditions shall be the ruling condition.

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

Questions pertaining to this matter should be directed to Martin Crosson at 716-879-4346, by writing to the following address: U.S. Army Corps of Engineers, 1776 Niagara Street, Buffalo, New York 14207 or by E-mail at: martin.h.crosson@usace.army.mil

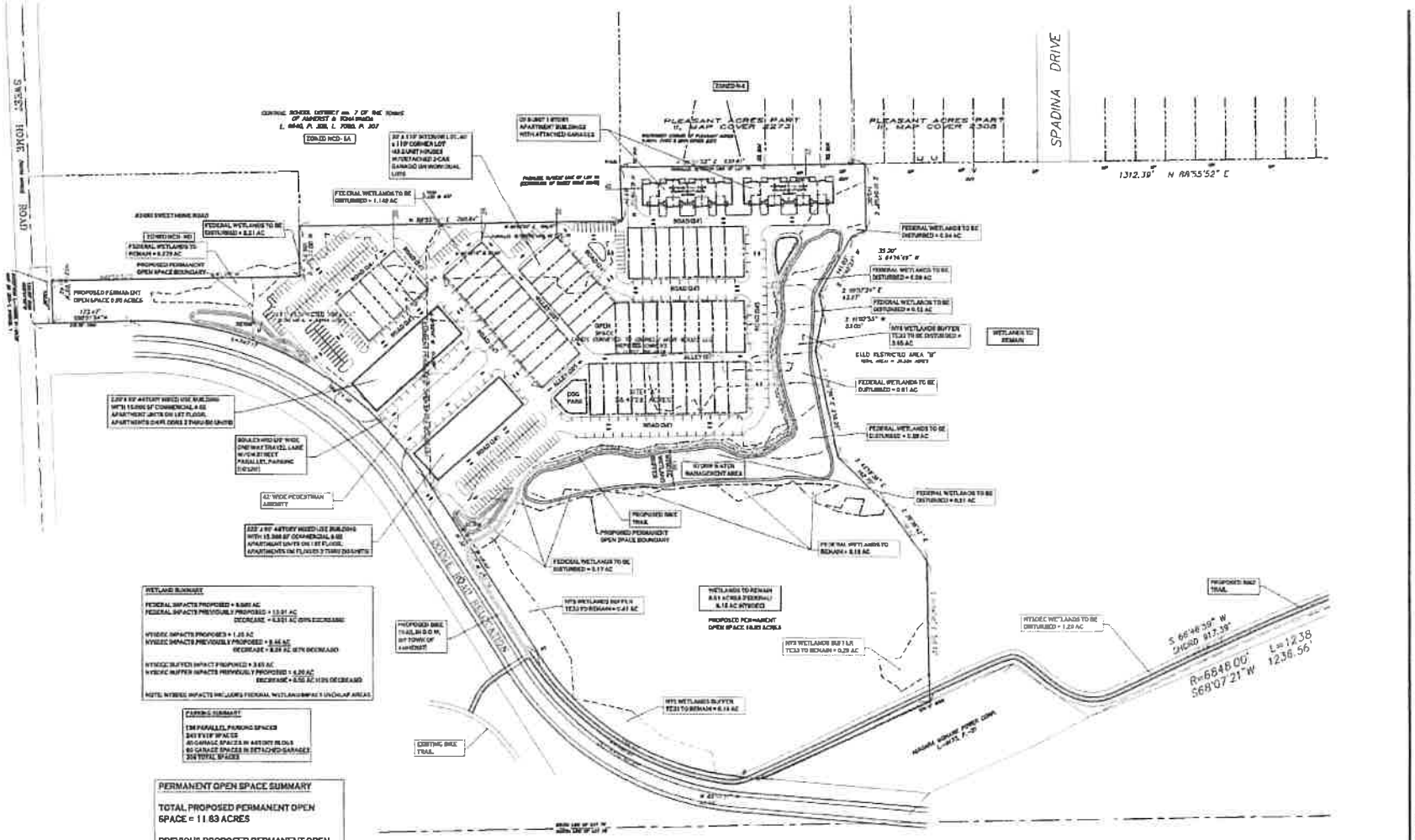
BY AUTHORITY OF THE SECRETARY OF THE ARMY

Steven V. Metivier

For: Mark Scalabrino
Acting Chief, Regulatory Branch

Enclosures

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)



N SITE PLAN
SCALE: 1"=100'

Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 1 of 3

Camina Wood Morris

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Muir Woods Site "A"
Sweet Home & Dodge Road
Amherst, New York

Date: 1/1/20
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Concept Site Plan

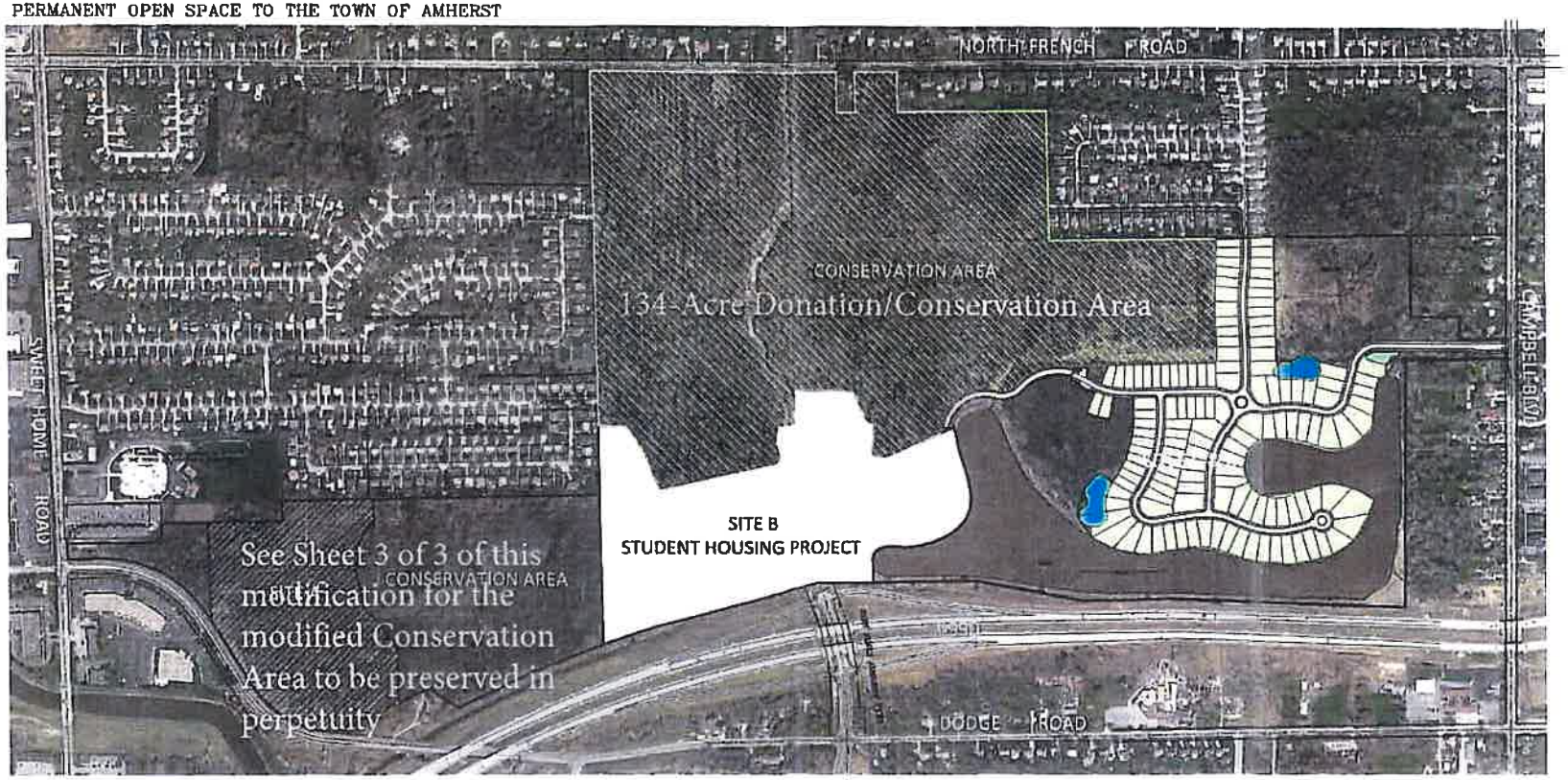
DRAWING NO.
C-100
Project no.: 19.192

© Camina Wood Morris D.P.C.

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

MUIR WOODS OVERALL PROJECT AREA

PROPOSED DONATION OF APPROXIMATELY 134 ACRES OF PERMANENT OPEN SPACE TO THE TOWN OF AMHERST

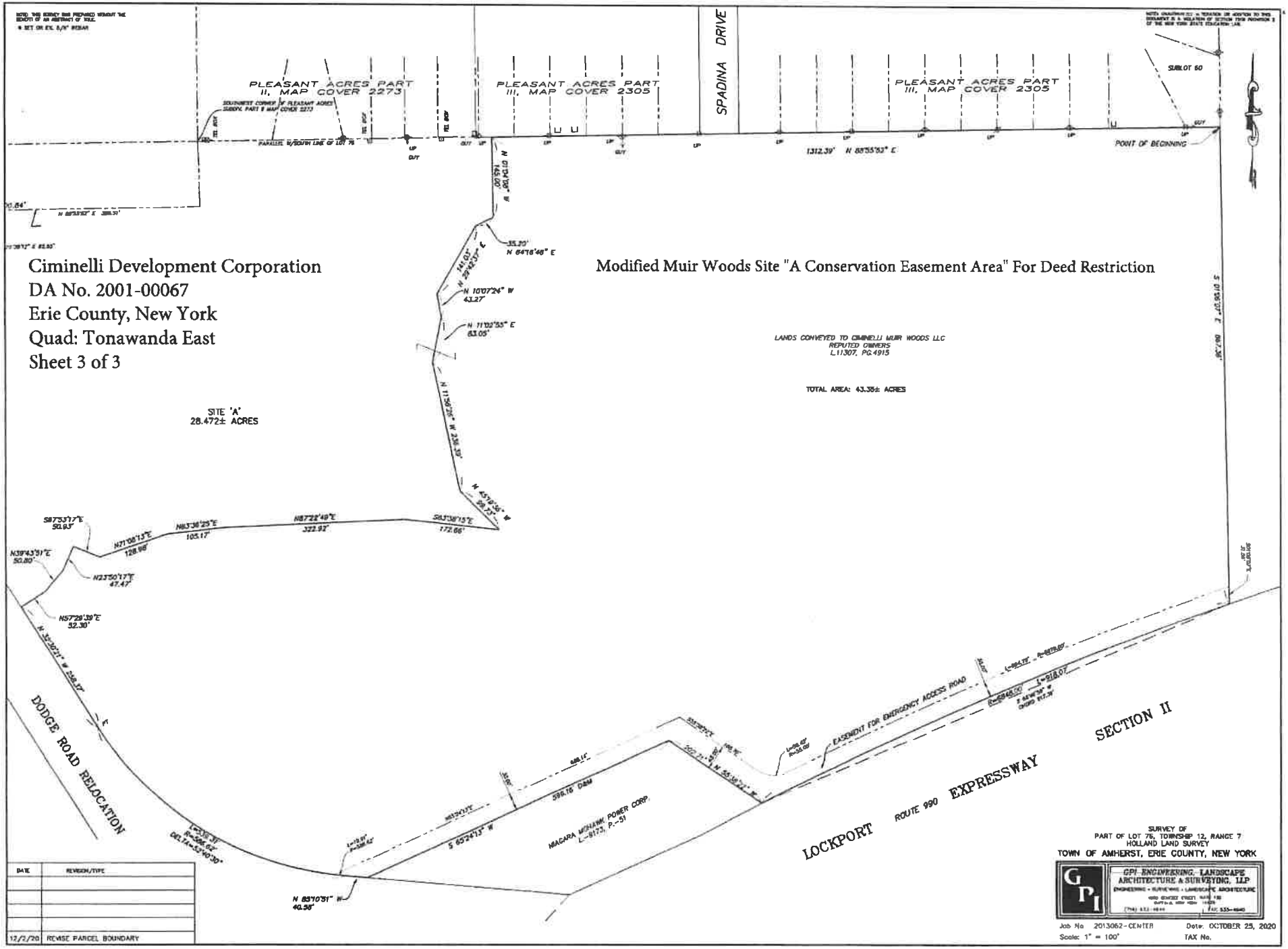


CONSERVATION AREA TO BE DONATED

Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 2 of 3

GPI

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Appendix L

NYSDEC Letter of Acknowledgement

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Appendix M

5 Acre Disturbance Letter

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Carmina · Wood · Morris DPC

487 Main Street Suite 600 Buffalo, New York 14203 P: 716.842.3165 F: 716.842.0263 W: cwm-ae.com

March 4, 2021

Vaishali Reberholt, PE, CPESC
Town of Amherst Engineering Department
1100 North Forest Road
Amherst, NY 14221

Re: **Sawyer's Landing**
Amherst, NY

Dear Vaishali:

This letter shall serve as our request to have a total of 5 acres disturbed at one time at the above site. Per the NYSDEC General Permit, our site inspections will increase to 2 times per week when 5 acres is reached and will continue until the time the total disturbance is under 5 acres.

If you have any questions regarding the above, please feel free to contact me at 842-3165 [Ext 103] or via e-mail at cwood@cwm-ae.com.

Sincerely,
Carmina Wood Morris, D.P.C.

Christopher Wood, PE

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Appendix N

Engineer's Report

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Carmina · Wood · Morris DPC

487 Main Street Suite 600 Buffalo, New York 14203 P: 716.842.3165 F: 716.842.0263 W: cwm-ae.com

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

ENGINEER'S REPORT

for

Sawyer's Landing

Dodge & Sweet Home Road
Town of Amherst, Erie County, New York

Prepared for

Sawyer's Landing LLC

c/o Severyn Development
43 Central Ave Suite #300
Lancaster, NY 14086

Prepared by

Carmina Wood Morris, D.P.C.

487 Main Street, Suite 500
Buffalo, NY 14203

Telephone: (716) 842-3165
Fax: (716) 842-0263

February 2021



Table of Contents

Written Engineer's Report

Section 1 - Location & Description
Section 2 - Water Service
Section 3 - Sanitary Sewer Service
Section 4 - Storm Sewer Service

Appendices

Appendix A Sanitary Sewer and Water Demand Calculations

Appendix B Storm Sewer System Drainage Calculations

- Existing Runoff
- Proposed Runoff – East
- Proposed Runoff - West
- Green Infrastructure & Water Quality Calculations

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Section 1 - Location & Description

This project is a development of a 17.4 acre site located on the north side of Dodge Road, west of Sweet Home Road in the Town of Amherst. Both Dodge Road and Sweet Home Road are Erie County roads. Proposed is the construction of a mixed use development to include (2) 4-story buildings with a total of 30,000 sf of commercial and 100 apartments, (47) duplex lots and (2) 1-story apartment buildings with a total of 12 units. A bike trail will be constructed on site, this trail will connect to the existing Town of Amherst bike trail on the south side of Dodge Road. The approximately 1 acre westerly portion will remain undisturbed and be deed restricted as permanent open space. The site is currently undeveloped consisting of woods and overgrown brush/grass. NYSDEC and Federal wetlands were delineated on site by Earth Dimensions, Inc. Approximately 6.1 acres of Federal and 1.2 acres of NYSDEC wetlands have been permitted to be impacted. The proposed site development area to be disturbed for this project is approximately 16.4 acres.

Section 2 - Water Service

A new 8" D.I. combined service will be tapped off the existing 24" D.I.P. ECWA water main along the north side of Dodge Road. Following the tap, the 8" D.I. service will continue north into the site where it will enter into a Hot-Box enclosure. Within the Hot-Box enclosure an 8" meter (by ECWA) and an 8" Watts 957 RPZ will be installed. The service will exit the Hot-Box enclosure and then transition into 8" AWWA C-900 PVC. The service will run throughout the site to provide both domestic and fire service to the proposed buildings. Heat & light for testing will be provided in the area of the meter & RPZ to prevent freezing. Drainage due to testing or failure will be to the exterior through a drain, drainage will be away from the enclosure. The owner will be responsible for keeping the drainage ports clear of snow and debris. A total of 4 (four) proposed fire hydrants shall be installed around the site to provide fire protection coverage. There are no existing water services to this site, and therefor none to be killed/abandoned per ECWA requirements.

Domestic Summary:

Peak Operating Demand:	140.6 gpm
Water Main:	24" on Dodge Road
Static Pressure:	105 psi (per ECWA, 98 psi residual)
Friction Loss:	0.0 psi
Loss through meter/RPZ:	13.0 psi
Elevation Loss:	0.0 psi
Pressure after RPZ & Meter:	92 psi
Pressure at 4th floor:	77 psi

Repairs to all devices will be made during off hours, dual backflow preventers are not required. The site is not located in a 100-year flood plain. Disinfection of the

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

water service following installation will be continuous feed, according to AWWA C-651, latest revision.

Section 3 - Sanitary Sewer Service

The proposed sanitary sewer service will connect to the existing 60" sanitary sewer (peanut line) located on the south side of Dodge Road. In order to connect to this sewer, a public sewer extension along the south side of Dodge Road will be required. This public extension will consist of a total of 643 LF of 8" SDR-35 PVC at a minimum slope of 0.4%.

The proposed private on site sewer mains will consist of 8" SDR-35 PVC at a minimum slope of 0.4%. Each of the proposed commercial buildings and apartment buildings will have a 6" SDR-35 PVC sanitary sewer lateral at a minimum slope of 1.0% tied into the private main. The duplex units will have a 4" SDR-35 PVC sanitary sewer lateral at a minimum slope of 1.0% tied into the private main. The 8" private main will tie into the proposed public extension on the south side of Dodge Road across from the SE portion of the project site.

A downstream sanitary sewer capacity analysis (DSCA) is required to be prepared for the site given the flows will exceed 2,500 gpd. This report is included in Appendix A.

Design Parameters

Housing: use 110/gpd/bedroom
Q = 412 bedrooms x 110 gpd/bed = 45,320 gpd

Commercial: use 0.1 gpd/sf
Q = 20,000 sf x 0.1 gpd/sf = 2,000 gpd

use 15 gpd/employee
Q = 20 employees x 15 gpd/emp = 300 gpd

Restaurant: use 35 gpd/seat
Q = 100 seats x 35 gpd/seat = 3,500 gpd

Total = 51,120 gpd (average)

using a 3.97 PF (see appendix A for calc)

Total = 51,120 x 3.97 = 202,908 gpd = 140.91 gpm = 0.314 cfs

The hydraulic loading rates per "Design Standard for Wastewater Treatment Works" 2014, NYSDEC. See attached Sanitary Sewer & Water Calculations for additional information.

I/I Mitigation:

Peak Flow = 140.91 gpm

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

4:1 offset = 140.91 x 4 = 563.63 gpm
Mitigation Credit = $250/gpm
I/I Mitigation = 563.63 gpm x $250/gpm = $140,908.66
Refer to Appendix A for additional information.

Section 4 - Storm Sewer Service

The existing site is generally flat and slopes west with portions sloping east. The portion that slopes west settles in a low area and once the capacity of that area is exceeded, sheet flow continues towards Sweet Home Road and is collected by an existing 12" pipe on the north side of Dodge Road. This pipe flows to the Erie County system on Sweet Home Road. The portion that flows east flows to the offsite wetlands.

Currently Dodge Road does not have a drainage system. A series of catch basins and pipes will be installed in the green area on the north side of Dodge Road to collect the road drainage. The west portion of this system will connect to the existing closed drainage system on Sweet Home Road. The east portion will discharge to the Ellicott Creek diversion channel using and existing discharge point. This new system will also convey the proposed discharge from the site as described below.

The proposed onsite storm sewer system consists of smooth interior and perforated HDPE pipes connected by a series of catch basins, manholes and yard drains. The site is split into a storm water management area on the east and west sides.

West Side

The west side of the site has (2) bioretention areas which portions of the westerly area will discharge to. These bioretention areas along with the remainder of the west portion of the site will discharge to the underground detention area. Note that the yard drains installed along the north property line discharge to the underground detention area. An outlet structure in the SW portion of this area will control runoff to at or below existing runoff flow rates. The discharge from the outlet control structure will discharge to the new system on Dodge Road which flows to the Sweet Home Road system.

Underground Detention Summary

(286) ADS Stormtech SC-740 chambers
Top of stone elev. = 573.00
Top of chamber elev. = 572.50
Bottom of chamber elev. = 570.00
Bottom of stone elev. = 569.50
Total storage = 18,574 CF

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Sawyer's Landing
3/4/2021
4 of 5

Event	Ex. Discharge	Pro. Discharge	Elev.
1 yr	0.87 cfs	0.33 cfs	570.29
2 yr	1.34 cfs	0.68 cfs	570.46
5 yr	2.14 cfs	1.05 cfs	570.79
10 yr	2.94 cfs	1.28 cfs	571.13
25 yr	4.34 cfs	1.61 cfs	571.73
50 yr	5.69 cfs	3.61 cfs	572.23
100 yr	7.33 cfs	4.83 cfs	572.92

East Side

The east side of the site has a bioretention area and wet detention pond which this portion of the site discharges to. The NE portion of the site discharges to a forebay which spills into the main micropool portion of the wet detention basin. The SE portion of the site discharges to the bioretention area which also spills into the main micropool portion of the site. An outlet control structure is located in the SE portion of the micropool and controls the discharge from this storm water management area. Spillways are also located on the east portion of the micropool which will discharge to the existing wetlands to the east in order to not cut off all flow from this site into this area. The discharge from the outlet control structure will discharge to the new system on Dodge Road which flows to the Ellicott Creek diversion channel.

The bioretention areas and wet detention pond for the project area are sized to provide 100% of the required Runoff Reduction Volume (RRv) and Water Quality Volume (WQv) treatment for the overall site in accordance with Chapter 4 of the NYSDEC Stormwater design manual. The soils in the vicinity of the bioretention areas are mainly USDA hydrologic group 'D' and therefore the system will be installed with underdrains per NYSDEC requirements. The bioretention areas will consist of 6" and 8" perforated HDPE underdrains in 12" of drainage gravel, followed by filter fabric and 18" minimum of planting soil. Overflow yard drains will be installed to allow 6" maximum temporary ponding for RRv treatment. The east bioretention area (area #3) spills into the wet detention pond and the underdrain pipe ties together with the pond discharge and flows to Dodge Road. The east bioretention areas (areas #1 & #2) have a catch basin to act as the spillway and this catch basin and the underdrain pipes discharge to the underground detention area.

Storm Water Management Area Summary

Forebay
Top of basin elev. = 576.80
Permanent water elev. = 575.00
Aquatic bench elev. = 574.50
Bottom of basin elev. = 569.00

Micropool
Top of basin elev. = 576.80
Permanent water elev. = 575.00
Aquatic bench elev. = 574.50
Bottom of basin elev. = 563.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Sawyer's Landing
3/4/2021
5 of 5

Overall Storm Water Summary

WQv Provided = 152,678 cf (pond)
WQv Provided = 6,948 cf (bioretention)
WQv Provided = 159,626 cf (total)

Bioretention Area Summary:

Area	Rim Elev.	Bottom Elev.	Area
1	574.50	574.00	2,300 sf
2	574.50	574.00	2,600 sf
3	575.50	575.00	11,000 sf
		Total Provided =	15,900 sf

Water Quality Summary:
WQv req'd = 28,804 cf (0.661 ac-ft)
RRv min. req'd = 5,518 cf (0.127 ac-ft)
RRv provided = 8,662 cf (0.199 ac-ft)
WQv provided = 159,626 cf (3.665 ac-ft)
Total RRv + WQv provided = 8,662 cf + 159,626 cf = 168,287 cf (3.868 ac-ft)

Detention: Comparison of the existing 1-year vs. the proposed 1-year runoff
Comparison of the existing 10-year vs. the proposed 10-year runoff
Comparison of the existing 100-year vs. the proposed 100-year runoff

Storm pipes: 10-year storm

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Appendix A

Sanitary Sewer and Water Demand Calculations

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

CARMINA WOOD MORRIS, D.P.C.
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 21.011 Date: 2/19/2021
Project Name: Sawyer's Landing
Project Address: Sweet Home Road and Dodge Road - Amherst, NY
Subject: Sanitary Sewer Demand Calcs
Sheet: 1 of 1

1.a

Sanitary Sewage Demand Calculations:

West - Mixed Use Buildings							
0.1 gal/d/sf	x	20,000	sf	=	2,000	gpd	*use 0.1 gallons per day per square foot
35.0 gal/d/seat	x	100	seats	=	3,500	gpd	*use 35 gallons per day per seat (fast food)
15 gal/d/employee	x	20	employees	=	300	gpd	*use 15 gallons per day per employee
West - Apartments							
220 gal/d/unit	x	100	units	=	22,000	gpd	*use 220 gallons per day per 2-bedroom unit
North - Apartments and Duplex Buildings							
220 gal/d/unit	x	94	units	=	20,680	gpd	*use 220 gallons per day per 2-bedroom unit
220 gal/d/unit	x	12	units	=	2,640	gpd	*use 220 gallons per day per 2-bedroom unit
Total Site Sanitary Demand:				=	51,120	gpd	
				=	0.051	MGD	
Find Peak Sanitary Demand:				=	0.079	cfs	

Peaking Factor based on Population:
Total demand: 51,120 gpd / 100 gpcd = 511 per capita

Population (P) = 511 people

Peaking Factor : $(18 + \sqrt{P}) / (4 + \sqrt{P})$ where P is in thousands

Peaking Factor = 3.97

Peak Sanitary Demand	=	51,120	x	3.97	=	202,908	gpd
					=	0.203	MGD
					=	0.314	cfs

Required Infiltration and Inflow Mitigation:

Peak Sanitary Flow	=	202,908	gpd	=	140.91	gpm
4:1 offset flow per NYSDEC requirements	=	140.9	x 4	=	563.63	gpm req'd
Mitigation Credit	=	$250	/ gpm			
Mitigation Agreement Amount	=	**$140,908.66**				

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

CARMINA WOOD MORRIS, D.P.C.
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 21.011 Date: 2/19/2021
Project Name: Sawyer's Landing
Project Address: Sweet Home Road and Dodge Road - Amherst, NY
Subject: Sanitary Sewer & Water Demand Calcs
Sheet: 2 of 2

Water Demand Calculations (domestic):

Site

51,120 gpd x 1.1 = 56,232 gpd *use 110% of sewage demand

*use 1.8 peaking factor and assume a 12 hour day

56,232 gpm x 1day/12hr x 1hr/60min = 78.10 gpm

78.10 gpm x 1.8 = 140.58 gpm Q_{peak}

Headlosses:

Q_{peak} = 140.58 gpm
Pipe = 8 inch Ductile Iron C = 140
Length = 20 LF (approx. distance from tap to RPZ)

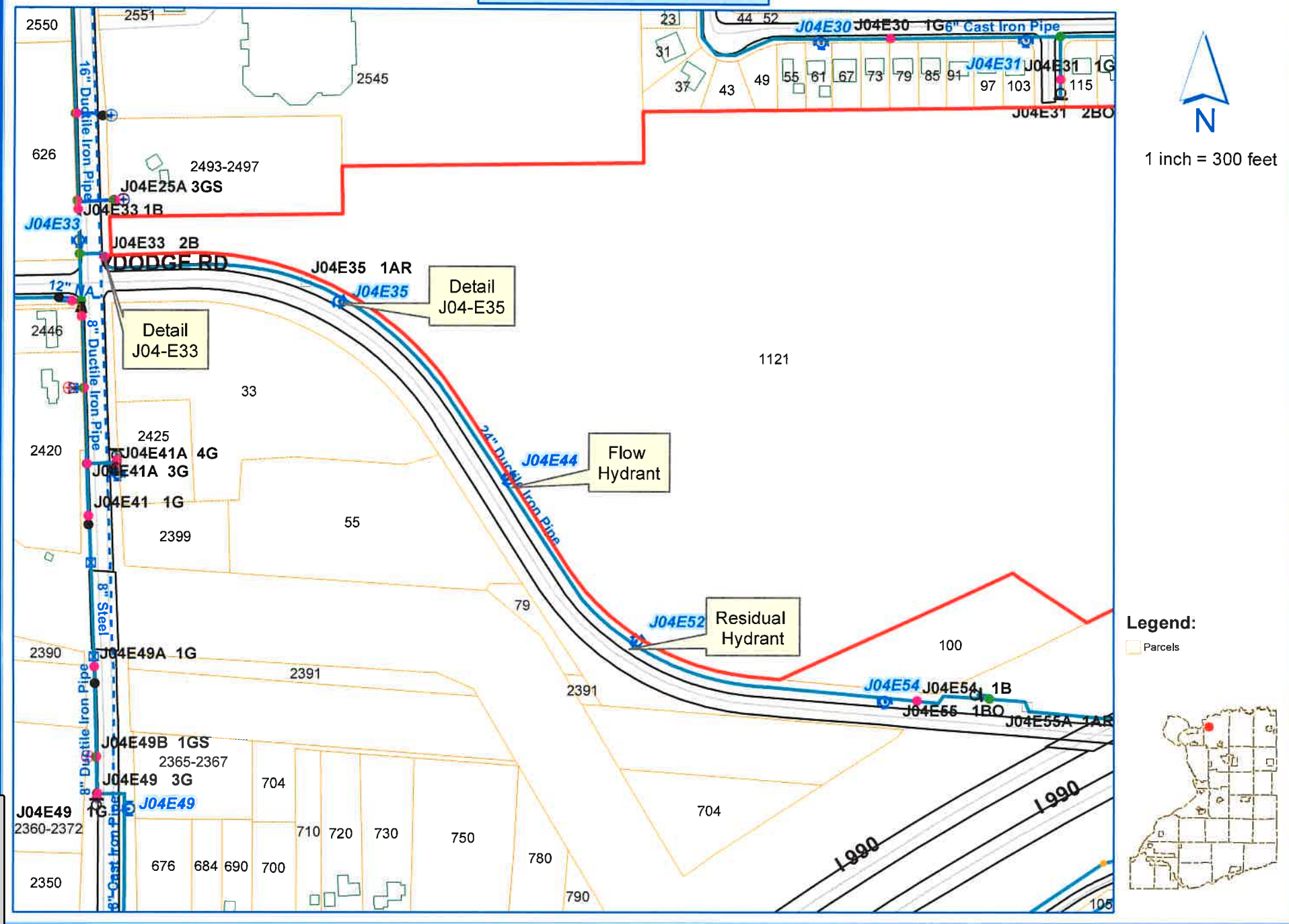
$$H_L = \frac{10.44\, L\, Q^{1.85}}{C^{1.85}\, D^{4.866}} = \frac{10.44(20)(21.51)^{1.85}}{(140)^{1.85}\,(6)^{4.866}} = 0.01 \text{ ft} = 0.00 \text{ psi}$$

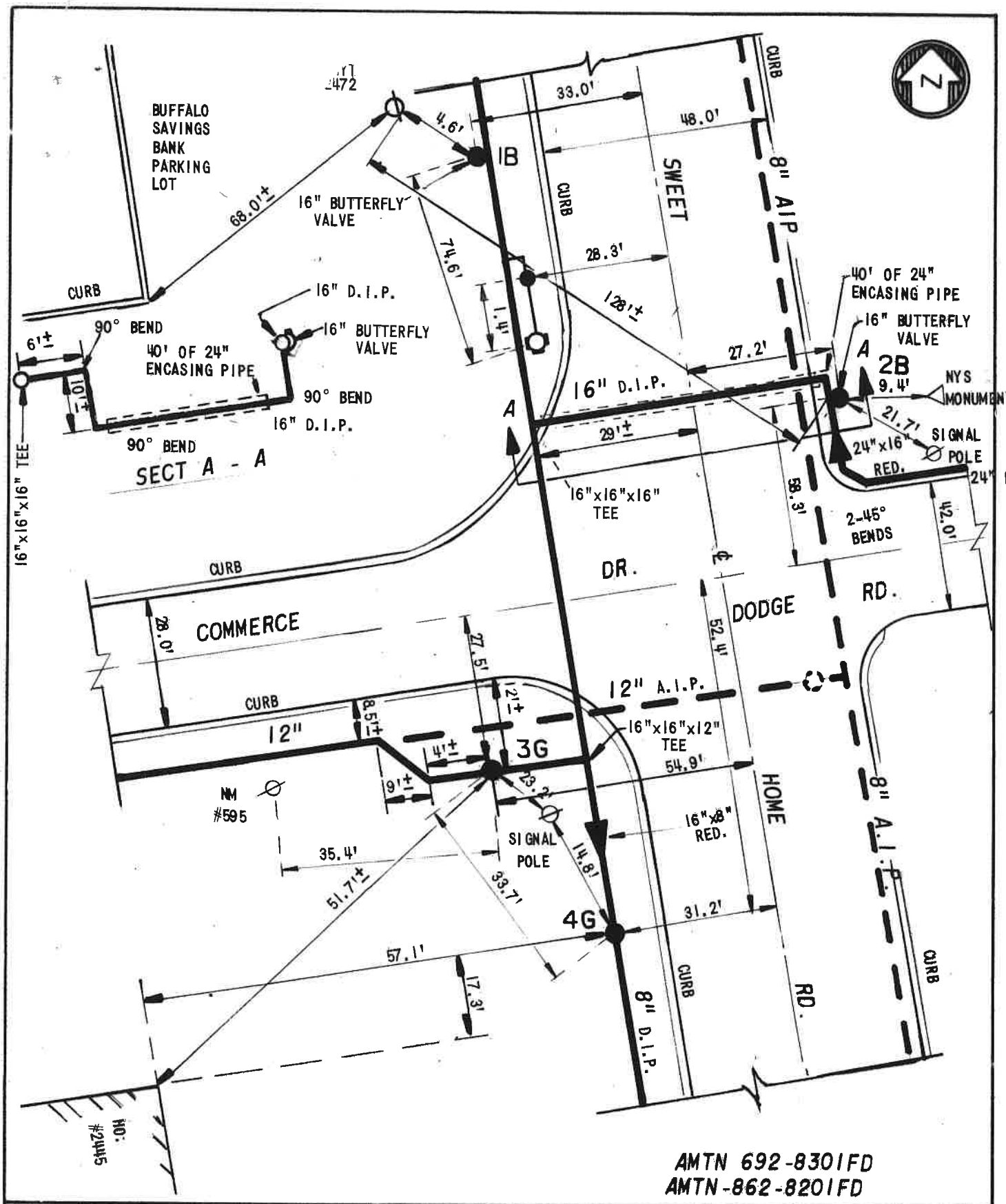
Δ elev = 0 ft = 0.00 psi
Loss through meter = 1 psi
Loss through RPZ = 12 psi
Total Losses = 13.0 psi
Static Pressure = 105 psi (per ECWA - residual pressure 98 psi)
Residual Pressure Following RPZ = 105 - 13.0 = 92.0 psi (available after rpz & meter)

Residual Pressure 30" above 4th Floor
Δ elev = 35 ft = 15.16 psi
Residual Pressure 30" above 4th Floor = 76.8 psi

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

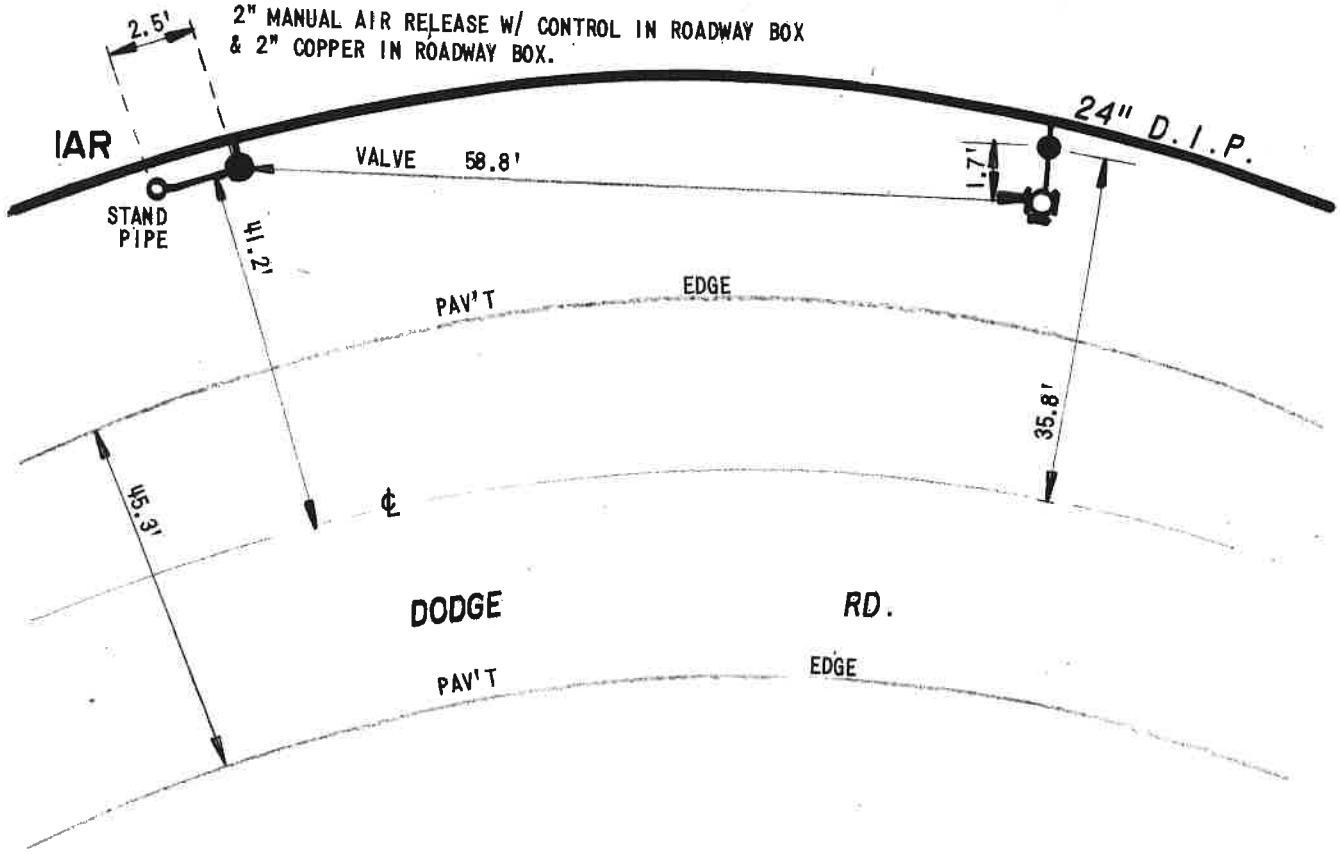
1121 Dodge Rd., AMTN





ERIE COUNTY WATER AUTHORITY, BUFFALO, NEW YORK	REVISED DR. BY: RLS DATE: 6-30-06 NOT TO SCALE	TOWN OF AMHERST W.D 15C	J04-E33 DETAIL SHEET NO.

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)



AMTN-692-8301-FD

SHEET 1

ERIE COUNTY WATER AUTHORITY, BUFFALO, NEW YORK	REVISED DR. BY: RLS DATE: 6-30-06 NOT TO SCALE	TOWN OF AMHERST W.D. 15C	J04-E35 DETAIL SHEET NO.

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

AMHERST
Size of Main/Branch: 24"/6" Fire District: 22028 GETZVILLE FD 11 Water District: 315 AMHERST DISTRICT 15C

Performed By: JRS & DPZ

Comments: HYDRANT FLOW TEST REQUESTED BY BILL GROFF
PRATT & HUTH, PHONE: 633-4844, FAX: 633-4940

Dischrge Coef: .90 Elvtn Usgs(ft): Static(psi): 105 Residual(psi): 98 Required Residual Pressure(psi): 20
Gallons Used..: 7,680 Total Flow(gpm): 2,558 Flow at Reqd Resid Pressure: 9,850

Flow Hydrants:

C	Flow Hyd	Flow Hydrant Address	Main/Brnch	Nzle	Size	Pitot	Flow	Comments
_	J04 E44	DODGE RD	24"/6"	1:	2.50	58.0	1,279	
		2ND HYD E/O SWEET HOME RD		2:	2.50	58.0	1,279	
				3:			Tot Flow:	2,558

Bottom

I=Flow Hydrant Inquiry
ENTER=Continue F3=Exit F6=Maintain Test F7=Test Hydrant Inquiry F15=Print Test Information

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Downstream Sewer Capacity Analysis

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Muir Woods Site

Sweet Home & Dodge Road, Amherst New York

Downstream Sewer Capacity Analysis Report

Project Description

This new site development project will consist of the construction of apartment buildings, duplexes, office, restaurant, and retail space. Construction will also include on-site utility, landscaping improvements, and associated roads and parking. The overall acreage of the site is 28.47 acres. The site is located at Sweet Home Road and Dodge Road on a western portion of parcel 40.08-3-13.1 in the Town of Amherst.

The proposed sewer for this project will tie into the existing 60" RCP Peanut line along Dodge Road. Sewage will then be conveyed west and then eventually north through the 84" West Side Interceptor to the Town of Amherst Wastewater Treatment Facility #16.

Node 1 – Dodge Road (60"):

Existing Peak Flow measured (wet weather event)	=	40.602 cfs (21.851 mgd)*
Proposed Muir Woods Peak Flow	=	0.337 cfs **
Proposed Peak Flow	=	40.939 cfs

Theoretical capacity of existing 60" RCP pipe @ 0.07% = 81.366 cfs

Conclusion: The proposed peak flow is less than the capacity of the 60" pipe, therefore there is sufficient capacity. At no time during the monitoring did the flow depth exceed the pipe diameter at Node 1 of the downstream monitoring points during the rain events monitored.

Node 2 – North Ellicott Creek Rd (60")

Existing Peak Flow measured (wet weather event)	=	99.524 cfs (53.561 mgd)*
Proposed Muir Woods Peak Flow	=	0.337 cfs **
Proposed Peak Flow	=	99.861 cfs

Theoretical capacity of existing 60" pipe = 82.873 cfs (44.60 mgd)

Conclusion: Current flows the day following the 1.21" rainfall event exceeded the capacity of the existing 60" sewer pipe, but at no time during the monitoring period did the flow at any point slow or stall which would have caused a backup or flooding at the manhole. In addition, Sanitary Sewer Overflow (SSD) did not occur. I/I mitigation shall be required for the contribution proposed for this project.

Notes:

Pipe slopes, sizes and materials provided by Town of Amherst Engineering Department Sewer Maintenance Division

* Converted from measurements in TECSmith report dated 8/12/20

** See Sanitary Sewage Demand Calculations

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Node 3 – Sweet Home (66")

Existing Peak Flow measured (overall)	=	69.058 cfs (39.601 mgd)*
Proposed Muir Woods Peak Flow	=	0.337 cfs **
Proposed Peak Flow	=	69.395 cfs

Capacity of existing 66" pipe = 106.657 cfs (57.40 mgd)

Conclusion: The proposed peak flow is less than the capacity of the 66" pipe, therefore there is sufficient capacity. At no time during the monitoring did the flow depth exceed the pipe diameter at Node 3 of the downstream monitoring points during the rain events monitored.

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Notes:

Pipe slopes, sizes and materials provided by Town of Amherst Engineering Department Sewer Maintenance Division

* Converted from measurements in TECSmith report dated 8/12/20

** See Sanitary Sewage Demand Calculations

Location Map

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Muir Woods Site - Sweet Home and Dodge Rd



8/18/2020, 8:51:26 AM

Parcels

Municipal Boundaries

1:9,028

0 300 600 1,200 ft

0 90 180 360 m

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, :GIS .gov

Sanitary Demand Calculations

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

CARMINA WOOD MORRIS, D.P.C.
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 19.192 Date: 8/24/2020
Project Name: Muir Woods
Project Address: Sweet Home Road and Dodge Road - Amherst, NY
Subject: Sanitary Sewer Demand Calcs
Sheet: 1 of 1

1.a

Sanitary Sewage Demand Calculations:

West - Mixed Use Buildings							
0.1 gal/d/sf	x	15,000	sf	=	1,500	gpd	*use 0.1 gallons per day per square foot
35.0 gal/d/seat	x	200	seats	=	7,000	gpd	*use 35 gallons per day per seat (fast food)
15 gal/d/employee	x	20	employees	=	300	gpd	*use 15 gallons per day per employee
West - Apartments							
220 gal/d/unit	x	110	units	=	24,200	gpd	*use 220 gallons per day per 2-bedroom unit
North - Apartments and Duplex Buildings							
220 gal/d/unit	x	90	units	=	19,800	gpd	*use 220 gallons per day per 2-bedroom unit
220 gal/d/unit	x	12	units	=	2,640	gpd	*use 220 gallons per day per 2-bedroom unit

Total Site Sanitary Demand: = 55,440 gpd
= 0.055 MGD
Find Peak Sanitary Demand: = 0.086 cfs

Peaking Factor based on Population:
Total demand: 55,440 gpd / 100 gpcd = 554 per capita

Population (P) = 554 people

Peaking Factor : $(18 + \sqrt{P}) / (4 + \sqrt{P})$ where P is in thousands

Peaking Factor = 3.95

Peak Sanitary Demand = 55,440 x 3.95 = 219,029 gpd
= 0.219 MGD
= 0.339 cfs

Required Infiltration and Inflow Mitigation:

Peak Sanitary Flow = 219,029 gpd = 152.10 gpm

4:1 offset flow per NYSDEC requirements = 152.1 x 4 = 608.41 gpm req'd

Mitigation Credit = $250 / gpm

Mitigation Agreement Amount = $152,103.30

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

TECSmith Monitoring Report

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Date	Node 1			Node 2			Node 3			Rain:
	Dodge Rd 60" (60")			North Ellicott Creek Rd. (60")			Sweethome 66 (66")			
	FLOW (GAL x 1,000)	PEAK FLOW (MGD)	PEAK LEVEL (IN)	FLOW (GAL x 1,000)	PEAK FLOW (MDG)	PEAK LEVEL (IN)	FLOW (GAL x 1	PEAK FLOW (MDG)	PEAK LEVEL (IN)	(inches)
7/8/2020	4186.283	8.161	14.473	7265.409	8.598	16.319	4800986323.2	8.025	19.770	0
7/9/2020	6195.964	8.253	14.556	7387.504	8.661	16.273	6645115872.8	8.044	19.590	0
7/10/2020	6231.790	8.143	14.521	7625.321	9.362	16.873	6667623530.3	8.079	19.790	0
7/11/2020	10033.769	21.851	39.526	20780.607	53.561	76.701	10540796680.3	28.096	66.000	1.21
7/12/2020	9184.078	14.374	22.474	11292.759	17.205	23.420	9306202243.7	13.750	25.810	0
7/13/2020	7070.585	9.115	15.714	11243.925	29.525	33.420	7609650153.8	9.108	20.730	0.47
7/14/2020	6974.494	9.101	15.869	9685.896	13.288	20.168	7274548275.2	9.280	20.720	0
7/15/2020	6591.385	8.845	15.512	8174.879	9.503	17.013	6975378581.5	8.831	20.460	0
7/16/2020	9916.241	20.532	27.213	18886.012	44.070	43.892	12067803314.2	39.601	32.990	0.86
7/17/2020	10096.644	16.639	23.493	12451.728	18.137	24.043	10307997546.4	14.224	26.250	0.03
7/18/2020	8256.593	10.757	17.307	9766.538	11.556	18.960	8664937727.1	10.772	22.350	0
7/19/2020	7589.558	11.382	18.060	10166.964	17.245	24.128	8331695207.5	24.048	23.030	0.21
7/20/2020	7269.757	9.235	16.144	8853.911	10.160	18.118	7730113857.4	9.669	20.890	0
7/21/2020	6681.658	8.895	15.365	8179.097	9.991	17.880	1603593925.8	9.197	20.330	0
7/22/2020	8633.887	15.390	22.402	15950.443	42.105	43.300	16326027301.0	29.736	27.790	0.42
7/23/2020	7327.211	9.216	16.027	9664.310	11.130	18.508	6916249204.1	19.172	20.800	0
7/24/2020	6764.464	8.779	15.317	8434.117	9.760	17.405	8296938032.2	15.723	20.360	0
7/25/2020	6426.122	8.861	15.407	8159.333	9.969	17.608	6871634377.4	12.359	20.320	0
7/26/2020	6409.255	8.667	15.297	8027.060	9.774	17.372	6816880470.0	9.106	20.360	0
7/27/2020	6487.339	8.269	15.107	7871.954	9.244	16.902	6854655651.9	8.336	20.100	0.03
7/28/2020	6298.427	8.016	14.780	7696.223	9.134	16.757	6692447010.5	8.080	19.740	0.01
7/29/2020	8340.302	16.584	23.592	12134.192	36.728	39.530	9170179156.5	20.222	29.310	0.18
7/30/2020	6969.955	8.785	15.769	8383.294	9.650	17.268	7523641190.2	9.272	20.460	0
7/31/2020	6450.443	8.415	15.050	7762.583	9.287	16.964	7145517425.5	9.079	20.020	0
8/1/2020	6190.340	8.162	14.979	7900.808	9.762	17.305	6954528215.3	13.188	20.010	0
8/2/2020	7093.727	10.270	17.033	9801.968	15.922	22.240	7827565960.7	17.585	22.270	0.29
8/3/2020	6767.967	8.538	15.346	8117.853	9.663	17.172	7374180322.3	9.104	20.460	0
8/4/2020	6796.062	10.365	17.180	8920.731	24.649	28.896	7717920498.0	19.489	24.920	0.9
8/5/2020	4464.403	13.072	20.203	5583.196	26.407	31.097	3896577334.0	14.011	25.600	0
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Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

Date: August 12, 2020

SANITARY SEWER FLOW CAPACITY STUDY – Summary Review

Prepared For: Muir Woods Capacity Analysis

Christopher Wood
487 Main Street, Suite 600
Buffalo, New York 14203
P: (716) 842-3165
F: (716) 842-0263

Project Name: Muir Woods Capacity Analysis

Flow Monitoring Period: July 8, 2020 to August 5, 2020

Rain Events (> 0.5-inches) Monitored: July 11 (1.21"), July 16 (0.86"), and August (0.90")

Number of Monitoring Nodes: Three (3) downstream manholes

Node Locations and Descriptions:

- Node 1 Dodge Rd 60" (60")
- Node 2 North Ellicott Creek Rd. (60")
- Node 3 Sweethome 66 (66")

Summary Conclusion:

Based on the data presented in this report, specifically the flow depth measurements recorded (see graphs below)

- At no time did the flow depth exceed pipe diameter at Node 1 and Node3 of the downstream monitoring points during the rain events monitored.
- One time the flow depth exceed pipe diameter at Node 2 of the downstream monitoring points during the rain events monitored.
- At no time during the monitoring period did the flow at any point slow or stall which would have caused a backup or flooding at the manhole.

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

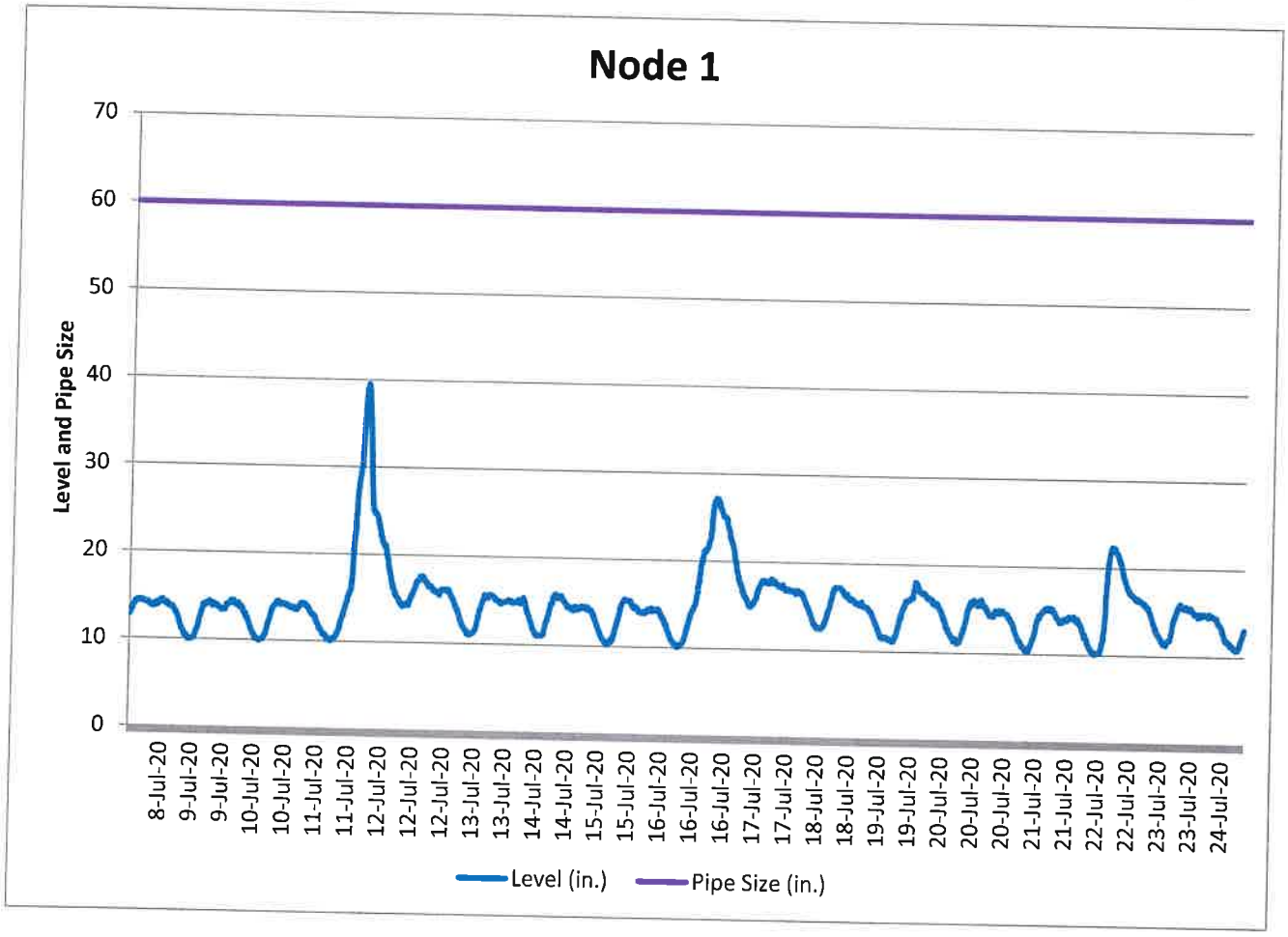
TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

Depth of Flow Capacity Summary:

Depth of flow capacity is based on diameter of pipe. See graphs below.

- At no time during the monitoring period did depth of flow exceed pipe diameter at Node 1.

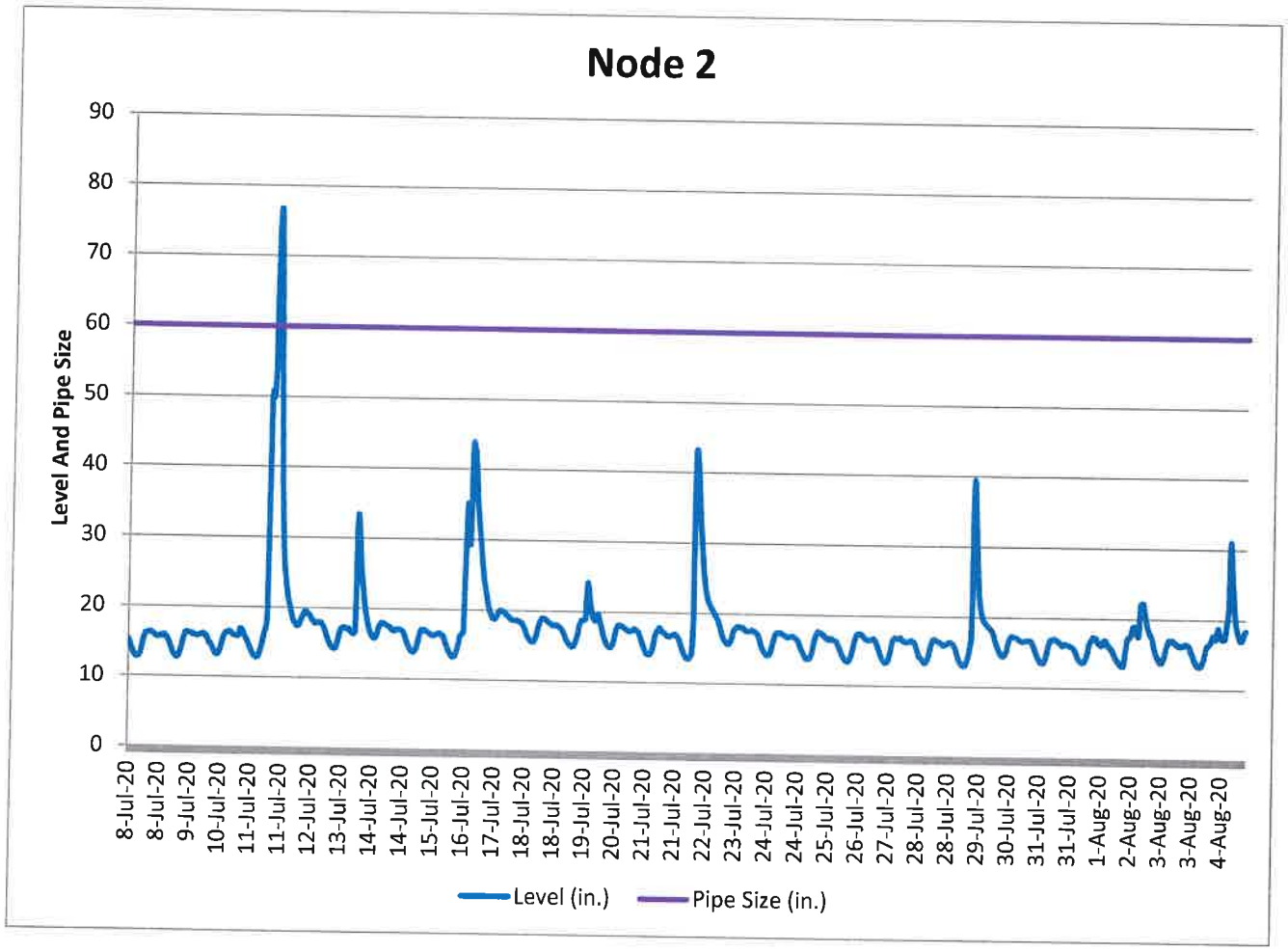


Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

- One time during the monitoring period did depth of flow exceed pipe diameter at Node 2.

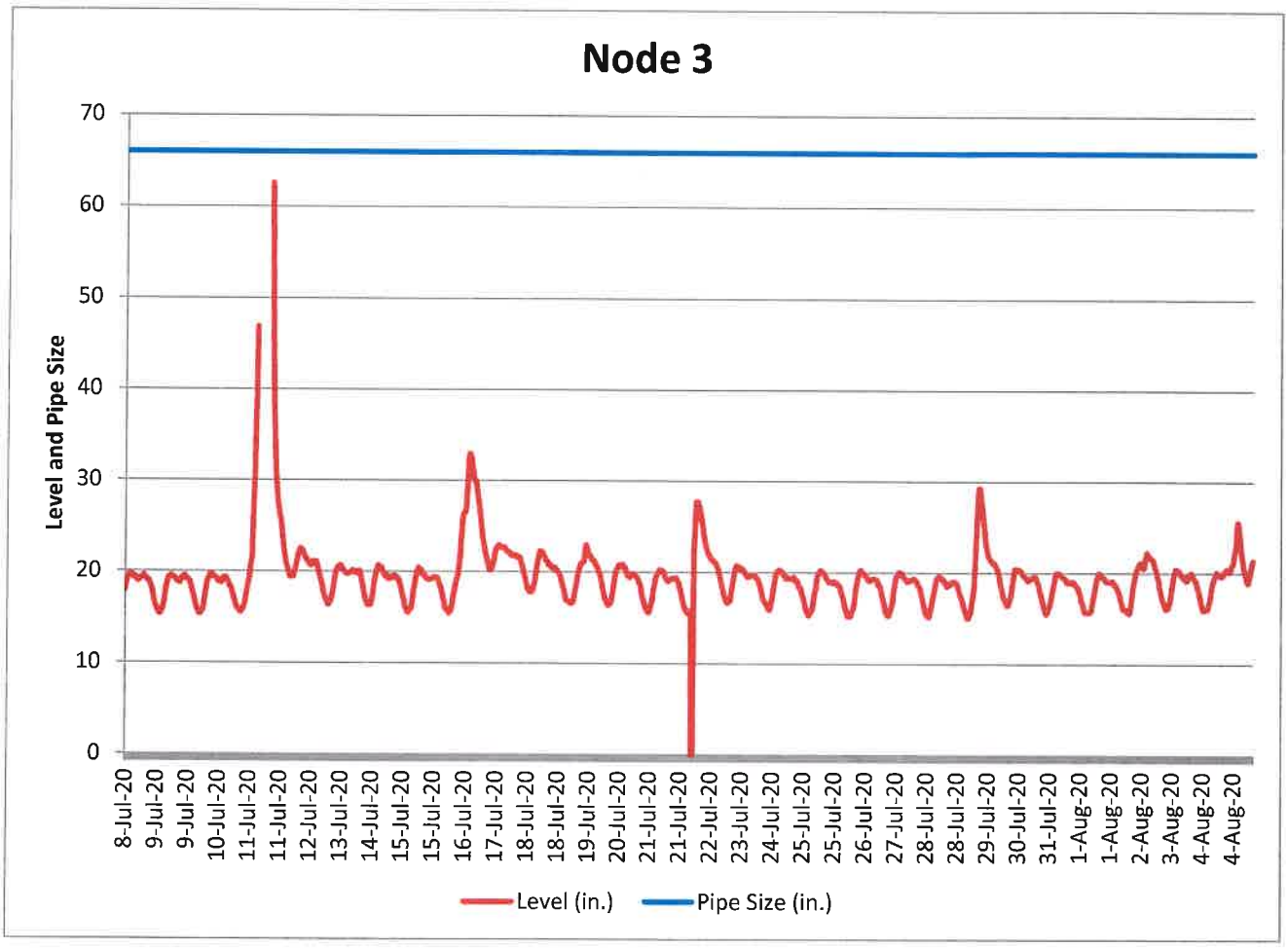


Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

- At no time during the monitoring period did depth of flow exceed pipe diameter at Node 3.



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

(T) Amherst Engineering Department Sewer Maintenance Division
Downstream Routing Map

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Town of Amherst Engineering Department
Sewer Maintenance Division

Main Sanitary Sewer Interceptors

DOWNSTREAM SEWER

AMHERST PEANUT LINE & WEST SIDE INTERCEPTOR

460 Dodge Road - Proposed 26 Unit Apartment Building - Amherst Consolidated Sewer District

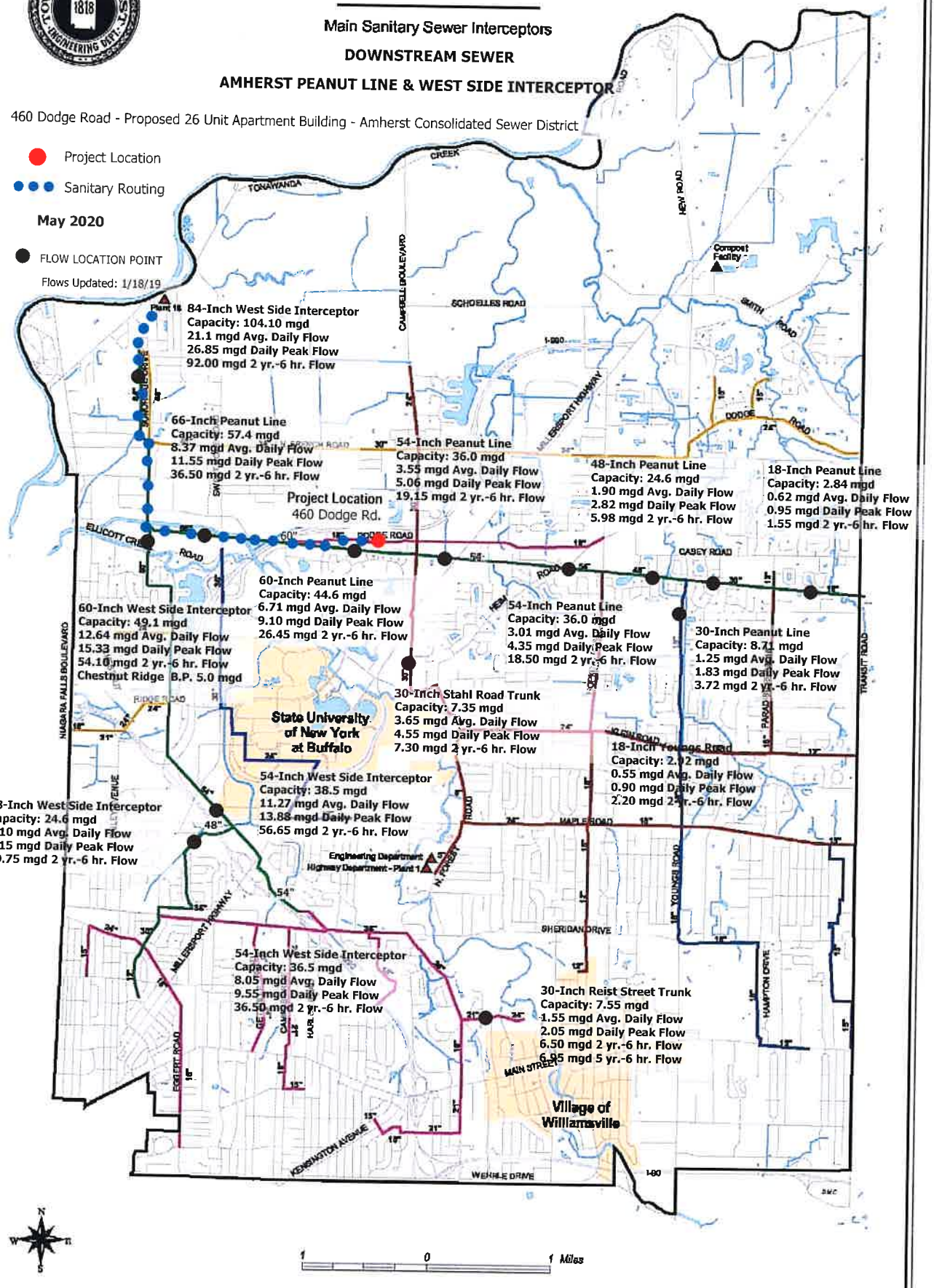
Project Location

Sanitary Routing

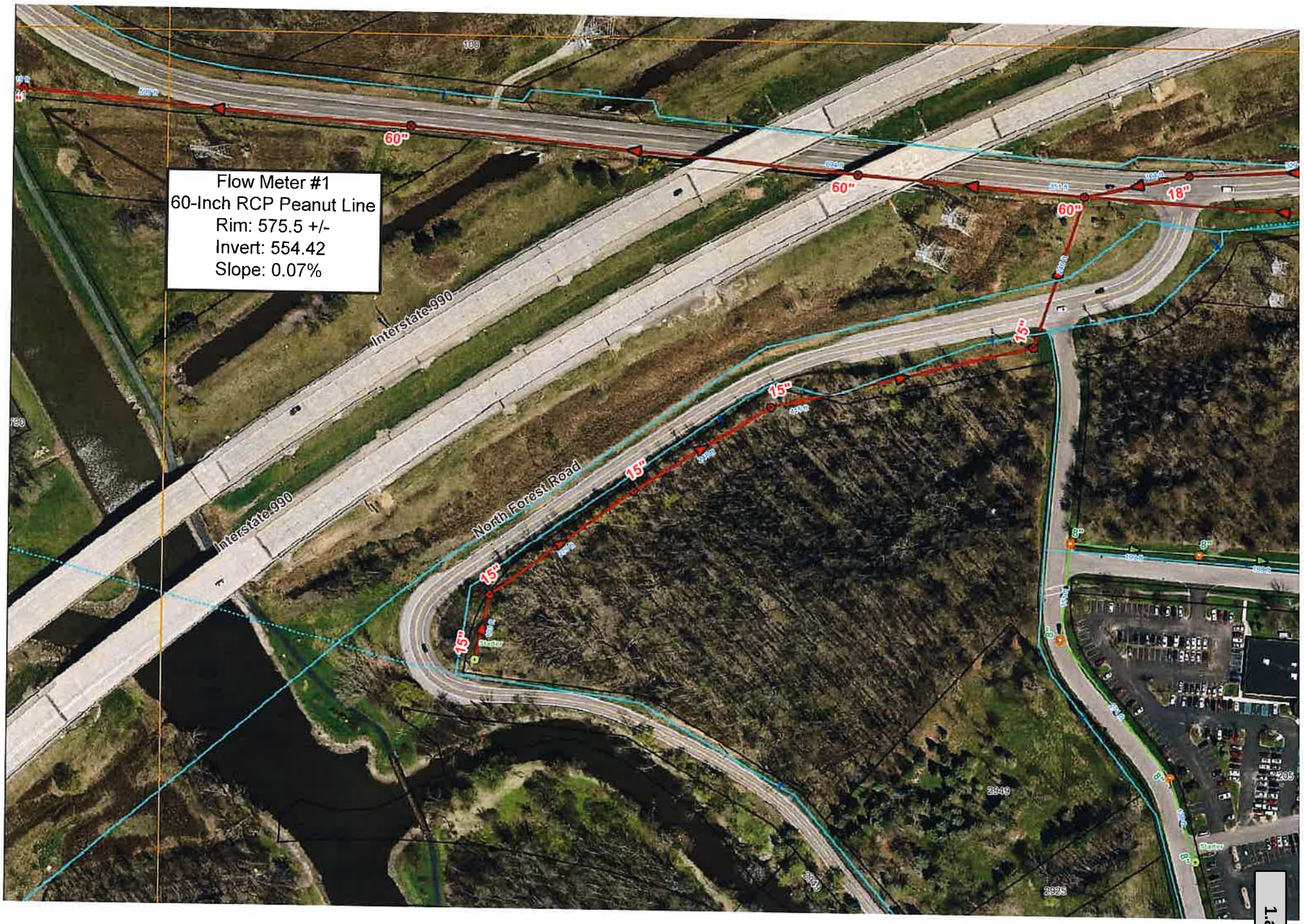
May 2020

FLOW LOCATION POINT

Flows Updated: 1/18/19



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)


Flow Meter #1
60-Inch RCP Peanut Line
Rim: 575.5 +/-
Invert: 554.42
Slope: 0.07%
Interstate 990
Interstate 990
North Forest Road
60"
60"
60"
18"
15"
15"
15"
15"
15"



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Flow Meter #3


Sweet Home Rd
Reznicki & Company, LLP
Timothy M Brown CPA PLLC
Buffalo Vet Center
Dr. Ronald A. Cooke, MD
Ashley's Garden

Appendix B

Storm Sewer System Drainage Calculations

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Existing Runoff

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

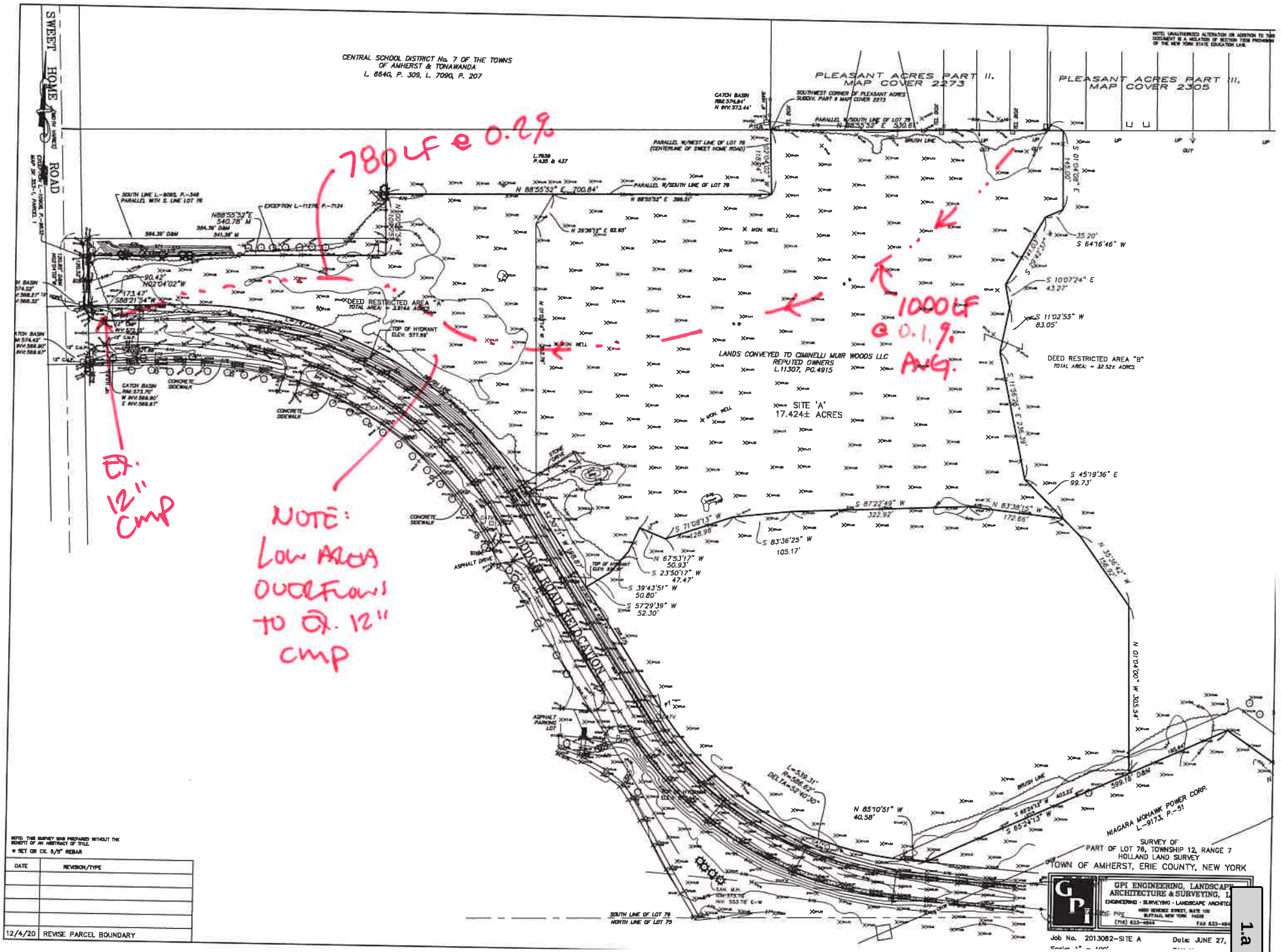


Existing

Subcat Reach Pond Link

Routing Diagram for 21.011 Existing
Prepared by Hewlett-Packard Company, Printed 3/1/2021
HydroCAD® 10.00-18 s/n 05019 © 2016 HydroCAD Software Solutions LLC

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)


780 LF @ 0.2%
1000 LF @ 0.1% AVG.
EX. 12" CMP
NOTE: LOW AREA OVERFLOWS TO EX. 12" CMP
SWEET HOME ROAD
DODGE ROAD RELOCATION
CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA
L. 8640, P. 309, L. 7090, P. 207
PLEASANT ACRES PART II. MAP COVER 2273
PLEASANT ACRES PART III. MAP COVER 2305
LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC REPUTED OWNERS L.11307, PG.4915
SITE 'A' 17.424± ACRES
DEED RESTRICTED AREA "A" TOTAL AREA: = 3.8144 ACRES
DEED RESTRICTED AREA "B" TOTAL AREA: = 32.52± ACRES
NIAGARA MOHAWK POWER CORP. L.-9173, P.-51
SURVEY OF PART OF LOT 78, TOWNSHIP 12, RANGE 7 HOLLAND LAND SURVEY TOWN OF AMHERST, ERIE COUNTY, NEW YORK
GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, L
Job No. 2013082-SITE A
Date: JUNE 27,
DATE | REVISION/TYPE
12/4/20 | REVISE PARCEL BOUNDARY

Events for Subcatchment 1S: Existing

Event	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-Year	0.87	0.578	0.41
2-Year	1.34	0.851	0.60
5-Year	2.14	1.304	0.92
10-Year	2.94	1.752	1.24
25-Year	4.34	2.527	1.78
50-Year	5.69	3.272	2.31
100-Year	**7.33**	**4.181**	**2.95**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.830	77	Brush, Fair, HSG D (1S)
12.170	79	Woods, Fair, HSG D (1S)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
17.000	HSG D	1S
0.000	Other	

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	4.830	0.000	4.830	Brush, Fair	1S
0.000	0.000	0.000	12.170	0.000	12.170	Woods, Fair	1S

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

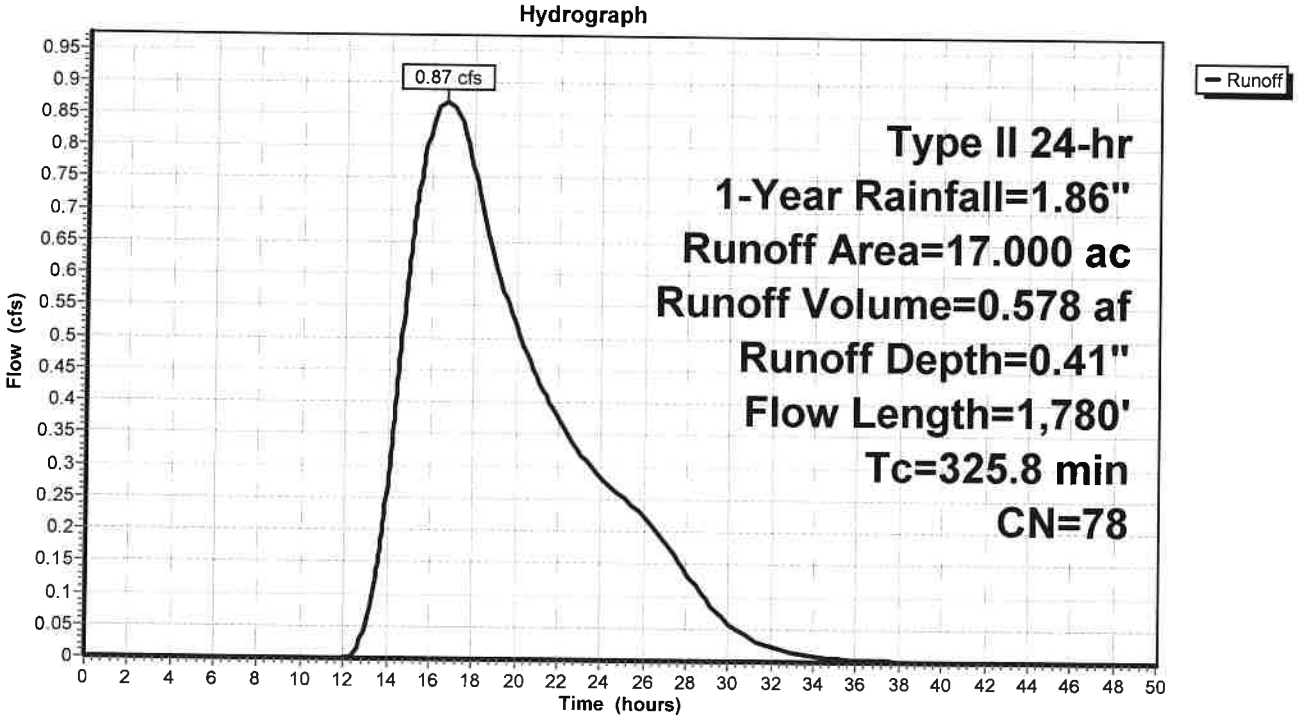
Runoff = 0.87 cfs @ 16.65 hrs, Volume= 0.578 af, Depth= 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

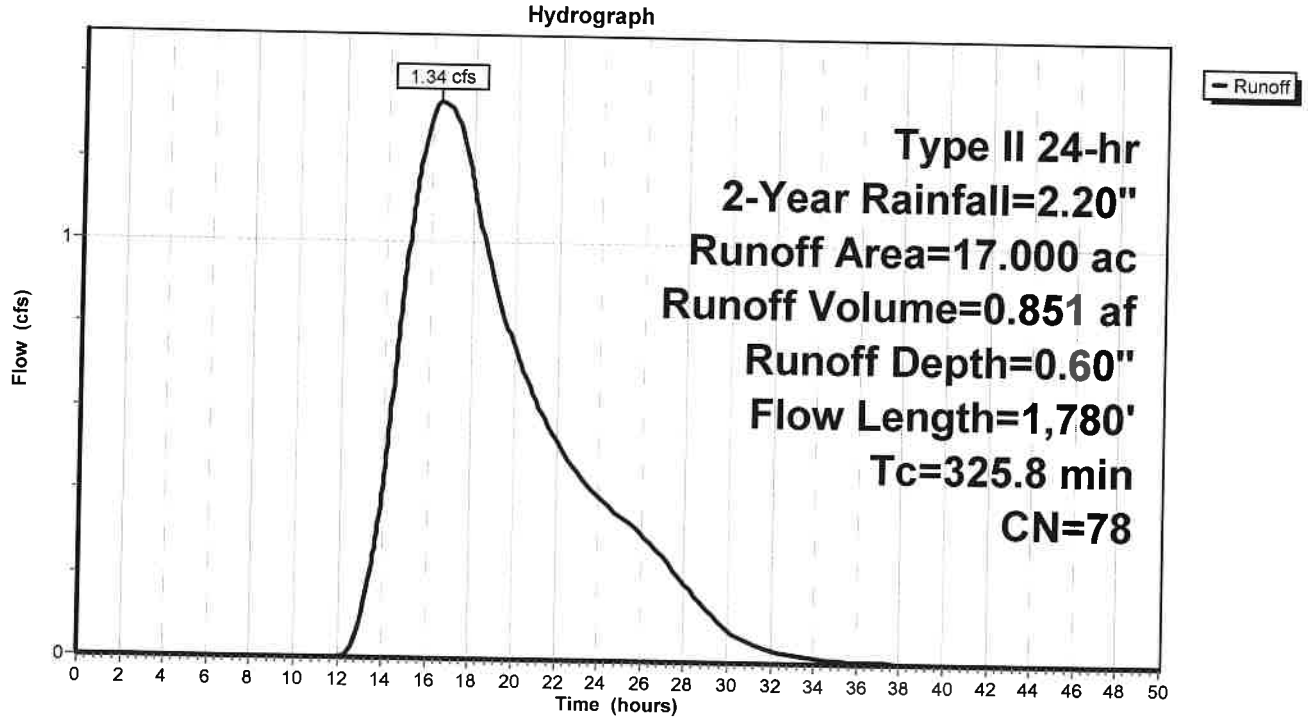
Runoff = 1.34 cfs @ 16.35 hrs, Volume= 0.851 af, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

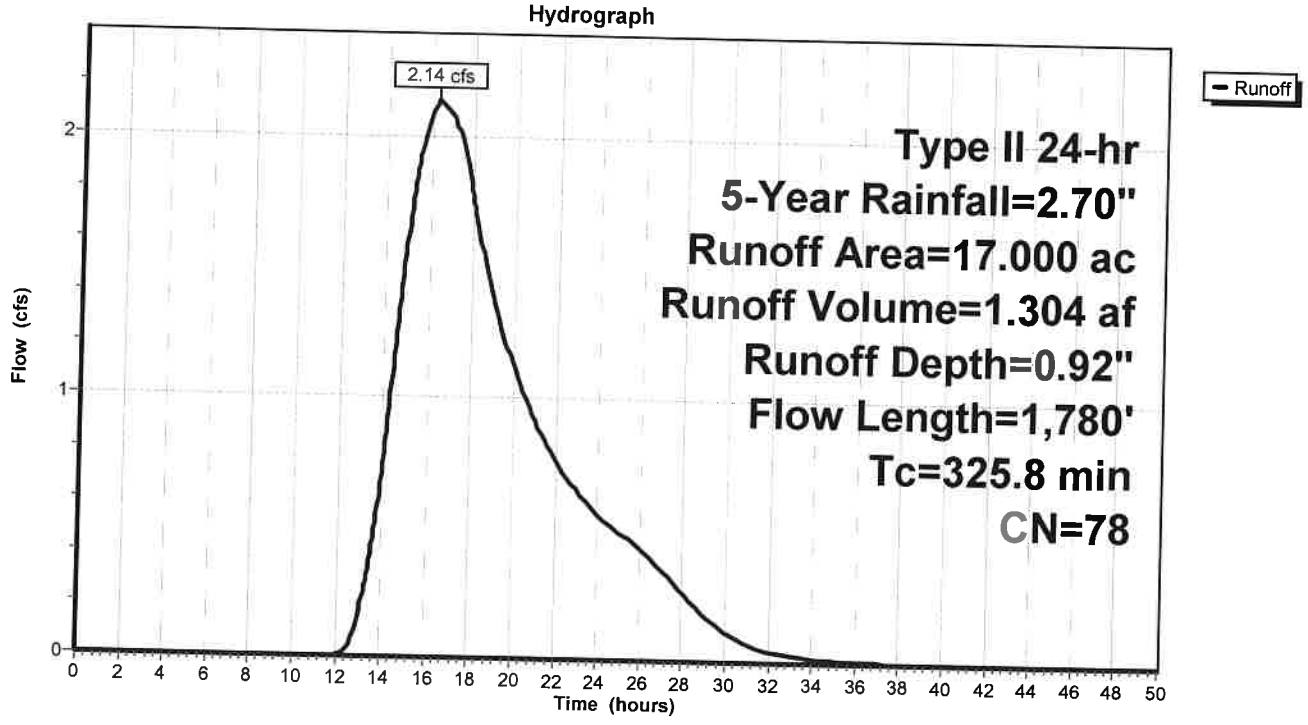
Runoff = 2.14 cfs @ 16.31 hrs, Volume= 1.304 af, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

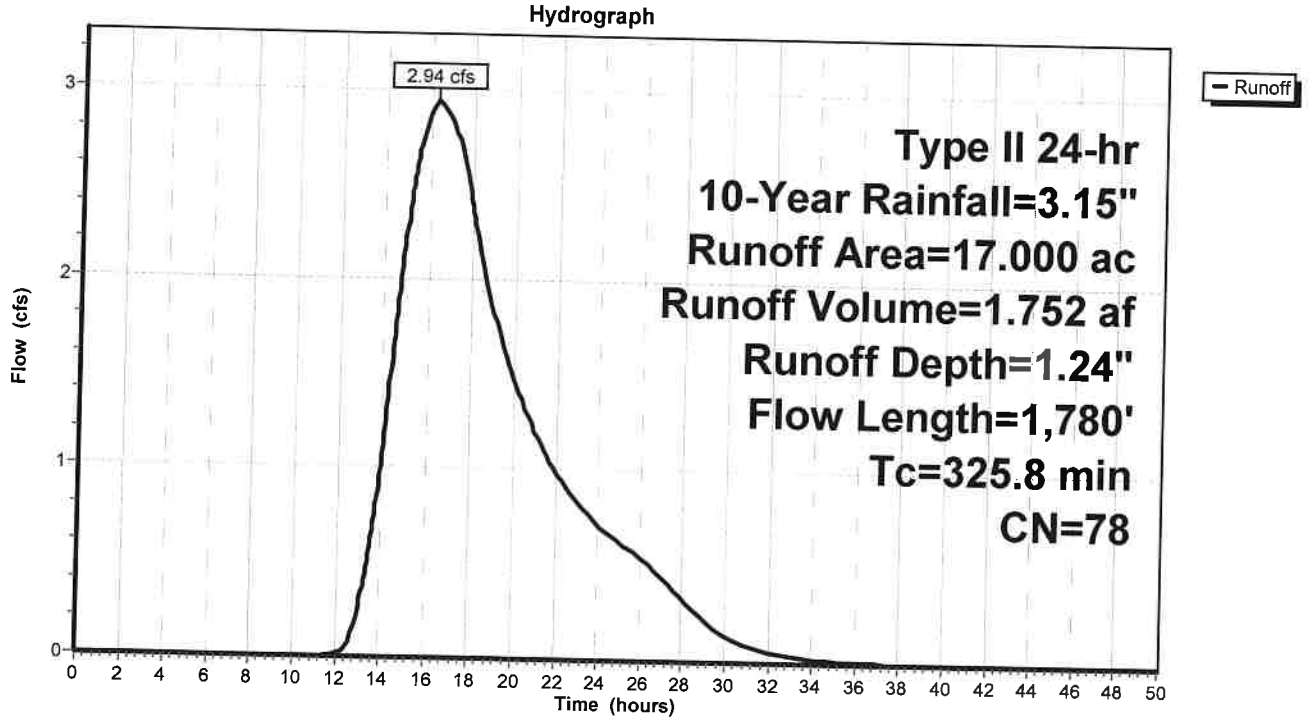
Runoff = 2.94 cfs @ 16.31 hrs, Volume= 1.752 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

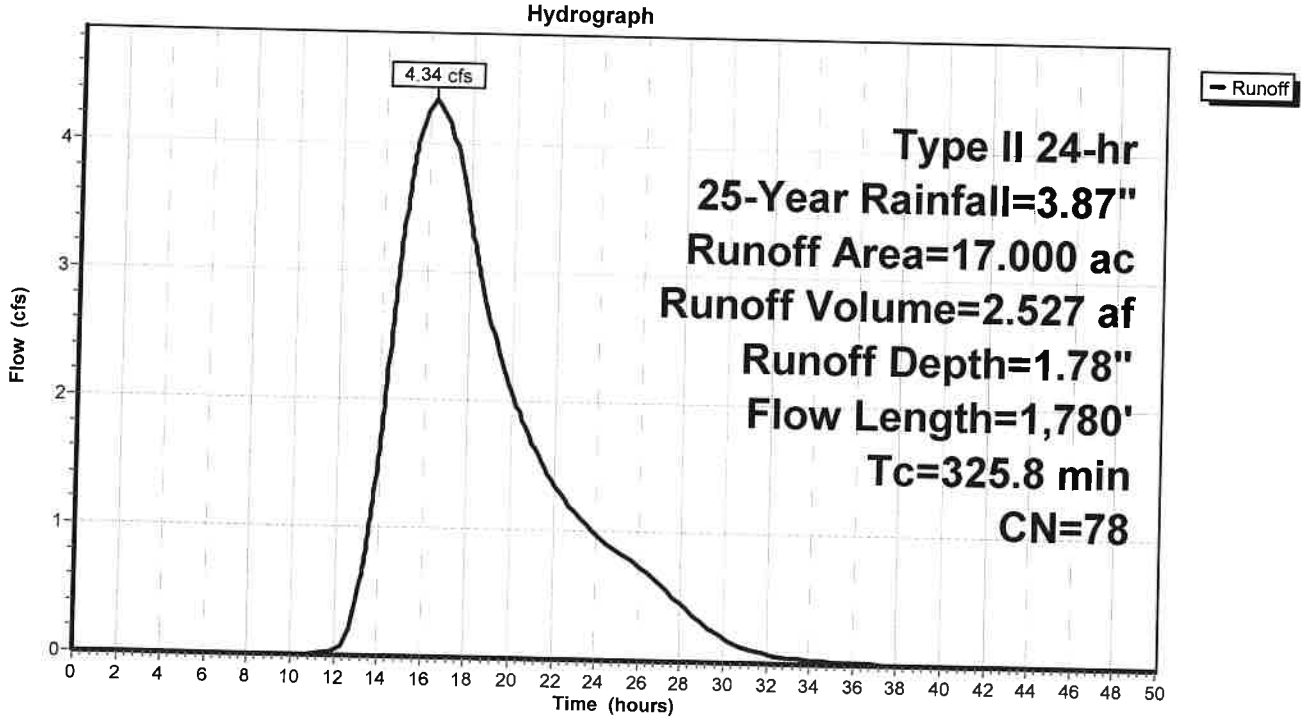
Runoff = 4.34 cfs @ 16.30 hrs, Volume= 2.527 af, Depth= 1.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

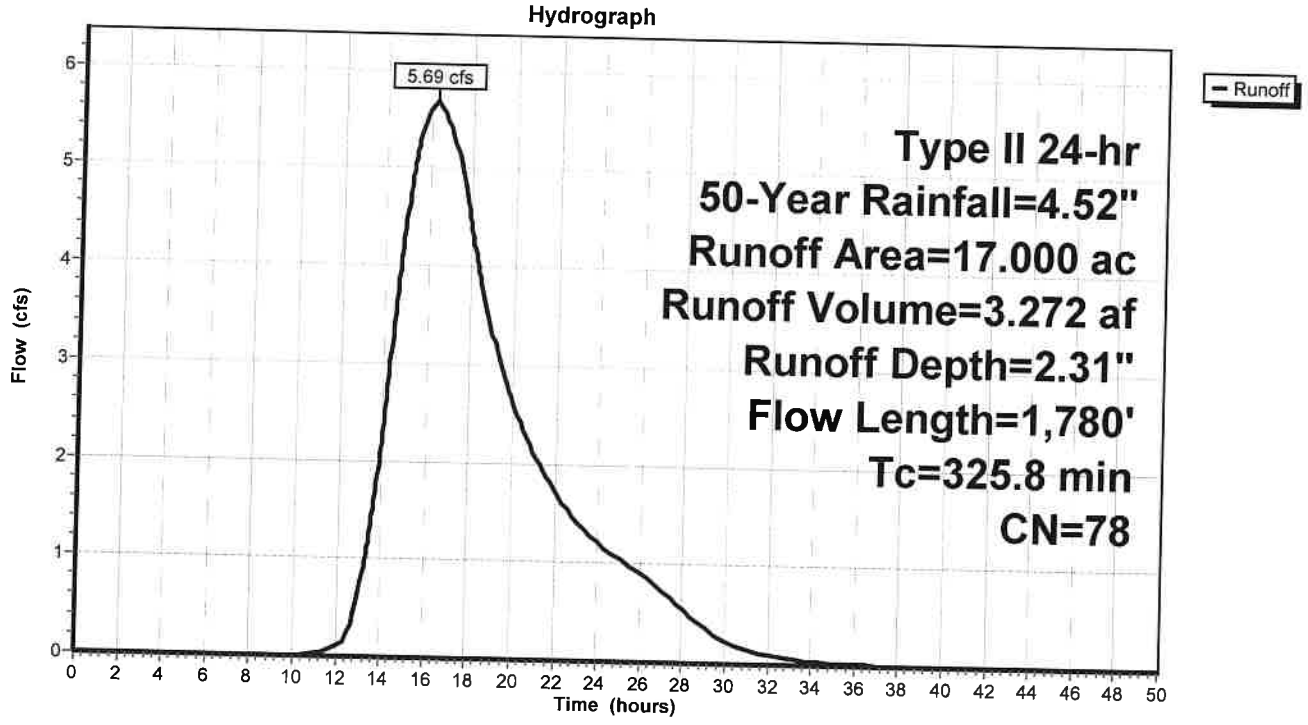
Runoff = 5.69 cfs @ 16.29 hrs, Volume= 3.272 af, Depth= 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

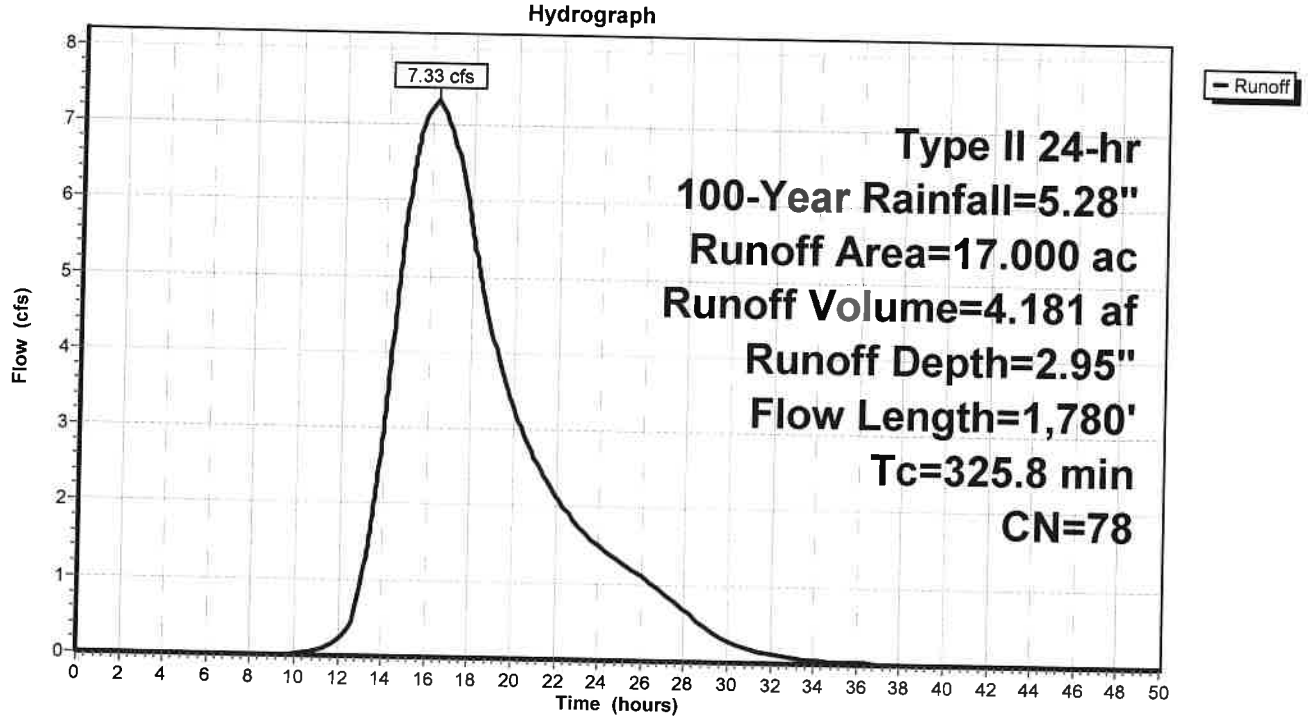
Runoff = 7.33 cfs @ 16.29 hrs, Volume= 4.181 af, Depth= 2.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



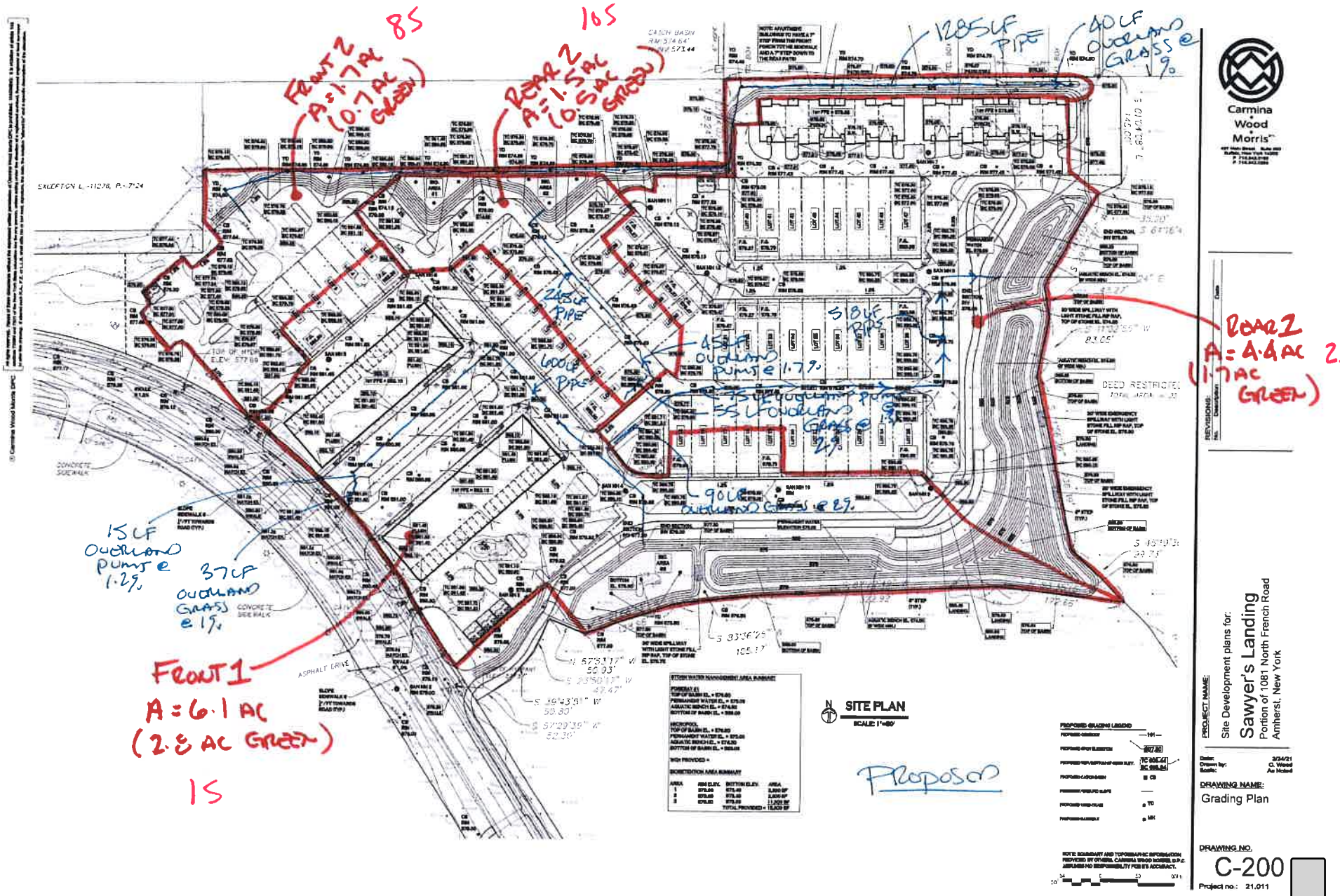
Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

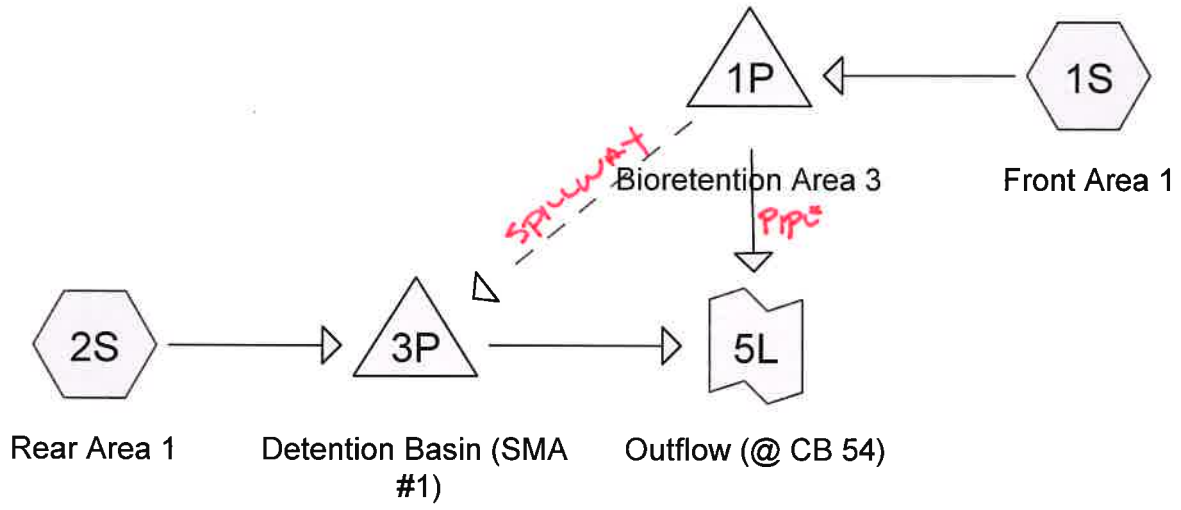
Proposed Runoff

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Proposed Runoff - East

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)


FRONT 2
A=1.7AC
(0.7AC GREEN)
85
REAR 2
A=1.5AC
(0.5AC GREEN)
105
120 LF PIPE
40 LF OVERLAND GRASS e 9%
REAR 2
A=4.4AC
(1.7AC GREEN)
245 LF PIPE
600 LF PIPE
45 LF OVERLAND PUMP e 1.7%
55 LF PIPE
55 LF OVERLAND PUMP e 2%
55 LF OVERLAND GRASS e 2%
90 LF OVERLAND GRASS e 2%
15 LF OVERLAND PUMP e 1.2%
37 LF OVERLAND GRASS e 1%
FRONT 1
A=6.1AC
(2.5AC GREEN)
15
SITE PLAN
SCALE: 1"=80'
Proposed
Carmina Wood Morris
PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York
DRAWING NAME:
Grading Plan
DRAWING NO.
C-200
Project no.: 21.011



Subcat Reach Pond Link

Routing Diagram for 21.011 Proposed
Prepared by Hewlett-Packard Company, Printed 3/4/2021
HydroCAD® 10.00-18 s/n 05019 © 2016 HydroCAD Software Solutions LLC

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Events for Link 5L: Outflow (@ CB 54)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
1-Year	2.78	2.78	**0.00**
2-Year	2.86	2.86	0.00
5-Year	3.01	3.01	0.00
10-Year	3.16	3.16	0.00
25-Year	3.36	3.36	0.00
50-Year	3.48	3.48	0.00
100-Year	**3.60**	**3.60**	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Events for Pond 3P: Detention Basin (SMA #1)

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	6.05	0.10	0.10	0.00	575.23	13,685
2-Year	12.29	0.18	0.18	0.00	575.32	19,129
5-Year	20.08	0.33	0.33	0.00	575.46	28,218
10-Year	26.01	0.47	0.47	0.00	575.60	37,117
25-Year	34.94	0.64	0.64	0.00	575.83	51,964
50-Year	42.93	1.97	0.72	1.25	576.00	62,935
100-Year	**52.24**	**8.57**	**0.78**	**7.80**	**576.11**	**70,722**

TO DUDLEE RD

TO WETLANDS

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Events for Pond 1P: Bioretention Area 3

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	8.17	4.38	2.74	1.63	575.82	7,520
2-Year	10.57	8.19	2.79	5.41	575.91	8,359
5-Year	14.18	12.91	2.83	10.09	575.99	9,153
10-Year	17.46	16.45	2.85	13.60	576.04	9,672
25-Year	22.74	21.73	2.89	18.84	576.11	10,375
50-Year	27.50	26.43	2.91	23.52	576.17	10,954
100-Year	**33.05**	**31.92**	**2.94**	**28.98**	**576.23**	**11,585**

↑ TO DOUGE RD

↑ TO BASIN

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.500	80	>75% Grass cover, Good, HSG D (1S, 2S)
3.200	98	Paved parking, HSG D (1S, 2S)
2.800	98	Roofs, HSG D (1S, 2S)
10.500	**90**	**TOTAL AREA**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
10.500	HSG D	1S, 2S
0.000	Other	
10.500		**TOTAL AREA**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	4.500	0.000	4.500	>75% Grass cover, Good	1S, 2S
0.000	0.000	0.000	3.200	0.000	3.200	Paved parking	1S, 2S
0.000	0.000	0.000	2.800	0.000	2.800	Roofs	1S, 2S
0.000	**0.000**	**0.000**	**10.500**	**0.000**	**10.500**	**TOTAL AREA**	

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=0.98"
Flow Length=652' Tc=13.3 min CN=90 Runoff=8.17 cfs 0.496 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=1.04"
Flow Length=683' Tc=14.4 min CN=91 Runoff=6.05 cfs 0.382 af

Pond 1P: Bioretention Area 3 Peak Elev=575.82' Storage=7,520 cf Inflow=8.17 cfs 0.496 af
Primary=2.74 cfs 0.475 af Secondary=1.63 cfs 0.021 af Outflow=4.38 cfs 0.496 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.23' Storage=13,685 cf Inflow=6.05 cfs 0.403 af
Primary=0.10 cfs 0.249 af Secondary=0.00 cfs 0.000 af Outflow=0.10 cfs 0.249 af

Link 5L: Outflow (@ CB 54) Inflow=2.78 cfs 0.724 af
Primary=2.78 cfs 0.724 af

Total Runoff Area = 10.500 ac Runoff Volume = 0.878 af Average Runoff Depth = 1.00"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

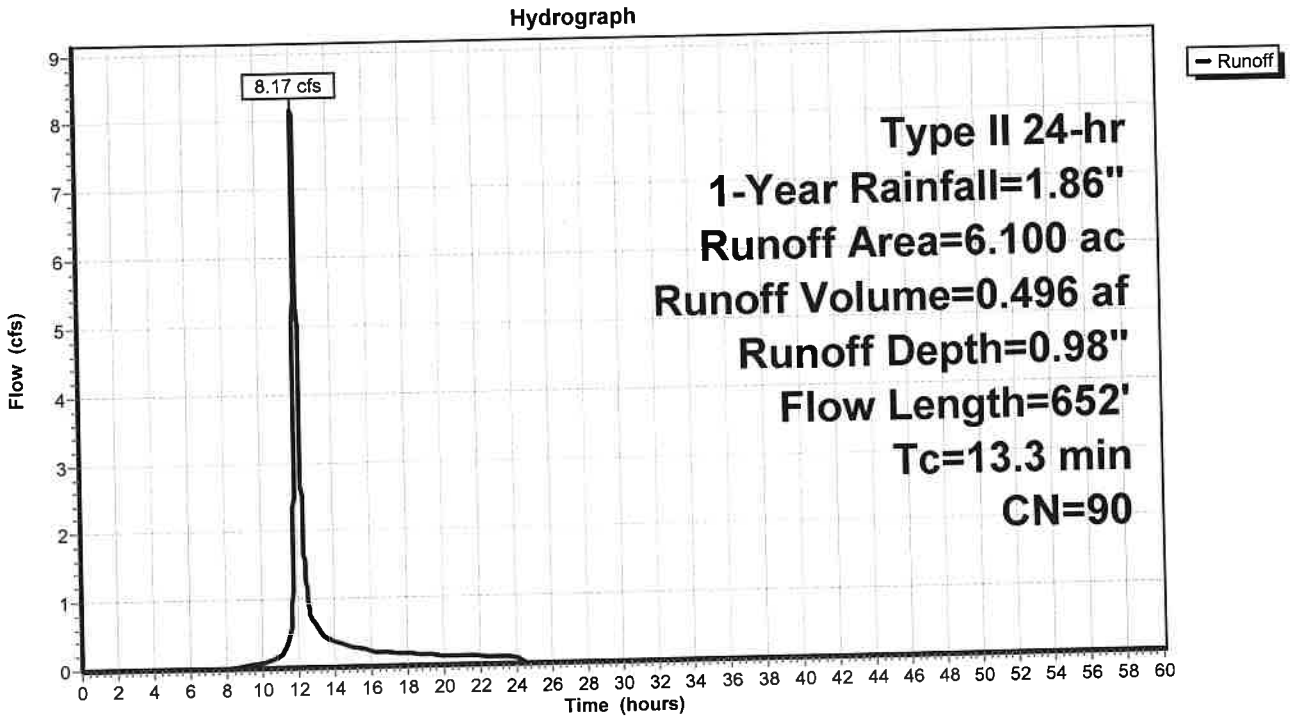
Runoff = 8.17 cfs @ 12.05 hrs, Volume= 0.496 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.00
9.00	0.27	0.00	0.02
10.00	0.34	0.01	0.07
11.00	0.44	0.03	0.20
12.00	1.23	0.48	**7.23**
13.00	1.44	0.63	**0.63**
14.00	1.53	0.70	0.37
15.00	1.59	0.75	0.29
16.00	1.64	0.79	0.23
17.00	1.68	0.83	0.20
18.00	1.71	0.85	0.17
19.00	1.74	0.88	0.15
20.00	1.77	0.90	0.13
21.00	1.79	0.92	0.12
22.00	1.82	0.94	0.12
23.00	1.84	0.96	0.11
24.00	**1.86**	**0.98**	0.11
25.00	1.86	0.98	0.00
26.00	1.86	0.98	0.00
27.00	1.86	0.98	0.00
28.00	1.86	0.98	0.00
29.00	1.86	0.98	0.00
30.00	1.86	0.98	0.00
31.00	1.86	0.98	0.00
32.00	1.86	0.98	0.00
33.00	1.86	0.98	0.00
34.00	1.86	0.98	0.00
35.00	1.86	0.98	0.00
36.00	1.86	0.98	0.00
37.00	1.86	0.98	0.00
38.00	1.86	0.98	0.00
39.00	1.86	0.98	0.00
40.00	1.86	0.98	0.00
41.00	1.86	0.98	0.00
42.00	1.86	0.98	0.00
43.00	1.86	0.98	0.00
44.00	1.86	0.98	0.00
45.00	1.86	0.98	0.00
46.00	1.86	0.98	0.00
47.00	1.86	0.98	0.00
48.00	1.86	0.98	0.00
49.00	1.86	0.98	0.00
50.00	1.86	0.98	0.00
51.00	1.86	0.98	0.00
52.00	1.86	0.98	0.00
53.00	1.86	0.98	0.00
54.00	1.86	0.98	0.00
55.00	1.86	0.98	0.00
56.00	1.86	0.98	0.00
57.00	1.86	0.98	0.00
58.00	1.86	0.98	0.00
59.00	1.86	0.98	0.00
60.00	1.86	0.98	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

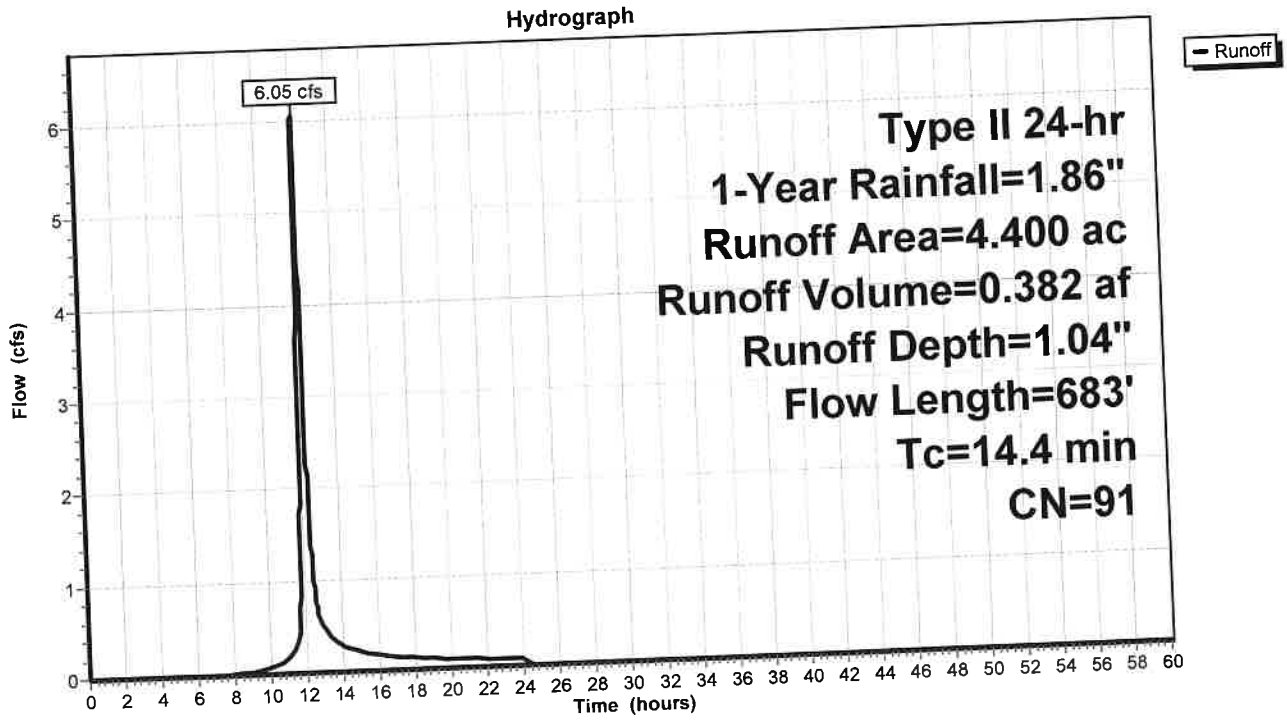
Runoff = 6.05 cfs @ 12.06 hrs, Volume= 0.382 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.01
9.00	0.27	0.01	0.03
10.00	0.34	0.02	0.06
11.00	0.44	0.05	0.17
12.00	1.23	0.53	**5.18**
13.00	1.44	0.69	**0.48**
14.00	1.53	0.76	0.28
15.00	1.59	0.81	0.21
16.00	1.64	0.85	0.17
17.00	1.68	0.89	0.15
18.00	1.71	0.92	0.13
19.00	1.74	0.94	0.11
20.00	1.77	0.97	0.10
21.00	1.79	0.99	0.09
22.00	1.82	1.01	0.09
23.00	1.84	1.02	0.08
24.00	**1.86**	**1.04**	0.08
25.00	1.86	1.04	0.00
26.00	1.86	1.04	0.00
27.00	1.86	1.04	0.00
28.00	1.86	1.04	0.00
29.00	1.86	1.04	0.00
30.00	1.86	1.04	0.00
31.00	1.86	1.04	0.00
32.00	1.86	1.04	0.00
33.00	1.86	1.04	0.00
34.00	1.86	1.04	0.00
35.00	1.86	1.04	0.00
36.00	1.86	1.04	0.00
37.00	1.86	1.04	0.00
38.00	1.86	1.04	0.00
39.00	1.86	1.04	0.00
40.00	1.86	1.04	0.00
41.00	1.86	1.04	0.00
42.00	1.86	1.04	0.00
43.00	1.86	1.04	0.00
44.00	1.86	1.04	0.00
45.00	1.86	1.04	0.00
46.00	1.86	1.04	0.00
47.00	1.86	1.04	0.00
48.00	1.86	1.04	0.00
49.00	1.86	1.04	0.00
50.00	1.86	1.04	0.00
51.00	1.86	1.04	0.00
52.00	1.86	1.04	0.00
53.00	1.86	1.04	0.00
54.00	1.86	1.04	0.00
55.00	1.86	1.04	0.00
56.00	1.86	1.04	0.00
57.00	1.86	1.04	0.00
58.00	1.86	1.04	0.00
59.00	1.86	1.04	0.00
60.00	1.86	1.04	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area =	6.100 ac,	54.10% Impervious,	Inflow Depth =	0.98"	for 1-Year event
Inflow =	8.17 cfs @	12.05 hrs,	Volume=	0.496 af	
Outflow =	4.38 cfs @	12.19 hrs,	Volume=	0.496 af,	Atten= 46%, Lag= 8.2 min
Primary =	2.74 cfs @	12.19 hrs,	Volume=	0.475 af	
Secondary =	1.63 cfs @	12.19 hrs,	Volume=	0.021 af	

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.82' @ 12.19 hrs Surf.Area= 9,695 sf Storage= 7,520 cf

Plug-Flow detention time= 319.4 min calculated for 0.496 af (100% of inflow)
Center-of-Mass det. time= 319.4 min (1,152.7 - 833.3)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

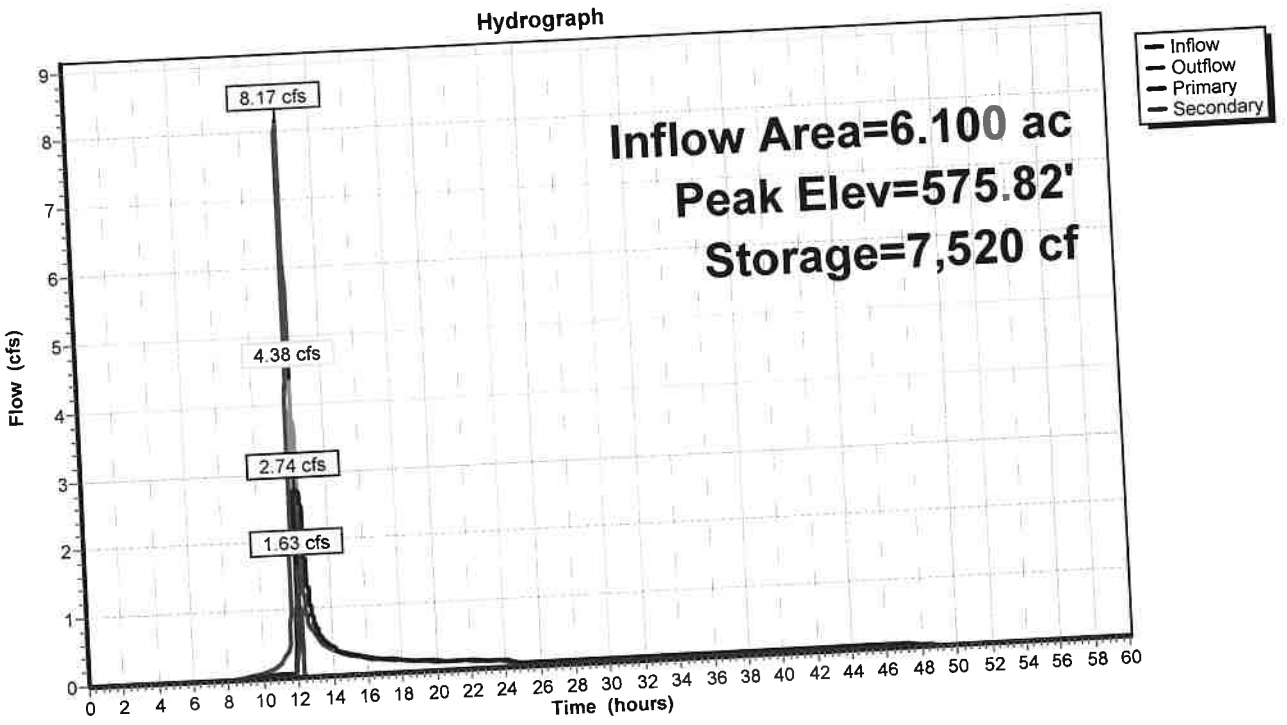
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.74 cfs @ 12.19 hrs HW=575.82' (Free Discharge)
↑—**1=8" pipe** (Barrel Controls 2.74 cfs @ 7.86 fps)
↑—**2=Grate** (Passes < 3.80 cfs potential flow)
└—**3=Exfiltration** (Passes < 0.06 cfs potential flow)

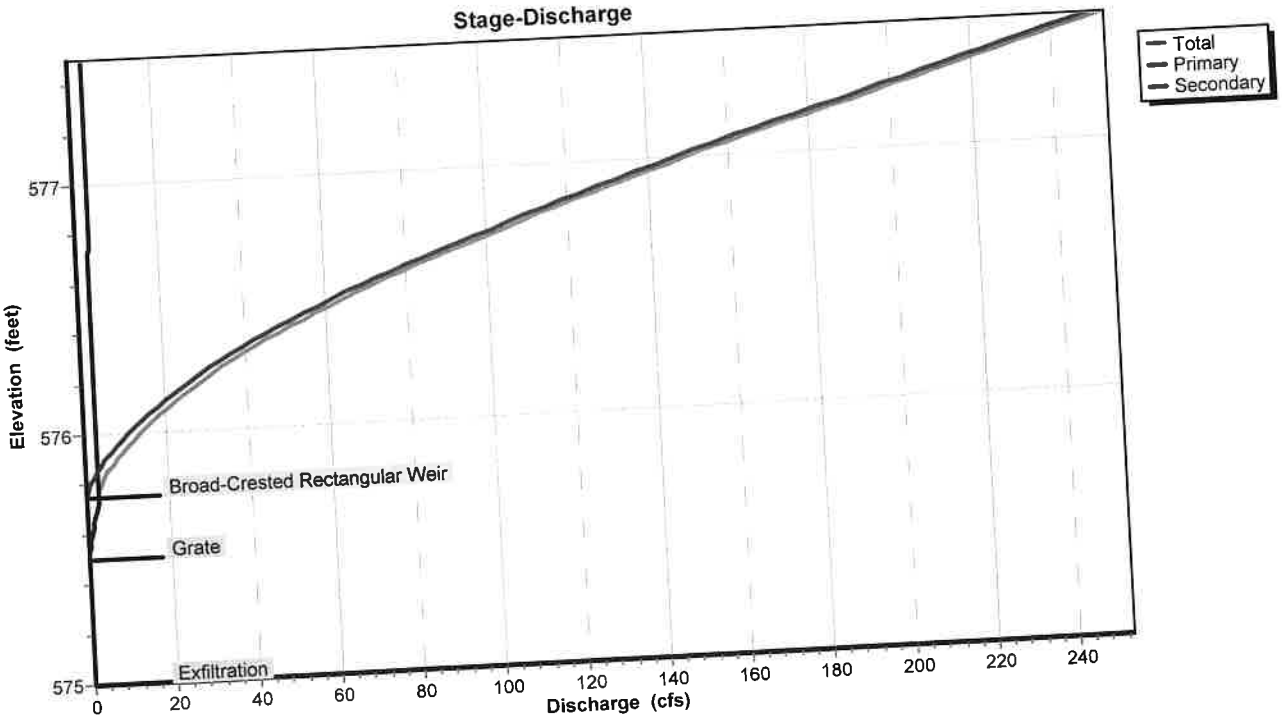
Secondary OutFlow Max=1.62 cfs @ 12.19 hrs HW=575.82' (Free Discharge)
↑—**4=Broad-Crested Rectangular Weir** (Weir Controls 1.62 cfs @ 0.77 fps)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

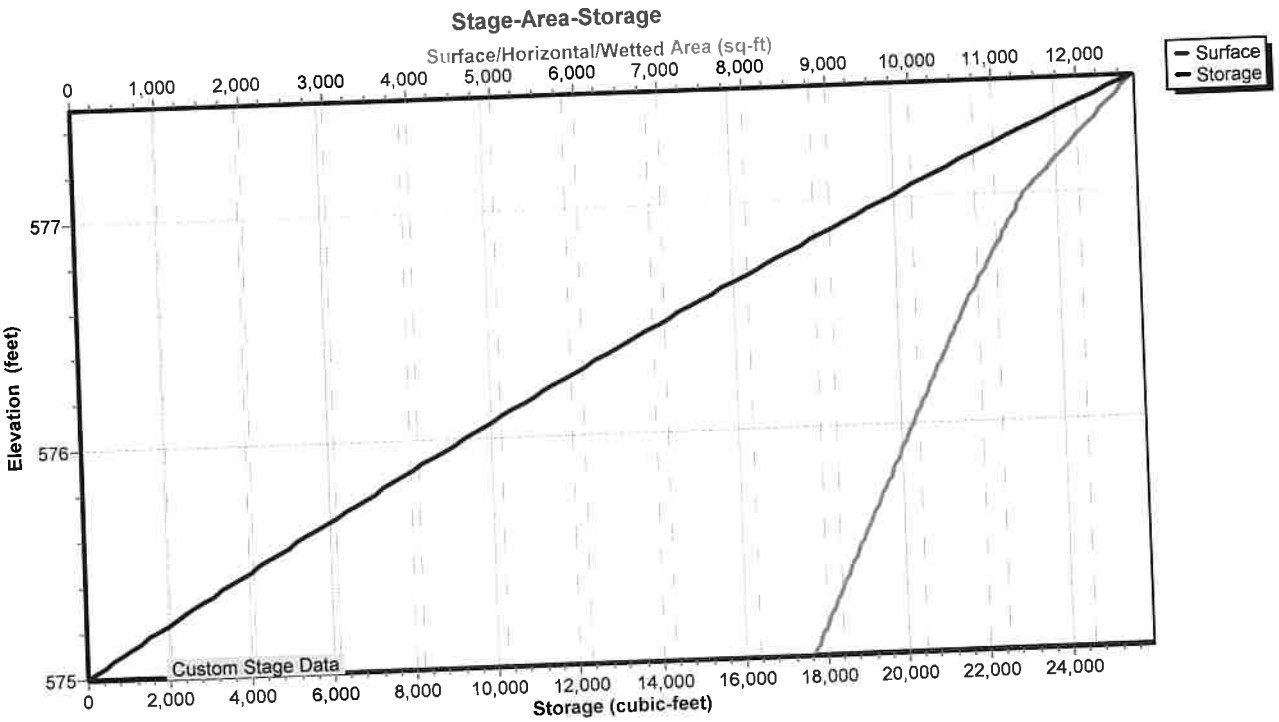


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.00	0	575.00	0.00	0.00	0.00
10.00	0.07	121	575.01	0.03	0.03	0.00
12.00	**7.23**	**4,533**	**575.51**	**0.08**	**0.08**	**0.00**
14.00	**0.37**	**5,004**	**575.56**	**0.42**	**0.42**	**0.00**
16.00	0.23	4,812	575.54	0.25	0.25	0.00
18.00	0.17	4,735	575.53	0.18	0.18	0.00
20.00	0.13	4,666	575.52	0.14	0.14	0.00
22.00	0.12	4,618	575.51	0.12	0.12	0.00
24.00	0.11	4,598	575.51	0.11	0.11	0.00
26.00	0.00	4,207	575.47	0.06	0.06	0.00
28.00	0.00	3,812	575.43	0.05	0.05	0.00
30.00	0.00	3,420	575.38	0.05	0.05	0.00
32.00	0.00	3,031	575.34	0.05	0.05	0.00
34.00	0.00	2,646	575.30	0.05	0.05	0.00
36.00	0.00	2,264	575.26	0.05	0.05	0.00
38.00	0.00	1,885	575.21	0.05	0.05	0.00
40.00	0.00	1,510	575.17	0.05	0.05	0.00
42.00	0.00	1,138	575.13	0.05	0.05	0.00
44.00	0.00	769	575.09	0.05	0.05	0.00
46.00	0.00	404	575.05	0.05	0.05	0.00
48.00	0.00	96	575.01	0.02	0.02	0.00
50.00	0.00	18	575.00	0.00	0.00	0.00
52.00	0.00	3	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 1.10" for 1-Year event
Inflow = 6.05 cfs @ 12.06 hrs, Volume= 0.403 af
Outflow = 0.10 cfs @ 19.66 hrs, Volume= 0.249 af, Atten= 98%, Lag= 455.7 min
Primary = 0.10 cfs @ 19.66 hrs, Volume= 0.249 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.23' @ 19.66 hrs Surf.Area= 60,952 sf Storage= 13,685 cf

Plug-Flow detention time= 1,134.7 min calculated for 0.249 af (62% of inflow)
Center-of-Mass det. time= 1,028.3 min (1,852.6 - 824.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

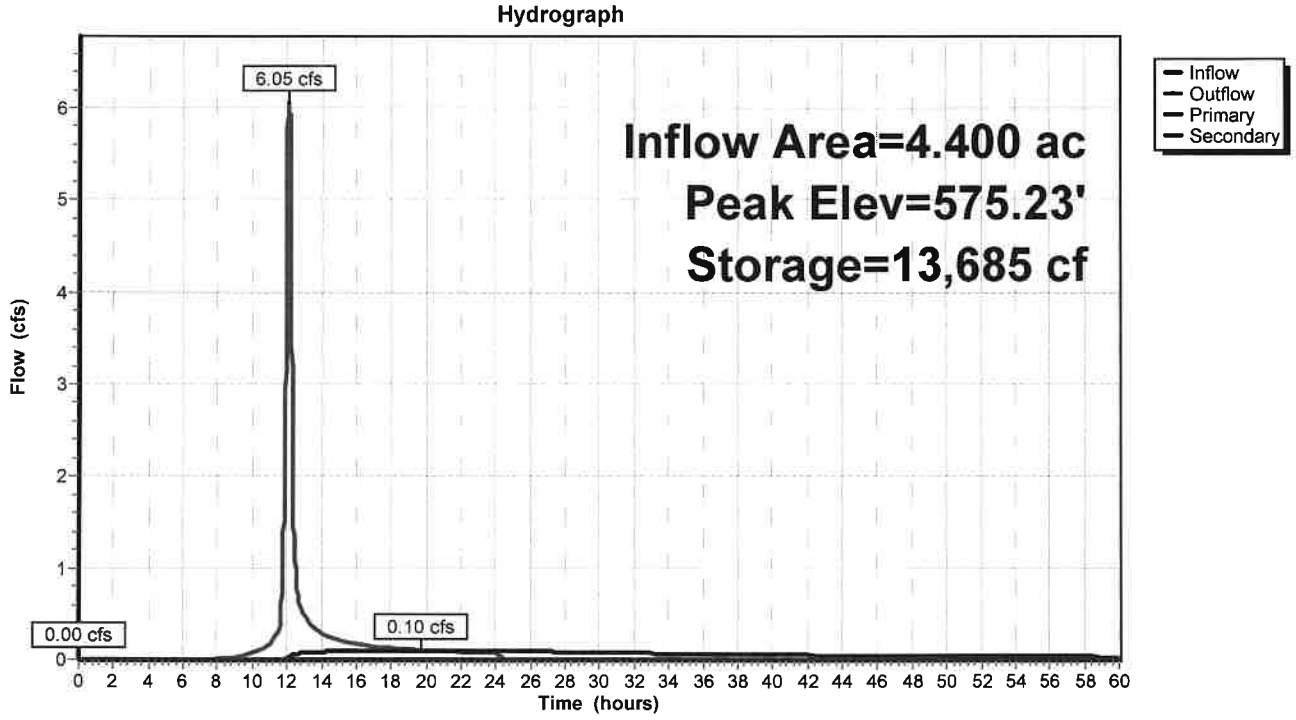
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.10 cfs @ 19.66 hrs HW=575.23' (Free Discharge)
↑**1=12" outlet pipe** (Passes 0.10 cfs of 1.85 cfs potential flow)
↑**2=low flow outlet pipe** (Barrel Controls 0.10 cfs @ 1.70 fps)
3=Grate (Controls 0.00 cfs)

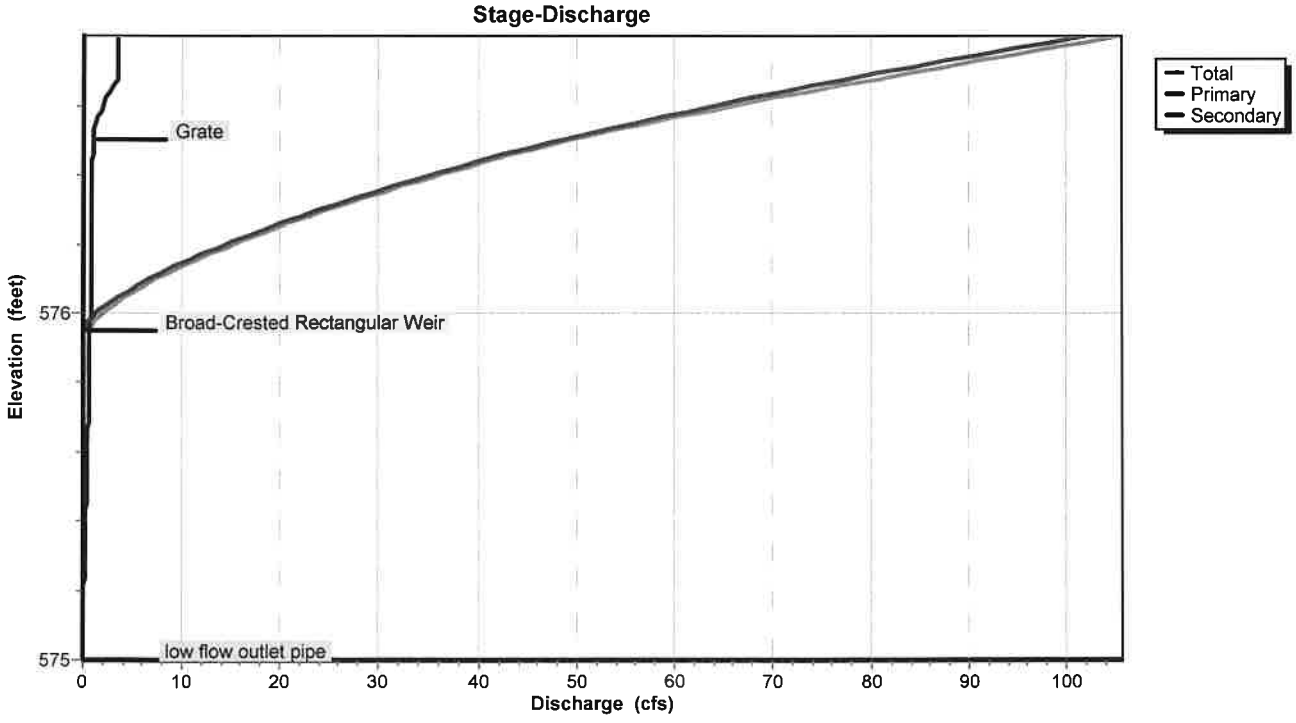
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
↑**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

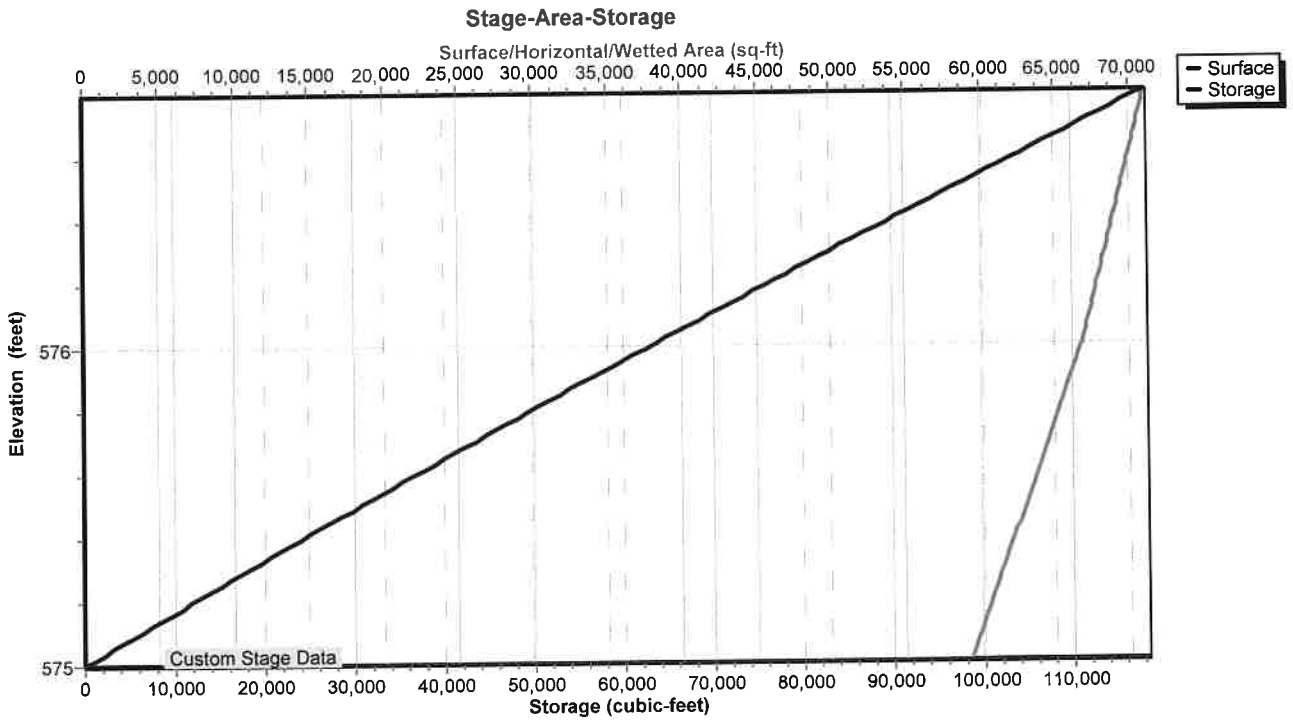


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.01	5	575.00	0.00	0.00	0.00
10.00	0.06	218	575.00	0.00	0.00	0.00
12.00	**5.18**	3,798	575.06	0.01	0.01	0.00
14.00	**0.28**	12,350	575.21	0.08	0.08	0.00
16.00	0.17	13,252	575.22	0.10	0.10	0.00
18.00	0.13	**13,599**	**575.23**	**0.10**	**0.10**	0.00
20.00	0.10	**13,682**	**575.23**	**0.10**	**0.10**	0.00
22.00	0.09	13,599	575.23	0.10	0.10	0.00
24.00	0.08	13,477	575.22	0.10	0.10	0.00
26.00	0.00	12,859	575.21	0.09	0.09	0.00
28.00	0.00	12,236	575.20	0.08	0.08	0.00
30.00	0.00	11,664	575.19	0.08	0.08	0.00
32.00	0.00	11,139	575.19	0.07	0.07	0.00
34.00	0.00	10,655	575.18	0.06	0.06	0.00
36.00	0.00	10,207	575.17	0.06	0.06	0.00
38.00	0.00	9,792	575.16	0.06	0.06	0.00
40.00	0.00	9,408	575.16	0.05	0.05	0.00
42.00	0.00	9,050	575.15	0.05	0.05	0.00
44.00	0.00	8,716	575.15	0.04	0.04	0.00
46.00	0.00	8,404	575.14	0.04	0.04	0.00
48.00	0.00	8,113	575.14	0.04	0.04	0.00
50.00	0.00	7,839	575.13	0.04	0.04	0.00
52.00	0.00	7,582	575.13	0.03	0.03	0.00
54.00	0.00	7,341	575.12	0.03	0.03	0.00
56.00	0.00	7,114	575.12	0.03	0.03	0.00
58.00	0.00	6,899	575.12	0.03	0.03	0.00
60.00	0.00	6,696	575.11	0.03	0.03	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

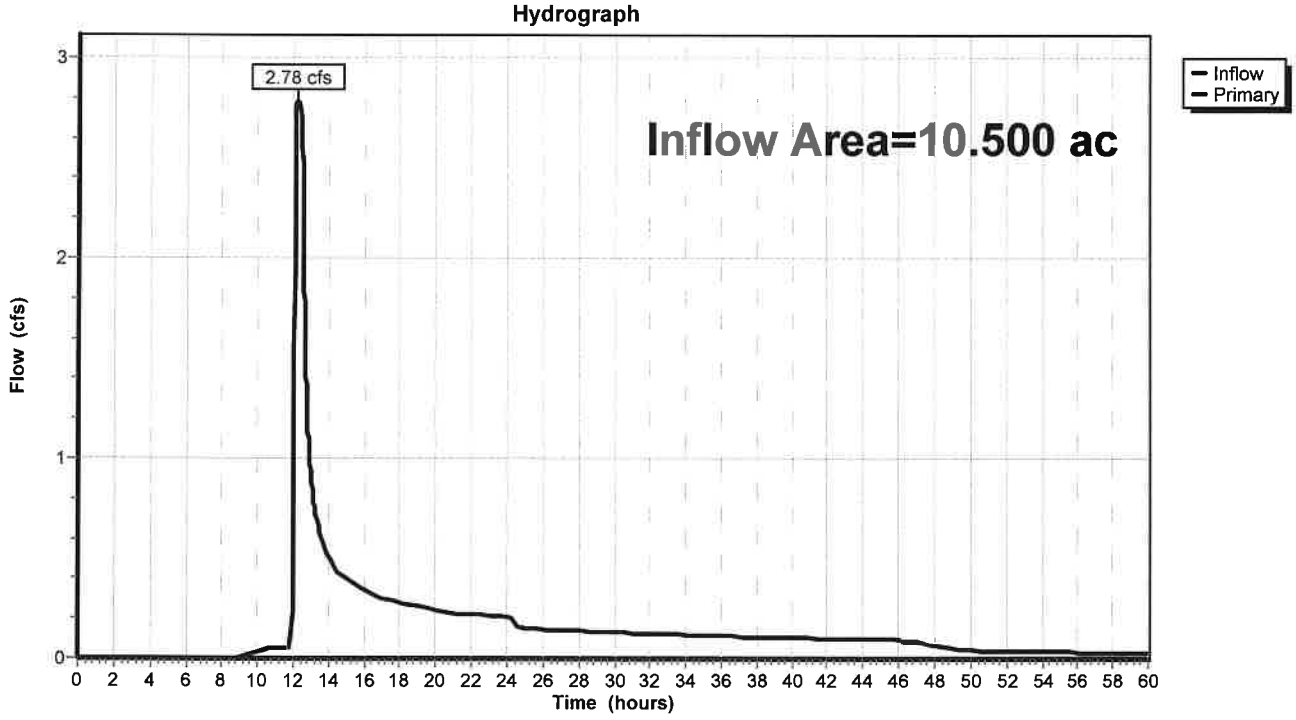
Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 0.83" for 1-Year event
Inflow = 2.78 cfs @ 12.22 hrs, Volume= 0.724 af
Primary = 2.78 cfs @ 12.22 hrs, Volume= 0.724 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.04	0.00	0.04
1.00	0.00	0.00	0.00	53.00	0.03	0.00	0.03
2.00	0.00	0.00	0.00	54.00	0.03	0.00	0.03
3.00	0.00	0.00	0.00	55.00	0.03	0.00	0.03
4.00	0.00	0.00	0.00	56.00	0.03	0.00	0.03
5.00	0.00	0.00	0.00	57.00	0.03	0.00	0.03
6.00	0.00	0.00	0.00	58.00	0.03	0.00	0.03
7.00	0.00	0.00	0.00	59.00	0.03	0.00	0.03
8.00	0.00	0.00	0.00	60.00	0.03	0.00	0.03
9.00	0.01	0.00	0.01				
10.00	0.03	0.00	0.03				
11.00	0.05	0.00	0.05				
12.00	**0.09**	0.00	**0.09**				
13.00	**0.91**	0.00	**0.91**				
14.00	0.51	0.00	0.51				
15.00	0.40	0.00	0.40				
16.00	0.34	0.00	0.34				
17.00	0.30	0.00	0.30				
18.00	0.28	0.00	0.28				
19.00	0.26	0.00	0.26				
20.00	0.24	0.00	0.24				
21.00	0.23	0.00	0.23				
22.00	0.22	0.00	0.22				
23.00	0.21	0.00	0.21				
24.00	0.21	0.00	0.21				
25.00	0.15	0.00	0.15				
26.00	0.15	0.00	0.15				
27.00	0.14	0.00	0.14				
28.00	0.14	0.00	0.14				
29.00	0.13	0.00	0.13				
30.00	0.13	0.00	0.13				
31.00	0.13	0.00	0.13				
32.00	0.12	0.00	0.12				
33.00	0.12	0.00	0.12				
34.00	0.12	0.00	0.12				
35.00	0.12	0.00	0.12				
36.00	0.11	0.00	0.11				
37.00	0.11	0.00	0.11				
38.00	0.11	0.00	0.11				
39.00	0.11	0.00	0.11				
40.00	0.10	0.00	0.10				
41.00	0.10	0.00	0.10				
42.00	0.10	0.00	0.10				
43.00	0.10	0.00	0.10				
44.00	0.10	0.00	0.10				
45.00	0.09	0.00	0.09				
46.00	0.09	0.00	0.09				
47.00	0.09	0.00	0.09				
48.00	0.06	0.00	0.06				
49.00	0.05	0.00	0.05				
50.00	0.04	0.00	0.04				
51.00	0.04	0.00	0.04				

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=1.27"
Flow Length=652' Tc=13.3 min CN=90 Runoff=10.57 cfs 0.644 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=1.34"
Flow Length=683' Tc=14.4 min CN=91 Runoff=7.75 cfs 0.491 af

Pond 1P: Bioretention Area 3 Peak Elev=575.91' Storage=8,359 cf Inflow=10.57 cfs 0.644 af
Primary=2.79 cfs 0.556 af Secondary=5.41 cfs 0.088 af Outflow=8.19 cfs 0.644 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.32' Storage=19,128 cf Inflow=12.29 cfs 0.579 af
Primary=0.18 cfs 0.400 af Secondary=0.00 cfs 0.000 af Outflow=0.18 cfs 0.400 af

Link 5L: Outflow (@ CB 54) Inflow=2.86 cfs 0.956 af
Primary=2.86 cfs 0.956 af

Total Runoff Area = 10.500 ac Runoff Volume = 1.135 af Average Runoff Depth = 1.30"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

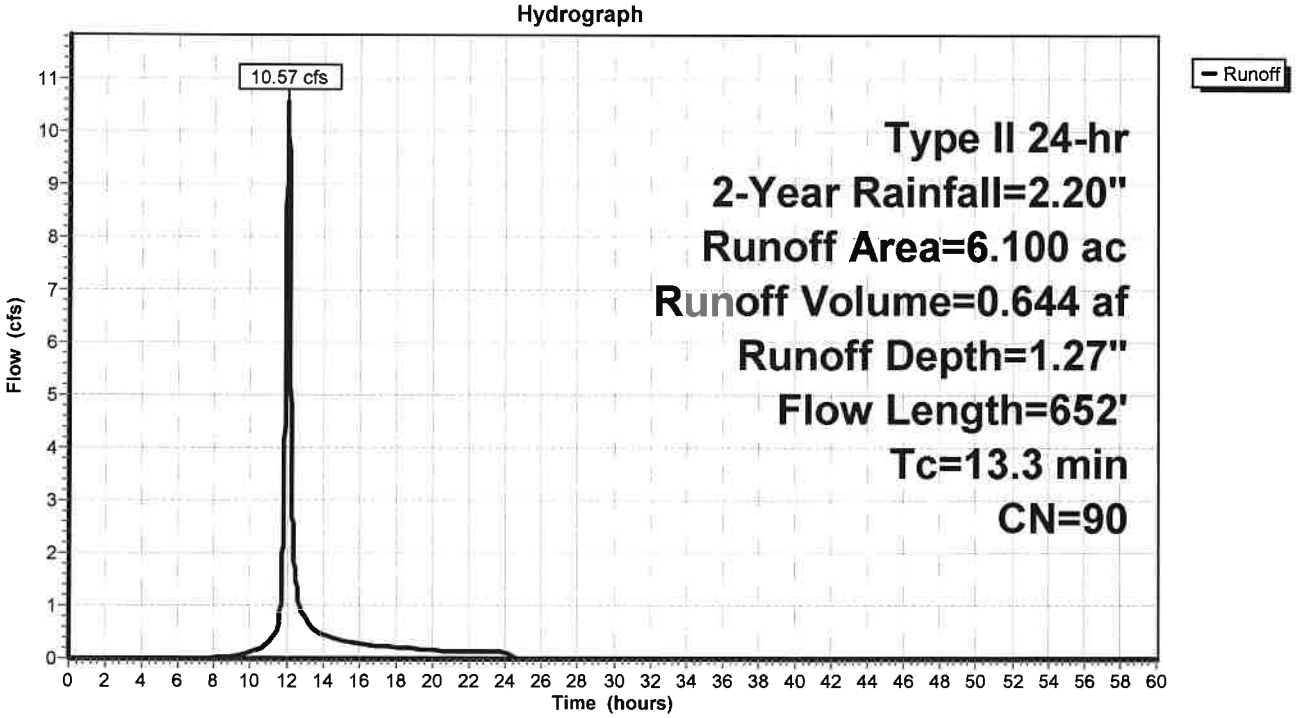
Runoff = 10.57 cfs @ 12.05 hrs, Volume= 0.644 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.05	0.00	0.00
3.00	0.08	0.00	0.00
4.00	0.11	0.00	0.00
5.00	0.14	0.00	0.00
6.00	0.18	0.00	0.00
7.00	0.22	0.00	0.00
8.00	0.26	0.00	0.02
9.00	0.32	0.01	0.06
10.00	0.40	0.02	0.12
11.00	0.52	0.06	0.30
12.00	1.46	0.65	**9.45**
13.00	1.70	0.84	**0.79**
14.00	1.80	0.93	0.46
15.00	1.88	0.99	0.36
16.00	1.94	1.04	0.28
17.00	1.98	1.08	0.24
18.00	2.03	1.12	0.21
19.00	2.06	1.15	0.19
20.00	2.09	1.17	0.16
21.00	2.12	1.20	0.15
22.00	2.15	1.22	0.14
23.00	2.18	1.24	0.14
24.00	**2.20**	**1.27**	0.13
25.00	2.20	1.27	0.00
26.00	2.20	1.27	0.00
27.00	2.20	1.27	0.00
28.00	2.20	1.27	0.00
29.00	2.20	1.27	0.00
30.00	2.20	1.27	0.00
31.00	2.20	1.27	0.00
32.00	2.20	1.27	0.00
33.00	2.20	1.27	0.00
34.00	2.20	1.27	0.00
35.00	2.20	1.27	0.00
36.00	2.20	1.27	0.00
37.00	2.20	1.27	0.00
38.00	2.20	1.27	0.00
39.00	2.20	1.27	0.00
40.00	2.20	1.27	0.00
41.00	2.20	1.27	0.00
42.00	2.20	1.27	0.00
43.00	2.20	1.27	0.00
44.00	2.20	1.27	0.00
45.00	2.20	1.27	0.00
46.00	2.20	1.27	0.00
47.00	2.20	1.27	0.00
48.00	2.20	1.27	0.00
49.00	2.20	1.27	0.00
50.00	2.20	1.27	0.00
51.00	2.20	1.27	0.00
52.00	2.20	1.27	0.00
53.00	2.20	1.27	0.00
54.00	2.20	1.27	0.00
55.00	2.20	1.27	0.00
56.00	2.20	1.27	0.00
57.00	2.20	1.27	0.00
58.00	2.20	1.27	0.00
59.00	2.20	1.27	0.00
60.00	2.20	1.27	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

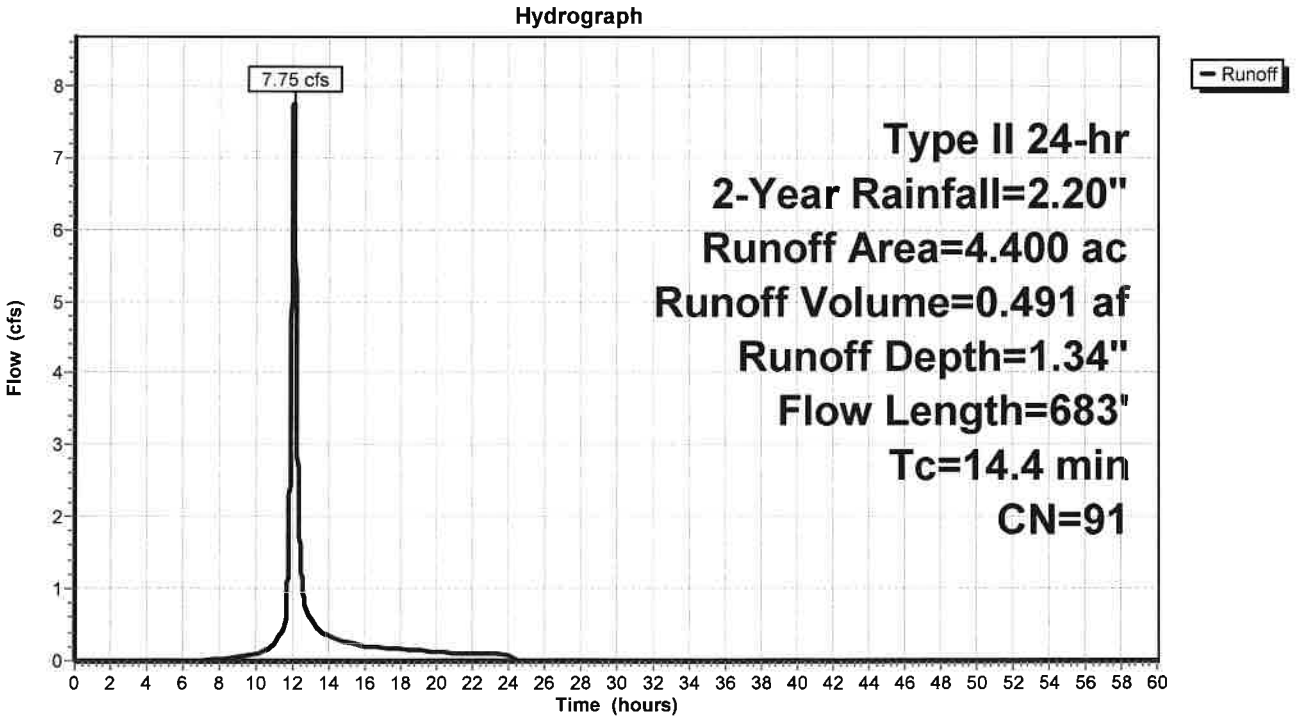
Runoff = 7.75 cfs @ 12.06 hrs, Volume= 0.491 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.05	0.00	0.00
3.00	0.08	0.00	0.00
4.00	0.11	0.00	0.00
5.00	0.14	0.00	0.00
6.00	0.18	0.00	0.00
7.00	0.22	0.00	0.00
8.00	0.26	0.00	0.02
9.00	0.32	0.01	0.06
10.00	0.40	0.03	0.10
11.00	0.52	0.08	0.25
12.00	1.46	0.71	**6.69**
13.00	1.70	0.90	**0.60**
14.00	1.80	0.99	0.35
15.00	1.88	1.06	0.27
16.00	1.94	1.11	0.21
17.00	1.98	1.15	0.18
18.00	2.03	1.19	0.16
19.00	2.06	1.22	0.14
20.00	2.09	1.25	0.12
21.00	2.12	1.27	0.11
22.00	2.15	1.30	0.10
23.00	2.18	1.32	0.10
24.00	**2.20**	**1.34**	0.10
25.00	2.20	1.34	0.00
26.00	2.20	1.34	0.00
27.00	2.20	1.34	0.00
28.00	2.20	1.34	0.00
29.00	2.20	1.34	0.00
30.00	2.20	1.34	0.00
31.00	2.20	1.34	0.00
32.00	2.20	1.34	0.00
33.00	2.20	1.34	0.00
34.00	2.20	1.34	0.00
35.00	2.20	1.34	0.00
36.00	2.20	1.34	0.00
37.00	2.20	1.34	0.00
38.00	2.20	1.34	0.00
39.00	2.20	1.34	0.00
40.00	2.20	1.34	0.00
41.00	2.20	1.34	0.00
42.00	2.20	1.34	0.00
43.00	2.20	1.34	0.00
44.00	2.20	1.34	0.00
45.00	2.20	1.34	0.00
46.00	2.20	1.34	0.00
47.00	2.20	1.34	0.00
48.00	2.20	1.34	0.00
49.00	2.20	1.34	0.00
50.00	2.20	1.34	0.00
51.00	2.20	1.34	0.00
52.00	2.20	1.34	0.00
53.00	2.20	1.34	0.00
54.00	2.20	1.34	0.00
55.00	2.20	1.34	0.00
56.00	2.20	1.34	0.00
57.00	2.20	1.34	0.00
58.00	2.20	1.34	0.00
59.00	2.20	1.34	0.00
60.00	2.20	1.34	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 1.27" for 2-Year event
Inflow = 10.57 cfs @ 12.05 hrs, Volume= 0.644 af
Outflow = 8.19 cfs @ 12.13 hrs, Volume= 0.644 af, Atten= 22%, Lag= 4.9 min
Primary = 2.79 cfs @ 12.13 hrs, Volume= 0.556 af
Secondary = 5.41 cfs @ 12.13 hrs, Volume= 0.088 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.91' @ 12.13 hrs Surf.Area= 9,805 sf Storage= 8,359 cf

Plug-Flow detention time= 252.3 min calculated for 0.644 af (100% of inflow)
Center-of-Mass det. time= 252.2 min (1,078.1 - 825.9)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

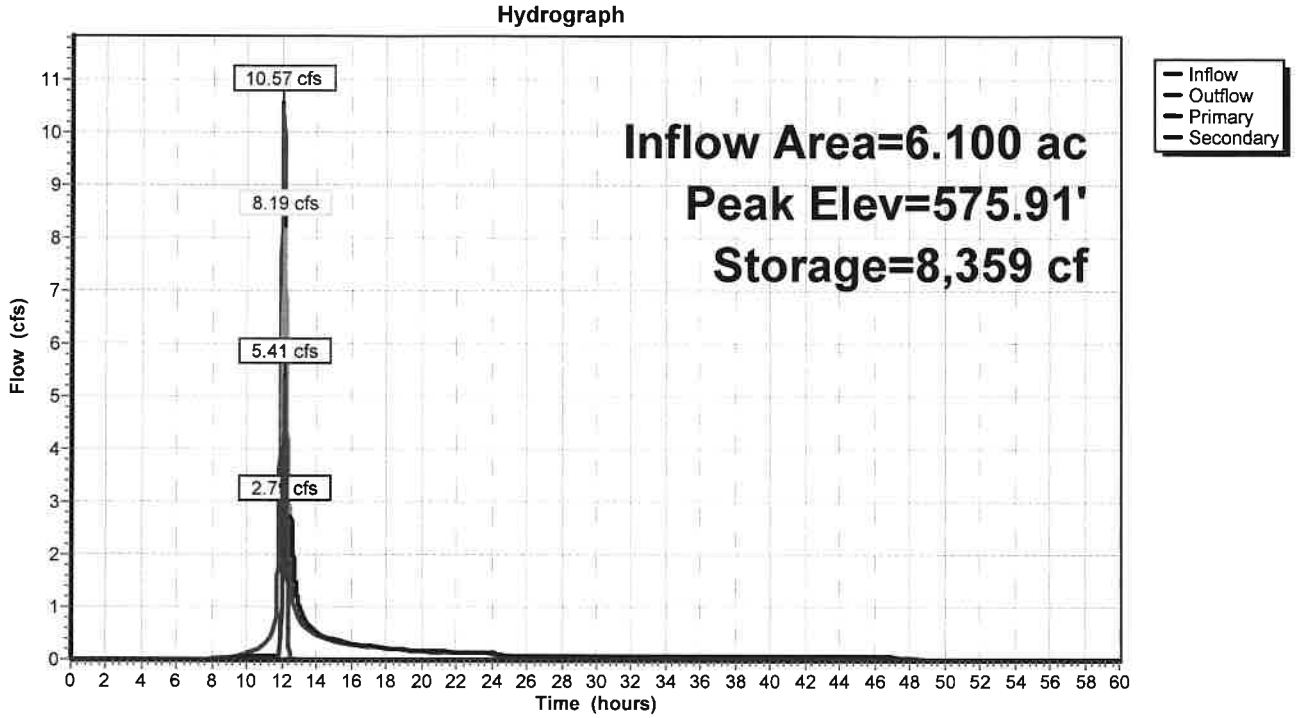
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.79 cfs @ 12.13 hrs HW=575.91' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.79 cfs @ 7.98 fps)
└**2=Grate** (Passes < 4.28 cfs potential flow)
└**3=Exfiltration** (Passes < 0.06 cfs potential flow)

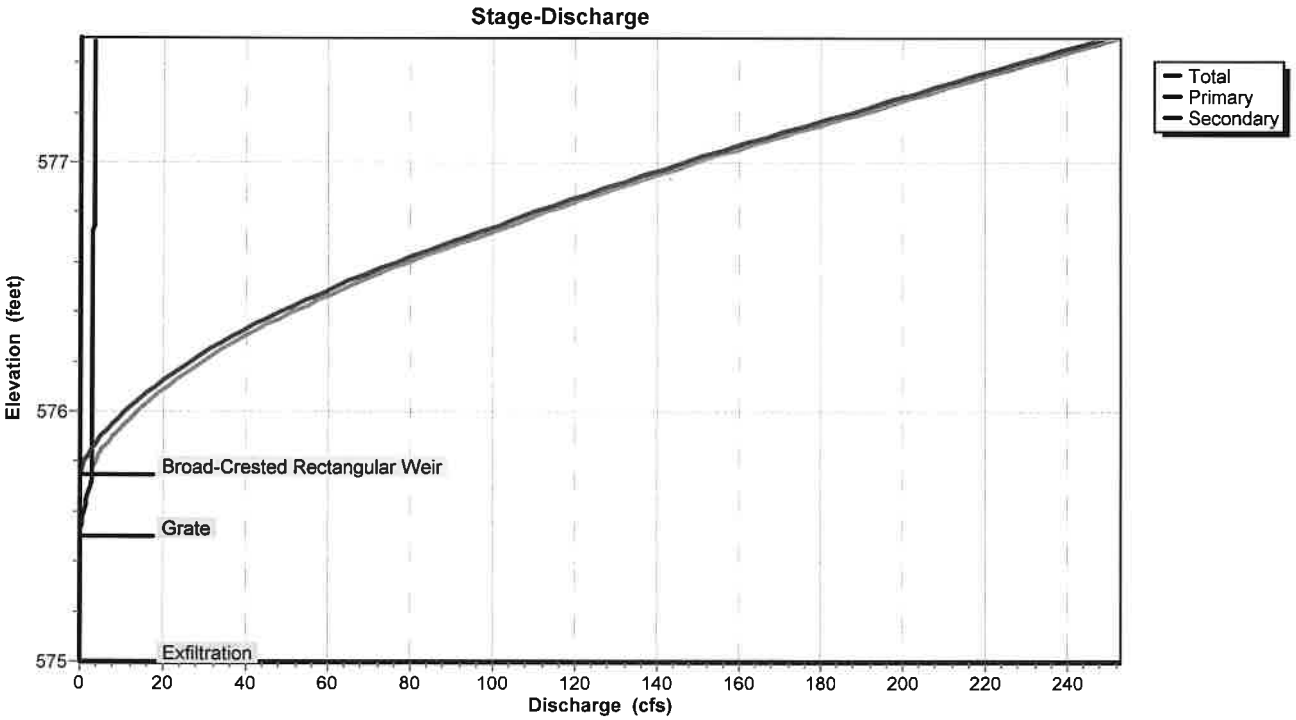
Secondary OutFlow Max=5.39 cfs @ 12.13 hrs HW=575.91' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 5.39 cfs @ 1.15 fps)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

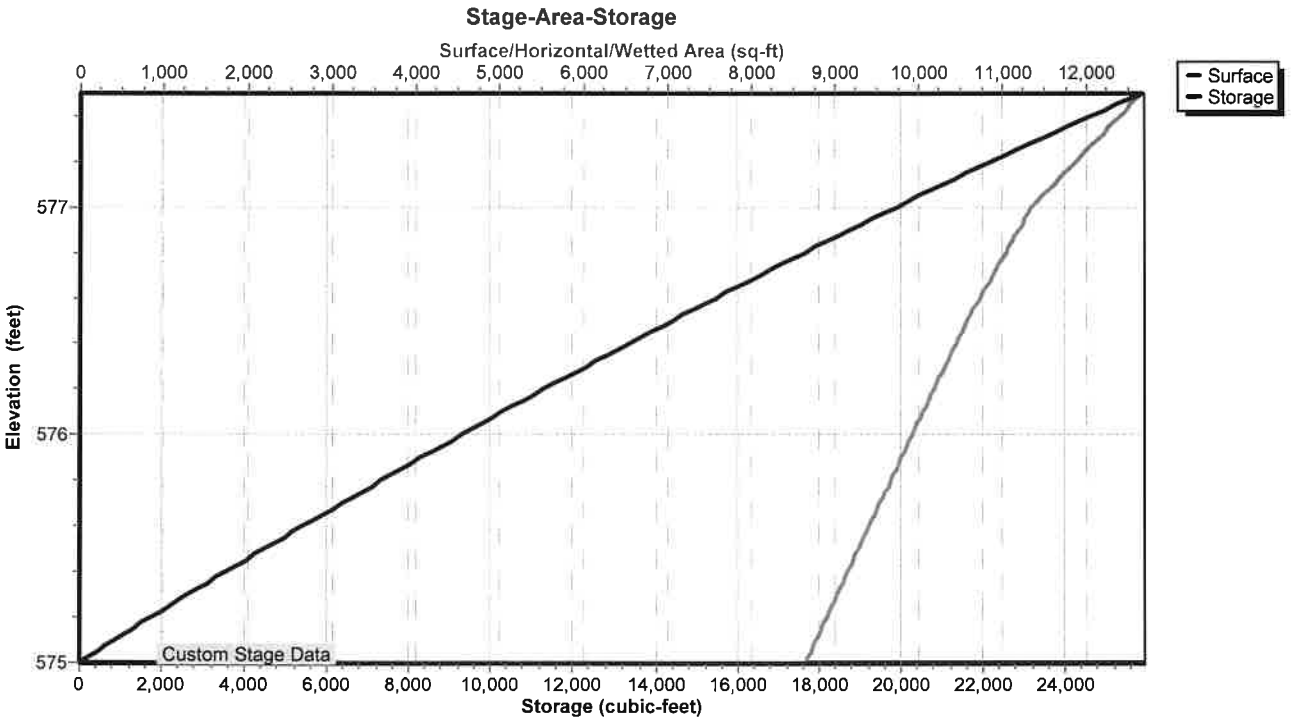


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.02	17	575.00	0.00	0.00	0.00
10.00	0.12	257	575.03	0.05	0.05	0.00
12.00	**9.45**	**6,253**	**575.69**	**2.30**	**2.30**	**0.00**
14.00	**0.46**	**5,096**	**575.57**	**0.52**	**0.52**	**0.00**
16.00	0.28	4,881	575.54	0.30	0.30	0.00
18.00	0.21	4,786	575.53	0.22	0.22	0.00
20.00	0.16	4,719	575.53	0.17	0.17	0.00
22.00	0.14	4,676	575.52	0.15	0.15	0.00
24.00	0.13	4,652	575.52	0.13	0.13	0.00
26.00	0.00	4,232	575.47	0.06	0.06	0.00
28.00	0.00	3,836	575.43	0.05	0.05	0.00
30.00	0.00	3,444	575.39	0.05	0.05	0.00
32.00	0.00	3,055	575.34	0.05	0.05	0.00
34.00	0.00	2,670	575.30	0.05	0.05	0.00
36.00	0.00	2,287	575.26	0.05	0.05	0.00
38.00	0.00	1,909	575.22	0.05	0.05	0.00
40.00	0.00	1,533	575.18	0.05	0.05	0.00
42.00	0.00	1,161	575.13	0.05	0.05	0.00
44.00	0.00	792	575.09	0.05	0.05	0.00
46.00	0.00	426	575.05	0.05	0.05	0.00
48.00	0.00	107	575.01	0.02	0.02	0.00
50.00	0.00	20	575.00	0.00	0.00	0.00
52.00	0.00	4	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 1.58" for 2-Year event
Inflow = 12.29 cfs @ 12.11 hrs, Volume= 0.579 af
Outflow = 0.18 cfs @ 17.01 hrs, Volume= 0.400 af, Atten= 99%, Lag= 293.7 min
Primary = 0.18 cfs @ 17.01 hrs, Volume= 0.400 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.32' @ 17.01 hrs Surf.Area= 61,630 sf Storage= 19,128 cf

Plug-Flow detention time= 1,051.7 min calculated for 0.400 af (69% of inflow)
Center-of-Mass det. time= 962.0 min (1,770.2 - 808.1)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

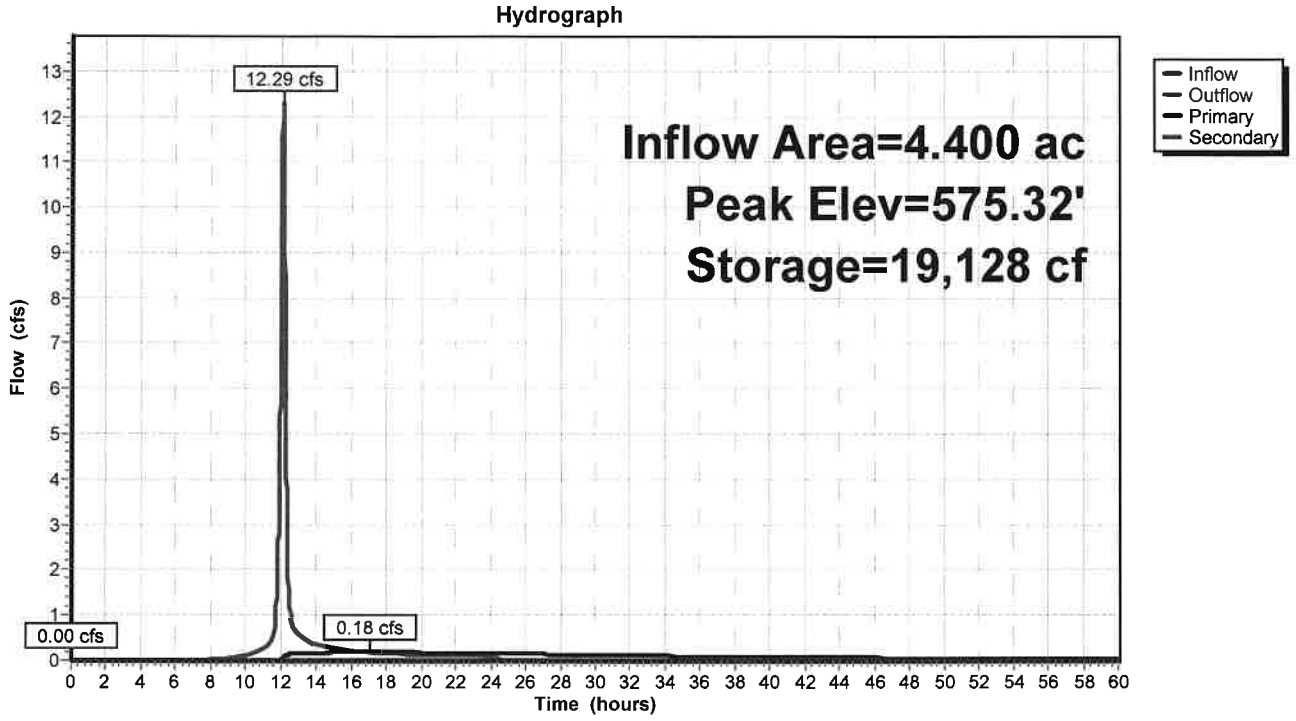
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.18 cfs @ 17.01 hrs HW=575.32' (Free Discharge)
└─**1=12" outlet pipe** (Passes 0.18 cfs of 1.87 cfs potential flow)
  ├─**2=low flow outlet pipe** (Barrel Controls 0.18 cfs @ 1.95 fps)
  └─**3=Grate** (Controls 0.00 cfs)

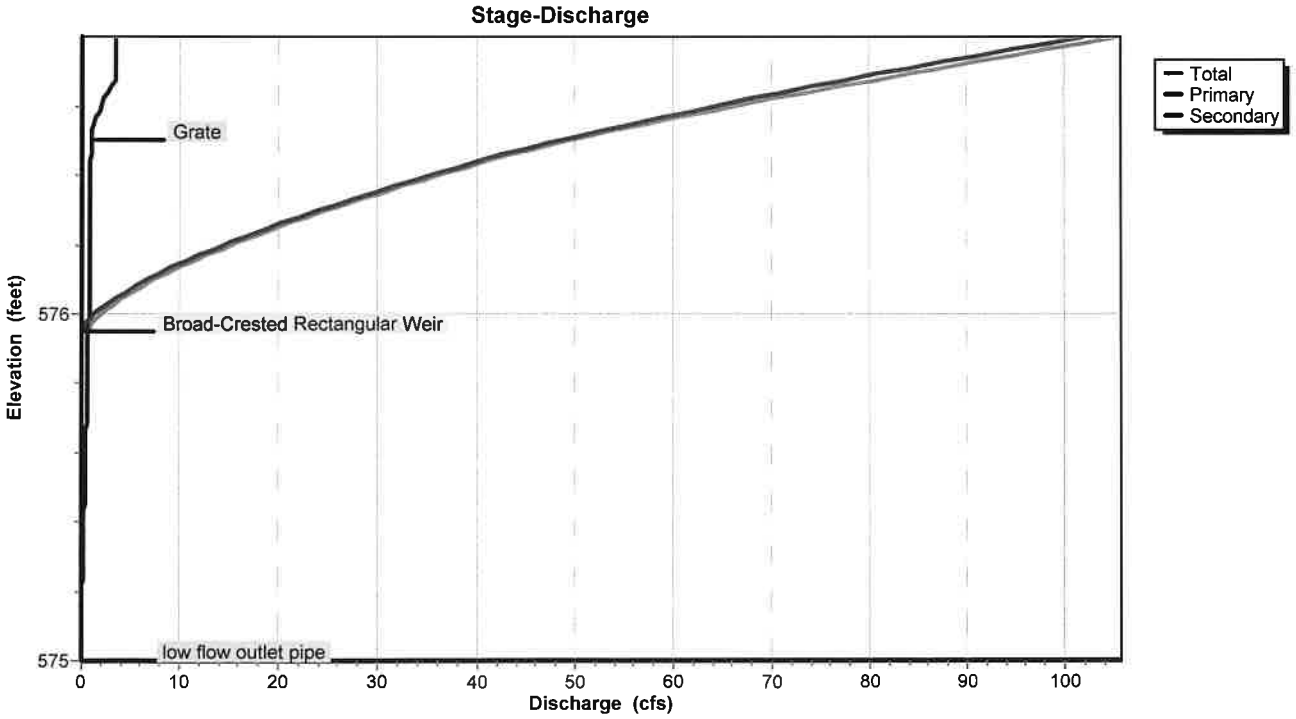
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

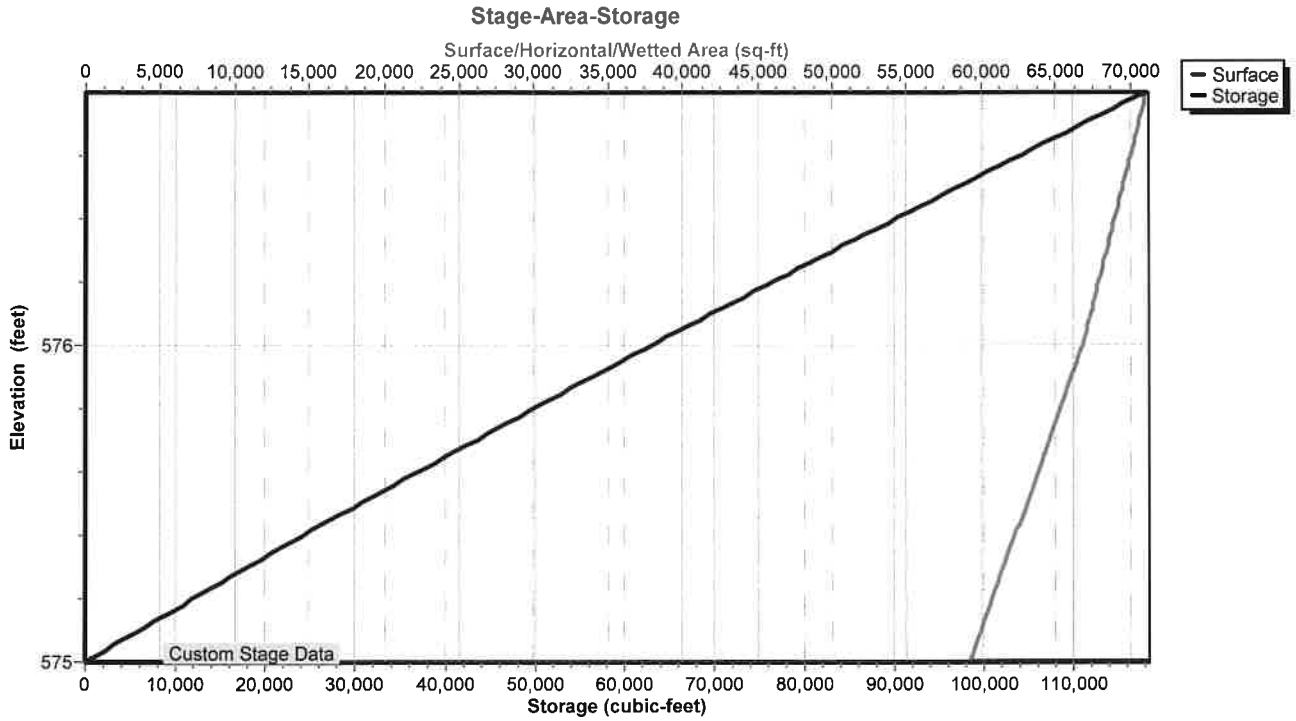


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.02	48	575.00	0.00	0.00	0.00
10.00	0.10	451	575.01	0.00	0.00	0.00
12.00	**6.69**	5,327	575.09	0.02	0.02	0.00
14.00	**0.35**	18,425	575.31	0.17	0.17	0.00
16.00	0.21	**19,087**	**575.32**	**0.18**	**0.18**	0.00
18.00	0.16	**19,093**	**575.32**	**0.18**	**0.18**	0.00
20.00	0.12	18,812	575.31	0.17	0.17	0.00
22.00	0.10	18,367	575.30	0.17	0.17	0.00
24.00	0.10	17,912	575.30	0.16	0.16	0.00
26.00	0.00	16,886	575.28	0.15	0.15	0.00
28.00	0.00	15,893	575.26	0.13	0.13	0.00
30.00	0.00	14,996	575.25	0.12	0.12	0.00
32.00	0.00	14,184	575.24	0.11	0.11	0.00
34.00	0.00	13,445	575.22	0.10	0.10	0.00
36.00	0.00	12,772	575.21	0.09	0.09	0.00
38.00	0.00	12,156	575.20	0.08	0.08	0.00
40.00	0.00	11,591	575.19	0.08	0.08	0.00
42.00	0.00	11,071	575.18	0.07	0.07	0.00
44.00	0.00	10,592	575.18	0.06	0.06	0.00
46.00	0.00	10,149	575.17	0.06	0.06	0.00
48.00	0.00	9,739	575.16	0.05	0.05	0.00
50.00	0.00	9,358	575.16	0.05	0.05	0.00
52.00	0.00	9,003	575.15	0.05	0.05	0.00
54.00	0.00	8,673	575.15	0.04	0.04	0.00
56.00	0.00	8,364	575.14	0.04	0.04	0.00
58.00	0.00	8,075	575.14	0.04	0.04	0.00
60.00	0.00	7,803	575.13	0.04	0.04	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

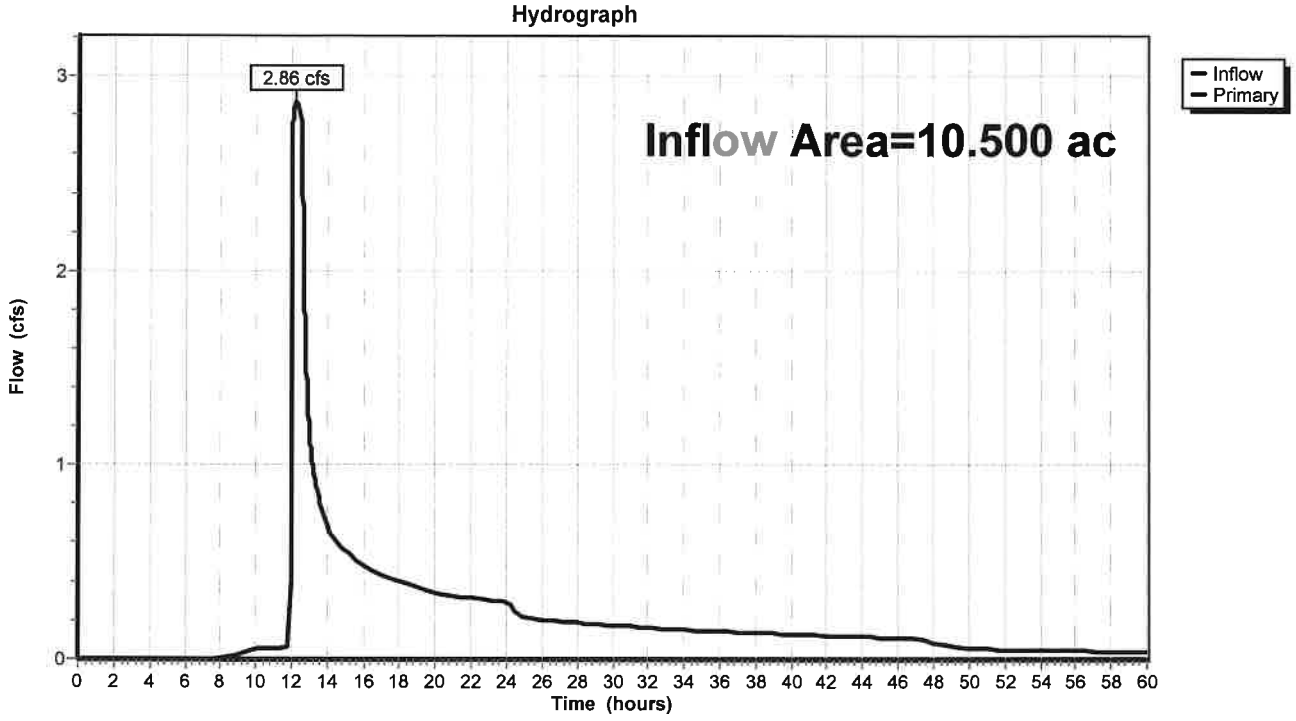
Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 1.09" for 2-Year event
Inflow = 2.86 cfs @ 12.23 hrs, Volume= 0.956 af
Primary = 2.86 cfs @ 12.23 hrs, Volume= 0.956 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.05	0.00	0.05
1.00	0.00	0.00	0.00	53.00	0.05	0.00	0.05
2.00	0.00	0.00	0.00	54.00	0.04	0.00	0.04
3.00	0.00	0.00	0.00	55.00	0.04	0.00	0.04
4.00	0.00	0.00	0.00	56.00	0.04	0.00	0.04
5.00	0.00	0.00	0.00	57.00	0.04	0.00	0.04
6.00	0.00	0.00	0.00	58.00	0.04	0.00	0.04
7.00	0.00	0.00	0.00	59.00	0.04	0.00	0.04
8.00	0.00	0.00	0.00	60.00	0.04	0.00	0.04
9.00	0.02	0.00	0.02				
10.00	0.05	0.00	0.05				
11.00	0.05	0.00	0.05				
12.00	**2.31**	0.00	**2.31**				
13.00	**1.18**	0.00	**1.18**				
14.00	0.69	0.00	0.69				
15.00	0.55	0.00	0.55				
16.00	0.48	0.00	0.48				
17.00	0.43	0.00	0.43				
18.00	0.40	0.00	0.40				
19.00	0.37	0.00	0.37				
20.00	0.34	0.00	0.34				
21.00	0.32	0.00	0.32				
22.00	0.31	0.00	0.31				
23.00	0.30	0.00	0.30				
24.00	0.29	0.00	0.29				
25.00	0.21	0.00	0.21				
26.00	0.20	0.00	0.20				
27.00	0.19	0.00	0.19				
28.00	0.19	0.00	0.19				
29.00	0.18	0.00	0.18				
30.00	0.17	0.00	0.17				
31.00	0.17	0.00	0.17				
32.00	0.16	0.00	0.16				
33.00	0.16	0.00	0.16				
34.00	0.15	0.00	0.15				
35.00	0.15	0.00	0.15				
36.00	0.14	0.00	0.14				
37.00	0.14	0.00	0.14				
38.00	0.13	0.00	0.13				
39.00	0.13	0.00	0.13				
40.00	0.13	0.00	0.13				
41.00	0.12	0.00	0.12				
42.00	0.12	0.00	0.12				
43.00	0.12	0.00	0.12				
44.00	0.11	0.00	0.11				
45.00	0.11	0.00	0.11				
46.00	0.11	0.00	0.11				
47.00	0.11	0.00	0.11				
48.00	0.08	0.00	0.08				
49.00	0.06	0.00	0.06				
50.00	0.06	0.00	0.06				
51.00	0.05	0.00	0.05				

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=1.71"
Flow Length=652' Tc=13.3 min CN=90 Runoff=14.18 cfs 0.870 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=1.79"
Flow Length=683' Tc=14.4 min CN=91 Runoff=10.29 cfs 0.658 af

Pond 1P: Bioretention Area 3 Peak Elev=575.99' Storage=9,153 cf Inflow=14.18 cfs 0.870 af
Primary=2.83 cfs 0.666 af Secondary=10.09 cfs 0.203 af Outflow=12.91 cfs 0.870 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.46' Storage=28,218 cf Inflow=20.08 cfs 0.861 af
Primary=0.33 cfs 0.652 af Secondary=0.00 cfs 0.000 af Outflow=0.33 cfs 0.652 af

Link 5L: Outflow (@ CB 54) Inflow=3.01 cfs 1.318 af
Primary=3.01 cfs 1.318 af

Total Runoff Area = 10.500 ac Runoff Volume = 1.527 af Average Runoff Depth = 1.75"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

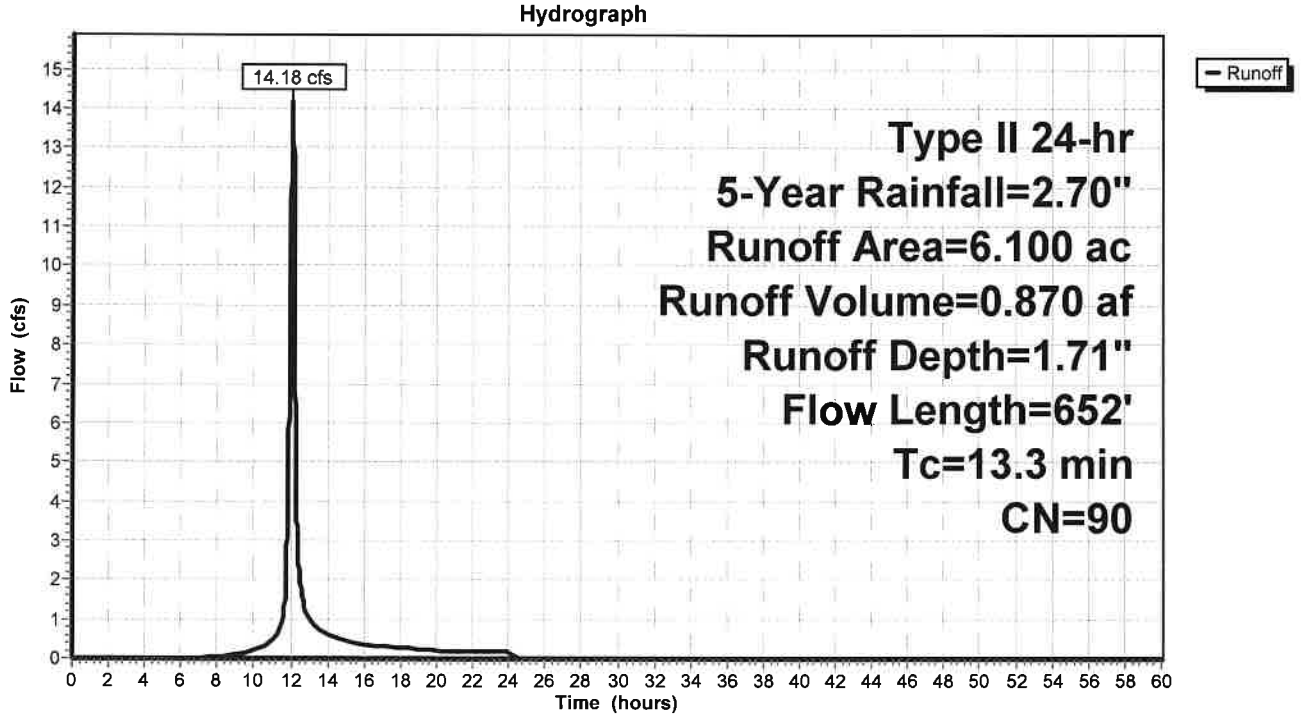
Runoff = 14.18 cfs @ 12.05 hrs, Volume= 0.870 af, Depth= 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.00
7.00	0.27	0.00	0.02
8.00	0.32	0.01	0.05
9.00	0.40	0.02	0.12
10.00	0.49	0.05	0.20
11.00	0.63	0.11	0.47
12.00	1.79	0.92	**12.79**
13.00	2.08	1.17	**1.02**
14.00	2.21	1.28	0.59
15.00	2.30	1.36	0.46
16.00	2.38	1.42	0.36
17.00	2.43	1.47	0.31
18.00	2.49	1.52	0.27
19.00	2.53	1.56	0.24
20.00	2.57	1.59	0.20
21.00	2.60	1.62	0.19
22.00	2.64	1.65	0.18
23.00	2.67	1.68	0.17
24.00	**2.70**	**1.71**	0.17
25.00	2.70	1.71	0.00
26.00	2.70	1.71	0.00
27.00	2.70	1.71	0.00
28.00	2.70	1.71	0.00
29.00	2.70	1.71	0.00
30.00	2.70	1.71	0.00
31.00	2.70	1.71	0.00
32.00	2.70	1.71	0.00
33.00	2.70	1.71	0.00
34.00	2.70	1.71	0.00
35.00	2.70	1.71	0.00
36.00	2.70	1.71	0.00
37.00	2.70	1.71	0.00
38.00	2.70	1.71	0.00
39.00	2.70	1.71	0.00
40.00	2.70	1.71	0.00
41.00	2.70	1.71	0.00
42.00	2.70	1.71	0.00
43.00	2.70	1.71	0.00
44.00	2.70	1.71	0.00
45.00	2.70	1.71	0.00
46.00	2.70	1.71	0.00
47.00	2.70	1.71	0.00
48.00	2.70	1.71	0.00
49.00	2.70	1.71	0.00
50.00	2.70	1.71	0.00
51.00	2.70	1.71	0.00
52.00	2.70	1.71	0.00
53.00	2.70	1.71	0.00
54.00	2.70	1.71	0.00
55.00	2.70	1.71	0.00
56.00	2.70	1.71	0.00
57.00	2.70	1.71	0.00
58.00	2.70	1.71	0.00
59.00	2.70	1.71	0.00
60.00	2.70	1.71	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

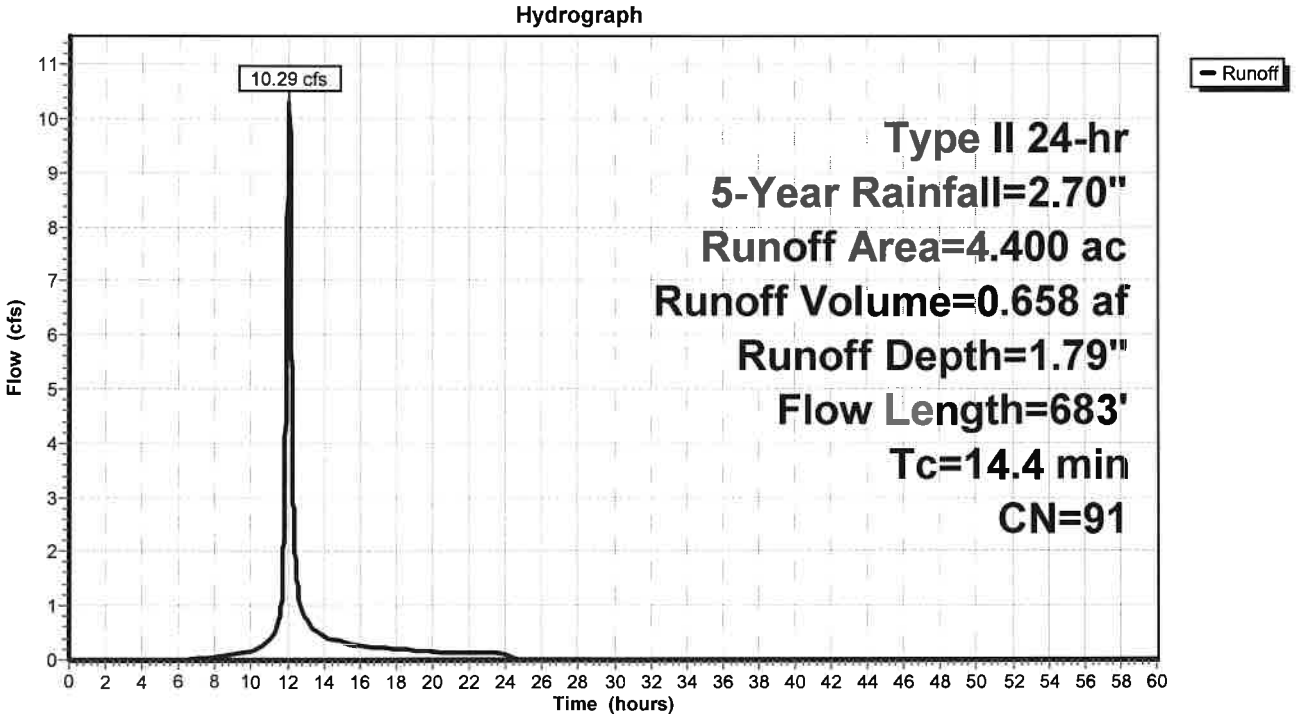
Runoff = 10.29 cfs @ 12.06 hrs, Volume= 0.658 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.00
7.00	0.27	0.00	0.03
8.00	0.32	0.01	0.05
9.00	0.40	0.03	0.10
10.00	0.49	0.07	0.17
11.00	0.63	0.13	0.37
12.00	1.79	0.98	**8.97**
13.00	2.08	1.24	**0.77**
14.00	2.21	1.35	0.44
15.00	2.30	1.43	0.34
16.00	2.38	1.50	0.27
17.00	2.43	1.55	0.23
18.00	2.49	1.60	0.20
19.00	2.53	1.64	0.18
20.00	2.57	1.67	0.15
21.00	2.60	1.71	0.14
22.00	2.64	1.74	0.13
23.00	2.67	1.77	0.13
24.00	**2.70**	**1.79**	0.12
25.00	2.70	1.79	0.00
26.00	2.70	1.79	0.00
27.00	2.70	1.79	0.00
28.00	2.70	1.79	0.00
29.00	2.70	1.79	0.00
30.00	2.70	1.79	0.00
31.00	2.70	1.79	0.00
32.00	2.70	1.79	0.00
33.00	2.70	1.79	0.00
34.00	2.70	1.79	0.00
35.00	2.70	1.79	0.00
36.00	2.70	1.79	0.00
37.00	2.70	1.79	0.00
38.00	2.70	1.79	0.00
39.00	2.70	1.79	0.00
40.00	2.70	1.79	0.00
41.00	2.70	1.79	0.00
42.00	2.70	1.79	0.00
43.00	2.70	1.79	0.00
44.00	2.70	1.79	0.00
45.00	2.70	1.79	0.00
46.00	2.70	1.79	0.00
47.00	2.70	1.79	0.00
48.00	2.70	1.79	0.00
49.00	2.70	1.79	0.00
50.00	2.70	1.79	0.00
51.00	2.70	1.79	0.00
52.00	2.70	1.79	0.00
53.00	2.70	1.79	0.00
54.00	2.70	1.79	0.00
55.00	2.70	1.79	0.00
56.00	2.70	1.79	0.00
57.00	2.70	1.79	0.00
58.00	2.70	1.79	0.00
59.00	2.70	1.79	0.00
60.00	2.70	1.79	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 1.71" for 5-Year event
Inflow = 14.18 cfs @ 12.05 hrs, Volume= 0.870 af
Outflow = 12.91 cfs @ 12.10 hrs, Volume= 0.870 af, Atten= 9%, Lag= 2.9 min
Primary = 2.83 cfs @ 12.10 hrs, Volume= 0.666 af
Secondary = 10.09 cfs @ 12.10 hrs, Volume= 0.203 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.99' @ 12.10 hrs Surf.Area= 9,908 sf Storage= 9,153 cf

Plug-Flow detention time= 193.1 min calculated for 0.869 af (100% of inflow)
Center-of-Mass det. time= 193.4 min (1,010.7 - 817.3)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

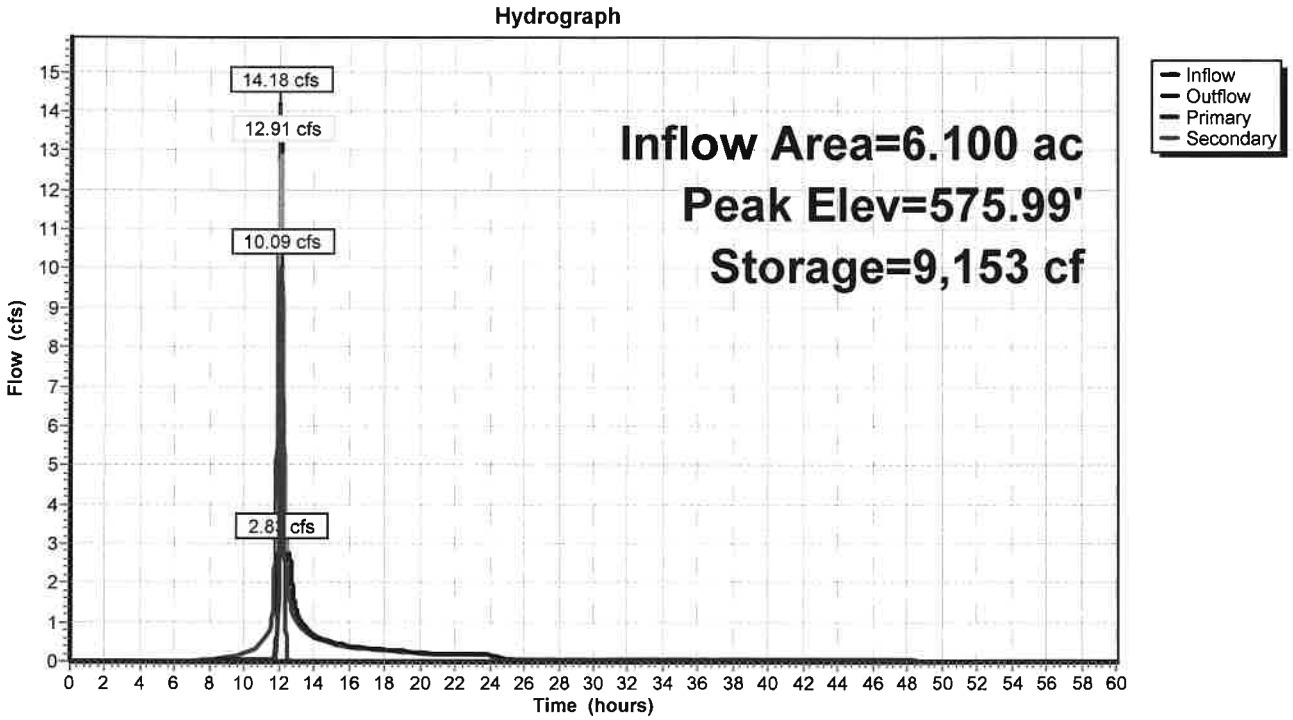
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.83 cfs @ 12.10 hrs HW=575.99' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.83 cfs @ 8.10 fps)
  ├**2=Grate** (Passes < 4.69 cfs potential flow)
  └**3=Exfiltration** (Passes < 0.06 cfs potential flow)

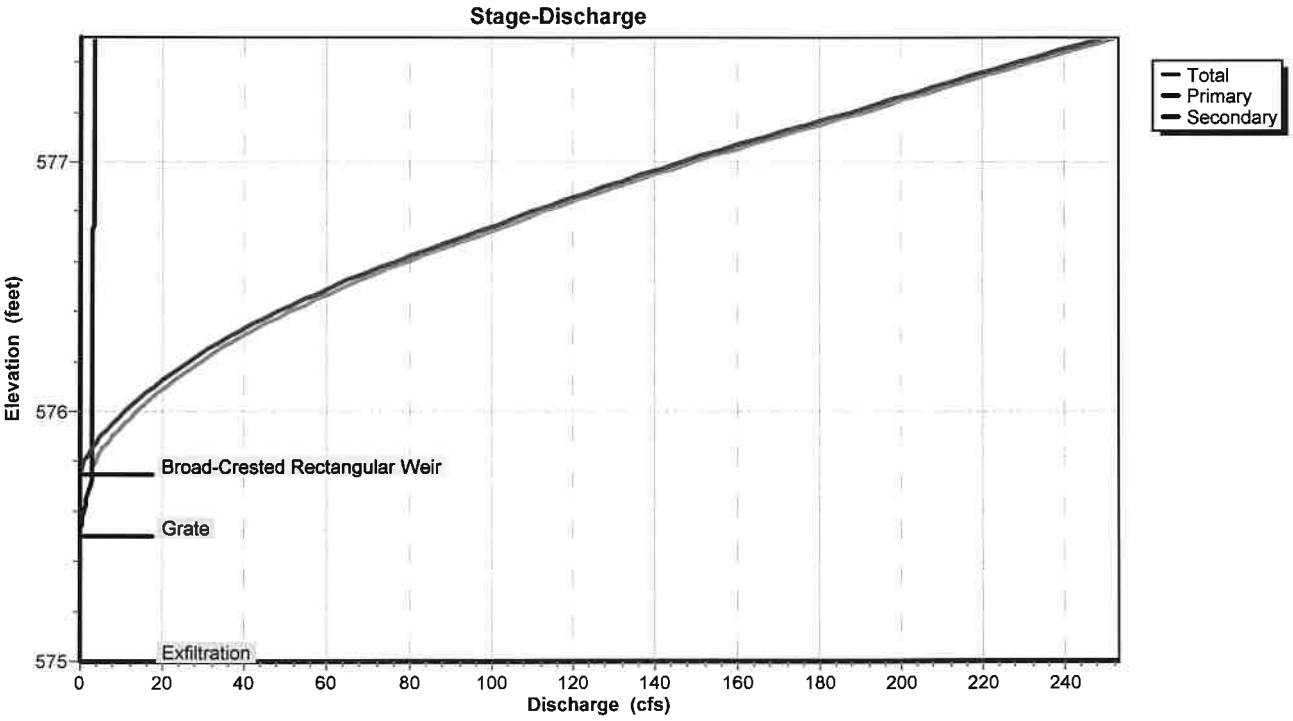
Secondary OutFlow Max=10.07 cfs @ 12.10 hrs HW=575.99' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 10.07 cfs @ 1.42 fps)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

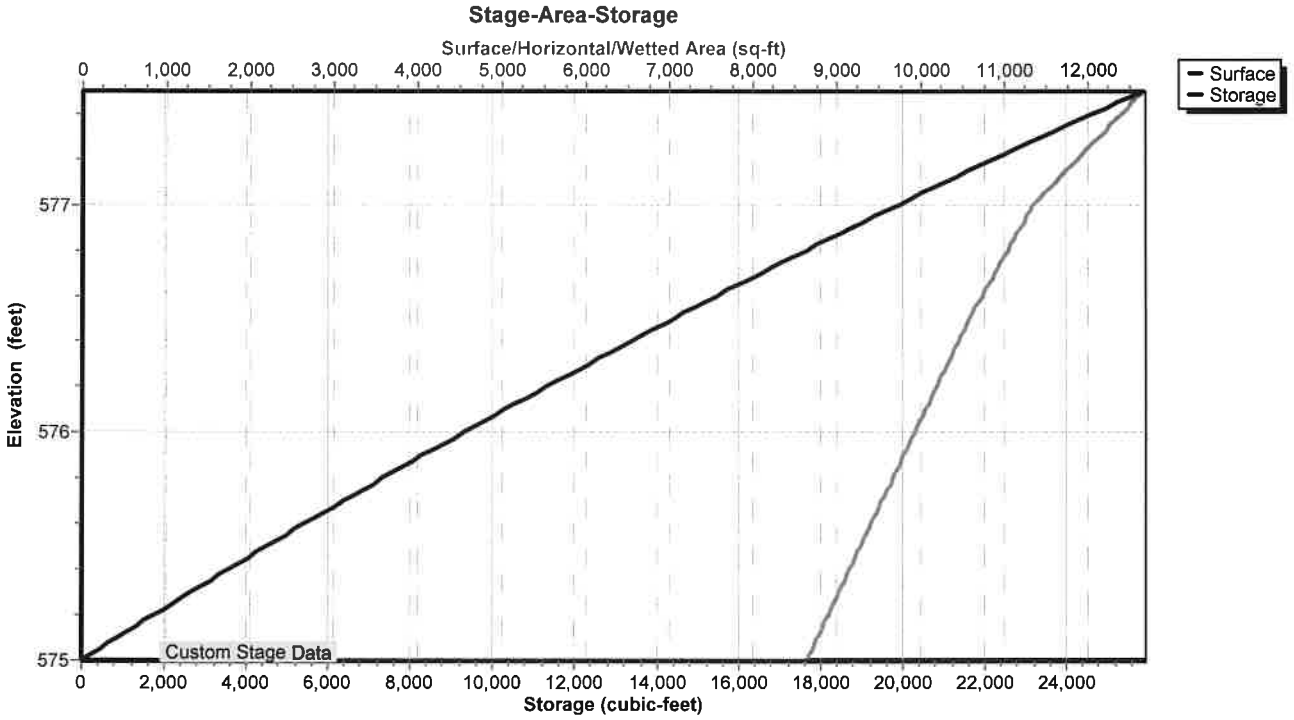


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.05	99	575.01	0.02	0.02	0.00
10.00	0.20	617	575.07	0.05	0.05	0.00
12.00	**12.79**	**8,183**	**575.89**	**7.28**	**2.78**	**4.50**
14.00	**0.59**	**5,218**	**575.58**	**0.66**	**0.66**	**0.00**
16.00	0.36	4,969	575.55	0.38	0.38	0.00
18.00	0.27	4,859	575.54	0.29	0.29	0.00
20.00	0.20	4,774	575.53	0.21	0.21	0.00
22.00	0.18	4,739	575.53	0.18	0.18	0.00
24.00	0.17	4,722	575.53	0.17	0.17	0.00
26.00	0.00	4,258	575.48	0.06	0.06	0.00
28.00	0.00	3,862	575.43	0.05	0.05	0.00
30.00	0.00	3,470	575.39	0.05	0.05	0.00
32.00	0.00	3,081	575.35	0.05	0.05	0.00
34.00	0.00	2,695	575.30	0.05	0.05	0.00
36.00	0.00	2,313	575.26	0.05	0.05	0.00
38.00	0.00	1,934	575.22	0.05	0.05	0.00
40.00	0.00	1,558	575.18	0.05	0.05	0.00
42.00	0.00	1,186	575.14	0.05	0.05	0.00
44.00	0.00	816	575.09	0.05	0.05	0.00
46.00	0.00	450	575.05	0.05	0.05	0.00
48.00	0.00	119	575.01	0.03	0.03	0.00
50.00	0.00	22	575.00	0.01	0.01	0.00
52.00	0.00	4	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 2.35" for 5-Year event
Inflow = 20.08 cfs @ 12.08 hrs, Volume= 0.861 af
Outflow = 0.33 cfs @ 15.13 hrs, Volume= 0.652 af, Atten= 98%, Lag= 182.5 min
Primary = 0.33 cfs @ 15.13 hrs, Volume= 0.652 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.46' @ 15.13 hrs Surf.Area= 62,747 sf Storage= 28,218 cf

Plug-Flow detention time= 974.3 min calculated for 0.652 af (76% of inflow)
Center-of-Mass det. time= 898.6 min (1,692.2 - 793.6)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

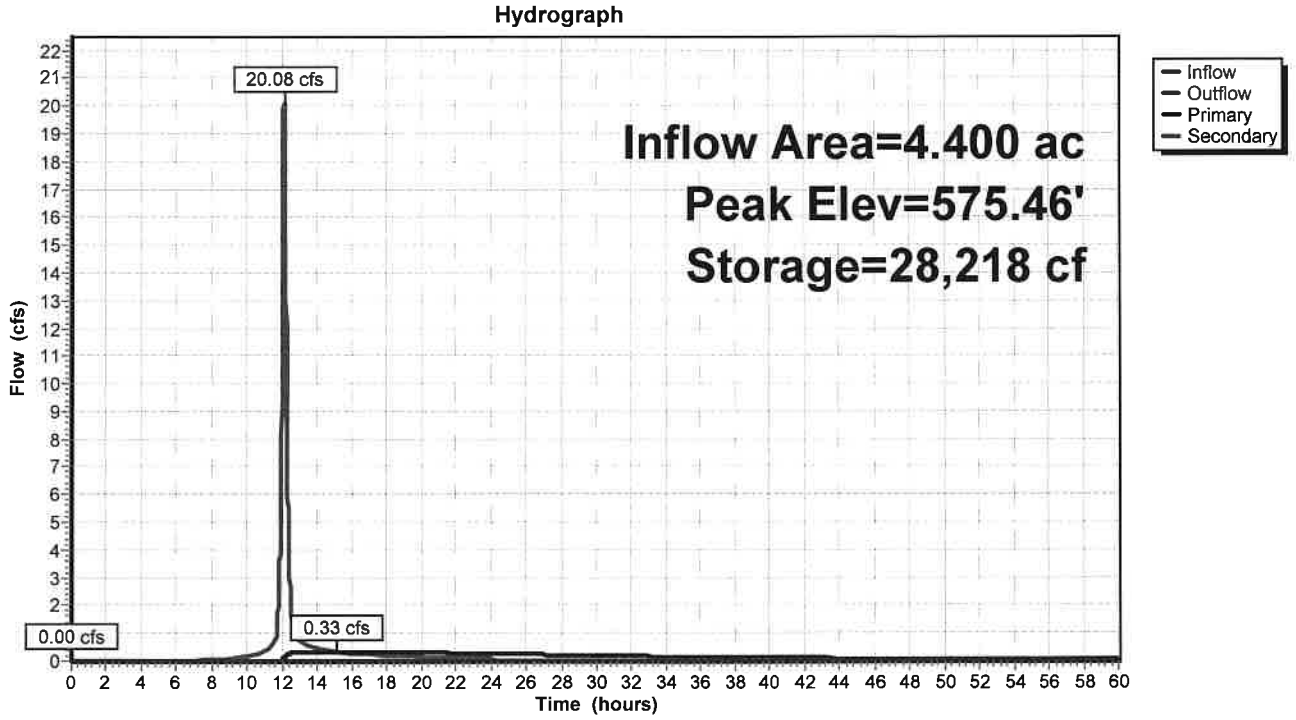
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.33 cfs @ 15.13 hrs HW=575.46' (Free Discharge)
↑**1=12" outlet pipe** (Passes 0.33 cfs of 2.02 cfs potential flow)
↑**2=low flow outlet pipe** (Barrel Controls 0.33 cfs @ 2.27 fps)
3=Grate (Controls 0.00 cfs)

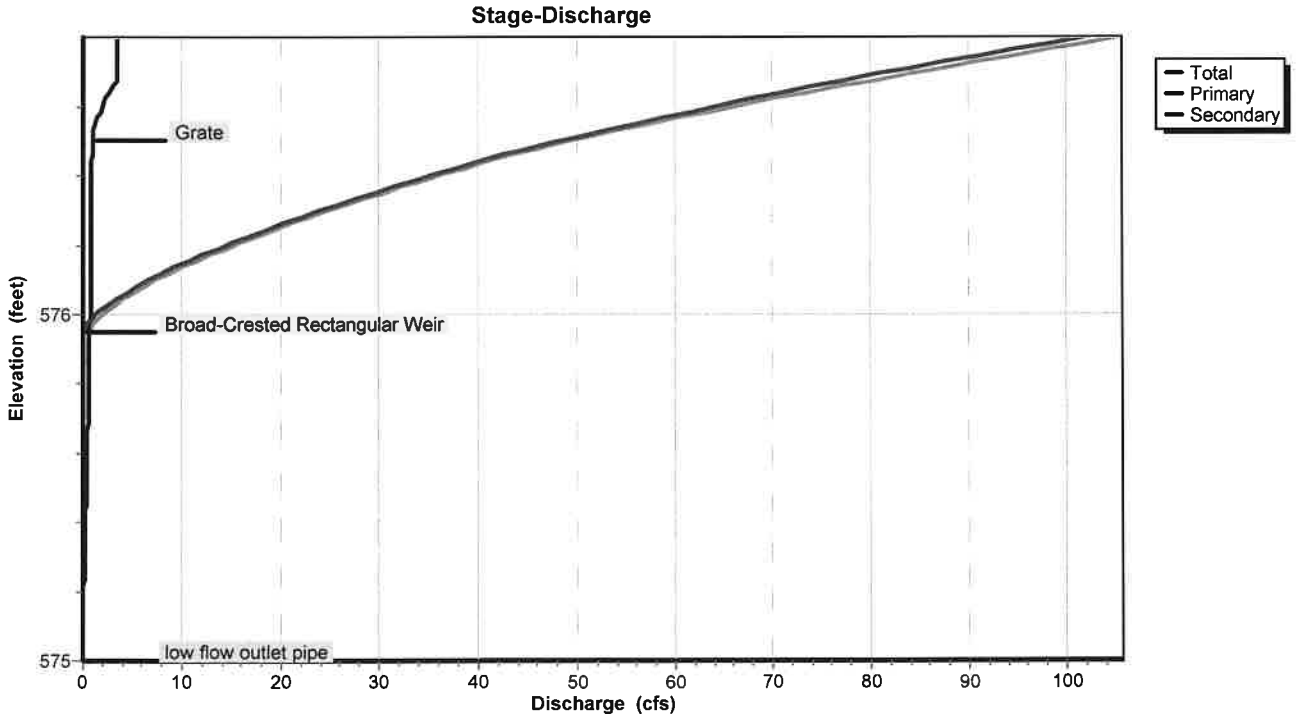
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
↑**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

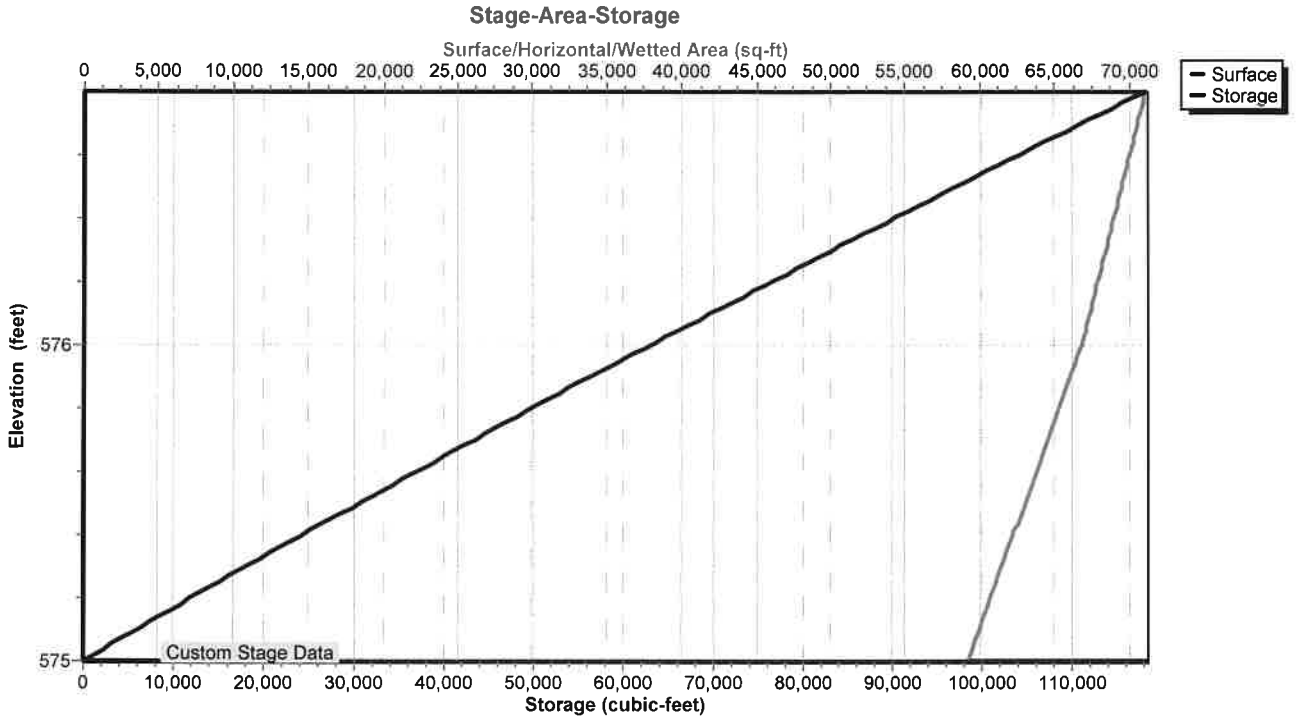


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	1	575.00	0.00	0.00	0.00
8.00	0.05	186	575.00	0.00	0.00	0.00
10.00	0.17	912	575.02	0.00	0.00	0.00
12.00	**13.47**	8,186	575.14	0.04	0.04	0.00
14.00	**0.44**	**28,034**	**575.46**	**0.33**	**0.33**	0.00
16.00	0.27	**28,118**	**575.46**	**0.33**	**0.33**	0.00
18.00	0.20	27,442	575.45	0.32	0.32	0.00
20.00	0.15	26,479	575.43	0.30	0.30	0.00
22.00	0.13	25,382	575.42	0.28	0.28	0.00
24.00	0.12	24,337	575.40	0.26	0.26	0.00
26.00	0.00	22,633	575.37	0.24	0.24	0.00
28.00	0.00	21,033	575.35	0.21	0.21	0.00
30.00	0.00	19,609	575.32	0.19	0.19	0.00
32.00	0.00	18,338	575.30	0.17	0.17	0.00
34.00	0.00	17,199	575.29	0.15	0.15	0.00
36.00	0.00	16,175	575.27	0.13	0.13	0.00
38.00	0.00	15,251	575.25	0.12	0.12	0.00
40.00	0.00	14,415	575.24	0.11	0.11	0.00
42.00	0.00	13,655	575.23	0.10	0.10	0.00
44.00	0.00	12,964	575.22	0.09	0.09	0.00
46.00	0.00	12,331	575.21	0.08	0.08	0.00
48.00	0.00	11,752	575.20	0.08	0.08	0.00
50.00	0.00	11,220	575.19	0.07	0.07	0.00
52.00	0.00	10,729	575.18	0.07	0.07	0.00
54.00	0.00	10,276	575.17	0.06	0.06	0.00
56.00	0.00	9,856	575.16	0.06	0.06	0.00
58.00	0.00	9,467	575.16	0.05	0.05	0.00
60.00	0.00	9,105	575.15	0.05	0.05	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

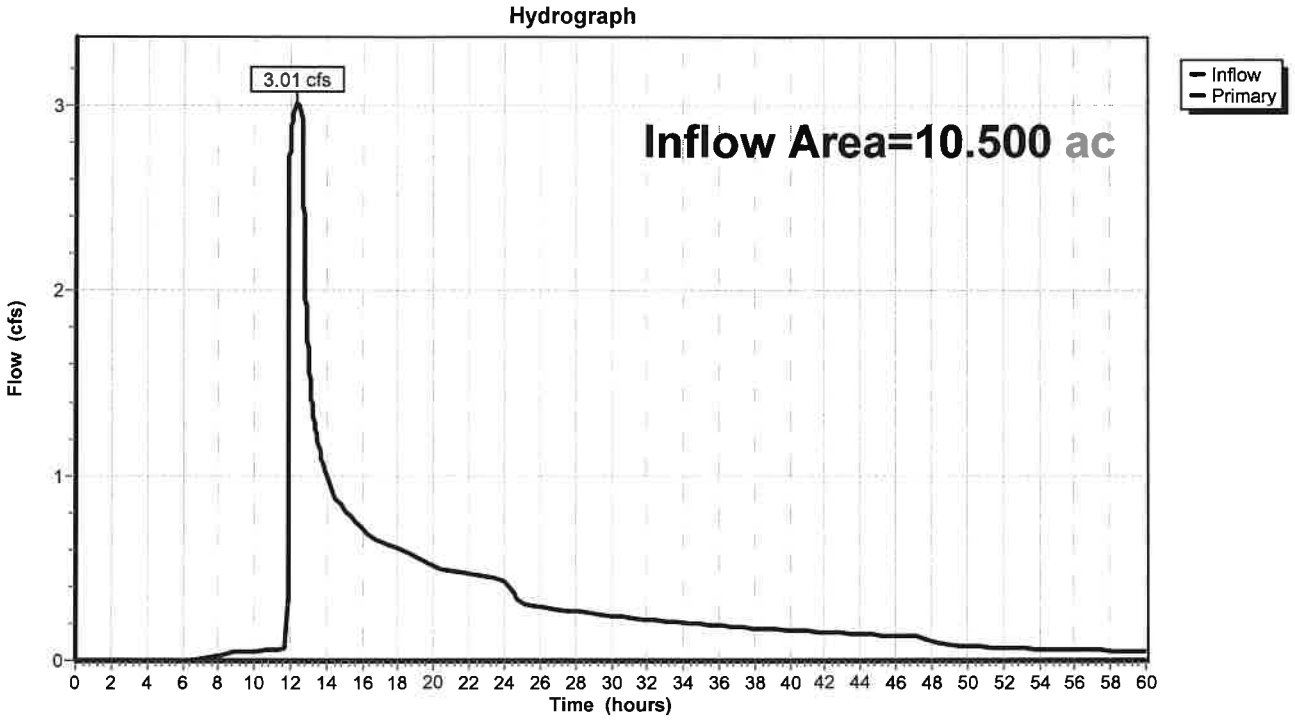
Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 1.51" for 5-Year event
Inflow = 3.01 cfs @ 12.34 hrs, Volume= 1.318 af
Primary = 3.01 cfs @ 12.34 hrs, Volume= 1.318 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.07	0.00	0.07
1.00	0.00	0.00	0.00	53.00	0.06	0.00	0.06
2.00	0.00	0.00	0.00	54.00	0.06	0.00	0.06
3.00	0.00	0.00	0.00	55.00	0.06	0.00	0.06
4.00	0.00	0.00	0.00	56.00	0.06	0.00	0.06
5.00	0.00	0.00	0.00	57.00	0.05	0.00	0.05
6.00	0.00	0.00	0.00	58.00	0.05	0.00	0.05
7.00	0.00	0.00	0.00	59.00	0.05	0.00	0.05
8.00	0.02	0.00	0.02	60.00	0.05	0.00	0.05
9.00	0.05	0.00	0.05				
10.00	0.05	0.00	0.05				
11.00	0.05	0.00	0.05				
12.00	**2.82**	0.00	**2.82**				
13.00	**1.62**	0.00	**1.62**				
14.00	0.99	0.00	0.99				
15.00	0.81	0.00	0.81				
16.00	0.71	0.00	0.71				
17.00	0.65	0.00	0.65				
18.00	0.60	0.00	0.60				
19.00	0.56	0.00	0.56				
20.00	0.51	0.00	0.51				
21.00	0.48	0.00	0.48				
22.00	0.47	0.00	0.47				
23.00	0.45	0.00	0.45				
24.00	0.43	0.00	0.43				
25.00	0.31	0.00	0.31				
26.00	0.29	0.00	0.29				
27.00	0.28	0.00	0.28				
28.00	0.26	0.00	0.26				
29.00	0.25	0.00	0.25				
30.00	0.24	0.00	0.24				
31.00	0.23	0.00	0.23				
32.00	0.22	0.00	0.22				
33.00	0.21	0.00	0.21				
34.00	0.20	0.00	0.20				
35.00	0.20	0.00	0.20				
36.00	0.19	0.00	0.19				
37.00	0.18	0.00	0.18				
38.00	0.17	0.00	0.17				
39.00	0.17	0.00	0.17				
40.00	0.16	0.00	0.16				
41.00	0.16	0.00	0.16				
42.00	0.15	0.00	0.15				
43.00	0.15	0.00	0.15				
44.00	0.14	0.00	0.14				
45.00	0.14	0.00	0.14				
46.00	0.13	0.00	0.13				
47.00	0.13	0.00	0.13				
48.00	0.10	0.00	0.10				
49.00	0.09	0.00	0.09				
50.00	0.08	0.00	0.08				
51.00	0.07	0.00	0.07				

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=2.12"
Flow Length=652' Tc=13.3 min CN=90 Runoff=17.46 cfs 1.079 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=2.21"
Flow Length=683' Tc=14.4 min CN=91 Runoff=12.59 cfs 0.811 af

Pond 1P: Bioretention Area 3 Peak Elev=576.04' Storage=9,672 cf Inflow=17.46 cfs 1.079 af
Primary=2.85 cfs 0.765 af Secondary=13.60 cfs 0.314 af Outflow=16.45 cfs 1.079 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.60' Storage=37,117 cf Inflow=26.01 cfs 1.125 af
Primary=0.47 cfs 0.892 af Secondary=0.00 cfs 0.000 af Outflow=0.47 cfs 0.892 af

Link 5L: Outflow (@ CB 54) Inflow=3.16 cfs 1.657 af
Primary=3.16 cfs 1.657 af

Total Runoff Area = 10.500 ac Runoff Volume = 1.890 af Average Runoff Depth = 2.16"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

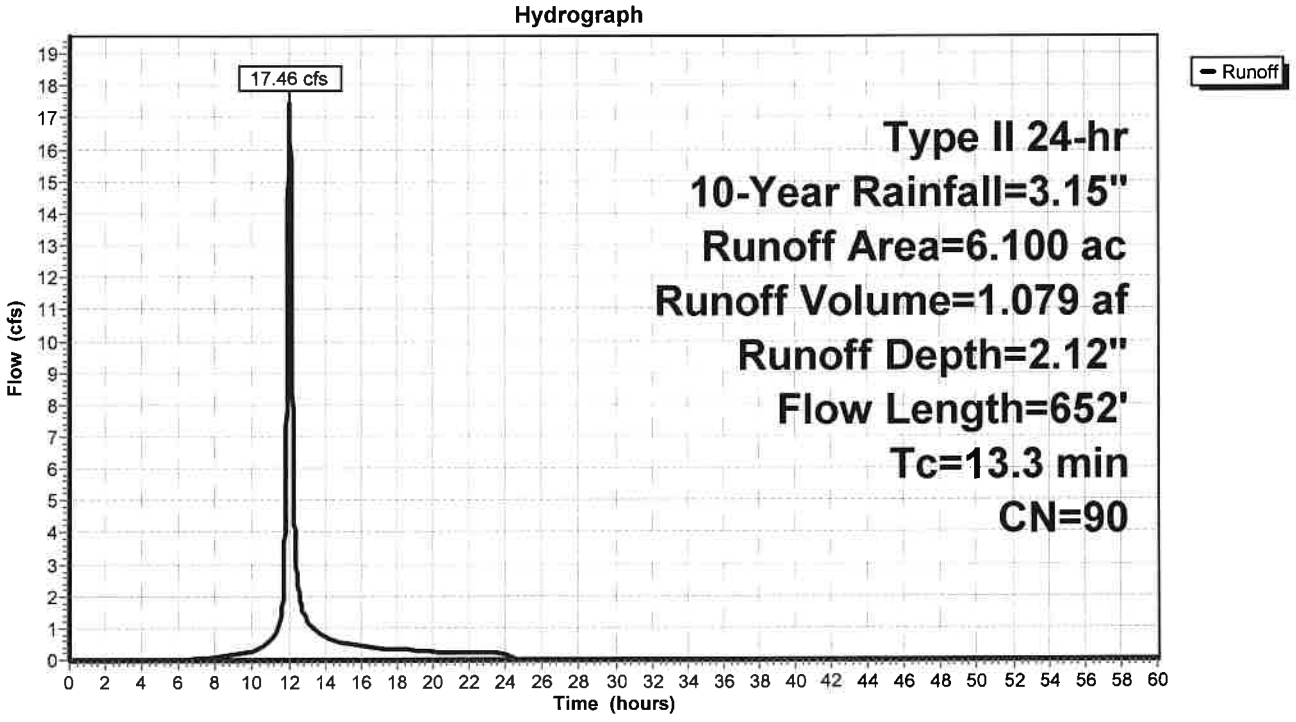
Runoff = 17.46 cfs @ 12.05 hrs, Volume= 1.079 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.07	0.00	0.00
3.00	0.11	0.00	0.00
4.00	0.15	0.00	0.00
5.00	0.20	0.00	0.00
6.00	0.25	0.00	0.01
7.00	0.31	0.01	0.05
8.00	0.38	0.02	0.09
9.00	0.46	0.04	0.18
10.00	0.57	0.08	0.28
11.00	0.74	0.16	0.63
12.00	2.09	1.17	**15.84**
13.00	2.43	1.47	**1.23**
14.00	2.58	1.61	0.71
15.00	2.69	1.70	0.55
16.00	2.77	1.78	0.43
17.00	2.84	1.84	0.37
18.00	2.90	1.89	0.33
19.00	2.95	1.94	0.28
20.00	3.00	1.98	0.24
21.00	3.04	2.02	0.22
22.00	3.08	2.06	0.22
23.00	3.11	2.09	0.21
24.00	**3.15**	**2.12**	0.20
25.00	3.15	2.12	0.00
26.00	3.15	2.12	0.00
27.00	3.15	2.12	0.00
28.00	3.15	2.12	0.00
29.00	3.15	2.12	0.00
30.00	3.15	2.12	0.00
31.00	3.15	2.12	0.00
32.00	3.15	2.12	0.00
33.00	3.15	2.12	0.00
34.00	3.15	2.12	0.00
35.00	3.15	2.12	0.00
36.00	3.15	2.12	0.00
37.00	3.15	2.12	0.00
38.00	3.15	2.12	0.00
39.00	3.15	2.12	0.00
40.00	3.15	2.12	0.00
41.00	3.15	2.12	0.00
42.00	3.15	2.12	0.00
43.00	3.15	2.12	0.00
44.00	3.15	2.12	0.00
45.00	3.15	2.12	0.00
46.00	3.15	2.12	0.00
47.00	3.15	2.12	0.00
48.00	3.15	2.12	0.00
49.00	3.15	2.12	0.00
50.00	3.15	2.12	0.00
51.00	3.15	2.12	0.00
52.00	3.15	2.12	0.00
53.00	3.15	2.12	0.00
54.00	3.15	2.12	0.00
55.00	3.15	2.12	0.00
56.00	3.15	2.12	0.00
57.00	3.15	2.12	0.00
58.00	3.15	2.12	0.00
59.00	3.15	2.12	0.00
60.00	3.15	2.12	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

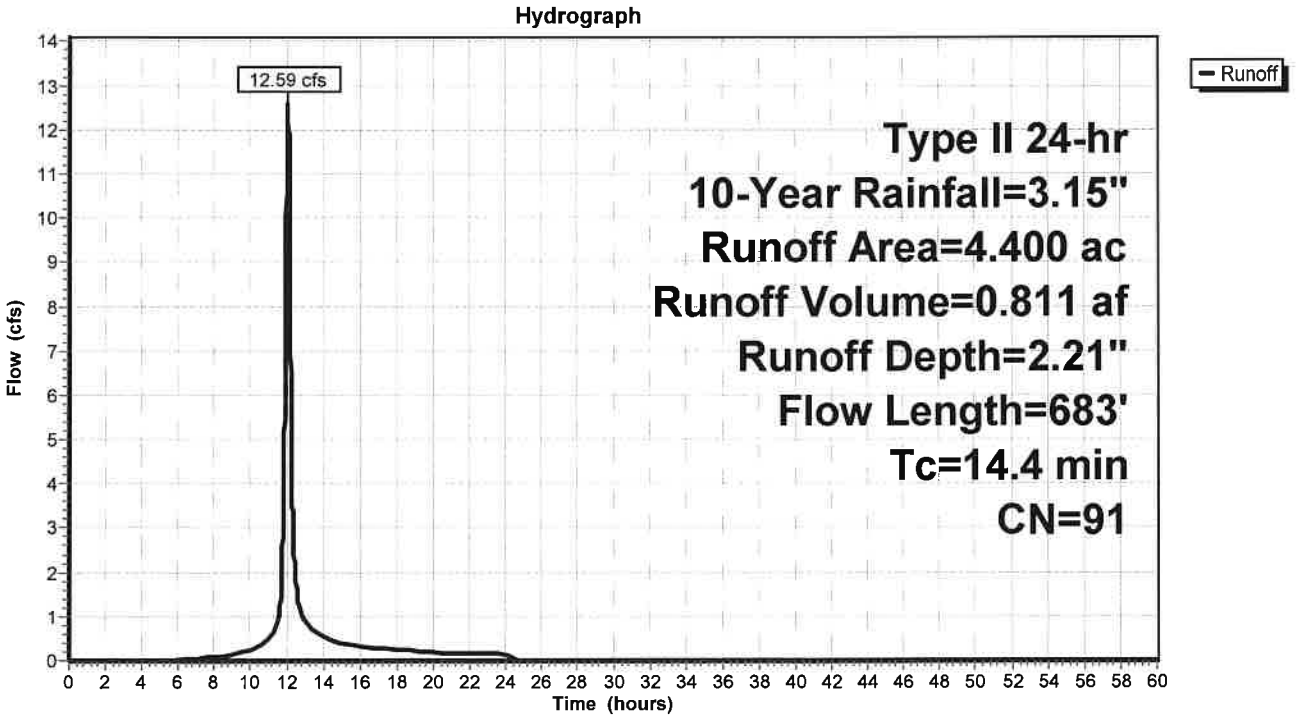
Runoff = 12.59 cfs @ 12.06 hrs, Volume= 0.811 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.07	0.00	0.00
3.00	0.11	0.00	0.00
4.00	0.15	0.00	0.00
5.00	0.20	0.00	0.00
6.00	0.25	0.00	0.02
7.00	0.31	0.01	0.05
8.00	0.38	0.03	0.08
9.00	0.46	0.06	0.15
10.00	0.57	0.10	0.23
11.00	0.74	0.19	0.49
12.00	2.09	1.24	**11.04**
13.00	2.43	1.55	**0.92**
14.00	2.58	1.69	0.53
15.00	2.69	1.78	0.40
16.00	2.77	1.86	0.32
17.00	2.84	1.92	0.27
18.00	2.90	1.98	0.24
19.00	2.95	2.03	0.21
20.00	3.00	2.07	0.18
21.00	3.04	2.11	0.16
22.00	3.08	2.14	0.16
23.00	3.11	2.18	0.15
24.00	**3.15**	**2.21**	0.15
25.00	3.15	2.21	0.00
26.00	3.15	2.21	0.00
27.00	3.15	2.21	0.00
28.00	3.15	2.21	0.00
29.00	3.15	2.21	0.00
30.00	3.15	2.21	0.00
31.00	3.15	2.21	0.00
32.00	3.15	2.21	0.00
33.00	3.15	2.21	0.00
34.00	3.15	2.21	0.00
35.00	3.15	2.21	0.00
36.00	3.15	2.21	0.00
37.00	3.15	2.21	0.00
38.00	3.15	2.21	0.00
39.00	3.15	2.21	0.00
40.00	3.15	2.21	0.00
41.00	3.15	2.21	0.00
42.00	3.15	2.21	0.00
43.00	3.15	2.21	0.00
44.00	3.15	2.21	0.00
45.00	3.15	2.21	0.00
46.00	3.15	2.21	0.00
47.00	3.15	2.21	0.00
48.00	3.15	2.21	0.00
49.00	3.15	2.21	0.00
50.00	3.15	2.21	0.00
51.00	3.15	2.21	0.00
52.00	3.15	2.21	0.00
53.00	3.15	2.21	0.00
54.00	3.15	2.21	0.00
55.00	3.15	2.21	0.00
56.00	3.15	2.21	0.00
57.00	3.15	2.21	0.00
58.00	3.15	2.21	0.00
59.00	3.15	2.21	0.00
60.00	3.15	2.21	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 2.12" for 10-Year event
Inflow = 17.46 cfs @ 12.05 hrs, Volume= 1.079 af
Outflow = 16.45 cfs @ 12.09 hrs, Volume= 1.079 af, Atten= 6%, Lag= 2.3 min
Primary = 2.85 cfs @ 12.09 hrs, Volume= 0.765 af
Secondary = 13.60 cfs @ 12.09 hrs, Volume= 0.314 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.04' @ 12.09 hrs Surf.Area= 9,976 sf Storage= 9,672 cf

Plug-Flow detention time= 160.8 min calculated for 1.079 af (100% of inflow)
Center-of-Mass det. time= 160.7 min (971.9 - 811.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

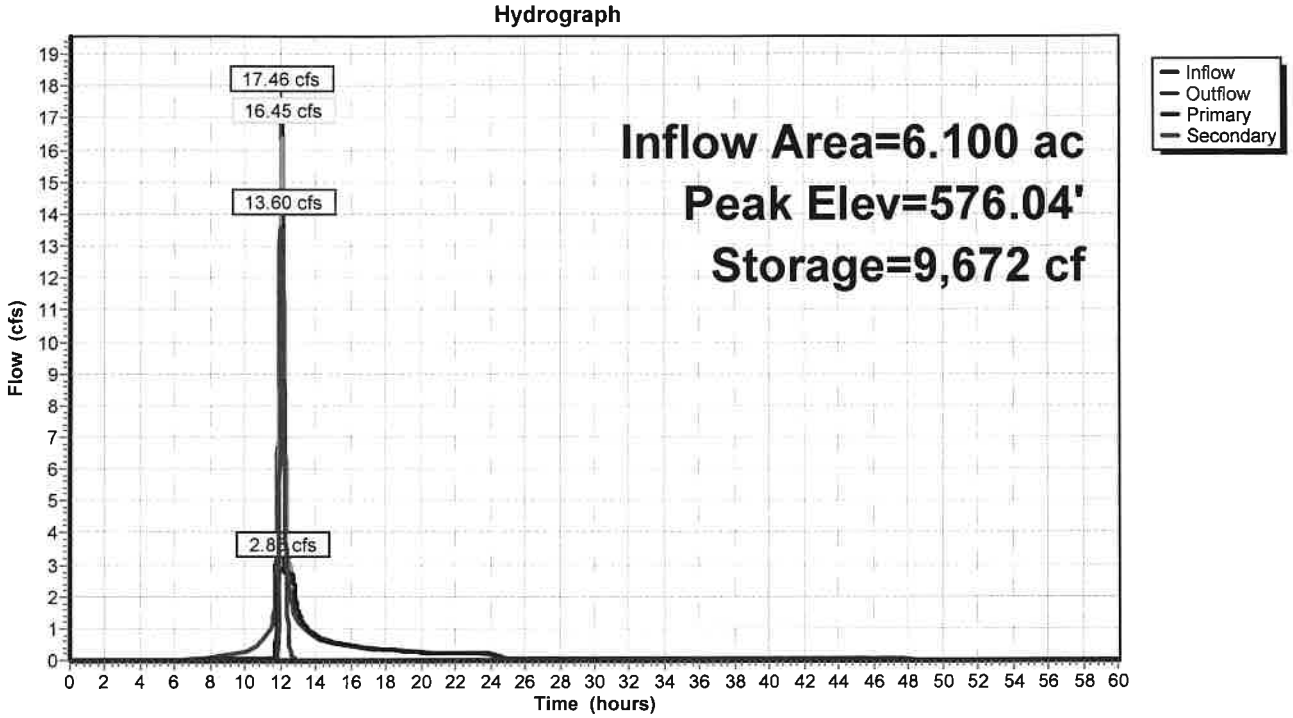
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.85 cfs @ 12.09 hrs HW=576.04' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.85 cfs @ 8.17 fps)
  ├**2=Grate** (Passes < 4.93 cfs potential flow)
  └**3=Exfiltration** (Passes < 0.06 cfs potential flow)

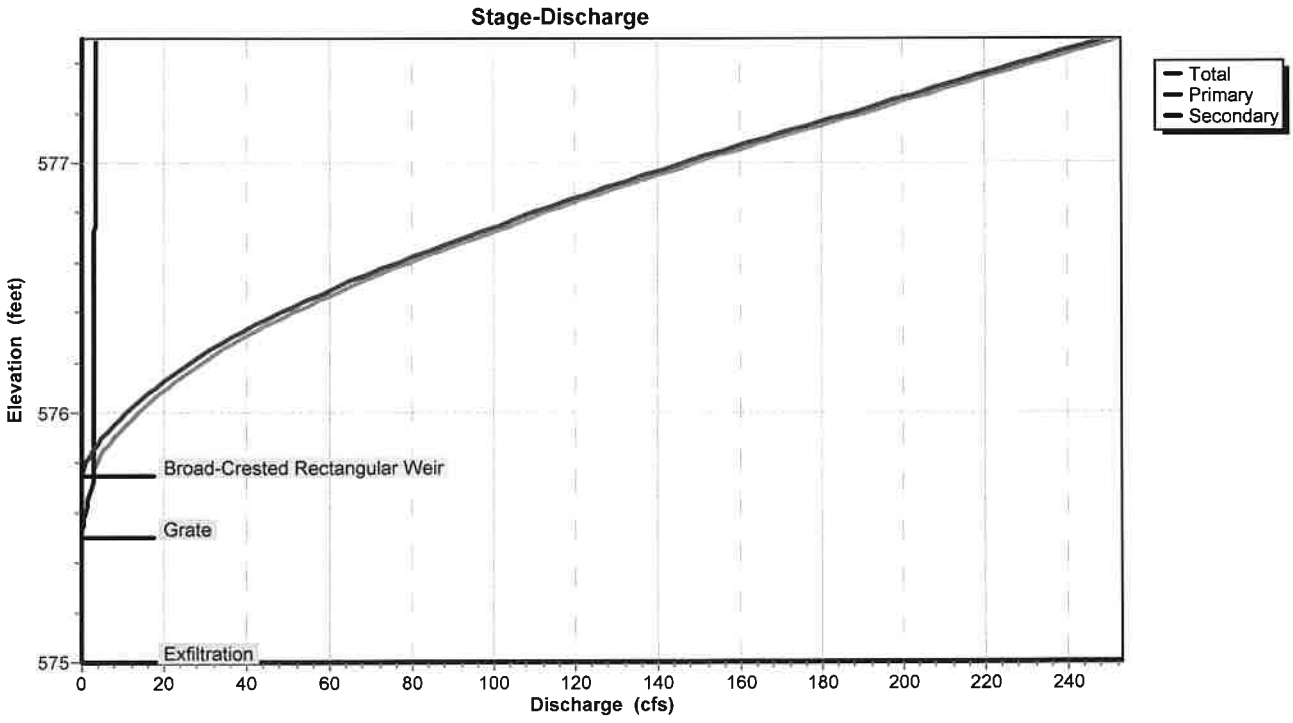
Secondary OutFlow Max=13.58 cfs @ 12.09 hrs HW=576.04' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 13.58 cfs @ 1.57 fps)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

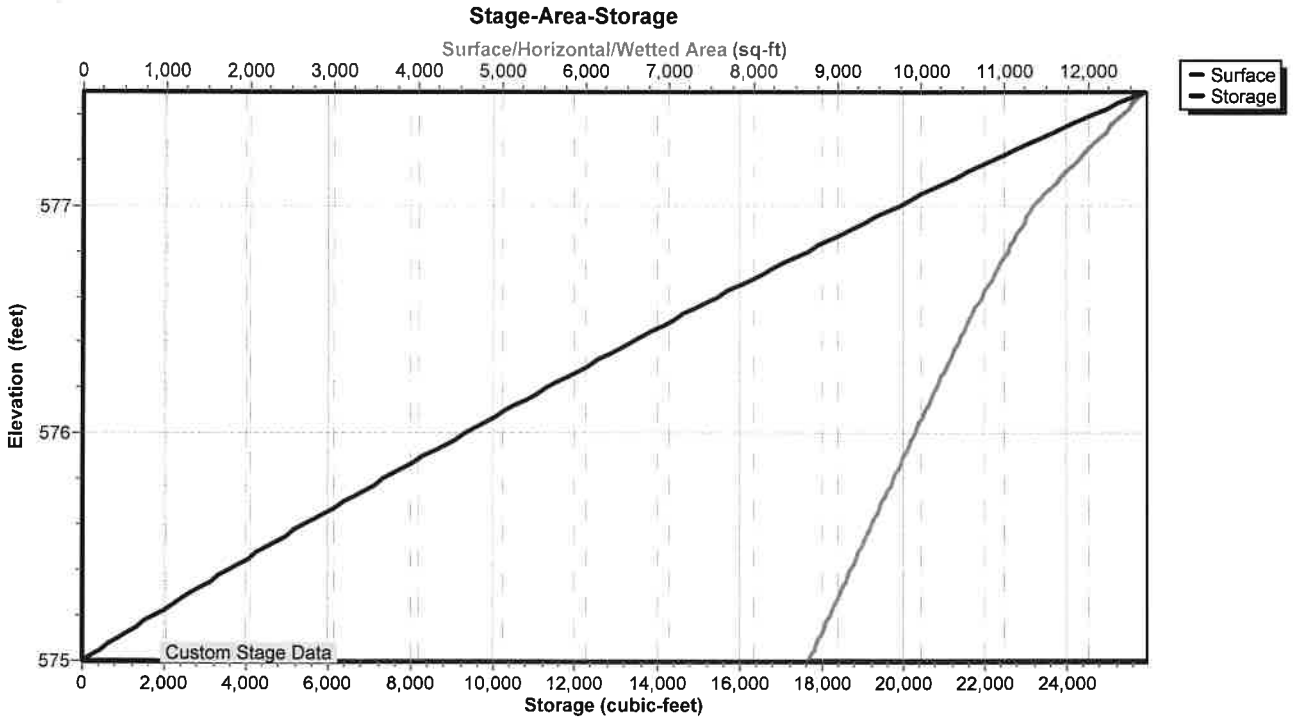


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.01	6	575.00	0.00	0.00	0.00
8.00	0.09	207	575.02	0.05	0.05	0.00
10.00	0.28	1,102	575.13	0.05	0.05	0.00
12.00	**15.84**	**9,006**	**575.97**	**11.97**	**2.82**	**9.15**
14.00	**0.71**	**5,320**	**575.59**	**0.79**	**0.79**	**0.00**
16.00	0.43	5,039	575.56	0.46	0.46	0.00
18.00	0.33	4,925	575.55	0.34	0.34	0.00
20.00	0.24	4,823	575.54	0.25	0.25	0.00
22.00	0.22	4,781	575.53	0.22	0.22	0.00
24.00	0.20	4,760	575.53	0.20	0.20	0.00
26.00	0.00	4,270	575.48	0.06	0.06	0.00
28.00	0.00	3,874	575.43	0.05	0.05	0.00
30.00	0.00	3,482	575.39	0.05	0.05	0.00
32.00	0.00	3,093	575.35	0.05	0.05	0.00
34.00	0.00	2,707	575.31	0.05	0.05	0.00
36.00	0.00	2,324	575.26	0.05	0.05	0.00
38.00	0.00	1,945	575.22	0.05	0.05	0.00
40.00	0.00	1,569	575.18	0.05	0.05	0.00
42.00	0.00	1,197	575.14	0.05	0.05	0.00
44.00	0.00	828	575.10	0.05	0.05	0.00
46.00	0.00	461	575.05	0.05	0.05	0.00
48.00	0.00	126	575.01	0.03	0.03	0.00
50.00	0.00	24	575.00	0.01	0.01	0.00
52.00	0.00	4	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 3.07" for 10-Year event
Inflow = 26.01 cfs @ 12.08 hrs, Volume= 1.125 af
Outflow = 0.47 cfs @ 14.32 hrs, Volume= 0.892 af, Atten= 98%, Lag= 134.6 min
Primary = 0.47 cfs @ 14.32 hrs, Volume= 0.892 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.60' @ 14.32 hrs Surf.Area= 63,820 sf Storage= 37,117 cf

Plug-Flow detention time= 942.6 min calculated for 0.892 af (79% of inflow)
Center-of-Mass det. time= 874.9 min (1,660.4 - 785.4)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

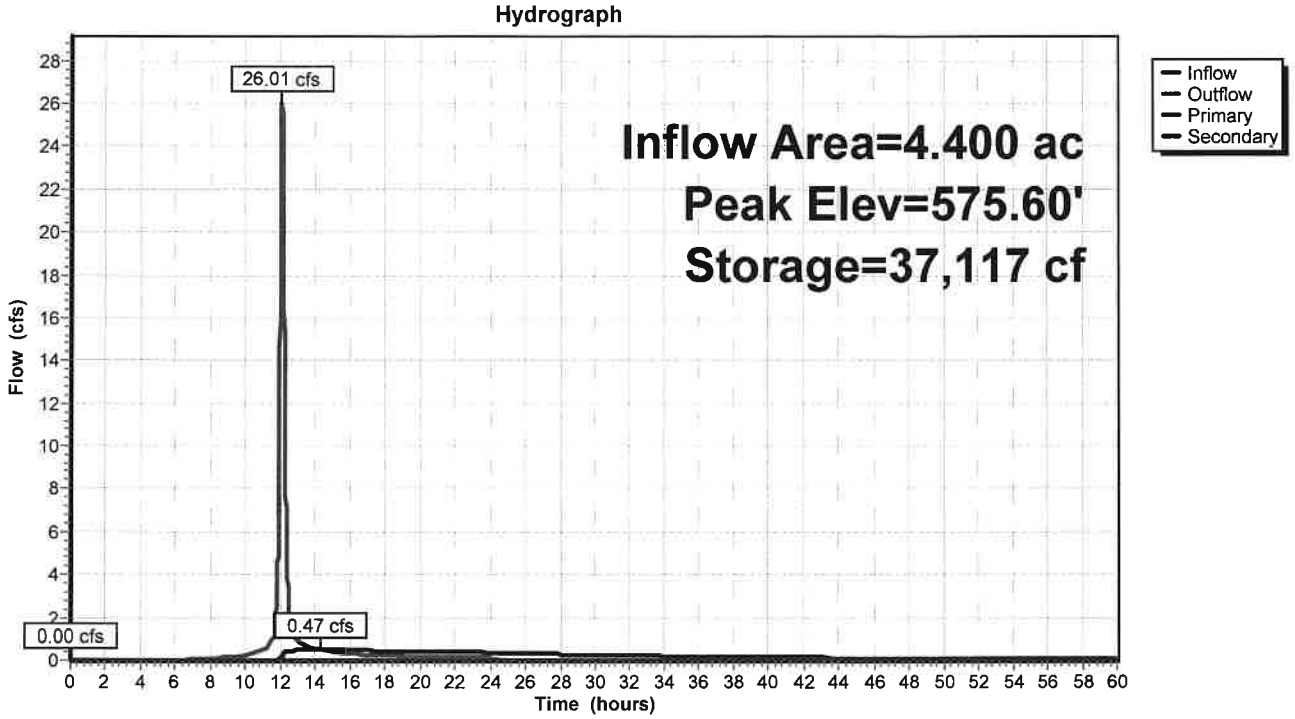
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.47 cfs @ 14.32 hrs HW=575.60' (Free Discharge)
└**1=12" outlet pipe** (Passes 0.47 cfs of 2.23 cfs potential flow)
  ├**2=low flow outlet pipe** (Barrel Controls 0.47 cfs @ 2.50 fps)
  └**3=Grate** (Controls 0.00 cfs)

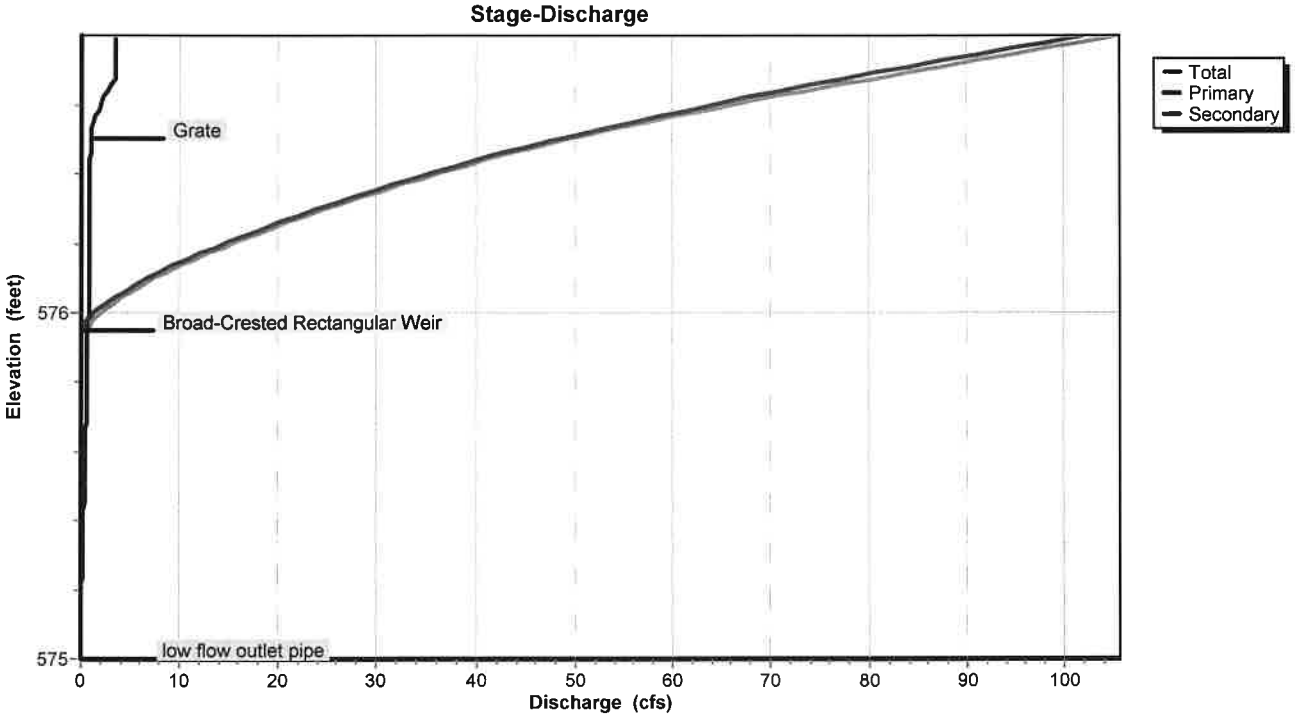
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

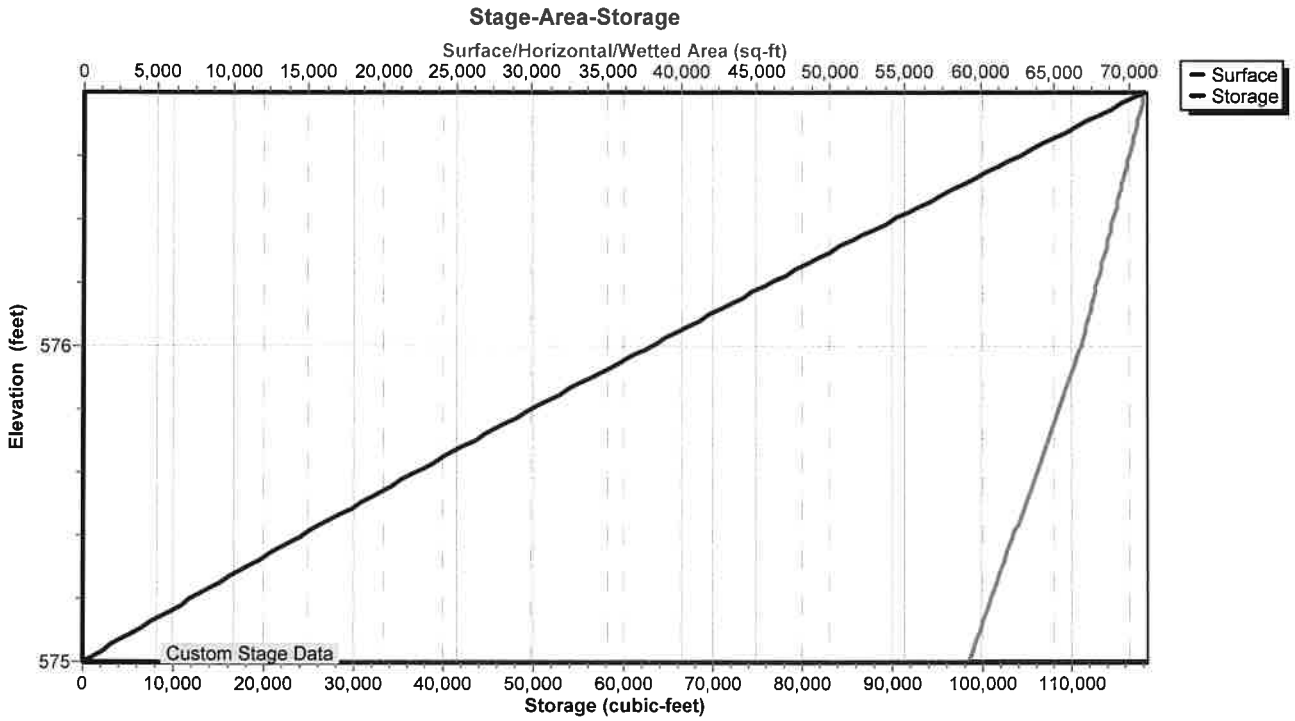


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.02	28	575.00	0.00	0.00	0.00
8.00	0.08	376	575.01	0.00	0.00	0.00
10.00	0.23	1,427	575.02	0.00	0.00	0.00
12.00	**20.19**	11,922	575.20	0.08	0.08	0.00
14.00	**0.53**	**37,087**	**575.60**	**0.47**	**0.47**	0.00
16.00	0.32	**36,669**	**575.60**	**0.46**	**0.46**	0.00
18.00	0.24	35,374	575.58	0.44	0.44	0.00
20.00	0.18	33,764	575.55	0.42	0.42	0.00
22.00	0.16	32,024	575.52	0.39	0.39	0.00
24.00	0.15	30,385	575.50	0.37	0.37	0.00
26.00	0.00	28,005	575.46	0.33	0.33	0.00
28.00	0.00	25,794	575.42	0.29	0.29	0.00
30.00	0.00	23,836	575.39	0.26	0.26	0.00
32.00	0.00	22,102	575.36	0.23	0.23	0.00
34.00	0.00	20,561	575.34	0.20	0.20	0.00
36.00	0.00	19,188	575.32	0.18	0.18	0.00
38.00	0.00	17,961	575.30	0.16	0.16	0.00
40.00	0.00	16,860	575.28	0.14	0.14	0.00
42.00	0.00	15,870	575.26	0.13	0.13	0.00
44.00	0.00	14,975	575.25	0.12	0.12	0.00
46.00	0.00	14,165	575.24	0.11	0.11	0.00
48.00	0.00	13,428	575.22	0.10	0.10	0.00
50.00	0.00	12,756	575.21	0.09	0.09	0.00
52.00	0.00	12,141	575.20	0.08	0.08	0.00
54.00	0.00	11,578	575.19	0.08	0.08	0.00
56.00	0.00	11,059	575.18	0.07	0.07	0.00
58.00	0.00	10,581	575.18	0.06	0.06	0.00
60.00	0.00	10,139	575.17	0.06	0.06	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

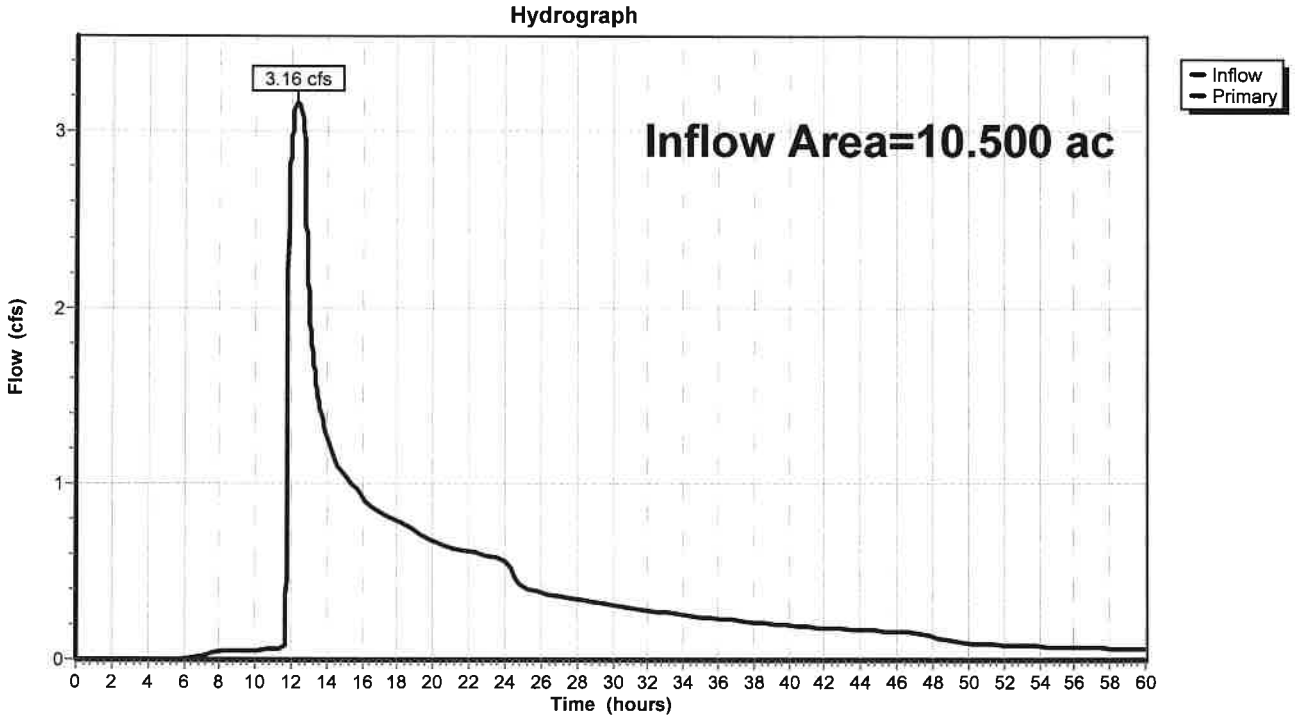
Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 1.89" for 10-Year event
Inflow = 3.16 cfs @ 12.39 hrs, Volume= 1.657 af
Primary = 3.16 cfs @ 12.39 hrs, Volume= 1.657 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.08	0.00	0.08
1.00	0.00	0.00	0.00	53.00	0.08	0.00	0.08
2.00	0.00	0.00	0.00	54.00	0.08	0.00	0.08
3.00	0.00	0.00	0.00	55.00	0.07	0.00	0.07
4.00	0.00	0.00	0.00	56.00	0.07	0.00	0.07
5.00	0.00	0.00	0.00	57.00	0.07	0.00	0.07
6.00	0.00	0.00	0.00	58.00	0.06	0.00	0.06
7.00	0.02	0.00	0.02	59.00	0.06	0.00	0.06
8.00	0.05	0.00	0.05	60.00	0.06	0.00	0.06
9.00	0.05	0.00	0.05				
10.00	0.05	0.00	0.05				
11.00	0.06	0.00	0.06				
12.00	**2.90**	0.00	**2.90**				
13.00	**2.02**	0.00	**2.02**				
14.00	1.26	0.00	1.26				
15.00	1.05	0.00	1.05				
16.00	0.92	0.00	0.92				
17.00	0.84	0.00	0.84				
18.00	0.78	0.00	0.78				
19.00	0.73	0.00	0.73				
20.00	0.67	0.00	0.67				
21.00	0.63	0.00	0.63				
22.00	0.61	0.00	0.61				
23.00	0.59	0.00	0.59				
24.00	0.57	0.00	0.57				
25.00	0.40	0.00	0.40				
26.00	0.38	0.00	0.38				
27.00	0.36	0.00	0.36				
28.00	0.34	0.00	0.34				
29.00	0.33	0.00	0.33				
30.00	0.31	0.00	0.31				
31.00	0.29	0.00	0.29				
32.00	0.28	0.00	0.28				
33.00	0.27	0.00	0.27				
34.00	0.26	0.00	0.26				
35.00	0.24	0.00	0.24				
36.00	0.23	0.00	0.23				
37.00	0.22	0.00	0.22				
38.00	0.21	0.00	0.21				
39.00	0.20	0.00	0.20				
40.00	0.20	0.00	0.20				
41.00	0.19	0.00	0.19				
42.00	0.18	0.00	0.18				
43.00	0.18	0.00	0.18				
44.00	0.17	0.00	0.17				
45.00	0.16	0.00	0.16				
46.00	0.16	0.00	0.16				
47.00	0.15	0.00	0.15				
48.00	0.13	0.00	0.13				
49.00	0.11	0.00	0.11				
50.00	0.09	0.00	0.09				
51.00	0.09	0.00	0.09				

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=2.80"
Flow Length=652' Tc=13.3 min CN=90 Runoff=22.74 cfs 1.421 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=2.89"
Flow Length=683' Tc=14.4 min CN=91 Runoff=16.27 cfs 1.061 af

Pond 1P: Bioretention Area 3 Peak Elev=576.11' Storage=10,375 cf Inflow=22.74 cfs 1.421 af
Primary=2.89 cfs 0.934 af Secondary=18.84 cfs 0.487 af Outflow=21.73 cfs 1.421 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.83' Storage=51,963 cf Inflow=34.94 cfs 1.548 af
Primary=0.64 cfs 1.276 af Secondary=0.00 cfs 0.000 af Outflow=0.64 cfs 1.276 af

Link 5L: Outflow (@ CB 54) Inflow=3.36 cfs 2.210 af
Primary=3.36 cfs 2.210 af

Total Runoff Area = 10.500 ac Runoff Volume = 2.482 af Average Runoff Depth = 2.84"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

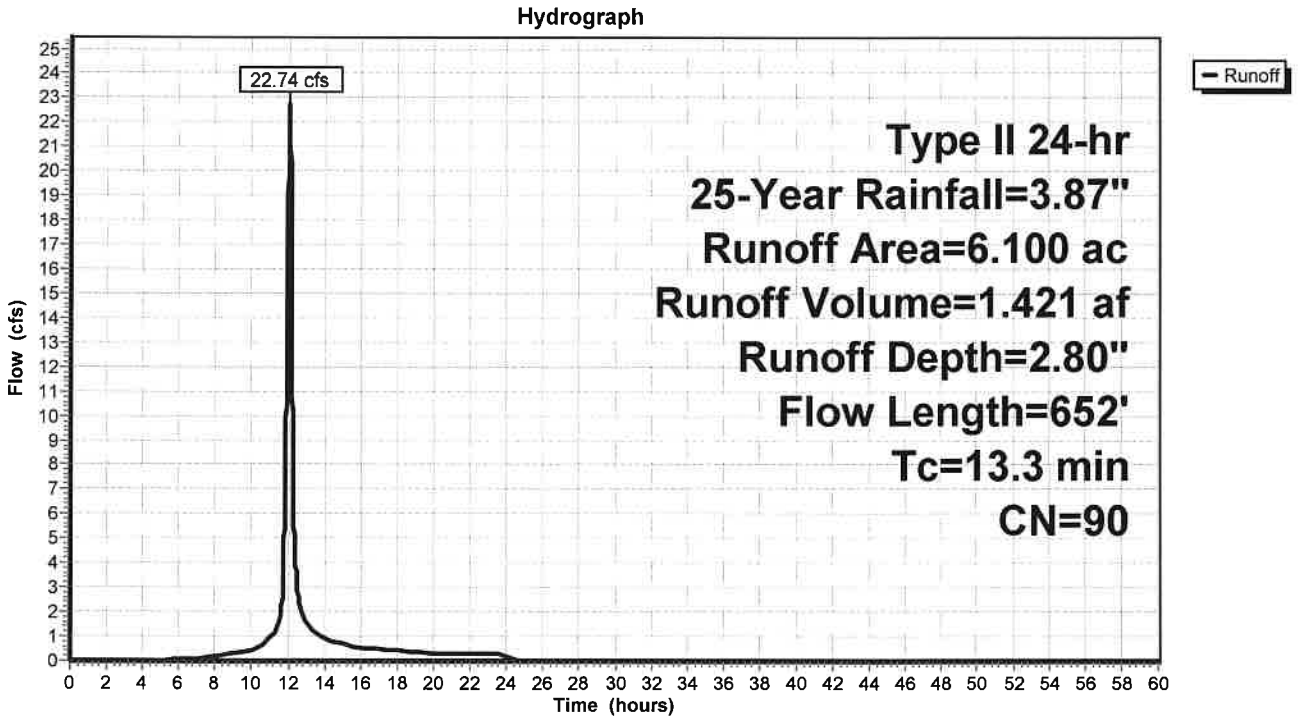
Runoff = 22.74 cfs @ 12.05 hrs, Volume= 1.421 af, Depth= 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.04	0.00	0.00
2.00	0.09	0.00	0.00
3.00	0.13	0.00	0.00
4.00	0.19	0.00	0.00
5.00	0.24	0.00	0.01
6.00	0.31	0.01	0.05
7.00	0.38	0.02	0.10
8.00	0.46	0.04	0.16
9.00	0.57	0.08	0.28
10.00	0.70	0.14	0.43
11.00	0.91	0.26	0.90
12.00	2.57	1.59	**20.75**
13.00	2.99	1.97	**1.57**
14.00	3.17	2.14	0.90
15.00	3.30	2.26	0.70
16.00	3.41	2.36	0.54
17.00	3.49	2.44	0.47
18.00	3.56	2.51	0.41
19.00	3.63	2.57	0.36
20.00	3.68	2.62	0.30
21.00	3.73	2.67	0.28
22.00	3.78	2.71	0.27
23.00	3.83	2.75	0.26
24.00	**3.87**	**2.80**	0.25
25.00	3.87	2.80	0.00
26.00	3.87	2.80	0.00
27.00	3.87	2.80	0.00
28.00	3.87	2.80	0.00
29.00	3.87	2.80	0.00
30.00	3.87	2.80	0.00
31.00	3.87	2.80	0.00
32.00	3.87	2.80	0.00
33.00	3.87	2.80	0.00
34.00	3.87	2.80	0.00
35.00	3.87	2.80	0.00
36.00	3.87	2.80	0.00
37.00	3.87	2.80	0.00
38.00	3.87	2.80	0.00
39.00	3.87	2.80	0.00
40.00	3.87	2.80	0.00
41.00	3.87	2.80	0.00
42.00	3.87	2.80	0.00
43.00	3.87	2.80	0.00
44.00	3.87	2.80	0.00
45.00	3.87	2.80	0.00
46.00	3.87	2.80	0.00
47.00	3.87	2.80	0.00
48.00	3.87	2.80	0.00
49.00	3.87	2.80	0.00
50.00	3.87	2.80	0.00
51.00	3.87	2.80	0.00
52.00	3.87	2.80	0.00
53.00	3.87	2.80	0.00
54.00	3.87	2.80	0.00
55.00	3.87	2.80	0.00
56.00	3.87	2.80	0.00
57.00	3.87	2.80	0.00
58.00	3.87	2.80	0.00
59.00	3.87	2.80	0.00
60.00	3.87	2.80	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

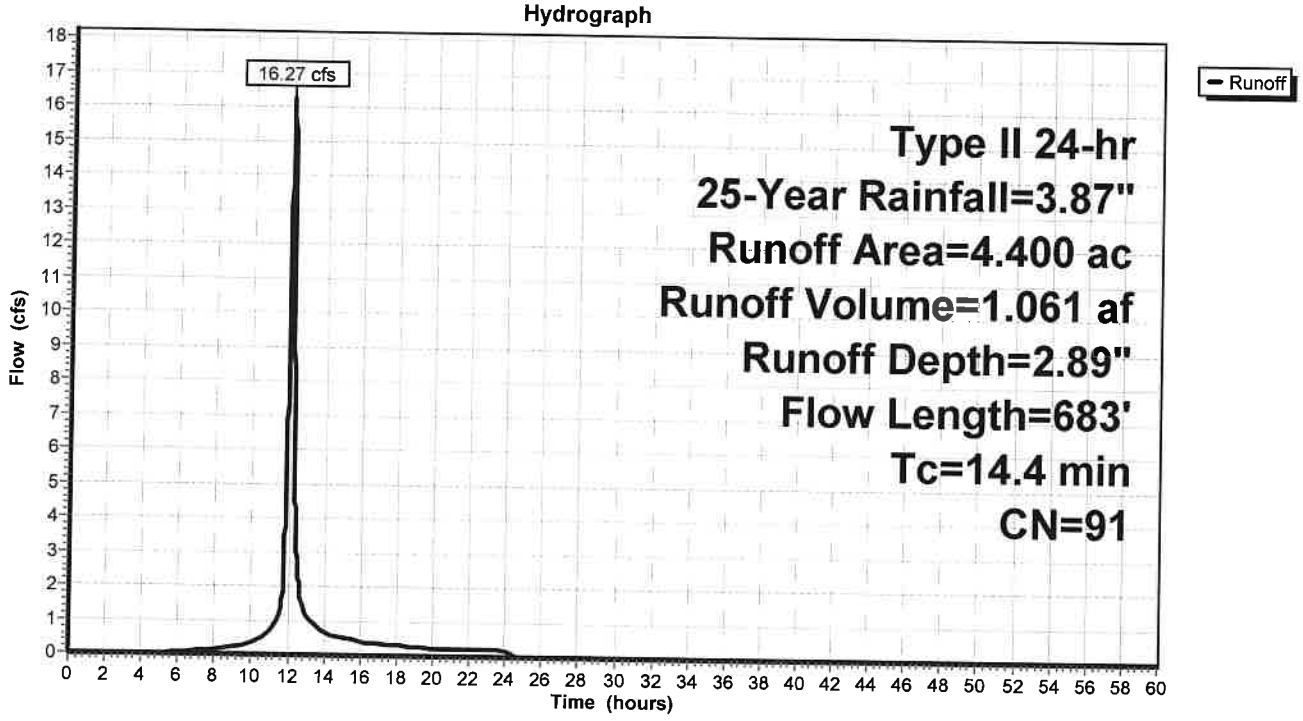
Runoff = 16.27 cfs @ 12.06 hrs, Volume= 1.061 af, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.04	0.00	0.00
2.00	0.09	0.00	0.00
3.00	0.13	0.00	0.00
4.00	0.19	0.00	0.00
5.00	0.24	0.00	0.02
6.00	0.31	0.01	0.05
7.00	0.38	0.03	0.09
8.00	0.46	0.06	0.13
9.00	0.57	0.10	0.23
10.00	0.70	0.17	0.34
11.00	0.91	0.30	0.69
12.00	2.57	1.67	**14.36**
13.00	2.99	2.06	**1.16**
14.00	3.17	2.23	0.67
15.00	3.30	2.36	0.51
16.00	3.41	2.45	0.40
17.00	3.49	2.53	0.34
18.00	3.56	2.60	0.30
19.00	3.63	2.66	0.26
20.00	3.68	2.72	0.22
21.00	3.73	2.76	0.21
22.00	3.78	2.81	0.20
23.00	3.83	2.85	0.19
24.00	**3.87**	**2.89**	0.18
25.00	3.87	2.89	0.00
26.00	3.87	2.89	0.00
27.00	3.87	2.89	0.00
28.00	3.87	2.89	0.00
29.00	3.87	2.89	0.00
30.00	3.87	2.89	0.00
31.00	3.87	2.89	0.00
32.00	3.87	2.89	0.00
33.00	3.87	2.89	0.00
34.00	3.87	2.89	0.00
35.00	3.87	2.89	0.00
36.00	3.87	2.89	0.00
37.00	3.87	2.89	0.00
38.00	3.87	2.89	0.00
39.00	3.87	2.89	0.00
40.00	3.87	2.89	0.00
41.00	3.87	2.89	0.00
42.00	3.87	2.89	0.00
43.00	3.87	2.89	0.00
44.00	3.87	2.89	0.00
45.00	3.87	2.89	0.00
46.00	3.87	2.89	0.00
47.00	3.87	2.89	0.00
48.00	3.87	2.89	0.00
49.00	3.87	2.89	0.00
50.00	3.87	2.89	0.00
51.00	3.87	2.89	0.00
52.00	3.87	2.89	0.00
53.00	3.87	2.89	0.00
54.00	3.87	2.89	0.00
55.00	3.87	2.89	0.00
56.00	3.87	2.89	0.00
57.00	3.87	2.89	0.00
58.00	3.87	2.89	0.00
59.00	3.87	2.89	0.00
60.00	3.87	2.89	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 2.80" for 25-Year event
Inflow = 22.74 cfs @ 12.05 hrs, Volume= 1.421 af
Outflow = 21.73 cfs @ 12.08 hrs, Volume= 1.421 af, Atten= 4%, Lag= 2.0 min
Primary = 2.89 cfs @ 12.08 hrs, Volume= 0.934 af
Secondary = 18.84 cfs @ 12.08 hrs, Volume= 0.487 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.11' @ 12.08 hrs Surf.Area= 10,069 sf Storage= 10,375 cf

Plug-Flow detention time= 127.9 min calculated for 1.421 af (100% of inflow)
Center-of-Mass det. time= 128.1 min (931.5 - 803.4)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

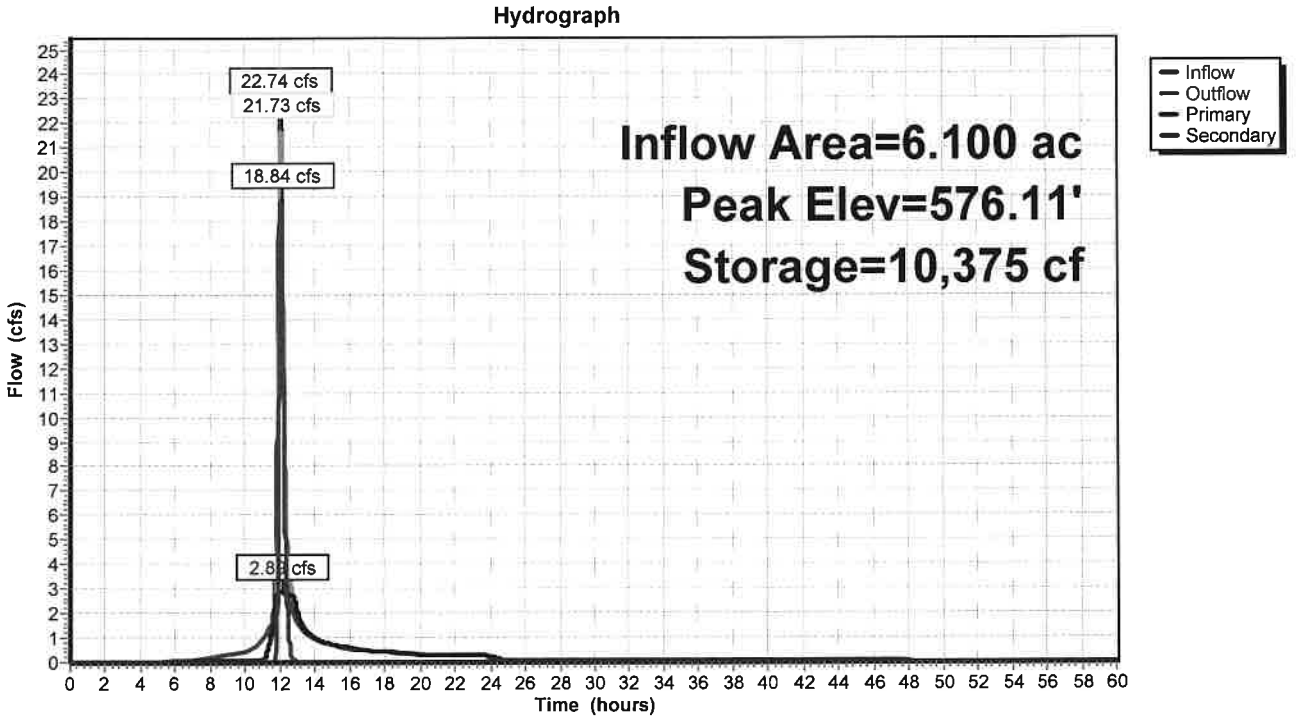
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.89 cfs @ 12.08 hrs HW=576.11' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.89 cfs @ 8.27 fps)
  └**2=Grate** (Passes < 5.25 cfs potential flow)
  └**3=Exfiltration** (Passes < 0.06 cfs potential flow)

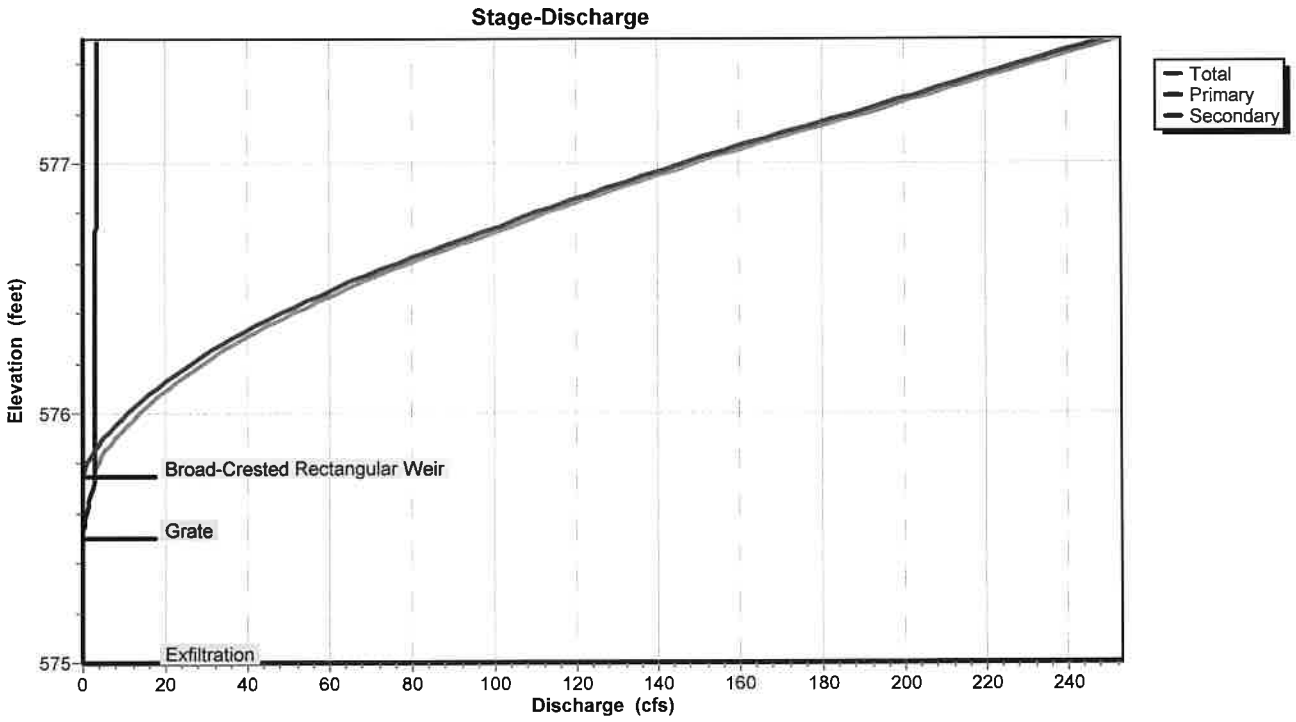
Secondary OutFlow Max=18.83 cfs @ 12.08 hrs HW=576.11' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 18.83 cfs @ 1.75 fps)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

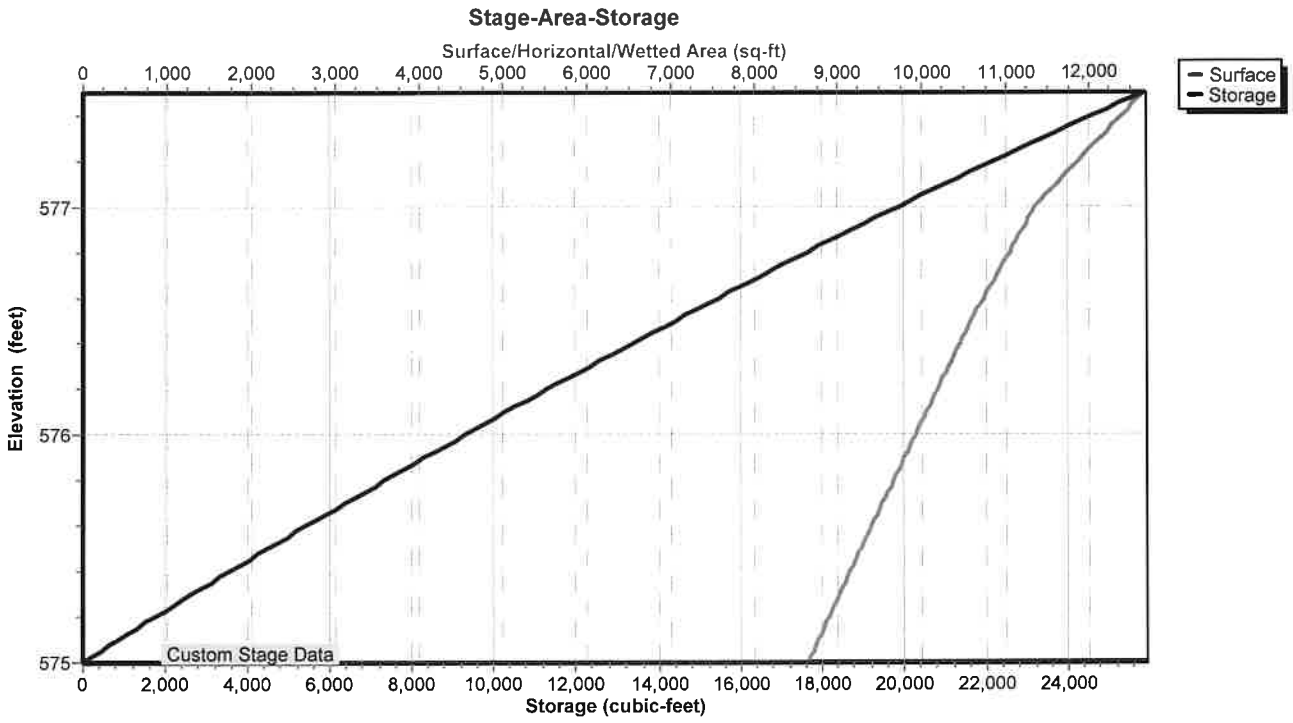


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.05	75	575.01	0.02	0.02	0.00
8.00	0.16	510	575.06	0.05	0.05	0.00
10.00	0.43	2,153	575.24	0.05	0.05	0.00
12.00	**20.75**	**9,748**	**576.05**	**16.99**	**2.86**	**14.14**
14.00	**0.90**	**5,469**	**575.61**	**1.00**	**1.00**	**0.00**
16.00	0.54	5,148	575.57	0.58	0.58	0.00
18.00	0.41	5,009	575.56	0.43	0.43	0.00
20.00	0.30	4,900	575.54	0.32	0.32	0.00
22.00	0.27	4,847	575.54	0.28	0.28	0.00
24.00	0.25	4,821	575.54	0.25	0.25	0.00
26.00	0.00	4,285	575.48	0.06	0.06	0.00
28.00	0.00	3,889	575.44	0.05	0.05	0.00
30.00	0.00	3,497	575.39	0.05	0.05	0.00
32.00	0.00	3,108	575.35	0.05	0.05	0.00
34.00	0.00	2,722	575.31	0.05	0.05	0.00
36.00	0.00	2,339	575.27	0.05	0.05	0.00
38.00	0.00	1,960	575.22	0.05	0.05	0.00
40.00	0.00	1,584	575.18	0.05	0.05	0.00
42.00	0.00	1,211	575.14	0.05	0.05	0.00
44.00	0.00	842	575.10	0.05	0.05	0.00
46.00	0.00	475	575.05	0.05	0.05	0.00
48.00	0.00	134	575.02	0.03	0.03	0.00
50.00	0.00	25	575.00	0.01	0.01	0.00
52.00	0.00	5	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 4.22" for 25-Year event
Inflow = 34.94 cfs @ 12.07 hrs, Volume= 1.548 af
Outflow = 0.64 cfs @ 14.10 hrs, Volume= 1.276 af, Atten= 98%, Lag= 121.4 min
Primary = 0.64 cfs @ 14.10 hrs, Volume= 1.276 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.83' @ 14.10 hrs Surf.Area= 65,573 sf Storage= 51,963 cf

Plug-Flow detention time= 951.6 min calculated for 1.276 af (82% of inflow)
Center-of-Mass det. time= 890.6 min (1,667.8 - 777.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

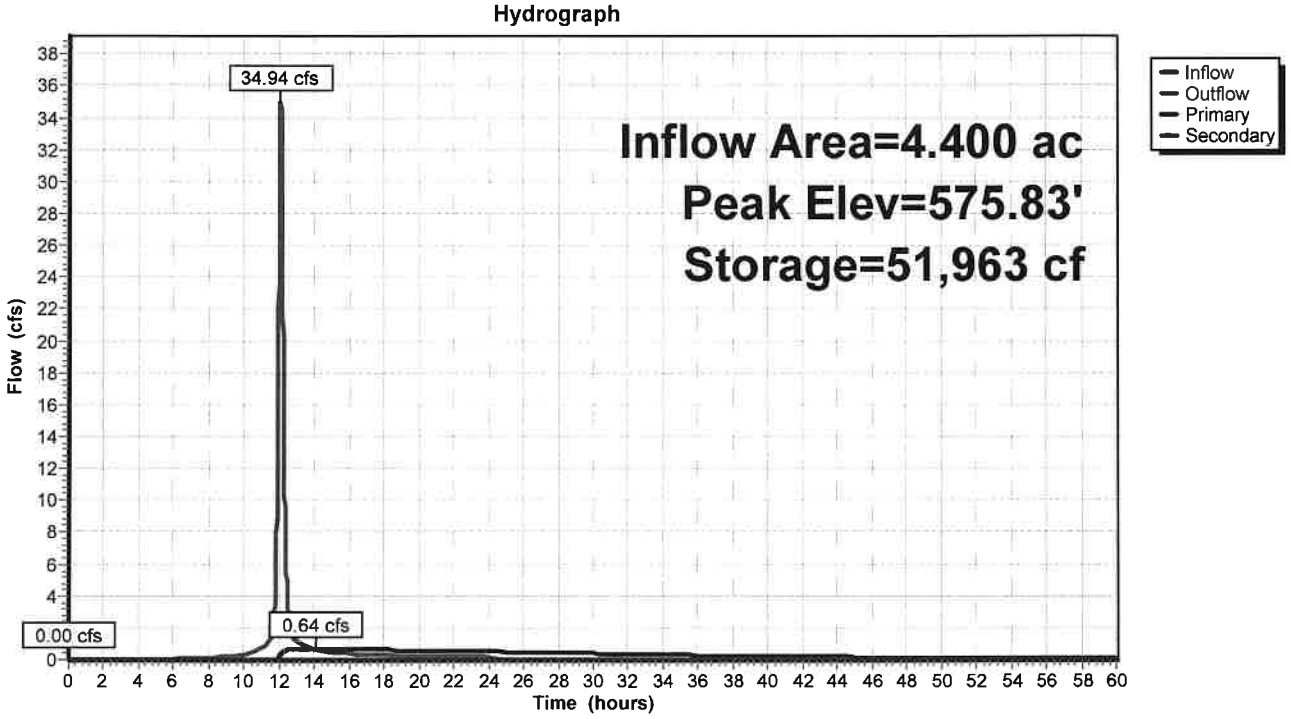
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.64 cfs @ 14.10 hrs HW=575.83' (Free Discharge)
↑—**1=12" outlet pipe** (Passes 0.64 cfs of 2.52 cfs potential flow)
↑—**2=low flow outlet pipe** (Inlet Controls 0.64 cfs @ 3.24 fps)
—**3=Grate** (Controls 0.00 cfs)

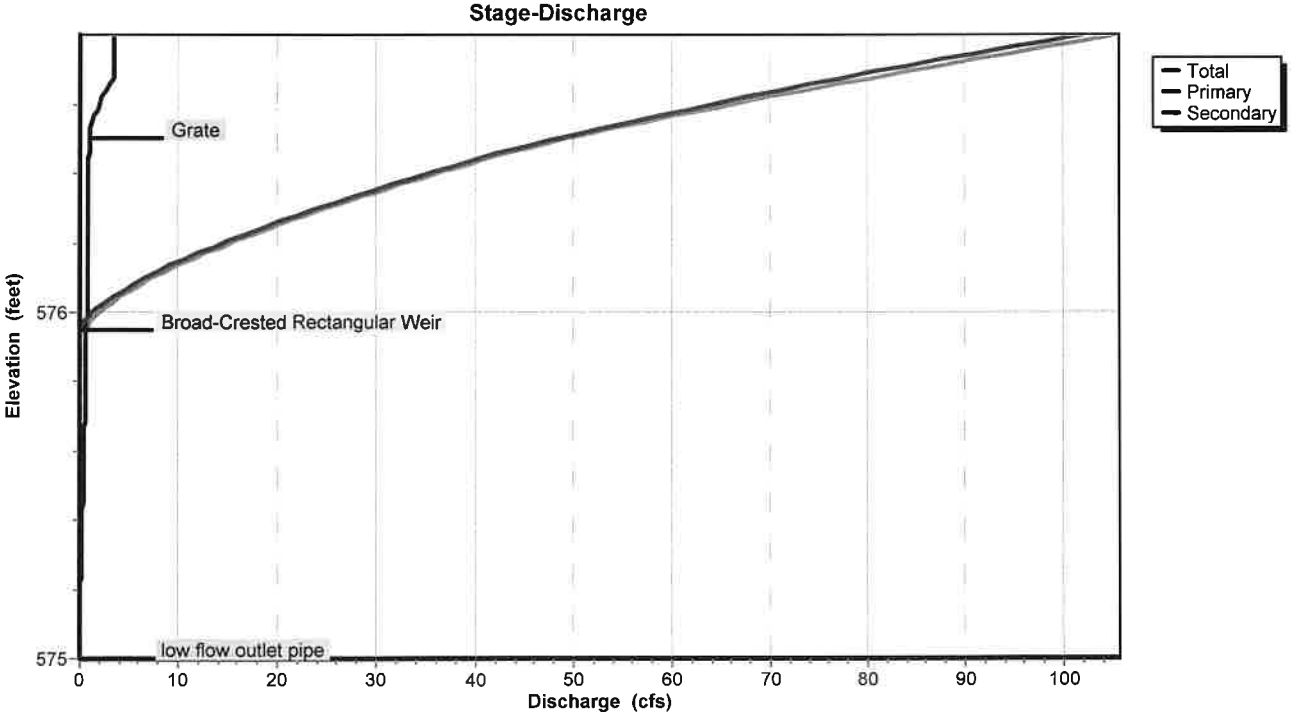
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
↑—**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

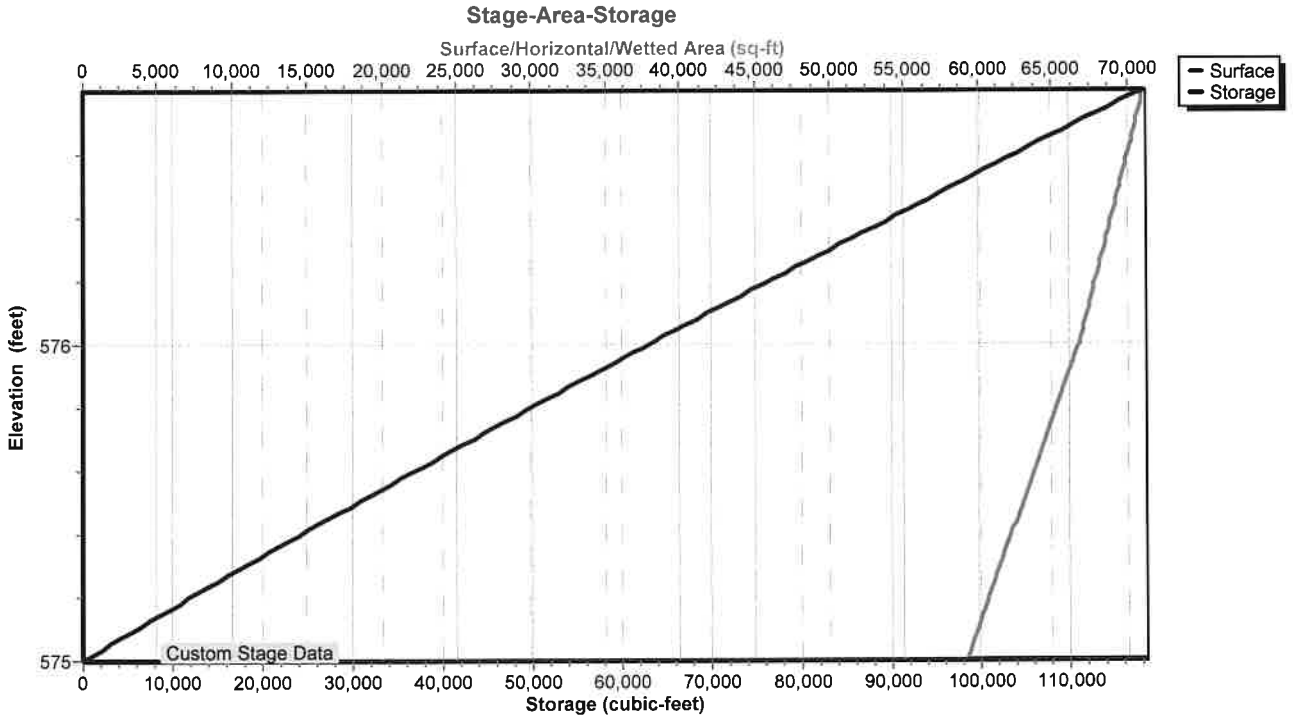


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.05	138	575.00	0.00	0.00	0.00
8.00	0.13	792	575.01	0.00	0.00	0.00
10.00	0.34	2,407	575.04	0.00	0.00	0.00
12.00	**28.50**	18,305	575.30	0.17	0.17	0.00
14.00	**0.67**	**51,959**	**575.83**	**0.64**	**0.64**	0.00
16.00	0.40	**51,083**	**575.82**	**0.63**	**0.63**	0.00
18.00	0.30	49,081	575.79	0.61	0.61	0.00
20.00	0.22	46,637	575.75	0.59	0.59	0.00
22.00	0.20	44,041	575.71	0.55	0.55	0.00
24.00	0.18	41,619	575.67	0.51	0.51	0.00
26.00	0.00	38,209	575.62	0.48	0.48	0.00
28.00	0.00	34,905	575.57	0.44	0.44	0.00
30.00	0.00	31,923	575.52	0.39	0.39	0.00
32.00	0.00	29,266	575.48	0.35	0.35	0.00
34.00	0.00	26,910	575.44	0.31	0.31	0.00
36.00	0.00	24,824	575.41	0.27	0.27	0.00
38.00	0.00	22,978	575.38	0.24	0.24	0.00
40.00	0.00	21,340	575.35	0.21	0.21	0.00
42.00	0.00	19,882	575.33	0.19	0.19	0.00
44.00	0.00	18,582	575.31	0.17	0.17	0.00
46.00	0.00	17,418	575.29	0.15	0.15	0.00
48.00	0.00	16,372	575.27	0.14	0.14	0.00
50.00	0.00	15,429	575.26	0.12	0.12	0.00
52.00	0.00	14,576	575.24	0.11	0.11	0.00
54.00	0.00	13,802	575.23	0.10	0.10	0.00
56.00	0.00	13,098	575.22	0.09	0.09	0.00
58.00	0.00	12,454	575.21	0.09	0.09	0.00
60.00	0.00	11,865	575.20	0.08	0.08	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

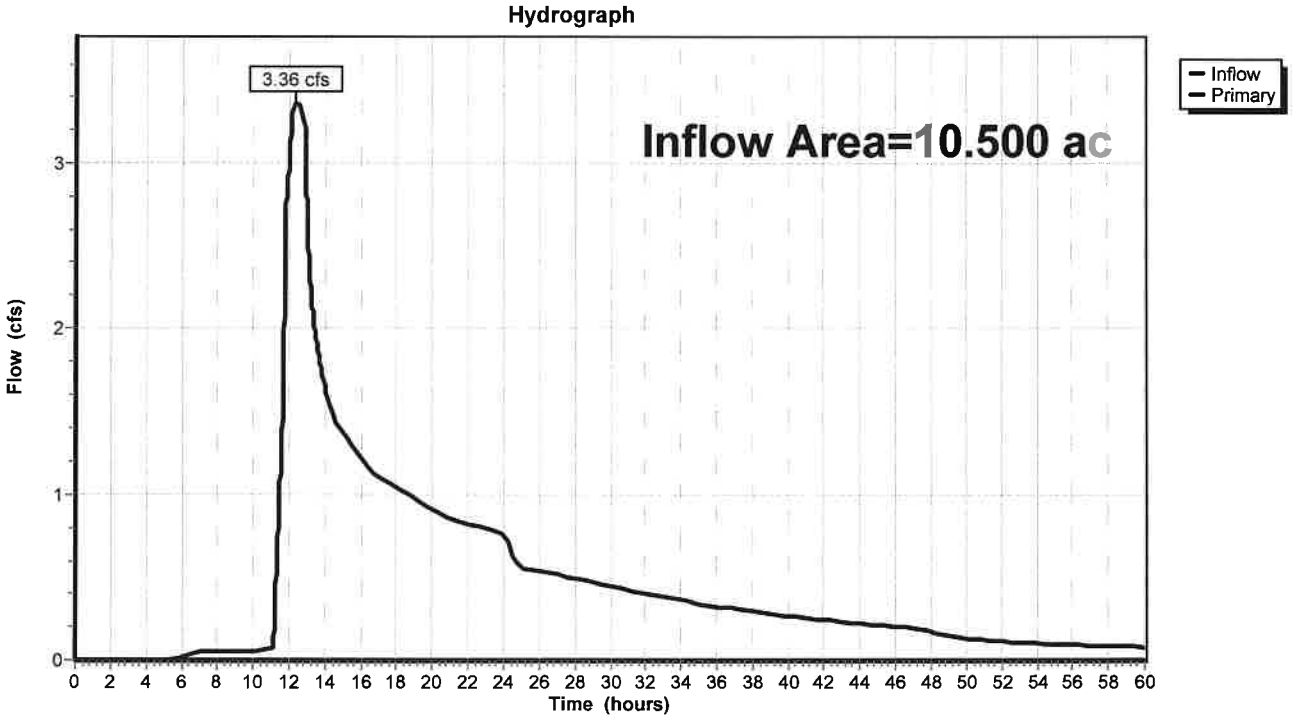
Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 2.53" for 25-Year event
Inflow = 3.36 cfs @ 12.37 hrs, Volume= 2.210 af
Primary = 3.36 cfs @ 12.37 hrs, Volume= 2.210 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.11	0.00	0.11
1.00	0.00	0.00	0.00	53.00	0.11	0.00	0.11
2.00	0.00	0.00	0.00	54.00	0.10	0.00	0.10
3.00	0.00	0.00	0.00	55.00	0.10	0.00	0.10
4.00	0.00	0.00	0.00	56.00	0.09	0.00	0.09
5.00	0.00	0.00	0.00	57.00	0.09	0.00	0.09
6.00	0.02	0.00	0.02	58.00	0.09	0.00	0.09
7.00	0.05	0.00	0.05	59.00	0.08	0.00	0.08
8.00	0.05	0.00	0.05	60.00	0.08	0.00	0.08
9.00	0.05	0.00	0.05				
10.00	0.06	0.00	0.06				
11.00	0.07	0.00	0.07				
12.00	**3.02**	0.00	**3.02**				
13.00	**2.64**	0.00	**2.64**				
14.00	1.63	0.00	1.63				
15.00	1.36	0.00	1.36				
16.00	1.21	0.00	1.21				
17.00	1.10	0.00	1.10				
18.00	1.04	0.00	1.04				
19.00	0.97	0.00	0.97				
20.00	0.91	0.00	0.91				
21.00	0.85	0.00	0.85				
22.00	0.82	0.00	0.82				
23.00	0.79	0.00	0.79				
24.00	0.76	0.00	0.76				
25.00	0.55	0.00	0.55				
26.00	0.53	0.00	0.53				
27.00	0.51	0.00	0.51				
28.00	0.49	0.00	0.49				
29.00	0.47	0.00	0.47				
30.00	0.45	0.00	0.45				
31.00	0.42	0.00	0.42				
32.00	0.40	0.00	0.40				
33.00	0.38	0.00	0.38				
34.00	0.36	0.00	0.36				
35.00	0.34	0.00	0.34				
36.00	0.33	0.00	0.33				
37.00	0.31	0.00	0.31				
38.00	0.29	0.00	0.29				
39.00	0.28	0.00	0.28				
40.00	0.27	0.00	0.27				
41.00	0.25	0.00	0.25				
42.00	0.24	0.00	0.24				
43.00	0.23	0.00	0.23				
44.00	0.22	0.00	0.22				
45.00	0.21	0.00	0.21				
46.00	0.20	0.00	0.20				
47.00	0.20	0.00	0.20				
48.00	0.17	0.00	0.17				
49.00	0.14	0.00	0.14				
50.00	0.13	0.00	0.13				
51.00	0.12	0.00	0.12				

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=3.41"
Flow Length=652' Tc=13.3 min CN=90 Runoff=27.50 cfs 1.736 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=3.52"
Flow Length=683' Tc=14.4 min CN=91 Runoff=19.58 cfs 1.290 af

Pond 1P: Bioretention Area 3 Peak Elev=576.17' Storage=10,953 cf Inflow=27.50 cfs 1.736 af
Primary=2.91 cfs 1.092 af Secondary=23.52 cfs 0.644 af Outflow=26.43 cfs 1.736 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=576.00' Storage=62,935 cf Inflow=42.93 cfs 1.933 af
Primary=0.72 cfs 1.504 af Secondary=1.25 cfs 0.131 af Outflow=1.97 cfs 1.635 af

Link 5L: Outflow (@ CB 54) Inflow=3.48 cfs 2.596 af
Primary=3.48 cfs 2.596 af

Total Runoff Area = 10.500 ac Runoff Volume = 3.026 af Average Runoff Depth = 3.46"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

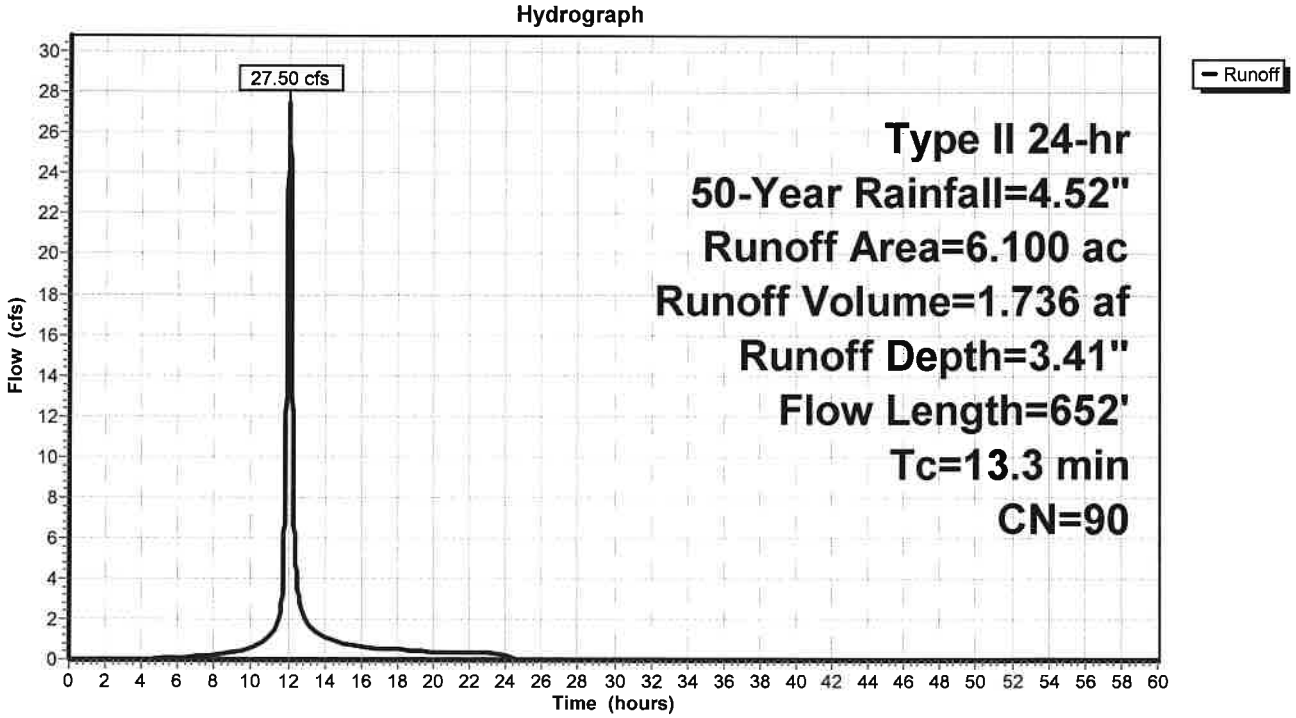
Runoff = 27.50 cfs @ 12.05 hrs, Volume= 1.736 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	4.52	3.41	0.00
1.00	0.05	0.00	0.00	53.00	4.52	3.41	0.00
2.00	0.10	0.00	0.00	54.00	4.52	3.41	0.00
3.00	0.16	0.00	0.00	55.00	4.52	3.41	0.00
4.00	0.22	0.00	0.00	56.00	4.52	3.41	0.00
5.00	0.28	0.00	0.04	57.00	4.52	3.41	0.00
6.00	0.36	0.02	0.09	58.00	4.52	3.41	0.00
7.00	0.45	0.04	0.16	59.00	4.52	3.41	0.00
8.00	0.54	0.07	0.23	60.00	4.52	3.41	0.00
9.00	0.66	0.13	0.39				
10.00	0.82	0.21	0.57				
11.00	1.06	0.36	1.16				
12.00	3.00	1.98	**25.18**				
13.00	3.49	2.44	**1.87**				
14.00	3.71	2.64	1.08				
15.00	3.86	2.78	0.83				
16.00	3.98	2.90	0.64				
17.00	4.08	2.99	0.55				
18.00	4.16	3.07	0.49				
19.00	4.24	3.15	0.42				
20.00	4.30	3.21	0.36				
21.00	4.36	3.26	0.33				
22.00	4.42	3.32	0.32				
23.00	4.47	3.37	0.31				
24.00	**4.52**	**3.41**	0.30				
25.00	4.52	3.41	0.00				
26.00	4.52	3.41	0.00				
27.00	4.52	3.41	0.00				
28.00	4.52	3.41	0.00				
29.00	4.52	3.41	0.00				
30.00	4.52	3.41	0.00				
31.00	4.52	3.41	0.00				
32.00	4.52	3.41	0.00				
33.00	4.52	3.41	0.00				
34.00	4.52	3.41	0.00				
35.00	4.52	3.41	0.00				
36.00	4.52	3.41	0.00				
37.00	4.52	3.41	0.00				
38.00	4.52	3.41	0.00				
39.00	4.52	3.41	0.00				
40.00	4.52	3.41	0.00				
41.00	4.52	3.41	0.00				
42.00	4.52	3.41	0.00				
43.00	4.52	3.41	0.00				
44.00	4.52	3.41	0.00				
45.00	4.52	3.41	0.00				
46.00	4.52	3.41	0.00				
47.00	4.52	3.41	0.00				
48.00	4.52	3.41	0.00				
49.00	4.52	3.41	0.00				
50.00	4.52	3.41	0.00				
51.00	4.52	3.41	0.00				

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

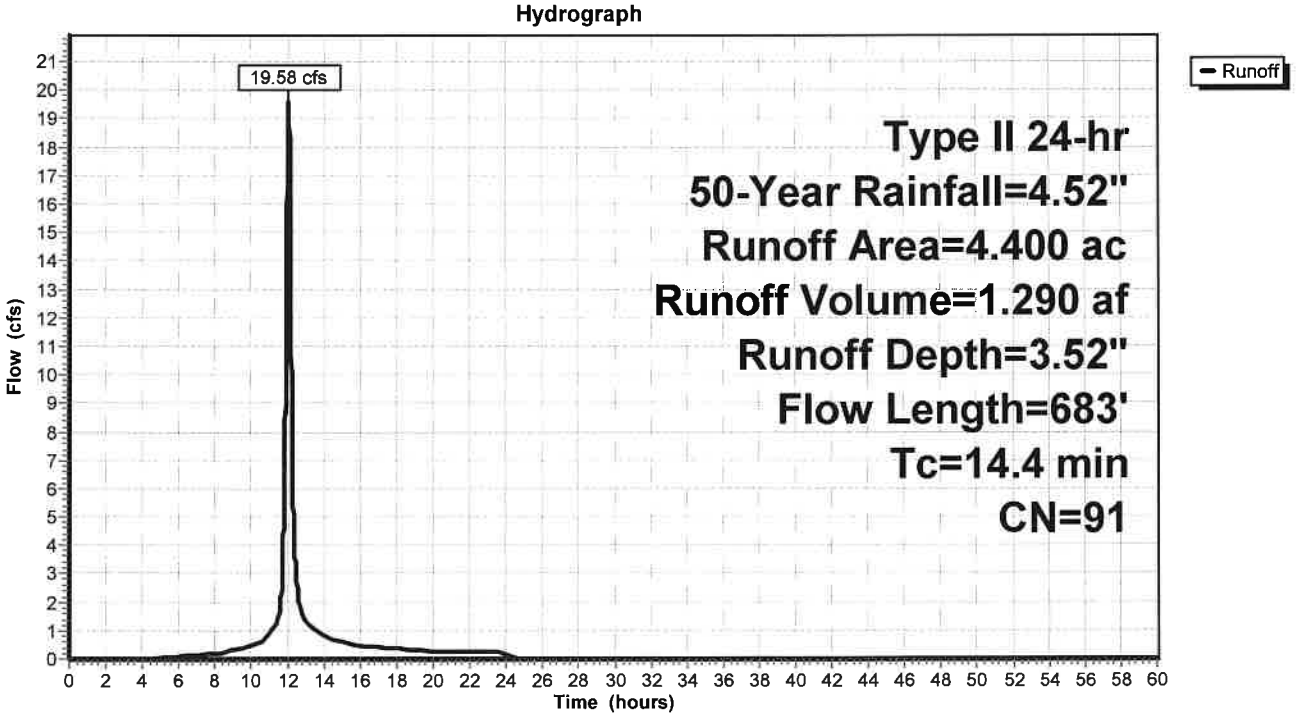
Runoff = 19.58 cfs @ 12.06 hrs, Volume= 1.290 af, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.10	0.00	0.00
3.00	0.16	0.00	0.00
4.00	0.22	0.00	0.00
5.00	0.28	0.01	0.04
6.00	0.36	0.02	0.08
7.00	0.45	0.05	0.13
8.00	0.54	0.09	0.19
9.00	0.66	0.15	0.31
10.00	0.82	0.24	0.44
11.00	1.06	0.40	0.88
12.00	3.00	2.07	**17.36**
13.00	3.49	2.53	**1.38**
14.00	3.71	2.74	0.79
15.00	3.86	2.88	0.60
16.00	3.98	3.00	0.47
17.00	4.08	3.09	0.40
18.00	4.16	3.17	0.36
19.00	4.24	3.25	0.31
20.00	4.30	3.31	0.26
21.00	4.36	3.36	0.24
22.00	4.42	3.42	0.23
23.00	4.47	3.47	0.22
24.00	**4.52**	**3.52**	0.21
25.00	4.52	3.52	0.00
26.00	4.52	3.52	0.00
27.00	4.52	3.52	0.00
28.00	4.52	3.52	0.00
29.00	4.52	3.52	0.00
30.00	4.52	3.52	0.00
31.00	4.52	3.52	0.00
32.00	4.52	3.52	0.00
33.00	4.52	3.52	0.00
34.00	4.52	3.52	0.00
35.00	4.52	3.52	0.00
36.00	4.52	3.52	0.00
37.00	4.52	3.52	0.00
38.00	4.52	3.52	0.00
39.00	4.52	3.52	0.00
40.00	4.52	3.52	0.00
41.00	4.52	3.52	0.00
42.00	4.52	3.52	0.00
43.00	4.52	3.52	0.00
44.00	4.52	3.52	0.00
45.00	4.52	3.52	0.00
46.00	4.52	3.52	0.00
47.00	4.52	3.52	0.00
48.00	4.52	3.52	0.00
49.00	4.52	3.52	0.00
50.00	4.52	3.52	0.00
51.00	4.52	3.52	0.00
52.00	4.52	3.52	0.00
53.00	4.52	3.52	0.00
54.00	4.52	3.52	0.00
55.00	4.52	3.52	0.00
56.00	4.52	3.52	0.00
57.00	4.52	3.52	0.00
58.00	4.52	3.52	0.00
59.00	4.52	3.52	0.00
60.00	4.52	3.52	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 3.41" for 50-Year event
Inflow = 27.50 cfs @ 12.05 hrs, Volume= 1.736 af
Outflow = 26.43 cfs @ 12.08 hrs, Volume= 1.736 af, Atten= 4%, Lag= 1.9 min
Primary = 2.91 cfs @ 12.08 hrs, Volume= 1.092 af
Secondary = 23.52 cfs @ 12.08 hrs, Volume= 0.644 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.17' @ 12.08 hrs Surf.Area= 10,144 sf Storage= 10,953 cf

Plug-Flow detention time= 109.3 min calculated for 1.736 af (100% of inflow)
Center-of-Mass det. time= 109.3 min (907.1 - 797.8)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

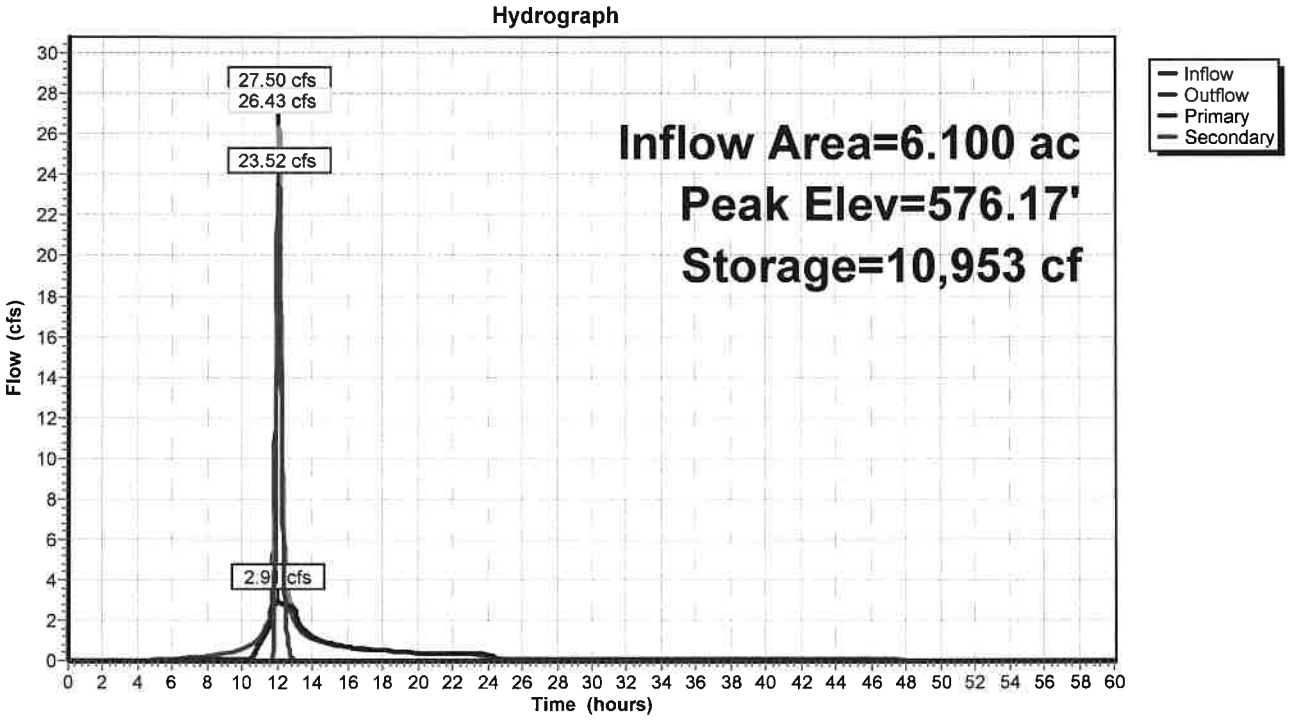
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.91 cfs @ 12.08 hrs HW=576.17' (Free Discharge)
└─**1=8" pipe** (Barrel Controls 2.91 cfs @ 8.34 fps)
  ├─**2=Grate** (Passes < 5.49 cfs potential flow)
  └─**3=Exfiltration** (Passes < 0.06 cfs potential flow)

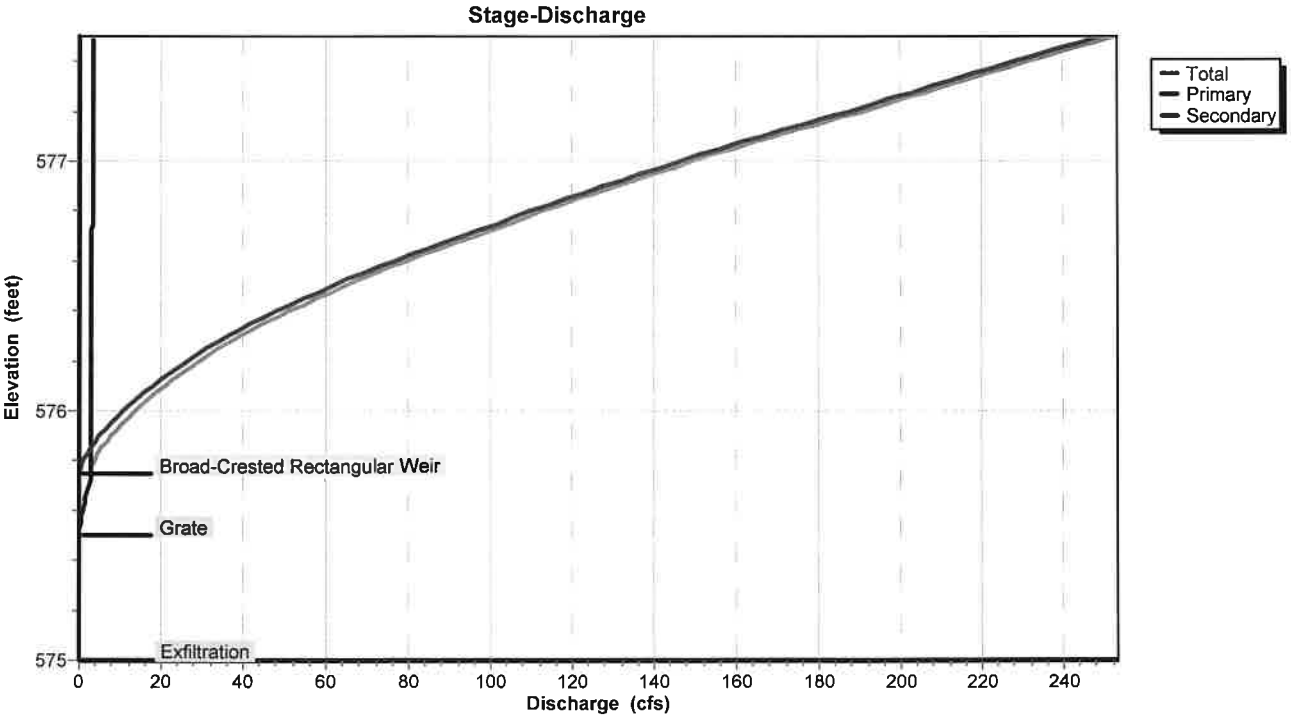
Secondary OutFlow Max=23.50 cfs @ 12.08 hrs HW=576.17' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 23.50 cfs @ 1.88 fps)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

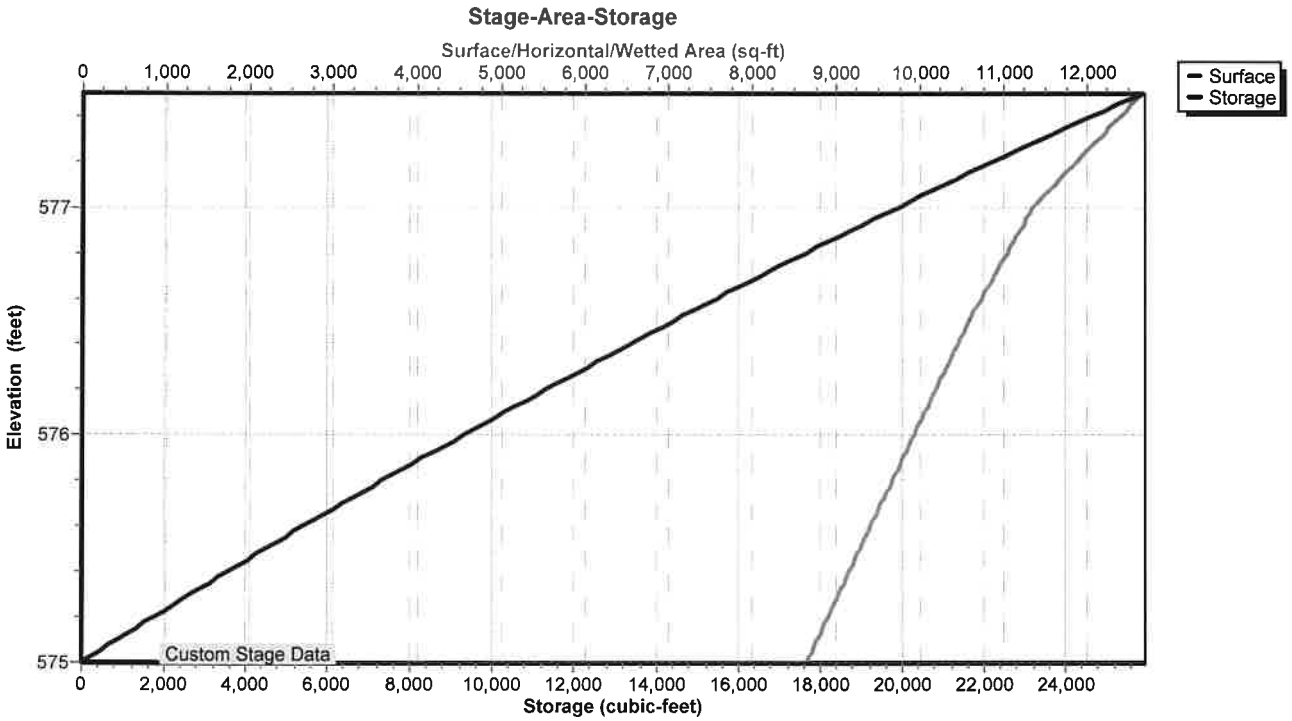


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.09	180	575.02	0.04	0.04	0.00
8.00	0.23	959	575.11	0.05	0.05	0.00
10.00	0.57	3,333	575.38	0.05	0.05	0.00
12.00	**25.18**	**10,302**	**576.10**	**21.15**	**2.88**	**18.27**
14.00	**1.08**	**5,594**	**575.62**	**1.18**	**1.18**	**0.00**
16.00	0.64	5,233	575.58	0.68	0.68	0.00
18.00	0.49	5,081	575.56	0.51	0.51	0.00
20.00	0.36	4,961	575.55	0.38	0.38	0.00
22.00	0.32	4,907	575.55	0.33	0.33	0.00
24.00	0.30	4,876	575.54	0.30	0.30	0.00
26.00	0.00	4,297	575.48	0.06	0.06	0.00
28.00	0.00	3,900	575.44	0.05	0.05	0.00
30.00	0.00	3,508	575.39	0.05	0.05	0.00
32.00	0.00	3,118	575.35	0.05	0.05	0.00
34.00	0.00	2,732	575.31	0.05	0.05	0.00
36.00	0.00	2,350	575.27	0.05	0.05	0.00
38.00	0.00	1,970	575.22	0.05	0.05	0.00
40.00	0.00	1,594	575.18	0.05	0.05	0.00
42.00	0.00	1,221	575.14	0.05	0.05	0.00
44.00	0.00	852	575.10	0.05	0.05	0.00
46.00	0.00	486	575.06	0.05	0.05	0.00
48.00	0.00	140	575.02	0.03	0.03	0.00
50.00	0.00	26	575.00	0.01	0.01	0.00
52.00	0.00	5	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 5.27" for 50-Year event
Inflow = 42.93 cfs @ 12.07 hrs, Volume= 1.933 af
Outflow = 1.97 cfs @ 12.73 hrs, Volume= 1.635 af, Atten= 95%, Lag= 39.8 min
Primary = 0.72 cfs @ 12.73 hrs, Volume= 1.504 af
Secondary = 1.25 cfs @ 12.73 hrs, Volume= 0.131 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.00' @ 12.73 hrs Surf.Area= 66,838 sf Storage= 62,935 cf

Plug-Flow detention time= 900.4 min calculated for 1.635 af (85% of inflow)
Center-of-Mass det. time= 844.0 min (1,616.3 - 772.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

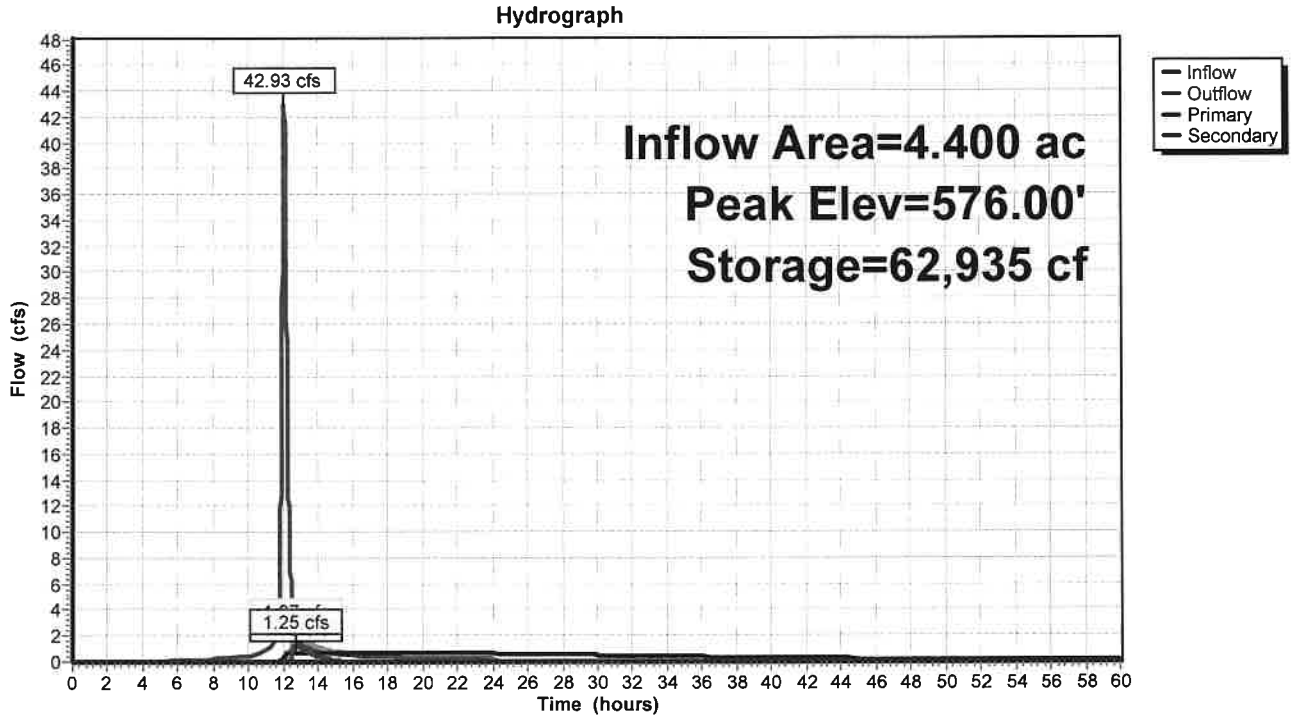
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.72 cfs @ 12.73 hrs HW=576.00' (Free Discharge)
↑—**1=12" outlet pipe** (Passes 0.72 cfs of 2.71 cfs potential flow)
↑—**2=low flow outlet pipe** (Inlet Controls 0.72 cfs @ 3.68 fps)
—**3=Grate** (Controls 0.00 cfs)

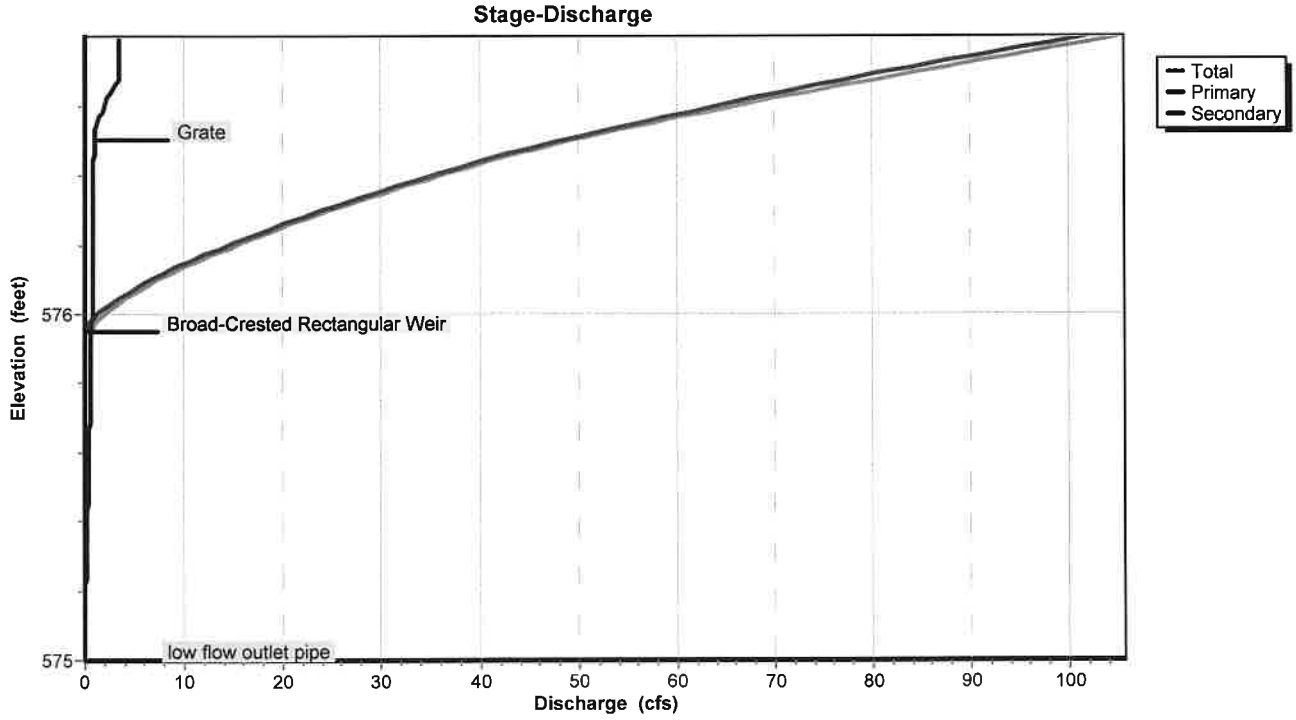
Secondary OutFlow Max=1.25 cfs @ 12.73 hrs HW=576.00' (Free Discharge)
↑—**4=Broad-Crested Rectangular Weir** (Weir Controls 1.25 cfs @ 0.64 fps)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

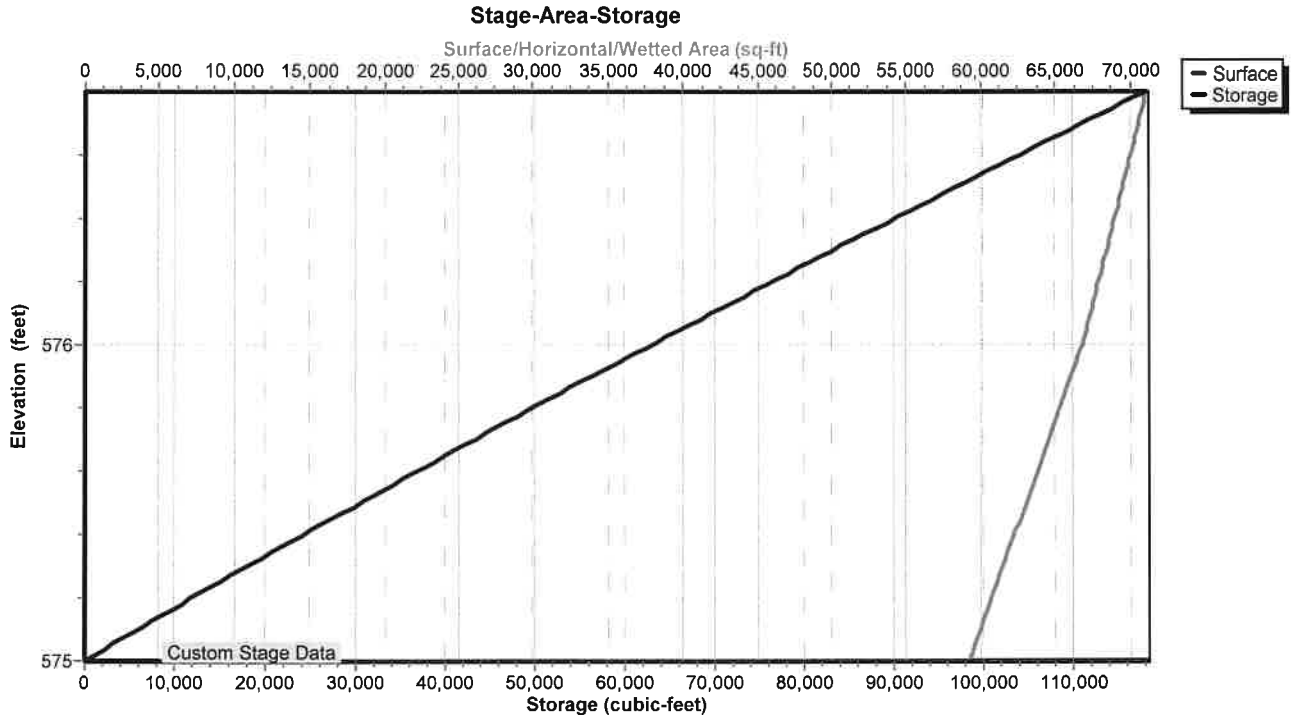


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	1	575.00	0.00	0.00	0.00
6.00	0.08	300	575.01	0.00	0.00	0.00
8.00	0.19	1,265	575.02	0.00	0.00	0.00
10.00	0.44	3,420	575.06	0.01	0.01	0.00
12.00	**35.63**	**24,163**	**575.40**	**0.26**	**0.26**	**0.00**
14.00	**0.79**	**61,204**	**575.97**	**1.11**	**0.71**	**0.40**
16.00	0.47	59,536	575.95	0.70	0.70	0.00
18.00	0.36	57,495	575.92	0.68	0.68	0.00
20.00	0.26	54,889	575.88	0.66	0.66	0.00
22.00	0.23	51,975	575.83	0.64	0.64	0.00
24.00	0.21	49,094	575.79	0.61	0.61	0.00
26.00	0.00	45,010	575.73	0.56	0.56	0.00
28.00	0.00	41,189	575.67	0.50	0.50	0.00
30.00	0.00	37,665	575.61	0.47	0.47	0.00
32.00	0.00	34,410	575.56	0.43	0.43	0.00
34.00	0.00	31,481	575.51	0.38	0.38	0.00
36.00	0.00	28,873	575.47	0.34	0.34	0.00
38.00	0.00	26,562	575.44	0.30	0.30	0.00
40.00	0.00	24,517	575.40	0.27	0.27	0.00
42.00	0.00	22,705	575.37	0.24	0.24	0.00
44.00	0.00	21,097	575.35	0.21	0.21	0.00
46.00	0.00	19,666	575.33	0.19	0.19	0.00
48.00	0.00	18,389	575.30	0.17	0.17	0.00
50.00	0.00	17,245	575.29	0.15	0.15	0.00
52.00	0.00	16,216	575.27	0.14	0.14	0.00
54.00	0.00	15,288	575.25	0.12	0.12	0.00
56.00	0.00	14,449	575.24	0.11	0.11	0.00
58.00	0.00	13,686	575.23	0.10	0.10	0.00
60.00	0.00	12,992	575.22	0.09	0.09	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

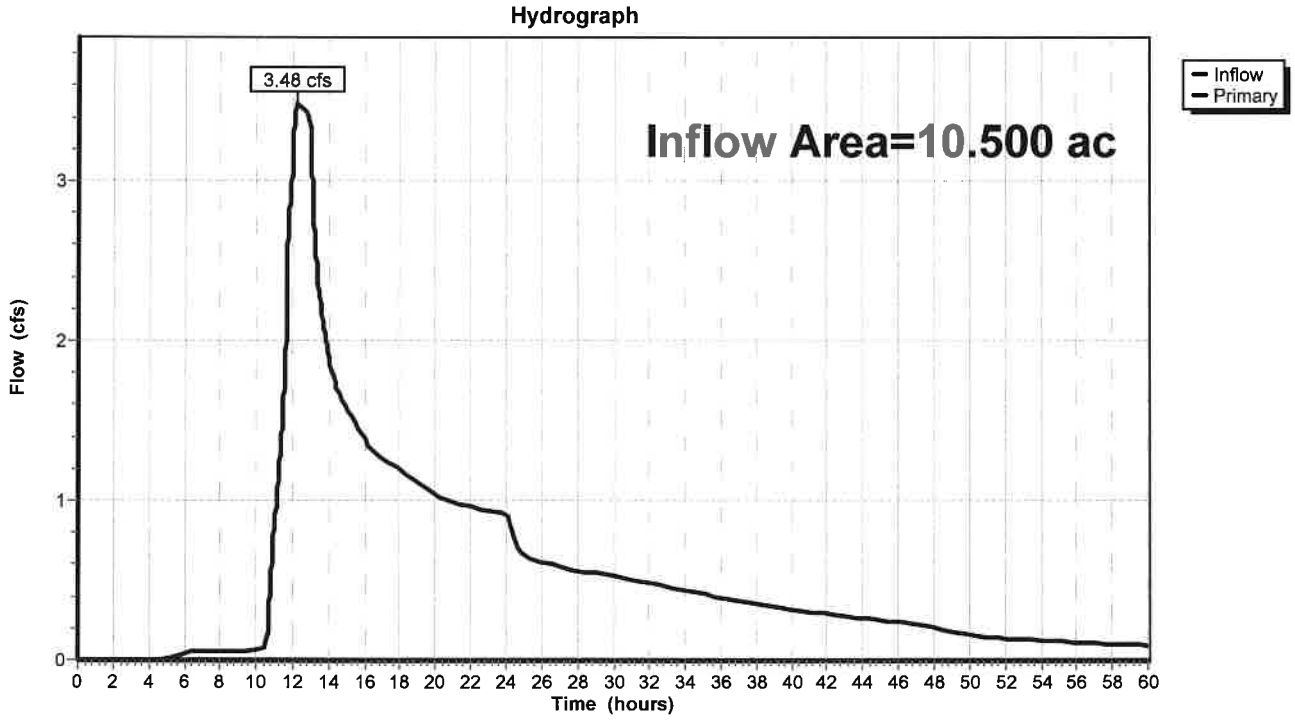
Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 2.97" for 50-Year event
Inflow = 3.48 cfs @ 12.21 hrs, Volume= 2.596 af
Primary = 3.48 cfs @ 12.21 hrs, Volume= 2.596 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.14	0.00	0.14
1.00	0.00	0.00	0.00	53.00	0.13	0.00	0.13
2.00	0.00	0.00	0.00	54.00	0.12	0.00	0.12
3.00	0.00	0.00	0.00	55.00	0.12	0.00	0.12
4.00	0.00	0.00	0.00	56.00	0.11	0.00	0.11
5.00	0.01	0.00	0.01	57.00	0.11	0.00	0.11
6.00	0.04	0.00	0.04	58.00	0.10	0.00	0.10
7.00	0.05	0.00	0.05	59.00	0.10	0.00	0.10
8.00	0.05	0.00	0.05	60.00	0.09	0.00	0.09
9.00	0.06	0.00	0.06				
10.00	0.06	0.00	0.06				
11.00	0.88	0.00	0.88				
12.00	**3.14**	0.00	**3.14**				
13.00	**3.25**	0.00	**3.25**				
14.00	1.89	0.00	1.89				
15.00	1.57	0.00	1.57				
16.00	1.38	0.00	1.38				
17.00	1.26	0.00	1.26				
18.00	1.19	0.00	1.19				
19.00	1.11	0.00	1.11				
20.00	1.04	0.00	1.04				
21.00	0.99	0.00	0.99				
22.00	0.96	0.00	0.96				
23.00	0.94	0.00	0.94				
24.00	0.91	0.00	0.91				
25.00	0.65	0.00	0.65				
26.00	0.62	0.00	0.62				
27.00	0.59	0.00	0.59				
28.00	0.56	0.00	0.56				
29.00	0.55	0.00	0.55				
30.00	0.53	0.00	0.53				
31.00	0.51	0.00	0.51				
32.00	0.48	0.00	0.48				
33.00	0.46	0.00	0.46				
34.00	0.44	0.00	0.44				
35.00	0.42	0.00	0.42				
36.00	0.39	0.00	0.39				
37.00	0.37	0.00	0.37				
38.00	0.35	0.00	0.35				
39.00	0.34	0.00	0.34				
40.00	0.32	0.00	0.32				
41.00	0.30	0.00	0.30				
42.00	0.29	0.00	0.29				
43.00	0.27	0.00	0.27				
44.00	0.26	0.00	0.26				
45.00	0.25	0.00	0.25				
46.00	0.24	0.00	0.24				
47.00	0.23	0.00	0.23				
48.00	0.20	0.00	0.20				
49.00	0.17	0.00	0.17				
50.00	0.16	0.00	0.16				
51.00	0.15	0.00	0.15				

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=4.15"
Flow Length=652' Tc=13.3 min CN=90 Runoff=33.05 cfs 2.108 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=4.25"
Flow Length=683' Tc=14.4 min CN=91 Runoff=23.44 cfs 1.560 af

Pond 1P: Bioretention Area 3 Peak Elev=576.23' Storage=11,585 cf Inflow=33.05 cfs 2.108 af
Primary=2.94 cfs 1.275 af Secondary=28.98 cfs 0.833 af Outflow=31.92 cfs 2.108 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=576.11' Storage=70,722 cf Inflow=52.24 cfs 2.392 af
Primary=0.78 cfs 1.554 af Secondary=7.80 cfs 0.534 af Outflow=8.57 cfs 2.088 af

Link 5L: Outflow (@ CB 54) Inflow=3.60 cfs 2.829 af
Primary=3.60 cfs 2.829 af

Total Runoff Area = 10.500 ac Runoff Volume = 3.668 af Average Runoff Depth = 4.19"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

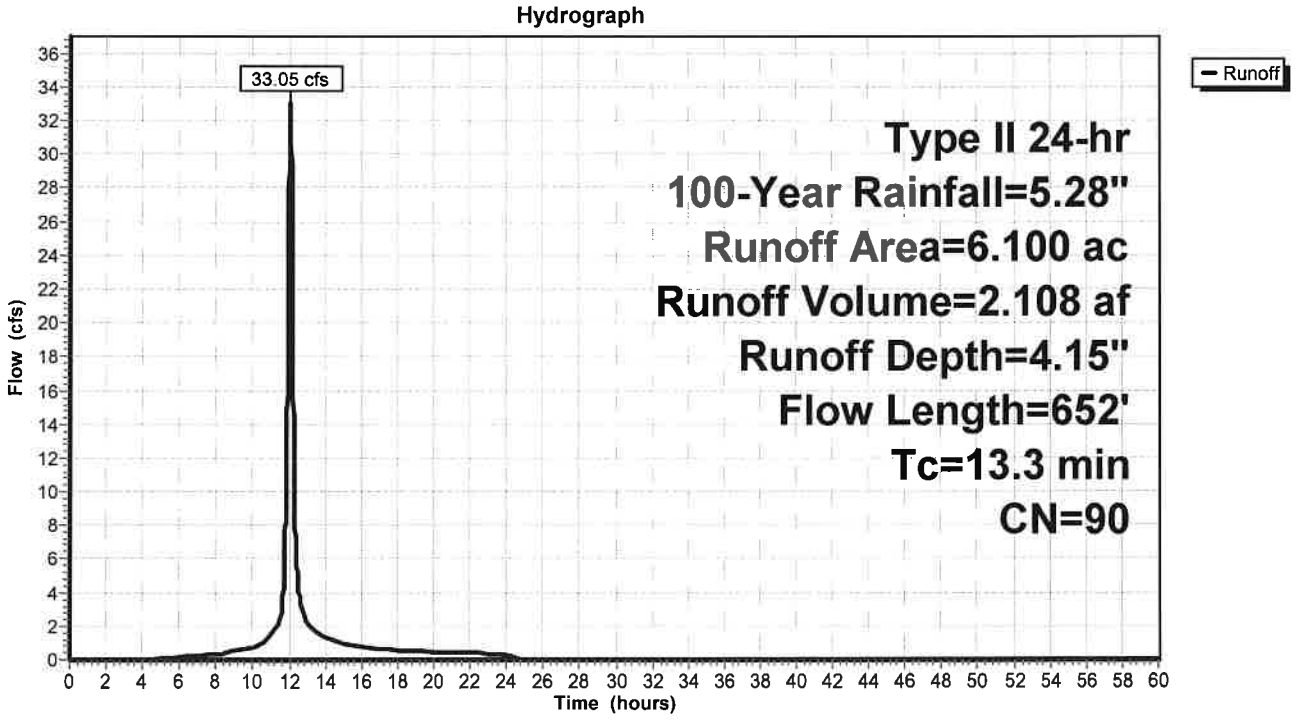
Runoff = 33.05 cfs @ 12.05 hrs, Volume= 2.108 af, Depth= 4.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.28	4.15	0.00
1.00	0.06	0.00	0.00	53.00	5.28	4.15	0.00
2.00	0.12	0.00	0.00	54.00	5.28	4.15	0.00
3.00	0.18	0.00	0.00	55.00	5.28	4.15	0.00
4.00	0.25	0.00	0.01	56.00	5.28	4.15	0.00
5.00	0.33	0.01	0.08	57.00	5.28	4.15	0.00
6.00	0.42	0.03	0.15	58.00	5.28	4.15	0.00
7.00	0.52	0.06	0.23	59.00	5.28	4.15	0.00
8.00	0.63	0.11	0.32	60.00	5.28	4.15	0.00
9.00	0.78	0.18	0.52				
10.00	0.96	0.29	0.74				
11.00	1.24	0.49	1.47				
12.00	3.50	2.45	**30.36**				
13.00	4.08	2.99	**2.21**				
14.00	4.33	3.23	1.27				
15.00	4.51	3.40	0.98				
16.00	4.65	3.54	0.76				
17.00	4.76	3.65	0.66				
18.00	4.86	3.74	0.58				
19.00	4.95	3.83	0.50				
20.00	5.03	3.90	0.42				
21.00	5.09	3.97	0.40				
22.00	5.16	4.03	0.38				
23.00	5.22	4.09	0.36				
24.00	**5.28**	**4.15**	0.35				
25.00	5.28	4.15	0.00				
26.00	5.28	4.15	0.00				
27.00	5.28	4.15	0.00				
28.00	5.28	4.15	0.00				
29.00	5.28	4.15	0.00				
30.00	5.28	4.15	0.00				
31.00	5.28	4.15	0.00				
32.00	5.28	4.15	0.00				
33.00	5.28	4.15	0.00				
34.00	5.28	4.15	0.00				
35.00	5.28	4.15	0.00				
36.00	5.28	4.15	0.00				
37.00	5.28	4.15	0.00				
38.00	5.28	4.15	0.00				
39.00	5.28	4.15	0.00				
40.00	5.28	4.15	0.00				
41.00	5.28	4.15	0.00				
42.00	5.28	4.15	0.00				
43.00	5.28	4.15	0.00				
44.00	5.28	4.15	0.00				
45.00	5.28	4.15	0.00				
46.00	5.28	4.15	0.00				
47.00	5.28	4.15	0.00				
48.00	5.28	4.15	0.00				
49.00	5.28	4.15	0.00				
50.00	5.28	4.15	0.00				
51.00	5.28	4.15	0.00				

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

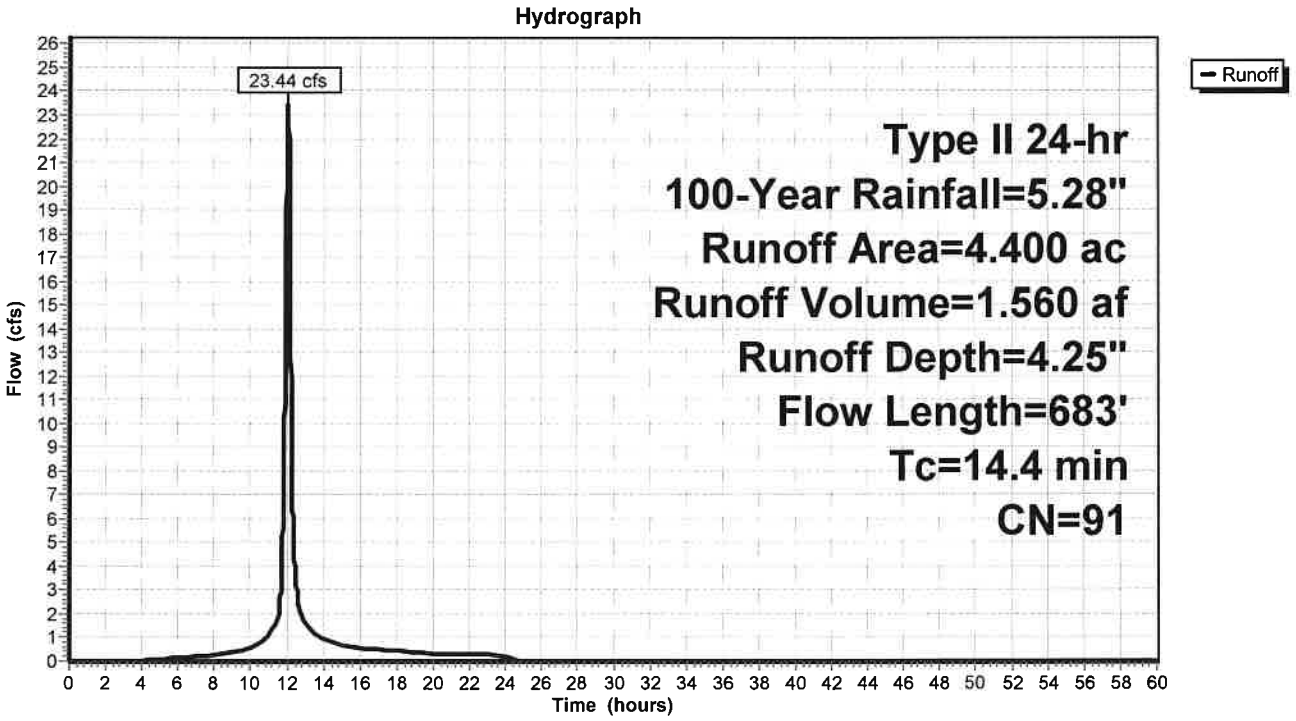
Runoff = 23.44 cfs @ 12.06 hrs, Volume= 1.560 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.18	0.00	0.00
4.00	0.25	0.00	0.02
5.00	0.33	0.02	0.07
6.00	0.42	0.04	0.13
7.00	0.52	0.08	0.19
8.00	0.63	0.13	0.25
9.00	0.78	0.21	0.41
10.00	0.96	0.33	0.57
11.00	1.24	0.54	1.10
12.00	3.50	2.54	**20.85**
13.00	4.08	3.09	**1.64**
14.00	4.33	3.33	0.94
15.00	4.51	3.50	0.71
16.00	4.65	3.64	0.56
17.00	4.76	3.75	0.48
18.00	4.86	3.85	0.42
19.00	4.95	3.93	0.36
20.00	5.03	4.01	0.31
21.00	5.09	4.07	0.29
22.00	5.16	4.14	0.28
23.00	5.22	4.20	0.26
24.00	**5.28**	**4.25**	0.25
25.00	5.28	4.25	0.00
26.00	5.28	4.25	0.00
27.00	5.28	4.25	0.00
28.00	5.28	4.25	0.00
29.00	5.28	4.25	0.00
30.00	5.28	4.25	0.00
31.00	5.28	4.25	0.00
32.00	5.28	4.25	0.00
33.00	5.28	4.25	0.00
34.00	5.28	4.25	0.00
35.00	5.28	4.25	0.00
36.00	5.28	4.25	0.00
37.00	5.28	4.25	0.00
38.00	5.28	4.25	0.00
39.00	5.28	4.25	0.00
40.00	5.28	4.25	0.00
41.00	5.28	4.25	0.00
42.00	5.28	4.25	0.00
43.00	5.28	4.25	0.00
44.00	5.28	4.25	0.00
45.00	5.28	4.25	0.00
46.00	5.28	4.25	0.00
47.00	5.28	4.25	0.00
48.00	5.28	4.25	0.00
49.00	5.28	4.25	0.00
50.00	5.28	4.25	0.00
51.00	5.28	4.25	0.00
52.00	5.28	4.25	0.00
53.00	5.28	4.25	0.00
54.00	5.28	4.25	0.00
55.00	5.28	4.25	0.00
56.00	5.28	4.25	0.00
57.00	5.28	4.25	0.00
58.00	5.28	4.25	0.00
59.00	5.28	4.25	0.00
60.00	5.28	4.25	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 4.15" for 100-Year event
Inflow = 33.05 cfs @ 12.05 hrs, Volume= 2.108 af
Outflow = 31.92 cfs @ 12.08 hrs, Volume= 2.108 af, Atten= 3%, Lag= 1.8 min
Primary = 2.94 cfs @ 12.08 hrs, Volume= 1.275 af
Secondary = 28.98 cfs @ 12.08 hrs, Volume= 0.833 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.23' @ 12.08 hrs Surf.Area= 10,226 sf Storage= 11,585 cf

Plug-Flow detention time= 93.7 min calculated for 2.108 af (100% of inflow)
Center-of-Mass det. time= 93.9 min (886.3 - 792.4)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

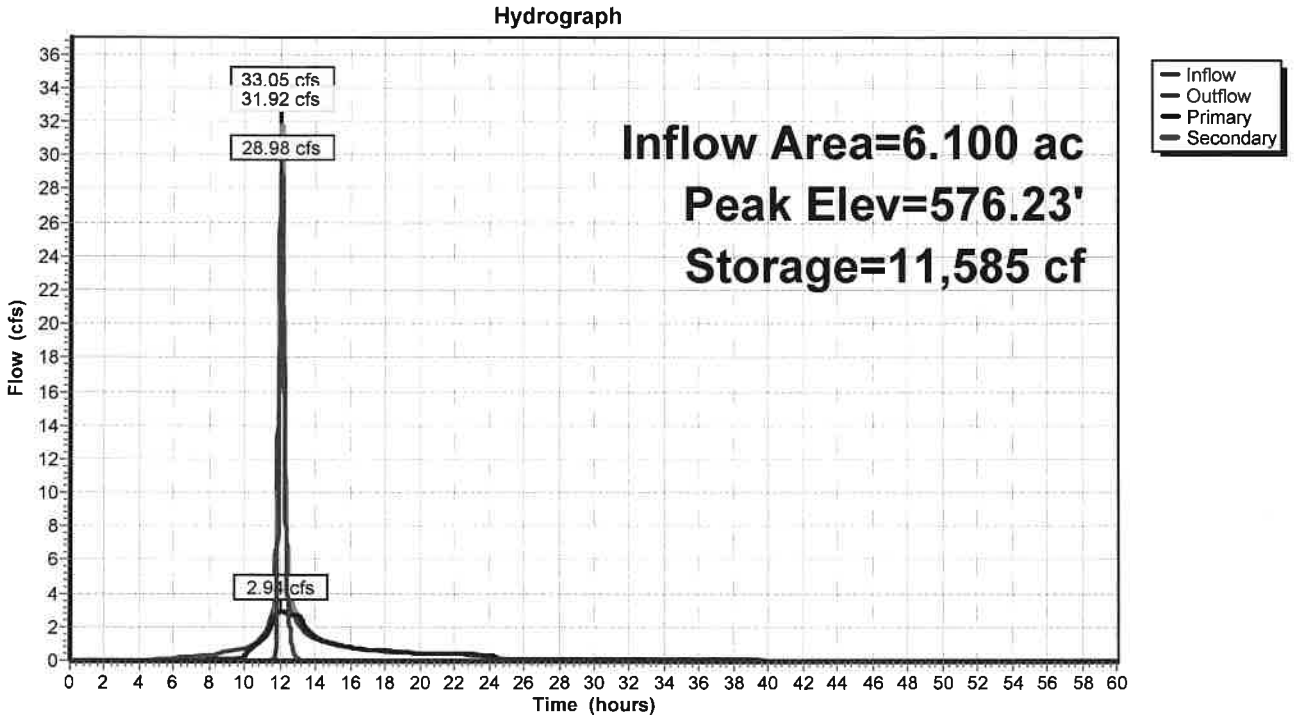
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.94 cfs @ 12.08 hrs HW=576.23' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.94 cfs @ 8.43 fps)
  ├**2=Grate** (Passes < 5.74 cfs potential flow)
  └**3=Exfiltration** (Passes < 0.06 cfs potential flow)

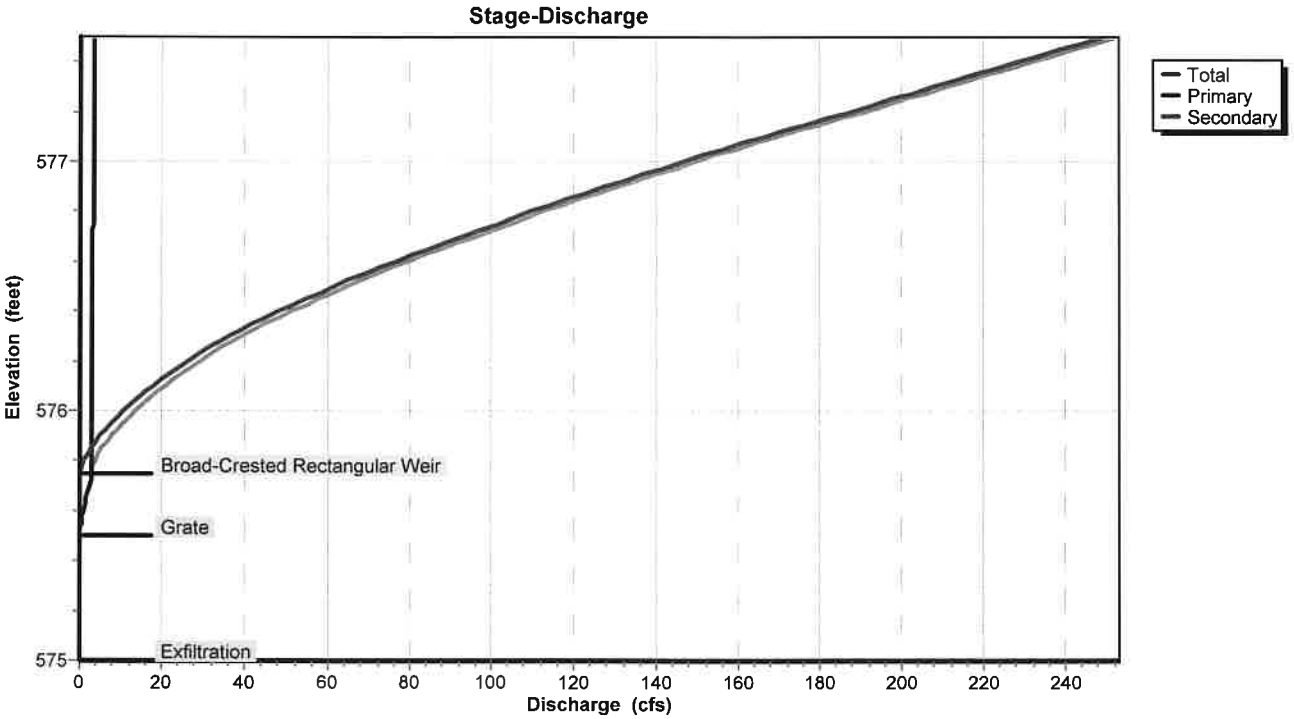
Secondary OutFlow Max=28.93 cfs @ 12.08 hrs HW=576.23' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 28.93 cfs @ 2.02 fps)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

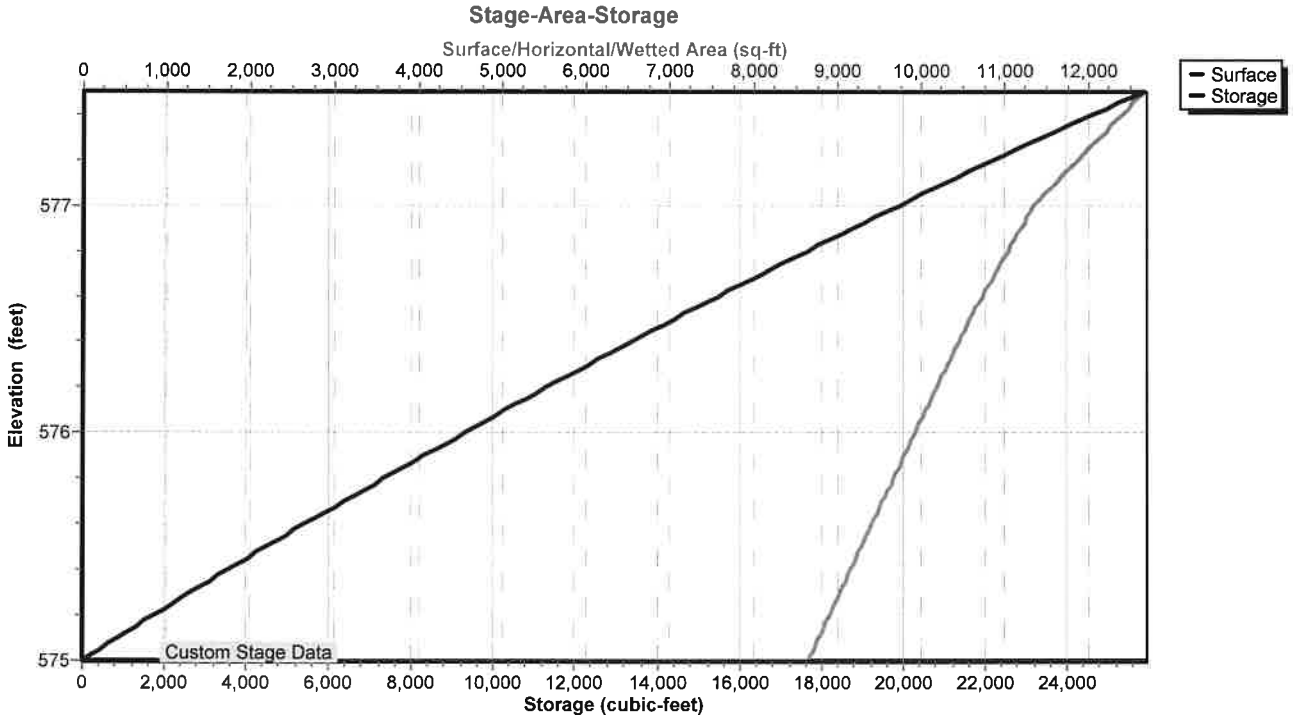


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.01	6	575.00	0.00	0.00	0.00
6.00	0.15	359	575.04	0.05	0.05	0.00
8.00	0.32	1,651	575.19	0.05	0.05	0.00
10.00	0.74	4,857	575.54	0.28	0.28	0.00
12.00	**30.36**	**10,896**	**576.16**	**25.95**	**2.91**	**23.04**
14.00	**1.27**	**5,731**	**575.63**	**1.39**	**1.39**	**0.00**
16.00	0.76	5,329	575.59	0.81	0.81	0.00
18.00	0.58	5,164	575.57	0.60	0.60	0.00
20.00	0.42	5,023	575.56	0.44	0.44	0.00
22.00	0.38	4,969	575.55	0.38	0.38	0.00
24.00	0.35	4,939	575.55	0.35	0.35	0.00
26.00	0.00	4,307	575.48	0.06	0.06	0.00
28.00	0.00	3,911	575.44	0.05	0.05	0.00
30.00	0.00	3,518	575.40	0.05	0.05	0.00
32.00	0.00	3,129	575.35	0.05	0.05	0.00
34.00	0.00	2,743	575.31	0.05	0.05	0.00
36.00	0.00	2,360	575.27	0.05	0.05	0.00
38.00	0.00	1,981	575.23	0.05	0.05	0.00
40.00	0.00	1,604	575.18	0.05	0.05	0.00
42.00	0.00	1,232	575.14	0.05	0.05	0.00
44.00	0.00	862	575.10	0.05	0.05	0.00
46.00	0.00	496	575.06	0.05	0.05	0.00
48.00	0.00	147	575.02	0.03	0.03	0.00
50.00	0.00	28	575.00	0.01	0.01	0.00
52.00	0.00	5	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 6.52" for 100-Year event
Inflow = 52.24 cfs @ 12.07 hrs, Volume= 2.392 af
Outflow = 8.57 cfs @ 12.41 hrs, Volume= 2.088 af, Atten= 84%, Lag= 20.7 min
Primary = 0.78 cfs @ 12.41 hrs, Volume= 1.554 af
Secondary = 7.80 cfs @ 12.41 hrs, Volume= 0.534 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.11' @ 12.41 hrs Surf.Area= 67,462 sf Storage= 70,722 cf

Plug-Flow detention time= 739.0 min calculated for 2.088 af (87% of inflow)
Center-of-Mass det. time= 688.7 min (1,456.5 - 767.8)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

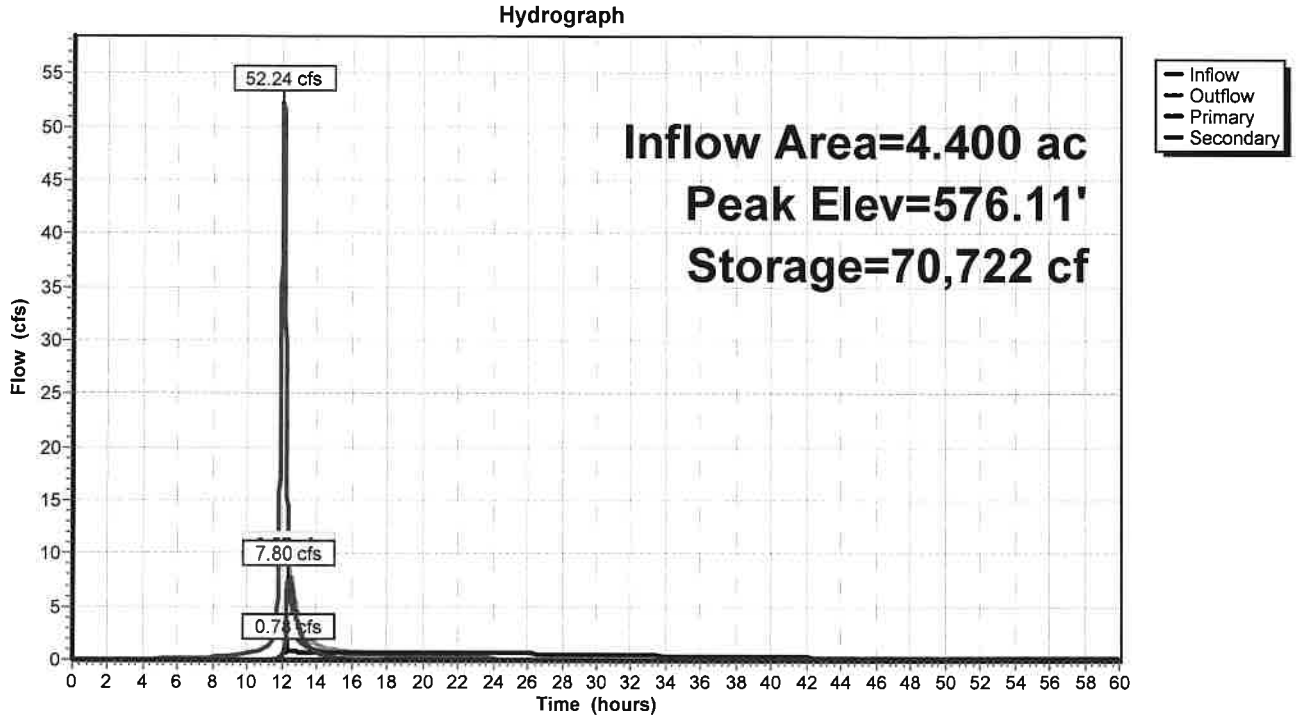
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.78 cfs @ 12.41 hrs HW=576.11' (Free Discharge)
└─**1=12" outlet pipe** (Passes 0.78 cfs of 2.84 cfs potential flow)
  ├─**2=low flow outlet pipe** (Inlet Controls 0.78 cfs @ 3.95 fps)
  └─**3=Grate** (Controls 0.00 cfs)

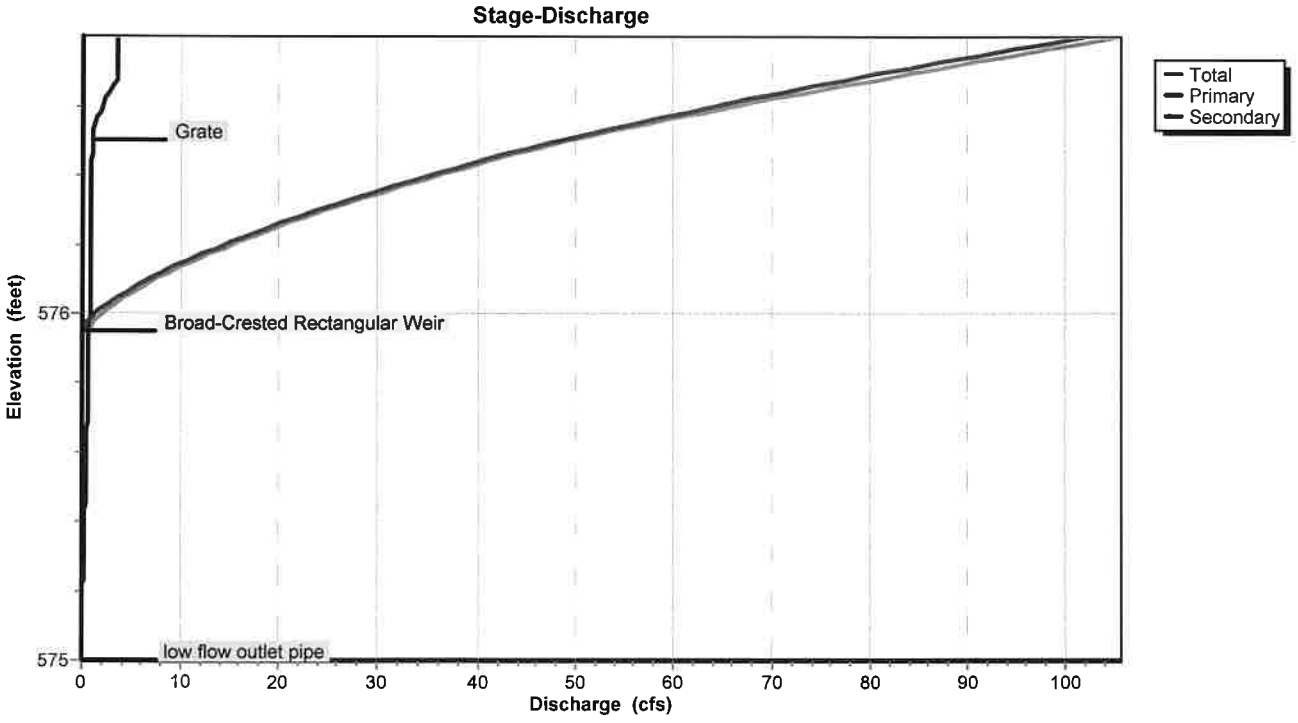
Secondary OutFlow Max=7.79 cfs @ 12.41 hrs HW=576.11' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 7.79 cfs @ 1.18 fps)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

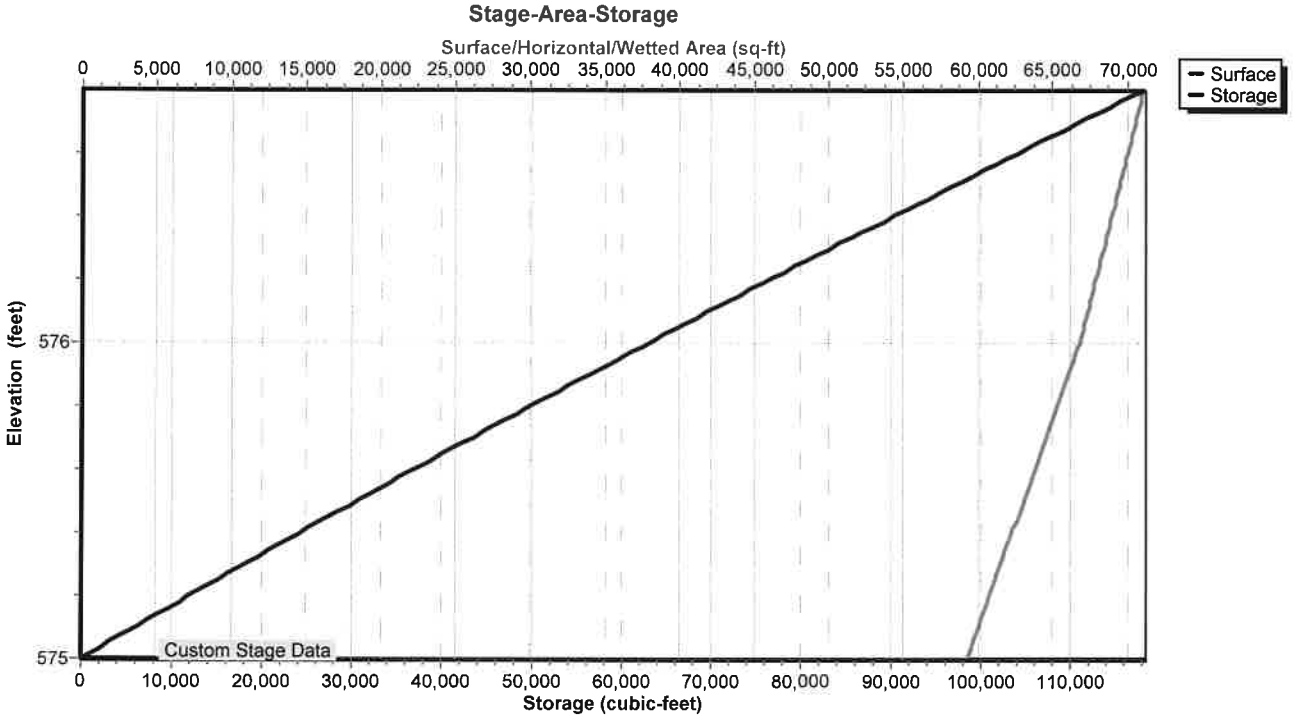


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.02	25	575.00	0.00	0.00	0.00
6.00	0.13	556	575.01	0.00	0.00	0.00
8.00	0.25	1,914	575.03	0.00	0.00	0.00
10.00	0.57	4,720	575.08	0.01	0.01	0.00
12.00	**43.89**	**31,253**	**575.51**	**0.38**	**0.38**	**0.00**
14.00	**0.94**	**61,894**	**575.98**	**1.43**	**0.71**	**0.72**
16.00	0.56	59,972	575.95	0.73	0.70	0.03
18.00	0.42	58,398	575.93	0.69	0.69	0.00
20.00	0.31	56,130	575.90	0.67	0.67	0.00
22.00	0.28	53,450	575.86	0.65	0.65	0.00
24.00	0.25	50,762	575.81	0.63	0.63	0.00
26.00	0.00	46,581	575.75	0.59	0.59	0.00
28.00	0.00	42,588	575.69	0.52	0.52	0.00
30.00	0.00	38,979	575.63	0.49	0.49	0.00
32.00	0.00	35,609	575.58	0.45	0.45	0.00
34.00	0.00	32,555	575.53	0.40	0.40	0.00
36.00	0.00	29,827	575.49	0.36	0.36	0.00
38.00	0.00	27,407	575.45	0.32	0.32	0.00
40.00	0.00	25,264	575.42	0.28	0.28	0.00
42.00	0.00	23,368	575.39	0.25	0.25	0.00
44.00	0.00	21,686	575.36	0.22	0.22	0.00
46.00	0.00	20,191	575.33	0.20	0.20	0.00
48.00	0.00	18,858	575.31	0.17	0.17	0.00
50.00	0.00	17,665	575.29	0.16	0.16	0.00
52.00	0.00	16,594	575.28	0.14	0.14	0.00
54.00	0.00	15,630	575.26	0.13	0.13	0.00
56.00	0.00	14,758	575.25	0.12	0.12	0.00
58.00	0.00	13,967	575.23	0.10	0.10	0.00
60.00	0.00	13,248	575.22	0.10	0.10	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

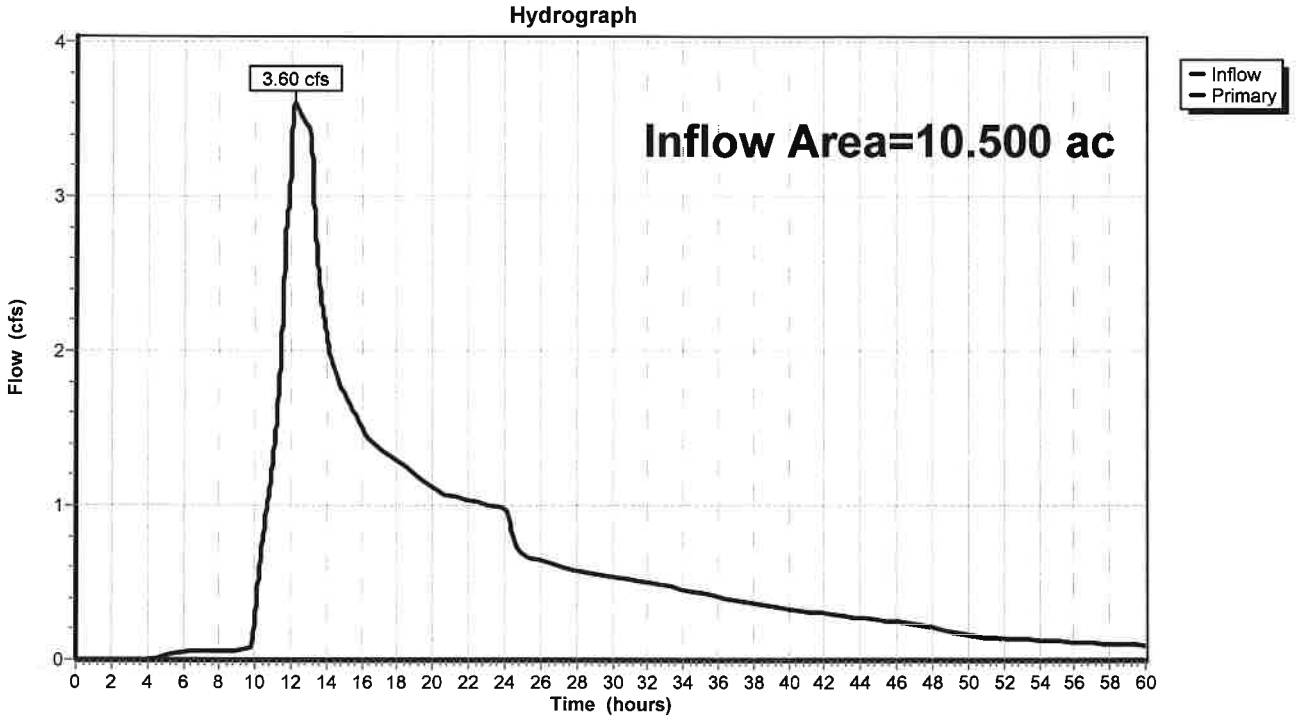
Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 3.23" for 100-Year event
Inflow = 3.60 cfs @ 12.19 hrs, Volume= 2.829 af
Primary = 3.60 cfs @ 12.19 hrs, Volume= 2.829 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

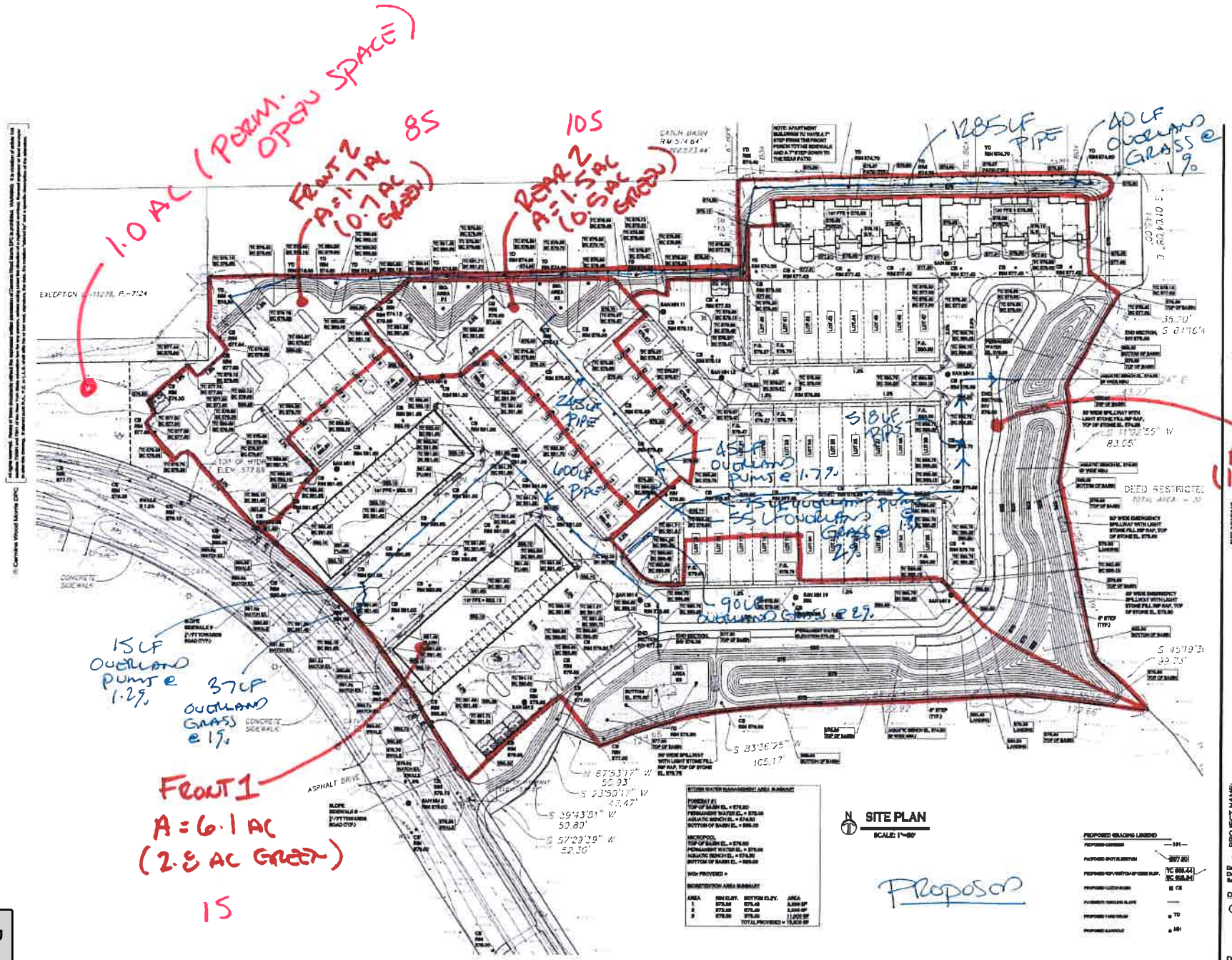
Hydrograph for Link 5L: Outflow (@ CB 54)

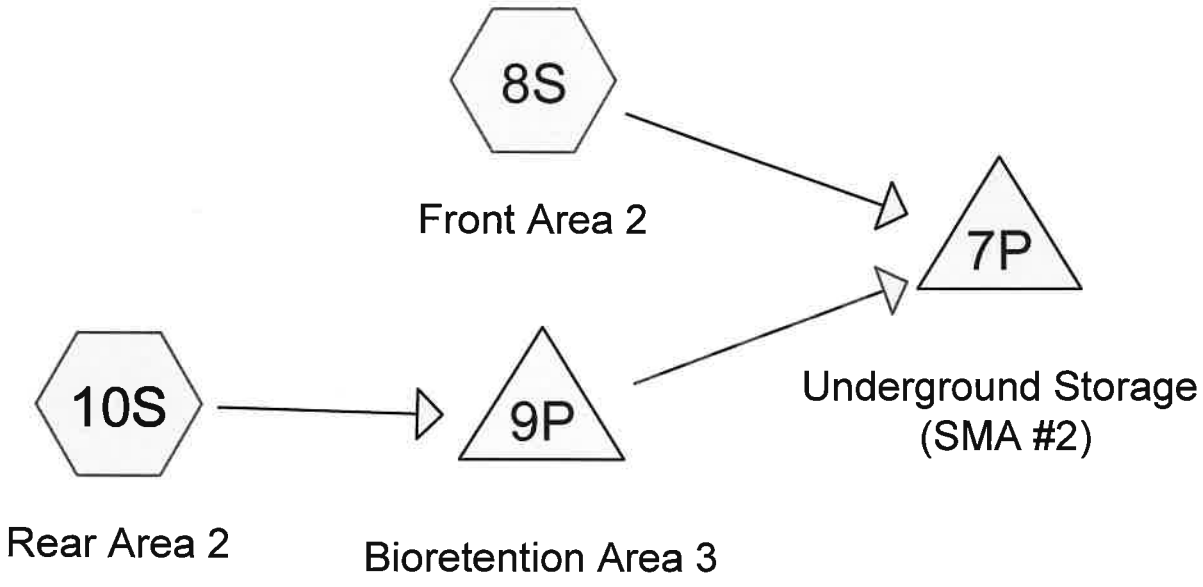
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.14	0.00	0.14
1.00	0.00	0.00	0.00	53.00	0.13	0.00	0.13
2.00	0.00	0.00	0.00	54.00	0.13	0.00	0.13
3.00	0.00	0.00	0.00	55.00	0.12	0.00	0.12
4.00	0.00	0.00	0.00	56.00	0.12	0.00	0.12
5.00	0.03	0.00	0.03	57.00	0.11	0.00	0.11
6.00	0.05	0.00	0.05	58.00	0.10	0.00	0.10
7.00	0.05	0.00	0.05	59.00	0.10	0.00	0.10
8.00	0.05	0.00	0.05	60.00	0.10	0.00	0.10
9.00	0.06	0.00	0.06				
10.00	0.30	0.00	0.30				
11.00	1.31	0.00	1.31				
12.00	**3.29**	0.00	**3.29**				
13.00	**3.44**	0.00	**3.44**				
14.00	2.10	0.00	2.10				
15.00	1.72	0.00	1.72				
16.00	1.51	0.00	1.51				
17.00	1.37	0.00	1.37				
18.00	1.29	0.00	1.29				
19.00	1.20	0.00	1.20				
20.00	1.11	0.00	1.11				
21.00	1.06	0.00	1.06				
22.00	1.03	0.00	1.03				
23.00	1.01	0.00	1.01				
24.00	0.98	0.00	0.98				
25.00	0.68	0.00	0.68				
26.00	0.64	0.00	0.64				
27.00	0.61	0.00	0.61				
28.00	0.58	0.00	0.58				
29.00	0.55	0.00	0.55				
30.00	0.54	0.00	0.54				
31.00	0.52	0.00	0.52				
32.00	0.50	0.00	0.50				
33.00	0.48	0.00	0.48				
34.00	0.45	0.00	0.45				
35.00	0.43	0.00	0.43				
36.00	0.41	0.00	0.41				
37.00	0.39	0.00	0.39				
38.00	0.37	0.00	0.37				
39.00	0.35	0.00	0.35				
40.00	0.33	0.00	0.33				
41.00	0.32	0.00	0.32				
42.00	0.30	0.00	0.30				
43.00	0.28	0.00	0.28				
44.00	0.27	0.00	0.27				
45.00	0.26	0.00	0.26				
46.00	0.25	0.00	0.25				
47.00	0.24	0.00	0.24				
48.00	0.21	0.00	0.21				
49.00	0.18	0.00	0.18				
50.00	0.16	0.00	0.16				
51.00	0.15	0.00	0.15				

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Proposed Runoff - West

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)


1.0 AC (PERM. OPEN SPACE)
FRONT 2
A = 1.7 AC
(0.7 AC GREEN)
85
REAR 2
A = 1.5 AC
(0.5 AC GREEN)
105
128 LF PIPE
40 LF OVERLAND GRASS @ 9%
245 LF PIPE
60 LF PIPE
45 LF OVERLAND PUMP @ 1.7%
55 LF PIPE
ES LF OVERLAND GRASS @ 2%
REAR 1
A = 4.4 AC
(1.7 AC GREEN)
25
90 LF OVERLAND GRASS @ 2%
15 LF OVERLAND PUMP @ 1.2%
37 LF OVERLAND GRASS @ 1%
FRONT 1
A = 6.1 AC
(2.8 AC GREEN)
15
PROPOSED
SITE PLAN
SCALE: 1"=60'
Carmina Wood Morris
PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York
DRAWING NAME:
Grading Plan
DRAWING NO.
C-200
Project no.: 21.011



Subcat Reach Pond Link

Routing Diagram for 21.011 Proposed
Prepared by Hewlett-Packard Company, Printed 3/4/2021
HydroCAD® 10.00-18 s/n 05019 © 2016 HydroCAD Software Solutions LLC

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Events for Pond 7P: Underground Storage

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	2.40	0.33	570.29	4,537
2-Year	4.15	0.68	570.46	5,990
5-Year	7.03	1.05	570.79	8,639
10-Year	9.17	1.28	571.13	11,342
25-Year	11.11	1.61	571.73	15,804
50-Year	12.80	3.61	572.23	18,836
100-Year	**14.92**	**4.83**	**572.92**	**21,772**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.200	80	>75% Grass cover, Good, HSG D (8S, 10S)
1.200	98	Paved parking, HSG D (8S, 10S)
0.800	98	Roofs, HSG D (8S, 10S)
3.200	**91**	**TOTAL AREA**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
3.200	HSG D	8S, 10S
0.000	Other	
3.200		**TOTAL AREA**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchmer Numbers
0.000	0.000	0.000	1.200	0.000	1.200	>75% Grass cover, Good	8S, 10S
0.000	0.000	0.000	1.200	0.000	1.200	Paved parking	8S, 10S
0.000	0.000	0.000	0.800	0.000	0.800	Roofs	8S, 10S
0.000	**0.000**	**0.000**	**3.200**	**0.000**	**3.200**	**TOTAL AREA**	

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=1.04"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=2.36 cfs 0.148 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=1.11"
Flow Length=345' Tc=9.1 min CN=92 Runoff=2.63 cfs 0.139 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=570.29' Storage=4,537 cf Inflow=2.40 cfs 0.287 af
Outflow=0.33 cfs 0.243 af

Pond 9P: Bioretention Area 3 Peak Elev=574.54' Storage=2,922 cf Inflow=2.63 cfs 0.139 af
Outflow=0.43 cfs 0.139 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.287 af Average Runoff Depth = 1.08"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

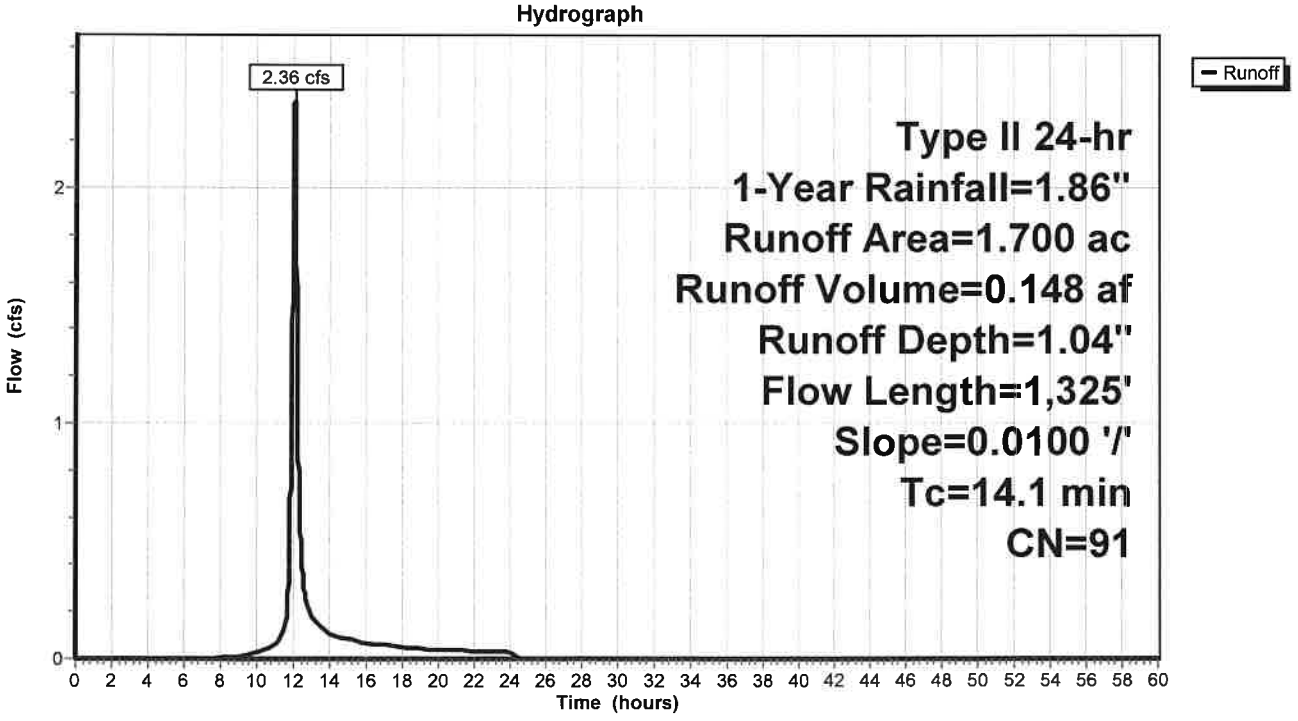
Runoff = 2.36 cfs @ 12.06 hrs, Volume= 0.148 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.00
9.00	0.27	0.01	0.01
10.00	0.34	0.02	0.02
11.00	0.44	0.05	0.07
12.00	1.23	0.53	**2.04**
13.00	1.44	0.69	**0.18**
14.00	1.53	0.76	0.11
15.00	1.59	0.81	0.08
16.00	1.64	0.85	0.07
17.00	1.68	0.89	0.06
18.00	1.71	0.92	0.05
19.00	1.74	0.94	0.04
20.00	1.77	0.97	0.04
21.00	1.79	0.99	0.03
22.00	1.82	1.01	0.03
23.00	1.84	1.02	0.03
24.00	**1.86**	**1.04**	0.03
25.00	1.86	1.04	0.00
26.00	1.86	1.04	0.00
27.00	1.86	1.04	0.00
28.00	1.86	1.04	0.00
29.00	1.86	1.04	0.00
30.00	1.86	1.04	0.00
31.00	1.86	1.04	0.00
32.00	1.86	1.04	0.00
33.00	1.86	1.04	0.00
34.00	1.86	1.04	0.00
35.00	1.86	1.04	0.00
36.00	1.86	1.04	0.00
37.00	1.86	1.04	0.00
38.00	1.86	1.04	0.00
39.00	1.86	1.04	0.00
40.00	1.86	1.04	0.00
41.00	1.86	1.04	0.00
42.00	1.86	1.04	0.00
43.00	1.86	1.04	0.00
44.00	1.86	1.04	0.00
45.00	1.86	1.04	0.00
46.00	1.86	1.04	0.00
47.00	1.86	1.04	0.00
48.00	1.86	1.04	0.00
49.00	1.86	1.04	0.00
50.00	1.86	1.04	0.00
51.00	1.86	1.04	0.00
52.00	1.86	1.04	0.00
53.00	1.86	1.04	0.00
54.00	1.86	1.04	0.00
55.00	1.86	1.04	0.00
56.00	1.86	1.04	0.00
57.00	1.86	1.04	0.00
58.00	1.86	1.04	0.00
59.00	1.86	1.04	0.00
60.00	1.86	1.04	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

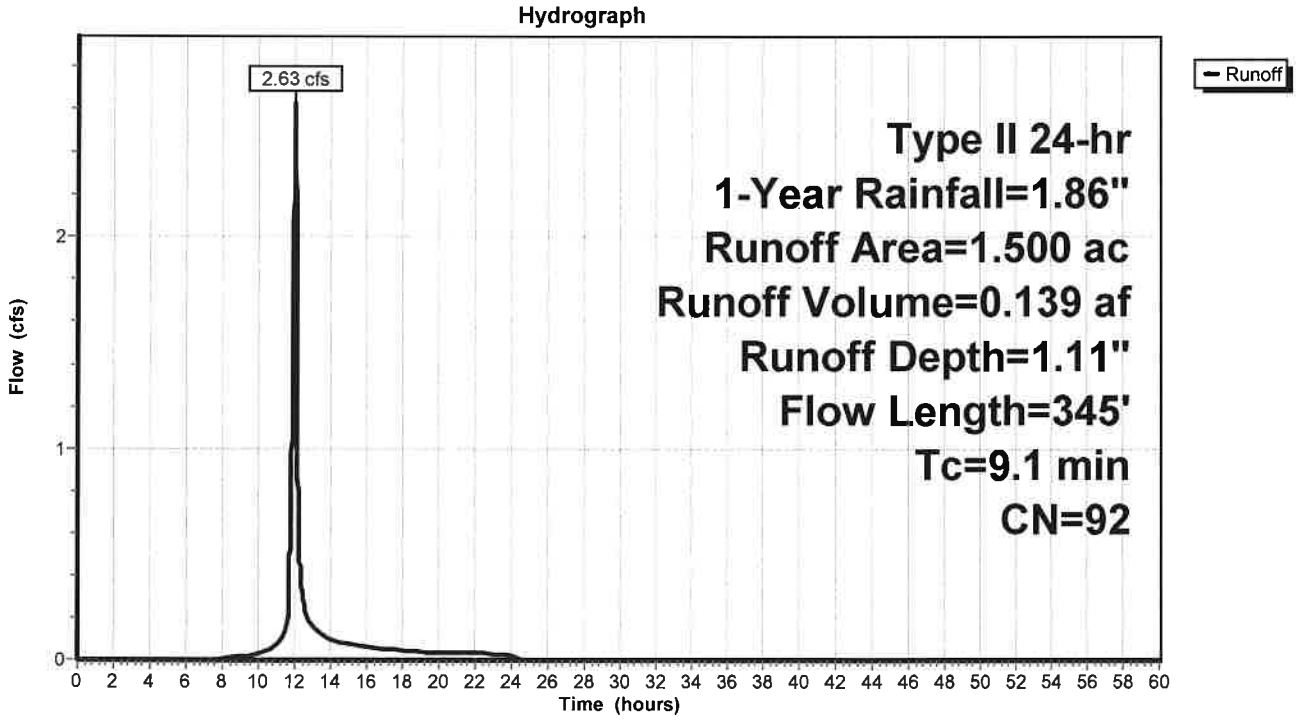
Runoff = 2.63 cfs @ 12.01 hrs, Volume= 0.139 af, Depth= 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.01
9.00	0.27	0.01	0.02
10.00	0.34	0.03	0.03
11.00	0.44	0.06	0.07
12.00	1.23	0.58	**2.63**
13.00	1.44	0.75	**0.16**
14.00	1.53	0.82	0.09
15.00	1.59	0.88	0.07
16.00	1.64	0.92	0.06
17.00	1.68	0.95	0.05
18.00	1.71	0.98	0.04
19.00	1.74	1.01	0.04
20.00	1.77	1.03	0.03
21.00	1.79	1.05	0.03
22.00	1.82	1.07	0.03
23.00	1.84	1.09	0.03
24.00	**1.86**	**1.11**	0.03
25.00	1.86	1.11	0.00
26.00	1.86	1.11	0.00
27.00	1.86	1.11	0.00
28.00	1.86	1.11	0.00
29.00	1.86	1.11	0.00
30.00	1.86	1.11	0.00
31.00	1.86	1.11	0.00
32.00	1.86	1.11	0.00
33.00	1.86	1.11	0.00
34.00	1.86	1.11	0.00
35.00	1.86	1.11	0.00
36.00	1.86	1.11	0.00
37.00	1.86	1.11	0.00
38.00	1.86	1.11	0.00
39.00	1.86	1.11	0.00
40.00	1.86	1.11	0.00
41.00	1.86	1.11	0.00
42.00	1.86	1.11	0.00
43.00	1.86	1.11	0.00
44.00	1.86	1.11	0.00
45.00	1.86	1.11	0.00
46.00	1.86	1.11	0.00
47.00	1.86	1.11	0.00
48.00	1.86	1.11	0.00
49.00	1.86	1.11	0.00
50.00	1.86	1.11	0.00
51.00	1.86	1.11	0.00
52.00	1.86	1.11	0.00
53.00	1.86	1.11	0.00
54.00	1.86	1.11	0.00
55.00	1.86	1.11	0.00
56.00	1.86	1.11	0.00
57.00	1.86	1.11	0.00
58.00	1.86	1.11	0.00
59.00	1.86	1.11	0.00
60.00	1.86	1.11	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 1.08" for 1-Year event
Inflow = 2.40 cfs @ 12.06 hrs, Volume= 0.287 af
Outflow = 0.33 cfs @ 13.18 hrs, Volume= 0.243 af, Atten= 86%, Lag= 67.2 min
Primary = 0.33 cfs @ 13.18 hrs, Volume= 0.243 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 570.29' @ 13.18 hrs Surf.Area= 10,145 sf Storage= 4,537 cf

Plug-Flow detention time= 493.3 min calculated for 0.243 af (85% of inflow)
Center-of-Mass det. time= 283.3 min (1,405.6 - 1,122.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

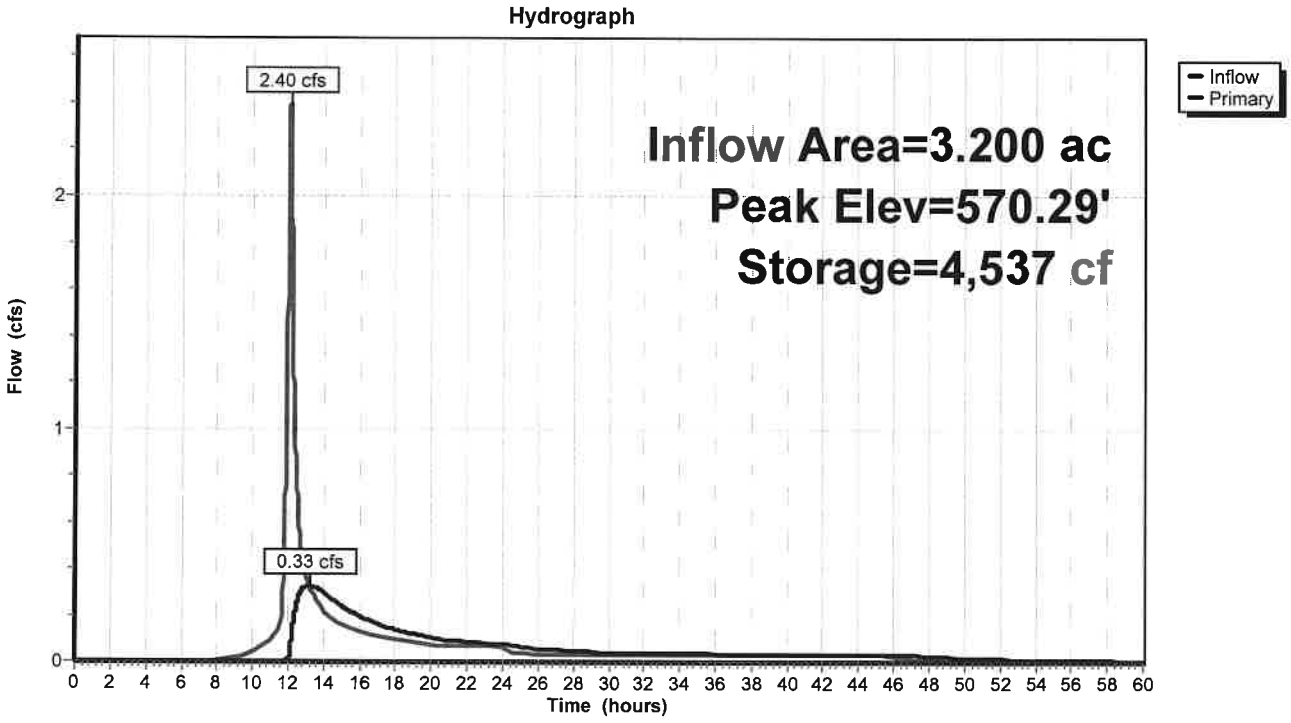
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

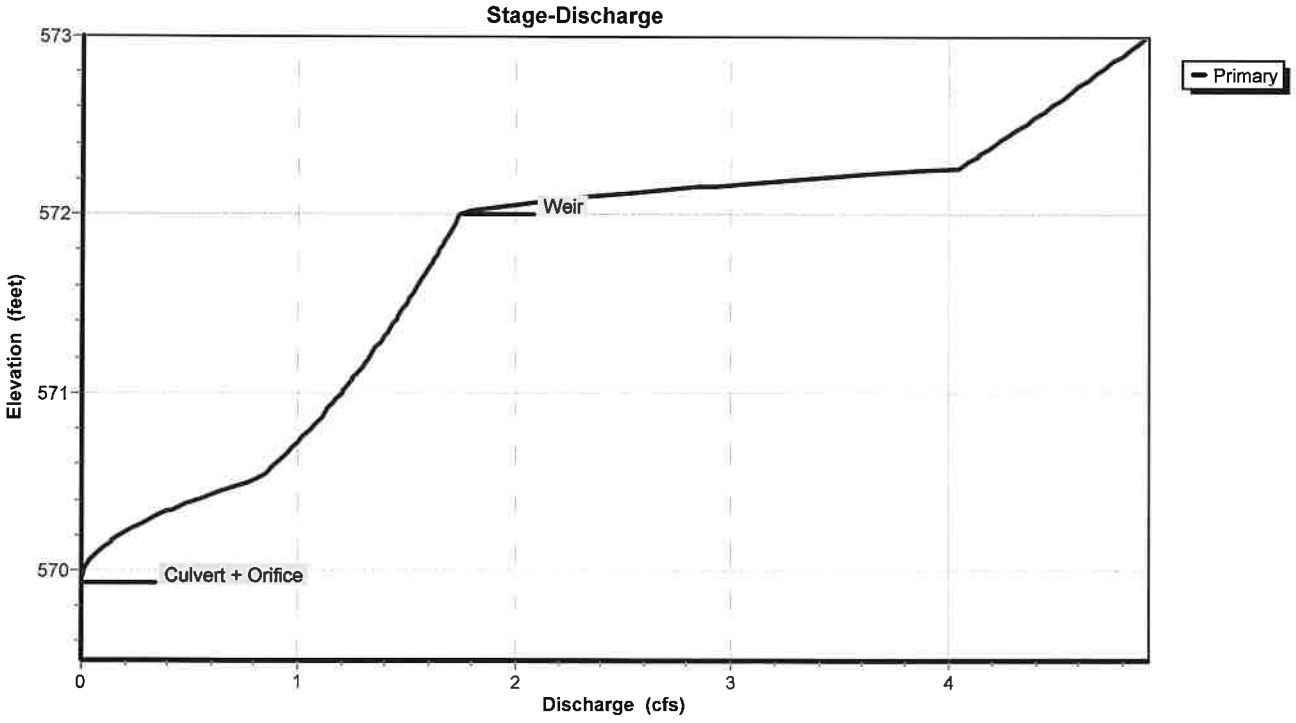
Primary OutFlow Max=0.32 cfs @ 13.18 hrs HW=570.29' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.32 cfs @ 1.88 fps)
  ├**2=Orifice** (Passes 0.32 cfs of 0.56 cfs potential flow)
  └**3=Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Pond 7P: Underground Storage (SMA #2)



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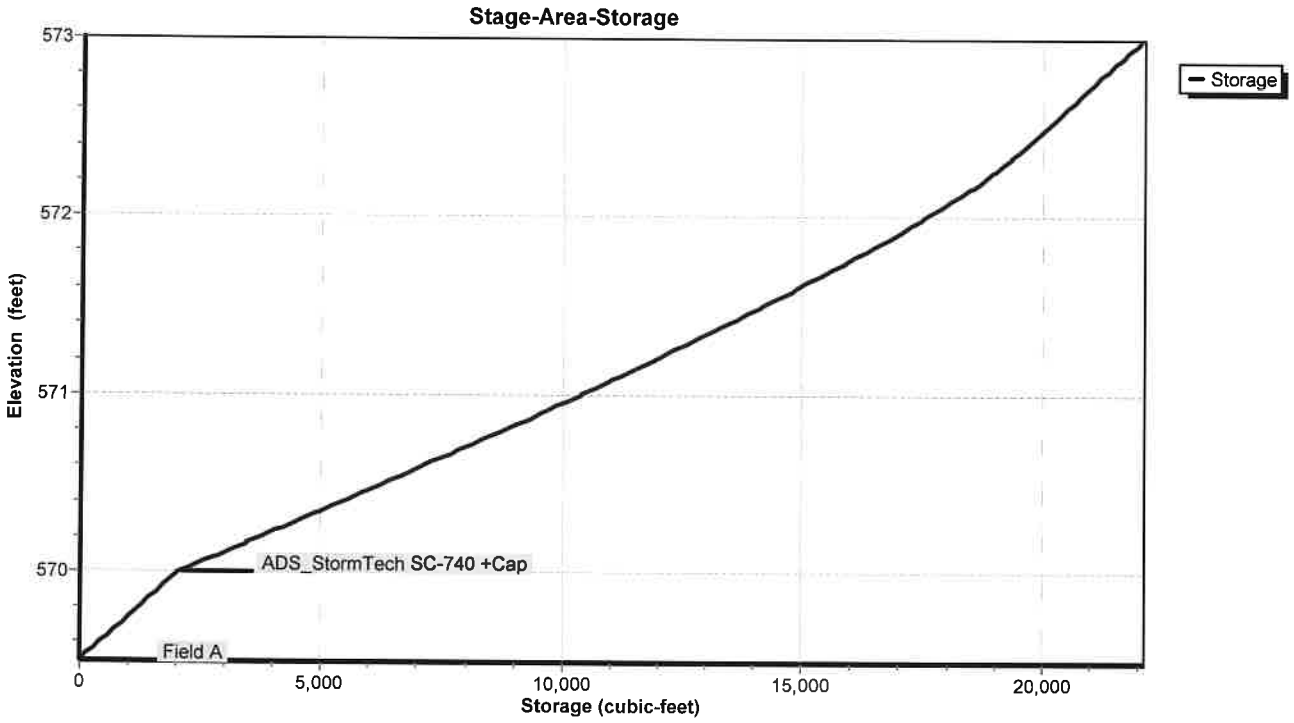
Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.00	0	569.50	0.00
8.00	0.00	4	569.50	0.00
10.00	0.04	139	569.53	0.00
12.00	**2.08**	**1,735**	**569.93**	**0.00**
14.00	**0.22**	**4,393**	**570.28**	**0.30**
16.00	0.13	3,835	570.21	0.20
18.00	0.10	3,452	570.17	0.14
20.00	0.07	3,194	570.14	0.10
22.00	0.07	3,023	570.12	0.08
24.00	0.06	2,931	570.10	0.07
26.00	0.03	2,737	570.08	0.06
28.00	0.03	2,618	570.07	0.05
30.00	0.03	2,550	570.06	0.04
32.00	0.03	2,506	570.06	0.04
34.00	0.03	2,476	570.05	0.04
36.00	0.03	2,453	570.05	0.03
38.00	0.03	2,436	570.05	0.03
40.00	0.03	2,422	570.05	0.03
42.00	0.03	2,410	570.04	0.03
44.00	0.03	2,399	570.04	0.03
46.00	0.03	2,388	570.04	0.03
48.00	0.01	2,288	570.03	0.02
50.00	0.00	2,166	570.02	0.02
52.00	0.00	2,066	570.00	0.01
54.00	0.00	1,993	569.99	0.01
56.00	0.00	1,945	569.98	0.01
58.00	0.00	1,910	569.97	0.00
60.00	0.00	1,885	569.96	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)
569.50	0
569.55	203
569.60	406
569.65	609
569.70	812
569.75	1,014
569.80	1,217
569.85	1,420
569.90	1,623
569.95	1,826
570.00	2,029
570.05	2,459
570.10	2,889
570.15	3,318
570.20	3,746
570.25	4,173
570.30	4,598
570.35	5,022
570.40	5,444
570.45	5,865
570.50	6,284
570.55	6,701
570.60	7,116
570.65	7,529
570.70	7,940
570.75	8,349
570.80	8,756
570.85	9,160
570.90	9,562
570.95	9,962
571.00	10,359
571.05	10,754
571.10	11,145
571.15	11,534
571.20	11,919
571.25	12,301
571.30	12,680
571.35	13,056
571.40	13,428
571.45	13,797
571.50	14,161
571.55	14,522
571.60	14,879
571.65	15,230
571.70	15,577
571.75	15,917
571.80	16,252
571.85	16,582
571.90	16,906
571.95	17,224
572.00	17,535
572.05	17,838
572.10	18,133
572.15	18,417
572.20	18,690
572.25	18,946
572.30	19,188
572.35	19,417
572.40	19,637
572.45	19,850
572.50	20,057
572.55	20,260
572.60	20,463
572.65	20,665
572.70	20,868
572.75	21,071
572.80	21,274
572.85	21,477
572.90	21,680
572.95	21,883
573.00	**22,086**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 1.11" for 1-Year event
Inflow = 2.63 cfs @ 12.01 hrs, Volume= 0.139 af
Outflow = 0.43 cfs @ 12.29 hrs, Volume= 0.139 af, Atten= 84%, Lag= 17.0 min
Primary = 0.43 cfs @ 12.29 hrs, Volume= 0.139 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.54' @ 12.29 hrs Surf.Area= 5,881 sf Storage= 2,922 cf

Plug-Flow detention time= 615.0 min calculated for 0.139 af (100% of inflow)
Center-of-Mass det. time= 615.0 min (1,433.7 - 818.7)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

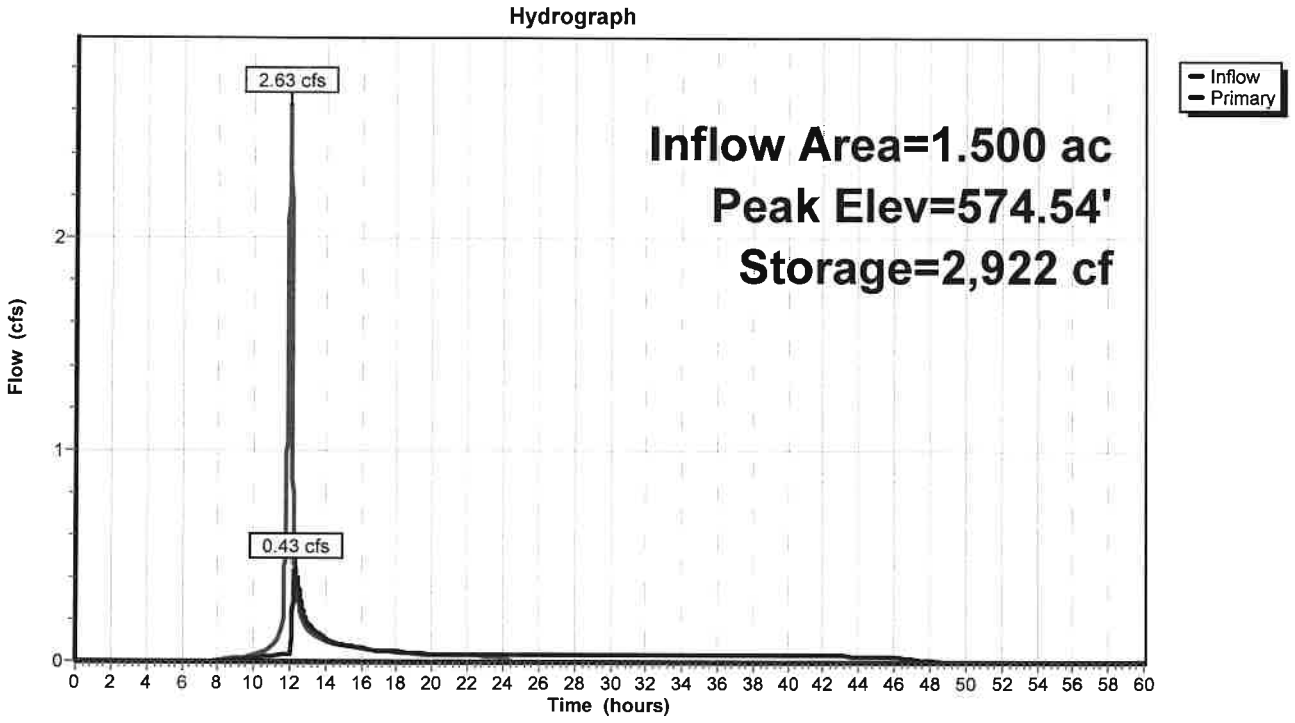
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

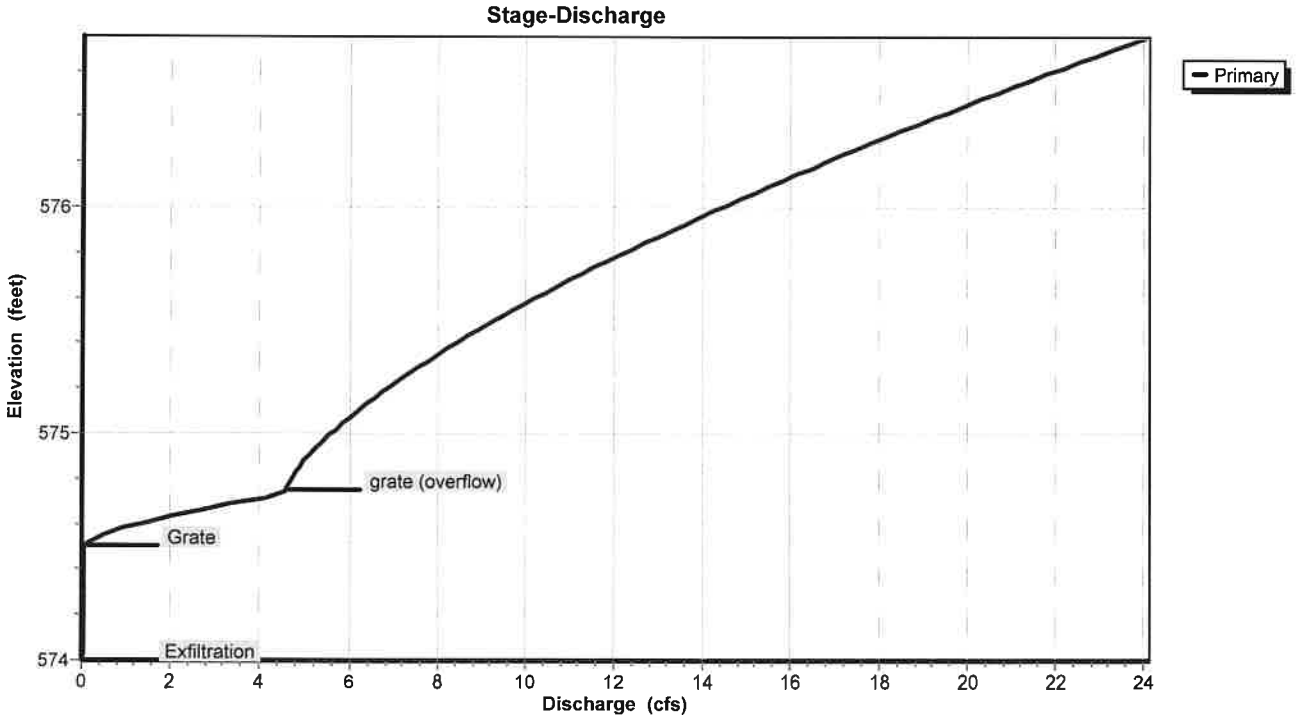
Primary OutFlow Max=0.42 cfs @ 12.29 hrs HW=574.54' (Free Discharge)
- **1=8" pipe** (Passes 0.42 cfs of 4.43 cfs potential flow)
  - **2=Grate** (Weir Controls 0.39 cfs @ 0.69 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

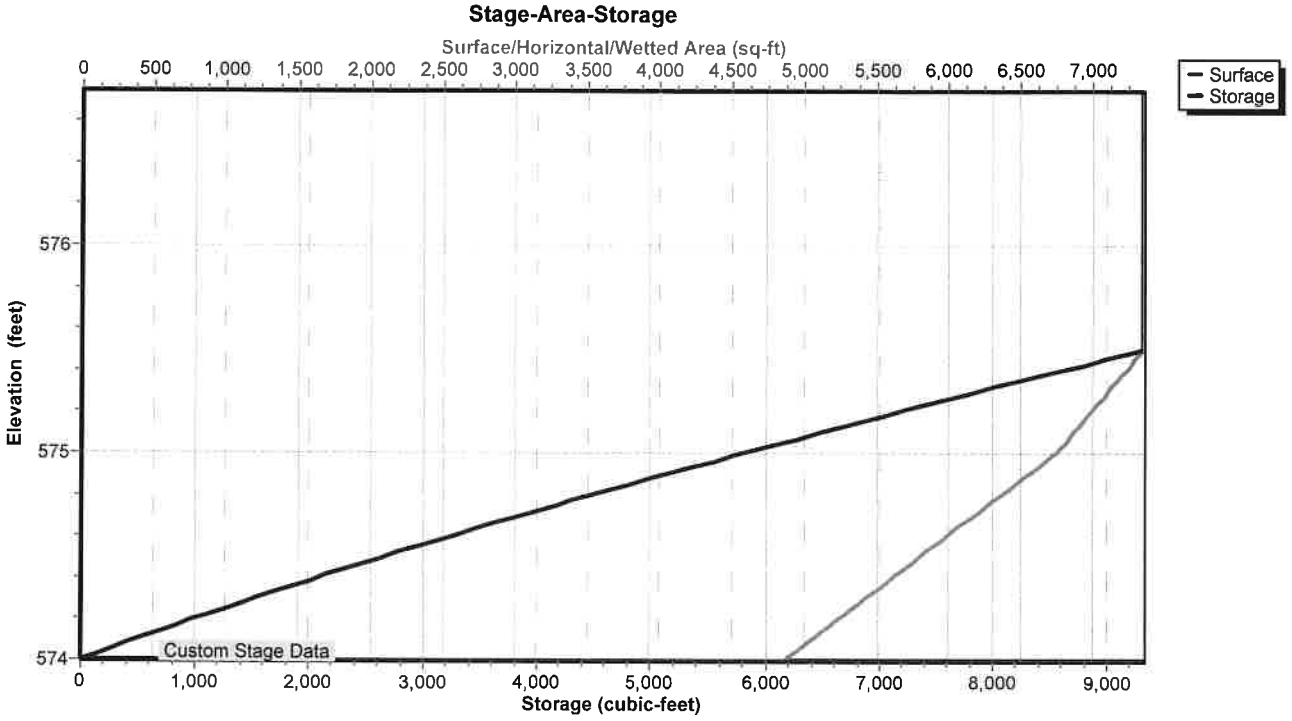


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.00	0	574.00	0.00
8.00	0.01	9	574.00	0.00
10.00	0.03	70	574.01	0.01
12.00	**2.63**	**1,806**	**574.35**	**0.03**
14.00	**0.09**	**2,731**	**574.51**	**0.11**
16.00	0.06	2,688	574.50	0.06
18.00	0.04	2,673	574.50	0.05
20.00	0.03	2,662	574.50	0.03
22.00	0.03	2,636	574.50	0.03
24.00	0.03	2,594	574.49	0.03
26.00	0.00	2,362	574.45	0.03
28.00	0.00	2,119	574.40	0.03
30.00	0.00	1,881	574.36	0.03
32.00	0.00	1,647	574.32	0.03
34.00	0.00	1,417	574.28	0.03
36.00	0.00	1,190	574.23	0.03
38.00	0.00	968	574.19	0.03
40.00	0.00	750	574.15	0.03
42.00	0.00	536	574.11	0.03
44.00	0.00	326	574.07	0.03
46.00	0.00	120	574.02	0.03
48.00	0.00	26	574.01	0.01
50.00	0.00	6	574.00	0.00
52.00	0.00	1	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=1.34"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=3.03 cfs 0.190 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=1.42"
Flow Length=345' Tc=9.1 min CN=92 Runoff=3.32 cfs 0.177 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=570.46' Storage=5,990 cf Inflow=4.15 cfs 0.367 af
Outflow=0.68 cfs 0.324 af

Pond 9P: Bioretention Area 3 Peak Elev=574.60' Storage=3,274 cf Inflow=3.32 cfs 0.177 af
Outflow=1.41 cfs 0.177 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.367 af Average Runoff Depth = 1.38"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

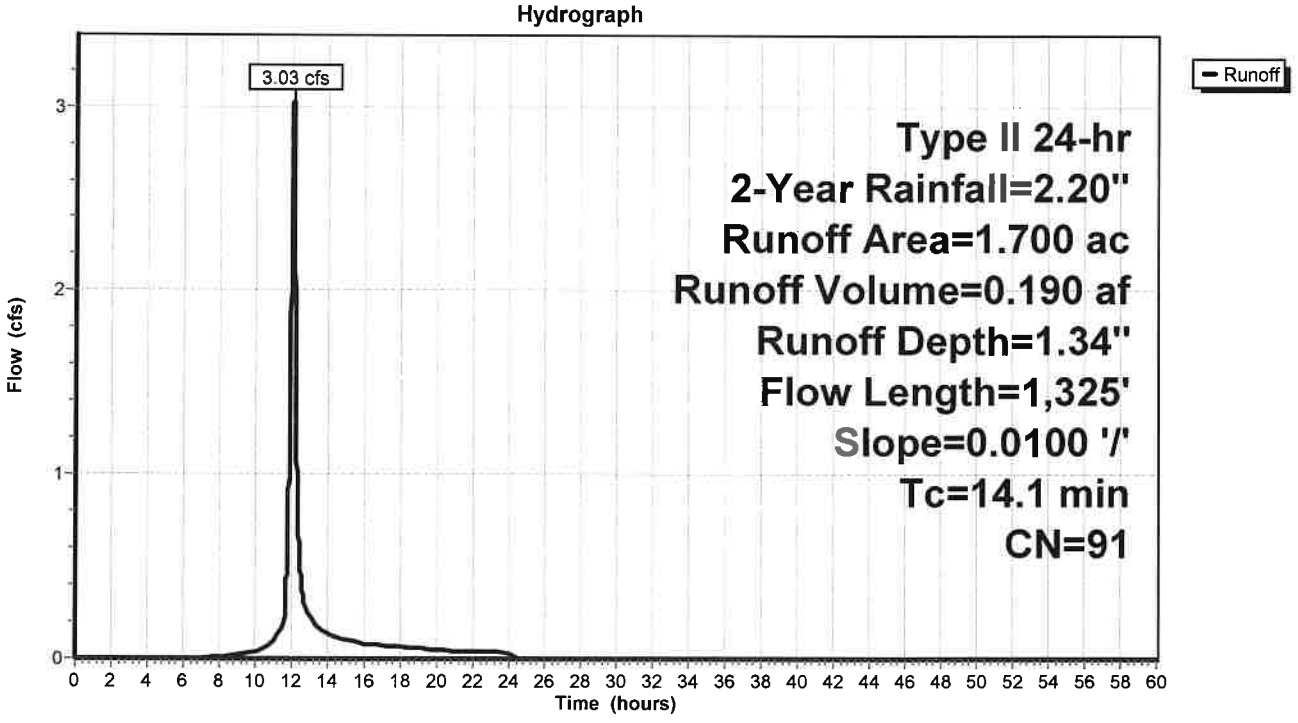
Runoff = 3.03 cfs @ 12.06 hrs, Volume= 0.190 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass**
					Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.05	0.00	0.00
3.00	0.08	0.00	0.00
4.00	0.11	0.00	0.00
5.00	0.14	0.00	0.00
6.00	0.18	0.00	0.00
7.00	0.22	0.00	0.00
8.00	0.26	0.00	0.01
9.00	0.32	0.01	0.02
10.00	0.40	0.03	0.04
11.00	0.52	0.08	0.10
12.00	1.46	0.71	**2.64**
13.00	1.70	0.90	**0.23**
14.00	1.80	0.99	0.13
15.00	1.88	1.06	0.10
16.00	1.94	1.11	0.08
17.00	1.98	1.15	0.07
18.00	2.03	1.19	0.06
19.00	2.06	1.22	0.05
20.00	2.09	1.25	0.05
21.00	2.12	1.27	0.04
22.00	2.15	1.30	0.04
23.00	2.18	1.32	0.04
24.00	**2.20**	**1.34**	0.04
25.00	2.20	1.34	0.00
26.00	2.20	1.34	0.00
27.00	2.20	1.34	0.00
28.00	2.20	1.34	0.00
29.00	2.20	1.34	0.00
30.00	2.20	1.34	0.00
31.00	2.20	1.34	0.00
32.00	2.20	1.34	0.00
33.00	2.20	1.34	0.00
34.00	2.20	1.34	0.00
35.00	2.20	1.34	0.00
36.00	2.20	1.34	0.00
37.00	2.20	1.34	0.00
38.00	2.20	1.34	0.00
39.00	2.20	1.34	0.00
40.00	2.20	1.34	0.00
41.00	2.20	1.34	0.00
42.00	2.20	1.34	0.00
43.00	2.20	1.34	0.00
44.00	2.20	1.34	0.00
45.00	2.20	1.34	0.00
46.00	2.20	1.34	0.00
47.00	2.20	1.34	0.00
48.00	2.20	1.34	0.00
49.00	2.20	1.34	0.00
50.00	2.20	1.34	0.00
51.00	2.20	1.34	0.00
52.00	2.20	1.34	0.00
53.00	2.20	1.34	0.00
54.00	2.20	1.34	0.00
55.00	2.20	1.34	0.00
56.00	2.20	1.34	0.00
57.00	2.20	1.34	0.00
58.00	2.20	1.34	0.00
59.00	2.20	1.34	0.00
60.00	2.20	1.34	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

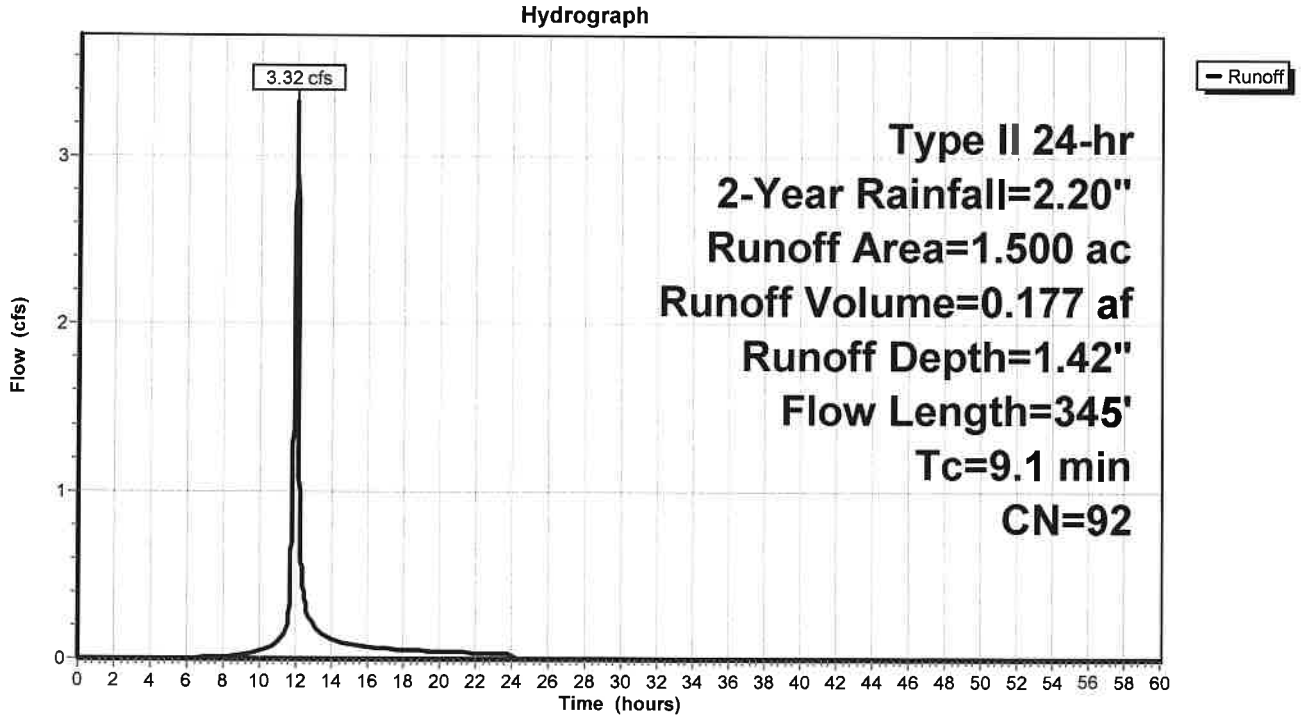
Runoff = 3.32 cfs @ 12.00 hrs, Volume= 0.177 af, Depth= 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	2.20	1.42	0.00
1.00	0.02	0.00	0.00	53.00	2.20	1.42	0.00
2.00	0.05	0.00	0.00	54.00	2.20	1.42	0.00
3.00	0.08	0.00	0.00	55.00	2.20	1.42	0.00
4.00	0.11	0.00	0.00	56.00	2.20	1.42	0.00
5.00	0.14	0.00	0.00	57.00	2.20	1.42	0.00
6.00	0.18	0.00	0.00	58.00	2.20	1.42	0.00
7.00	0.22	0.00	0.01	59.00	2.20	1.42	0.00
8.00	0.26	0.01	0.01	60.00	2.20	1.42	0.00
9.00	0.32	0.02	0.03				
10.00	0.40	0.05	0.04				
11.00	0.52	0.10	0.10				
12.00	1.46	0.77	**3.32**				
13.00	1.70	0.97	0.20				
14.00	1.80	1.06	0.12				
15.00	1.88	1.13	0.09				
16.00	1.94	1.18	0.07				
17.00	1.98	1.22	0.06				
18.00	2.03	1.26	0.05				
19.00	2.06	1.29	0.05				
20.00	2.09	1.32	0.04				
21.00	2.12	1.35	0.04				
22.00	2.15	1.37	0.04				
23.00	2.18	1.40	0.03				
24.00	**2.20**	**1.42**	0.03				
25.00	2.20	1.42	0.00				
26.00	2.20	1.42	0.00				
27.00	2.20	1.42	0.00				
28.00	2.20	1.42	0.00				
29.00	2.20	1.42	0.00				
30.00	2.20	1.42	0.00				
31.00	2.20	1.42	0.00				
32.00	2.20	1.42	0.00				
33.00	2.20	1.42	0.00				
34.00	2.20	1.42	0.00				
35.00	2.20	1.42	0.00				
36.00	2.20	1.42	0.00				
37.00	2.20	1.42	0.00				
38.00	2.20	1.42	0.00				
39.00	2.20	1.42	0.00				
40.00	2.20	1.42	0.00				
41.00	2.20	1.42	0.00				
42.00	2.20	1.42	0.00				
43.00	2.20	1.42	0.00				
44.00	2.20	1.42	0.00				
45.00	2.20	1.42	0.00				
46.00	2.20	1.42	0.00				
47.00	2.20	1.42	0.00				
48.00	2.20	1.42	0.00				
49.00	2.20	1.42	0.00				
50.00	2.20	1.42	0.00				
51.00	2.20	1.42	0.00				

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 1.38" for 2-Year event
Inflow = 4.15 cfs @ 12.10 hrs, Volume= 0.367 af
Outflow = 0.68 cfs @ 12.65 hrs, Volume= 0.324 af, Atten= 84%, Lag= 33.2 min
Primary = 0.68 cfs @ 12.65 hrs, Volume= 0.324 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 570.46' @ 12.65 hrs Surf.Area= 10,145 sf Storage= 5,990 cf

Plug-Flow detention time= 401.0 min calculated for 0.324 af (88% of inflow)
Center-of-Mass det. time= 229.7 min (1,287.9 - 1,058.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

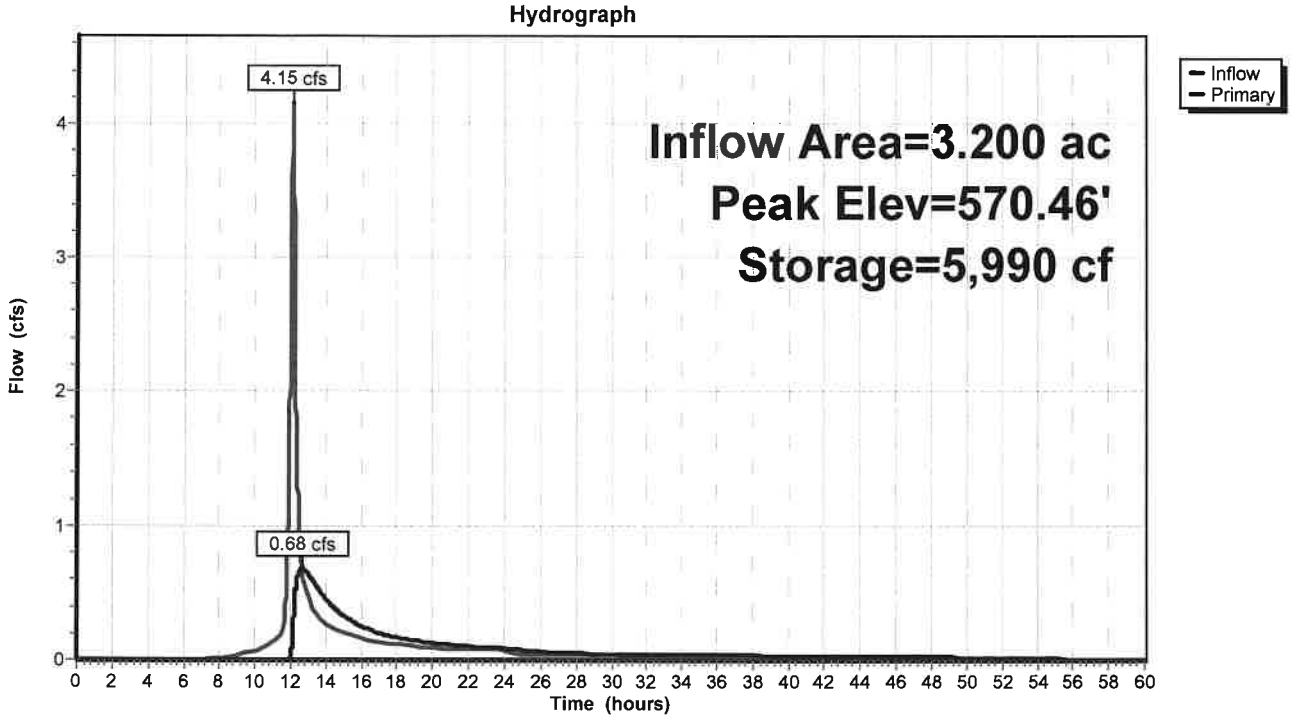
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

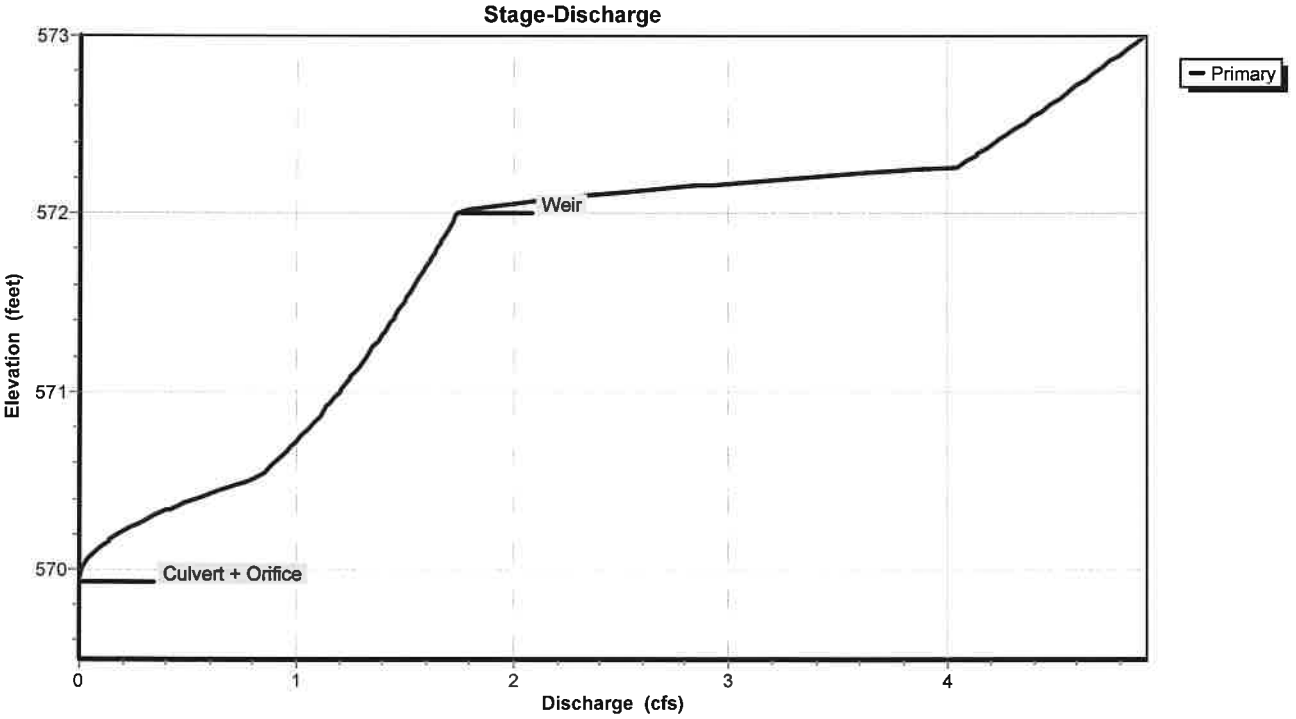
Primary OutFlow Max=0.68 cfs @ 12.65 hrs HW=570.46' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.68 cfs @ 2.31 fps)
└**2=Orifice** (Passes 0.68 cfs of 0.76 cfs potential flow)
└**3=Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

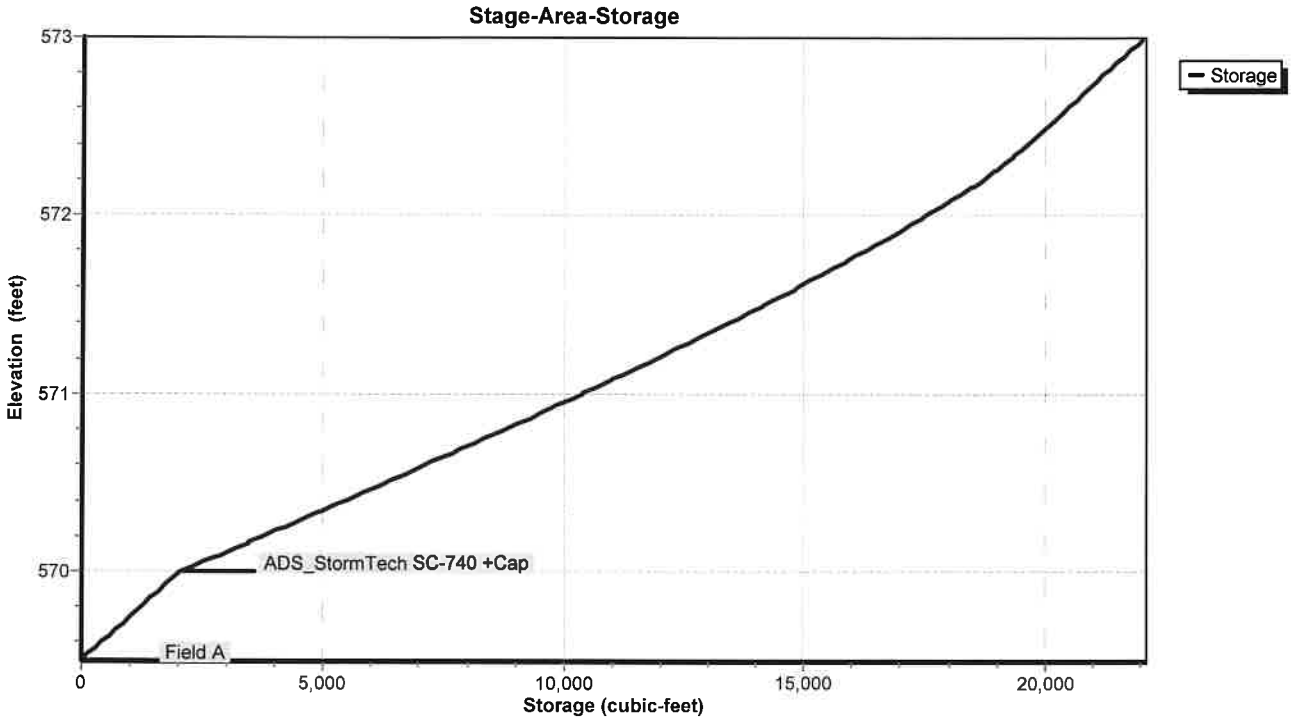


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.00	0	569.50	0.00
8.00	0.01	32	569.51	0.00
10.00	0.06	286	569.57	0.00
12.00	**2.68**	**2,414**	**570.04**	**0.03**
14.00	**0.27**	**5,111**	**570.36**	**0.45**
16.00	0.16	4,155	570.25	0.25
18.00	0.12	3,660	570.19	0.17
20.00	0.09	3,359	570.15	0.12
22.00	0.08	3,149	570.13	0.10
24.00	0.07	3,029	570.12	0.09
26.00	0.03	2,788	570.09	0.06
28.00	0.03	2,647	570.07	0.05
30.00	0.03	2,566	570.06	0.04
32.00	0.03	2,517	570.06	0.04
34.00	0.03	2,484	570.05	0.04
36.00	0.03	2,459	570.05	0.03
38.00	0.03	2,441	570.05	0.03
40.00	0.03	2,426	570.05	0.03
42.00	0.03	2,413	570.04	0.03
44.00	0.03	2,402	570.04	0.03
46.00	0.03	2,392	570.04	0.03
48.00	0.01	2,323	570.03	0.03
50.00	0.00	2,199	570.02	0.02
52.00	0.00	2,091	570.01	0.01
54.00	0.00	2,010	570.00	0.01
56.00	0.00	1,957	569.98	0.01
58.00	0.00	1,919	569.97	0.00
60.00	0.00	1,891	569.97	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)
569.50	0
569.55	203
569.60	406
569.65	609
569.70	812
569.75	1,014
569.80	1,217
569.85	1,420
569.90	1,623
569.95	1,826
570.00	2,029
570.05	2,459
570.10	2,889
570.15	3,318
570.20	3,746
570.25	4,173
570.30	4,598
570.35	5,022
570.40	5,444
570.45	5,865
570.50	6,284
570.55	6,701
570.60	7,116
570.65	7,529
570.70	7,940
570.75	8,349
570.80	8,756
570.85	9,160
570.90	9,562
570.95	9,962
571.00	10,359
571.05	10,754
571.10	11,145
571.15	11,534
571.20	11,919
571.25	12,301
571.30	12,680
571.35	13,056
571.40	13,428
571.45	13,797
571.50	14,161
571.55	14,522
571.60	14,879
571.65	15,230
571.70	15,577
571.75	15,917
571.80	16,252
571.85	16,582
571.90	16,906
571.95	17,224
572.00	17,535
572.05	17,838
572.10	18,133
572.15	18,417
572.20	18,690
572.25	18,946
572.30	19,188
572.35	19,417
572.40	19,637
572.45	19,850
572.50	20,057
572.55	20,260
572.60	20,463
572.65	20,665
572.70	20,868
572.75	21,071
572.80	21,274
572.85	21,477
572.90	21,680
572.95	21,883
573.00	**22,086**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 1.42" for 2-Year event
Inflow = 3.32 cfs @ 12.00 hrs, Volume= 0.177 af
Outflow = 1.41 cfs @ 12.13 hrs, Volume= 0.177 af, Atten= 58%, Lag= 7.6 min
Primary = 1.41 cfs @ 12.13 hrs, Volume= 0.177 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.60' @ 12.13 hrs Surf.Area= 5,993 sf Storage= 3,274 cf

Plug-Flow detention time= 499.6 min calculated for 0.177 af (100% of inflow)
Center-of-Mass det. time= 499.8 min (1,311.6 - 811.8)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

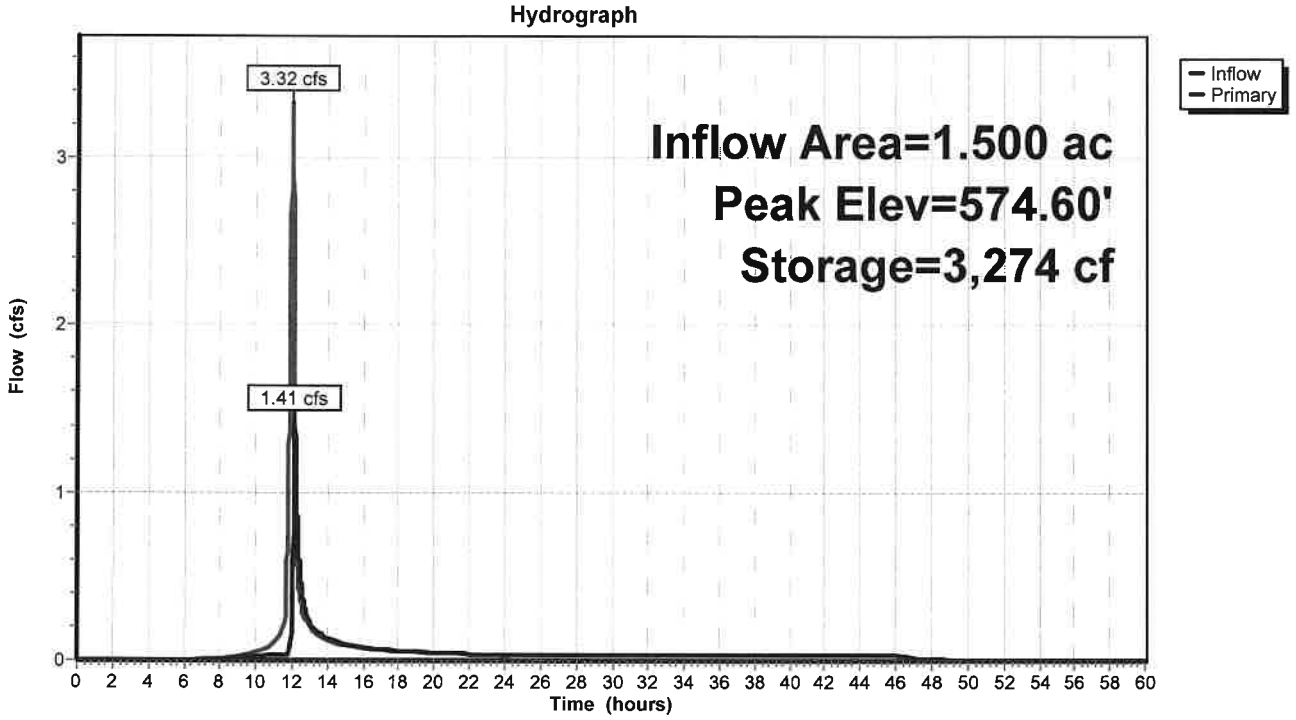
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

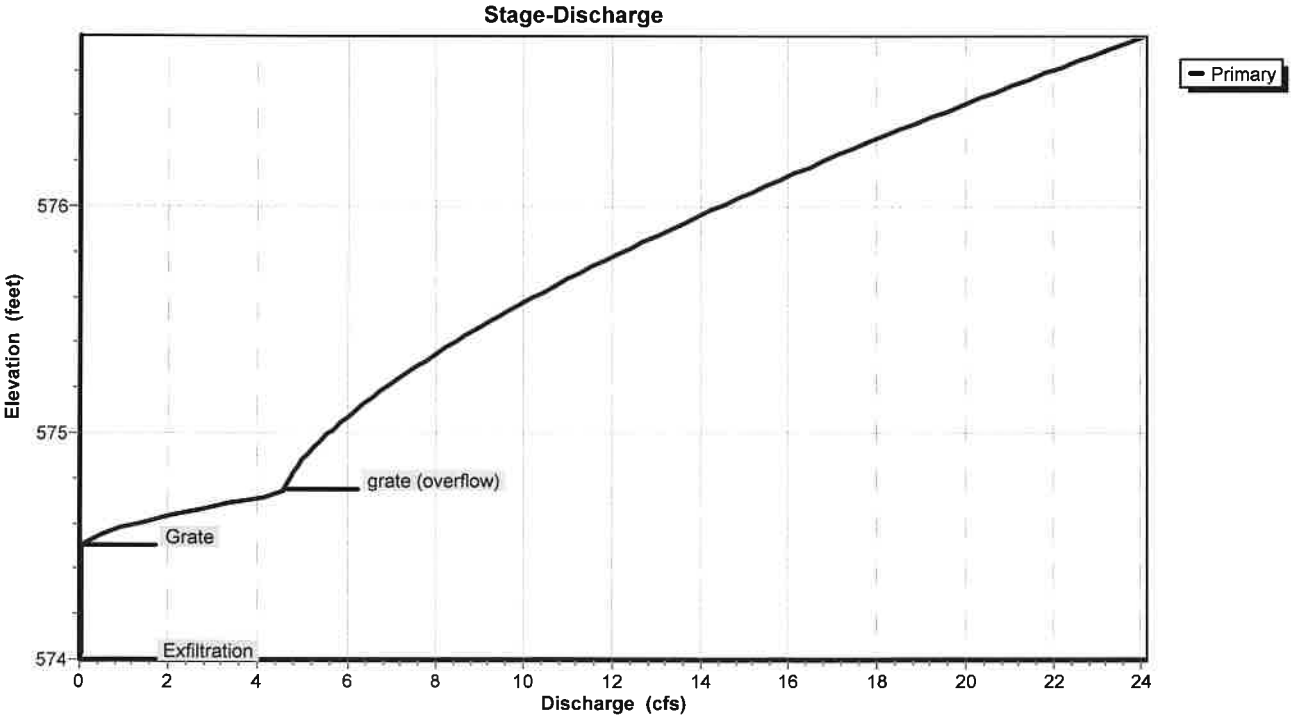
Primary OutFlow Max=1.41 cfs @ 12.13 hrs HW=574.60' (Free Discharge)
- **1=8" pipe** (Passes 1.41 cfs of 4.48 cfs potential flow)
  - **2=Grate** (Weir Controls 1.37 cfs @ 1.05 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

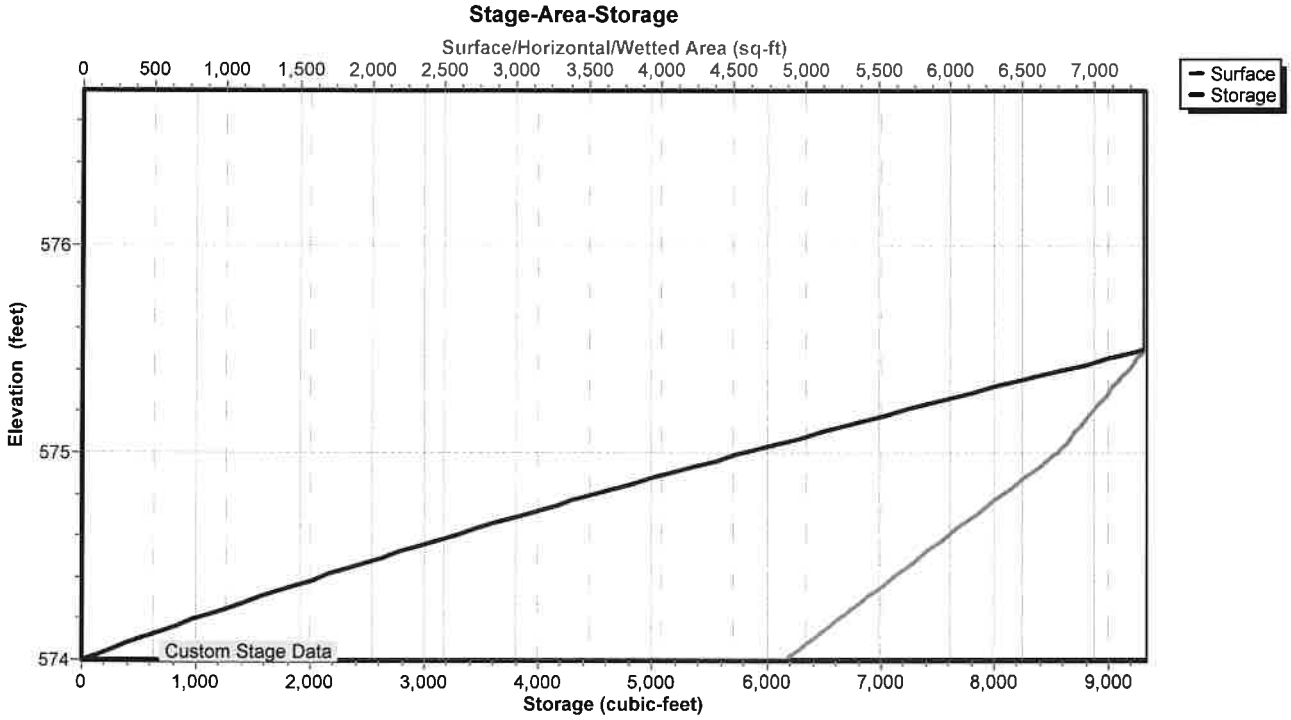


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.00	0	574.00	0.00
8.00	0.01	26	574.01	0.01
10.00	0.04	116	574.02	0.02
12.00	**3.32**	**2,442**	**574.46**	**0.03**
14.00	0.12	**2,754**	**574.52**	**0.13**
16.00	0.07	2,701	574.51	0.08
18.00	0.05	2,683	574.50	0.06
20.00	0.04	2,669	574.50	0.04
22.00	0.04	2,664	574.50	0.04
24.00	0.03	2,661	574.50	0.03
26.00	0.00	2,430	574.46	0.03
28.00	0.00	2,186	574.42	0.03
30.00	0.00	1,947	574.37	0.03
32.00	0.00	1,712	574.33	0.03
34.00	0.00	1,480	574.29	0.03
36.00	0.00	1,253	574.25	0.03
38.00	0.00	1,030	574.20	0.03
40.00	0.00	810	574.16	0.03
42.00	0.00	595	574.12	0.03
44.00	0.00	384	574.08	0.03
46.00	0.00	176	574.04	0.03
48.00	0.00	40	574.01	0.01
50.00	0.00	9	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=1.79"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=4.02 cfs 0.254 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=1.88"
Flow Length=345' Tc=9.1 min CN=92 Runoff=4.35 cfs 0.235 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=570.79' Storage=8,639 cf Inflow=7.03 cfs 0.489 af
Outflow=1.05 cfs 0.446 af

Pond 9P: Bioretention Area 3 Peak Elev=574.68' Storage=3,708 cf Inflow=4.35 cfs 0.235 af
Outflow=3.06 cfs 0.235 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.489 af Average Runoff Depth = 1.83"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

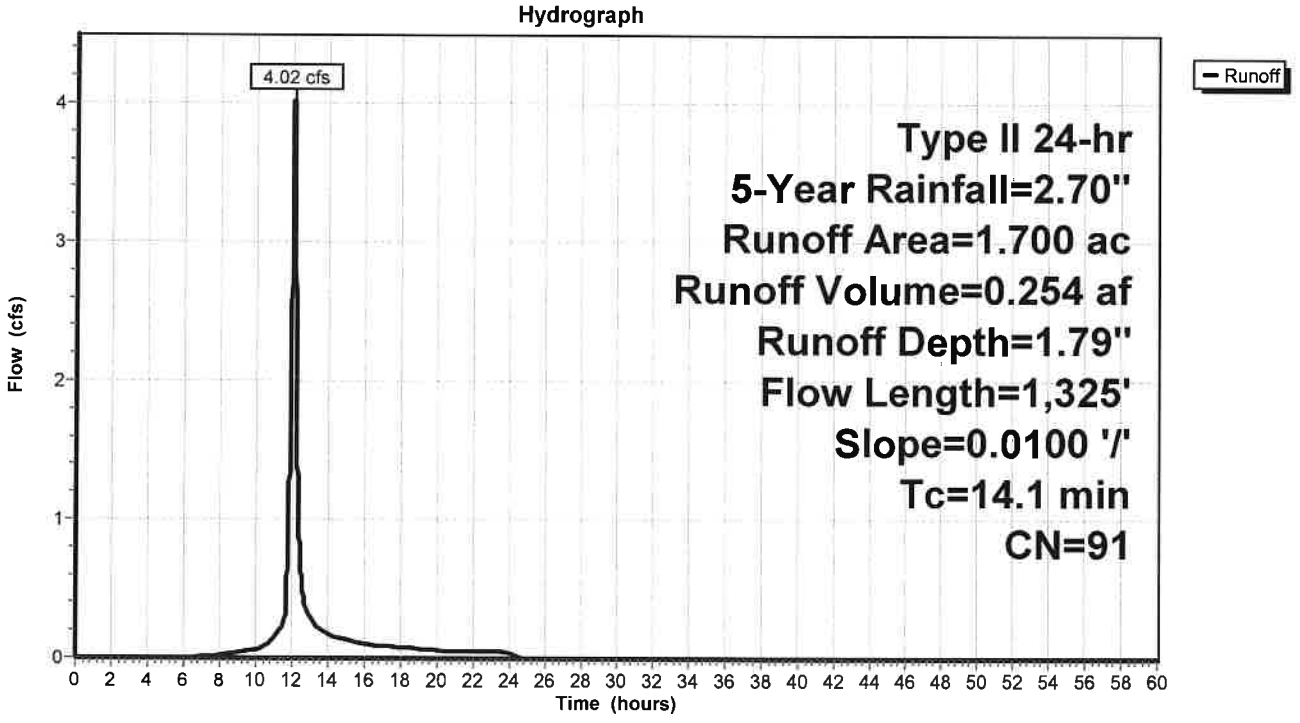
Runoff = 4.02 cfs @ 12.06 hrs, Volume= 0.254 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.00
7.00	0.27	0.00	0.01
8.00	0.32	0.01	0.02
9.00	0.40	0.03	0.04
10.00	0.49	0.07	0.06
11.00	0.63	0.13	0.14
12.00	1.79	0.98	**3.54**
13.00	2.08	1.24	**0.30**
14.00	2.21	1.35	0.17
15.00	2.30	1.43	0.13
16.00	2.38	1.50	0.10
17.00	2.43	1.55	0.09
18.00	2.49	1.60	0.08
19.00	2.53	1.64	0.07
20.00	2.57	1.67	0.06
21.00	2.60	1.71	0.05
22.00	2.64	1.74	0.05
23.00	2.67	1.77	0.05
24.00	**2.70**	**1.79**	0.05
25.00	2.70	1.79	0.00
26.00	2.70	1.79	0.00
27.00	2.70	1.79	0.00
28.00	2.70	1.79	0.00
29.00	2.70	1.79	0.00
30.00	2.70	1.79	0.00
31.00	2.70	1.79	0.00
32.00	2.70	1.79	0.00
33.00	2.70	1.79	0.00
34.00	2.70	1.79	0.00
35.00	2.70	1.79	0.00
36.00	2.70	1.79	0.00
37.00	2.70	1.79	0.00
38.00	2.70	1.79	0.00
39.00	2.70	1.79	0.00
40.00	2.70	1.79	0.00
41.00	2.70	1.79	0.00
42.00	2.70	1.79	0.00
43.00	2.70	1.79	0.00
44.00	2.70	1.79	0.00
45.00	2.70	1.79	0.00
46.00	2.70	1.79	0.00
47.00	2.70	1.79	0.00
48.00	2.70	1.79	0.00
49.00	2.70	1.79	0.00
50.00	2.70	1.79	0.00
51.00	2.70	1.79	0.00
52.00	2.70	1.79	0.00
53.00	2.70	1.79	0.00
54.00	2.70	1.79	0.00
55.00	2.70	1.79	0.00
56.00	2.70	1.79	0.00
57.00	2.70	1.79	0.00
58.00	2.70	1.79	0.00
59.00	2.70	1.79	0.00
60.00	2.70	1.79	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

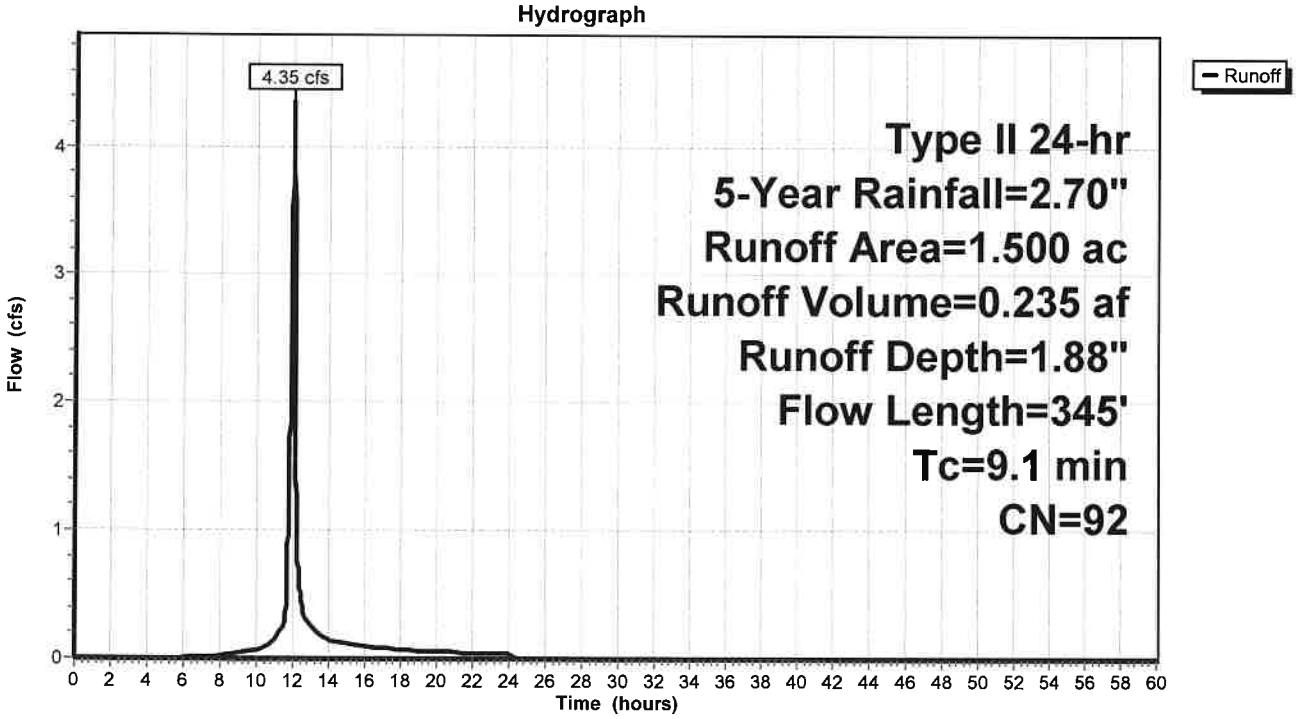
Runoff = 4.35 cfs @ 12.00 hrs, Volume= 0.235 af, Depth= 1.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.01
7.00	0.27	0.01	0.01
8.00	0.32	0.02	0.02
9.00	0.40	0.05	0.04
10.00	0.49	0.08	0.07
11.00	0.63	0.16	0.15
12.00	1.79	1.05	**4.35**
13.00	2.08	1.31	0.25
14.00	2.21	1.43	0.15
15.00	2.30	1.51	0.12
16.00	2.38	1.58	0.09
17.00	2.43	1.63	0.08
18.00	2.49	1.68	0.07
19.00	2.53	1.72	0.06
20.00	2.57	1.76	0.05
21.00	2.60	1.79	0.05
22.00	2.64	1.82	0.05
23.00	2.67	1.85	0.04
24.00	**2.70**	**1.88**	0.04
25.00	2.70	1.88	0.00
26.00	2.70	1.88	0.00
27.00	2.70	1.88	0.00
28.00	2.70	1.88	0.00
29.00	2.70	1.88	0.00
30.00	2.70	1.88	0.00
31.00	2.70	1.88	0.00
32.00	2.70	1.88	0.00
33.00	2.70	1.88	0.00
34.00	2.70	1.88	0.00
35.00	2.70	1.88	0.00
36.00	2.70	1.88	0.00
37.00	2.70	1.88	0.00
38.00	2.70	1.88	0.00
39.00	2.70	1.88	0.00
40.00	2.70	1.88	0.00
41.00	2.70	1.88	0.00
42.00	2.70	1.88	0.00
43.00	2.70	1.88	0.00
44.00	2.70	1.88	0.00
45.00	2.70	1.88	0.00
46.00	2.70	1.88	0.00
47.00	2.70	1.88	0.00
48.00	2.70	1.88	0.00
49.00	2.70	1.88	0.00
50.00	2.70	1.88	0.00
51.00	2.70	1.88	0.00
52.00	2.70	1.88	0.00
53.00	2.70	1.88	0.00
54.00	2.70	1.88	0.00
55.00	2.70	1.88	0.00
56.00	2.70	1.88	0.00
57.00	2.70	1.88	0.00
58.00	2.70	1.88	0.00
59.00	2.70	1.88	0.00
60.00	2.70	1.88	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 1.83" for 5-Year event
Inflow = 7.03 cfs @ 12.07 hrs, Volume= 0.489 af
Outflow = 1.05 cfs @ 12.55 hrs, Volume= 0.446 af, Atten= 85%, Lag= 29.0 min
Primary = 1.05 cfs @ 12.55 hrs, Volume= 0.446 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 570.79' @ 12.55 hrs Surf.Area= 10,145 sf Storage= 8,639 cf

Plug-Flow detention time= 321.6 min calculated for 0.446 af (91% of inflow)
Center-of-Mass det. time= 190.4 min (1,183.7 - 993.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

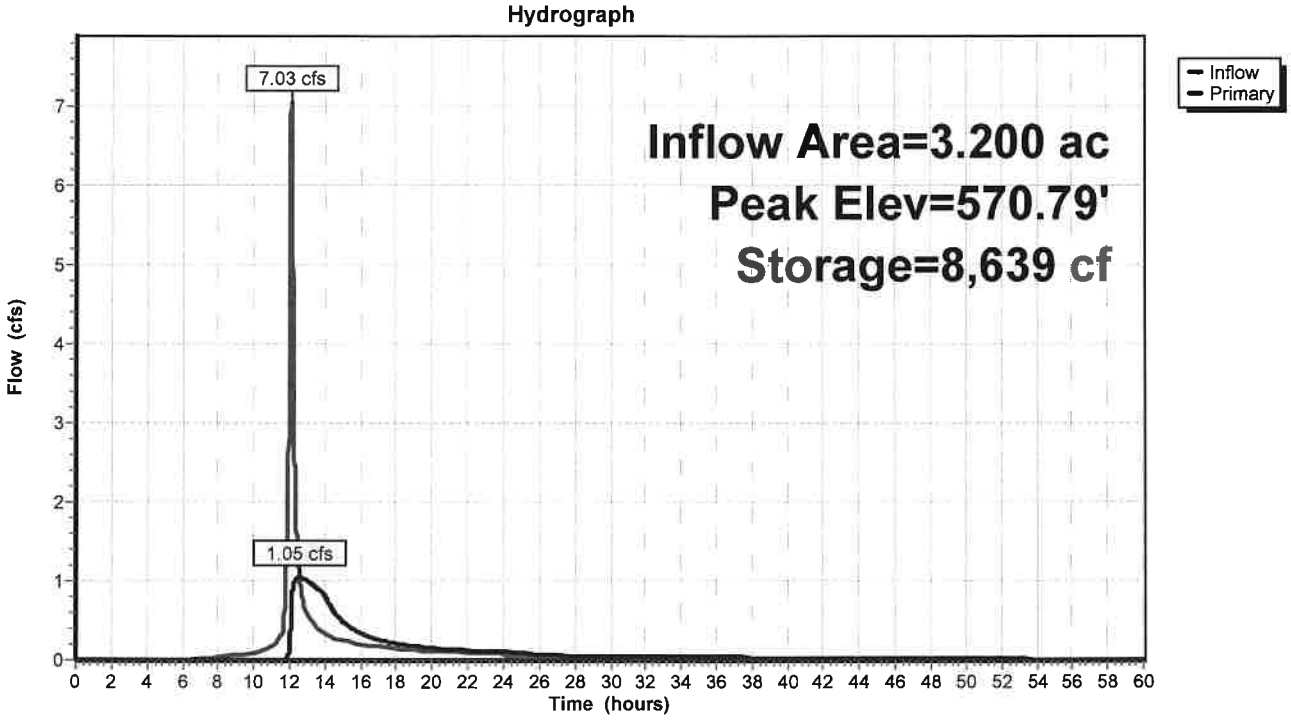
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

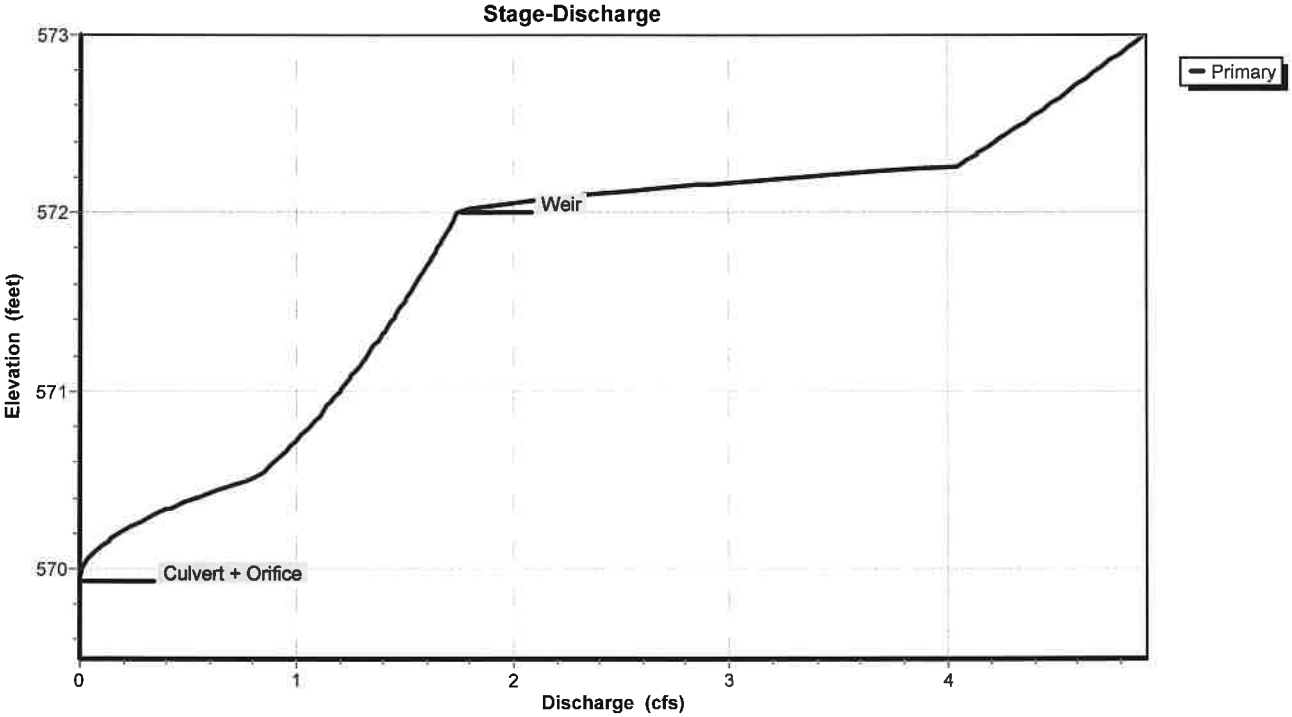
Primary OutFlow Max=1.05 cfs @ 12.55 hrs HW=570.79' (Free Discharge)
↑**1=Culvert** (Passes 1.05 cfs of 1.53 cfs potential flow)
↑**2=Orifice** (Orifice Controls 1.05 cfs @ 4.00 fps)
3=Weir (Controls 0.00 cfs)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

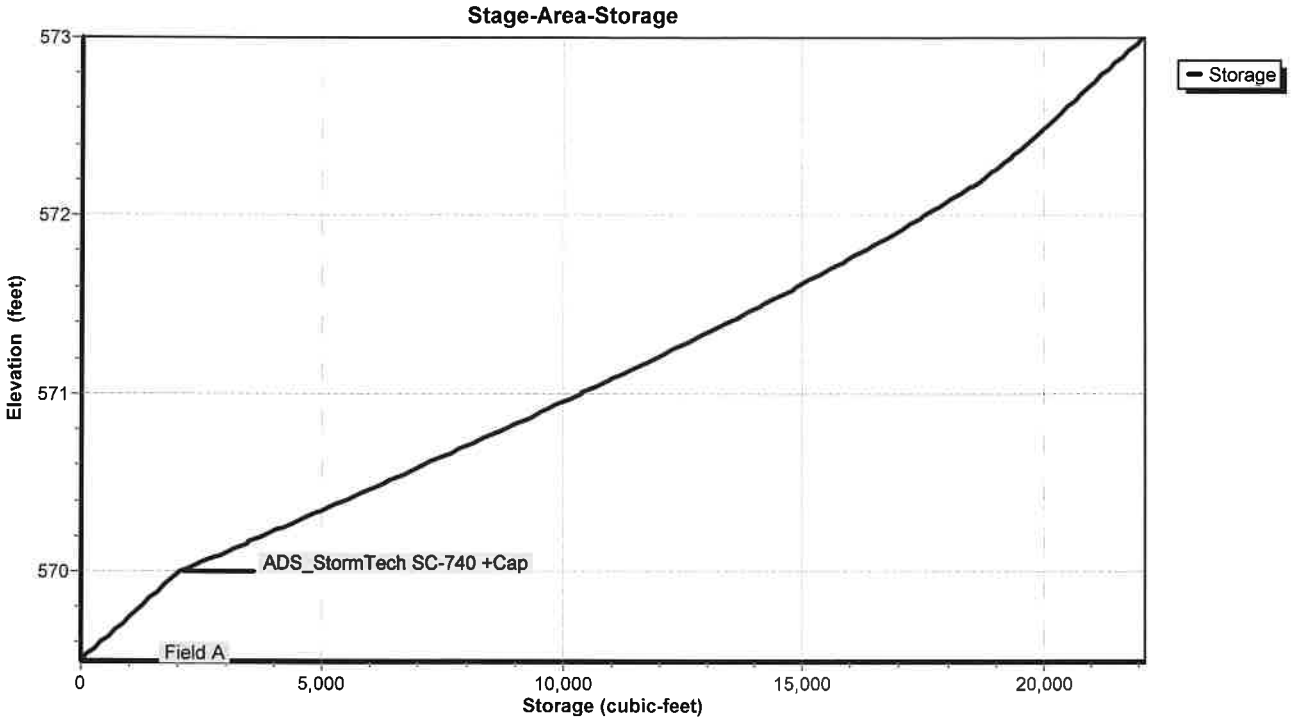


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.00	2	569.50	0.00
8.00	0.03	119	569.53	0.00
10.00	0.09	566	569.64	0.00
12.00	**5.13**	**3,593**	**570.18**	**0.16**
14.00	**0.33**	**6,444**	**570.52**	**0.81**
16.00	0.20	4,602	570.30	0.34
18.00	0.15	3,932	570.22	0.21
20.00	0.11	3,570	570.18	0.15
22.00	0.10	3,332	570.15	0.12
24.00	0.09	3,200	570.14	0.10
26.00	0.03	2,873	570.10	0.07
28.00	0.03	2,693	570.08	0.05
30.00	0.03	2,592	570.07	0.04
32.00	0.03	2,532	570.06	0.04
34.00	0.03	2,493	570.05	0.04
36.00	0.03	2,465	570.05	0.03
38.00	0.03	2,445	570.05	0.03
40.00	0.03	2,428	570.05	0.03
42.00	0.03	2,415	570.04	0.03
44.00	0.03	2,403	570.04	0.03
46.00	0.03	2,393	570.04	0.03
48.00	0.01	2,328	570.03	0.03
50.00	0.00	2,203	570.02	0.02
52.00	0.00	2,095	570.01	0.01
54.00	0.00	2,013	570.00	0.01
56.00	0.00	1,959	569.98	0.01
58.00	0.00	1,920	569.97	0.00
60.00	0.00	1,892	569.97	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 1.88" for 5-Year event
Inflow = 4.35 cfs @ 12.00 hrs, Volume= 0.235 af
Outflow = 3.06 cfs @ 12.08 hrs, Volume= 0.235 af, Atten= 30%, Lag= 4.6 min
Primary = 3.06 cfs @ 12.08 hrs, Volume= 0.235 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.68' @ 12.08 hrs Surf.Area= 6,129 sf Storage= 3,708 cf

Plug-Flow detention time= 384.2 min calculated for 0.235 af (100% of inflow)
Center-of-Mass det. time= 384.1 min (1,187.9 - 803.8)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

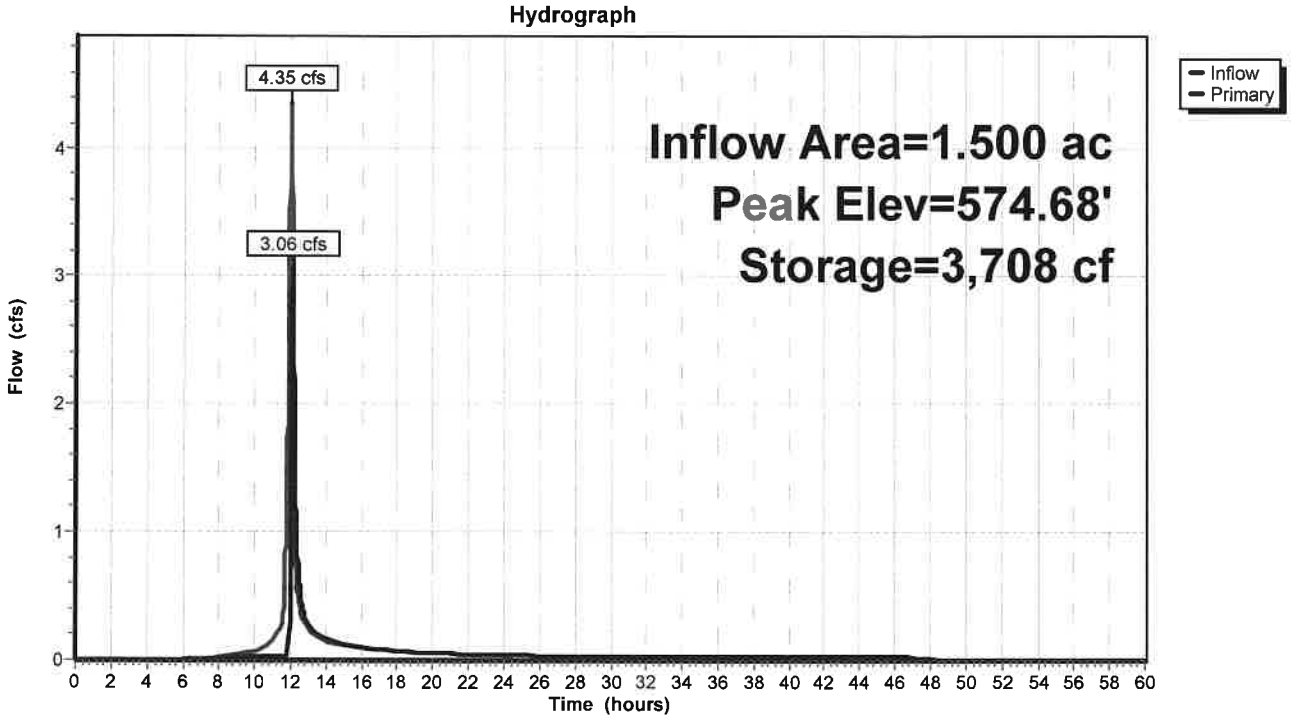
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

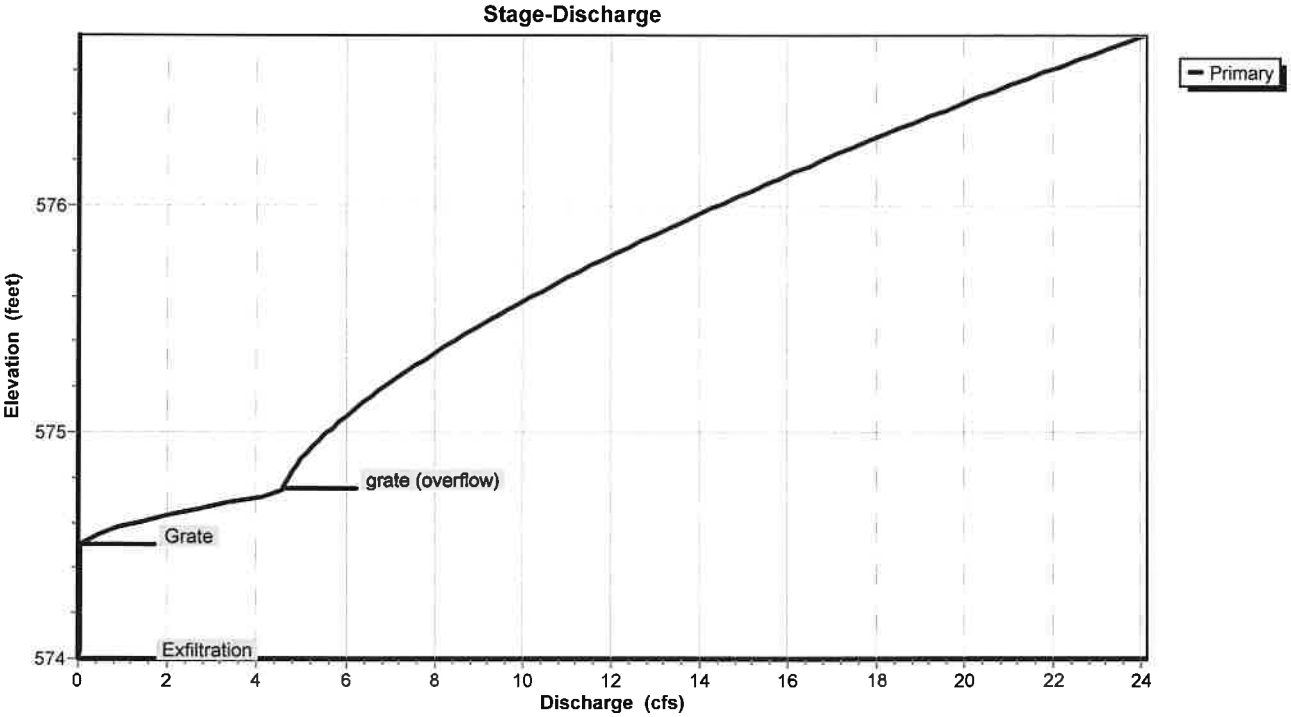
Primary OutFlow Max=3.05 cfs @ 12.08 hrs HW=574.68' (Free Discharge)
- **1=8" pipe** (Passes 3.05 cfs of 4.54 cfs potential flow)
  - **2=Grate** (Weir Controls 3.02 cfs @ 1.37 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

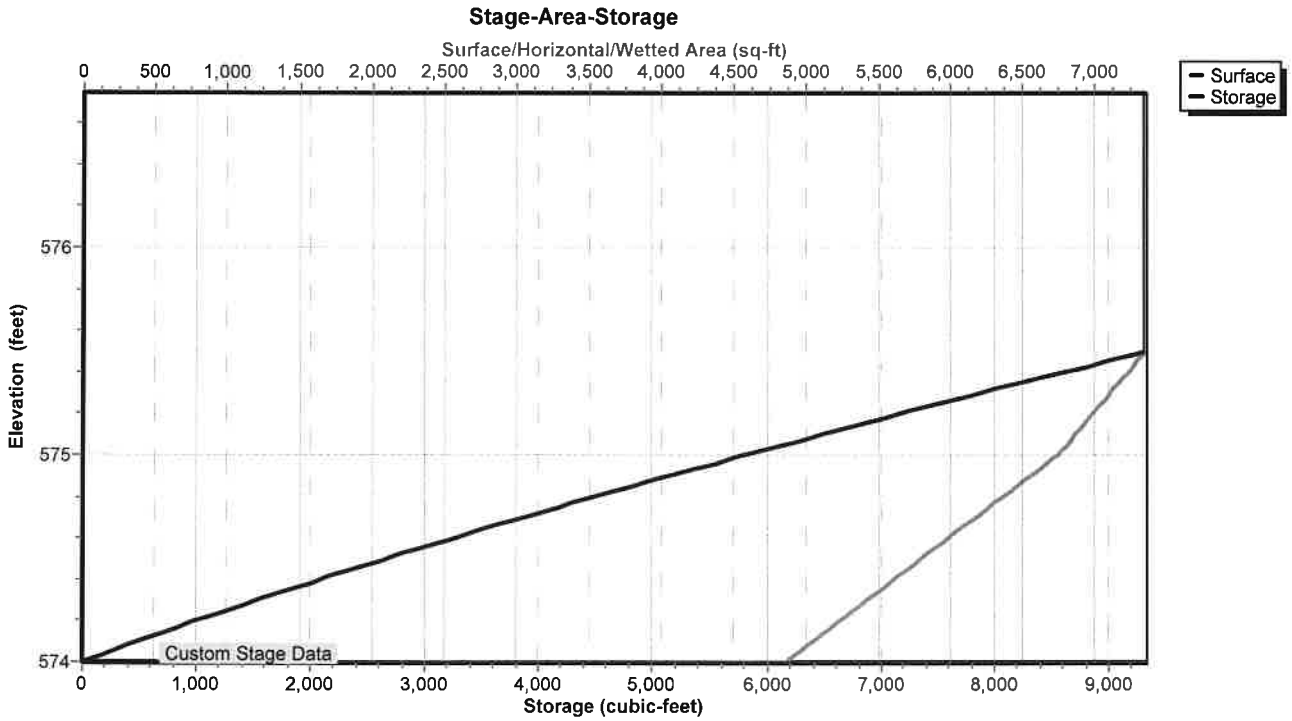


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.01	6	574.00	0.00
8.00	0.02	61	574.01	0.01
10.00	0.07	208	574.04	0.03
12.00	**4.35**	**3,326**	**574.61**	**1.59**
14.00	0.15	**2,783**	**574.52**	**0.16**
16.00	0.09	2,721	574.51	0.10
18.00	0.07	2,697	574.51	0.07
20.00	0.05	2,679	574.50	0.05
22.00	0.05	2,673	574.50	0.05
24.00	0.04	2,670	574.50	0.04
26.00	0.00	2,439	574.46	0.03
28.00	0.00	2,196	574.42	0.03
30.00	0.00	1,956	574.38	0.03
32.00	0.00	1,720	574.33	0.03
34.00	0.00	1,489	574.29	0.03
36.00	0.00	1,262	574.25	0.03
38.00	0.00	1,038	574.21	0.03
40.00	0.00	819	574.16	0.03
42.00	0.00	603	574.12	0.03
44.00	0.00	392	574.08	0.03
46.00	0.00	184	574.04	0.03
48.00	0.00	42	574.01	0.01
50.00	0.00	9	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=2.21"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=4.91 cfs 0.313 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=2.30"
Flow Length=345' Tc=9.1 min CN=92 Runoff=5.28 cfs 0.288 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=571.13' Storage=11,342 cf Inflow=9.17 cfs 0.601 af
Outflow=1.28 cfs 0.558 af

Pond 9P: Bioretention Area 3 Peak Elev=574.72' Storage=4,001 cf Inflow=5.28 cfs 0.288 af
Outflow=4.27 cfs 0.288 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.601 af Average Runoff Depth = 2.25"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

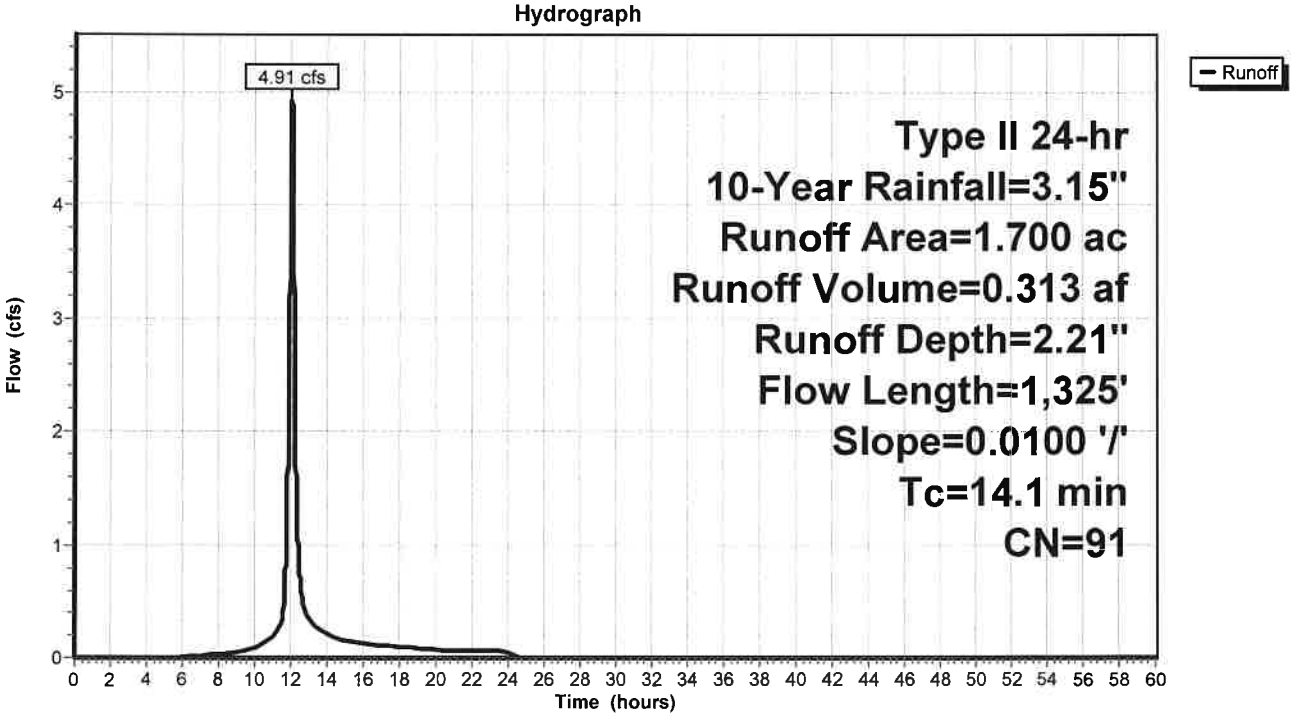
Runoff = 4.91 cfs @ 12.05 hrs, Volume= 0.313 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.07	0.00	0.00
3.00	0.11	0.00	0.00
4.00	0.15	0.00	0.00
5.00	0.20	0.00	0.00
6.00	0.25	0.00	0.01
7.00	0.31	0.01	0.02
8.00	0.38	0.03	0.03
9.00	0.46	0.06	0.06
10.00	0.57	0.10	0.09
11.00	0.74	0.19	0.19
12.00	2.09	1.24	**4.35**
13.00	2.43	1.55	**0.35**
14.00	2.58	1.69	0.20
15.00	2.69	1.78	0.16
16.00	2.77	1.86	0.12
17.00	2.84	1.92	0.11
18.00	2.90	1.98	0.09
19.00	2.95	2.03	0.08
20.00	3.00	2.07	0.07
21.00	3.04	2.11	0.06
22.00	3.08	2.14	0.06
23.00	3.11	2.18	0.06
24.00	**3.15**	**2.21**	0.06
25.00	3.15	2.21	0.00
26.00	3.15	2.21	0.00
27.00	3.15	2.21	0.00
28.00	3.15	2.21	0.00
29.00	3.15	2.21	0.00
30.00	3.15	2.21	0.00
31.00	3.15	2.21	0.00
32.00	3.15	2.21	0.00
33.00	3.15	2.21	0.00
34.00	3.15	2.21	0.00
35.00	3.15	2.21	0.00
36.00	3.15	2.21	0.00
37.00	3.15	2.21	0.00
38.00	3.15	2.21	0.00
39.00	3.15	2.21	0.00
40.00	3.15	2.21	0.00
41.00	3.15	2.21	0.00
42.00	3.15	2.21	0.00
43.00	3.15	2.21	0.00
44.00	3.15	2.21	0.00
45.00	3.15	2.21	0.00
46.00	3.15	2.21	0.00
47.00	3.15	2.21	0.00
48.00	3.15	2.21	0.00
49.00	3.15	2.21	0.00
50.00	3.15	2.21	0.00
51.00	3.15	2.21	0.00
52.00	3.15	2.21	0.00
53.00	3.15	2.21	0.00
54.00	3.15	2.21	0.00
55.00	3.15	2.21	0.00
56.00	3.15	2.21	0.00
57.00	3.15	2.21	0.00
58.00	3.15	2.21	0.00
59.00	3.15	2.21	0.00
60.00	3.15	2.21	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

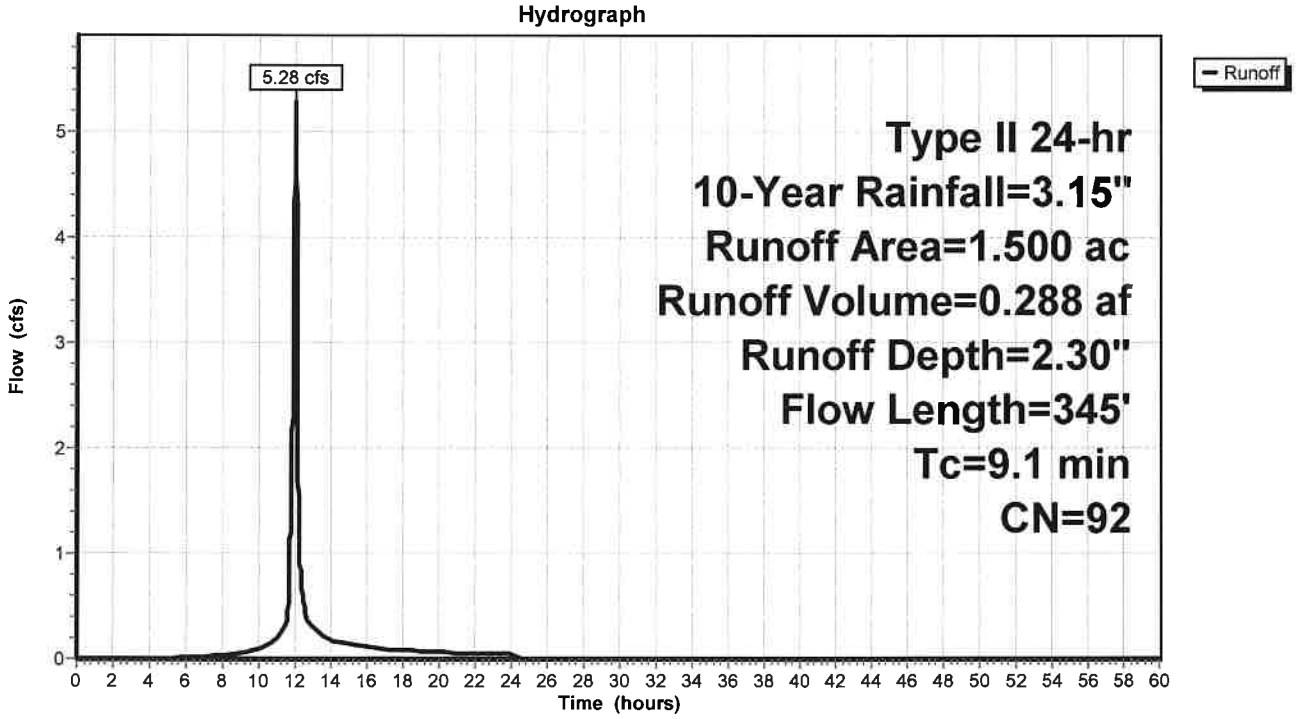
Runoff = 5.28 cfs @ 12.00 hrs, Volume= 0.288 af, Depth= 2.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.15	2.30	0.00
1.00	0.03	0.00	0.00	53.00	3.15	2.30	0.00
2.00	0.07	0.00	0.00	54.00	3.15	2.30	0.00
3.00	0.11	0.00	0.00	55.00	3.15	2.30	0.00
4.00	0.15	0.00	0.00	56.00	3.15	2.30	0.00
5.00	0.20	0.00	0.00	57.00	3.15	2.30	0.00
6.00	0.25	0.01	0.01	58.00	3.15	2.30	0.00
7.00	0.31	0.02	0.02	59.00	3.15	2.30	0.00
8.00	0.38	0.04	0.03	60.00	3.15	2.30	0.00
9.00	0.46	0.07	0.06				
10.00	0.57	0.12	0.09				
11.00	0.74	0.22	0.20				
12.00	2.09	1.32	**5.27**				
13.00	2.43	1.63	0.30				
14.00	2.58	1.77	0.18				
15.00	2.69	1.87	0.14				
16.00	2.77	1.95	0.11				
17.00	2.84	2.01	0.09				
18.00	2.90	2.07	0.08				
19.00	2.95	2.12	0.07				
20.00	3.00	2.16	0.06				
21.00	3.04	2.20	0.06				
22.00	3.08	2.23	0.05				
23.00	3.11	2.27	0.05				
24.00	**3.15**	**2.30**	0.05				
25.00	3.15	2.30	0.00				
26.00	3.15	2.30	0.00				
27.00	3.15	2.30	0.00				
28.00	3.15	2.30	0.00				
29.00	3.15	2.30	0.00				
30.00	3.15	2.30	0.00				
31.00	3.15	2.30	0.00				
32.00	3.15	2.30	0.00				
33.00	3.15	2.30	0.00				
34.00	3.15	2.30	0.00				
35.00	3.15	2.30	0.00				
36.00	3.15	2.30	0.00				
37.00	3.15	2.30	0.00				
38.00	3.15	2.30	0.00				
39.00	3.15	2.30	0.00				
40.00	3.15	2.30	0.00				
41.00	3.15	2.30	0.00				
42.00	3.15	2.30	0.00				
43.00	3.15	2.30	0.00				
44.00	3.15	2.30	0.00				
45.00	3.15	2.30	0.00				
46.00	3.15	2.30	0.00				
47.00	3.15	2.30	0.00				
48.00	3.15	2.30	0.00				
49.00	3.15	2.30	0.00				
50.00	3.15	2.30	0.00				
51.00	3.15	2.30	0.00				

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 2.25" for 10-Year event
Inflow = 9.17 cfs @ 12.06 hrs, Volume= 0.601 af
Outflow = 1.28 cfs @ 12.54 hrs, Volume= 0.558 af, Atten= 86%, Lag= 29.2 min
Primary = 1.28 cfs @ 12.54 hrs, Volume= 0.558 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 571.13' @ 12.54 hrs Surf.Area= 10,145 sf Storage= 11,342 cf

Plug-Flow detention time= 284.1 min calculated for 0.558 af (93% of inflow)
Center-of-Mass det. time= 176.3 min (1,132.0 - 955.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

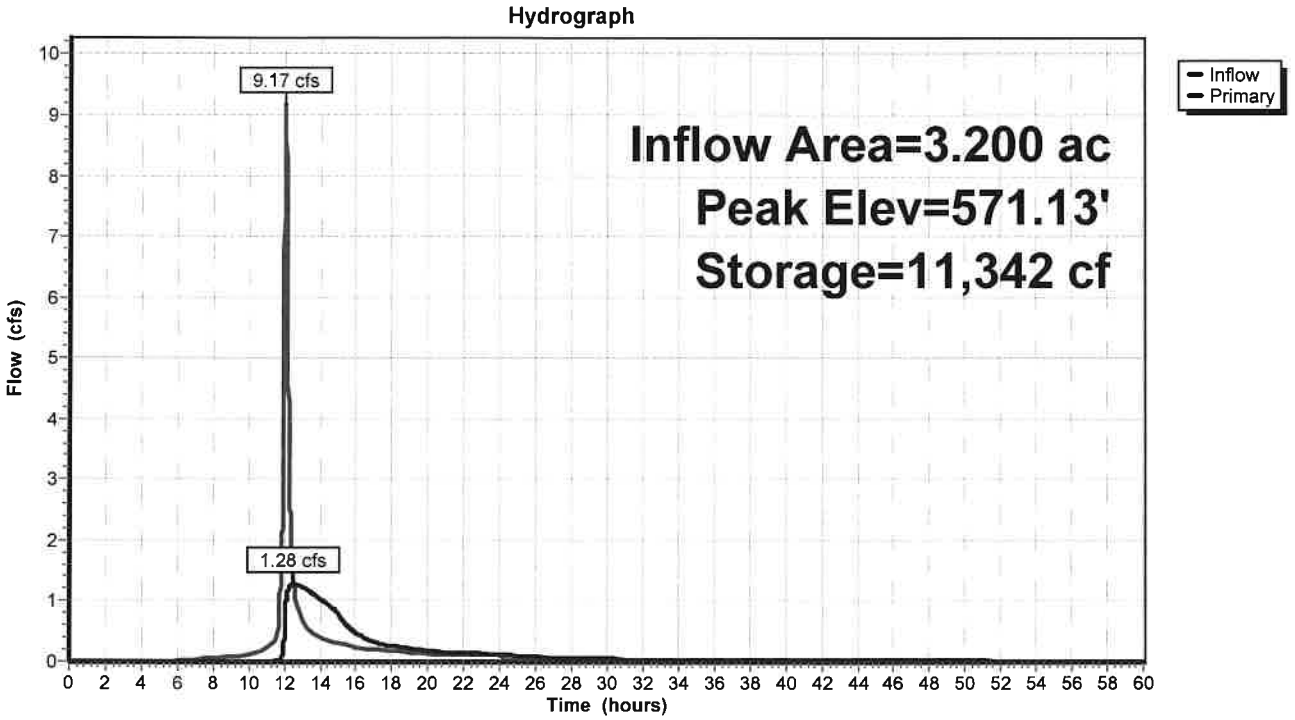
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

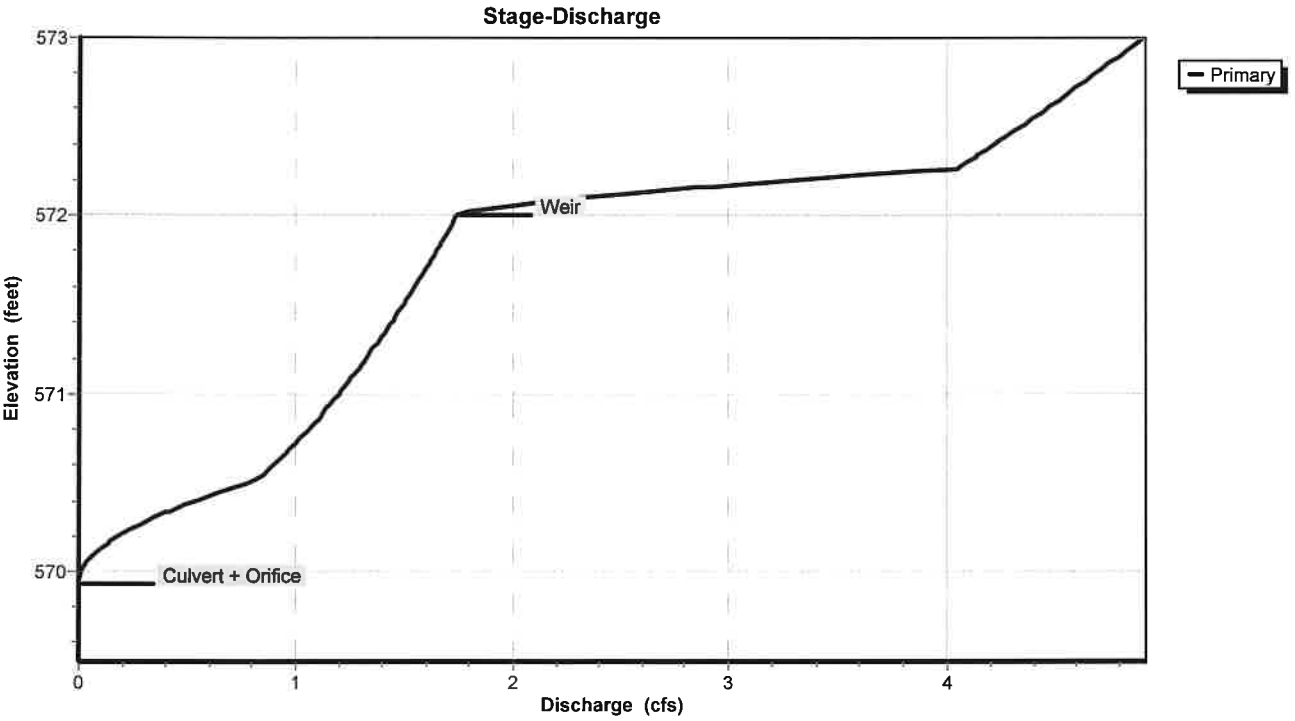
Primary OutFlow Max=1.28 cfs @ 12.54 hrs HW=571.13' (Free Discharge)
└**1=Culvert** (Passes 1.28 cfs of 2.37 cfs potential flow)
├**2=Orifice** (Orifice Controls 1.28 cfs @ 4.88 fps)
└**3=Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

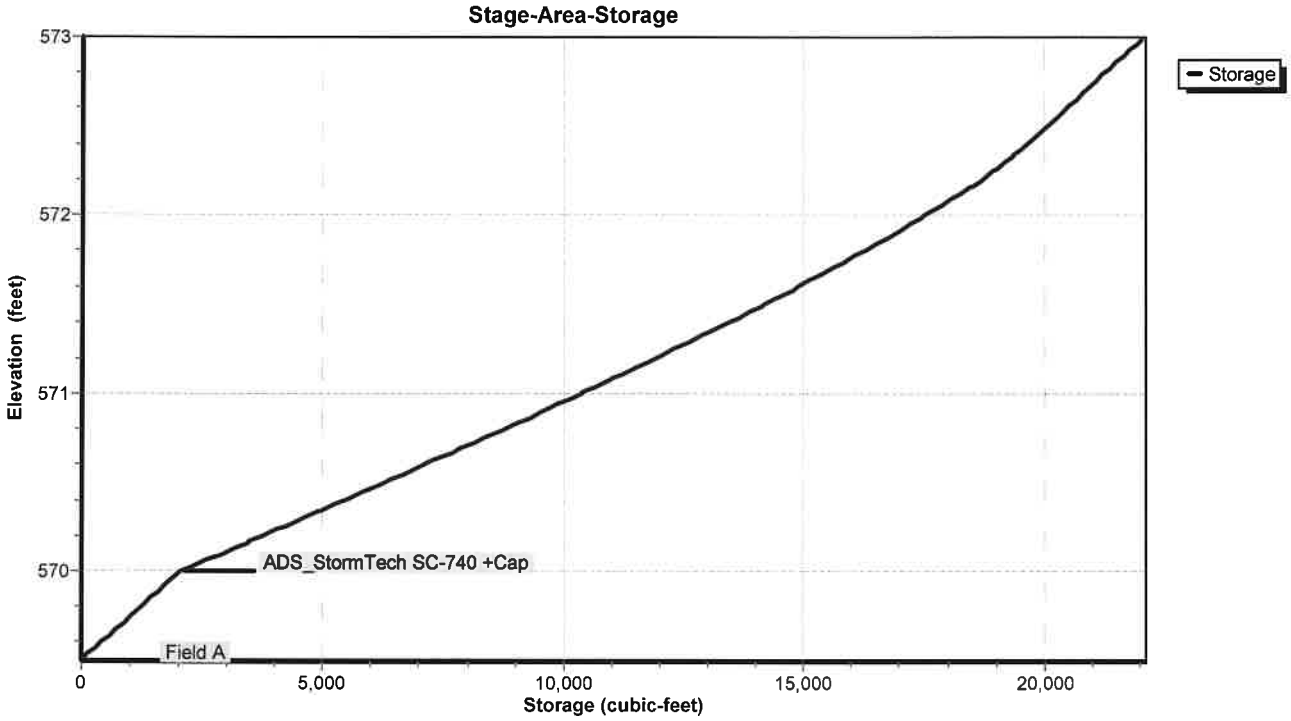


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.01	18	569.50	0.00
8.00	0.05	241	569.56	0.00
10.00	0.12	846	569.71	0.00
12.00	**7.80**	**5,030**	**570.35**	**0.43**
14.00	**0.39**	**8,504**	**570.77**	**1.03**
16.00	0.24	5,183	570.37	0.47
18.00	0.18	4,195	570.25	0.26
20.00	0.13	3,754	570.20	0.18
22.00	0.12	3,484	570.17	0.14
24.00	0.11	3,343	570.15	0.12
26.00	0.03	2,942	570.11	0.08
28.00	0.03	2,728	570.08	0.05
30.00	0.03	2,611	570.07	0.05
32.00	0.03	2,544	570.06	0.04
34.00	0.03	2,500	570.05	0.04
36.00	0.03	2,470	570.05	0.03
38.00	0.03	2,448	570.05	0.03
40.00	0.03	2,430	570.05	0.03
42.00	0.03	2,416	570.05	0.03
44.00	0.03	2,404	570.04	0.03
46.00	0.03	2,393	570.04	0.03
48.00	0.01	2,331	570.04	0.03
50.00	0.00	2,206	570.02	0.02
52.00	0.00	2,098	570.01	0.01
54.00	0.00	2,015	570.00	0.01
56.00	0.00	1,960	569.98	0.01
58.00	0.00	1,921	569.97	0.00
60.00	0.00	1,893	569.97	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)
569.50	0
569.55	203
569.60	406
569.65	609
569.70	812
569.75	1,014
569.80	1,217
569.85	1,420
569.90	1,623
569.95	1,826
570.00	2,029
570.05	2,459
570.10	2,889
570.15	3,318
570.20	3,746
570.25	4,173
570.30	4,598
570.35	5,022
570.40	5,444
570.45	5,865
570.50	6,284
570.55	6,701
570.60	7,116
570.65	7,529
570.70	7,940
570.75	8,349
570.80	8,756
570.85	9,160
570.90	9,562
570.95	9,962
571.00	10,359
571.05	10,754
571.10	11,145
571.15	11,534
571.20	11,919
571.25	12,301
571.30	12,680
571.35	13,056
571.40	13,428
571.45	13,797
571.50	14,161
571.55	14,522
571.60	14,879
571.65	15,230
571.70	15,577
571.75	15,917
571.80	16,252
571.85	16,582
571.90	16,906
571.95	17,224
572.00	17,535
572.05	17,838
572.10	18,133
572.15	18,417
572.20	18,690
572.25	18,946
572.30	19,188
572.35	19,417
572.40	19,637
572.45	19,850
572.50	20,057
572.55	20,260
572.60	20,463
572.65	20,665
572.70	20,868
572.75	21,071
572.80	21,274
572.85	21,477
572.90	21,680
572.95	21,883
573.00	**22,086**

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 2.30" for 10-Year event
Inflow = 5.28 cfs @ 12.00 hrs, Volume= 0.288 af
Outflow = 4.27 cfs @ 12.06 hrs, Volume= 0.288 af, Atten= 19%, Lag= 3.5 min
Primary = 4.27 cfs @ 12.06 hrs, Volume= 0.288 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.72' @ 12.06 hrs Surf.Area= 6,219 sf Storage= 4,001 cf

Plug-Flow detention time= 318.6 min calculated for 0.288 af (100% of inflow)
Center-of-Mass det. time= 318.8 min (1,116.8 - 798.1)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

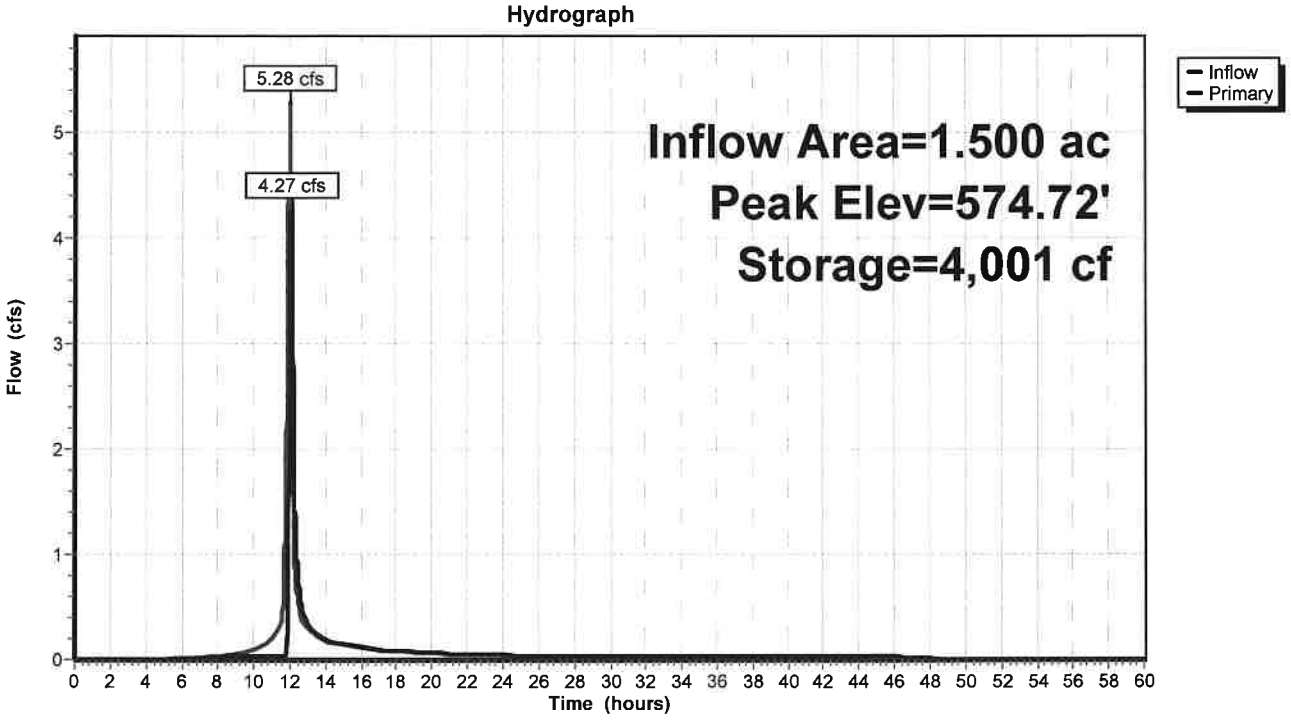
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

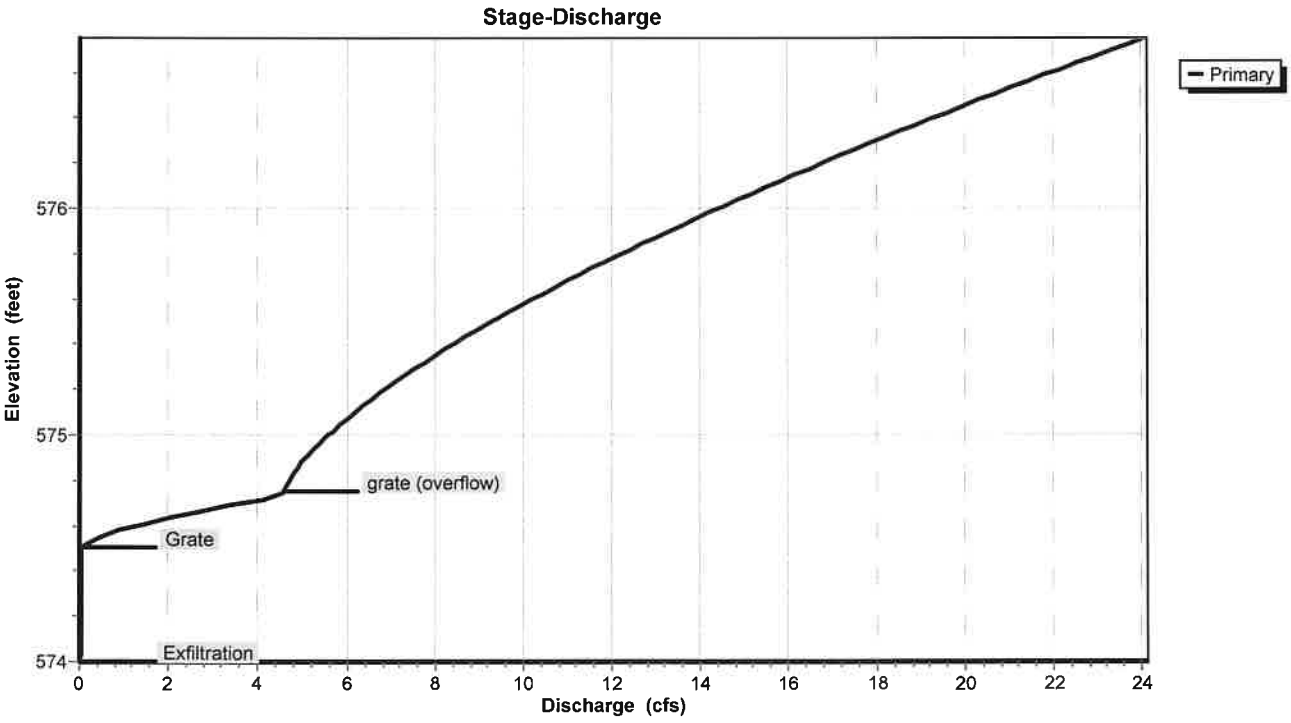
Primary OutFlow Max=4.36 cfs @ 12.06 hrs HW=574.72' (Free Discharge)
- **1=8" pipe** (Passes 4.36 cfs of 4.57 cfs potential flow)
  - **2=Grate** (Weir Controls 4.32 cfs @ 1.54 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

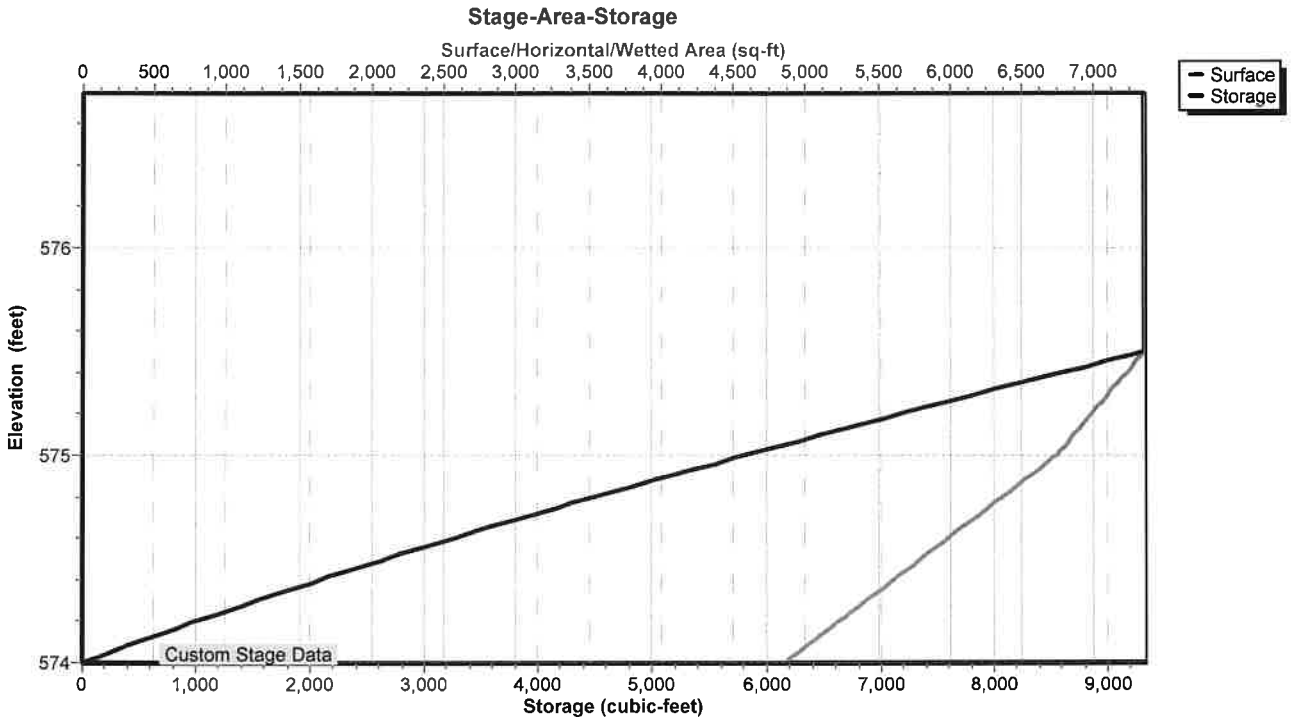


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.01	21	574.00	0.00
8.00	0.03	99	574.02	0.02
10.00	0.09	335	574.07	0.03
12.00	**5.27**	**3,799**	**574.69**	**3.45**
14.00	0.18	**2,801**	**574.52**	**0.19**
16.00	0.11	2,738	574.51	0.12
18.00	0.08	2,710	574.51	0.09
20.00	0.06	2,689	574.50	0.06
22.00	0.05	2,681	574.50	0.06
24.00	0.05	2,677	574.50	0.05
26.00	0.00	2,445	574.46	0.03
28.00	0.00	2,201	574.42	0.03
30.00	0.00	1,961	574.38	0.03
32.00	0.00	1,726	574.33	0.03
34.00	0.00	1,494	574.29	0.03
36.00	0.00	1,267	574.25	0.03
38.00	0.00	1,043	574.21	0.03
40.00	0.00	824	574.16	0.03
42.00	0.00	608	574.12	0.03
44.00	0.00	397	574.08	0.03
46.00	0.00	189	574.04	0.03
48.00	0.00	44	574.01	0.01
50.00	0.00	10	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=2.89"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=6.35 cfs 0.410 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=2.99"
Flow Length=345' Tc=9.1 min CN=92 Runoff=6.75 cfs 0.374 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=571.73' Storage=15,804 cf Inflow=11.11 cfs 0.784 af
Outflow=1.61 cfs 0.740 af

Pond 9P: Bioretention Area 3 Peak Elev=574.82' Storage=4,638 cf Inflow=6.75 cfs 0.374 af
Outflow=4.78 cfs 0.374 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.784 af Average Runoff Depth = 2.94"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

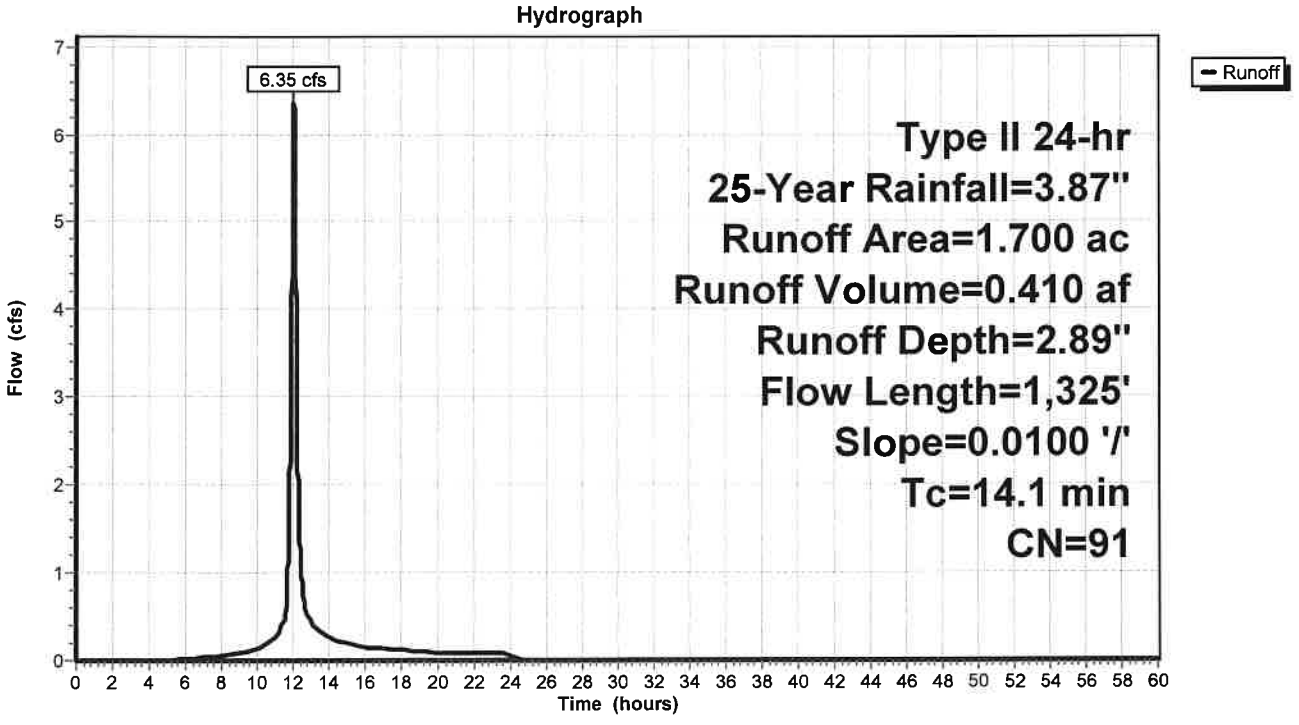
Runoff = 6.35 cfs @ 12.05 hrs, Volume= 0.410 af, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.04	0.00	0.00
2.00	0.09	0.00	0.00
3.00	0.13	0.00	0.00
4.00	0.19	0.00	0.00
5.00	0.24	0.00	0.01
6.00	0.31	0.01	0.02
7.00	0.38	0.03	0.04
8.00	0.46	0.06	0.05
9.00	0.57	0.10	0.09
10.00	0.70	0.17	0.13
11.00	0.91	0.30	0.27
12.00	2.57	1.67	**5.66**
13.00	2.99	2.06	**0.45**
14.00	3.17	2.23	0.26
15.00	3.30	2.36	0.20
16.00	3.41	2.45	0.15
17.00	3.49	2.53	0.13
18.00	3.56	2.60	0.12
19.00	3.63	2.66	0.10
20.00	3.68	2.72	0.09
21.00	3.73	2.76	0.08
22.00	3.78	2.81	0.08
23.00	3.83	2.85	0.07
24.00	**3.87**	**2.89**	0.07
25.00	3.87	2.89	0.00
26.00	3.87	2.89	0.00
27.00	3.87	2.89	0.00
28.00	3.87	2.89	0.00
29.00	3.87	2.89	0.00
30.00	3.87	2.89	0.00
31.00	3.87	2.89	0.00
32.00	3.87	2.89	0.00
33.00	3.87	2.89	0.00
34.00	3.87	2.89	0.00
35.00	3.87	2.89	0.00
36.00	3.87	2.89	0.00
37.00	3.87	2.89	0.00
38.00	3.87	2.89	0.00
39.00	3.87	2.89	0.00
40.00	3.87	2.89	0.00
41.00	3.87	2.89	0.00
42.00	3.87	2.89	0.00
43.00	3.87	2.89	0.00
44.00	3.87	2.89	0.00
45.00	3.87	2.89	0.00
46.00	3.87	2.89	0.00
47.00	3.87	2.89	0.00
48.00	3.87	2.89	0.00
49.00	3.87	2.89	0.00
50.00	3.87	2.89	0.00
51.00	3.87	2.89	0.00
52.00	3.87	2.89	0.00
53.00	3.87	2.89	0.00
54.00	3.87	2.89	0.00
55.00	3.87	2.89	0.00
56.00	3.87	2.89	0.00
57.00	3.87	2.89	0.00
58.00	3.87	2.89	0.00
59.00	3.87	2.89	0.00
60.00	3.87	2.89	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

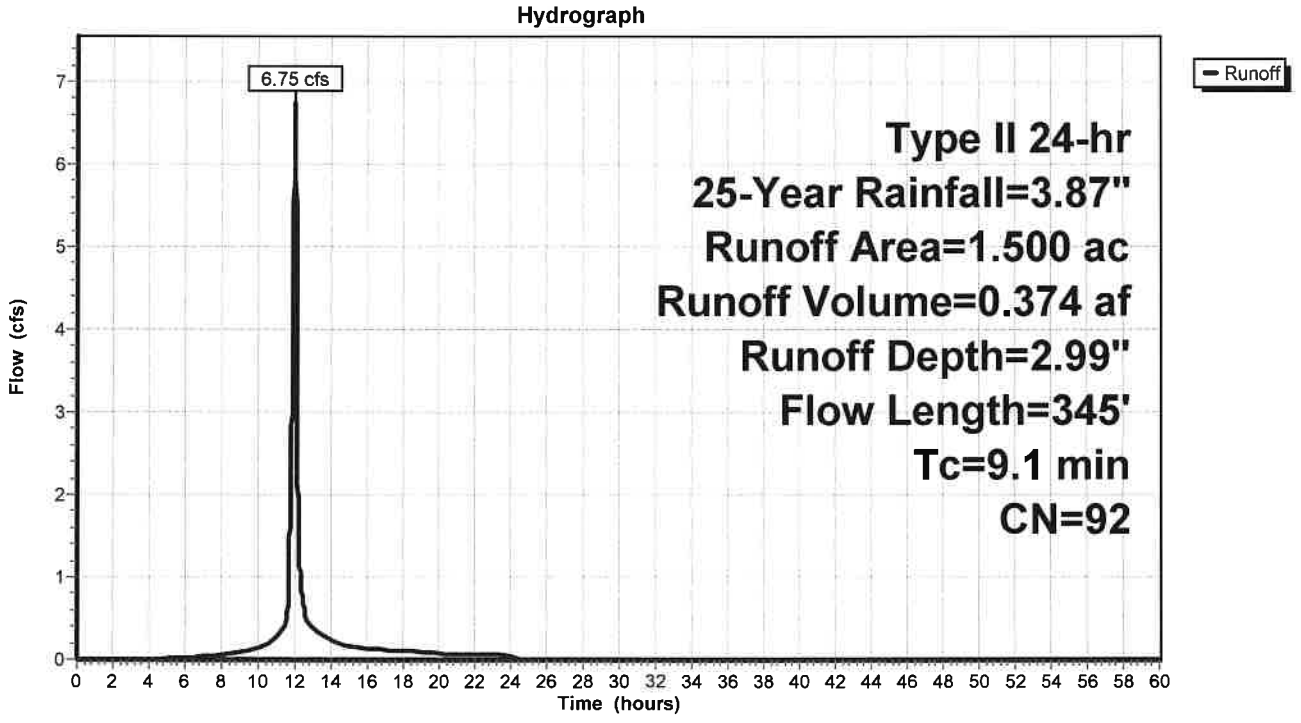
Runoff = 6.75 cfs @ 12.00 hrs, Volume= 0.374 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.04	0.00	0.00
2.00	0.09	0.00	0.00
3.00	0.13	0.00	0.00
4.00	0.19	0.00	0.00
5.00	0.24	0.01	0.01
6.00	0.31	0.02	0.02
7.00	0.38	0.04	0.04
8.00	0.46	0.07	0.05
9.00	0.57	0.12	0.09
10.00	0.70	0.20	0.13
11.00	0.91	0.34	0.27
12.00	2.57	1.75	**6.75**
13.00	2.99	2.15	0.38
14.00	3.17	2.33	0.22
15.00	3.30	2.45	0.17
16.00	3.41	2.55	0.13
17.00	3.49	2.63	0.12
18.00	3.56	2.70	0.10
19.00	3.63	2.76	0.09
20.00	3.68	2.81	0.08
21.00	3.73	2.86	0.07
22.00	3.78	2.91	0.07
23.00	3.83	2.95	0.07
24.00	**3.87**	**2.99**	0.06
25.00	3.87	2.99	0.00
26.00	3.87	2.99	0.00
27.00	3.87	2.99	0.00
28.00	3.87	2.99	0.00
29.00	3.87	2.99	0.00
30.00	3.87	2.99	0.00
31.00	3.87	2.99	0.00
32.00	3.87	2.99	0.00
33.00	3.87	2.99	0.00
34.00	3.87	2.99	0.00
35.00	3.87	2.99	0.00
36.00	3.87	2.99	0.00
37.00	3.87	2.99	0.00
38.00	3.87	2.99	0.00
39.00	3.87	2.99	0.00
40.00	3.87	2.99	0.00
41.00	3.87	2.99	0.00
42.00	3.87	2.99	0.00
43.00	3.87	2.99	0.00
44.00	3.87	2.99	0.00
45.00	3.87	2.99	0.00
46.00	3.87	2.99	0.00
47.00	3.87	2.99	0.00
48.00	3.87	2.99	0.00
49.00	3.87	2.99	0.00
50.00	3.87	2.99	0.00
51.00	3.87	2.99	0.00
52.00	3.87	2.99	0.00
53.00	3.87	2.99	0.00
54.00	3.87	2.99	0.00
55.00	3.87	2.99	0.00
56.00	3.87	2.99	0.00
57.00	3.87	2.99	0.00
58.00	3.87	2.99	0.00
59.00	3.87	2.99	0.00
60.00	3.87	2.99	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 2.94" for 25-Year event
Inflow = 11.11 cfs @ 12.06 hrs, Volume= 0.784 af
Outflow = 1.61 cfs @ 12.54 hrs, Volume= 0.740 af, Atten= 85%, Lag= 29.2 min
Primary = 1.61 cfs @ 12.54 hrs, Volume= 0.740 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 571.73' @ 12.54 hrs Surf.Area= 10,145 sf Storage= 15,804 cf

Plug-Flow detention time= 252.2 min calculated for 0.740 af (94% of inflow)
Center-of-Mass det. time= 168.6 min (1,084.7 - 916.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

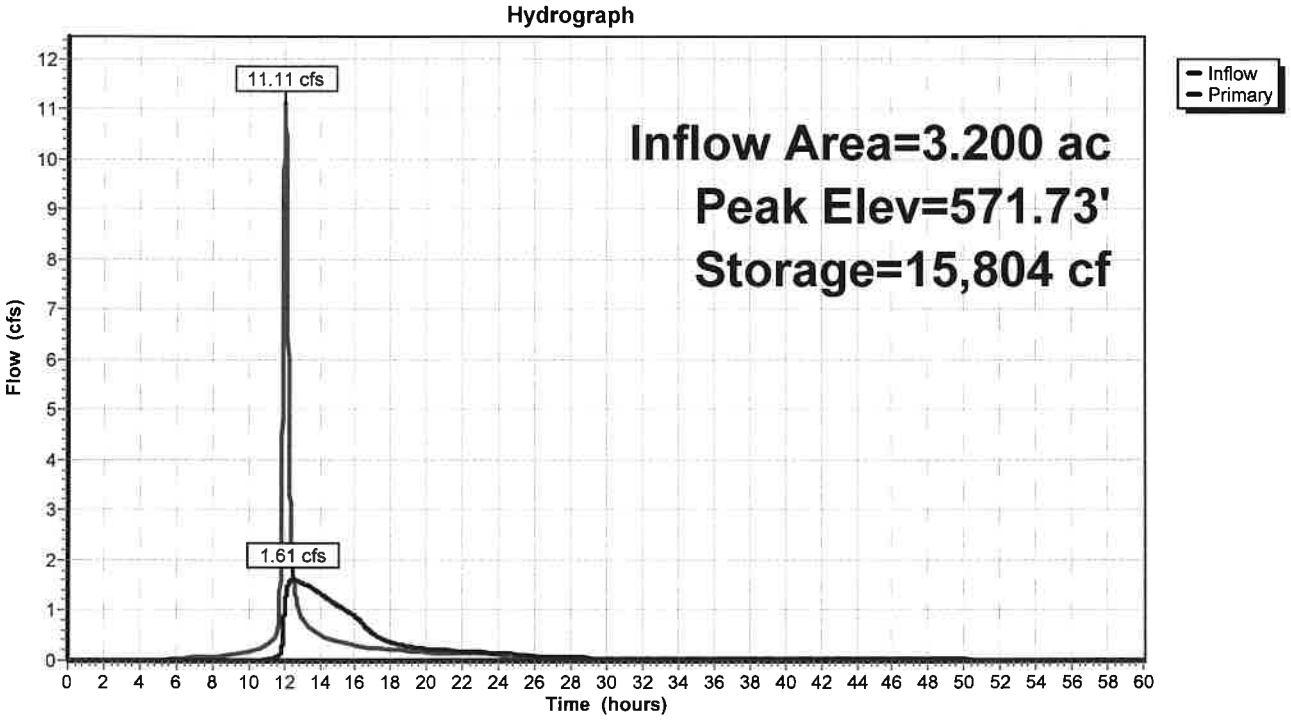
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

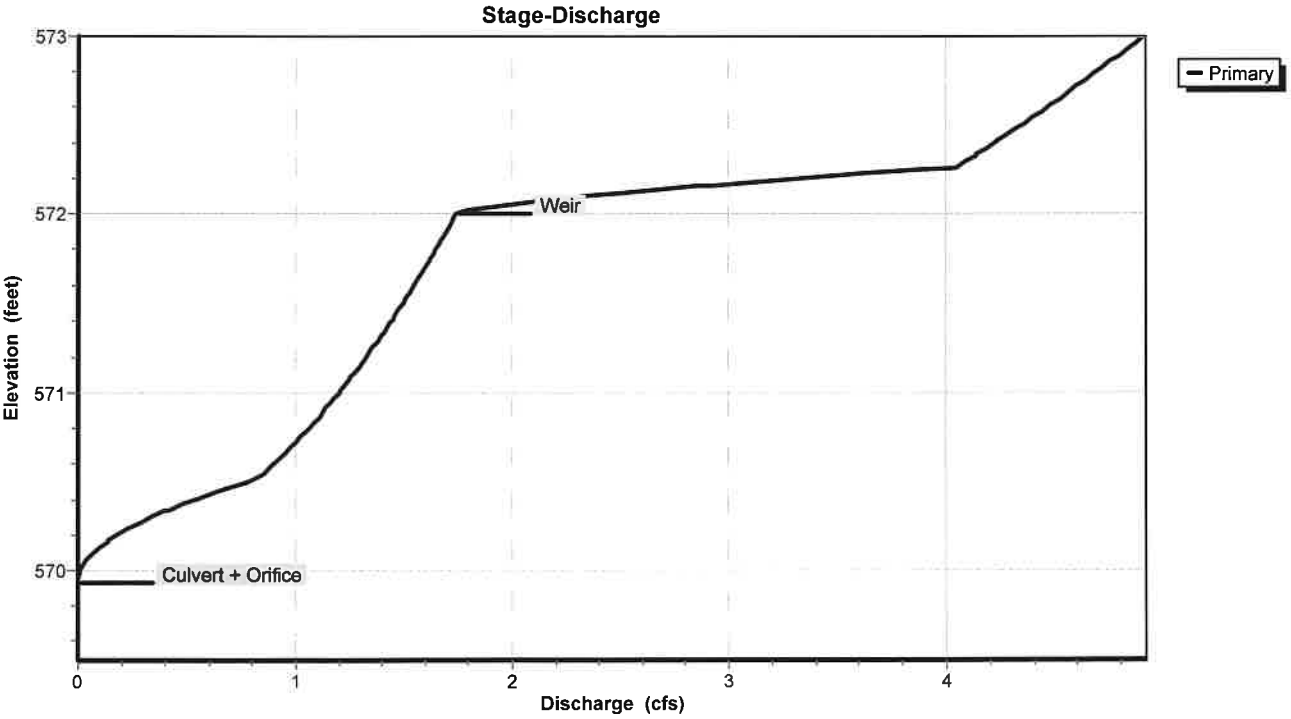
Primary OutFlow Max=1.61 cfs @ 12.54 hrs HW=571.73' (Free Discharge)
└**1=Culvert** (Passes 1.61 cfs of 3.29 cfs potential flow)
  ├**2=Orifice** (Orifice Controls 1.61 cfs @ 6.16 fps)
  └**3=Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

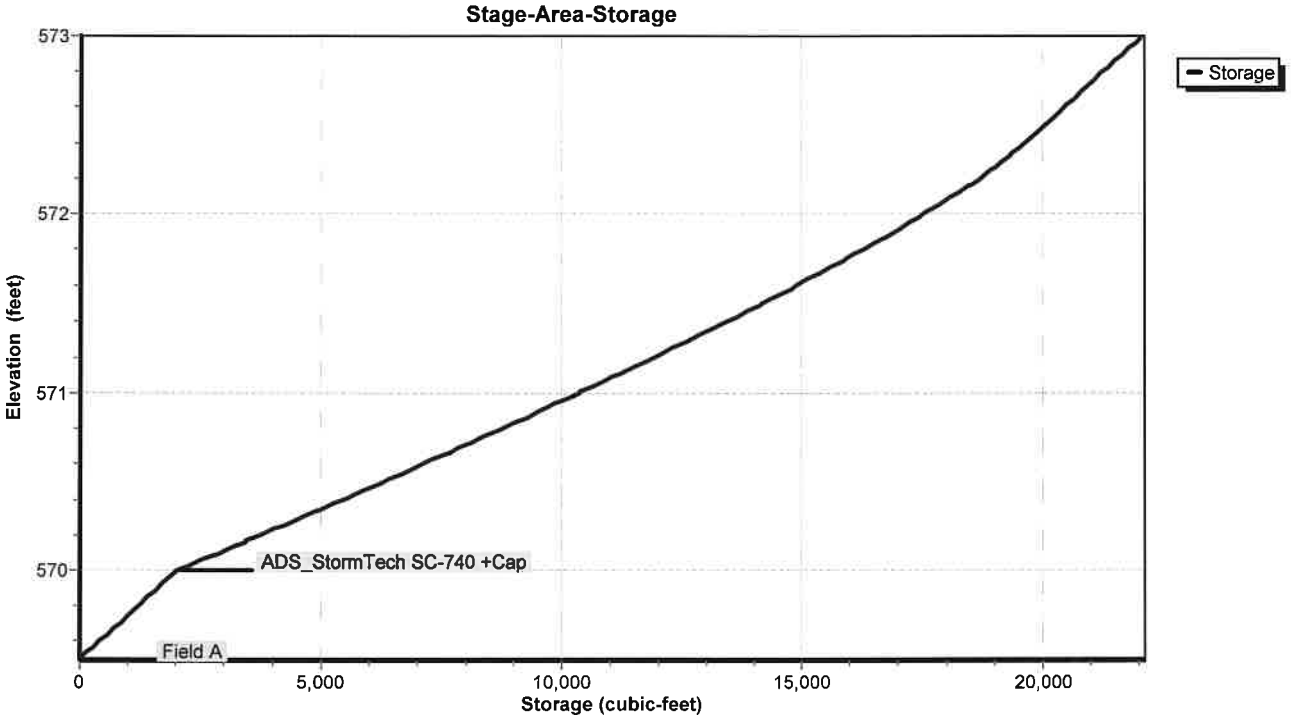


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.03	85	569.52	0.00
8.00	0.08	499	569.62	0.00
10.00	0.16	1,337	569.83	0.00
12.00	**10.28**	**7,562**	**570.65**	**0.94**
14.00	**0.49**	**12,132**	**571.23**	**1.34**
16.00	0.30	6,914	570.58	0.87
18.00	0.22	4,703	570.31	0.36
20.00	0.16	4,045	570.24	0.23
22.00	0.15	3,711	570.20	0.17
24.00	0.13	3,549	570.18	0.15
26.00	0.03	3,038	570.12	0.09
28.00	0.03	2,775	570.09	0.06
30.00	0.03	2,637	570.07	0.05
32.00	0.03	2,558	570.06	0.04
34.00	0.03	2,510	570.06	0.04
36.00	0.03	2,476	570.05	0.04
38.00	0.03	2,451	570.05	0.03
40.00	0.03	2,433	570.05	0.03
42.00	0.03	2,418	570.05	0.03
44.00	0.03	2,405	570.04	0.03
46.00	0.03	2,394	570.04	0.03
48.00	0.01	2,335	570.04	0.03
50.00	0.00	2,210	570.02	0.02
52.00	0.00	2,101	570.01	0.01
54.00	0.00	2,017	570.00	0.01
56.00	0.00	1,961	569.98	0.01
58.00	0.00	1,922	569.97	0.00
60.00	0.00	1,894	569.97	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 2.99" for 25-Year event
Inflow = 6.75 cfs @ 12.00 hrs, Volume= 0.374 af
Outflow = 4.78 cfs @ 12.08 hrs, Volume= 0.374 af, Atten= 29%, Lag= 4.5 min
Primary = 4.78 cfs @ 12.08 hrs, Volume= 0.374 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.82' @ 12.08 hrs Surf.Area= 6,409 sf Storage= 4,638 cf

Plug-Flow detention time= 252.6 min calculated for 0.374 af (100% of inflow)
Center-of-Mass det. time= 252.8 min (1,043.6 - 790.7)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

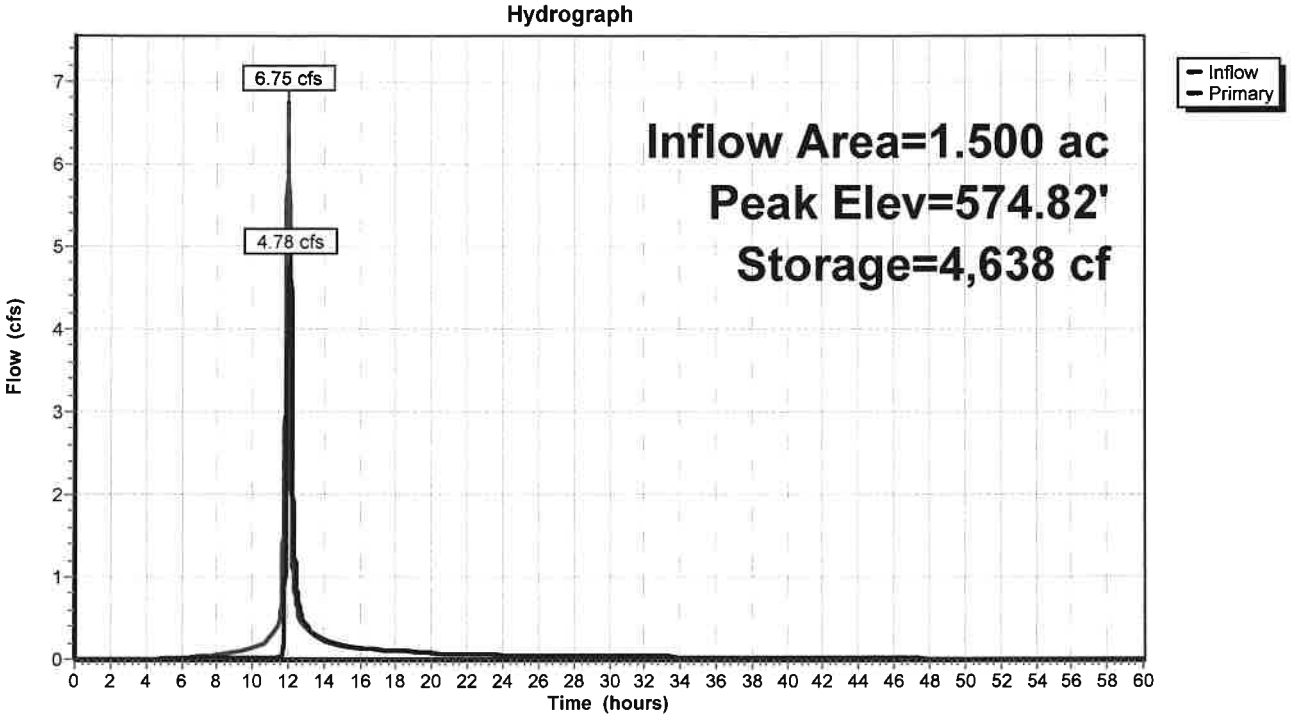
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

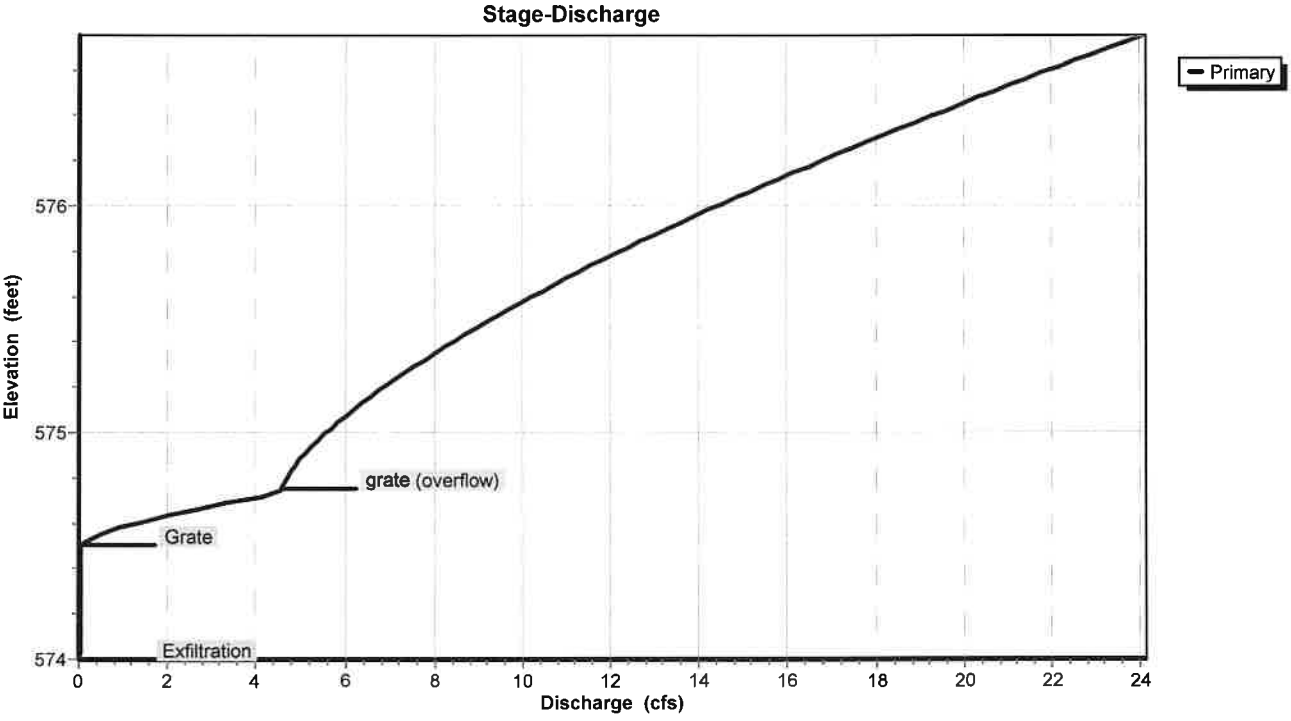
Primary OutFlow Max=4.78 cfs @ 12.08 hrs HW=574.82' (Free Discharge)
- **1=8" pipe** (Barrel Controls 4.65 cfs @ 5.92 fps)
  - **2=Grate** (Passes < 5.74 cfs potential flow)
  - **3=Exfiltration** (Passes < 0.04 cfs potential flow)
- **4=grate (overflow)** (Orifice Controls 0.13 cfs @ 0.87 fps)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

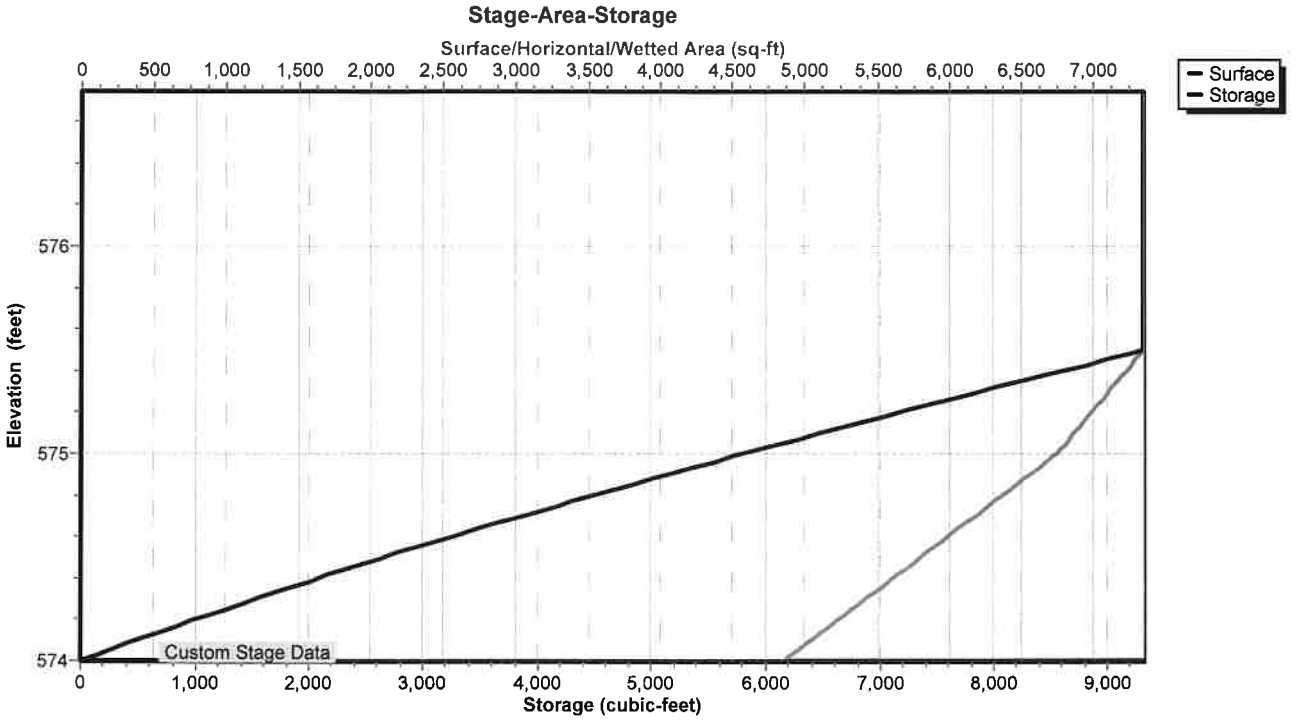


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.02	55	574.01	0.01
8.00	0.05	177	574.04	0.03
10.00	0.13	612	574.12	0.03
12.00	**6.75**	**4,265**	**574.77**	**4.62**
14.00	0.22	**2,825**	**574.53**	**0.24**
16.00	0.13	2,765	574.52	0.14
18.00	0.10	2,730	574.51	0.11
20.00	0.08	2,704	574.51	0.08
22.00	0.07	2,694	574.51	0.07
24.00	0.06	2,689	574.50	0.06
26.00	0.00	2,452	574.46	0.03
28.00	0.00	2,208	574.42	0.03
30.00	0.00	1,968	574.38	0.03
32.00	0.00	1,733	574.34	0.03
34.00	0.00	1,501	574.29	0.03
36.00	0.00	1,273	574.25	0.03
38.00	0.00	1,050	574.21	0.03
40.00	0.00	830	574.17	0.03
42.00	0.00	614	574.12	0.03
44.00	0.00	403	574.08	0.03
46.00	0.00	195	574.04	0.03
48.00	0.00	46	574.01	0.01
50.00	0.00	10	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=3.52"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=7.64 cfs 0.498 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=3.62"
Flow Length=345' Tc=9.1 min CN=92 Runoff=8.07 cfs 0.453 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=572.23' Storage=18,837 cf Inflow=12.80 cfs 0.951 af
Outflow=3.61 cfs 0.907 af

Pond 9P: Bioretention Area 3 Peak Elev=574.93' Storage=5,333 cf Inflow=8.07 cfs 0.453 af
Outflow=5.22 cfs 0.453 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.951 af Average Runoff Depth = 3.57"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

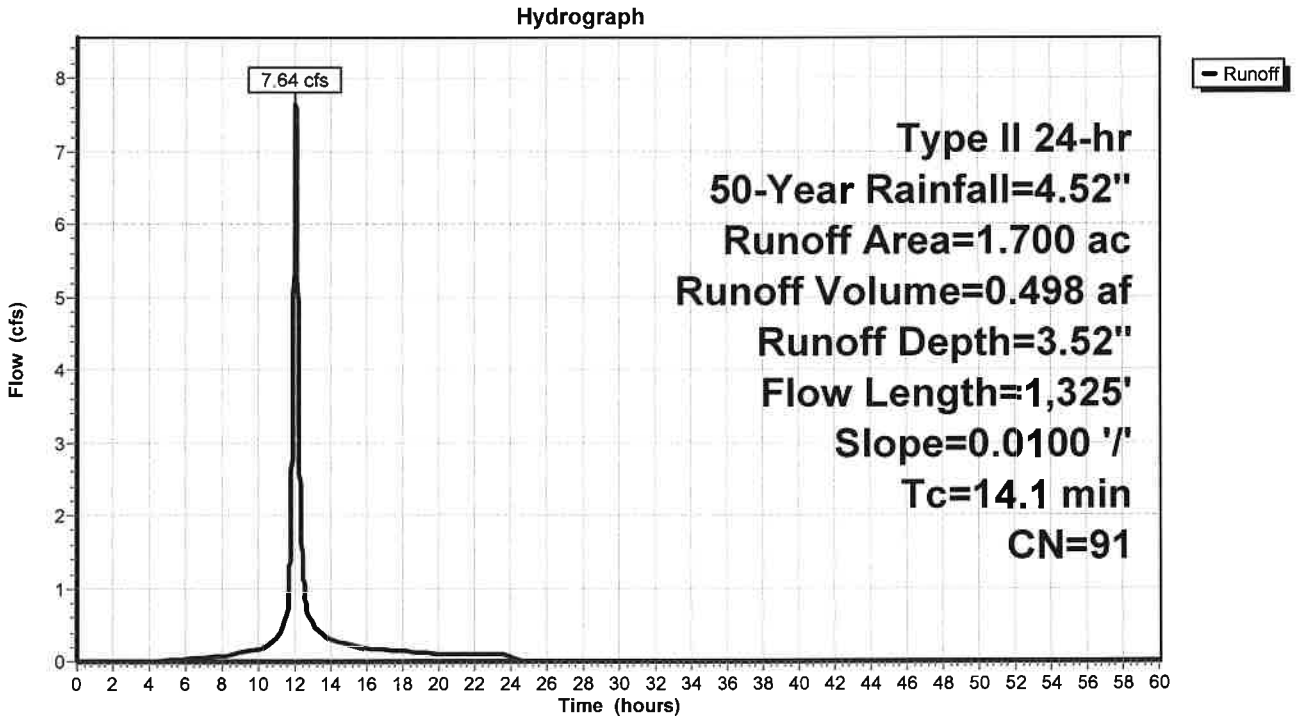
Runoff = 7.64 cfs @ 12.05 hrs, Volume= 0.498 af, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.10	0.00	0.00
3.00	0.16	0.00	0.00
4.00	0.22	0.00	0.00
5.00	0.28	0.01	0.02
6.00	0.36	0.02	0.03
7.00	0.45	0.05	0.05
8.00	0.54	0.09	0.07
9.00	0.66	0.15	0.12
10.00	0.82	0.24	0.17
11.00	1.06	0.40	0.34
12.00	3.00	2.07	**6.84**
13.00	3.49	2.53	**0.53**
14.00	3.71	2.74	0.30
15.00	3.86	2.88	0.23
16.00	3.98	3.00	0.18
17.00	4.08	3.09	0.16
18.00	4.16	3.17	0.14
19.00	4.24	3.25	0.12
20.00	4.30	3.31	0.10
21.00	4.36	3.36	0.09
22.00	4.42	3.42	0.09
23.00	4.47	3.47	0.09
24.00	**4.52**	**3.52**	0.08
25.00	4.52	3.52	0.00
26.00	4.52	3.52	0.00
27.00	4.52	3.52	0.00
28.00	4.52	3.52	0.00
29.00	4.52	3.52	0.00
30.00	4.52	3.52	0.00
31.00	4.52	3.52	0.00
32.00	4.52	3.52	0.00
33.00	4.52	3.52	0.00
34.00	4.52	3.52	0.00
35.00	4.52	3.52	0.00
36.00	4.52	3.52	0.00
37.00	4.52	3.52	0.00
38.00	4.52	3.52	0.00
39.00	4.52	3.52	0.00
40.00	4.52	3.52	0.00
41.00	4.52	3.52	0.00
42.00	4.52	3.52	0.00
43.00	4.52	3.52	0.00
44.00	4.52	3.52	0.00
45.00	4.52	3.52	0.00
46.00	4.52	3.52	0.00
47.00	4.52	3.52	0.00
48.00	4.52	3.52	0.00
49.00	4.52	3.52	0.00
50.00	4.52	3.52	0.00
51.00	4.52	3.52	0.00
52.00	4.52	3.52	0.00
53.00	4.52	3.52	0.00
54.00	4.52	3.52	0.00
55.00	4.52	3.52	0.00
56.00	4.52	3.52	0.00
57.00	4.52	3.52	0.00
58.00	4.52	3.52	0.00
59.00	4.52	3.52	0.00
60.00	4.52	3.52	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

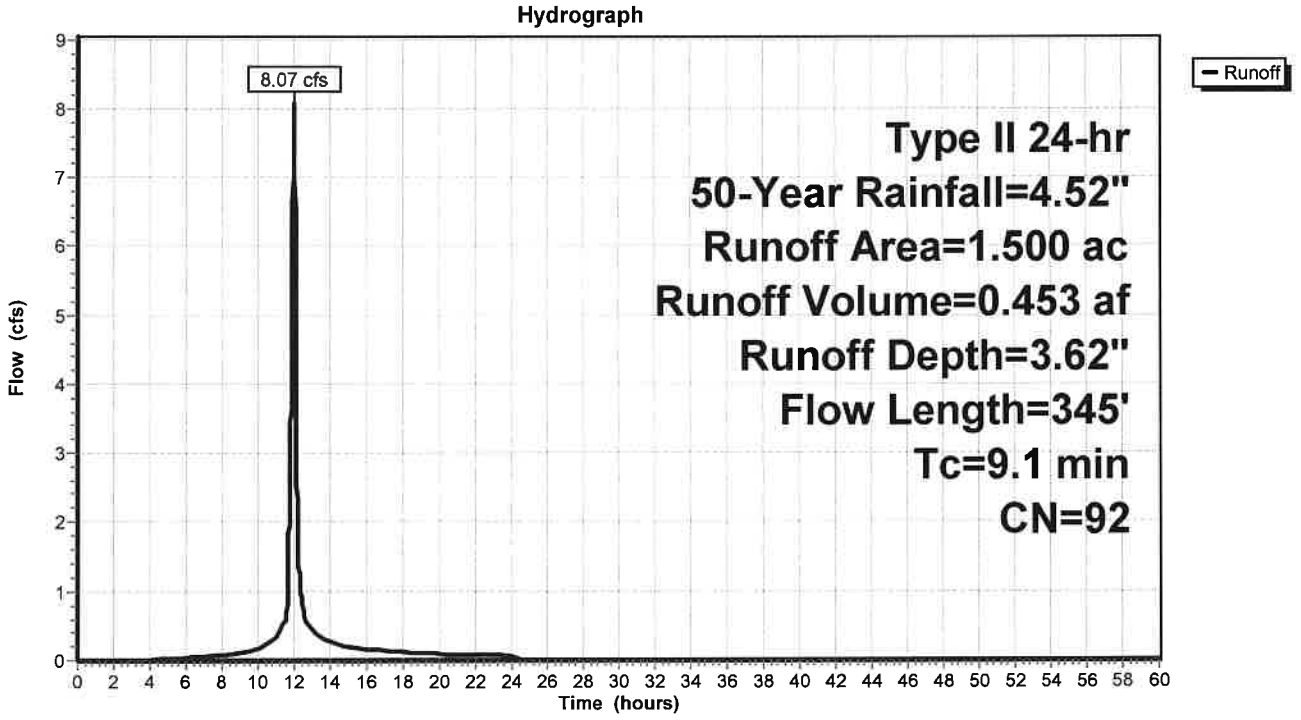
Runoff = 8.07 cfs @ 12.00 hrs, Volume= 0.453 af, Depth= 3.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.10	0.00	0.00
3.00	0.16	0.00	0.00
4.00	0.22	0.00	0.01
5.00	0.28	0.01	0.02
6.00	0.36	0.03	0.04
7.00	0.45	0.07	0.06
8.00	0.54	0.11	0.07
9.00	0.66	0.18	0.12
10.00	0.82	0.27	0.17
11.00	1.06	0.45	0.34
12.00	3.00	2.16	**8.07**
13.00	3.49	2.63	0.45
14.00	3.71	2.83	0.26
15.00	3.86	2.98	0.20
16.00	3.98	3.10	0.16
17.00	4.08	3.19	0.14
18.00	4.16	3.28	0.12
19.00	4.24	3.35	0.11
20.00	4.30	3.41	0.09
21.00	4.36	3.47	0.08
22.00	4.42	3.52	0.08
23.00	4.47	3.57	0.08
24.00	**4.52**	**3.62**	0.07
25.00	4.52	3.62	0.00
26.00	4.52	3.62	0.00
27.00	4.52	3.62	0.00
28.00	4.52	3.62	0.00
29.00	4.52	3.62	0.00
30.00	4.52	3.62	0.00
31.00	4.52	3.62	0.00
32.00	4.52	3.62	0.00
33.00	4.52	3.62	0.00
34.00	4.52	3.62	0.00
35.00	4.52	3.62	0.00
36.00	4.52	3.62	0.00
37.00	4.52	3.62	0.00
38.00	4.52	3.62	0.00
39.00	4.52	3.62	0.00
40.00	4.52	3.62	0.00
41.00	4.52	3.62	0.00
42.00	4.52	3.62	0.00
43.00	4.52	3.62	0.00
44.00	4.52	3.62	0.00
45.00	4.52	3.62	0.00
46.00	4.52	3.62	0.00
47.00	4.52	3.62	0.00
48.00	4.52	3.62	0.00
49.00	4.52	3.62	0.00
50.00	4.52	3.62	0.00
51.00	4.52	3.62	0.00
52.00	4.52	3.62	0.00
53.00	4.52	3.62	0.00
54.00	4.52	3.62	0.00
55.00	4.52	3.62	0.00
56.00	4.52	3.62	0.00
57.00	4.52	3.62	0.00
58.00	4.52	3.62	0.00
59.00	4.52	3.62	0.00
60.00	4.52	3.62	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 3.57" for 50-Year event
Inflow = 12.80 cfs @ 12.06 hrs, Volume= 0.951 af
Outflow = 3.61 cfs @ 12.36 hrs, Volume= 0.907 af, Atten= 72%, Lag= 17.7 min
Primary = 3.61 cfs @ 12.36 hrs, Volume= 0.907 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 572.23' @ 12.36 hrs Surf.Area= 10,145 sf Storage= 18,837 cf

Plug-Flow detention time= 228.3 min calculated for 0.907 af (95% of inflow)
Center-of-Mass det. time= 158.8 min (1,051.4 - 892.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

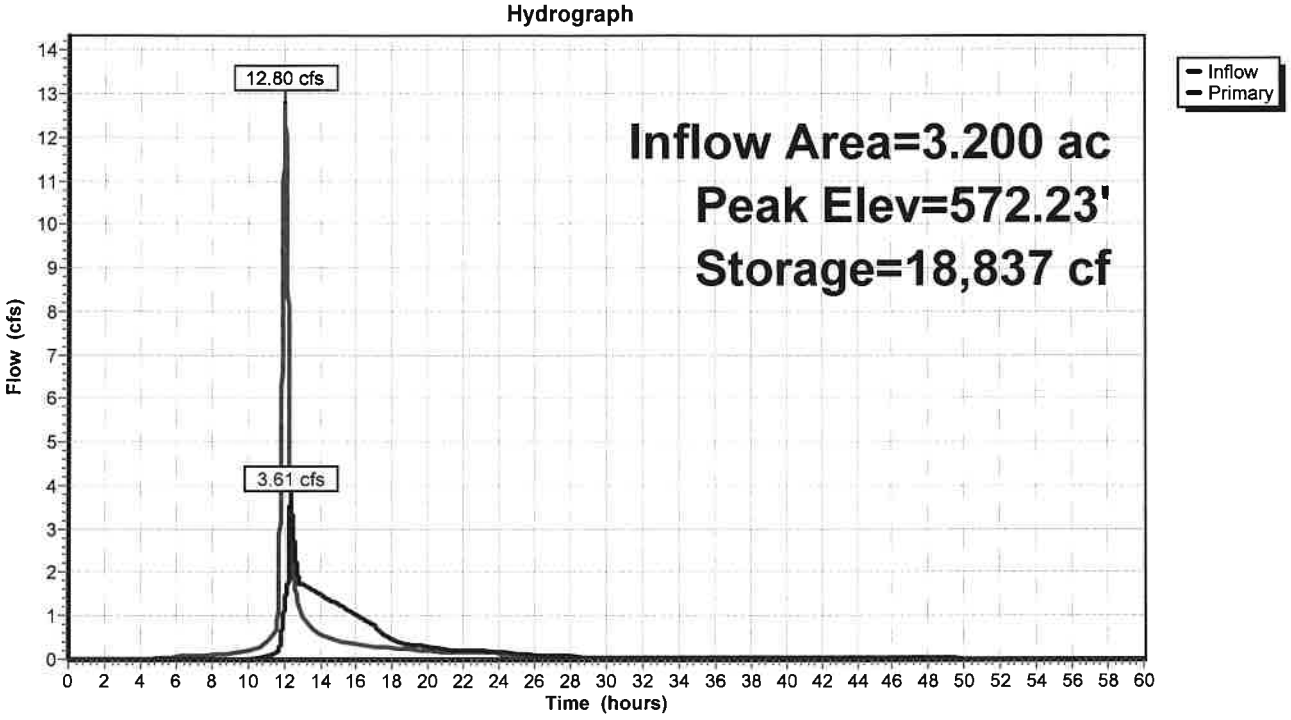
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

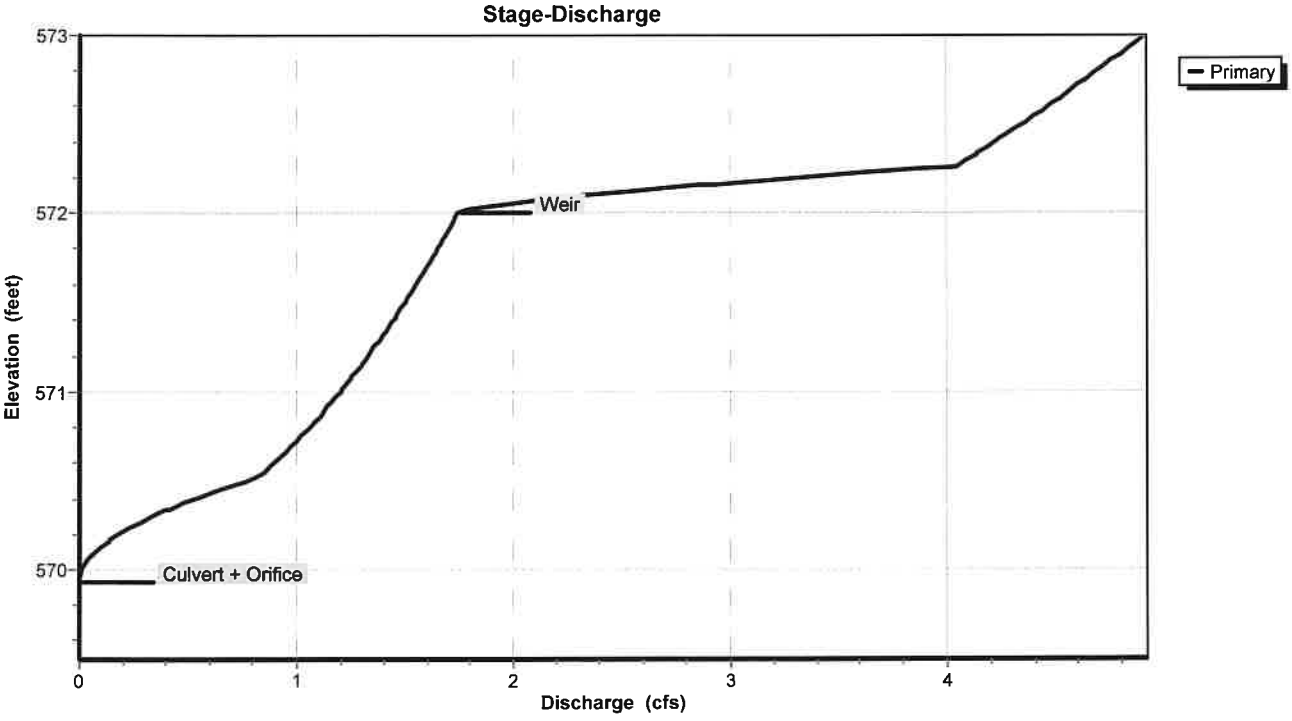
Primary OutFlow Max=3.60 cfs @ 12.36 hrs HW=572.23' (Free Discharge)
└**1=Culvert** (Passes 3.60 cfs of 4.00 cfs potential flow)
  ├**2=Orifice** (Orifice Controls 1.84 cfs @ 7.03 fps)
  └**3=Weir** (Weir Controls 1.76 cfs @ 1.56 fps)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

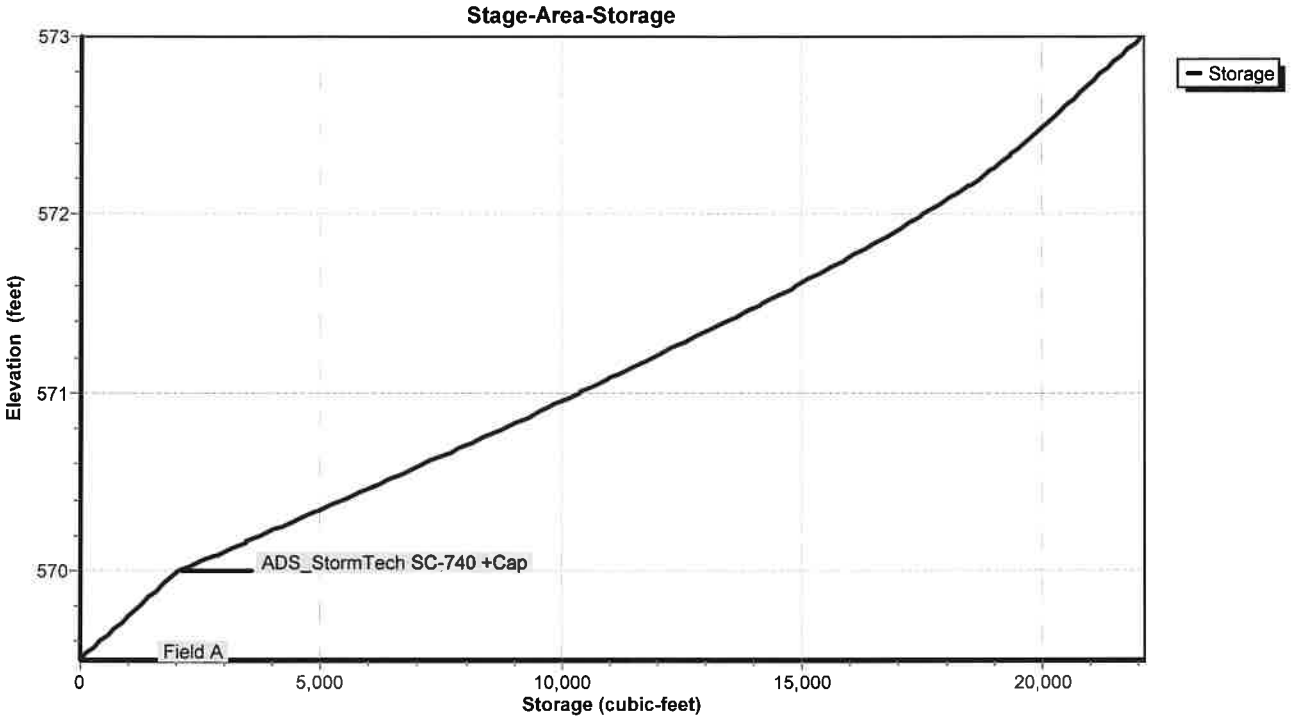


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	1	569.50	0.00
6.00	0.05	184	569.55	0.00
8.00	0.10	755	569.69	0.00
10.00	0.20	1,811	569.95	0.00
12.00	**11.66**	**9,752**	**570.92**	**1.15**
14.00	**0.59**	**14,219**	**571.51**	**1.50**
16.00	0.35	8,385	570.75	1.02
18.00	0.26	5,166	570.37	0.47
20.00	0.19	4,282	570.26	0.27
22.00	0.17	3,893	570.22	0.20
24.00	0.16	3,718	570.20	0.18
26.00	0.03	3,113	570.13	0.09
28.00	0.03	2,810	570.09	0.06
30.00	0.03	2,657	570.07	0.05
32.00	0.03	2,569	570.06	0.04
34.00	0.03	2,516	570.06	0.04
36.00	0.03	2,480	570.05	0.04
38.00	0.03	2,454	570.05	0.03
40.00	0.03	2,435	570.05	0.03
42.00	0.03	2,419	570.05	0.03
44.00	0.03	2,406	570.04	0.03
46.00	0.03	2,395	570.04	0.03
48.00	0.01	2,338	570.04	0.03
50.00	0.00	2,213	570.02	0.02
52.00	0.00	2,103	570.01	0.01
54.00	0.00	2,018	570.00	0.01
56.00	0.00	1,962	569.98	0.01
58.00	0.00	1,923	569.97	0.00
60.00	0.00	1,894	569.97	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 3.62" for 50-Year event
Inflow = 8.07 cfs @ 12.00 hrs, Volume= 0.453 af
Outflow = 5.22 cfs @ 12.09 hrs, Volume= 0.453 af, Atten= 35%, Lag= 5.1 min
Primary = 5.22 cfs @ 12.09 hrs, Volume= 0.453 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.93' @ 12.09 hrs Surf.Area= 6,611 sf Storage= 5,333 cf

Plug-Flow detention time= 214.9 min calculated for 0.453 af (100% of inflow)
Center-of-Mass det. time= 215.2 min (1,000.7 - 785.5)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

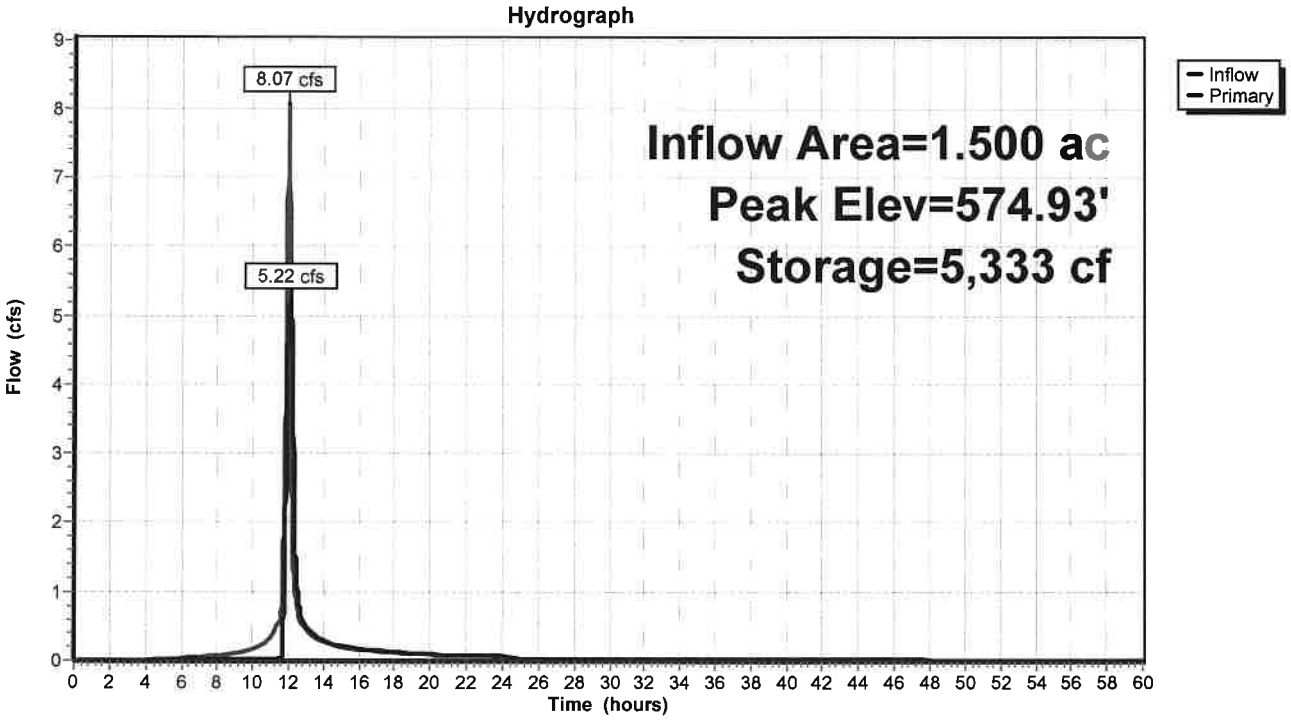
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

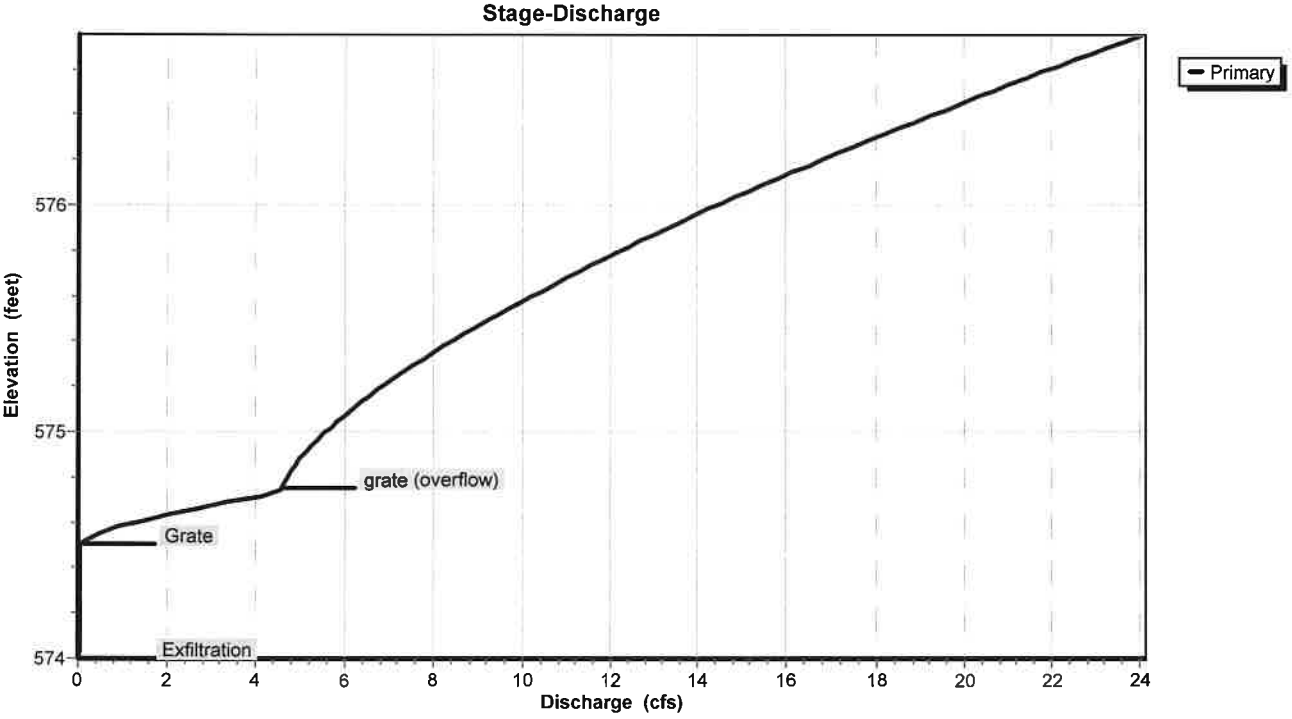
Primary OutFlow Max=5.22 cfs @ 12.09 hrs HW=574.93' (Free Discharge)
- **1=8" pipe** (Barrel Controls 4.73 cfs @ 6.02 fps)
  - **2=Grate** (Passes < 6.61 cfs potential flow)
  - **3=Exfiltration** (Passes < 0.04 cfs potential flow)
- **4=grate (overflow)** (Orifice Controls 0.49 cfs @ 1.36 fps)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

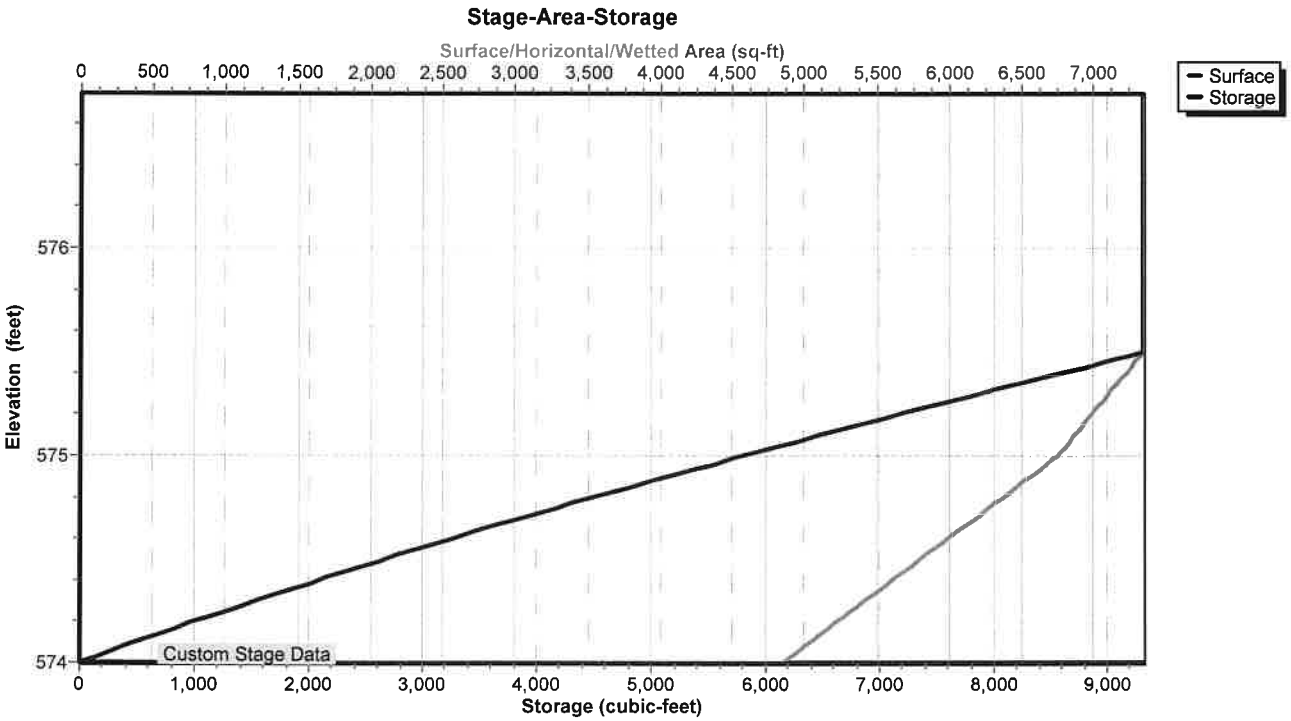


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.01	6	574.00	0.00
6.00	0.04	95	574.02	0.02
8.00	0.07	296	574.06	0.03
10.00	0.17	928	574.18	0.03
12.00	**8.07**	**4,720**	**574.84**	**4.83**
14.00	0.26	**2,846**	**574.53**	**0.28**
16.00	0.16	2,787	574.52	0.17
18.00	0.12	2,748	574.51	0.13
20.00	0.09	2,717	574.51	0.09
22.00	0.08	2,706	574.51	0.08
24.00	0.07	2,699	574.51	0.07
26.00	0.00	2,457	574.46	0.03
28.00	0.00	2,213	574.42	0.03
30.00	0.00	1,974	574.38	0.03
32.00	0.00	1,738	574.34	0.03
34.00	0.00	1,506	574.29	0.03
36.00	0.00	1,278	574.25	0.03
38.00	0.00	1,055	574.21	0.03
40.00	0.00	835	574.17	0.03
42.00	0.00	619	574.12	0.03
44.00	0.00	407	574.08	0.03
46.00	0.00	199	574.04	0.03
48.00	0.00	47	574.01	0.01
50.00	0.00	10	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=4.25"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=9.15 cfs 0.603 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=4.36"
Flow Length=345' Tc=9.1 min CN=92 Runoff=9.61 cfs 0.545 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=572.92' Storage=21,772 cf Inflow=14.92 cfs 1.148 af
Outflow=4.83 cfs 1.105 af

Pond 9P: Bioretention Area 3 Peak Elev=575.05' Storage=6,150 cf Inflow=9.61 cfs 0.545 af
Outflow=5.89 cfs 0.545 af

Total Runoff Area = 3.200 ac Runoff Volume = 1.148 af Average Runoff Depth = 4.31"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

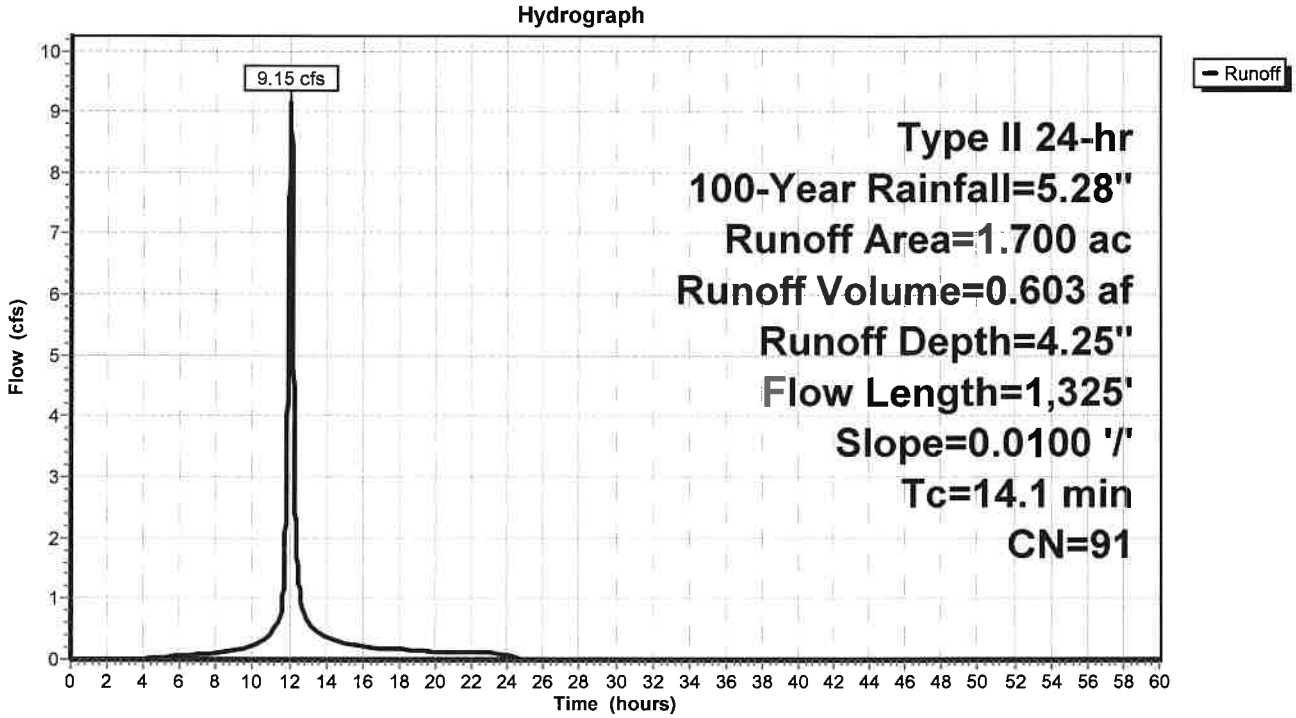
Runoff = 9.15 cfs @ 12.05 hrs, Volume= 0.603 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.28	4.25	0.00
1.00	0.06	0.00	0.00	53.00	5.28	4.25	0.00
2.00	0.12	0.00	0.00	54.00	5.28	4.25	0.00
3.00	0.18	0.00	0.00	55.00	5.28	4.25	0.00
4.00	0.25	0.00	0.01	56.00	5.28	4.25	0.00
5.00	0.33	0.02	0.03	57.00	5.28	4.25	0.00
6.00	0.42	0.04	0.05	58.00	5.28	4.25	0.00
7.00	0.52	0.08	0.07	59.00	5.28	4.25	0.00
8.00	0.63	0.13	0.10	60.00	5.28	4.25	0.00
9.00	0.78	0.21	0.16				
10.00	0.96	0.33	0.22				
11.00	1.24	0.54	0.43				
12.00	3.50	2.54	**8.21**				
13.00	4.08	3.09	**0.63**				
14.00	4.33	3.33	0.36				
15.00	4.51	3.50	0.28				
16.00	4.65	3.64	0.21				
17.00	4.76	3.75	0.18				
18.00	4.86	3.85	0.16				
19.00	4.95	3.93	0.14				
20.00	5.03	4.01	0.12				
21.00	5.09	4.07	0.11				
22.00	5.16	4.14	0.11				
23.00	5.22	4.20	0.10				
24.00	**5.28**	**4.25**	0.10				
25.00	5.28	4.25	0.00				
26.00	5.28	4.25	0.00				
27.00	5.28	4.25	0.00				
28.00	5.28	4.25	0.00				
29.00	5.28	4.25	0.00				
30.00	5.28	4.25	0.00				
31.00	5.28	4.25	0.00				
32.00	5.28	4.25	0.00				
33.00	5.28	4.25	0.00				
34.00	5.28	4.25	0.00				
35.00	5.28	4.25	0.00				
36.00	5.28	4.25	0.00				
37.00	5.28	4.25	0.00				
38.00	5.28	4.25	0.00				
39.00	5.28	4.25	0.00				
40.00	5.28	4.25	0.00				
41.00	5.28	4.25	0.00				
42.00	5.28	4.25	0.00				
43.00	5.28	4.25	0.00				
44.00	5.28	4.25	0.00				
45.00	5.28	4.25	0.00				
46.00	5.28	4.25	0.00				
47.00	5.28	4.25	0.00				
48.00	5.28	4.25	0.00				
49.00	5.28	4.25	0.00				
50.00	5.28	4.25	0.00				
51.00	5.28	4.25	0.00				

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

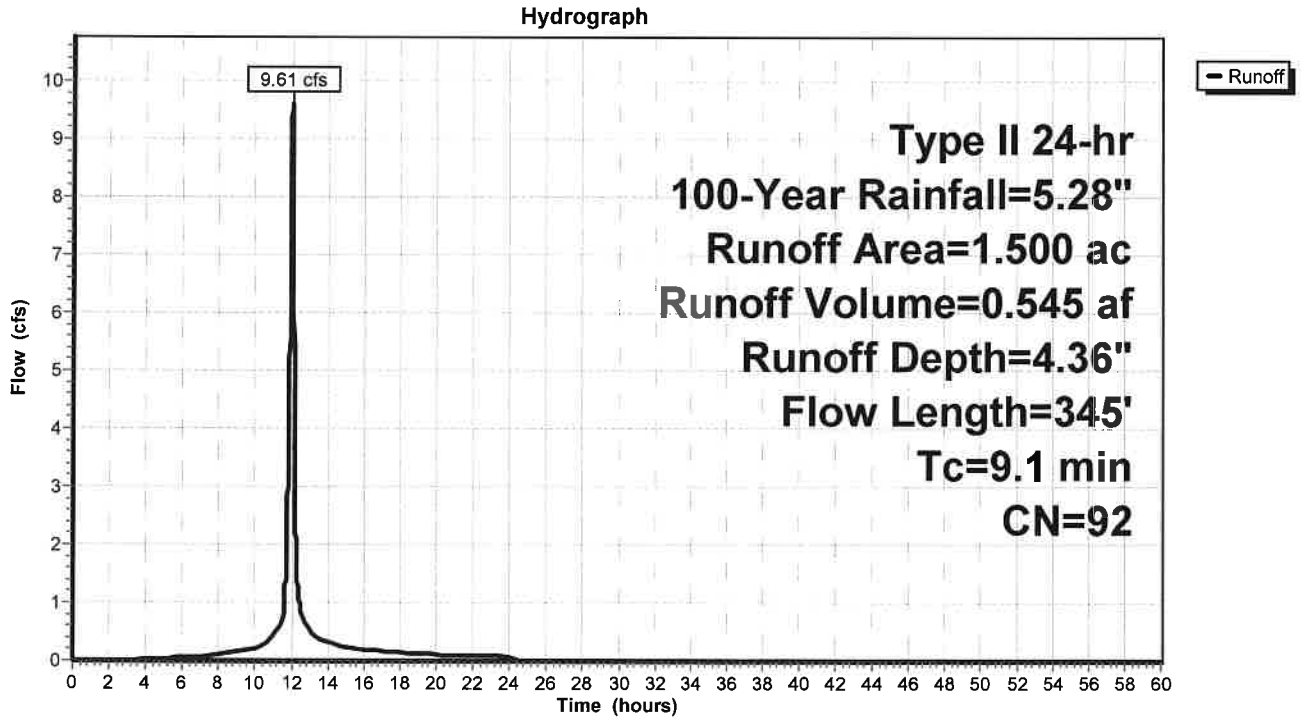
Runoff = 9.61 cfs @ 12.00 hrs, Volume= 0.545 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.18	0.00	0.00
4.00	0.25	0.01	0.02
5.00	0.33	0.02	0.03
6.00	0.42	0.06	0.05
7.00	0.52	0.10	0.08
8.00	0.63	0.16	0.10
9.00	0.78	0.25	0.16
10.00	0.96	0.37	0.22
11.00	1.24	0.59	0.42
12.00	3.50	2.64	**9.61**
13.00	4.08	3.19	0.53
14.00	4.33	3.44	0.31
15.00	4.51	3.61	0.24
16.00	4.65	3.74	0.19
17.00	4.76	3.86	0.16
18.00	4.86	3.96	0.14
19.00	4.95	4.04	0.12
20.00	5.03	4.12	0.10
21.00	5.09	4.18	0.10
22.00	5.16	4.24	0.09
23.00	5.22	4.30	0.09
24.00	**5.28**	**4.36**	0.09
25.00	5.28	4.36	0.00
26.00	5.28	4.36	0.00
27.00	5.28	4.36	0.00
28.00	5.28	4.36	0.00
29.00	5.28	4.36	0.00
30.00	5.28	4.36	0.00
31.00	5.28	4.36	0.00
32.00	5.28	4.36	0.00
33.00	5.28	4.36	0.00
34.00	5.28	4.36	0.00
35.00	5.28	4.36	0.00
36.00	5.28	4.36	0.00
37.00	5.28	4.36	0.00
38.00	5.28	4.36	0.00
39.00	5.28	4.36	0.00
40.00	5.28	4.36	0.00
41.00	5.28	4.36	0.00
42.00	5.28	4.36	0.00
43.00	5.28	4.36	0.00
44.00	5.28	4.36	0.00
45.00	5.28	4.36	0.00
46.00	5.28	4.36	0.00
47.00	5.28	4.36	0.00
48.00	5.28	4.36	0.00
49.00	5.28	4.36	0.00
50.00	5.28	4.36	0.00
51.00	5.28	4.36	0.00
52.00	5.28	4.36	0.00
53.00	5.28	4.36	0.00
54.00	5.28	4.36	0.00
55.00	5.28	4.36	0.00
56.00	5.28	4.36	0.00
57.00	5.28	4.36	0.00
58.00	5.28	4.36	0.00
59.00	5.28	4.36	0.00
60.00	5.28	4.36	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 4.31" for 100-Year event
Inflow = 14.92 cfs @ 12.06 hrs, Volume= 1.148 af
Outflow = 4.83 cfs @ 12.36 hrs, Volume= 1.105 af, Atten= 68%, Lag= 18.1 min
Primary = 4.83 cfs @ 12.36 hrs, Volume= 1.105 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 572.92' @ 12.36 hrs Surf.Area= 10,145 sf Storage= 21,772 cf

Plug-Flow detention time= 201.7 min calculated for 1.105 af (96% of inflow)
Center-of-Mass det. time= 143.6 min (1,016.5 - 873.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

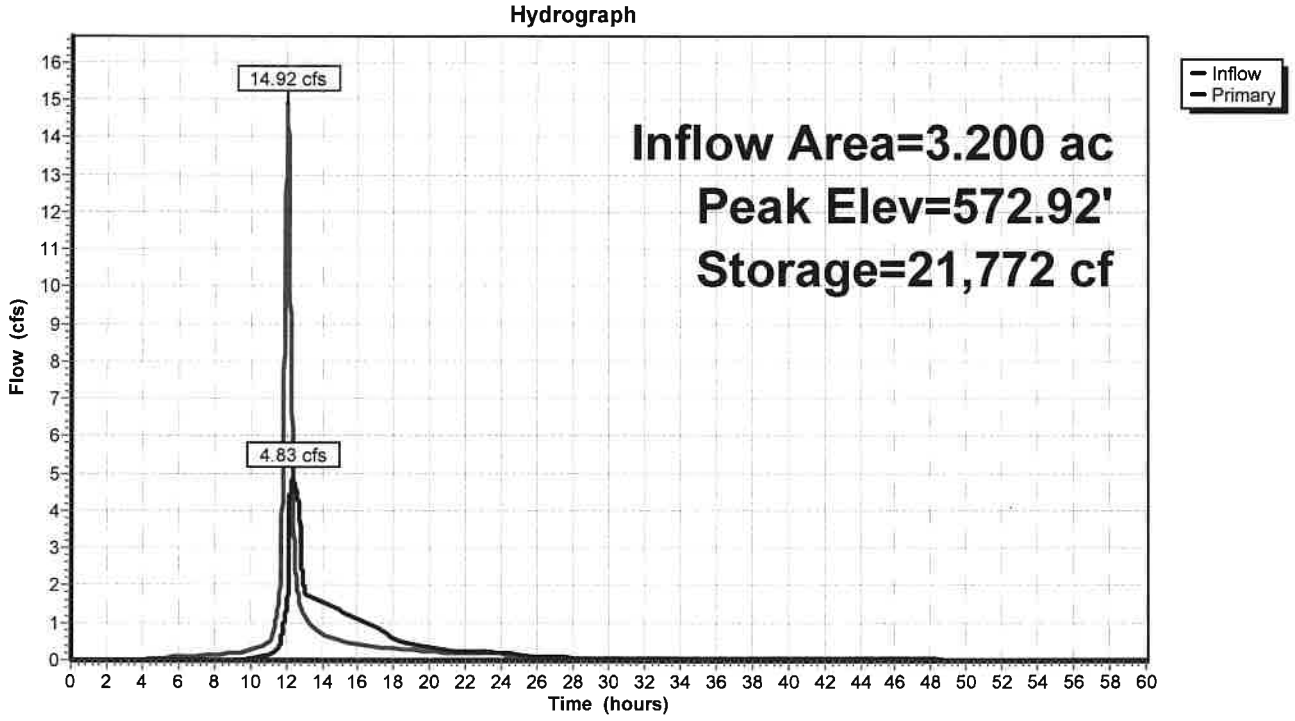
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

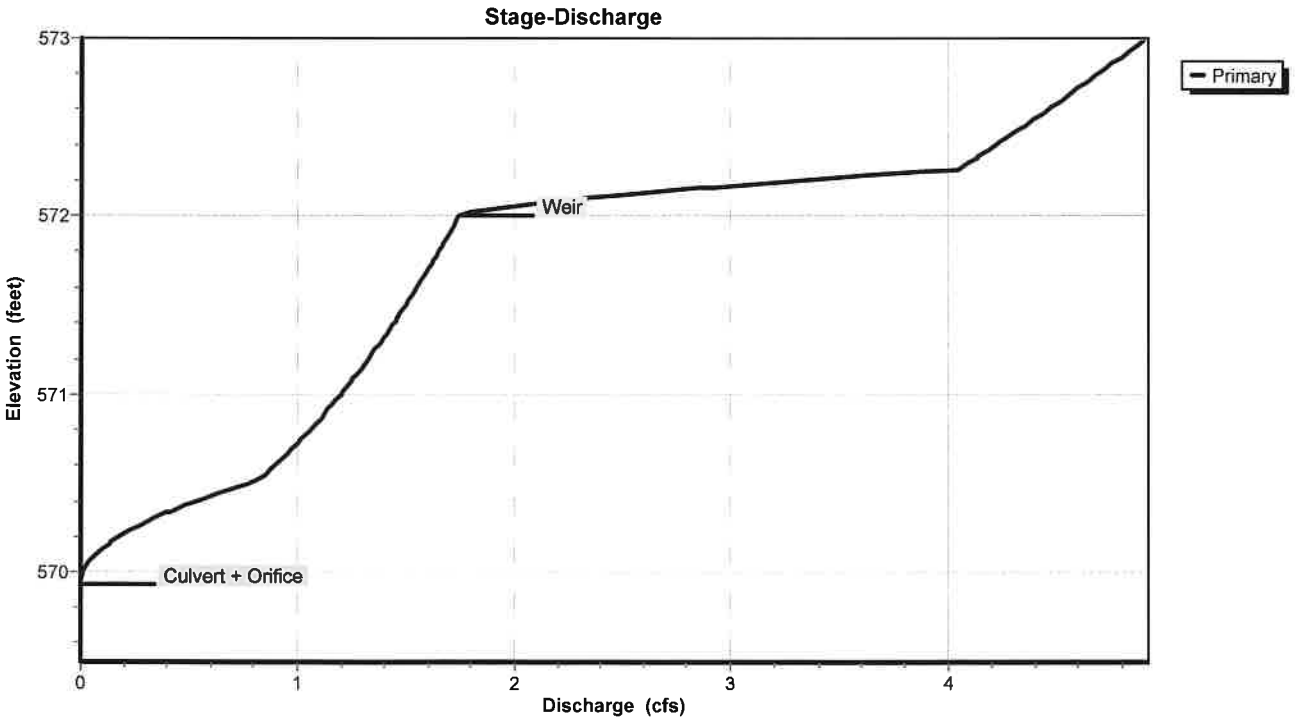
Primary OutFlow Max=4.83 cfs @ 12.36 hrs HW=572.92' (Free Discharge)
↑**1=Culvert** (Barrel Controls 4.83 cfs @ 6.16 fps)
↑**2=Orifice** (Passes < 2.12 cfs potential flow)
3=Weir (Passes < 13.95 cfs potential flow)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

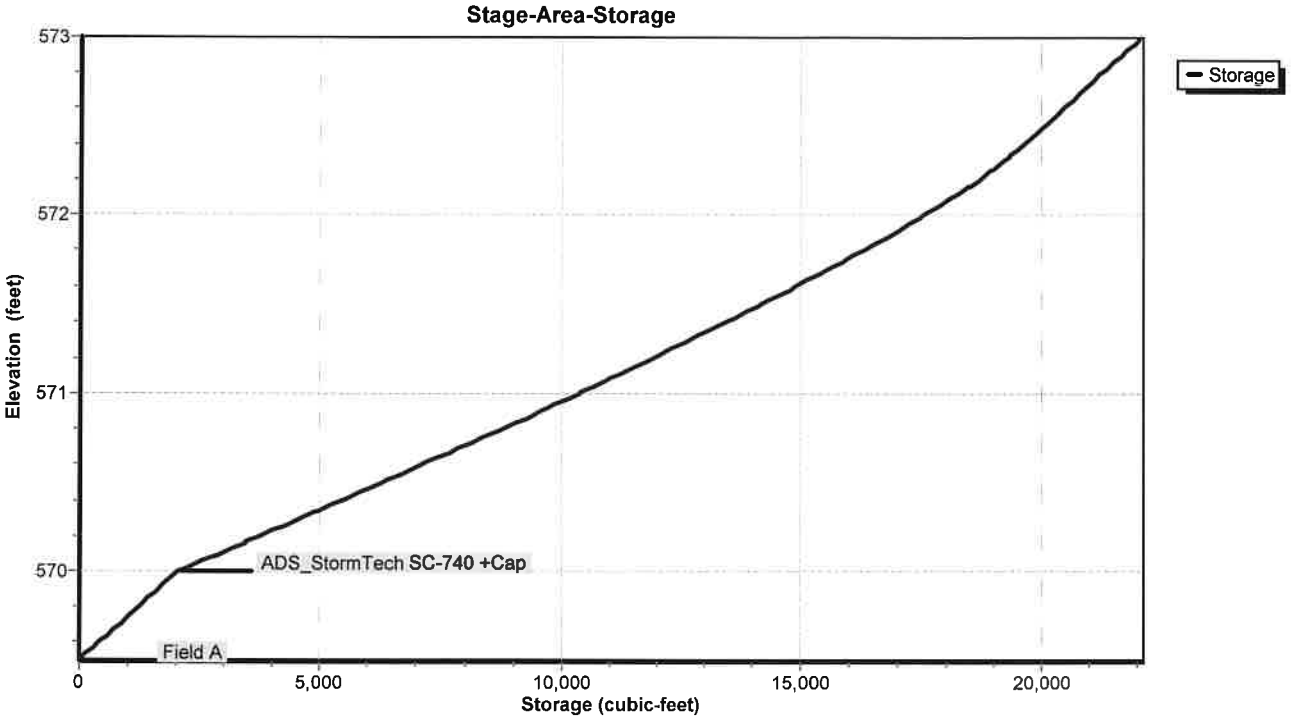


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.01	16	569.50	0.00
6.00	0.08	340	569.58	0.00
8.00	0.13	1,076	569.77	0.00
10.00	0.25	2,364	570.04	0.03
12.00	**13.40**	**12,150**	**571.23**	**1.34**
14.00	**0.69**	**15,059**	**571.63**	**1.56**
16.00	0.41	9,280	570.86	1.10
18.00	0.31	5,592	570.42	0.57
20.00	0.23	4,514	570.29	0.32
22.00	0.20	4,084	570.24	0.24
24.00	0.19	3,896	570.22	0.21
26.00	0.03	3,188	570.13	0.10
28.00	0.03	2,846	570.09	0.07
30.00	0.03	2,675	570.08	0.05
32.00	0.03	2,579	570.06	0.04
34.00	0.03	2,522	570.06	0.04
36.00	0.03	2,484	570.05	0.04
38.00	0.03	2,457	570.05	0.03
40.00	0.03	2,436	570.05	0.03
42.00	0.03	2,420	570.05	0.03
44.00	0.03	2,407	570.04	0.03
46.00	0.03	2,395	570.04	0.03
48.00	0.01	2,341	570.04	0.03
50.00	0.00	2,216	570.02	0.02
52.00	0.00	2,105	570.01	0.01
54.00	0.00	2,020	570.00	0.01
56.00	0.00	1,963	569.98	0.01
58.00	0.00	1,923	569.97	0.00
60.00	0.00	1,895	569.97	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 4.36" for 100-Year event
Inflow = 9.61 cfs @ 12.00 hrs, Volume= 0.545 af
Outflow = 5.89 cfs @ 12.09 hrs, Volume= 0.545 af, Atten= 39%, Lag= 5.5 min
Primary = 5.89 cfs @ 12.09 hrs, Volume= 0.545 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.05' @ 12.09 hrs Surf.Area= 6,805 sf Storage= 6,150 cf

Plug-Flow detention time= 184.7 min calculated for 0.545 af (100% of inflow)
Center-of-Mass det. time= 185.0 min (965.5 - 780.5)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

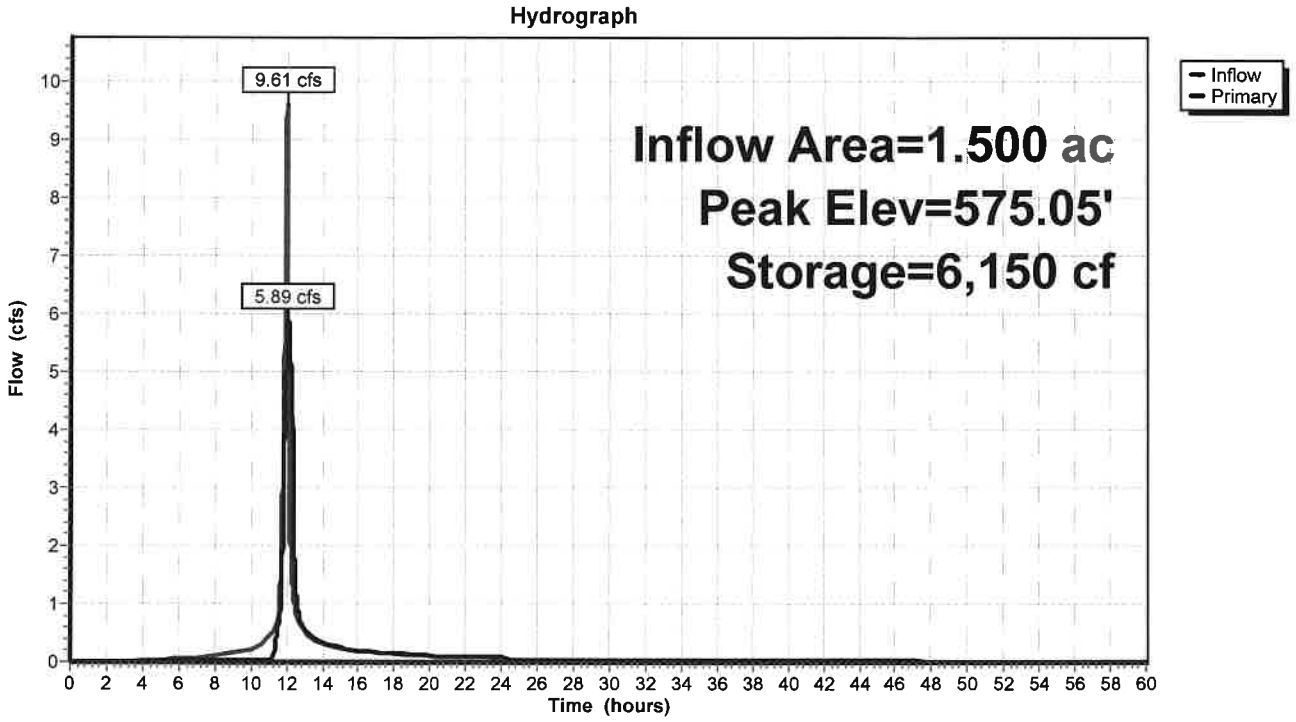
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

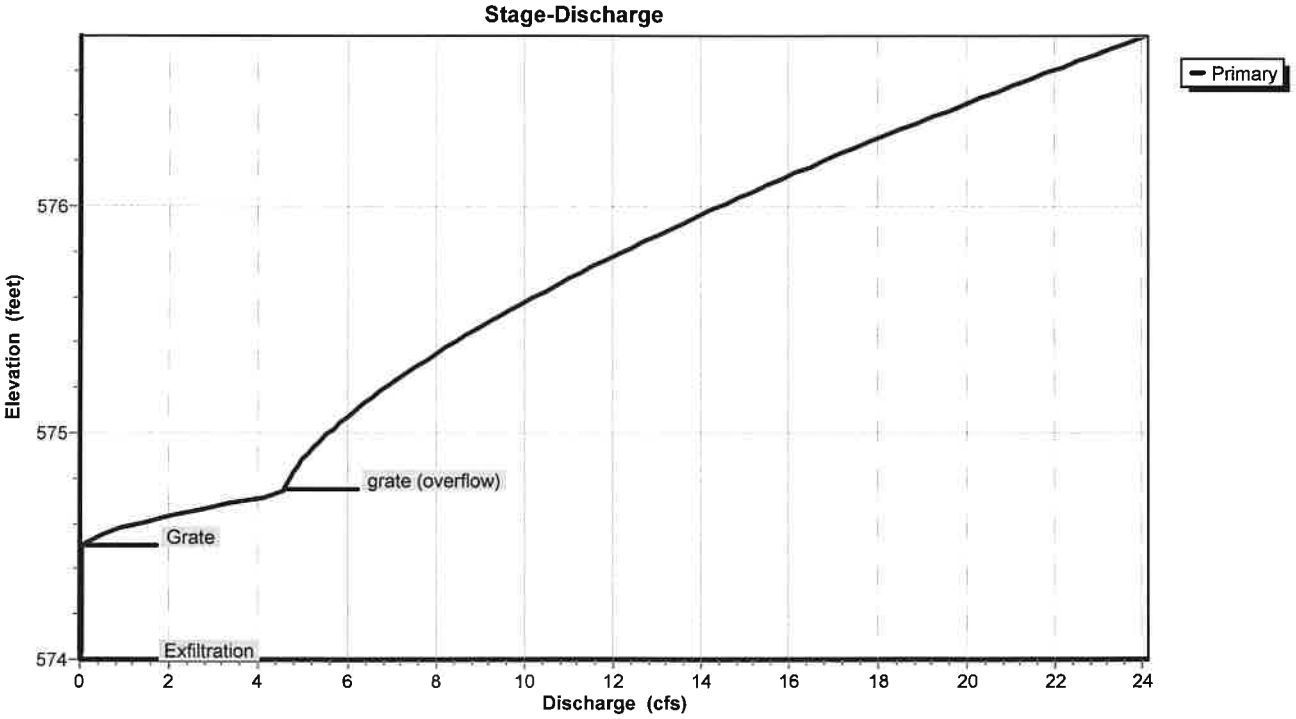
Primary OutFlow Max=5.88 cfs @ 12.09 hrs HW=575.05' (Free Discharge)
- **1=8" pipe** (Barrel Controls 4.82 cfs @ 6.14 fps)
  - **2=Grate** (Passes < 7.49 cfs potential flow)
  - **3=Exfiltration** (Passes < 0.04 cfs potential flow)
- **4=grate (overflow)** (Orifice Controls 1.06 cfs @ 1.76 fps)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

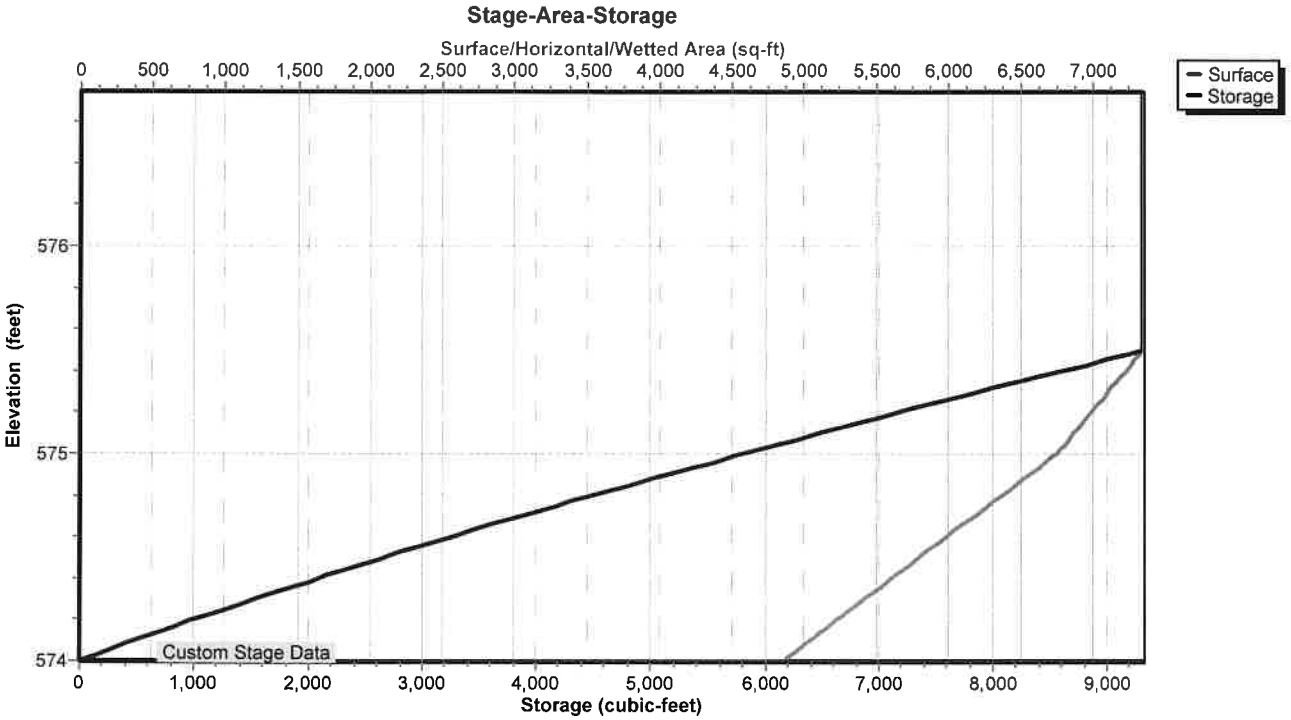


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.02	22	574.00	0.00
6.00	0.05	149	574.03	0.03
8.00	0.10	484	574.10	0.03
10.00	0.22	1,353	574.27	0.03
12.00	**9.61**	**5,288**	**574.92**	**5.19**
14.00	0.31	**2,872**	**574.54**	**0.33**
16.00	0.19	2,803	574.52	0.19
18.00	0.14	2,769	574.52	0.15
20.00	0.10	2,732	574.51	0.11
22.00	0.09	2,719	574.51	0.10
24.00	0.09	2,712	574.51	0.09
26.00	0.00	2,463	574.47	0.03
28.00	0.00	2,219	574.42	0.03
30.00	0.00	1,979	574.38	0.03
32.00	0.00	1,743	574.34	0.03
34.00	0.00	1,511	574.29	0.03
36.00	0.00	1,283	574.25	0.03
38.00	0.00	1,059	574.21	0.03
40.00	0.00	839	574.17	0.03
42.00	0.00	624	574.13	0.03
44.00	0.00	412	574.08	0.03
46.00	0.00	204	574.04	0.03
48.00	0.00	49	574.01	0.01
50.00	0.00	11	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	1	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

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Green Infrastructure & Water Quality Calculations

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Version 1.7
Last Updated: 2/22/21

Total Water Quality Volume Calculation
WQv(acre-feet) = [(P)(Rv)(A)] /12

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?.....	

Design Point:	1	
P=	1.00	*inch*

Breakdown of Subcatchments

Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Rv	WQv *(ft^3)*	Description
1	6.10	3.30	54%	0.54	11,888	
2	1.00	0.00	0%	0.05	182	
3	4.40	2.70	61%	0.60	9,620	
4	1.70	1.00	59%	0.58	3,576	
5	1.50	1.00	67%	0.65	3,539	
6						
7						
8						
9						
10						
Subtotal (1-30)	14.70	8.00	54%	0.54	**28,804**	**Subtotal 1**
Total	14.70	8.00	54%	0.54	**28,804**	**Initial WQv**

Identify Runoff Reduction Techniques By Area

Technique	Total Contributing Area *(Acre)*	Contributing Impervious Area *(Acre)*	Notes
Conservation of Natural Areas	1.00	0.00	*minimum 10,000 sf*
Riparian Buffers	0.00	0.00	*maximum contributing length 75 feet to 150 feet*
Filter Strips	0.00	0.00	
Tree Planting	0.00	0.00	*Up to 100 sf directly connected impervious area may be subtracted per tree*
Total	**1.00**	**0.00**	

Recalculate WQv after application of Area Reduction Techniques

	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Runoff Coefficient Rv	WQv *(ft^3)*
"<<Initial WQv"	14.70	8.00	54%	0.54	28,804
Subtract Area	-1.00	0.00			
WQv adjusted after Area Reductions	**13.70**	**8.00**	58%	0.58	28,623
Disconnection of Rooftops		0.00			
Adjusted WQv after Area Reduction and Rooftop Disconnect	13.70	8.00	58%	0.58	**28,623**
WQv reduced by Area Reduction techniques					182

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Total Water Quality Volume Calculation
WQv(acre-feet) = [(P)(Rv)(A)] /12

All Subcatchments						
Catchment	**Total Area** *(Acres)*	**Impervious Cover** *(Acres)*	**Percent Impervious** *%*	**Runoff Coefficient** *Rv*	**WQv** *(ft^3)*	**Description**
1	6.10	3.30	0.54	0.54	11888.25	
2	1.00	0.00	0.00	0.05	182	
3	4.40	2.70	0.61	0.60	9619.50	
4	1.70	1.00	0.59	0.58	3575.55	
5	1.50	1.00	0.67	0.65	3539.25	
6						
7						
8						
9						
10						
11						
12						
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Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor &

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
1	6.10	3.30	0.54	0.54	11888.25	1.00	
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	54%	0.54	11,888	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information			
Soil Group	D		
Soil Infiltration Rate	0.00	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		11,888	*ft^3*	
Enter Depth of Soil Media	*df*	1.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**8916**	***ft^2***	

Determine Actual Bio-Retention Area			
Filter Width	100	*ft*	
Filter Length	110	*ft*	
Filter Area	11000	*ft^2*	
Actual Volume Provided	14667	*ft^3*	

Determine Runoff Reduction				
Is the Bioretention contributing flow to another practice?			Select Practice	
RRv	5,867			
RRv applied	**5,867**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	6,022	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	
Volume Directed	0	*ft^3*	This volume is directed another practice	
Sizing √	OK		*Check to be sure Area provided ≥ Af*	

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Bioretention Worksheet

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor & Schueler, 1996)

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
5	1.50	1.00	0.67	0.65	3539.25	1.00	
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	67%	0.65	3,539	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information			
Soil Group	D		
Soil Infiltration Rate	0.00	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		3,539	*ft^3*	
Enter Depth of Soil Media	*df*	1.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**2654**	***ft^2***	

Determine Actual Bio-Retention Area			
Filter Width	49	*ft*	
Filter Length	100	*ft*	
Filter Area	4900	*ft^2*	
Actual Volume Provided	6533	*ft^3*	

Determine Runoff Reduction				
Is the Bioretention contributing flow to another practice?		No	Select Practice	
RRv	2,613			
RRv applied	**2,613**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	926	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	
Volume Directed	0	*ft^3*	This volume is directed another practice	
Sizing √	OK		*Check to be sure Area provided ≥ Af*	

(For use on HSG C or D Soils with underdrains)

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Conservation of Natural Areas

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (ft^3)	Precipitation (in)	Description
2	1.00	0.00	0.00	0.05	181.50	1.00	

Design Elements	
Is Contiguous Area ≥ 10,000 ft2?	*Yes*
Will limits of disturbance be clearly shown on all construction drawings and marked in field/project development site with structural barriers?	*Yes*
Is the Conservation area located in an acceptable conservation easement instrument that ensures perpetual protection of proposed area?	*Yes*
Does the easement specify how the natural area vegetation will be managed and boundaries will be marked?	*Yes*
Does the conservation area receive runoff from other contributing areas?	*No*
Does Conservation Area drain to a Design Point?	*No*
Is Sheet Flow to Riparian Buffer or another area based practice already being Used for this area?	*No*

Are All Criteria in Section 5.3.1 Met?	*Yes*

Area Reduction Adjustments		
Subtract	*1.00*	*Acres from Total Area*
Subtract	*0.00*	*Acres from Total Impervious Area*

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Minimum RRv

Enter the Soils Data for the site		
Soil Group	Acres	S
A		55%
B		40%
C		30%
D	**17.40**	20%
Total Area	17.4	
Calculate the Minimum RRv		
S =	**0.20**	
Impervious =	8.00	*acre*
Precipitation	1	*in*
Rv	0.95	
Minimum RRv	**5,518**	***ft3***
	0.13	af

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

NOI QUESTIONS

#	NOI Question	Reported Value	
		cf	af
28	Total Water Quality Volume (WQv) Required	28804	*0.661*
30	Total RRV Provided	8662	*0.199*
31	Is RRv Provided ≥WQv Required?	No	
32	Minimum RRv	5518	*0.127*
32a	Is RRv Provided ≥ Minimum RRv Required?	Yes	
33a	Total WQv Treated	159626	*3.664*
34	Sum of Volume Reduced & Treated	168287	*3.863*
34	Sum of Volume Reduced and Treated	168287	*3.863*
35	Is Sum RRv Provided and WQv Provided ≥WQv Required?	Yes	

Apply Peak Flow Attenuation			
36	Channel Protection	*Cpv*	
37	Overbank	*Qp*	
37	Extreme Flood Control	*Qf*	
	Are Quantity Control requirements met?		

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Runoff Reduction Volume and Treated volumes						
	Runoff Reduction Techiques/Standard SMPs		Total Contributing Area	Total Contributing Impervious Area	WQv Reduced (RRv)	WQv Treated
			(acres)	(acres)	cf	cf
Area/Volume Reduction	Conservation of Natural Areas	RR-1	1.00	0.00		
	Sheetflow to Riparian Buffers/Filter Strips	RR-2	0.00	0.00		
	Tree Planting/Tree Pit	RR-3	0.00	0.00		
	Disconnection of Rooftop Runoff	RR-4		0.00		
	Vegetated Swale	RR-5	0.00	0.00	0	
	Rain Garden	RR-6	0.00	0.00	0	
	Stormwater Planter	RR-7	0.00	0.00	0	
	Rain Barrel/Cistern	RR-8	0.00	0.00	0	
	Porous Pavement	RR-9	0.00	0.00	0	
	Green Roof (Intensive & Extensive)	RR-10	0.00	0.00	0	
Standard SMPs w/RRv Capacity	Infiltration Trench	I-1	0.00	0.00	0	0
	Infiltration Basin	I-2	0.00	0.00	0	0
	Dry Well	I-3	0.00	0.00	0	0
	Underground Infiltration System	I-4	0.00			
	Bioretention & Infiltration Bioretention	F-5	7.60	4.30	8480	6948
	Dry swale	O-1	0.00	0.00	0	0
Standard SMPs	Micropool Extended Detention (P-1)	P-1				
	Wet Pond (P-2)	P-2				
	Wet Extended Detention (P-3)	P-3				
	Multiple Pond system (P-4)	P-4				
	Pocket Pond (p-5)	P-5	9.8	3.40		152678.000
	Surface Sand filter (F-1)	F-1				
	Underground Sand filter (F-2)	F-2				
	Perimeter Sand Filter (F-3)	F-3				
	Organic Filter (F-4	F-4				
	Shallow Wetland (W-1)	W-1				
	Extended Detention Wetland (W-2	W-2				
	Pond/Wetland System (W-3)	W-3				
	Pocket Wetland (W-4)	W-4				
	Wet Swale (O-2)	O-2				
Totals by Area Reduction →			1.00	0.00	182	
Totals by Volume Reduction →			0.00	0.00	0	
Totals by Standard SMP w/RRV →			7.60	4.30	8480	6948
Totals by Standard SMP →			9.80	3.40		152678
Totals (Area + Volume + all SMPs) →			18.40	7.70	8,662	159,626
	Impervious Cover √	error				

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 6P: WQv

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
563.00	710	0
563.15	776	111
563.30	843	233
563.45	909	364
563.60	975	506
563.75	1,042	657
563.90	1,108	818
564.05	1,181	989
564.20	1,267	1,173
564.35	1,353	1,369
564.50	1,439	1,579
564.65	1,524	1,801
564.80	1,610	2,036
564.95	1,696	2,284
565.10	1,796	2,546
565.25	1,901	2,823
565.40	2,007	3,116
565.55	2,113	3,425
565.70	2,219	3,750
565.85	2,324	4,090
566.00	2,430	4,447
566.15	2,561	4,821
566.30	2,692	5,215
566.45	2,822	5,629
566.60	2,953	6,062
566.75	3,084	6,515
566.90	3,215	6,987
567.05	3,356	7,479
567.20	3,519	7,995
567.35	3,681	8,535
567.50	3,844	9,100
567.65	4,007	9,688
567.80	4,169	10,301
567.95	4,332	10,939
568.10	4,731	11,613
568.25	5,249	12,361
568.40	5,767	13,188
568.55	6,285	14,091
568.70	6,802	15,073
568.85	7,320	16,132
569.00	7,838	17,269
569.15	8,402	18,487
569.30	8,965	19,790
569.45	9,529	21,177
569.60	10,093	22,648
569.75	10,657	24,204
569.90	11,220	25,845
570.05	11,796	27,571
570.20	12,398	29,385
570.35	13,000	31,290
570.50	13,601	33,285
570.65	14,202	35,371
570.80	14,804	37,546
570.95	15,406	39,812
571.10	16,056	42,170
571.25	16,731	44,629
571.40	17,406	47,189
571.55	18,081	49,851
571.70	18,756	52,614
571.85	19,431	55,478
572.00	20,106	58,443
572.15	20,820	61,512
572.30	21,534	64,689
572.45	22,248	67,973
572.60	22,961	71,363
572.75	23,675	74,861
572.90	24,389	78,466
573.05	25,107	82,178
573.20	25,834	85,998
573.35	26,561	89,928
573.50	27,288	93,967
573.65	28,014	98,114
573.80	28,741	102,371
573.95	29,468	106,737
574.10	32,660	111,335
574.25	37,086	116,565
574.40	41,511	122,460
574.55	45,937	129,019
574.70	50,362	136,241
574.85	54,788	144,127
575.00	**59,213**	**152,678**

WQv

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Appendix O

NYSDEC Stormwater Management Inspection Lists

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Bioretetion Areas (F-5)



Description: Shallow stormwater basin or landscaped area which utilizes engineered soils and vegetation to capture and treat runoff. The practice is often located in parking lot islands, and can also be used to treat residential areas.

KEY CONSIDERATIONS

CONVEYANCE

- Provide overflow for the 10-year storm to the conveyance system.
- Conveyance to the system is typically overland flow delivered to the surface of the system, typically through curb cuts or over a concrete lip.

PRETREATMENT

- Pretreatment consists of a grass channel or grass filter strip, a gravel diaphragm, and a mulch layer, sized based on the methodologies described in Section 6.4.2.

TREATMENT

- Treatment area should have a four foot deep planting soil bed, a surface mulch layer, and a 6" ponding layer.
- Size the treatment area using equations provided in Chapter 6.

LANDSCAPING

- Detailed landscaping plan required.

MAINTENANCE

- Inspect and repair/replace treatment area components
- Stone drop (at least 6") provided at the inlet
- Remulch annually

STORMWATER MANAGEMENT SUITABILITY

- [X] Water Quality
- [ ] Channel Protection
- [ ] Overbank Flood Protection
- [ ] Extreme Flood Protection

Accepts Hotspot Runoff: *Yes*
(requires impermeable liner)

IMPLEMENTATION CONSIDERATIONS

- [M] Capital Cost
- [M] Maintenance Burden

Residential
Subdivision Use: *Yes*

High Density/Ultra-Urban: *Yes*

Drainage Area: *5 acres max.*

Soils: *Planting soils must meet specified criteria; No restrictions on surrounding soils*

Other Considerations:

- *Use of native plants is recommended*

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

	Key: **L**=Low **M**=Medium **H**=High **POLLUTANT REMOVAL** **G** Phosphorus **G** Nitrogen **G** Metals - Cadmium, Copper, Lead, and Zinc removal **F** Pathogens – Coliform, Streptococci, E.Coli removal Key: **G**=Good **F**=Fair **P**=Poor

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Bioretention Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
1. Pre-Construction		
Pre-construction meeting		
Runoff diverted		
Facility area cleared		
If designed as exfilter, soil testing for permeability		
Facility location staked out		
2. Excavation		
Size and location		
Lateral slopes completely level		
If designed as exfilter, ensure that excavation does not compact susoils.		
Longitudinal slopes within design range		

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
3. Structural Components		
Stone diaphragm installed correctly		
Outlets installed correctly		
Underdrain		
Pretreatment devices installed		
Soil bed composition and texture		
4. Vegetation		
Complies with planting specs		
Topsoil adequate in composition and placement		
Adequate erosion control measures in place		
5. Final Inspection		
Dimensions		
Proper stone diaphragm		
Proper outlet		
Soil/ filter bed permeability testing		
Effective stand of vegetation and stabilization		
Construction generated sediments removed		
Contributing watershed stabilized before flow is diverted to the practice		

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Comments:

Actions to be Taken:

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Bioretention Operation, Maintenance and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Bioretention and contributing areas clean of debris		
No dumping of yard wastes into practice		
Litter (branches, etc.) have been removed		
2. Vegetation (Monthly)		
Plant height not less than design water depth		
Fertilized per specifications		
Plant composition according to approved plans		
No placement of inappropriate plants		
Grass height not greater than 6 inches		
No evidence of erosion		
3. Check Dams/Energy Dissipaters/Sumps (Annual, After Major Storms)		
No evidence of sediment buildup		

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
Sumps should not be more than 50% full of sediment		
No evidence of erosion at downstream toe of drop structure		
4. Dewatering (Monthly)		
Dewaters between storms		
No evidence of standing water		
5. Sediment Deposition (Annual)		
Swale clean of sediments		
Sediments should not be > 20% of swale design depth		
6. Outlet/Overflow Spillway (Annual, After Major Storms)		
Good condition, no need for repair		
No evidence of erosion		
No evidence of any blockages		
7. Integrity of Filter Bed (Annual)		
Filter bed has not been blocked or filled inappropriately		

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Comments:

Actions to be Taken:

Attachment: SP-2021-05_application_052021 (23057 : Sp-2021-05)

Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York
SITE DEVELOPMENT DRAWINGS

AGENCIES

ENGINEERING DEPARTMENT
NAME/TITLE: JEFFERY BURROUGHS, P.E. – TOWN ENGINEER
COMPANY/DEPT: TOWN OF AMHERST ENGINEERING DEPARTMENT
ADDRESS: 1100 NORTH FOREST ROAD
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716–631–7154

PLANNING & ZONING DEPARTMENT
NAME/TITLE: DANIEL HOWARD – PLANNING DIRECTOR
COMPANY/DEPT: TOWN OF AMHERST PLANNING DEPARTMENT
ADDRESS: 5583 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716–631–7051

LAND SURVEYOR
NAME/TITLE: GPI ENGINEERING, LANDSCAPE ARCHITECTURE SURVEYING, LLP
COMPANY/DEPT: 4950 GENESEE STREET, SUITE 100
ADDRESS: BUFFALO, NEW YORK 14225
TELEPHONE 716–633–4844

UTILITIES

NATURAL GAS
COMPANY/DEPT:. NATIONAL FUEL GAS CORP.
ADDRESS: 6363 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716–857–7000

TELEPHONE COMPANY
COMPANY/DEPT: VERIZON
ADDRESS: 65 FRANKLIN STREET
BUFFALO, NEW YORK 14203
TELEPHONE 716–840–8748

CABLE COMPANY
COMPANY/DEPT: TIME WARNER
ADDRESS: 789 CHURCH ROAD
WEST SENECA, NEW YORK
TELEPHONE 716–558–8615

ELECTRIC COMPANY
COMPANY/DEPT: NATIONAL GRID
ADDRESS: 144 KENSINGTON AVENUE
BUFFALO, NEW YORK 14214
TELEPHONE 716–236–2738

WATER
COMPANY/DEPT:. ERIE COUNTY WATER AUTHORITY
ADDRESS: 3030 UNION ROAD
CHEEKTOWAGA, NEW YORK 14227
TELEPHONE 716–684–1510

DIG SAFELY NEW YORK
TELEPHONE 1–800–962–7962

OWNER/DEVELOPER

NAME: Sawyer's Landing LLC
ADDRESS 43 Central Ave Suite #300
Lancaster, NY 14086
TELEPHONE 716 818-0207

ENGINEER

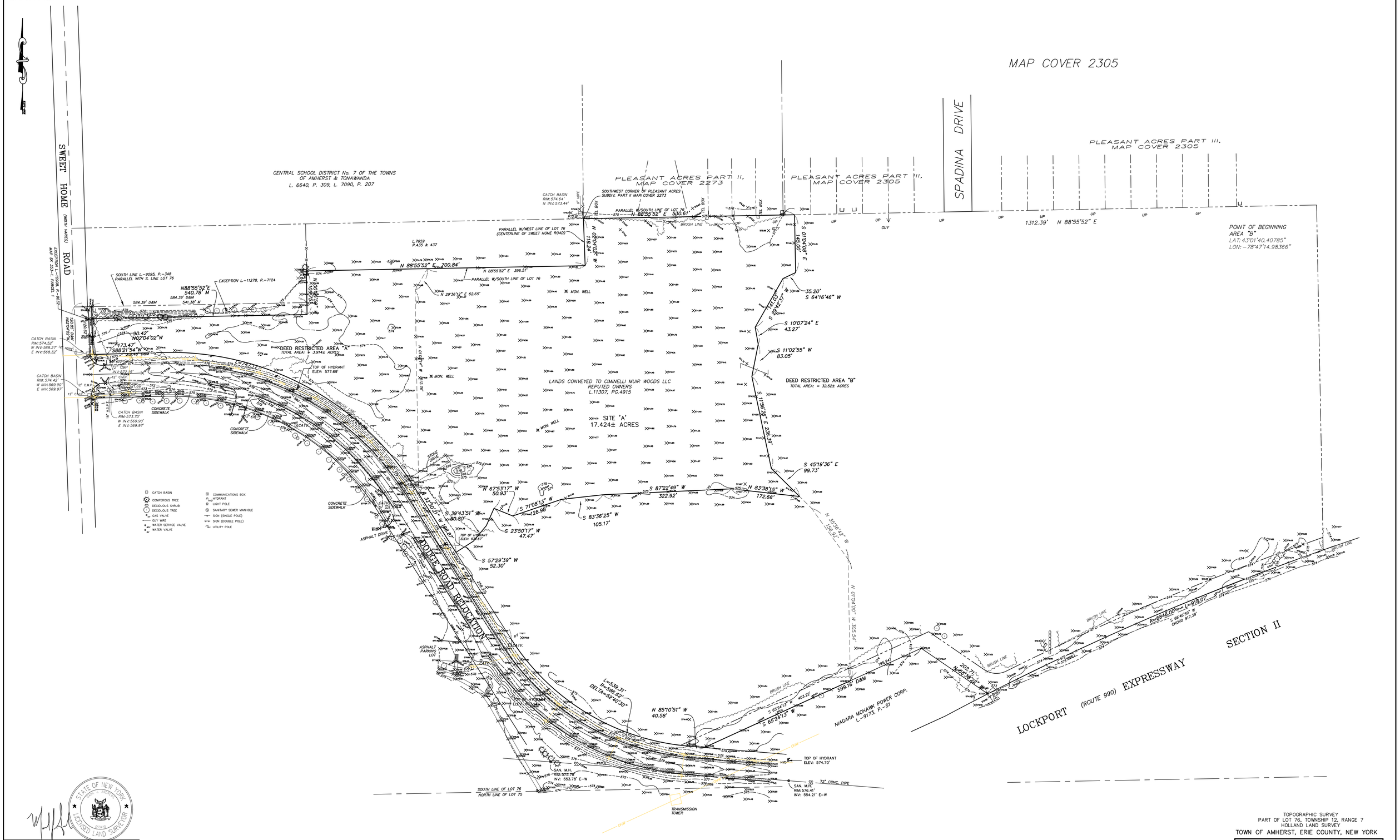
Carmina • Wood • Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

FEBRUARY 2021

DWG NO.	DRAWING TITLE
–	COVER SHEET
–	TOPOGRAPHIC MAP
–	BOUNDARY SURVEY
C–001	DEMOLITION & EROSION CONTROL PLAN
C–002	DEMOLITION & EROSION CONTROL DETAILS
C–100	OVERALL SITE PLAN
C–101	SITE PLAN
C–102	PARCEL MAP
C–103	SITE DETAILS
C–104	SITE DETAILS
C–200	GRADING PLAN
C–300	STORM DRAINAGE PLAN
C–301	STORM DRAINAGE DETAILS
C–302	STORM DRAINAGE DETAILS
C–303	STORM DRAINAGE DETAILS
C–400	UTILITY PLAN
C–401	SANITARY SEWER DETAILS
C–402	SANITARY SEWER DETAILS
C–403	SANITARY SEWER GENERAL NOTES
C–404	SANITARY SEWER TESTING NOTES
C–405	WATER DETAILS
C–406	WATER DETAILS
C–407	WATER DETAILS & NOTES
C–408	INSULATED ENCLOSURE DETAIL
L–100	LANDSCAPE PLAN

NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE.
● SET OR EX. 5/8" REBAR

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF SECTION 7209 PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW.



DATE	REVISION/TYPE

TOPOGRAPHIC SURVEY
PART OF LOT 76, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK

GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE
4950 GENESEE STREET, SUITE 100
BUFFALO, NEW YORK 14225
(716) 633-4844 FAX 633-4940

Job No. 2013062-SITE A Date: DECEMBER 22, 2020
Scale: 1" = 100' TAX No. 40.08-3-13.1 (PART OF)

Attachment: SP-2021-05_drawings_052021 (23057 : Sp-2021-05)

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF SECTION 7209 PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

SWEET HOME (WIDTH VARIES) ROAD

CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA
L. 6640, P. 309, L. 7090, P. 207

PLEASANT ACRES PART II, MAP COVER 2273

PLEASANT ACRES PART III, MAP COVER 2305

SOUTHWEST CORNER OF PLEASANT ACRES SUBDIV. PART II MAP COVER 2273

P.O.B.

TEL BOX

UP

GUY

N 88°55'52" E 530.61'
PARALLEL W/SOUTH LINE OF LOT 76

PARALLEL W/WEST LINE OF LOT 76
(CENTERLINE OF SWEET HOME ROAD)

N 02°04'02" W
118.24'

L.7659
P.435 & 437

N 88°55'52" E 700.84'

N 88°55'52" E 396.51'

PARALLEL W/SOUTH LINE OF LOT 76

N 29°36'12" E 62.65'

S 01°04'08" E
145.00'

35.20'
S 64°16'46" W

141.03'
S 29°42'37" W

S 10°07'24" E
43.27'

S 11°02'55" W
83.05'

S 11°56'26" E 236.39'

S 45°19'36" E
98.73'

SOUTH LINE L.-9095, P.-348
PARALLEL WITH S. LINE LOT 76

EXCEPTION L.-11278, P.-7124

584.39' D&M
541.38' M

N88°55'52"E
540.78' M

N 00°55'59" W
109.75'

EXCEPTION L.-10808, P.-9632
MAP SK 353-1, PARCEL 1

120.85' D&M
N02°04'02"W

120.52'

N02°04'02"W
90.42'

173.47'
S88°21'54"W
216.48' D&M

DEED RESTRICTED AREA "A"
TOTAL AREA: = 3.914± ACRES

N 01°03'14" W 512.26'

LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC
REPUTED OWNERS
L.11307, PG.4915

SITE 'A'
17.424± ACRES

DEED RESTRICTED AREA "B"
TOTAL AREA: = 32.52± ACRES

L=747.17
R=724.00

N 32°30'21" W 198.87'

N 67°53'17" W
50.93'

S 71°08'13" W
128.98'

S 83°36'25" W
105.17'

S 87°22'49" W
322.92'

N 83°38'15" W
172.66'

S 39°43'51" W
50.80'

S 23°50'17" W
47.47'

S 57°29'39" W
52.30'

N 32°30'21" W 457.24'

258.37'

DODGE ROAD RELOCATION

PT

L=539.31'
R=586.62'
DELTA=52°40'30"

PC

N 85°10'51" W
40.58'

N 35°36'42" W
156.92'

N 01°04'00" W 305.54'

195.94'

599.16' D&M

S 65°24'13" W 403.22'

S 65°24'13" W

NIAGARA MOHAWK POWER CORP.
L.-9173, P.-51

SOUTH LINE OF LOT 76
NORTH LINE OF LOT 75

STATE OF NEW YORK
MARK J. ANDREWS
050455
LICENSED LAND SURVEYOR

DATE	REVISION/TYPE
12/4/20	REVISE PARCEL BOUNDARY

NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE.
● SET OR EX. 5/8" REBAR

SURVEY OF
PART OF LOT 76, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK

GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE
4950 GENESEE STREET, SUITE 100
BUFFALO, NEW YORK 14225
(716) 633-4844 FAX 633-4940

Job No. 2013062-SITE A Date: JUNE 27, 2019
Scale: 1" = 100' TAX No.

Attachment: SP-2021-05_drawings_052021 (23057 : Sp-2021-05)

Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

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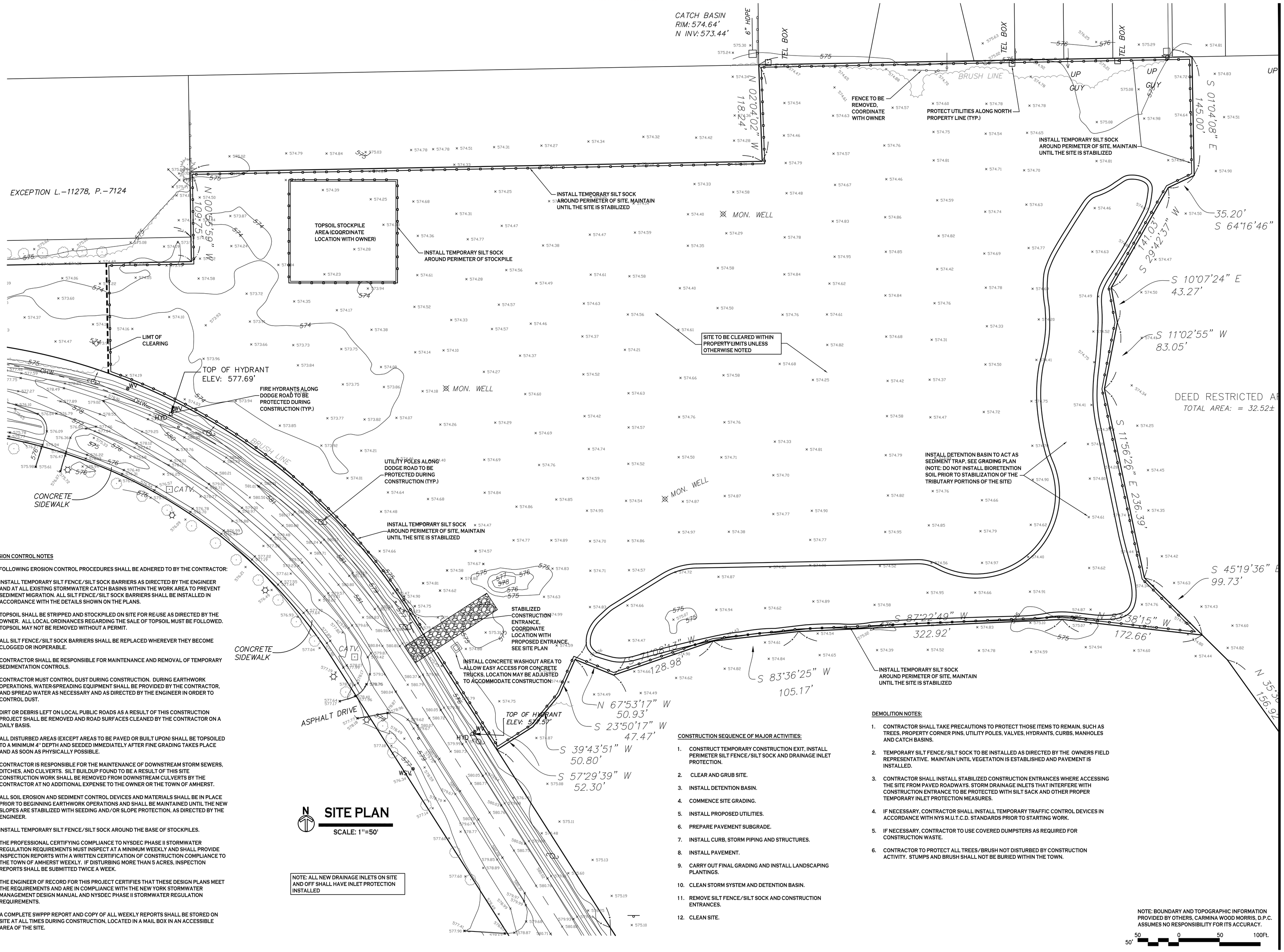

SITE PLAN

SCALE: 1"=50'

NOTE: ALL NEW DRAINAGE INLETS ON SITE AND OFF SHALL HAVE INLET PROTECTION INSTALLED

EROSION CONTROL NOTES

THE FOLLOWING EROSION CONTROL PROCEDURES SHALL BE ADHERED TO BY THE CONTRACTOR:

1. INSTALL TEMPORARY SILT FENCE/SILT SOCK BARRIERS AS DIRECTED BY THE ENGINEER AND AT ALL EXISTING STORMWATER CATCH BASINS WITHIN THE WORK AREA TO PREVENT SEDIMENT MIGRATION. ALL SILT FENCE/SILT SOCK BARRIERS SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS SHOWN ON THE PLANS.
2. TOPSOIL SHALL BE STRIPPED AND STOCKPILED ON SITE FOR RE-USE AS DIRECTED BY THE OWNER. ALL LOCAL ORDINANCES REGARDING THE SALE OF TOPSOIL MUST BE FOLLOWED. TOPSOIL MAY NOT BE REMOVED WITHOUT A PERMIT.
3. ALL SILT FENCE/SILT SOCK BARRIERS SHALL BE REPLACED WHEREVER THEY BECOME CLOGGED OR INOPERABLE.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE AND REMOVAL OF TEMPORARY SEDIMENTATION CONTROLS.
5. CONTRACTOR MUST CONTROL DUST DURING CONSTRUCTION. DURING EARTHWORK OPERATIONS, WATER-SPREADING EQUIPMENT SHALL BE PROVIDED BY THE CONTRACTOR, AND SPREAD WATER AS NECESSARY AND AS DIRECTED BY THE ENGINEER IN ORDER TO CONTROL DUST.
6. DIRT OR DEBRIS LEFT ON LOCAL PUBLIC ROADS AS A RESULT OF THIS CONSTRUCTION PROJECT SHALL BE REMOVED AND ROAD SURFACES CLEANED BY THE CONTRACTOR ON A DAILY BASIS.
7. ALL DISTURBED AREAS (EXCEPT AREAS TO BE PAVED OR BUILT UPON) SHALL BE TOPSOILED TO A MINIMUM 4" DEPTH AND SEEDED IMMEDIATELY AFTER FINE GRADING TAKES PLACE AND AS SOON AS PHYSICALLY POSSIBLE.
8. CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE OF DOWNSTREAM STORM SEWERS, DITCHES, AND CULVERTS. SILT BUILDUP FOUND TO BE A RESULT OF THIS SITE CONSTRUCTION WORK SHALL BE REMOVED FROM DOWNSTREAM CULVERTS BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER OR THE TOWN OF AMHERST.
9. ALL SOIL EROSION AND SEDIMENT CONTROL DEVICES AND MATERIALS SHALL BE IN PLACE PRIOR TO BEGINNING EARTHWORK OPERATIONS AND SHALL BE MAINTAINED UNTIL THE NEW SLOPES ARE STABILIZED WITH SEEDING AND/OR SLOPE PROTECTION, AS DIRECTED BY THE ENGINEER.
10. INSTALL TEMPORARY SILT FENCE/SILT SOCK AROUND THE BASE OF STOCKPILES.
11. THE PROFESSIONAL CERTIFYING COMPLIANCE TO NYSDEC PHASE II STORMWATER REGULATION REQUIREMENTS MUST INSPECT AT A MINIMUM WEEKLY AND SHALL PROVIDE INSPECTION REPORTS WITH A WRITTEN CERTIFICATION OF CONSTRUCTION COMPLIANCE TO THE TOWN OF AMHERST WEEKLY. IF DISTURBING MORE THAN 5 ACRES, INSPECTION REPORTS SHALL BE SUBMITTED TWICE A WEEK.
12. THE ENGINEER OF RECORD FOR THIS PROJECT CERTIFIES THAT THESE DESIGN PLANS MEET THE REQUIREMENTS AND ARE IN COMPLIANCE WITH THE NEW YORK STORMWATER MANAGEMENT DESIGN MANUAL AND NYSDEC PHASE II STORMWATER REGULATION REQUIREMENTS.
13. A COMPLETE SWPPP REPORT AND COPY OF ALL WEEKLY REPORTS SHALL BE STORED ON SITE AT ALL TIMES DURING CONSTRUCTION, LOCATED IN A MAIL BOX IN AN ACCESSIBLE AREA OF THE SITE.

CONSTRUCTION SEQUENCE OF MAJOR ACTIVITIES:

1. CONSTRUCT TEMPORARY CONSTRUCTION EXIT, INSTALL PERIMETER SILT FENCE/SILT SOCK AND DRAINAGE INLET PROTECTION.
2. CLEAR AND GRUB SITE.
3. INSTALL DETENTION BASIN.
4. COMMENCE SITE GRADING.
5. INSTALL PROPOSED UTILITIES.
6. PREPARE PAVEMENT SUBGRADE.
7. INSTALL CURB, STORM PIPING AND STRUCTURES.
8. INSTALL PAVEMENT.
9. CARRY OUT FINAL GRADING AND INSTALL LANDSCAPING PLANTINGS.
10. CLEAN STORM SYSTEM AND DETENTION BASIN.
11. REMOVE SILT FENCE/SILT SOCK AND CONSTRUCTION ENTRANCES.
12. CLEAN SITE.

DEMOLITION NOTES:

1. CONTRACTOR SHALL TAKE PRECAUTIONS TO PROTECT THOSE ITEMS TO REMAIN, SUCH AS TREES, PROPERTY CORNER PINS, UTILITY POLES, VALVES, HYDRANTS, CURBS, MANHOLES AND CATCH BASINS.
2. TEMPORARY SILT FENCE/SILT SOCK TO BE INSTALLED AS DIRECTED BY THE OWNERS FIELD REPRESENTATIVE. MAINTAIN UNTIL VEGETATION IS ESTABLISHED AND PAVEMENT IS INSTALLED.
3. CONTRACTOR SHALL INSTALL STABILIZED CONSTRUCTION ENTRANCES WHERE ACCESSING THE SITE FROM PAVED ROADWAYS. STORM DRAINAGE INLETS THAT INTERFERE WITH CONSTRUCTION ENTRANCE TO BE PROTECTED WITH SILT SACK AND OTHER PROPER TEMPORARY INLET PROTECTION MEASURES.
4. IF NECESSARY, CONTRACTOR SHALL INSTALL TEMPORARY TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH NYS M.U.T.C.D. STANDARDS PRIOR TO STARTING WORK.
5. IF NECESSARY, CONTRACTOR TO USE COVERED DUMPSTERS AS REQUIRED FOR CONSTRUCTION WASTE.
6. CONTRACTOR TO PROTECT ALL TREES/BRUSH NOT DISTURBED BY CONSTRUCTION ACTIVITY. STUMPS AND BRUSH SHALL NOT BE BURIED WITHIN THE TOWN.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Demolition & Erosion Control Plan

DRAWING NO.

C-001

Project no.: 21.011

Attachment: SP-2021-05_drawings_052021 (2305?) : SP-2021-05)

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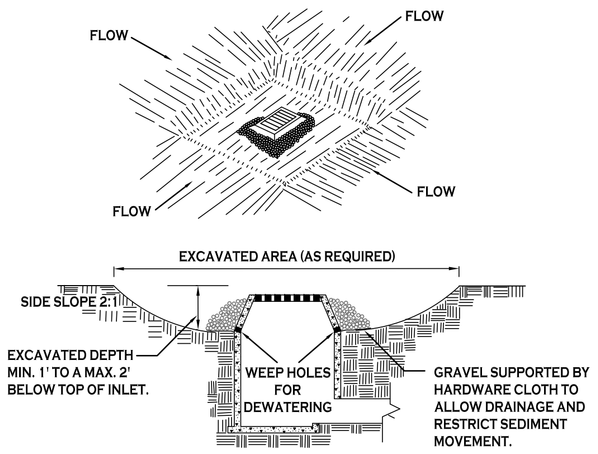


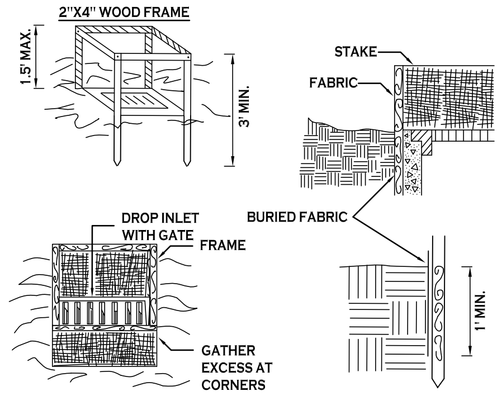
CONSTRUCTION SPECIFICATIONS

1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER EXCAVATION.
2. GRADE APPROACH TO THE INLET UNIFORMLY AROUND THE BASIN.
3. WEEP HOLES SHALL BE PROTECTED BY GRAVEL.
4. UPON STABILIZATION OF CONTRIBUTING DRAINAGE AREA, SEAL WEEP HOLES, FILL BASIN WITH STABLE SOIL TO FINAL GRADE, COMPACT IT PROPERLY AND STABILIZE WITH PERMANENT SEEDING.

   MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 1

NOT TO SCALE



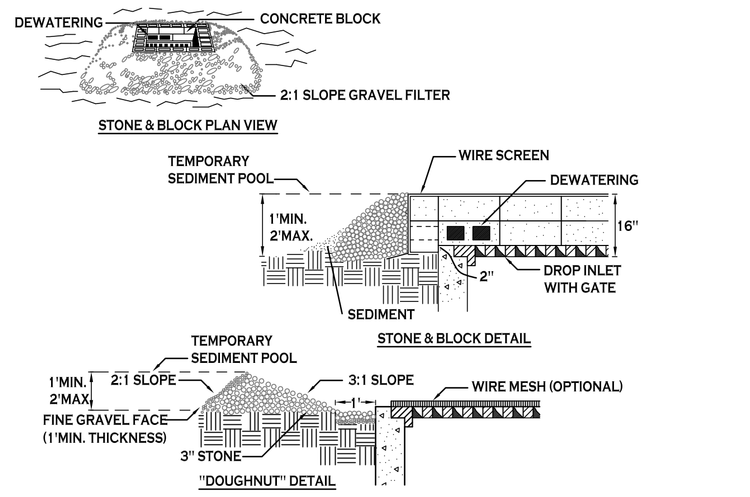
CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2" x 4" WOOD OR EQUIVALENT. METAL WITH A MINIMUM LENGTH OF 3 FEET.
4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2" x 4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.

   MAXIMUN DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 2

NOT TO SCALE



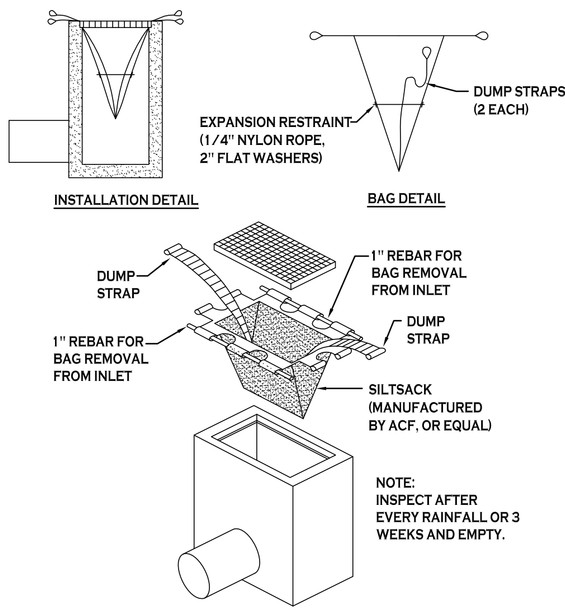
CONSTRUCTION SPECIFICATIONS

1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE FOR DEWATERING. FOUNDATION SHALL BE 2 INCHES MINIMUM BELOW REST OF INLET AND BLOCKS SHALL BE PLACED AGAINST INLET FOR SUPPORT.
2. HARDWARE CLOTH OR 1/2" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.
3. USE CLEAN STONE OR GRAVEL 1/2-3/4 INCH IN DIAMETER PLACED 2 INCHES BELOW TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER.
4. FOR STONE STRUCTURES ONLY, A 1 FOOT THICK LAYER OF THE FILTER STONE WILL BE PLACED AGAINST THE 3 INCH STONE AS SHOWN ON THE DRAWINGS.

   MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 3

NOT TO SCALE



SILT SACK DETAIL

NOT TO SCALE

NOTE: INSTALL ONE OF THE INLET PROTECTION OPTIONS SHOWN PRIOR TO CONSTRUCTION

CONSTRUCTION SPECIFICATIONS

1. WOVEN FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
3. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

SILT FENCE DETAIL

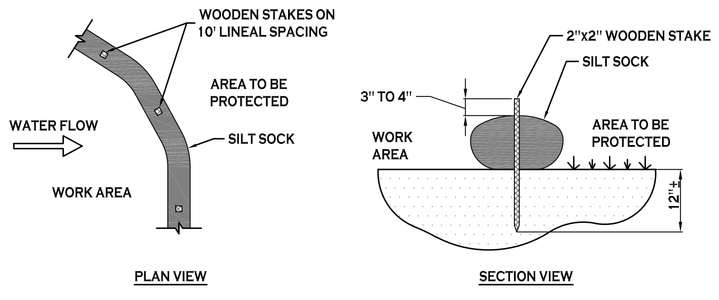
NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

STABILIZED CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE



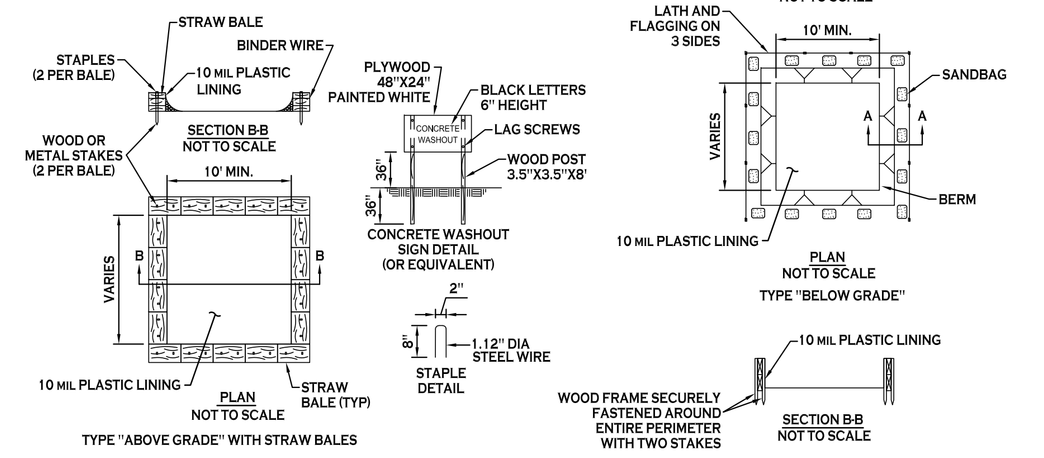
NOTES:

CONTRACTOR SHALL INSPECT AND MAINTAIN SILT SOCK AS NEEDED DURING THE DURATION OF CONSTRUCTION PROJECT.

CONTRACTOR SHALL REMOVE SEDIMENT COLLECTED AT THE BASE OF THE SILT SOCK WHEN IT HAS REACHED ½ OF THE EXPOSED HEIGHT OF THE SILT SOCK. ALTERNATIVELY, RATHER THAN CREATE A SOIL DISTURBING ACTIVITY, THE ENGINEER MAY CALL FOR ADDITIONAL SILT SOCK TO BE ADDED AT AREAS OF HIGH SEDIMENTATION, PLACED IMMEDIATELY ON TOP OF THE EXISTING SEDIMENT LADEN SILT SOCK.

SILT SOCK DETAIL

NOT TO SCALE



NOTES

1. ACTUAL LAYOUT TO BE DETERMINED IN THE FIELD.
2. A CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30' OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
3. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF OR RECYCLED.
4. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE BACKFILLED, REPAIRED, AND STABILIZED TO PREVENT EROSION.

CONCRETE WASHOUT DETAIL

NOT TO SCALE

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Buffalo, New York 14203
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F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Demolition & Erosion Control Details

DRAWING NO.

C-002

Project no.: 21.011

Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

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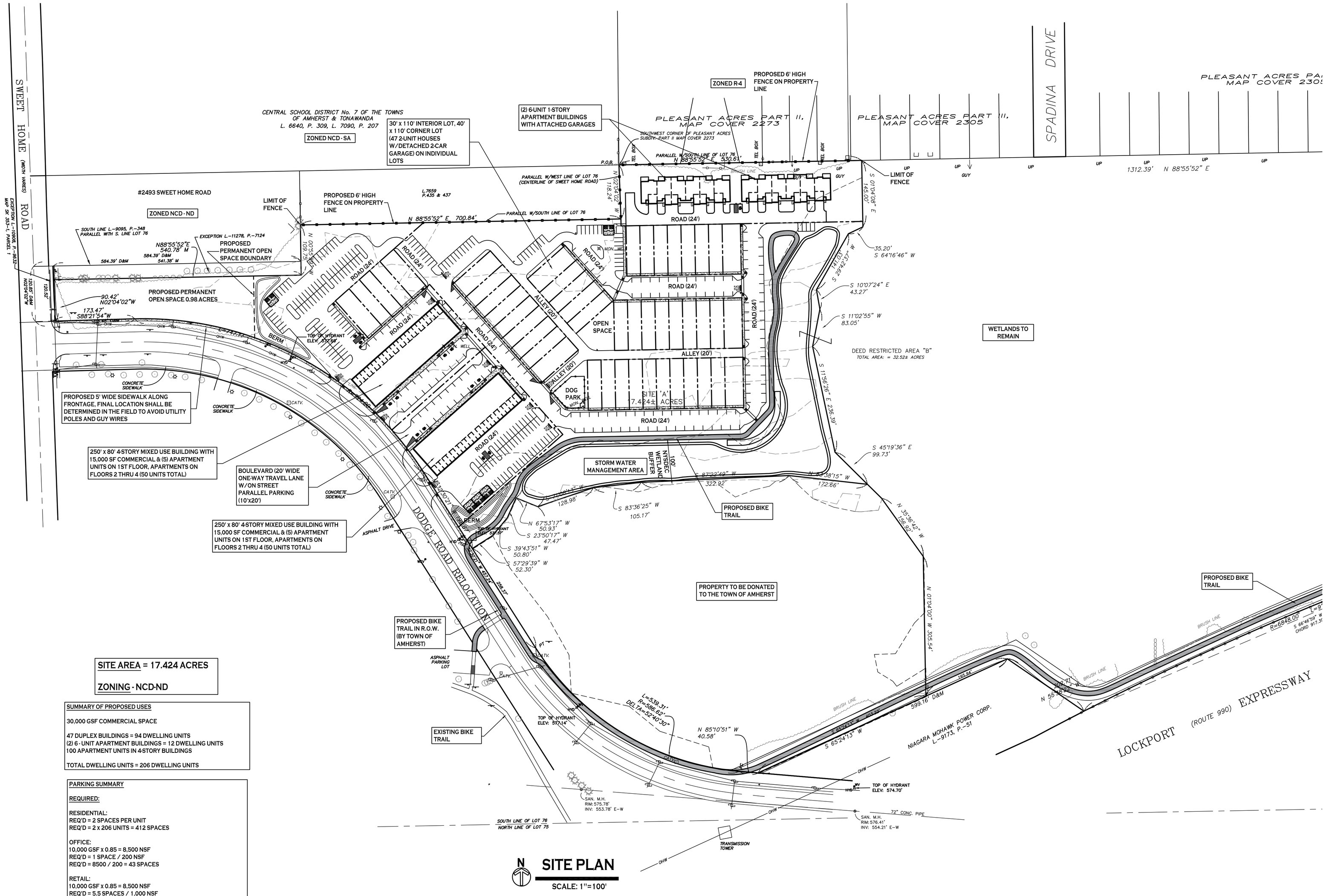

N

SITE PLAN

SCALE: 1"=100'

SITE AREA = 17.424 ACRES

ZONING - NCD-ND

SUMMARY OF PROPOSED USES

30,000 GSF COMMERCIAL SPACE

47 DUPLEX BUILDINGS = 94 DWELLING UNITS
(2) 6 - UNIT APARTMENT BUILDINGS = 12 DWELLING UNITS
100 APARTMENT UNITS IN 4-STORY BUILDINGS

TOTAL DWELLING UNITS = 206 DWELLING UNITS

PARKING SUMMARY

REQUIRED:

RESIDENTIAL:
REQ'D = 2 SPACES PER UNIT
REQ'D = 2 x 206 UNITS = 412 SPACES

OFFICE:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 1 SPACE / 200 NSF
REQ'D = 8500 / 200 = 43 SPACES

RETAIL:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 5.5 SPACES / 1,000 NSF
REQ'D = 8500 / 1000 x 5.5 = 47 SPACES

RESTAURANT:
REQ'D = 1 SPACE / 3 SEATS + 1 SPACE / 100 SF TAKE OUT AREA
REQ'D = 100 SEAT / 3 + 500 SF / 100 = 38 SPACES

TOTAL REQ'D = 540 SPACES

PROVIDED:

158 PARALLEL PARKING SPACES
213 9'x19' SPACES *
40 GARAGE SPACES IN 4-STORY BLDGS
94 GARAGE SPACES IN DETACHED GARAGES
505 TOTAL SPACES

* INCLUDES SPACES IN FRONT OF APARTMENT GARAGES

PERMANENT OPEN SPACE SUMMARY

TOTAL PROPOSED PERMANENT OPEN SPACE = 0.98 ACRES

WETLAND SUMMARY

FEDERAL IMPACTS PROPOSED = 6.089 AC
FEDERAL IMPACTS PREVIOUSLY PROPOSED = 13.01 AC
DECREASE = 6.921 AC (53% DECREASE)

NYSDEC IMPACTS PROPOSED = 1.20 AC
NYSDEC IMPACTS PREVIOUSLY PROPOSED = 9.46 AC
DECREASE = 8.26 AC (87% DECREASE)

NYSDEC BUFFER IMPACT PROPOSED = 3.65 AC
NYSDEC BUFFER IMPACTS PREVIOUSLY PROPOSED = 4.20 AC
DECREASE = 0.55 AC (13% DECREASE)

NOTE: NYSDEC IMPACTS INCLUDES FEDERAL WETLAND IMPACT OVERLAP AREAS

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

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F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Overall Site Plan

DRAWING NO.

C-100

Project no.: 21.011

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Packet Pg. 704

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

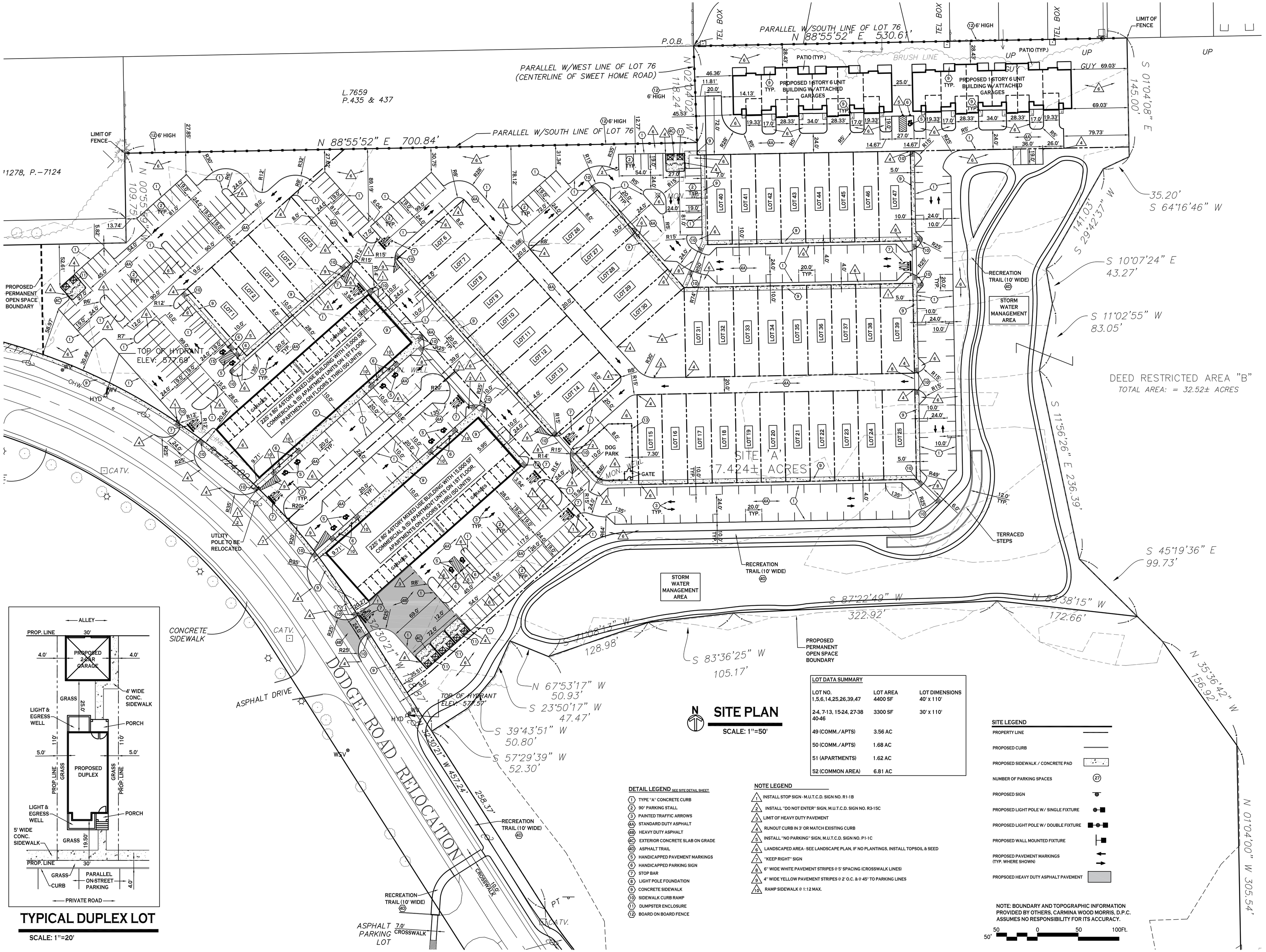
DRAWING NAME:

Site Plan

DRAWING NO.

C-101

Project no.: 21.011



SITE PLAN

SCALE: 1"=50'

LOT DATA SUMMARY		
LOT NO.	LOT AREA	LOT DIMENSIONS
1,5,6,14,25,26,39,47	4400 SF	40' x 110'
2-4, 7-13, 15-24, 27-38 40-46	3300 SF	30' x 110'
49 (COMM./APTS)	3.56 AC	
50 (COMM./APTS)	1.68 AC	
51 (APARTMENTS)	1.62 AC	
52 (COMMON AREA)	6.81 AC	

DETAIL LEGEND SEE SITE DETAIL SHEET

1. TYPE "A" CONCRETE CURB
2. 90° PARKING STALL
3. PAINTED TRAFFIC ARROWS
4A. STANDARD DUTY ASPHALT
4B. HEAVY DUTY ASPHALT
4C. EXTERIOR CONCRETE SLAB ON GRADE
4D. ASPHALT TRAIL
5. HANDICAPPED PAVEMENT MARKINGS
6. HANDICAPPED PARKING SIGN
7. STOP BAR
8. LIGHT POLE FOUNDATION
9. CONCRETE SIDEWALK
10. SIDEWALK CURB RAMP
11. DUMPSTER ENCLOSURE
12. BOARD ON BOARD FENCE

NOTE LEGEND

1. INSTALL STOP SIGN - M.U.T.C.D. SIGN NO. R1-1 B
2. INSTALL "DO NOT ENTER" SIGN, M.U.T.C.D. SIGN NO. R3-15C
3. LIMIT OF HEAVY DUTY PAVEMENT
4. RUNOUT CURB IN 3' OR MATCH EXISTING CURB
5. INSTALL "NO PARKING" SIGN, M.U.T.C.D. SIGN NO. P1-1C
6. LANDSCAPED AREA - SEE LANDSCAPE PLAN, IF NO PLANTINGS, INSTALL TOPSOIL & SEED
7. "KEEP RIGHT" SIGN
8. 6" WIDE WHITE PAVEMENT STRIPES @ 5' SPACING (CROSSWALK LINES)
9. 4" WIDE YELLOW PAVEMENT STRIPES @ 2' O.C. & @ 45° TO PARKING LINES
10. RAMP SIDEWALK @ 1:12 MAX.

SITE LEGEND

- PROPERTY LINE
- PROPOSED CURB
- PROPOSED SIDEWALK / CONCRETE PAD
- NUMBER OF PARKING SPACES (27)
- PROPOSED SIGN
- PROPOSED LIGHT POLE W/ SINGLE FIXTURE
- PROPOSED LIGHT POLE W/ DOUBLE FIXTURE
- PROPOSED WALL MOUNTED FIXTURE
- PROPOSED PAVEMENT MARKINGS (TYP. WHERE SHOWN)
- PROPSOED HEAVY DUTY ASPHALT PAVEMENT

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50' 50 0 50 100Ft.

TYPICAL DUPLEX LOT

SCALE: 1"=20'

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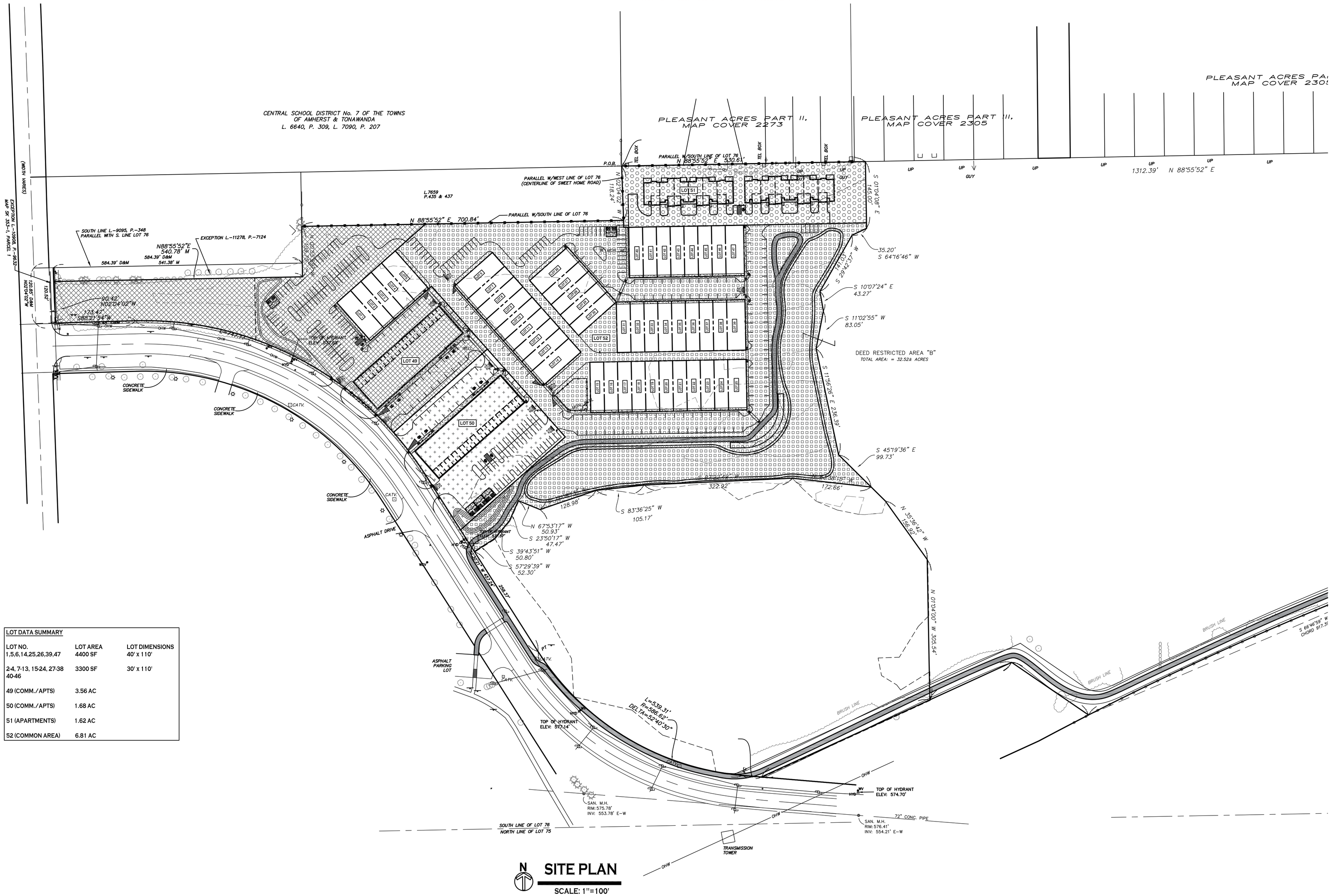

SITE PLAN

SCALE: 1"=100'

LOT DATA SUMMARY		
LOT NO.	LOT AREA	LOT DIMENSIONS
1,5,6,14,25,26,39,47	4400 SF	40' x 110'
2-4, 7-13, 15-24, 27-38 40-46	3300 SF	30' x 110'
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100' 100 0 100 200Ft.

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Parcel Map

DRAWING NO.

C-102

Project no.: 21.011

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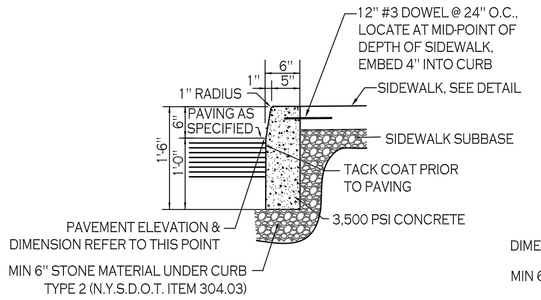
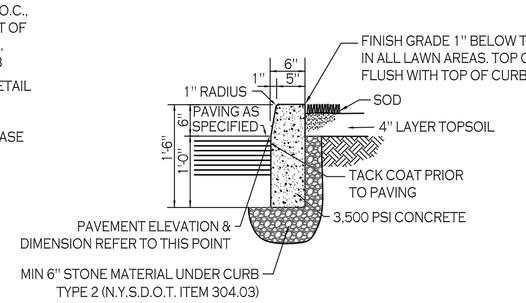


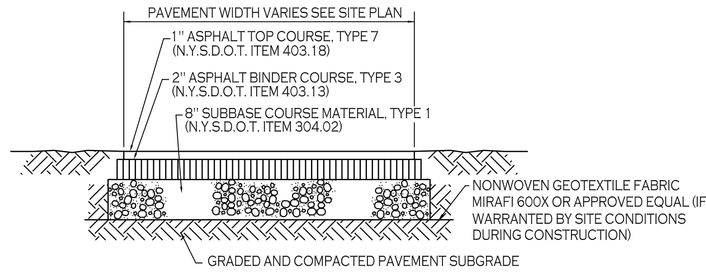
ABUTTING SIDEWALK



ABUTTING LANDSCAPE/GRASS

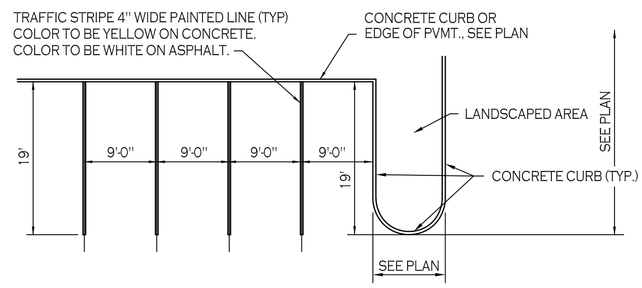
NOTES:
1. CONTROL JOINTS TO BE 2" DEEP AT 15'-0" O.C. - SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
2. WHERE THE CURB DROPS (IS FLUSH WITH ASPHALT) THE DEPTH OF CURB BELOW GRADE SHALL BE INCREASED TO 1'-6" AND OTHER DIMENSIONS ADJUSTED ACCORDINGLY.

TYPE "A" CONCRETE CURB - 1

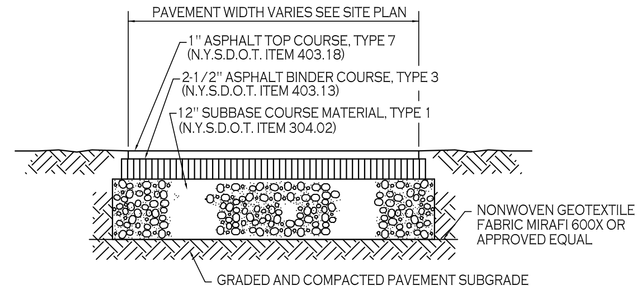


NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 401-3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304-3.

STANDARD DUTY ASPHALT SECTION - 4A

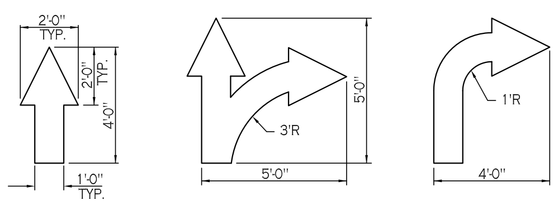


90° PARKING STALL LAYOUT - 2

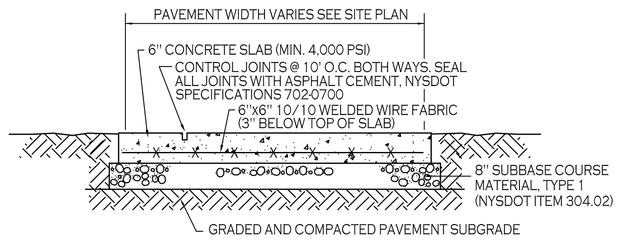


NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 401-3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304-3.

HEAVY DUTY ASPHALT SECTION - 4B

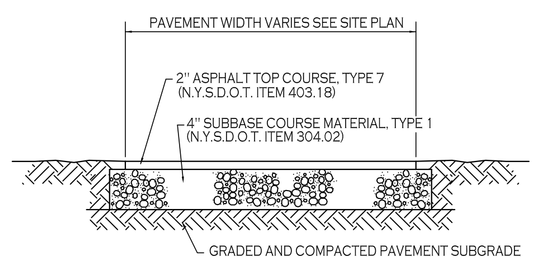


PAINTED TRAFFIC ARROWS - 3



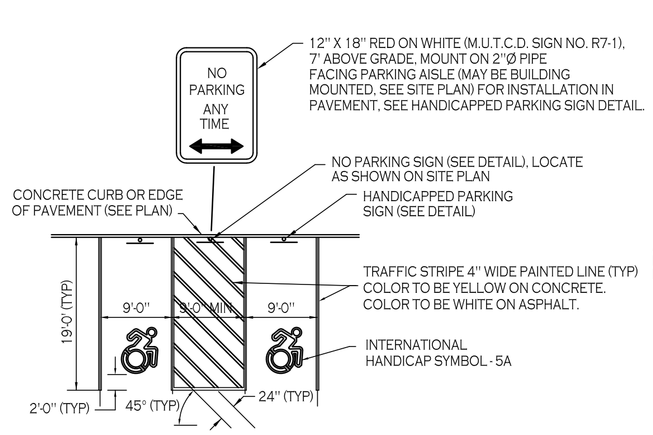
NOTE: CONCRETE PAVEMENT MATERIAL SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 501 AND CONSTRUCTION METHODS SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 502-3.

EXTERIOR CONCRETE SLAB-ON-GRADE SECTION - 4C

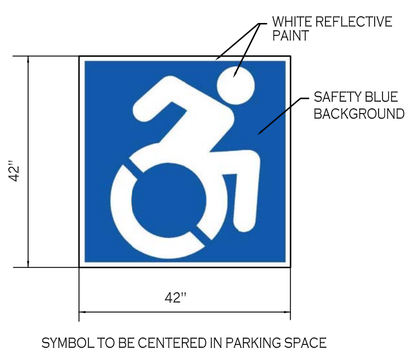


NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 401-3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304-3.

ASPHALT TRAIL SECTION - 4D

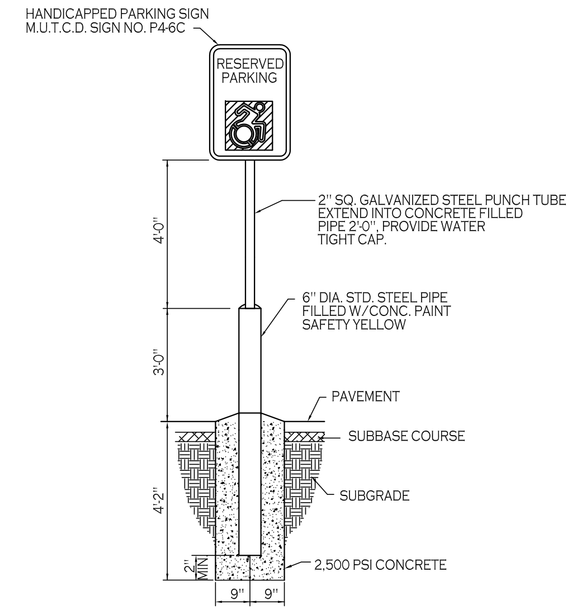


HANDICAPPED PAVEMENT MARKINGS & SIGNAGE - 5



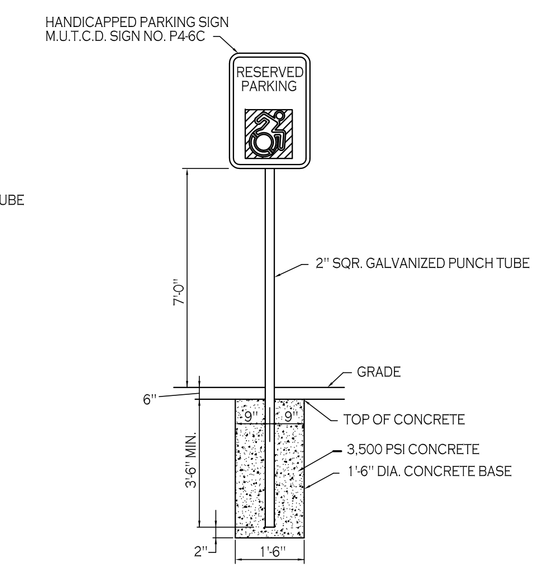
SYMBOL TO BE CENTERED IN PARKING SPACE

INTERNATIONAL HANDICAP SYMBOL - 5A



HANDICAPPED PARKING SIGN - 6

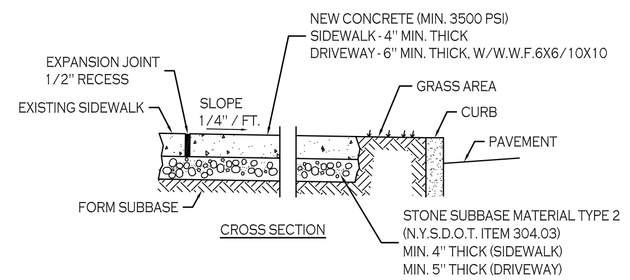
INSTALLED IN PAVEMENT



NOTES:
1. HANDICAPPED PARKING SIGN SHALL CONFORM WITH CURRENT STATE AND LOCAL CODES AND REGULATIONS.

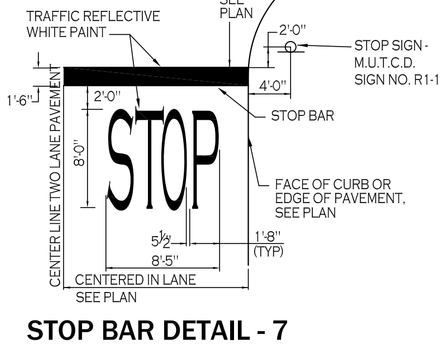
HANDICAP PARKING SIGNS - 6

INSTALLED IN GRASS/LANDSCAPED AREA

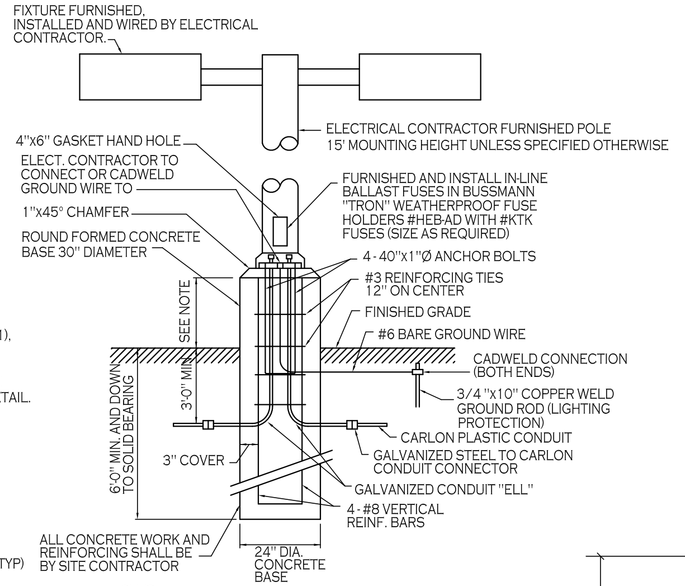


NOTES:
1. CONTROL JOINTS TO BE AT 5'-0" O.C., BOTH WAYS WHERE APPLICABLE. SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
2. CONCRETE SIDEWALK AND DRIVEWAY MATERIAL SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 501 AND CONSTRUCTION METHODS SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 608-3.
3. SUBBASE GRADE SHALL FOLLOW THE PROPOSED GRADE OF THE SIDEWALK AND SLOPE AWAY FROM BUILDING WHERE APPLICABLE, PROVIDE CONTINUOUS STONE PATH TO CURB UNDERDRAIN WHERE PROVIDED.
4. FULL DEPTH EXPANSION JOINTS SHALL BE INSTALLED EVERY 20' O.C., BOTHWAYS WHERE APPLICABLE. SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
5. SEE CURB DETAIL FOR DOWLING REQUIREMENTS WHERE ABUTTING CURB.
6. INSTALL 6" LONG #3 DOWELS @ 12" O.C. WHERE SIDEWALK ABUTS A BUILDING WALL AT AN ENTRANCE, THICKEN SIDEWALK TO 6" AT BUILDING WALL AND INSTALL DOWEL CENTERED IN THE 6" DEPTH. DOWELS AND THICKENING OF SIDEWALK SHALL EXTEND 18" EITHER SIDE OF ENTRANCE.
7. INSTALL 1/2" PREMOLDED EXPANSION JOINT WITH BACKER ROD & SEALANT WHERE SIDEWALK ABUTS BUILDING OR OTHER STRUCTURE.

CONCRETE SIDEWALK - 9



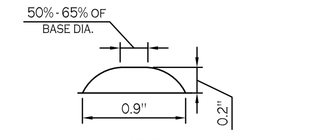
STOP BAR DETAIL - 7



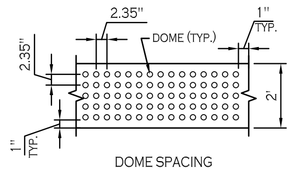
NOTES:
1. FOR LOCATIONS OF FOUNDATIONS SEE SITE PLAN
2. FOR LIGHT FIXTURE ORDERING INFORMATION SEE SITE LIGHTING PLAN
3. LIGHT POLE BASE EXPOSURE ABOVE GRADE SHALL BE:
   IN CURBED ISLANDS: 6" ABOVE TOP OF CURB ELEVATION
   IN PAVEMENT: 3" ABOVE GRADE
   IN NONCURBED GRASS AREAS: 6" ABOVE GRADE

LIGHT POLE FOUNDATION - 8

USE FOR 15' MOUNTING HEIGHT L.E.D. FIXTURES

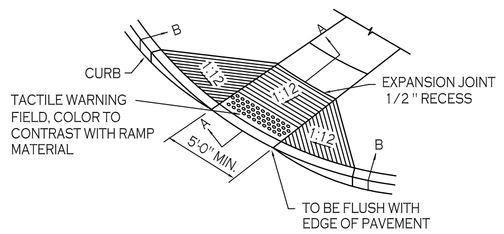


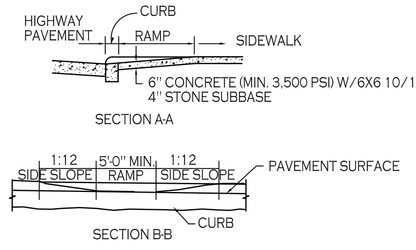
DOME SECTION



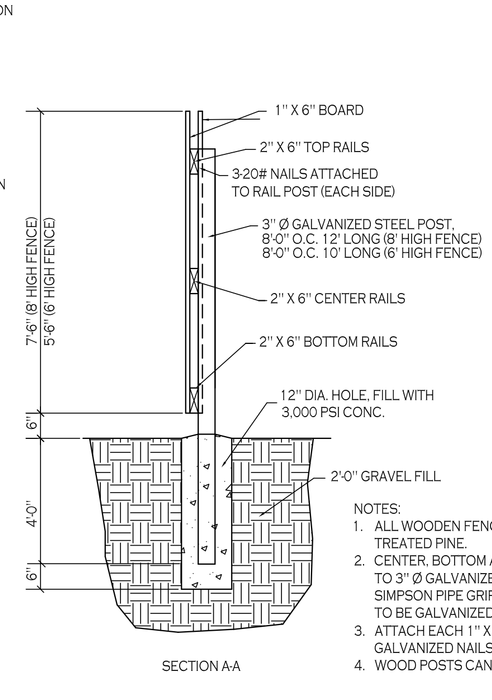
DOME SPACING

NOTE: TACTILE WARNING DEVICES SHALL BE PER ICC/ANSI A117.1-1998, SECTION 705.3.1.2 OR CURRENT UPDATE



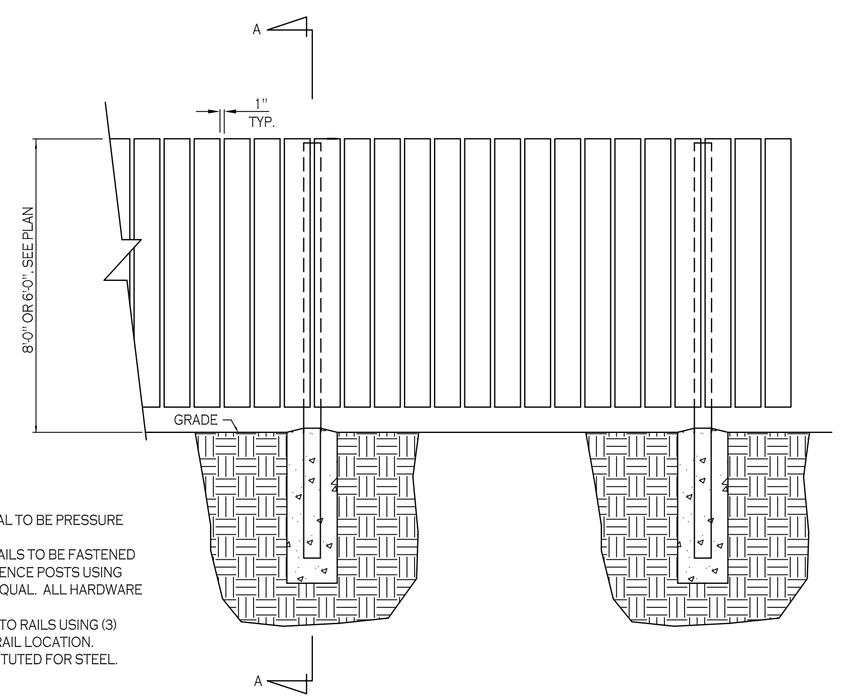


SIDEWALK CURB RAMP - 10



SECTION A-A

NOTES:
1. ALL WOODEN FENCE MATERIAL TO BE PRESSURE TREATED PINE.
2. CENTER, BOTTOM AND TOP RAILS TO BE FASTENED TO 3" Ø GALVANIZED STEEL FENCE POSTS USING SIMPSON PIPE GRIP TIES OR EQUAL. ALL HARDWARE TO BE GALVANIZED.
3. ATTACH EACH 1" X 6" BOARD TO RAILS USING (3) GALVANIZED NAILS AT EACH RAIL LOCATION.
4. WOOD POSTS CAN BE SUBSTITUTED FOR STEEL.



BOARD ON BOARD FENCE FENCE - 12

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Buffalo, New York 14203
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F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Site Details

DRAWING NO.
C-103

Project no.: 21.011

Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

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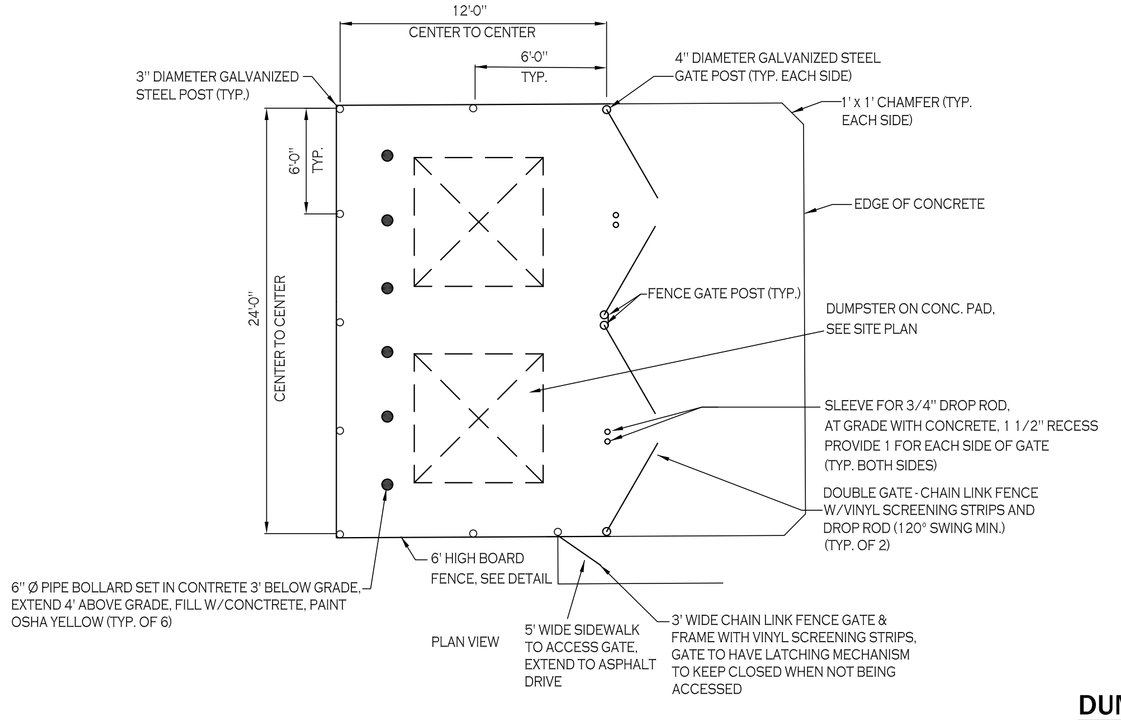
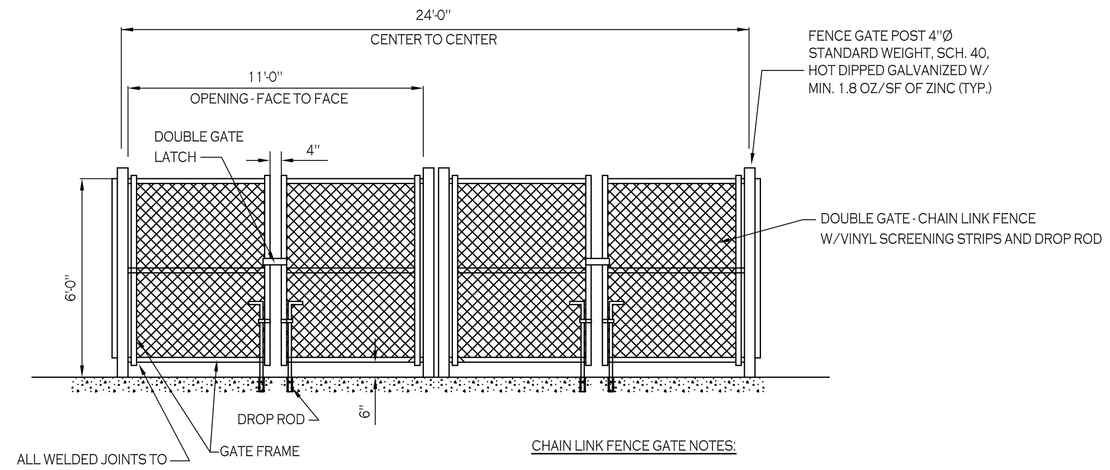
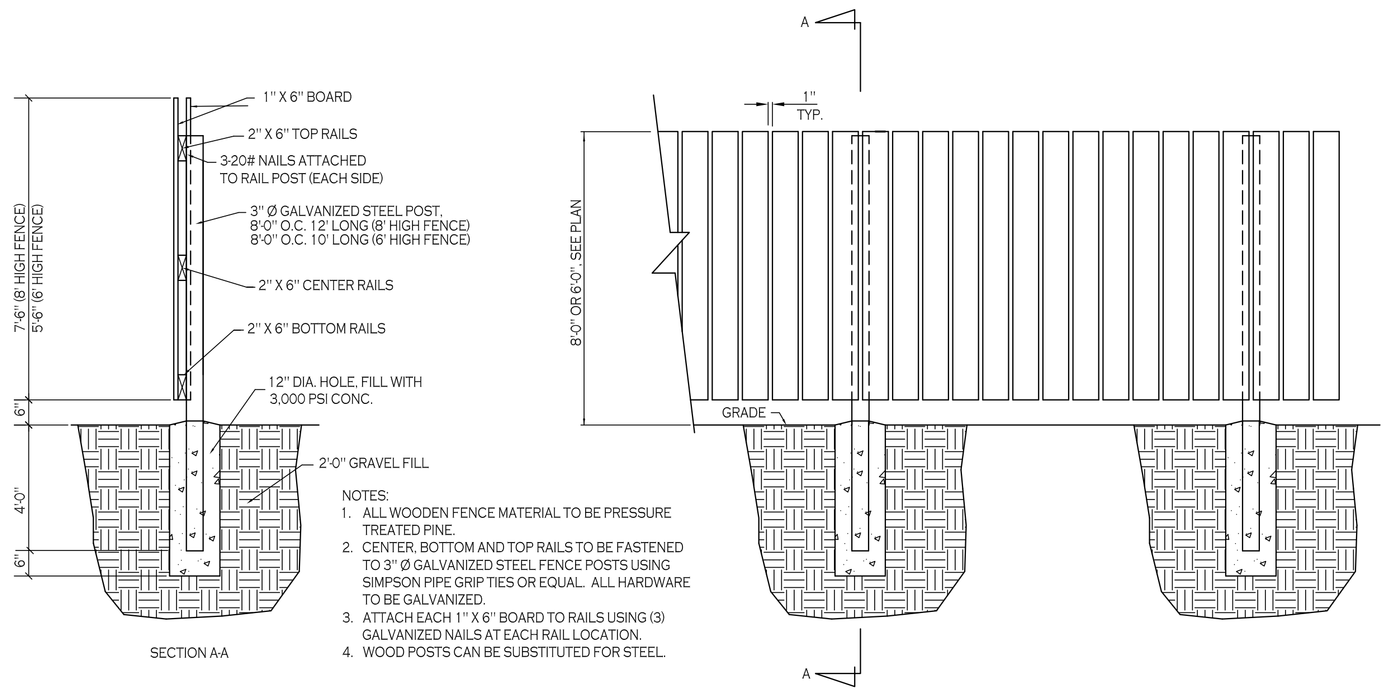




DUMPSTER ENCLOSURE - 11

CHAIN LINK FENCE GATE NOTES:

1. GATE POST FOOTINGS TO BE MIN. 36" DEEP x (4x) POST DIAMETER, EXTEND POST TO WITHIN 6" OF BOTTOM.
2. GATE FRAMES TO BE 2" SQ. GALVANIZED STEEL, WEIGHING 2.60 LB/FT IN ACCORDANCE WITH ASTM F 900.
3. CHAIN LINK FENCE FABRIC SHALL BE 2" MESH, 9 GAUGE, ZINC COATED STEEL CORE WIRE. INSTALL MESH WITH HOOK BOLTS AND TENSION BARS ON ALL 4 SIDES. ATTACH AT 15" MAX.
4. DOUBLE GATE LATCH TO BE FORKED TYPE CAPABLE OF RETAINING GATE IN CLOSED POSITION AND HAVE PROVISION FOR PAD LOCK. LATCH SHALL BE OPERABLE FROM EITHER SIDE OF GATE.
5. ALL HARDWARE TO BE HOT DIPPED GALVANIZED STEEL TO SUIT GATE SIZE.



NOTES:
1. ALL WOODEN FENCE MATERIAL TO BE PRESSURE TREATED PINE.
2. CENTER, BOTTOM AND TOP RAILS TO BE FASTENED TO 3" Ø GALVANIZED STEEL FENCE POSTS USING SIMPSON PIPE GRIP TIES OR EQUAL. ALL HARDWARE TO BE GALVANIZED.
3. ATTACH EACH 1" X 6" BOARD TO RAILS USING (3) GALVANIZED NAILS AT EACH RAIL LOCATION.
4. WOOD POSTS CAN BE SUBSTITUTED FOR STEEL.

BOARD ON BOARD FENCE FENCE - FOR DUMPSTER ENCLOSURE

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REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Site
Details

DRAWING NO.
C-104
Project no.: 21.011

Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

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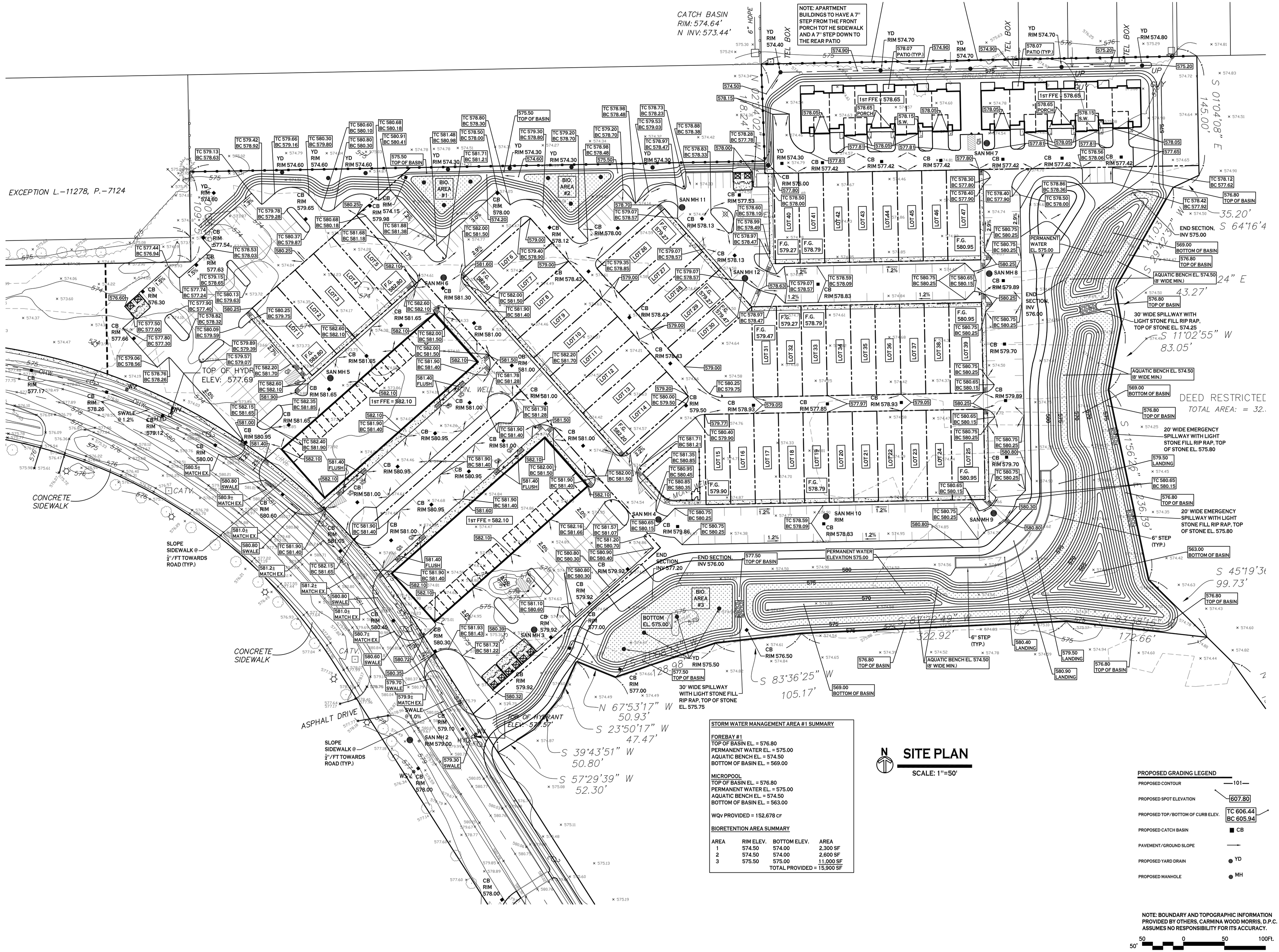

STORM WATER MANAGEMENT AREA #1 SUMMARY

FOREBAY #1
TOP OF BASIN EL. = 576.80
PERMANENT WATER EL. = 575.00
AQUATIC BENCH EL. = 574.50
BOTTOM OF BASIN EL. = 569.00

MICROPOOL
TOP OF BASIN EL. = 576.80
PERMANENT WATER EL. = 575.00
AQUATIC BENCH EL. = 574.50
BOTTOM OF BASIN EL. = 563.00

WQv PROVIDED = 152,678 CF

BIORETENTION AREA SUMMARY

AREA	RIM ELEV.	BOTTOM ELEV.	AREA
1	574.50	574.00	2,300 SF
2	574.50	574.00	2,600 SF
3	575.50	575.00	11,000 SF
		TOTAL PROVIDED =	15,900 SF

SITE PLAN

SCALE: 1"=50'

PROPOSED GRADING LEGEND

PROPOSED CONTOUR	101
PROPOSED SPOT ELEVATION	607.80
PROPOSED TOP/BOTTOM OF CURB ELEV.	TC 606.44 / BC 605.94
PROPOSED CATCH BASIN	CB
PAVEMENT/GROUND SLOPE	
PROPOSED YARD DRAIN	YD
PROPOSED MANHOLE	MH

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50 0 50 100Ft.

Carmina Wood Morris DPC
487 Main Street Suite 500
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P 716.842.3165
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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Grading Plan

DRAWING NO.

C-200

Project no.: 21.011

Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

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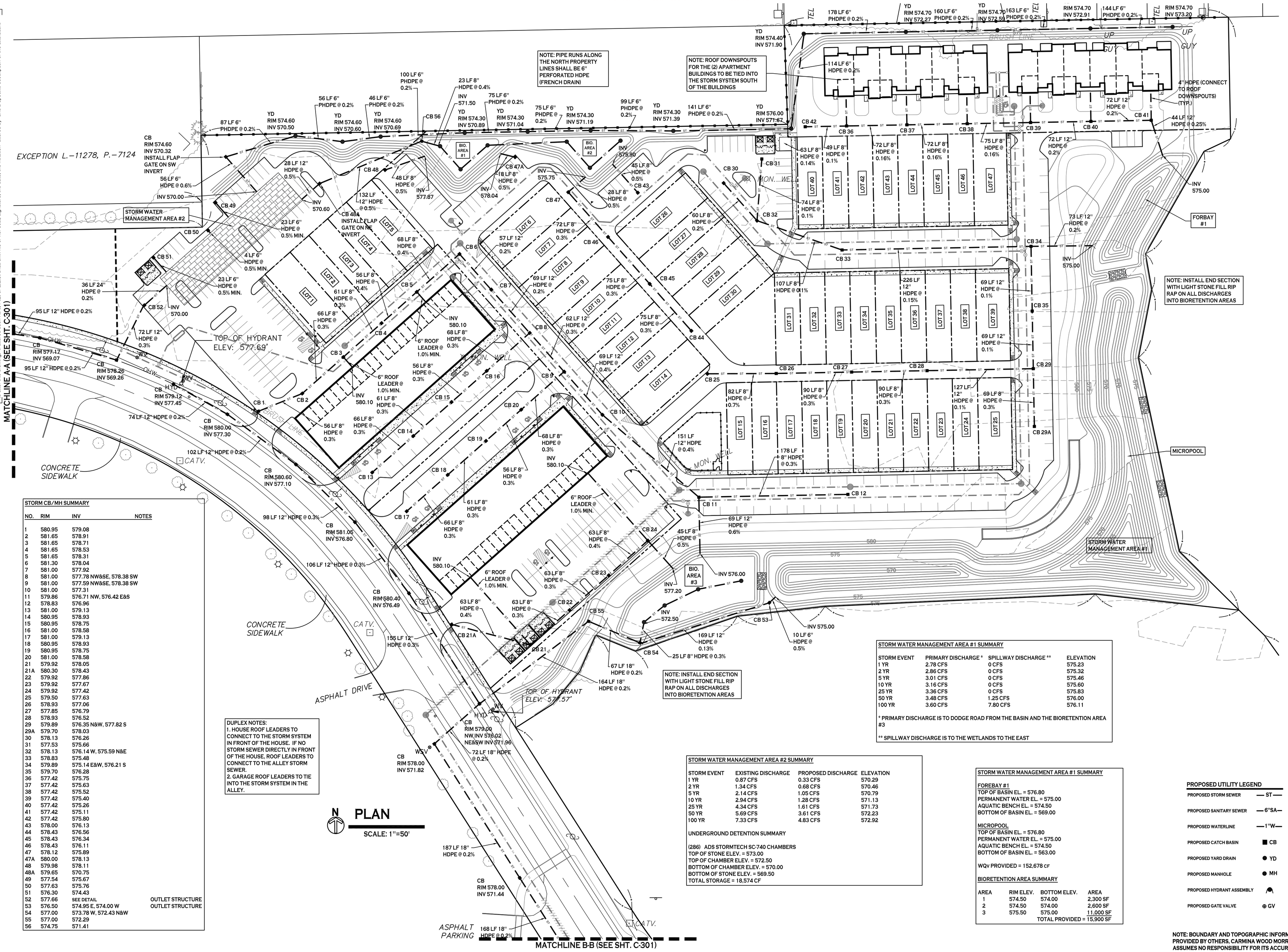

PLAN

SCALE: 1"=50'

STORM CB/MH SUMMARY			
NO.	RIM	INV	NOTES
1	580.95	579.08	
2	581.65	578.91	
3	581.65	578.71	
4	581.65	578.53	
5	581.65	578.31	
6	581.30	578.04	
7	581.00	577.92	
8	581.00	577.78 NW&SE, 578.38 SW	
9	581.00	577.59 NW&SE, 578.38 SW	
10	581.00	577.31	
11	579.86	576.71 NW, 576.42 E&S	
12	578.83	576.96	
13	581.00	579.13	
14	580.95	578.93	
15	580.95	578.75	
16	581.00	578.58	
17	581.00	579.13	
18	580.95	578.93	
19	580.95	578.75	
20	581.00	578.58	
21	579.92	578.05	
21A	580.30	578.43	
22	579.92	577.86	
23	579.92	577.67	
24	579.92	577.42	
25	579.50	577.63	
26	578.93	577.06	
27	577.85	576.79	
28	578.93	576.52	
29	579.89	576.35 N&W, 577.82 S	
29A	579.70	578.03	
30	578.13	576.26	
31	577.53	575.66	
32	578.13	576.14 W, 575.59 N&E	
33	578.83	575.48	
34	579.89	575.14 E&W, 576.21 S	
35	579.70	576.28	
36	577.42	575.75	
37	577.42	575.63	
38	577.42	575.52	
39	577.42	575.40	
40	577.42	575.26	
41	577.42	575.11	
42	577.42	575.80	
43	578.00	576.13	
44	578.43	576.56	
45	578.43	576.34	
46	578.43	576.11	
47	578.12	575.89	
47A	580.00	578.13	
48	579.98	578.11	
48A	579.65	570.75	
49	577.54	575.67	
50	577.63	575.76	
51	576.30	574.43	
52	577.66	SEE DETAIL	OUTLET STRUCTURE
53	576.50	574.95 E, 574.00 W	OUTLET STRUCTURE
54	577.00	573.78 W, 572.43 N&W	
55	577.00	572.29	
56	574.75	571.41	

DUPLEX NOTES:
1. HOUSE ROOF LEADERS TO CONNECT TO THE STORM SYSTEM IN FRONT OF THE HOUSE. IF NO STORM SEWER DIRECTLY IN FRONT OF THE HOUSE, ROOF LEADERS TO CONNECT TO THE ALLEY STORM SEWER.
2. GARAGE ROOF LEADERS TO TIE INTO THE STORM SYSTEM IN THE ALLEY.

STORM WATER MANAGEMENT AREA #1 SUMMARY			
STORM EVENT	PRIMARY DISCHARGE *	SPILLWAY DISCHARGE **	ELEVATION
1 YR	2.78 CFS	0 CFS	575.23
2 YR	2.86 CFS	0 CFS	575.32
5 YR	3.01 CFS	0 CFS	575.46
10 YR	3.16 CFS	0 CFS	575.60
25 YR	3.36 CFS	0 CFS	575.83
50 YR	3.48 CFS	1.25 CFS	576.00
100 YR	3.60 CFS	7.80 CFS	576.11

* PRIMARY DISCHARGE IS TO DODGE ROAD FROM THE BASIN AND THE BIORETENTION AREA #3

** SPILLWAY DISCHARGE IS TO THE WETLANDS TO THE EAST

STORM WATER MANAGEMENT AREA #2 SUMMARY			
STORM EVENT	EXISTING DISCHARGE	PROPOSED DISCHARGE	ELEVATION
1 YR	0.87 CFS	0.33 CFS	570.29
2 YR	1.34 CFS	0.68 CFS	570.46
5 YR	2.14 CFS	1.05 CFS	570.79
10 YR	2.94 CFS	1.28 CFS	571.13
25 YR	4.34 CFS	1.61 CFS	571.73
50 YR	5.69 CFS	3.61 CFS	572.23
100 YR	7.33 CFS	4.83 CFS	572.92

UNDERGROUND DETENTION SUMMARY

(286) ADS STORMTECH SC-740 CHAMBERS
TOP OF STONE ELEV. = 573.00
TOP OF CHAMBER ELEV. = 572.50
BOTTOM OF CHAMBER ELEV. = 570.00
BOTTOM OF STONE ELEV. = 569.50
TOTAL STORAGE = 18,574 CF

STORM WATER MANAGEMENT AREA #1 SUMMARY
FOREBAY #1
TOP OF BASIN EL. = 576.80
PERMANENT WATER EL. = 575.00
AQUATIC BENCH EL. = 574.50
BOTTOM OF BASIN EL. = 569.00
MICROPOOL
TOP OF BASIN EL. = 576.80
PERMANENT WATER EL. = 575.00
AQUATIC BENCH EL. = 574.50
BOTTOM OF BASIN EL. = 563.00
WQv PROVIDED = 152,678 CF

BIORETENTION AREA SUMMARY

AREA	RIM ELEV.	BOTTOM ELEV.	AREA
1	574.50	574.00	2,300 SF
2	574.50	574.00	2,600 SF
3	575.50	575.00	11,000 SF
		TOTAL PROVIDED =	15,900 SF

PROPOSED UTILITY LEGEND

- PROPOSED STORM SEWER — ST —
- PROPOSED SANITARY SEWER — 6"SA —
- PROPOSED WATERLINE — 1"W —
- PROPOSED CATCH BASIN ■ CB
- PROPOSED YARD DRAIN ● YD
- PROPOSED MANHOLE ● MH
- PROPOSED HYDRANT ASSEMBLY
- PROPOSED GATE VALVE ⊕ GV

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 0 50 100Ft.

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REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Storm Drainage Plan

DRAWING NO.
C-300

Project no.: 21.011

Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

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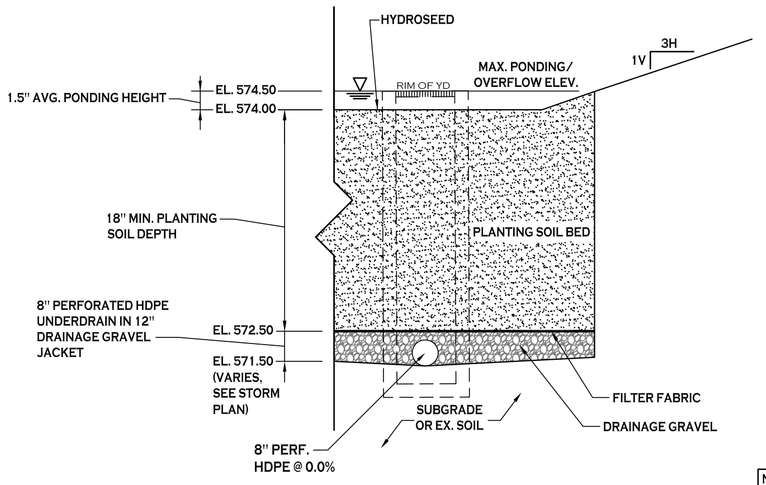
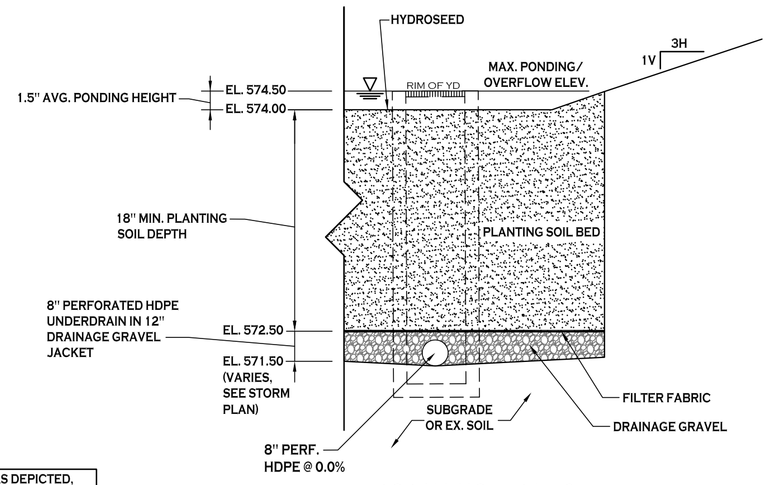
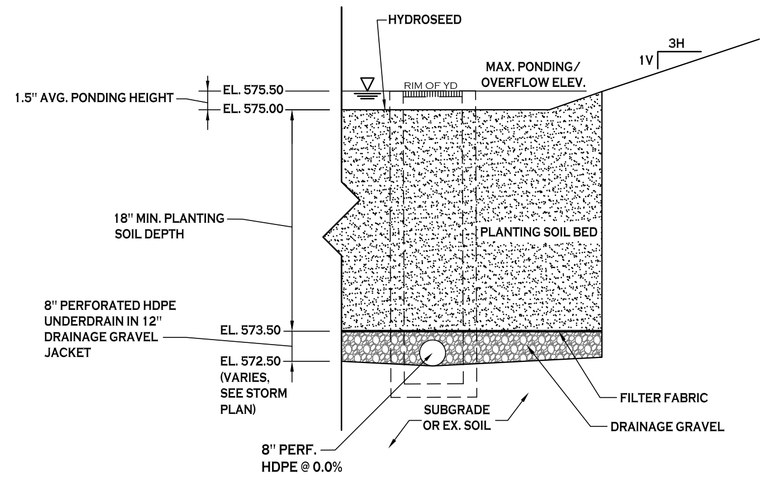


BIORETENTION AREA #1



BIORETENTION AREA #2



BIORETENTION AREA #3

NOTE: AS DEPICTED, YARD DRAIN RIM ELEVATIONS ARE TO BE SET 6" ABOVE PROPOSED GRADE IN BIORETENTION AREAS.

NOTES:
1. FILTER FABRIC TO BE NON-WOVEN CLASS 'C', MIRAFI 180-N OR APPROVED EQUIVALENT
2. MULCH TO BE SHREDDED HARDWOOD, AGED 12 MONTHS MIN.
3. DRAINAGE GRAVEL TO MEET AASHTO M-43. NO.67, SIZE 0.25" TO 0.75"
4. CONTRACTOR TO PROVIDE PLANTING SOIL SUBMITTAL SPECIFICATION FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.

NOTE: PLANTING SOIL SHALL BE LOAM/SAND MIX CONTAINING A MINIMUM OF 35 TO 60% SAND BY VOLUME AND LESS THAN 25% CLAY. SOIL SHOULD FALL WITHIN USCS TYPES SM OR ML WITH PERMEABILITY OF AT LEAST 0.5 FEET PER DAY. SOIL SHOULD BE FREE FROM STONES, STUMPS, ROOTS OR OTHER WOODY MATERIAL OVER 1" IN DIAMETER. PLACEMENT OF THE PLANTING SOIL SHOULD BE IN LIFTS OF 12" TO 18", LOOSELY COMPACTED.

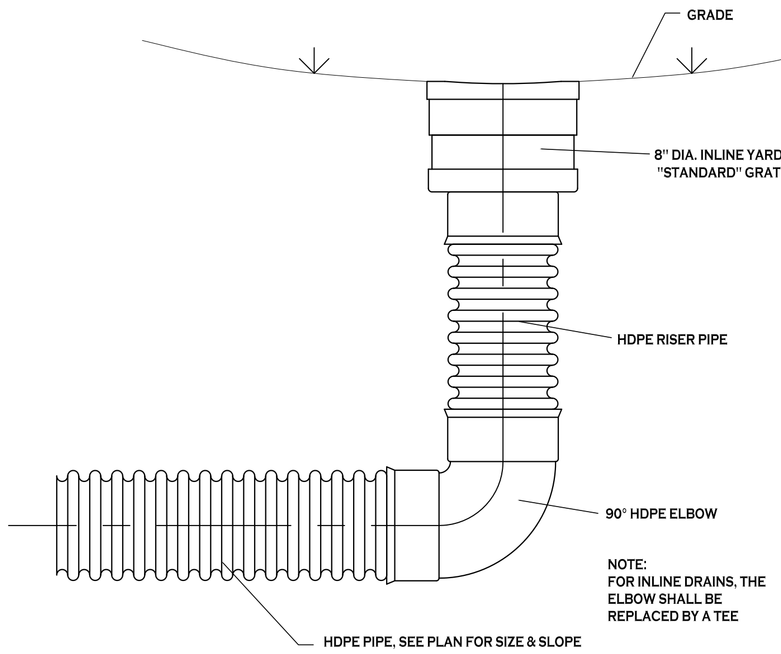
CHARACTERISTICS SHALL BE:
PH RANGE: 5.2 - 7.00
ORGANIC MATTER: 1.5 - 4.0%
MAGNESIUM: 35 LBS PER ACRE MIN.
PHOSPHORUS: 75 LBS PER ACRE MIN.
POTASSIUM: 85 LBS PER ACRE MIN.
SOLUBLE SALTS: 500 PPM
CLAY: 10 TO 25%
SILT: 30 TO 55%
SAND: 35 TO 60%

BIO-RETENTION AREA SEEDING SPEC (NORTHEAST WETLAND GRASS SEED MIX):

SEED MIXTURE	VARIETY	PERCENT BY NO. OF SEEDS
CREEPING BENTGRASS	AGROSTIS STOLONIFERA	63.0
ROUGH BLUEGRASS	POA TRIVIALIS	17.0
MEADOW FOXTAIL	ALOPECURUS ARUNDINACEUS	11.0
ANNUAL RYEGRASS	LOLIUM MULTIFLORUM	4.5
DEERTONGUE	PANICUM CLANDESTINUM	4.5

BIORETENTION AREA - TYPICAL SECTIONS

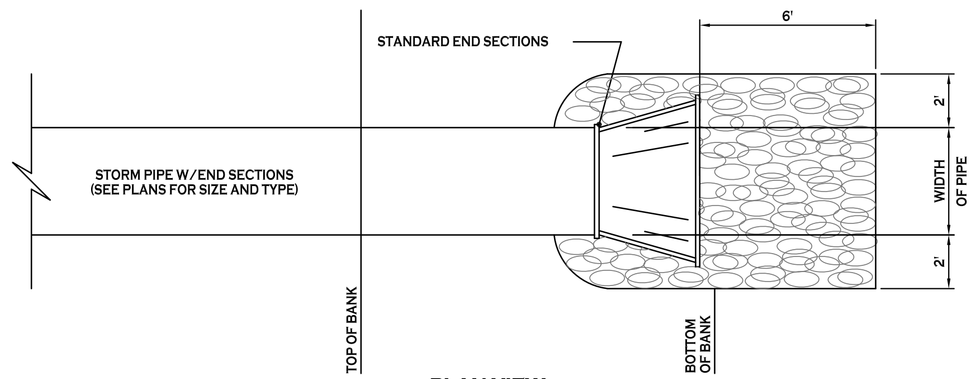
NOT TO SCALE



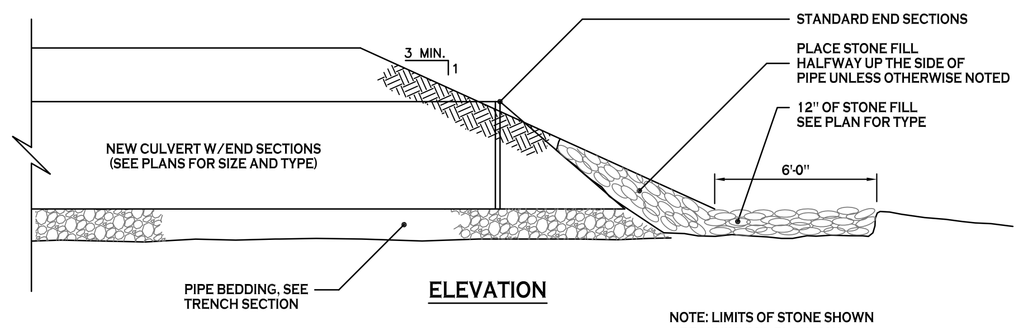
NOTE:
FOR INLINE DRAINS, THE ELBOW SHALL BE REPLACED BY A TEE

NOTE:
SEE TYPICAL TRENCH SECTION FOR BEDDING REQUIREMENTS

TYPICAL YARD DRAIN DETAIL



PLAN VIEW

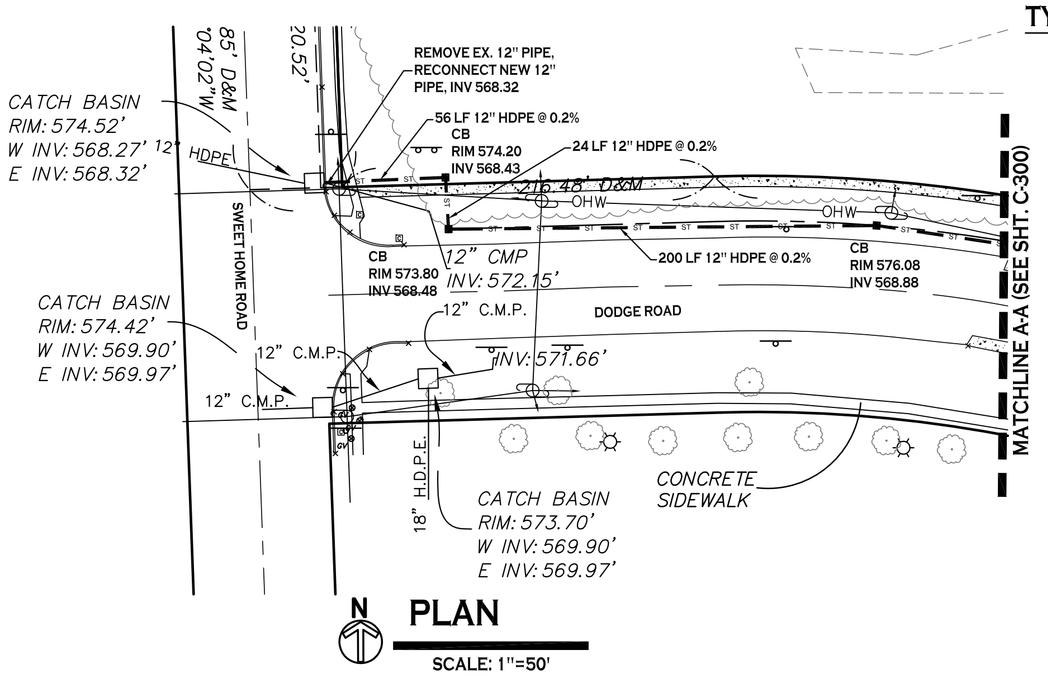


ELEVATION

NOTE: LIMITS OF STONE SHOWN ARE MINIMUMS, PLAN MAY INDICATE GREATER LIMITS

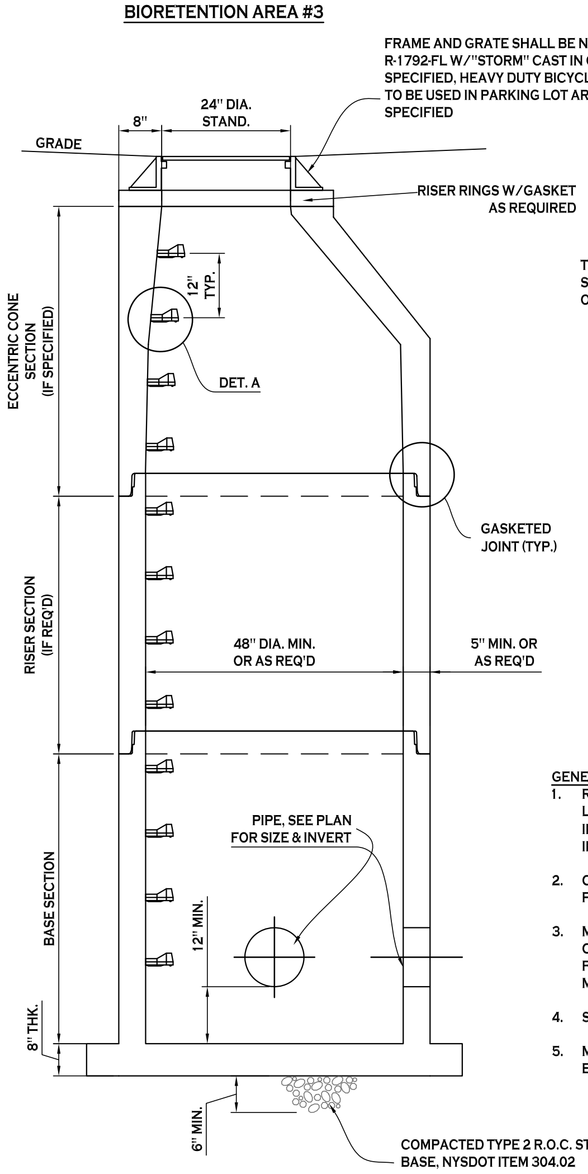
TYPICAL PIPE OUTLET W/ END SECTION & RIP RAP

NOT TO SCALE



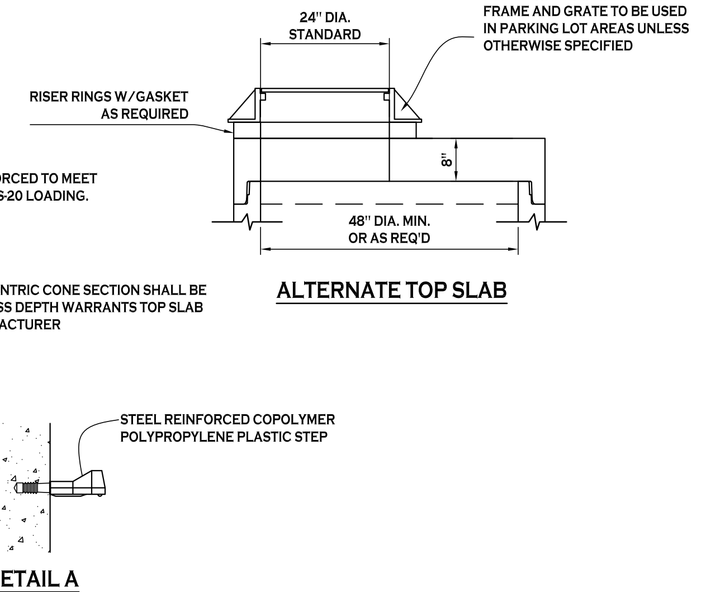
PLAN

SCALE: 1"=50'



TYPICAL STORM MANHOLE DETAIL

NOT TO SCALE

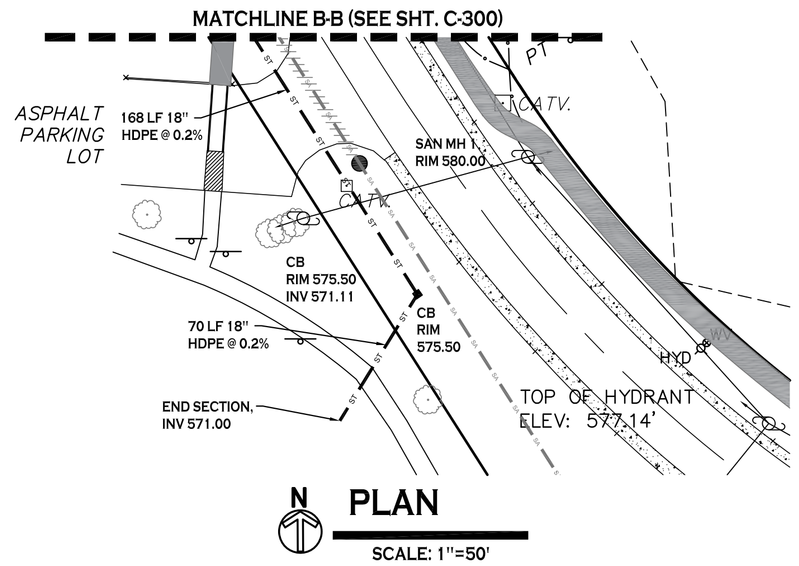


ALTERNATE TOP SLAB

NOTE: ECCENTRIC CONE SECTION SHALL BE USED UNLESS DEPTH WARRANTS TOP SLAB PER MANUFACTURER

DETAIL A

GENERAL NOTES:
1. REINFORCED STEEL TO CONFORM TO LATEST A.S.T.M. A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) IN BASE SLAB.
2. CONCRETE COMPRESSIVE STRENGTH - 4000 PSI MINIMUM.
3. MANHOLE DESIGN SPECIFICATIONS TO CONFORM TO LATEST A.S.T.M. C478 SPEC. FOR PRE-CAST REINFORCED CON-CRETE MANHOLE SECTIONS.
4. SINGLE POUR MONOLITHIC BASE SECTION.
5. MANHOLE TO BE COATED ON OUTSIDE WITH BITUMASTIC SEALER.



PLAN

SCALE: 1"=50'

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F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Storm Drainage Details

DRAWING NO.

C-301

Project no.: 21.011

1b

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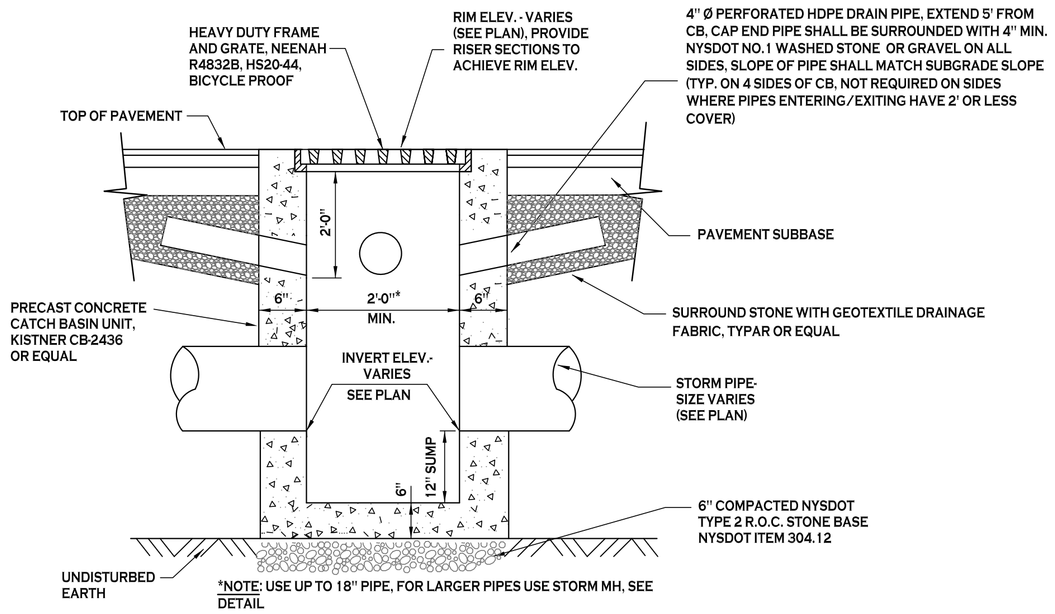
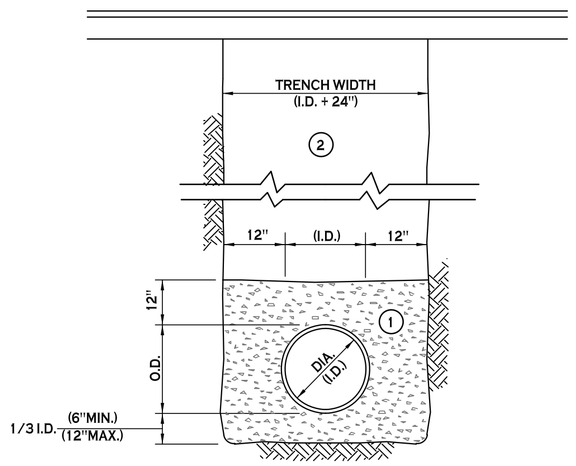


TYPICAL PRECAST CATCH BASIN

NOT TO SCALE



NOTES:

A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.

C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT 1985 EDITION)

(1) NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

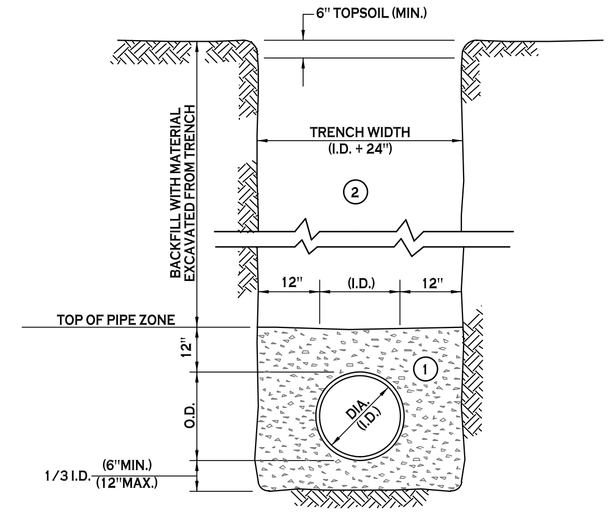
NO SLAG SHALL BE ALLOWED FOR MATERIAL (1)

(2) TYPE 2 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 304-2.02 TYPE 2. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN TWO INCHES AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL (2)

STORM SEWER TRENCH SECTION IN PAVED AREAS

NOT TO SCALE



NOTES:

A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.

C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT 1985 EDITION)

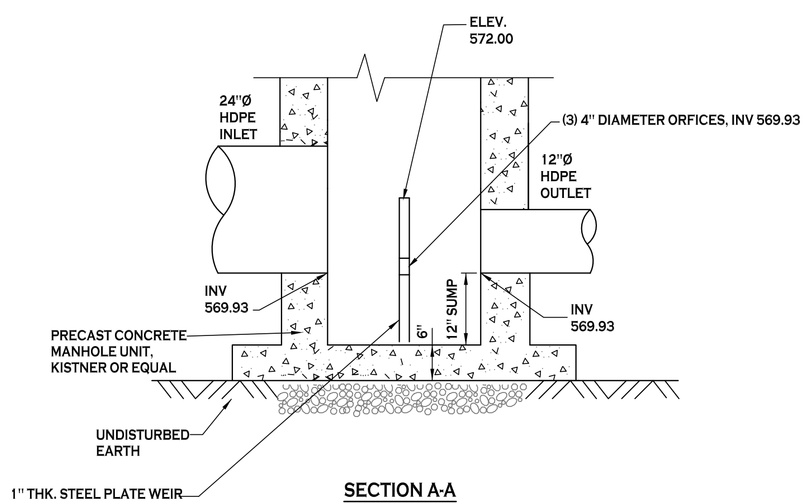
(1) NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL (1)

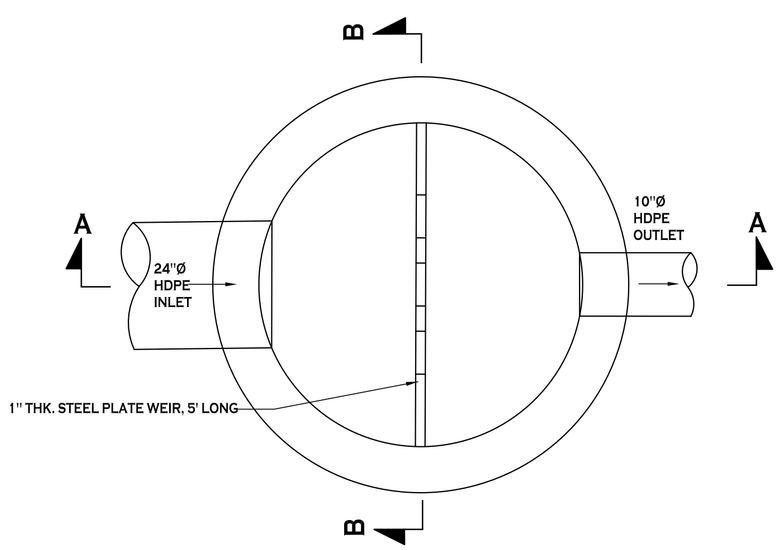
(2) BACKFILL MATERIAL SHALL BE NATIVE SOIL CONTAINING NO UNSUITABLE MATERIAL COMPACTED IN 6" LIFTS.

STORM SEWER TRENCH SECTION IN UNPAVED AREAS

NOT TO SCALE



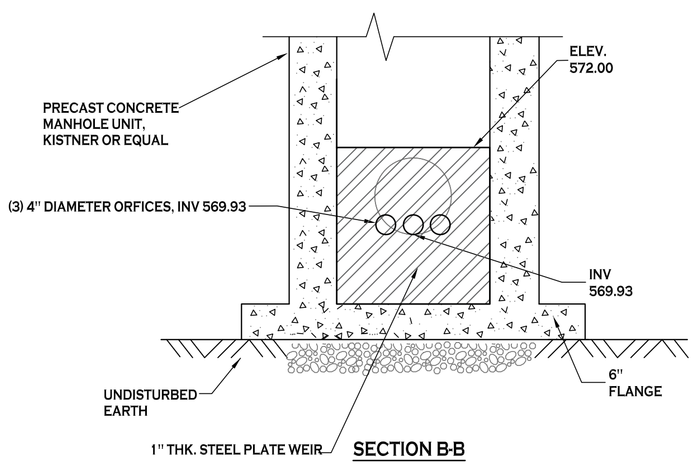
NOTES:
1. FASTEN STEEL PLATE TO CB WALL WITH ANGLE CLIPS AND BOLTS
2. STEEL PLATE, ANGLE CLIPS, AND BOLTS TO BE HOT DIPPED GALVANIZED

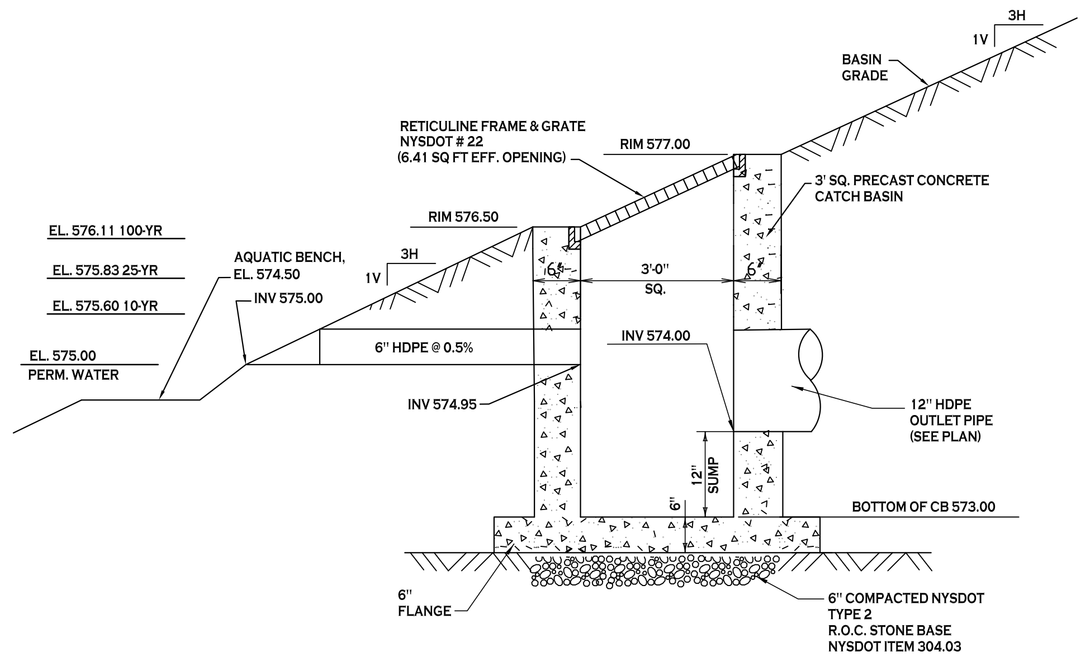


*NOTE: USE 5'-0" I.D. MANHOLE

OUTLET CONTROL STRUCTURE - CB 52

NOT TO SCALE





DETENTION BASIN OUTLET STRUCTURE - CB 53

N.T.S.

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Storm Drainage Details

DRAWING NO.

C-302

Project no.: 21.011

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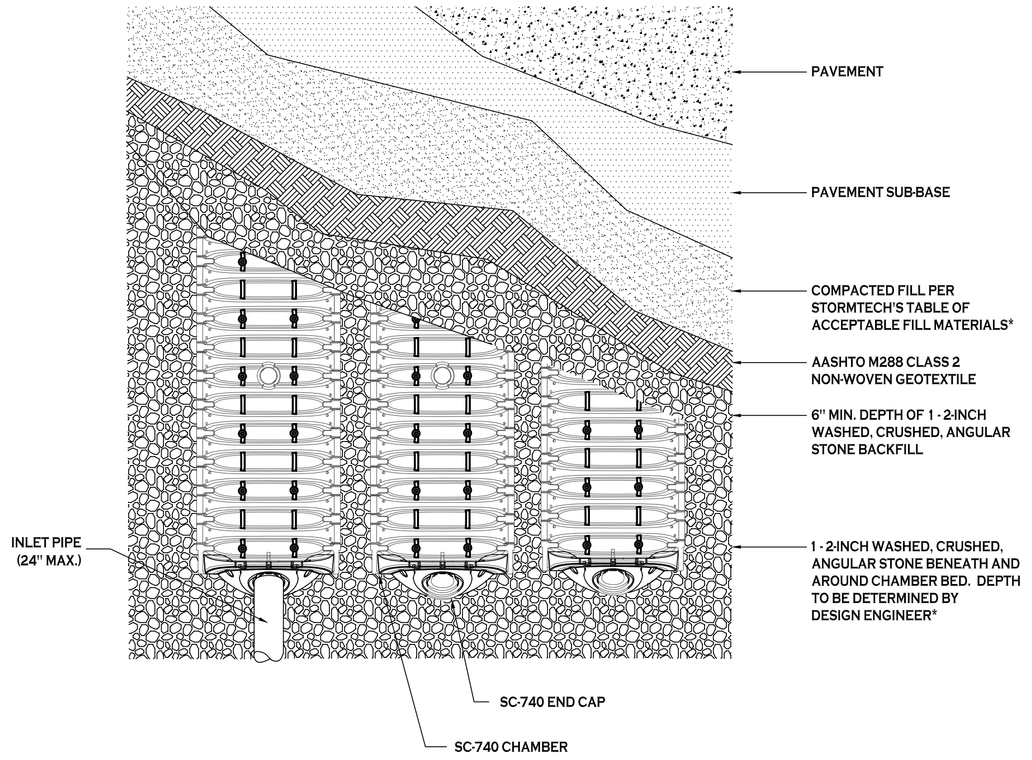


STORMTECH SC-740 CHAMBER SYSTEM
PLAN VIEW DETAIL

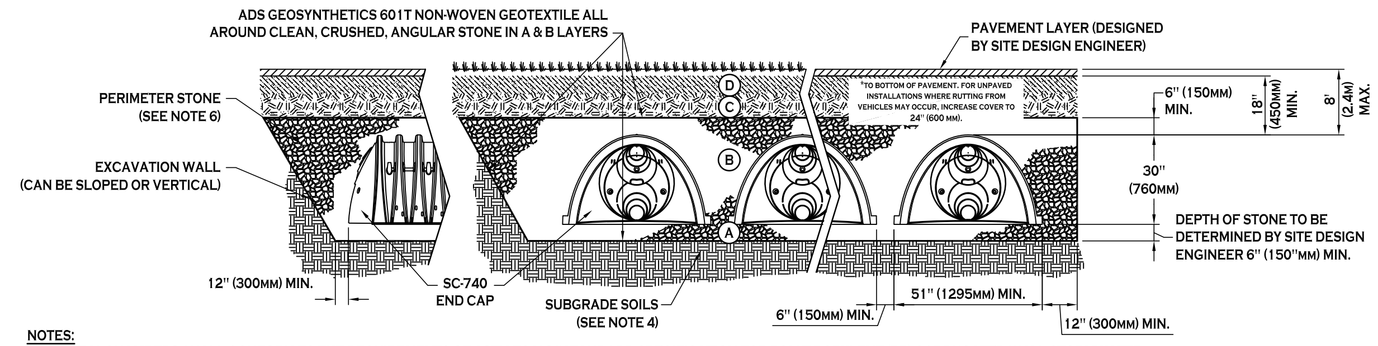
NOT TO SCALE

*SEE STORMTECH'S DESIGN MANUAL

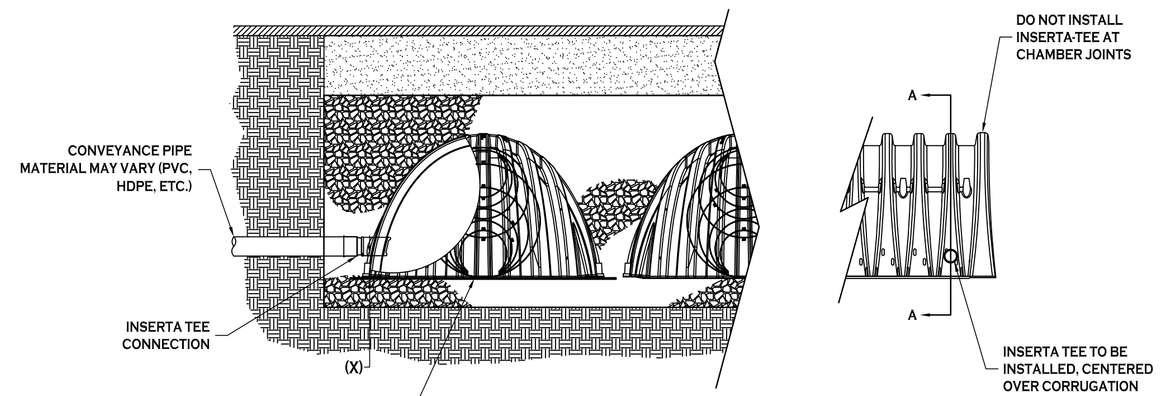
ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION/DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 MM) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LATER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 MM) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 MM) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 LBS (53 KN). DYNAMIC FORCE NOT TO EXCEED 20,000 LBS (89 KN).
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. [2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 MM) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



NOTES:
1. SC-740 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
6. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 MM)	4" (100 MM)
SC-740	10" (250 MM)	4" (100 MM)
DC-780	10" (250 MM)	4" (100 MM)
MC-3500	12" (300 MM)	6" (150 MM)
MC-4500	12" (300 MM)	8" (200 MM)
INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON		

NOTE:
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

INSERTA TEE DETAIL

NOT TO SCALE

INSPECTION AND MAINTENANCE

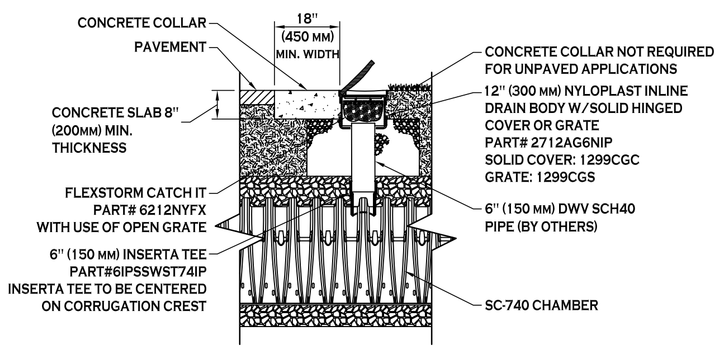
STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
- A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
- A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
- A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
- A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
- A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 MM) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
- B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
- B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
  - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
  - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
- B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 MM) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 M) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES:
1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



SC-740 6" INSPECTION PORT DETAIL

NOT TO SCALE

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/15/21
Drawn by: 2/24/21
Scale: As Noted

DRAWING NAME:

Storm Drainage Details

DRAWING NO.

C-303

Project no.: 21.011

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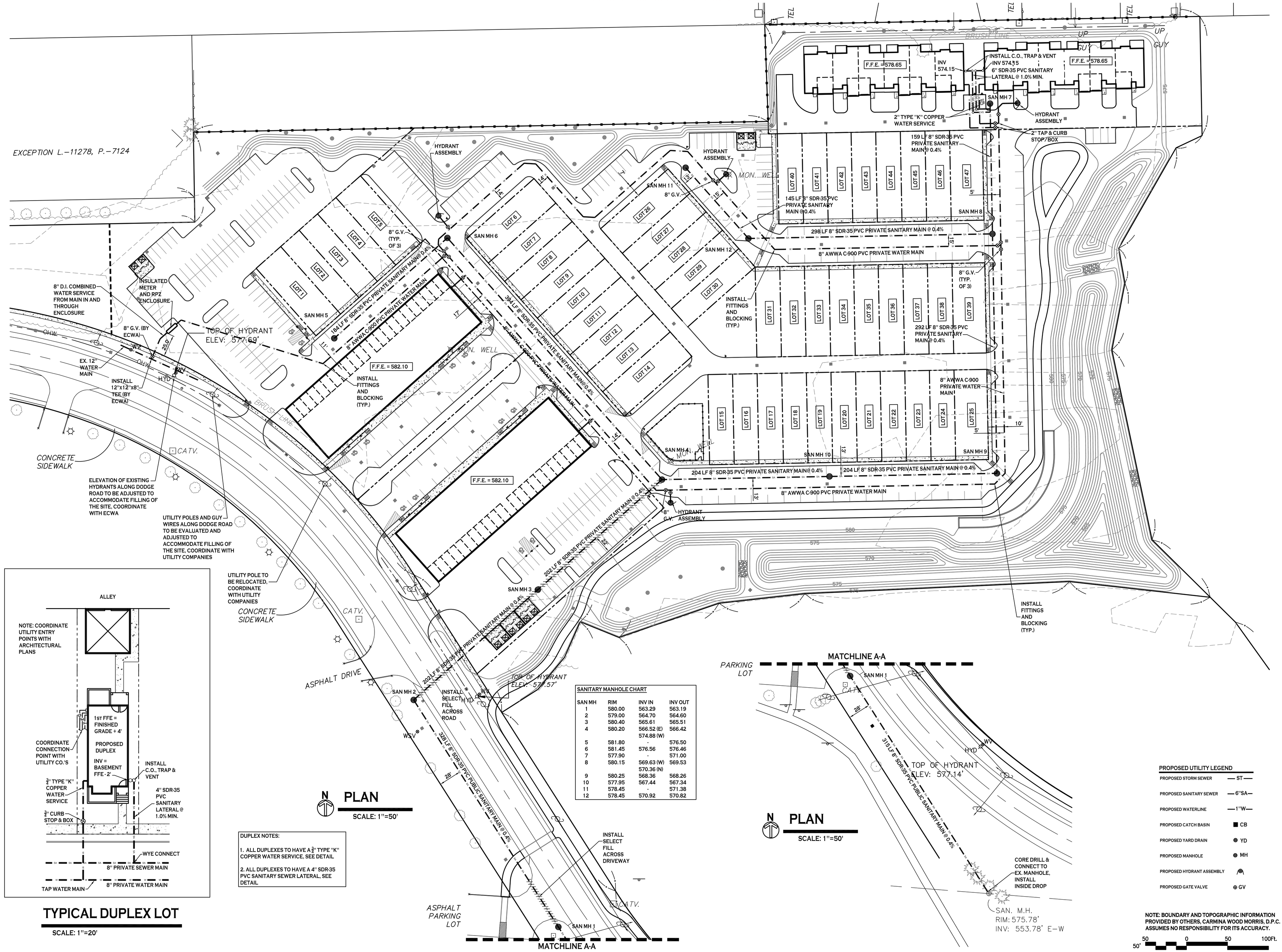

N PLAN
SCALE: 1"=50'

N PLAN
SCALE: 1"=50'

TYPICAL DUPLEX LOT

SCALE: 1"=20'

DUPLEX NOTES:

1. ALL DUPLEXES TO HAVE A ¾" TYPE "K" COPPER WATER SERVICE, SEE DETAIL
2. ALL DUPLEXES TO HAVE A 4" SDR-35 PVC SANITARY SEWER LATERAL, SEE DETAIL

SANITARY MANHOLE CHART

SAN MH	RIM	INV IN	INV OUT
1	580.00	563.29	563.19
2	579.00	564.70	564.60
3	580.40	565.61	565.51
4	580.20	566.52 (E)	566.42
		574.88 (W)	
5	581.80	-	576.50
6	581.45	576.56	576.46
7	577.90	-	571.00
8	580.15	569.63 (W)	569.53
		570.36 (N)	
9	580.25	568.36	568.26
10	577.95	567.44	567.34
11	578.45	-	571.38
12	578.45	570.92	570.82

PROPOSED UTILITY LEGEND

PROPOSED STORM SEWER	ST
PROPOSED SANITARY SEWER	6"SA
PROPOSED WATERLINE	1"W
PROPOSED CATCH BASIN	CB
PROPOSED YARD DRAIN	YD
PROPOSED MANHOLE	MH
PROPOSED HYDRANT ASSEMBLY	
PROPOSED GATE VALVE	GV

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

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Buffalo, New York 14203
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F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Utility Plan

DRAWING NO.
C-400

Project no.: 21.011

1b

Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

Packet Pg. 714

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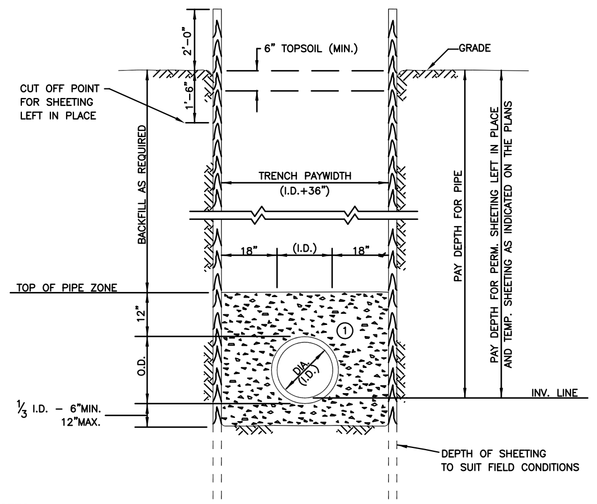
SHEETED TRENCH
(JANUARY 2012)



NOTES:

1. MAINTAIN 18" BETWEEN PIPE AND INSIDE FACE OF TEMPORARY SHEETING. IF SHEETING EXTENDS BELOW PIPE INVERT AS SHOWN, WHEN PVC PIPE MATERIAL IS USED, COMPACT MATERIAL ③ BEFORE PULLING THE SHEETING.
2. SHEETED TRENCH OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING EQUIPMENT.
3. SHEETING DRIVEN BELOW THE INVERT OF THE PIPE FOR BEDDING MATERIAL AND TOE SUPPORT WILL NOT BE CONSIDERED IN THE FORMULA FOR PAYMENT BUT SHOULD BE FIGURED BY THE CONTRACTOR IN DETERMINING HIS UNIT BID PRICE PER SQUARE FOOT OF SHEETING.
4. WHERE INDICATED ON THE PLANS OR AS ORDERED BY THE ENGINEER, TEMPORARY SHEETING WILL BE PAID FOR UNDER THE APPLICABLE BID ITEM. OTHER AREAS WHERE THE CONTRACTOR ELECTS TO USE TEMPORARY SHEETING NOT PREVIOUSLY AUTHORIZED BY THE ENGINEER SHALL BE AT HIS OPTION AND EXPENSE.

MATERIALS

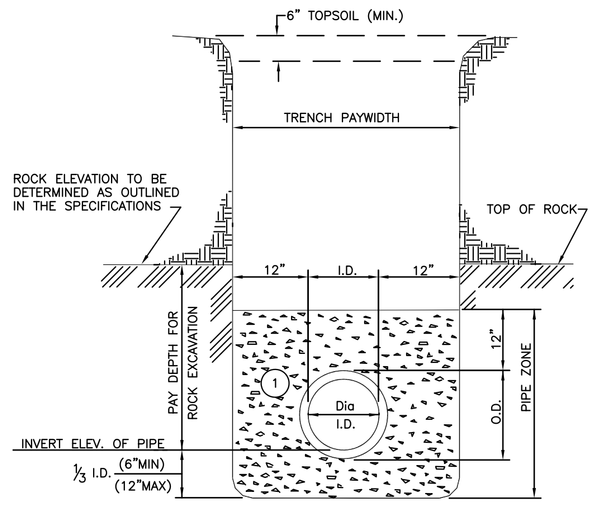
PIPE BEDDING MATERIAL (NYSDOT LATEST EDITION)

① NO.1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE CRUSHED STONE SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN 1" AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NOTE: SLAG SHALL NOT BE ALLOWED FOR MATERIALS ①

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1 12/01	REVISED TOPSOIL DIMENSION	STD.DETAIL 2
	Rev. 2 6/5/06	UPDATED MATERIALS TO NYSDOT LATEST EDITION	
	File: d-02	Date: 3/1/91	

ROCK TRENCH DETAIL
(JANUARY 2012)



NOTE:

A. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

B. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

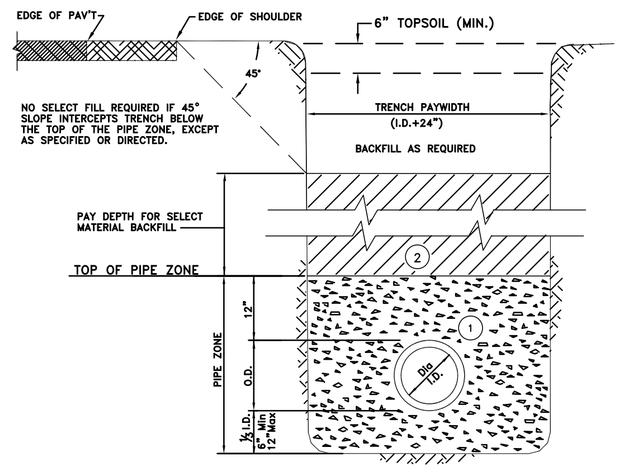
PIPE BEDDING MATERIAL (NYSDOT LATEST EDITION)

① NO.1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE CRUSHED STONE SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN 1" AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NOTE: SLAG SHALL NOT BE ALLOWED FOR MATERIALS ①

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1 1/6/94	ADDED 6" TOPSOIL (MIN.)	STD.DETAIL 3
	Rev. 2 2/7/94	ADDED NOTES A & B	
	File: d-03	Date: 3/1/91	

SELECT BACKFILL FOR TRENCH PARALLEL TO ROADWAYS
(JANUARY 2012)



NOTE:

A. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

B. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT LATEST EDITION)

① NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE CRUSHED STONE SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

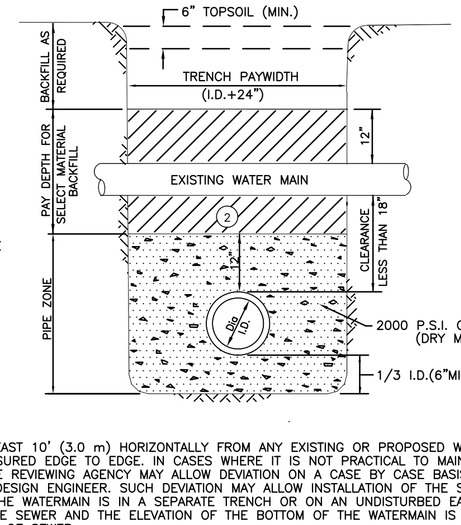
SELECT MATERIAL BACKFILL (NYSDOT LATEST EDITION)

② NO. 2 RUN OF CRUSHER STONE OR NO. 2 RUN OF CRUSHER GRAVEL WITH A GRADATION CONFORMING WITH NYSDOT SECTION 304-2.02 TYPE 4 AND NYSDOT SECTION 703-02. (COMPACTED IN 6" LIFTS TO 90% DENSITY)

NO SLAG SHALL BE ALLOWED FOR MATERIALS ① & ②

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 2 12/28/00	UPDATED MATERIALS TO NYSDOT LATEST EDITION	STD.DETAIL 4
	Rev. 3 12/01	Updated NYS DOT Editions	
	File: d-04	Date: 3/1/91	

WATERMAIN CROSSING DETAIL TYPICAL FOR ENCASEMENT
(JANUARY 2012)



NOTES:

A. IN ALL CASES WHERE THERE IS LESS THAN 18" CLEARANCE BETWEEN EXISTING WATER MAIN AND PROPOSED SEWER (INCLUDING HOUSE LATERALS) THE NEW WORK SHALL BE ENCASED IN CONCRETE AS SHOWN. WHEN A CASING PIPE IS SPECIFIED, NO CONCRETE ENCASEMENT IS REQUIRED.

B. THE CONCRETE ENCASEMENT SHALL EXTEND 3'-0" EACH SIDE OF THE WATER MAIN.

C. SEWERS SHALL BE LAID AT LEAST 10' (3.0 m) HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATERMAIN THE DISTANCE SHALL BE MEASURED EDGE TO EDGE. IN CASES WHERE IT IS NOT PRACTICAL TO MAINTAIN A 10' SEPARATION, THE APPROPRIATE REVIEWING AGENCY MAY ALLOW DEVIATION ON A CASE BY CASE BASIS, IF SUPPORTED BY DATA FROM THE DESIGN ENGINEER. SUCH DEVIATION MAY ALLOW INSTALLATION OF THE SEWER CLOSER TO A WATERMAIN, PROVIDED THE WATERMAIN IS IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF LOCATED ON ONE SIDE OF THE SEWER AND THE ELEVATION OF THE BOTTOM OF THE WATERMAIN IS AT LEAST 18" (46 cm) ABOVE THE TOP OF SEWER.

D. SEWERS CROSSING WATERMAINS SHALL BE LAID TO PROVIDE MINIMUM VERTICAL DISTANCE OF 18" (46 CM) BETWEEN THE OUTSIDE OF THE WATERMAIN AND THE OUTSIDE OF THE SEWER. THIS SHALL BE THE CASE WHEN THE WATERMAIN IS ABOVE OR BELOW THE SEWER. THE CROSSING SHALL BE ARRANGED SO THE JOINTS OF THE SEWER PIPE WILL BE EQUIDISTANT FROM AND AS FAR AWAY FROM THE WATERMAIN JOINTS AS POSSIBLE. WHERE THE WATERMAIN CROSSES UNDER A SEWER, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER TO PREVENT DAMAGE TO THE WATERMAIN.

E. WHEN IT IS IMPOSSIBLE TO OBTAIN THE PROPER HORIZONTAL AND VERTICAL SEPARATION AS STIPULATED ABOVE, THE SEWER SHALL BE EITHER ENCASED IN CONCRETE OR CONSTRUCTED OF PIPE MATERIAL EQUAL TO THE WATERMAIN AND PRESSURE TESTED AT 150 PSI TO ASSURE WATER TIGHTNESS.

F. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIALS PLACEMENT AND MAXIMUM PAY LIMITS.

G. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

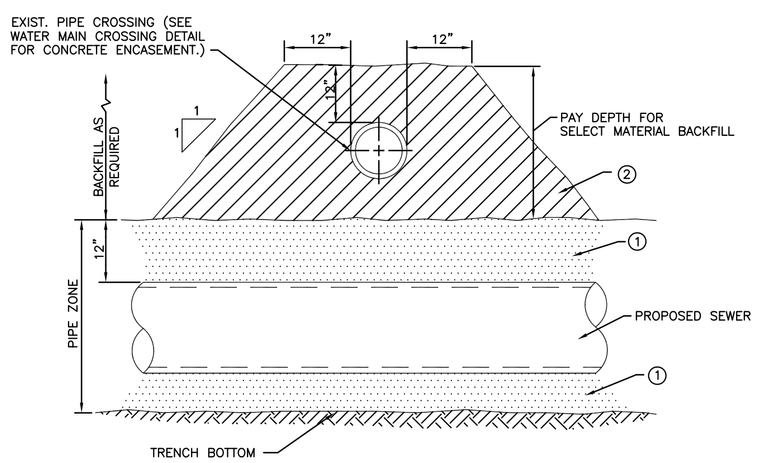
SELECT MATERIAL BACKFILL (NYSDOT LATEST EDITION)

② NO.2 RUN OF CRUSHER STONE OR NO.2 RUN OF CRUSHER GRAVEL WITH A GRADATION CONFORMING WITH NYSDOT SECTION 304-2.02 TYPE 4 AND NYSDOT SECTION 703-02. (COMPACTED IN 6"LIFTS TO 90% DENSITY)

NOTE: SLAG SHALL NOT BE ALLOWED FOR MATERIALS ②

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Revisions		STD.DETAIL 5
	2/7/94	ADDED 6" TOPSOIL(MIN.) & NOTE F&G	
	01/03/01	REVISED NOTE A	
	12/01	Revised Note "A"	
	File: d-05	Date: 3/1/91	

PIPE CROSSING SUPPORT DETAIL
(JANUARY 2012)



MATERIALS

PIPE BEDDING MATERIAL (NYSDOT LATEST EDITION)

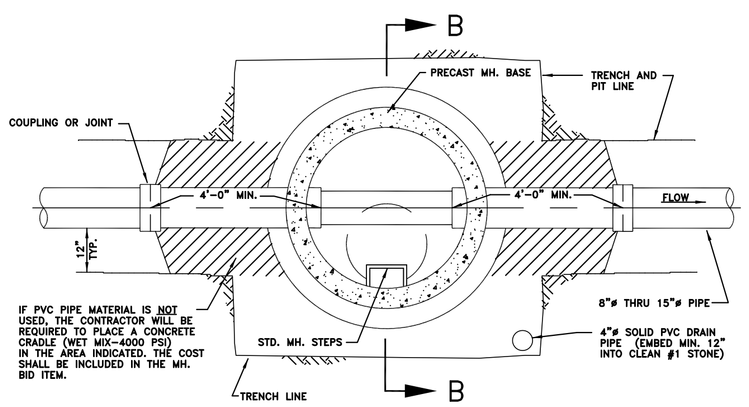
① NO.1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE CRUSHED STONE SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN 1" AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

SELECT MATERIAL BACKFILL (NYSDOT LATEST EDITION)

② NO.2 RUN OF CRUSHER STONE OR NO.2 RUN OF CRUSHER GRAVEL WITH A GRADATION CONFORMING WITH NYSDOT SECTION 304-2.02 TYPE 4 AND NYSDOT SECTION 703-02. (COMPACTED IN 6"LIFTS TO 90% DENSITY) NOTE: SLAG SHALL NOT BE ALLOWED FOR MATERIALS ① AND ②

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1 12/01	UPDATED MATERIALS TO NYSDOT LATEST EDITION	STD.DETAIL 9
	Rev. 2		
	File: d-09	Date: 3/1/91	

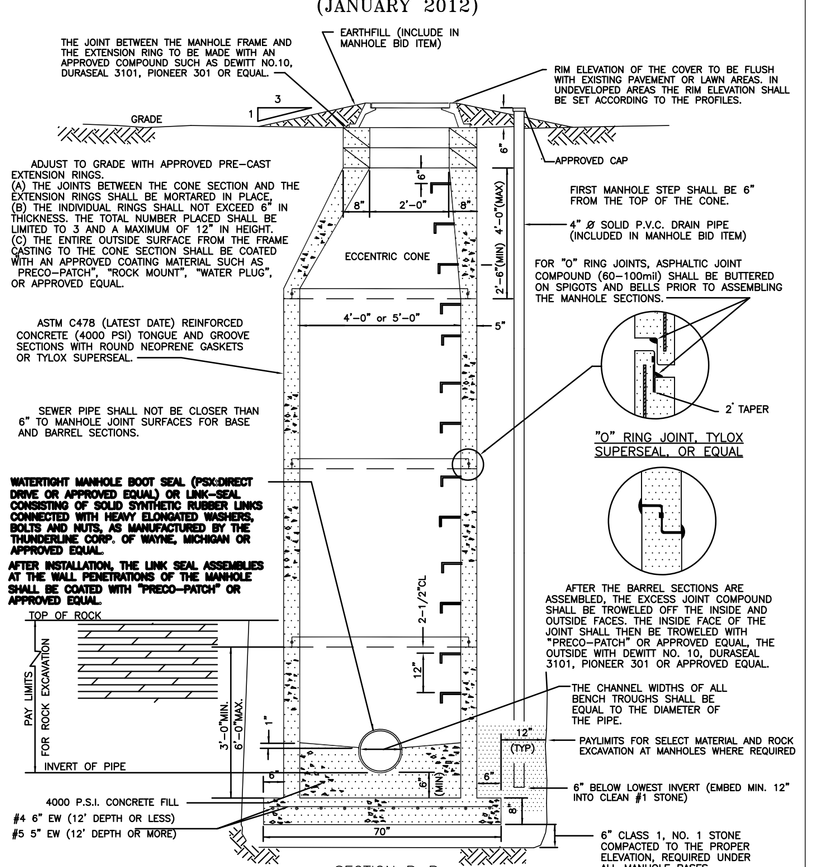
MONOLITHIC PRECAST BASE MANHOLES 4'-5' DIA. BASE FOR 15"ø SEWERS OR LESS
(JANUARY 2012)



PLAN

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1 12/01	REVISED 4" PVC TO SOLID PIPE IN #1 STONE BED	STD.DETAIL 10
	Rev. 2		
	File: d-10	Date: 3/1/91	

MONOLITHIC PRECAST BASE MANHOLES 4'-5' DIA. BASE FOR 15"ø SEWERS OR LESS (SECTION B-B)
(JANUARY 2012)



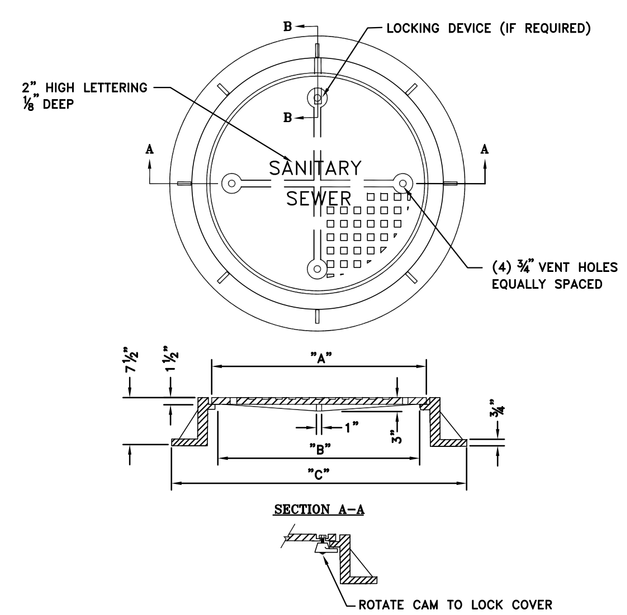
SECTION B-B

Revisions

07/15/98	ADD ROCK EXCAVATION PAYLIMITS
11/23/98	ADD 4"x4"x9" MARKER AND NOTES
12/01	REVISED 4" P.V.C. TO SOLID PIPE
03/04/03	ADDED WATER TIGHT BOOT SEAL NOTE
06/22/05	ADDED TYLOX SUPERSEAL NOTES
02/27/07	REMOVED WOOD POST AND NOTES
	CHANGED THE NUMBER OF EXTENSION RINGS FROM 2 TO 3

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT			STD.DETAIL 11
	File: d-11	Date: 3/1/91	

STANDARD FRAME AND COVER (PRIVATE SEWER)
(JANUARY 2012)



LOCKING DEVICE

TABLE				
PIPE SIZE	DIMENSION "A"	DIMENSION "B"	DIMENSION "C"	WEIGHT OF COVER
8" THRU 18"	24"	22 1/4"	35"(MAX.)	150 LBS. ± 5%
OVER 18"	32"	30"	46"(MAX.)	200 LBS. ± 5%

STANDARD FRAME AND COVER NOTES

1. MATERIAL ASTM A48 CLASS 30B CAST IRON.
2. UNIT MUST WITHSTAND H-20 WHEEL LOADING.
3. ALL DIMENSIONS ARE TO BE CONSIDERED MINIMUM WITH THE EXCEPTION OF THE COVER, WHICH MUST CONFORM EXACTLY TO MAINTAIN INTERCHANGEABILITY WITHIN THE COUNTY.
4. COVER WEIGHT 210 LBS. (MAX)
5. COATING NOT REQUIRED.
6. FRAMES AND COVERS SHALL HAVE MACHINED BEARING SURFACES.
7. LOCKING DEVICE MUST BE SITUATED TO ALLOW EASY REMOVAL OF COVER.
8. NO COMMERCIAL "BRAND NAME" LETTERING WILL BE ALLOWED ON THE EXPOSED SURFACE OF THE COVER.

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1		STD.DETAIL 13P
	Rev. 2		
	Rev. 3		
	Rev. 4		
	File: d-13P	Date: 2/05	

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Sanitary Sewer Details

DRAWING NO.

C-401

Project no.: 21.011

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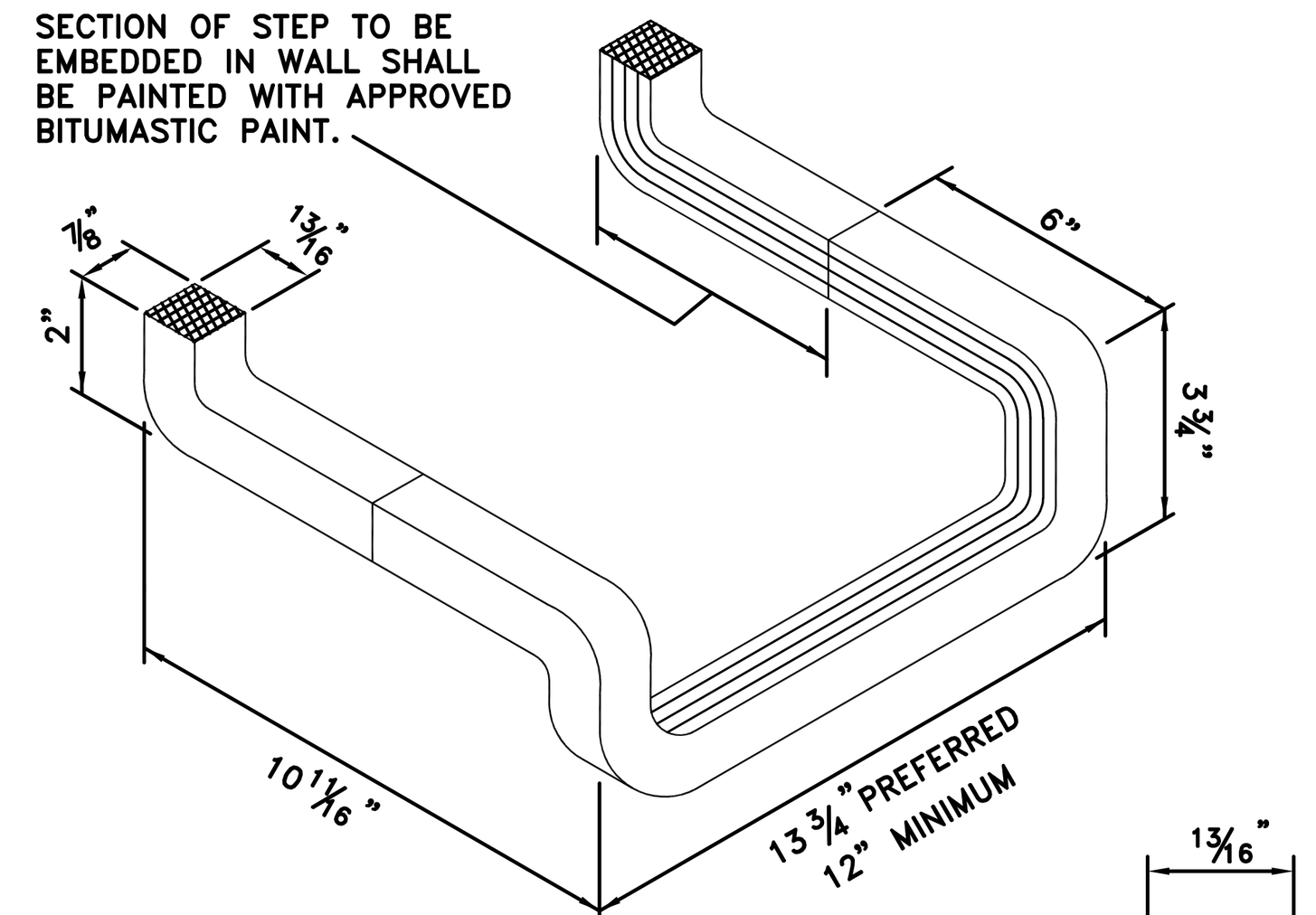
Attachment: SP-2021-05_drawings_052021 (23057 : Sp-2021-05)

STANDARD MANHOLE STEP
(JANUARY 2012)



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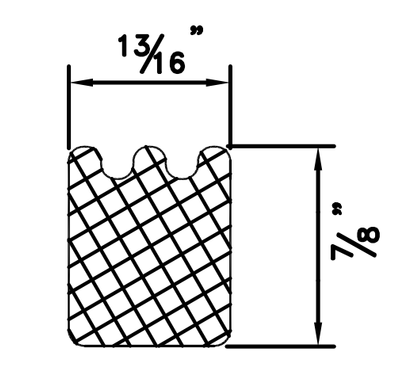
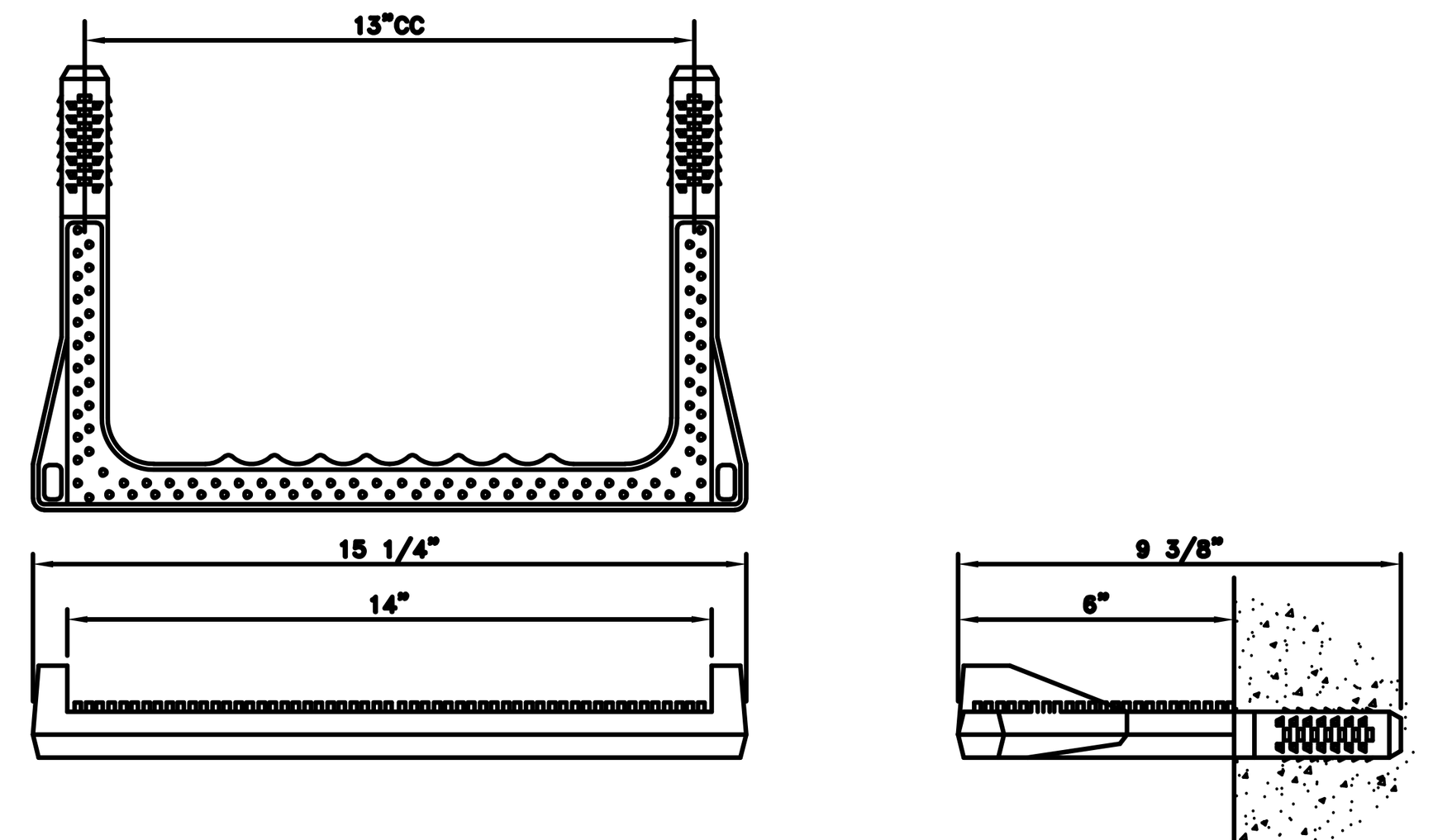


TYPICAL SECTION

NOTES:
1. MANHOLE STEPS SHALL BE OF FORGED ALUMINUM ALLOY.
2. AN ACCEPTABLE ALTERNATE IS THE STEEL REINFORCED COPOLYMER POLYPROPYLENE MANHOLE STEP.
3. THE STEPS SHALL BE EMBEDDED IN THE WALLS OF THE CONCRETE MANHOLE BARREL WHILE THE MANHOLE IS BEING CAST OR SECURELY GROUTED IN PLACE AFTER CASTING.



REINFORCED COPOLYMER POLYPROPELENE TYPE

ERIE COUNTY
DEPT. OF ENVIRONMENT & PLANNING
DIVISION OF SEWERAGE MANAGEMENT

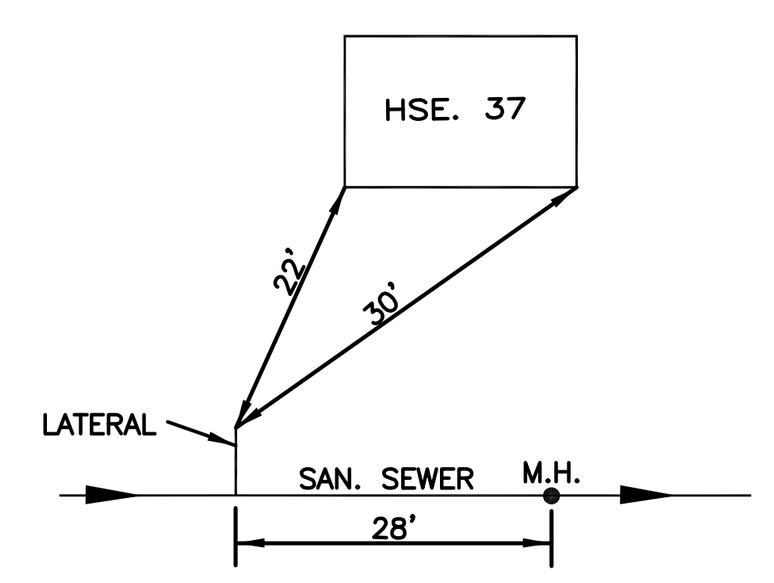
Rev. 1 12/9/96	ADDED REINFORCED COLPOLYMER TYPE STEP
Rev. 2	

File: d-17 Date: 3/1/91 STD.DETAIL 17

CONSTRUCTION SPECIFICATIONS FOR HOUSE LATERALS
(JANUARY 2012)

1. MATERIAL
   a. THICK WALL PVC – D – 3034, SDR–35
   b. EXTRA HEAVY CAST IRON
   c. DUCTILE IRON
2. FAR SIDE CROSSING
   a. LATERALS INSTALLED ACROSS TOWN ROADS MAY BE BY THE OPEN CUT METHOD WHERE ALLOWED BY THE HIGHWAY PERMIT.
   b. LATERALS INSTALLED ACROSS STATE OR COUNTY ROADS SHALL BE BY THE BORING AND JACKING METHOD (UNLESS OTHERWISE NOTED ON THE PLANS) USING A STEEL CASING PIPE. THE CARRIER PIPE SHALL CONFORM WITH THE MATERIAL SPECIFIED OR APPROVED BY THE ENGINEER.
   c. ALL PAVEMENT CROSSINGS (OPEN CUT METHOD) WITH LESS THAN 4'-0" COVER SHALL BE ENCASED WITH 2000 PSI CONCRETE.
   d. ALL FAR SIDE CROSSINGS SHALL BE INSTALLED UP TO ONE (1) FOOT OF THE R.O.W. LINE.
   e. THE CONTRACTOR SHALL SUPPLY A 2" X 4" WOOD MARKER EXTENDING FROM THE END OF THE CROSSING TO ONE FOOT BELOW GRADE. ALSO, RECORDS SHALL BE KEPT AS TO THE DEPTH OF THE HOUSE SERVICE AND A MINIMUM OF THREE (3) TIES SHALL BE ESTABLISHED FOR THE LOCATION OF THE SERVICE.
   f. LATERALS SHALL BE LAID AT A 2.0% MINIMUM GRADE. IN CASES OF A SHALLOW SEWER, A 1.0% SLOPE MAY BE APPROVED BY THE ENGINEER.
3. NEAR SIDE SERVICES
   a. THE CONTRACTOR SHALL SUPPLY WYE BRANCHES OF THE SAME MATERIAL AND CLASS AS THE SEWER MAIN.
   b. THE LOCATION OF THE WYE BRANCHES WILL BE DETERMINED BY THE CONTRACTOR AND ENGINEER IN THE FIELD AFTER CONFERRING WITH THE HOMEOWNER.
   c. THE LOCATION OF THE BRANCHES SHALL BE MEASURED FROM THE LAST DOWNSTREAM MANHOLE AND AT LEAST THREE (3) TIES FROM AN EXISTING STRUCTURE, NORMALLY THE HOME IT IS TO SERVICE.
   d. NEAR SIDE SERVICES SHALL BE INSTALLED UP TO ONE (1) FOOT OF THE R.O.W. LINE.
   e. THE CONTRACTOR SHALL PROVIDE A 2" X 4" WOOD MARKER EXTENDED FROM THE WYE BRANCH TO ONE (1) FOOT BELOW GRADE.
   f. ON ALL SERVICES WHERE THE MAIN IS GREATER THAN 8' IN DEPTH, THE CONTRACTOR SHALL PROVIDE A RISER PIPE TO AN ELEVATION 8' BELOW EXISTING GRADE.

NOTES:
1. RECORDS OF THE DEPTH OF COVER SHALL BE KEPT FOR ALL HOUSE LATERALS BUILT ACROSS PAVEMENTS. SUCH RECORDS SHALL IDENTIFY THE LATERALS BY THE USE OF HOUSE NUMBERS AND SHALL SHOW LOCATION OF THE END OF THE HOUSE LATERAL WITH A MINIMUM OF THREE(3) TIES AS SHOWN IN EXAMPLE BELOW.
2. THE CONTRACTOR SHALL OBTAIN ALL HIGHWAY/R.O.W. PERMITS PRIOR TO START OF WORK.
3. VENTS AND CLEAN OUTS MUST BE INSTALLED IN LAWN AREAS, NOT IN SIDEWALK OR DRIVEWAY AREAS, PREFERABLY BETWEEN THE CURB OR EDGE OF PAVEMENT AND THE SIDEWALK.

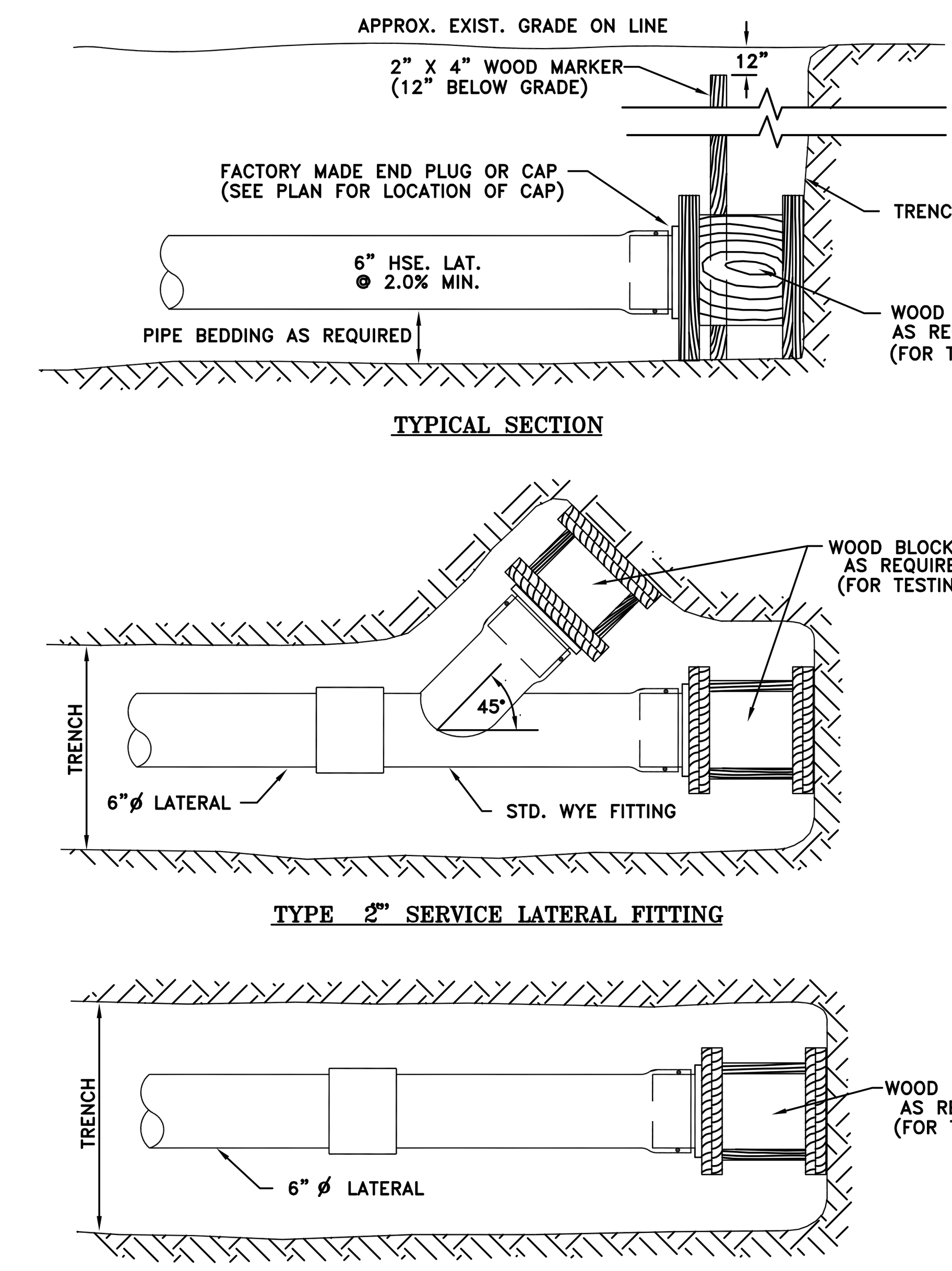


ERIE COUNTY
DEPT. OF ENVIRONMENT & PLANNING
DIVISION OF SEWERAGE MANAGEMENT

Rev. 1 5/17/93	NOTE 2c: DEPTH 4'-0"
Rev. 2 12/9/96	CHANGED NOTE 1 TO THREE(3) TIES
Rev. 3 7/14/99	ADDED TITLE
Rev. 4 12/01	ADDED NOTE 3 REGARDING LOCATION OF VENTS AND CLEAN OUTS

File: d-23 Date: 3/1/91 STD.DETAIL 23

CAP & BLOCKING METHODS FOR AIR TESTING
(JANUARY 2012)

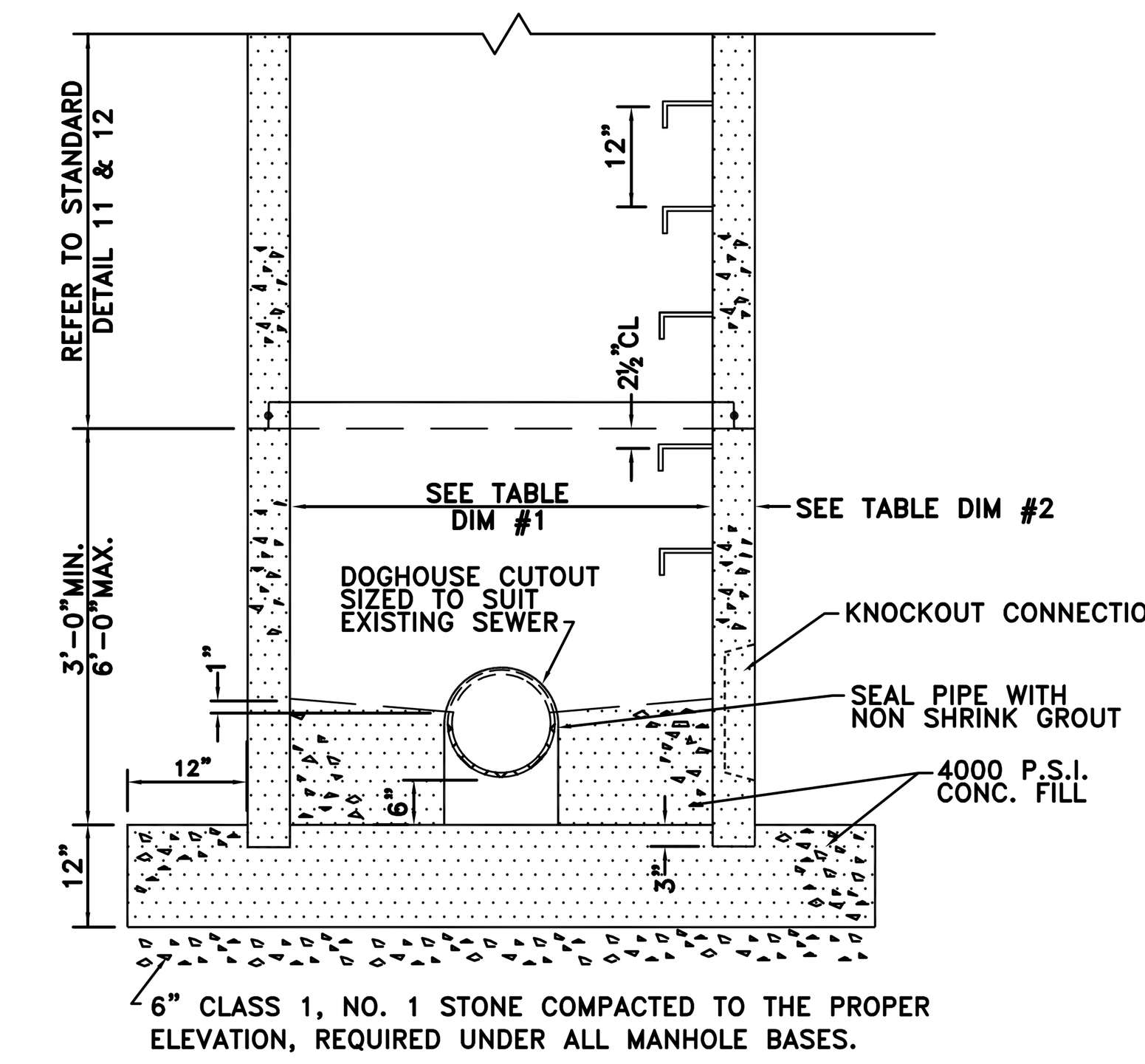


ERIE COUNTY
DEPT. OF ENVIRONMENT & PLANNING
DIVISION OF SEWERAGE MANAGEMENT

Rev. 1	
Rev. 2	

File: d-26 Date: 3/1/91 STD.DETAIL 26

PRECAST DOGHOUSE BASE MANHOLE
(JANUARY 2012)



PIPE SIZE	DIMENSION #1	DIMENSION #2
8"–16"	4'–0"*	5"
18"	5'–0"	6"
21"–27"	5'–0"	6"
30"–36"	6'–0"	7"

* FOR DROP CONNECTIONS INSIDE DIAMETER SHALL BE 5'-0"

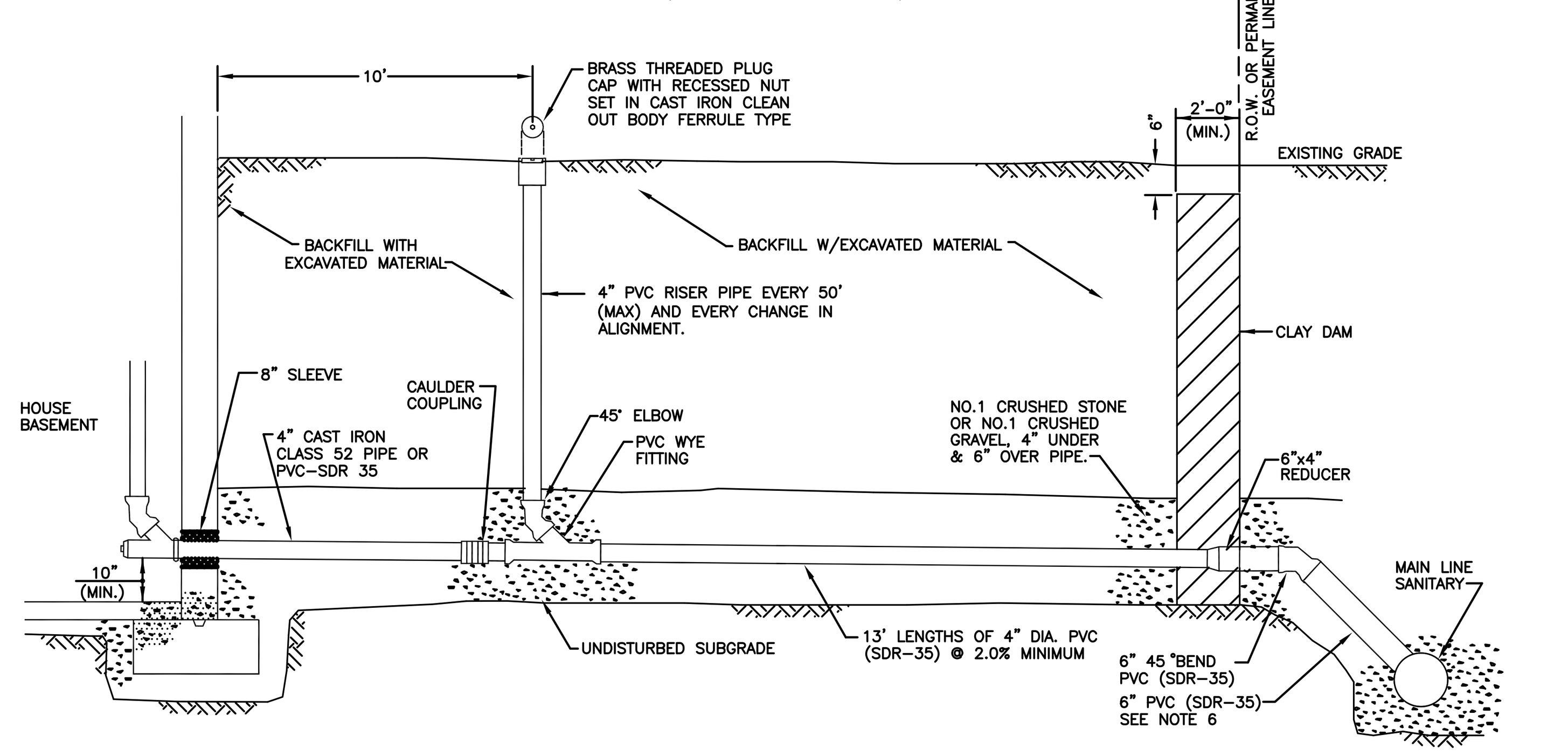
NOTE:
AREA AROUND DOGHOUSE CUTOUT & PIPE TO BE MADE WATERTIGHT UTILIZING A HYDRAULIC CEMENT MIXTURE (WATERPLUG,PRECO-PATCH, OR APPROVED EQUAL).

ERIE COUNTY
DEPT. OF ENVIRONMENT & PLANNING
DIVISION OF SEWERAGE MANAGEMENT

Rev. 1 11/08/91	ADDED PIPE SIZE CHART & NOTE
Rev. 2 2/7/94	REVISED STONE UNDER MANHOLE BASE TO CLASS 1, NO. 1

File: d-35 Date:10/16/91 STD.DETAIL 35

TYPICAL HOUSE SERVICE DETAIL
(JANUARY 2018)



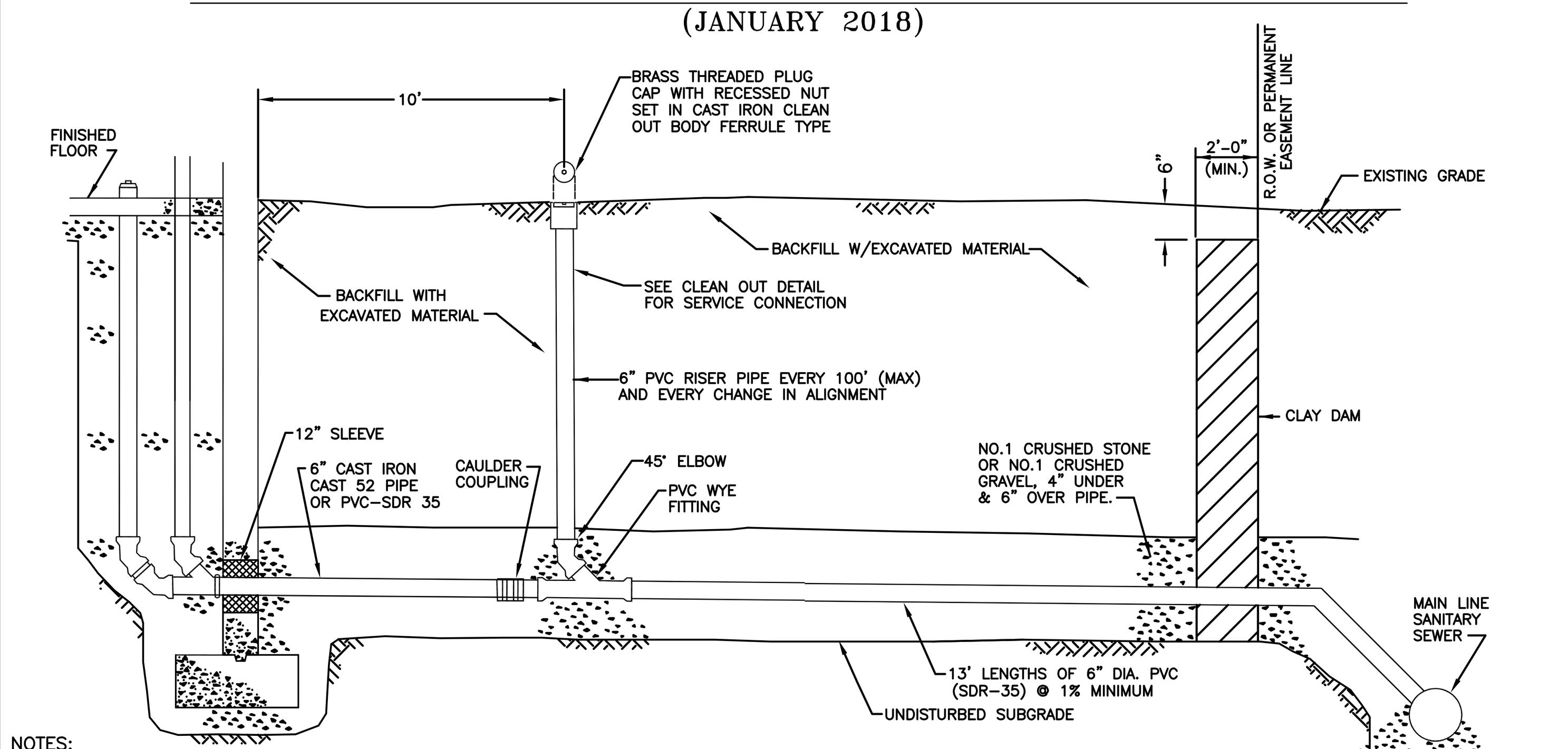
NOTES:
1. NO INSPECTION WILL BE PROVIDED WITHOUT A PERMIT. INSPECTIONS REQUIRE 48 HR. ADVANCE NOTICE FOR SCHEDULING.
2. ALL WORK MUST BE INSPECTED BY A COUNTY INSPECTOR
3. PVC PIPE MATERIAL SHALL BE MANUFACTURED IN ACCORDANCE WITH THE REQUIREMENTS OF THE LATEST ASTM SPECIFICATION D-3033/D-3034. CAST IRON PIPE MATERIAL SHALL BE EXTRA HEAVY CAST IRON MEETING THE REQUIREMENTS OF ASTM A74-42.
4. A MANUAL VALVE SHALL BE INSTALLED ON BASEMENT LAUNDRY DRAIN LINE.
5. CLEAN OUTS MUST BE INSTALLED IN LAWN AREAS, NOT IN SIDEWALKS OR DRIVEWAY AREAS, PREFERABLY BETWEEN THE CURB OR EDGE OF PAVEMENT, AND THE SIDEWALK.
6. SELECT BACKFILL REQUIRED UNDER PAVED AREAS.
7. CONCRETE ENCASEMENT IF COVER DEPTH IS LESS THAN 4'-0" UNDER PAVED AREAS
8. FOR NEW CONSTRUCTION, AN 8x6 WYE WITH 6" PVC TO 6" 45° BEND, THEN 6" x 4" REDUCER IS USED.
9. A 6" CLEAN OUT IS REQUIRED AT R.O.W. WHENEVER THE MAIN SEWER IS UNDER THE PAVEMENT LIMITS OR AT FAR SIDE OF PAVEMENT.
10. ANY EXCAVATION TO BE LEFT OPEN OVERNIGHT SHALL BE COMPLETELY ENCLOSED IN FENCING, OR WHERE NECESSARY, COVERED WITH STEEL PLATES.
11. DOWN SPOUTS, SUMP PUMPS, AND FOOTING DRAINS ARE NOT PERMITTED TO BE CONNECTED TO THE HOUSE LATERAL.
12. FOR NEW STRUCTURES, NO CONNECTION SHALL BE MADE UNTIL BUILDING ROOF IS ERECTED AND BASEMENT FLOOR IS POURED.

ERIE COUNTY
DEPT. OF ENVIRONMENT & PLANNING
DIVISION OF SEWERAGE MANAGEMENT

Rev. 6/05	ADDED NOTE 20 & CLASS 52 TYPE CI PIPE
Rev. 1/07	REMOVED OLD NOTES 1,3,8,10,12,13 AND 20 REVISED TO 6"PVC-DET6, 48 HR ADV NOTICE
Rev. 11/08	ADDED PVC TRAP AND SLEEVE
Rev. 01/12	REVISED 4" CAST IRON TRAP
Rev. 01/18	REMOVED TRAP AND RISER VENT

File: d-21 Date: 3/1/91 STD. DETAIL 21

TYPICAL COMMERCIAL SERVICE WITHOUT BASEMENT DETAIL
(JANUARY 2018)



NOTES:
1. NO INSPECTION WILL BE PROVIDED WITHOUT A PERMIT. INSPECTIONS REQUIRE 24 HR. ADVANCE NOTICE FOR SCHEDULING.
2. ALL WORK MUST BE INSPECTED BY A COUNTY INSPECTOR
3. PVC PIPE MATERIAL SHALL BE MANUFACTURED IN ACCORDANCE WITH THE REQUIREMENTS OF THE LATEST ASTM SPECIFICATION D-3033/D-3034. CAST IRON PIPE MATERIAL SHALL BE EXTRA HEAVY CAST IRON MEETING THE REQUIREMENTS OF ASTM A74-42.
4. CLEANOUTS MUST BE INSTALLED IN LAWN AREAS, NOT IN SIDEWALK OR DRIVEWAY AREAS, PREFERABLY BETWEEN THE CURB OR EDGE OF PAVEMENT AND THE SIDEWALK.
5. SELECT BACKFILL REQUIRED UNDER PAVED AREAS.
6. CONCRETE ENCASEMENT IF COVER DEPTH IS LESS THAN 4'-0" UNDER PAVED AREAS
7. MIN. DEPTH OF COVER 3'-0"
8. CLEAN OUT MEASUREMENTS SHALL START FROM CENTERLINE OF MAIN SEWER FOR NEARSIDE LATERALS AND FROM THE 6" CLEAN OUT FOR FAR SIDE CONNECTIONS. A CLEAN OUT MAY BE REQUIRED FOR ANY ABRUPT CHANGES IN LATERAL DIRECTION FLOW.
9. A 6" CLEAN OUT IS REQUIRED AT R.O.W. WHENEVER THE MAIN SEWER IS UNDER THE PAVEMENT LIMITS OR AT FAR SIDE OF OF PAVEMENT.
10. ANY SEWER LAID THROUGH OR OVER A SEPTIC TANK MUST BE CAST IRON (SEPTIC TANK MUST BE FILLED WITH BANK RUN GRAVEL).
11. ANY EXCAVATION TO BE LEFT OPEN OVERNIGHT SHALL BE COMPLETELY ENCLOSED IN FENCING, OR WHERE NECESSARY, COVERED WITH STEEL PLATES.
12. DOWN SPOUTS, SUMP PUMPS, AND FOOTING DRAINS ARE NOT PERMITTED TO BE CONNECTED TO THE LATERAL.
13. FOR NEW STRUCTURES, NO CONNECTION SHALL BE MADE UNTIL BUILDING ROOF IS ERECTED AND BASEMENT FLOOR IS POURED.

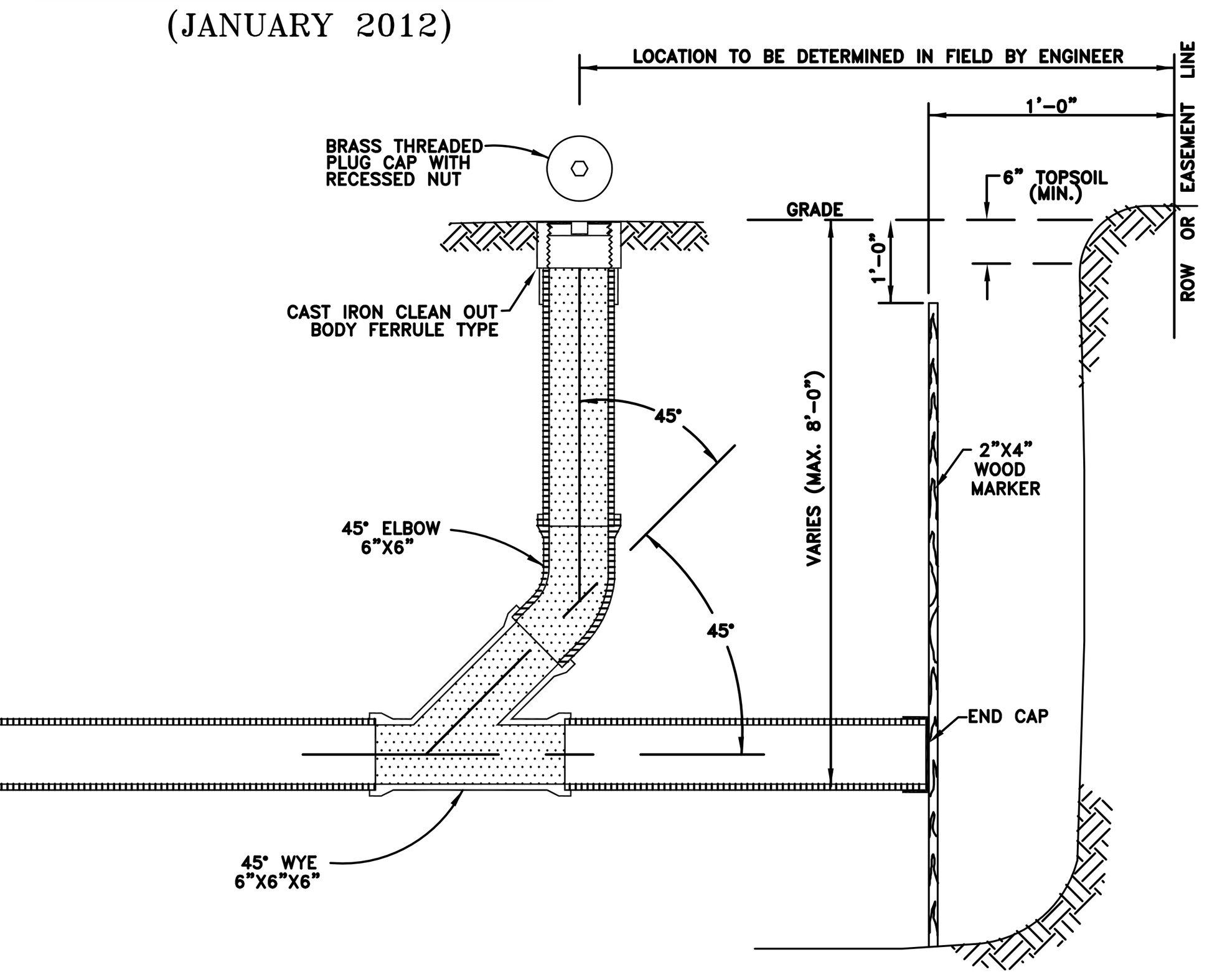
ERIE COUNTY
DEPT. OF ENVIRONMENT & PLANNING
DIVISION OF SEWERAGE MANAGEMENT

Rev. 6/05	ADDED NOTE 18 & CLASS 52 TYPE CI PIPE
Rev. 1/07	REMOVED OLD NOTES 2 AND 18 ADDED 1% MIN. TO SERVICE PIPE DETAIL
Rev. 11/08	ADDED SLEEVE AND PVC-SDR 35
Rev. 1/12	REVISED 6" CAST IRON TRAP NOTE
Rev. 1/18	REMOVED TRAP AND RISER VENT

File: d-22 Date: 3/1/91 STD. DETAIL 22

CLEAN-OUT DETAIL FOR SERVICE CONNECTION
(JANUARY 2012)

NOTES:
1. BID ITEM 7 SHALL INCLUDE FURNISHING AND INSTALLING 6" WYE, 6" ELBOW, 6" PIPE (VERTICAL), CLEAN OUT BODY AND BRASS PLUG.
2. HOUSE LATERAL INSTALLATION SHALL BE FIGURED UNDER BID ITEM 10.
3. CLEAN OUT BODIES SHALL BE STANDARD CAST IRON FERRULE TYPE AND CLEAN OUT PLUG SHALL BE BRASS.
4. ALL PAVEMENT CROSSINGS (OPEN CUT METHOD) WITH LESS THAN 4'-0" COVER SHALL BE ENCASED WITH 2000 PSI CONCRETE.
5. CLEAN-OUTS ARE REQUIRED AS SHOWN ON PLANS.
6. SHEETING, SHORING MATERIALS OR SHIELDS SYSTEMS NOT SHOWN.
7. CLEAN OUTS MUST BE INSTALLED IN LAWN AREAS, NOT IN SIDEWALK OR DRIVEWAY AREAS UNLESS DIRECTED BY ENGINEER.



ERIE COUNTY
DEPT. OF ENVIRONMENT & PLANNING
DIVISION OF SEWERAGE MANAGEMENT

Rev. 1 5/93	4'-0" COVER, C.I. CAP "RECESSED NUT"
Rev. 2 2/94	CHANGED DIM LINE FOR MAX. DEPTH
Rev. 3 12/01	ADDED NOTE 7
Rev. 4 5/02	CHANGED C.I. CAP TO BRASS
Rev. 5 6/05	1' MIN. FROM EDGE OF WALK NOTE
Rev. 6 1/12	CHANGED C.I. TO BRASS NOTES 1 & 3

File: d-28 Date: 3/1/91 STD. DETAIL 28

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
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REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Sanitary Sewer Details

DRAWING NO.
C-402

Project no.: 21.011

Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

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GENERAL NOTES FOR
SANITARY SEWER CONSTRUCTION
WITHIN ERIE COUNTY SEWER DISTRICTS

1. The Erie County Division of Sewerage Management (DSM), who operates and maintains the existing sewer lines and appurtenances within Erie County Sewer Districts (ECSD), is to be notified at least 48 hours in advance of the start of construction.

2. Construction shall be in accordance with the Rules and Regulations for Erie County Sewer Districts.

3. All permits required by the Federal, State, County, City and/or Town governments to perform work must be obtained prior to the start of work, and paid for by the Contractor.

4. If easement and/or Out of District Agreements are required, they must be complete and ready to be filed before the project will be approved for construction.

5. The contractor shall comply in all respects to the Industrial Code Part (Rule No.) 53 relating to construction, excavation, and demolition operations at or near underground facilities, as issued by the State of New York Department of Labor, Board of Standard and Appeals.

6. The construction of the sanitary sewer facilities shall be under the supervision of a person or firm qualified to practice professional engineering in New York State under the Education Law of the State, whenever engineering services are required by such law for such purposes.

7. Where such sanitary sewer facilities are under the supervision of a professional engineer, he/she shall certify to the DSM and to the applicant that the constructed facilities have been under his/her supervision and that the work has been fully completed in accordance with the approved engineering reports, plans, specifications, and approvals.

8. The Contractor is solely responsible for all site safety. The Contractor's equipment and methods of operation shall be in full compliance with OSHA Standards and satisfy all Federal, State and Local Health and Safety Regulations.

9. The Contractor is advised a trench shield and/or shoring designed in accordance with OSHA Standards shall be used in all open trench excavations.

10. Any contractor and/or plumber performing work in a confined space (i.e. manholes, wetwells, and chambers) owned by an Erie County Sewer District, must certify to the County that they have their own Confined Space Entry Program that meets or exceeds OSHA's regulations. Certification must be notarized by a notary public.

11. The contractor shall expose existing utilities ahead of the pipe laying operation, so if minor adjustments must be made in the pipe elevation and/or alignment due to interference from these utilities, said changes can be made in advance of the work.

12. The contractor shall retain the services of a qualified tree expert to remove, where necessary, branches which interfere with the construction operation, or to repair trees having suffered damage by construction activities. The cost involved is to be included in the various items of the contract.

13. The proposed 8 through 12 inch diameter sanitary sewer pipe shall be polyvinyl chloride (PVC) sewer pipe conforming to the latest revisions of American Society for Testing and Materials (ASTM) designation D-3034, SDR-35, installed in accordance with the ASTM designation D-2321-83a or the latest revision thereof, or approved equal. Larger diameter pipes will be reviewed on a case by case basis.

14. Sewers shall be laid with straight alignment between manholes and shall be checked by using a laser beam or lamping.

15. Should a fluid condition be encountered at the trench bottom, the contractor is to undercut the trench and provide suitable fill material (stone & fabric) to stabilize the trench bottom.

16. Sanitary sewer bedding material shall be No. 1 crushed stone with a gradation conforming to the *DSM Specifications for Subdivisions and Sanitary Sewer Extensions.*

17. Backfill shall be of a suitable material removed from the excavation except where other material is specified. Debris, frozen material, large clods or stones, organic matter, or other unstable materials shall not be used for backfill within two (2') feet of the top of the pipe.

18. All pipes crossing under paved areas are to be backfilled to sub-grade with compacted select material (No. 2 crushed stone) to five (5') feet outside the pavement edges or as required by the highway permit. If any proposed sewer runs under paved areas and has less than four (4) feet of cover, then concrete encasement is required as shown on the DSM Typical Concrete Encasement Detail.

19. Sewers parallel to watermains - *Ten State Standards, Latest Edition, Chapter 30, Section 38.31, and Page 30-11:* Sewers shall be laid at least ten (10') feet (three (3) meters) horizontally from any existing or proposed water main. The distance shall be measured edge to edge. In cases where it is not practical to maintain a ten (10') foot separation, the appropriate reviewing agency may allow deviation on a case-by-case basis, if supported by data from the design engineer. Such deviation may allow installation of the sewer closer to a water main, provided that the water main is in a separate trench or on an undisturbed earth shelf located on one side of the sewer and at an elevation so the bottom of the water main is at least 18-inches (460 mm) above the top of the sewer.

If it is impossible to obtain proper horizontal and vertical separation as described above, both the water main and sewer must be constructed of slip-on or mechanical joint pipe complying with public water supply design standards of the regulatory agency and be pressure tested to 150 pounds per square inch (psi) (1034 kPa) to assure water tightness prior to backfilling.

20. Sewers crossing watermains - *Ten State Standards, Latest Edition, Chapter 30, Section 38.32, Page 30-11 to 30-12:* Sewers crossing water mains shall be laid to provide a minimum vertical distance of 18-inches (460 mm) between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to maintain line and grade.

21. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, one of the following methods must be specified:

    a. The sewer shall be designed and constructed equal to water pipe, and shall be pressure tested at 150 psi (1034 kPa) to assure water tightness prior to backfilling.
    b. Either the water main or the sewer line may be encased in a watertight carrier pipe which extends ten (10') feet (three (3) meters) on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be of materials approved by the regulatory agency for use in water main construction.
    c. The sewer shall be encased in concrete per the DSM Watermain Crossing Detail Typical For Encasement

22. The manhole covers are to bear the inscription "ECSD SANITARY" and comply with the DSM Standard Frame and Cover detail. For private projects the covers shall bear the inscription "SANITARY SEWER" and comply with the DSM Standard Frame and Cover (Private Sewer) detail.

23. Building sanitary sewer vents must be installed six (6) inches above finished grade in a grassy area with a mushroom cap. If the vent is in a sidewalk or paved area, then protect with 6" diameter bollards (2 minimum).

24. Cleanouts (c.o.) are required on 4" and 6" building sewers every fifty feet and one hundred feet respectively, and at every change of alignment.

25. Abandoned building sewer connections from the site, if any, require proof of a District Permit for Disconnection prior to the new connection being made.

26. The following pertains only for direct replacement of in service sanitary sewers:
    a. Each new pipe joint shall be ultrasonic tested after it is laid, but before the next pipe is laid. All tests shall be in accordance with the testing equipment manufacture recommendations.

    b. The ultrasonic test shall be performed in lieu of the hydrostatic and air tests.
    c. A video inspection of the entire sewer shall be performed. Forward the video inspection tape and related paperwork to DSM for review and approval.
    d. A deflection test is required in all cases.

27. For all sanitary sewer installations, a written certificate of construction completeness and compliance, including the results of the hydrostatic leakage test, lamp test, deflection test, air test, etc. shall be submitted to the Erie County Health Department and DSM within thirty (30) days after completion of construction.

28. For all public and private 8" diameter pipe or larger sanitary sewer installations, the developer/contractor must provide one (1) set of record drawings on "D" size paper (24" x 36") and in an electronic file format (CD or flash drive) compatible with the latest AutoCAD release.

29. All public sewer extension projects that consist of more than 750 LF of 8" diameter pipe or larger, shall furnish a 2 year maintenance bond to the DSM.

30. Final Certification will be issued upon the full completeness and compliance of the project including any requirement(s) of I&I remedial work.

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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Sanitary Sewer
General Notes

DRAWING NO.
C-403

Project no.: 21.011

1b

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Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

A. Requirements

1. After backfilling and prior to the final acceptance of the project, the Contractor will be required to perform the following three tests on all sewers built under this project:

a) Air Tests
b) Infiltration or Exfiltration
c) Deflection Test (15" dia. and smaller).

2. No more than 1,000 linear feet of installed sewer shall be allowed to remain untested.

3. In view of the fact that house laterals and riser pipes often contribute considerable infiltration, such laterals and risers are to be installed and capped, tied and blocked as the work progresses, prior to the air testing of the lines.

4. The Contractor's testing procedures shall be completed in accordance with OSHA Standards for confined space entry. The Contractor will be required to provide and operate all equipment necessary for full compliance for his operation. Equipment such as gas detectors, safety harnesses, ventilating blowers, respirators etc. shall be provided by the Contractor.

B. Air Tests (Required for All Diameters up to and including 36") 10 State Standards Section, 33.94

1) This test shall be performed no earlier than 14 calendar days after the trenches are backfilled.

2) The procedure for air testing shall be as specified herein. The minimum allowable time for the test pressure to decrease from 3.5 psi to 3.0 psi shall be not less than as called for in the following table:

Minimum Acceptance Times* For Length Shown (min:sec)

Pipe Diameter	Up to 100'	100 - 200'	200 - 300'	300 - 400'
6"	2:50	2:50	2:50	2:51
8"	3:47	3:47	3:48	5:04
12"	5:40	5:42	8:33	11:24
15"	7:05	8:54	13:21	17:48
18"	8:30	12:49	19:14	25:38
21"	9:55	17:27	26:11	34:54
24"	11:24	22:48	34:11	45:35
27"	14:25	28:51	43:16	57:42
30"	17:48	35:37	53:25	71:13
33"	21:33	43:56	64:38	86:10
36"	25:39	51:17	76:55	102:34

* Erie County Sewer District Inspector will extend time to the next full minute during the test.

3. Pipe lines in sizes up to 36 inches in diameter can be air tested from manhole to manhole for distances not to exceed 400 feet.

4. In wet trenches where pumping to lower the water table is impractical, approved 4" diameter, solid PVC drain pipe (with approved cap) shall be placed at each manhole to extend from a point 6 inches below the lowest invert to the top of the ground. Embed the pipe a minimum of 12" into clean #1 stone. Ground water elevations will be measured at each manhole in order to calculate the groundwater pressure acting on the pipe exterior. The initial air test pressure shall be increased as necessary to overcome the calculated groundwater pressure.

5. The testing procedures outlined shall be strictly adhered to.

6. All testing equipment shall be supplied by the Contractor and be in good working condition. Some of the major equipment required for air tests is:

a) Stop watch graduated in tenths of a second.
b) Compressor of 50 to 100 psi capacity.
c) Bulkheads for pipe.
d) Approximately 100 feet of 3/8" diameter air hose.
e) Pressure gauge - 0 to 5 psi graduated in 1/16th of a pound increments.
f) Three 3/8 inch diameter check valves.

C. Infiltration Tests (Applicable Only if Ground Water is Two Feet Above the Top of the Pipe)

1. This test shall be performed no earlier than 14 calendar days after the trenches are backfilled.

2. Infiltration tests for all sewers constructed under this project shall not exceed 100 gallons per inch diameter per mile of sewer, per 24 hours. Each individual run of sewer (from one manhole to the next manhole if greater than 100 feet) shall comply with the allowable rate of infiltration. All equipment for the tests shall be furnished by the Contractor and be in good working condition.

3. The allowable rate of infiltration given in gallons per mile is not to be construed as a commitment on the part of the District to accept an entire line, where overall infiltration is less than the allowable, while one or more runs contribute excessive infiltration.

4. The infiltration test is intended to measure the water tightness of a sewer as related to the infiltration of ground water and is only applicable if the water table level is 2 feet or higher above the top of the pipe for the entire length of the test section.

RECOMMENDED STANDARDS FOR WASTEWATER FACILITIES, 2014 EDITION

38.3 Relation to Water Mains

38.31 Horizontal and Vertical Separation

Sewers shall be laid at least 10 feet (3 m) horizontally from any existing or proposed water main. The distance shall be measured edge to edge. For gravity sewers where it is not practical to maintain a 10 foot (3 m) separation, the appropriate reviewing agency may allow deviation on a case-by-case basis, if supported by data from the design engineer. Such deviation may allow installation of the gravity sewer closer to a water main, provided that the water main is in a separate trench or on an undisturbed earth shelf located on one side of the gravity sewer and at an elevation so the bottom of the water main is at least 18 inches (460 mm) above the top of the sewer.
If it is impossible to obtain proper horizontal and vertical separation as described above for gravity sewers, both the water main and gravity sewer shall be constructed of slip-on or mechanical joint pipe complying with Section 8.1 and Section 8.7 of the "Recommended Standards for Water Works - 2012 Edition" and shall be pressure rated to at least 150 psi (1034 kPa) and pressure tested to ensure watertightness.

38.32 Crossings

Sewers crossing water mains shall be laid to provide a minimum vertical distance of 18 inches (460 mm) between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to maintain line and grade.
When it is impossible to obtain proper horizontal and vertical separation as stipulated above, one of the following methods shall be specified:
30-11
a. The sewer shall be designed and constructed equal to water pipe, as described in Paragraph 38.31.
b. Either the water main or the sewer line may be encased in a watertight carrier pipe that extends 10 feet (3 m) on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be made of materials approved by the regulatory agency for use in water main construction.

a) Approved 4" diameter solid PVC drain pipe (with an approved cap) shall be placed at each manhole to extend from a point 6 inches below the lowest invert to the top of the ground. Embed the pipe a minimum of 12" into clean #1 stone. Ground water elevations will be measured at each manhole so that the ground water level can be correlated with the infiltration measurements.

b) Before conducting the tests, the water table should be allowed to stabilize at its normal level and verified that it is 2 feet above the top of the pipe during the test period. The test is usually conducted between adjacent manholes with the upstream end of the sewer bulkheaded in a suitable manner to isolate the test section. All service laterals, stubs and fittings should be properly plugged or capped at the connections to the test pipe section to prevent the entrance of ground water at these locations.

c) A V-notch weir or other suitable measuring device should be installed in the inlet pipe of the downstream manhole. Infiltrating water is then allowed to build up and level off behind the weir until a steady, uniform flow occurs over the weir. Leakage is determined by direct reading from graduations on the weir consecutively for five (5) days and converting the flow quantity to gallons per unit length of pipe per unit of time.

d) An important factor in applying the test criteria is to properly correlate the variable water head over the length of the sewer being tested to the high ground water level. A minimum of 2 feet of water over the pipe is required at the upper manhole before the infiltration test will be allowed.

5. When a sewer run between two consecutive manholes or chambers is found to contribute infiltration at a rate above the allowable, inspection by television or other cameras may be made by the Contractor so that the defective section of sewer can be located and repaired. Each individual run of sewer (from one manhole to the next manhole if greater than 100 feet) shall comply with the allowable rate of infiltration of 100 gallons per inch diameter per mile of sewer per 24 hours.

D. Exfiltration Tests

1. This test shall be performed no earlier than 14 calendar days after the trenches are backfilled.

2. The exfiltration test for all diameter sewers shall be as described below. Although actual infiltration will normally be less than that indicated by the water exfiltration test, the test does provide a positive means of subjecting the completed sewer system to an actual pressure test. Since sanitary sewers are not designed or expected to operate as a pressure system, care must be exercised in conducting the test and correlating the results with the allowable exfiltration limits.

a) The test is usually conducted between adjacent manholes. Prior to the test, all service laterals, stubs and fittings within the test section should be plugged or capped and adequately braced or blocked to withstand the water pressure resulting from the test.

b) If manholes are to be included in the test, the inlet pipe to each manhole should be bulkheaded and the test section filled with water through the upstream manhole. To allow air to escape from the sewer, the flow should be at a steady rate until the water level in the upstream manhole provides an average pressure of 5 psi (11.6' head) at the center point of the test section or the upstream manhole is filled. If necessary, provisions should be made to bleed off entrapped air during the filling of the test section.

c) Once the test section is filled, the water should be allowed to stand for an adequate period of time (one day minimum) to allow for water absorption by the pipe and manhole. After water absorption has stabilized, the water level in the upstream manhole is brought up to the proper test level and this level established by measuring down from the manhole rim or other convenient datum point. After 24 hours, the water elevation should be measured from the same reference point and the loss of water during the test period calculated, or the water can be restored to the level existing at the beginning of the test, and the amount added used to determine the leakage.

d) To exclude both manholes from the test,it is necessary to bulkhead the outlet pipe of the upstream manhole. Provision must be made in the bulkhead for filling the pipe and expelling trapped air.

e) The water level at the upstream manhole shall be computed and varies above the top of the pipe. Since the sewer is installed on a grade, the test section downstream will most likely be subjected to a greater pressure. Therefore, the test pressure head at the upstream manhole should be adjusted such that the maximum pressure on the pipe being tested is no greater than 10 psi, (23 feet of head).

3. When a sewer run between two consecutive manholes or chambers is found to exfiltrate at a rate above the allowable, inspection by television or other cameras may be made by the Contractor during wet weather, so that the defective section of sewer can be located and repaired. Each individual run of sewer (from one manhole to the next manhole) shall comply with the allowable rate of infiltration of 100 gallons per inch diameter per mile of sewer per 24 hours.

E. Deflection Test

1. This test shall be performed no earlier than 30 calendar days after the trenches are backfilled.

2. All flexible (PVC) sewers 8" diameter or larger constructed under this project shall be internally checked with a five percent (5%) deflection "go-no-go pig" or Mandrel to determine if the pipes are deflecting excessively. Any section of pipe unable to pass the deflection test "pig test" shall be removed and replaced at the Contractor's expense.

3. Deflection testing mandrels or pig shall be pulled thru the pipe by hand or hand operated winch. Power winches or drives are not permitted.

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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Sanitary Sewer Testing Notes

DRAWING NO.
C-404

Project no.: 21.011

1b

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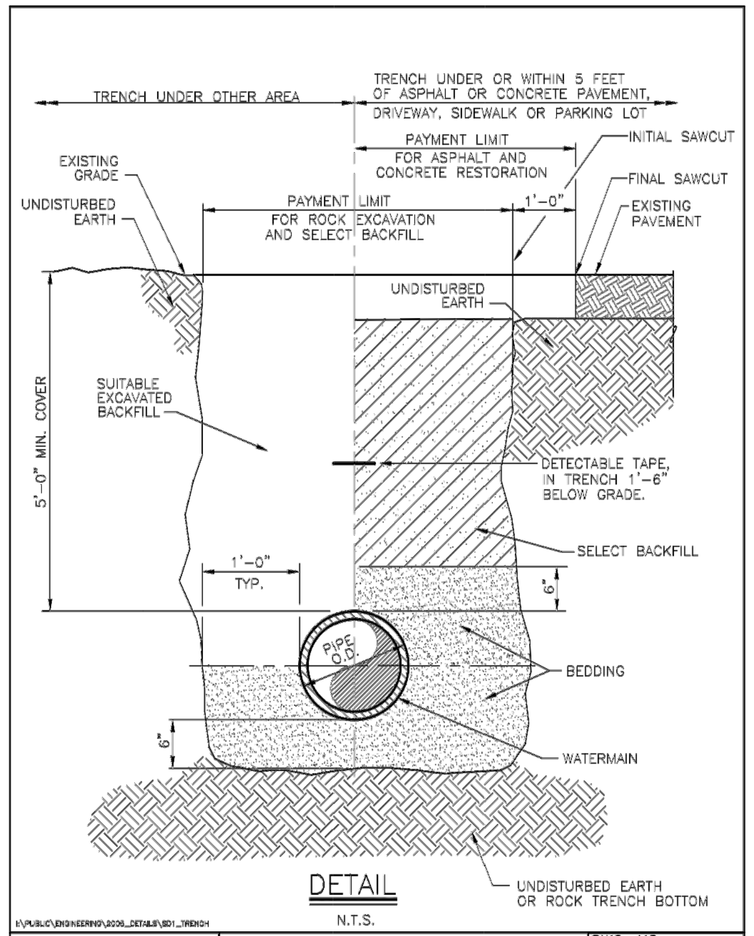
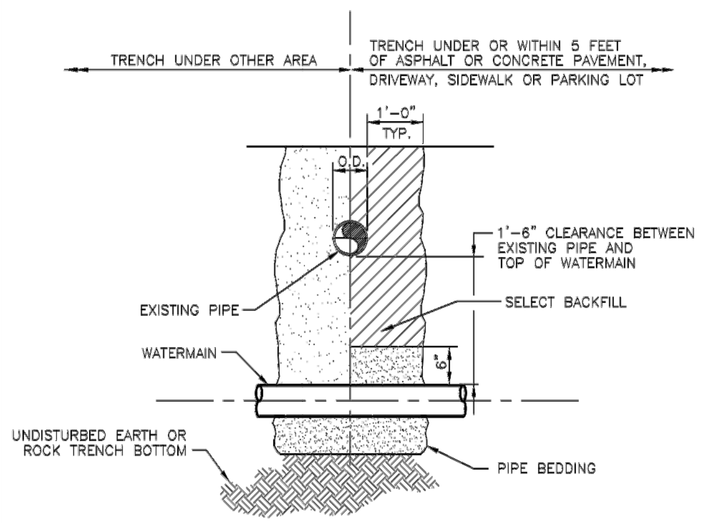
Attachment: SP-2021-05_drawings_052021 (2305?) : SP-2021-05)



DETAIL
N.T.S.

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD1_TRENCH

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TRENCH THROUGH 12–INCH DIAMETER WATERMAIN	DWG. NO. SD1	
		DATE 4/28/92	REVISED 10/05



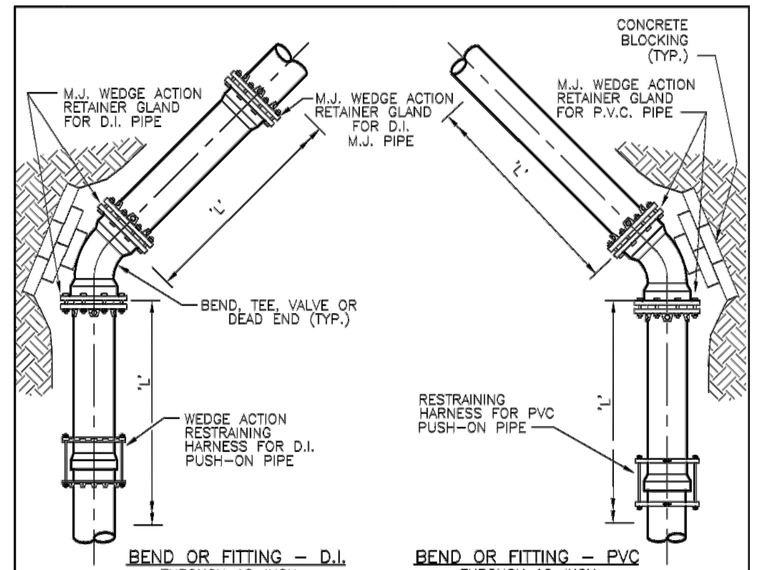
NOTES:

1. ALL EXISTING UTILITIES MUST BE SUPPORTED DURING CONSTRUCTION OF THE NEW WATERMAIN.
2. WHEN CROSSING A SEWERLINE WITH A NEW WATERMAIN, ONE FULL PIPE LENGTH (18 FT. MIN.) SHALL BE USED AT THE POINT OF CROSSING. THE WATERMAIN SHALL BE PLACED SO THAT BOTH JOINT ENDS ARE AS FAR AS POSSIBLE FROM THE EXISTING SEWERLINE.

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD2_PIPE_CROSSING

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL PIPE CROSSING	DWG. NO. SD2	
		DATE 4/28/92	REVISED 10/05



BEND OR FITTING – D.I.
THROUGH 12–INCH

BEND OR FITTING – PVC
THROUGH 10–INCH

RESTRAINED JOINT SCHEDULE					
PIPE SIZE	PIPE TYPE	11.25° ELBOW 'L'	22.5° ELBOW 'L'	45° ELBOW 'L'	TEE BRANCH, 90° BEND, VALVE OR DEAD END 'L'
6"	PVC	13'	25'	50'	120' MIN.
8"	PVC	15'	30'	59'	122' MIN.
8"	D.I.P.	15'	30'	59'	122' MIN.

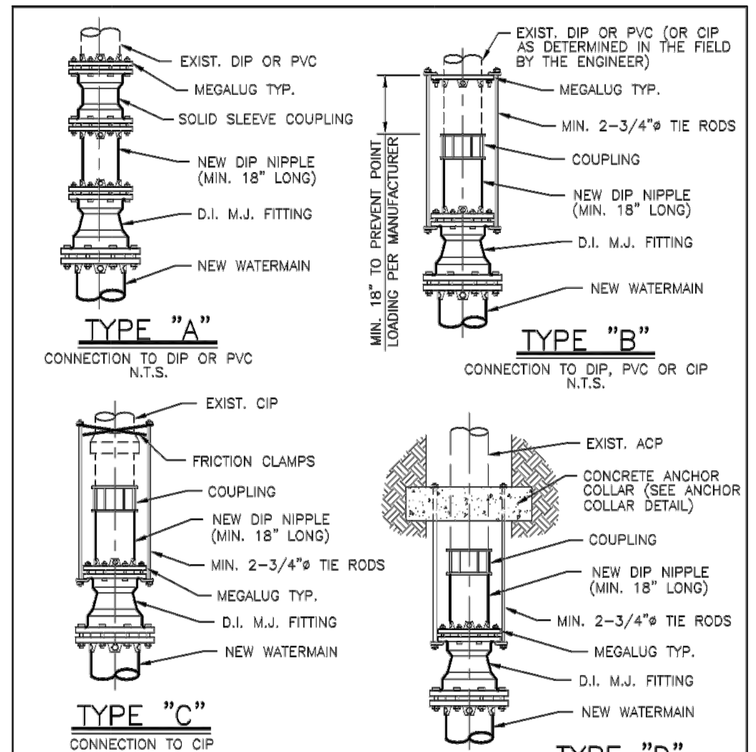
NOTES:

1. DIMENSION 'L' REPRESENTS THE LENGTH OF RESTRAINED PIPE REQUIRED IN FEET EACH SIDE OF THE PIPE FITTING.

PLAN
N.T.S.

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD4_REST._JOINT_SCHED

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL RESTRAINED JOINT SCHEDULE	DWG. NO. SD4	
		DATE 4/28/92	REVISED 10/05

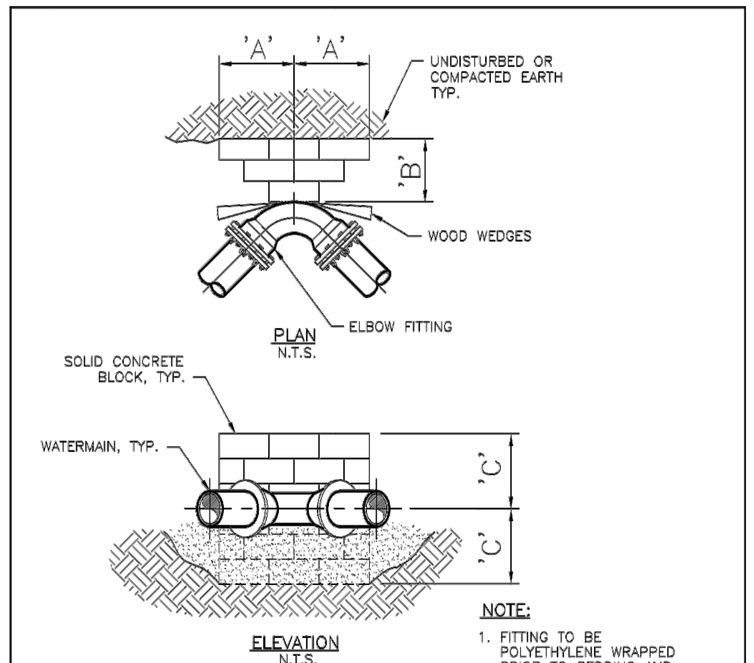


NOTES:

1. VALVES AND TEES MAY BE HARNESSED SIMILARLY.
2. HARNESSING IS FOR RESISTANCE TO INTERNAL PRESSURE–PIPE ITSELF MUST BE SUPPORTED ON FIRM BEDDING AND CAREFULLY BACKFILLED.
3. COAT ALL EXPOSED SURFACES OF HARNESS ASSEMBLY WITH BITUMINOUS COATING.
4. TIE RODS SHALL BE PLACED ON SIDES OF PIPE.

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD5_CONN_EXIST_MAIN

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TYPICAL CONNECTION TO EXISTING WATERMAIN THROUGH 12–INCH DIAMETER WATERMAIN	DWG. NO. SD5	
		DATE 3/05	REVISED 10/05



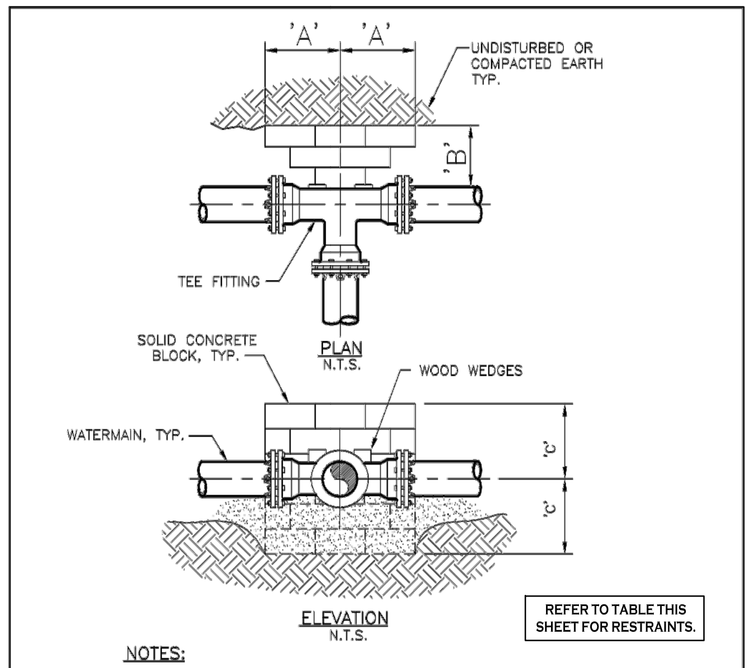
NOTE:

1. FITTING TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.

DIMENSION SCHEDULE												
PIPE SIZE	11.25° ELBOW			22.5° ELBOW			45° ELBOW			90° ELBOW		
	'A'	'B'	'C'	'A'	'B'	'C'	'A'	'B'	'C'	'A'	'B'	'C'
8"	1.5'	1.5'	2.5'	2.5'	1.5'	2.5'	3.0'	1.5'	3.5'	3.5'	1.5'	5.0'

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD6_THRUST_BLOCKS_ELBOW

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR ELBOW FITTING	DWG. NO. SD6	
		DATE 4/28/92	REVISED 10/05



NOTES:

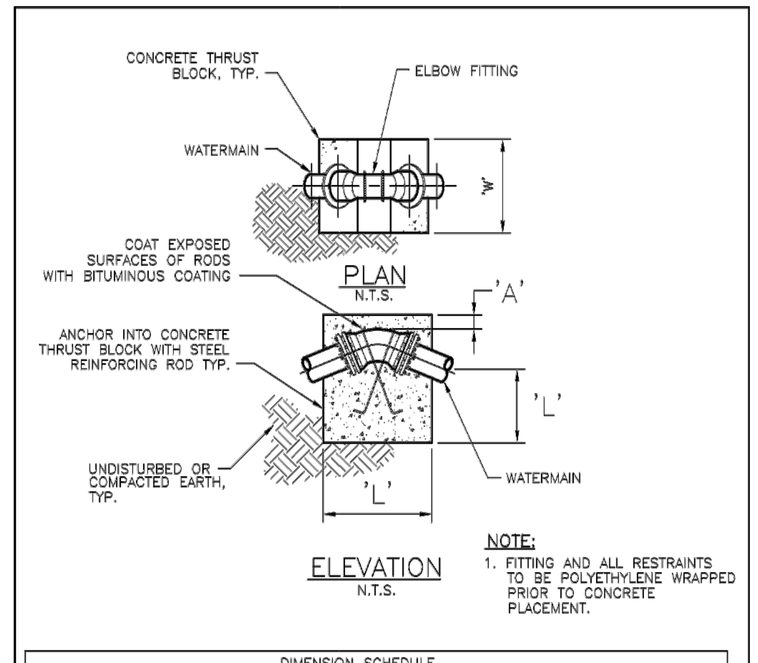
1. THRUST BLOCK REQUIRED FOR TEES, HYDRANT LATERAL TEES AND TAPPING SLEEVE INSTALLATIONS.
2. FITTING TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.

REFER TO TABLE THIS SHEET FOR RESTRAINTS.

BRANCH TEE SIZE	DIMENSION SCHEDULE 'A'	'B'	'C'
6"	1'-0"	1'-0"	0'-6"
8"	1'-6"	1'-0"	0'-6"

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD7_THRUST_BLOCKS_TEE

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR TEE OR "DEAD END" FITTING	DWG. NO. SD7	
		DATE 4/28/92	REVISED 10/05



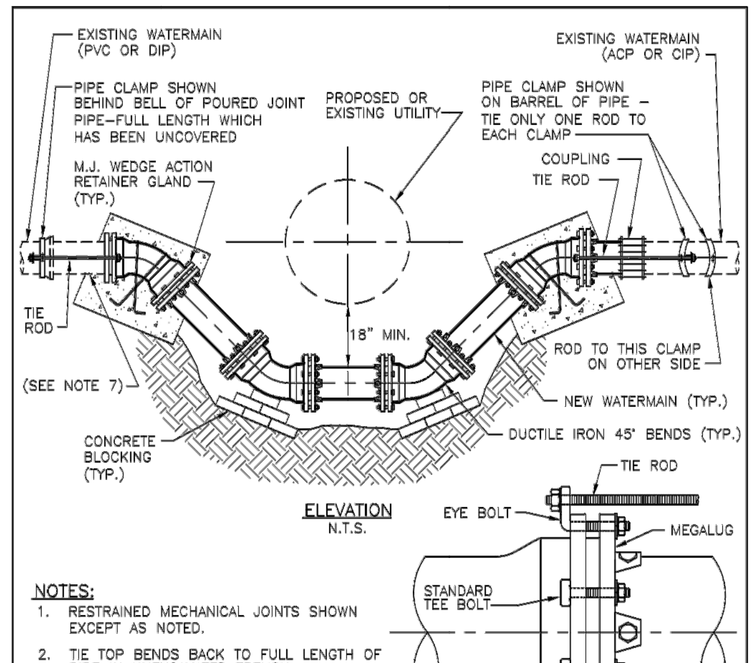
NOTE:

1. FITTING AND ALL RESTRAINTS TO BE POLYETHYLENE WRAPPED PRIOR TO CONCRETE PLACEMENT.

DIMENSION SCHEDULE													
PIPE SIZE	PIPE TYPE	11.25° ELBOW				22.5° ELBOW				45° ELBOW			
		'A'	'W'	'L'	ROD ø	'A'	'W'	'L'	ROD ø	'A'	'W'	'L'	ROD ø
8"	D.I.P	12"	1'-0"	1'-0"	1/2"	12"	1'-9"	1'-9"	1/2"	1'-6"	2'-0"	2'-0"	1/2"

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD8_THRUST_BLOCKS_VBEND

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR VERTICAL BEND	DWG. NO. SD8	
		DATE 4/28/92	REVISED 10/05



NOTES:

1. RESTRAINED MECHANICAL JOINTS SHOWN EXCEPT AS NOTED.
2. TIE TOP BENDS BACK TO FULL LENGTH OF PIPE IN UNEXCAVATED TRENCH.
3. VALVES, TEES AND HYDRANTS MAY BE HARNESSED SIMILARLY.
4. HARNESSING IS FOR RESISTANCE TO INTERNAL PRESSURES–PIPE ITSELF MUST BE SUPPORTED ON FIRM BEDDING AND CAREFULLY BACKFILLED.
5. COAT ALL EXPOSED SURFACES OF HARNESS ASSEMBLY WITH BITUMINOUS COATING.
6. TIE RODS SHALL BE PLACED ON SIDES OF PIPE.
7. IF EXISTING PIPE IS CIP OR PVC, CONNECT TO NEW FITTING ONLY WHEN ALLOWED BY ENGINEER.

TIE ROD SCHEDULE			
PIPE SIZE	PIPE TYPE	ROD ø	NUMBER OF RODS
8"	PVC	3/4"	2

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD10_HARN_OFFSET_EXIST_WMAIN

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL HARNESSING DETAILS–INSTALL OFFSET IN EXISTING WATERMAIN	DWG. NO. SD10	
		DATE 6/00	REVISED 10/05

Carmina Wood Morris DPC
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Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Water Details

DRAWING NO.

C-405

Project no.: 21.011

Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

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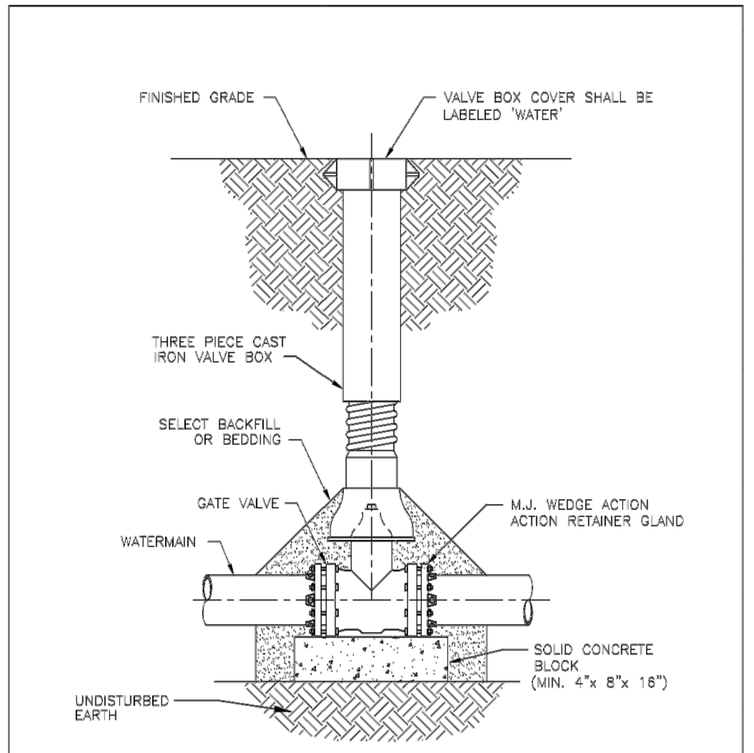
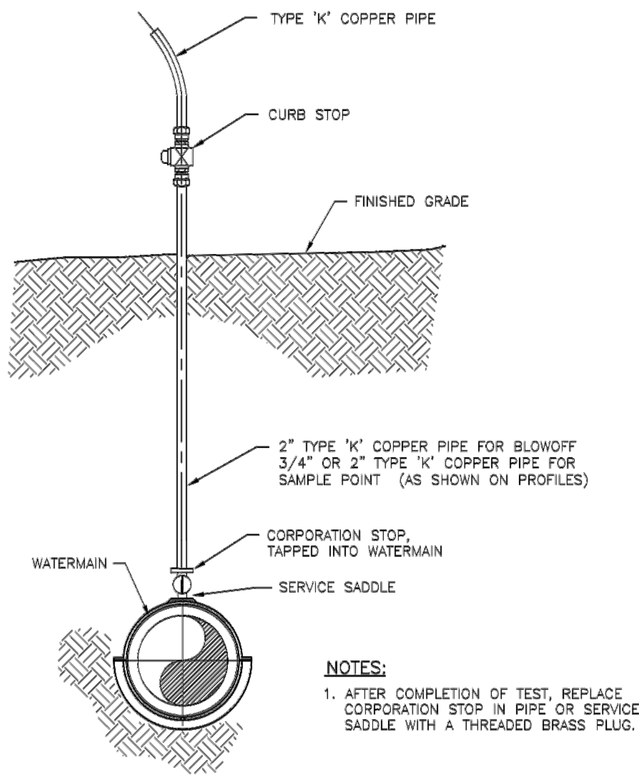


NOTES:
1. VALVE SHALL NOT SUPPORT VALVE BOX.
2. GATE VALVE SHALL BE INSTALLED LEVEL.
3. VALVE BOX SHALL BE PLUMB TO GRADE, WITH OPERATING NUT CENTERED IN BOX.

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD11_GATE_VALVE_SET

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GATE VALVE SETTING	DWG. NO. SD11	
		DATE 4/28/92	REVISED 02/17

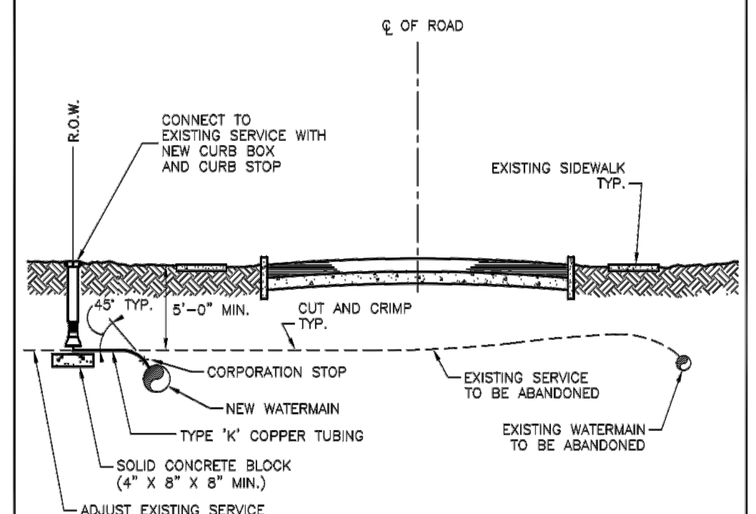


NOTES:
1. AFTER COMPLETION OF TEST, REPLACE CORPORATION STOP IN PIPE OR SERVICE SADDLE WITH A THREADED BRASS PLUG.

ELEVATION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD17_TEMP_BO_SAMP_PT

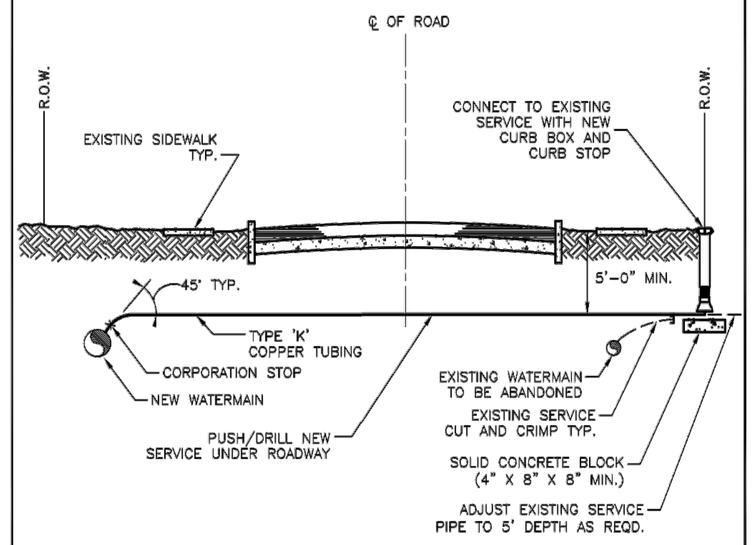
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TEMPORARY BLOW-OFF/SAMPLING POINT	DWG. NO. SD17	
		DATE 4/28/92	REVISED 10/05



NOTES:
1. EXISTING SERVICES SHALL BE CRIMPED AND ABANDONED IN PLACE.
2. SERVICE SADDLES SHALL BE USED UNDER THE FOLLOWING CONDITIONS:
   A. WHEN SERVICES ARE PLACED ON 4" OR SMALLER PIPES.
   B. WHEN SERVICES LARGER THAN 1" ARE PLACED ON A 6" PIPE.
   C. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON AN 8" PIPE.
   D. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON DUCTILE IRON PIPE.
   E. WHEN TAPPING ALL PLASTIC (PVC) PIPE.
   F. WHEN TAPPING ALL ASBESTOS-CEMENT PIPE.
3. CURB BOXES SHALL NOT BE PLACED IN SIDEWALKS, DRIVEWAYS, OR CURB RAMPS.
4. UNIONS ON COPPER TUBING ARE NOT ALLOWED UNLESS APPROVED BY ECWA PRIOR TO INSTALLATION.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD15_HS_SERV_REPLACE

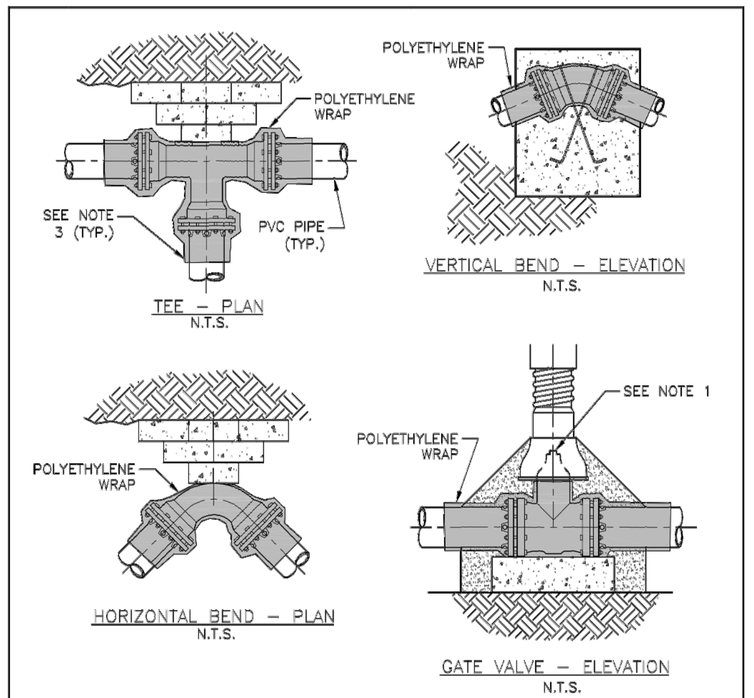
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL NEAR SIDE SERVICE REPLACEMENT/INSTALLATION	DWG. NO. SD15	
		DATE 4/92	REVISED 09/16



NOTES:
1. EXISTING SERVICES SHALL BE CRIMPED AND ABANDONED IN PLACE.
2. SERVICE SADDLES SHALL BE USED UNDER THE FOLLOWING CONDITIONS:
   A. WHEN SERVICES ARE PLACED ON 4" OR SMALLER PIPES.
   B. WHEN SERVICES LARGER THAN 1" ARE PLACED ON A 6" PIPE.
   C. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON AN 8" PIPE.
   D. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON DUCTILE IRON PIPE.
   E. WHEN TAPPING ALL PLASTIC (PVC) PIPE.
   F. WHEN TAPPING ALL ASBESTOS-CEMENT PIPE.
3. CURB BOXES SHALL NOT BE PLACED IN SIDEWALKS, DRIVEWAYS, OR CURB RAMPS.
4. USE POLYETHYLENE FOR 3/4" AND 1" SERVICES GREATER THAN 100 FEET IN LENGTH, AND FOR 1-1/2" AND 2" SERVICES GREATER THAN 60 FEET IN LENGTH. ALL POLYETHYLENE SERVICES SHALL INCLUDE A TRACER WIRE FOR DETECTION BY ECWA FORCES.
5. UNIONS ON COPPER TUBING ARE NOT ALLOWED UNLESS APPROVED BY ECWA PRIOR TO INSTALLATION.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD16_FS_SERV_REPLACE

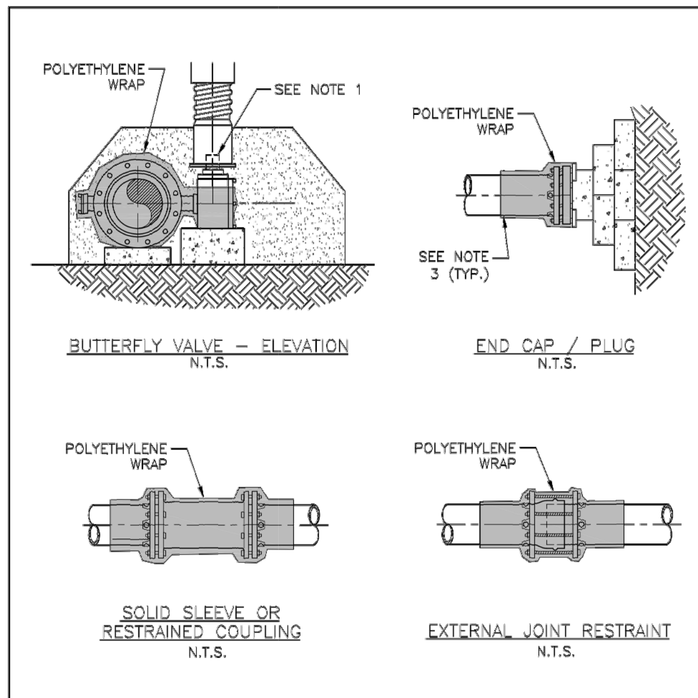
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL FAR SIDE SERVICE REPLACEMENT/INSTALLATION	DWG. NO. SD16	
		DATE 4/92	REVISED 09/16



NOTES:
1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP IS NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PIPE (OR POLYWRAP IF DIP) WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD39A_POLYWRAPPING_FITTINGS

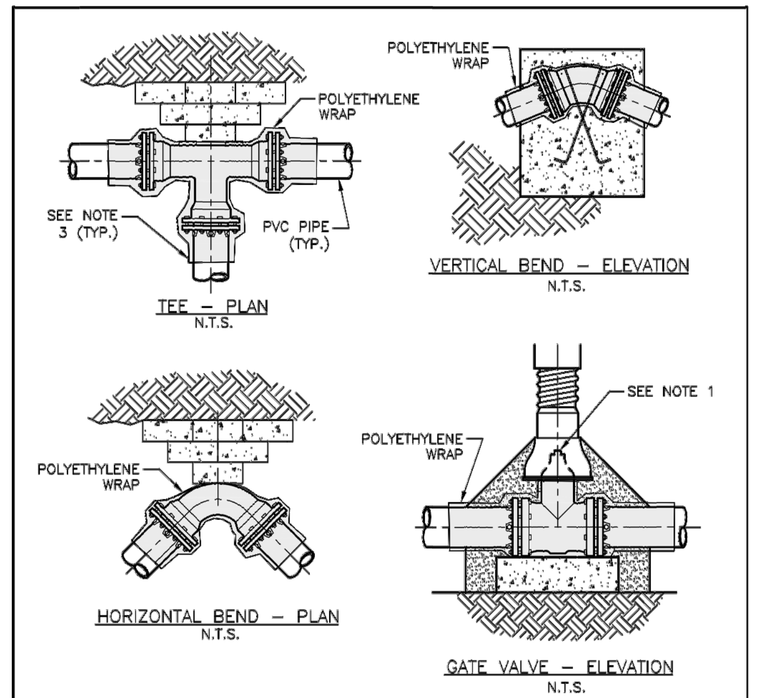
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING CAST/DUCTILE IRON FITTINGS	DWG. NO. SD39A	
		DATE 3/18	REVISED 12/18



NOTES:
1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP IS NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PIPE (OR POLYWRAP IF DIP) WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD39B_POLYWRAPPING_FITTINGS

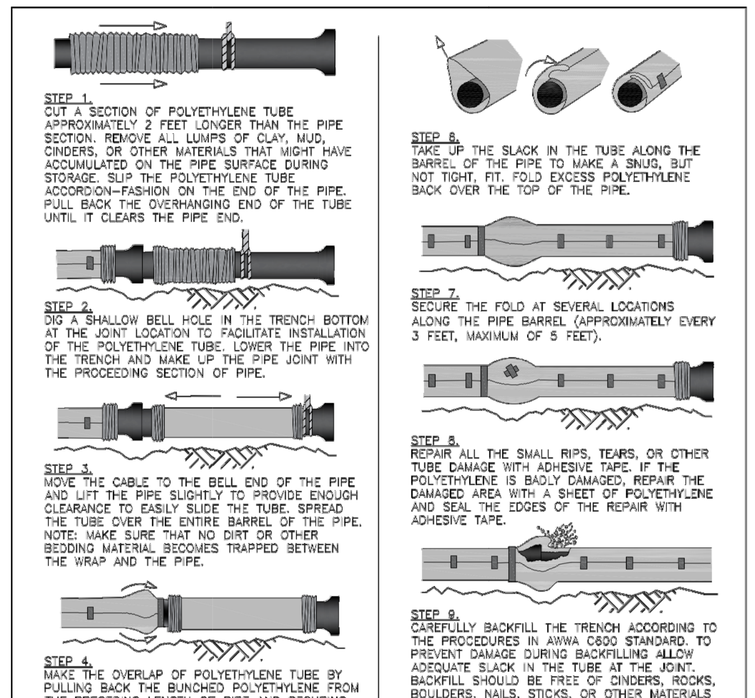
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING CAST/DUCTILE IRON FITTINGS	DWG. NO. SD39B	
		DATE 12/18	REVISED



NOTES:
1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON GATE VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PVC PIPE WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD39_POLYWRAPPING_FITTINGS

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING DUCTILE IRON FITTINGS ON PVC PIPE	DWG. NO. SD39	
		DATE 3/18	REVISED



NOTES:
1 - POLYETHYLENE WRAP (POLYWRAP) SHALL BE OF PROPER DIAMETER TO FIT OVER BELLS AND EXTERNAL WEDGE-ACTION RETAINER GLANDS.
2 - CAST AND DUCTILE IRON FITTINGS (BENDS, TEES, VALVES, ETC.) ARE TO BE WRAPPED IN POLYWRAP AND SECURED IN PLACE.
3 - DO NOT USE CHAINS, METAL WIRE, OR OTHER SUPPORTING SYSTEMS WHICH MAY DAMAGE THE POLYETHYLENE ENCASEMENT. REPLACE DAMAGED POLYWRAP ACCORDINGLY.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD32_POLY_WRAP

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYETHYLENE ENCASEMENT OF DUCTILE IRON PIPE	DWG. NO. SD32	
		DATE 08/16	REVISED 02/19

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F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Water Details

DRAWING NO.
C-406
Project no.: 21.011

Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

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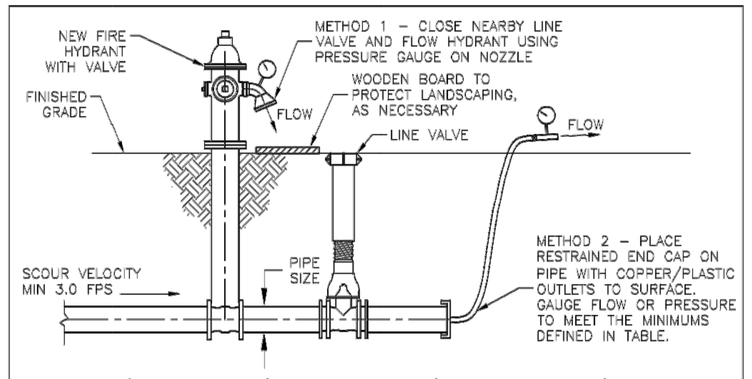


PIPE SIZE (IN)	REQUIRED FLOW (GPM)	METHOD 1 HYDRANT FLOW		METHOD 2 END CAP FLOW	
		2 1/2" NOZZLE PRESSURE (PSI)	4" NOZZLE PRESSURE (PSI)	2" I.D. PRESSURE (PSI)	3" I.D. PRESSURE (PSI)
6	275	7	1	7	2
8	500	9	2	22	5
10	750	20	4	50	10
12	1100	44	7	–	22
16	1900	–	20	–	62
20	3000	–	50	–	–

I.D. = INNER DIAMETER

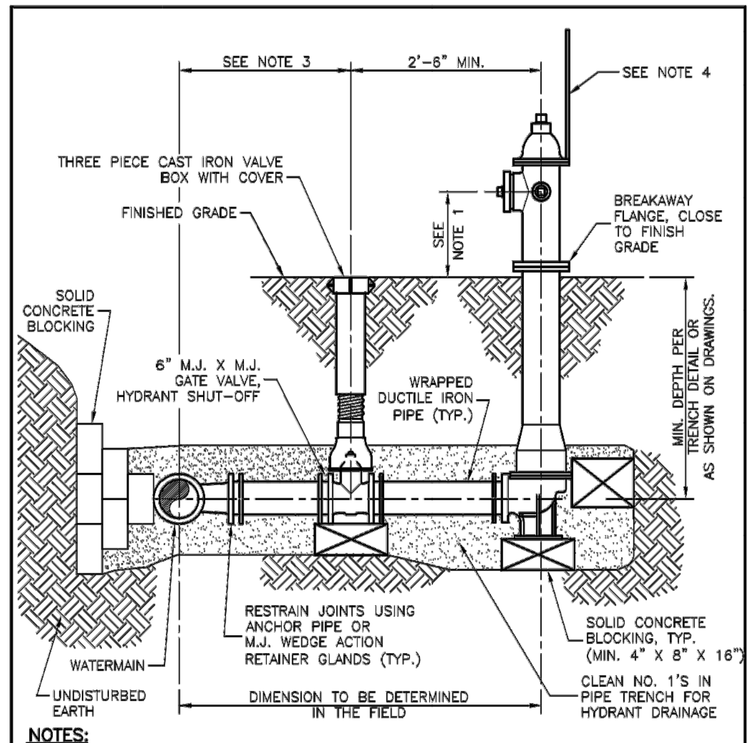
NOTES:

1. TO OBTAIN SCOUR VELOCITY (3.0 FPS) IN THE WATERLINE, CONTRACTOR SHALL ACHIEVE FLOWRATE AT NOZZLE DEFINED IN TABLE. PRESSURE GAUGE USED SHALL SHOW A HIGHER PRESSURE THAN THE MINIMUMS DEFINED IN THE TABLE.
2. OUTLET PRESSURE MEASURED BY PITOT GAUGE.
3. ENGINEER SHALL PROVIDE CALCULATIONS IF CONNECTIONS ARE OTHER THAN THOSE SHOWN, IF MULTIPLE CONNECTIONS ARE USED, OR AS REQUESTED BY ECWA.
4. TO FLUSH THREE PIPE VOLUMES, MINIMUM FLUSHING TIME (IN SECONDS) EQUALS THE LENGTH OF PIPE BEING FLUSHED, IN FEET.

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD36_WATERLINE_FLUSHING

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL WATERLINE FLUSHING	DWG. NO. SD36	
		DATE 6/16	REVISED 3/18



NOTES:

1. CENTERLINE OF THE LOWEST NOZZLE TO FINISHED GRADE SHALL BE A MIN. OF 15" & MAX. OF 18".
2. HYDRANT RISER SHALL BE INSTALLED PLUMB.
3. VALVE BOX SHALL NOT BE PLACED IN PAVEMENT.
4. RELOCATE HYDRANT MARKER (IF PRESENT), FOR WATERLINE REPLACEMENT PROJECTS ONLY.
5. HYDRANT FACE TO BE A MINIMUM OF 3' FROM THE BACK FACE OF ALL CURBS OR A MINIMUM OF 5' FROM ALL EDGES OF PAVEMENT (IF NO CURB).

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD13_HYD_INST

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL FIRE HYDRANT INSTALLATION	DWG. NO. SD13	
		DATE 6/00	REVISED 11/16

NOTES

1. All elevations refer to USGS NAVD83 datum.
2. The CONTRACTOR shall obtain necessary permits and furnish copies to the ENGINEER prior to commencing work.
3. The CONTRACTOR'S work area shall be confined to the limits of the right-of-ways and easements. The CONTRACTOR shall obtain any additional easements or work releases should the CONTRACTOR require additional area to accommodate his operations.
4. The CONTRACTOR shall provide maintenance and protection of traffic in accordance with the Erie County Highway Department standards and the NYSDOT Manual of Uniform Traffic Control Devices.
5. The locations and depths of existing underground utilities as shown on the plans and profiles are approximate. Other underground utilities not shown may be encountered. The CONTRACTOR shall perform test pits to verify the location and elevation of utilities at interconnections and crossings as shown, directed, or required. The CONTRACTOR shall excavate in advance of the pipe laying operation and expose all existing underground utilities to prevent damage during construction and to determine required changes in grade necessary to install the watermain to avoid conflicts.
6. The CONTRACTOR shall install those measures required to limit erosion of areas disturbed by the work. Clearing shall be performed on an as-needed basis, phased to reduce erosion and visual impact.
7. Blasting will not be permitted.
8. No more than one connection may be made to any existing watermain prior to testing, disinfection, and approval of the Waterline Installation Completed Works Approval Report(s) by the Erie County Water Authority and the Erie County Health Department.
9. The Erie County Water Authority shall only operate existing valves and fire hydrants, including newly installed valves and fire hydrants that have been placed into service. The CONTRACTOR is advised that watertight conditions may not exist when existing valves are closed.
10. The CONTRACTOR shall have all equipment, manpower, and materials required on site and ready for use prior to commencing any shut-down or removing any existing facilities from service. The CONTRACTOR shall notify all affected customers in writing of any shut-down at least 48 hours in advance. The CONTRACTOR shall notify the appropriate fire stations 48 hours in advance prior to taking any fire hydrants out of service. Any fire hydrants not in service shall be bagged in burlap or plastic. Any shut-down shall be limited to 4 consecutive hours. It may be necessary to schedule shut-downs at night, weekends, or other off hours so as to not affect schools, businesses or other customers, as determined by the ENGINEER. Shut-down requests shall be submitted to the Erie County Water Authority a minimum of 5 business days in advance of the requested shut-down date.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD29_GENERAL_NOTES

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GENERAL NOTES	DWG. NO. SD29	
		DATE 3/05	REVISED 7/17

11. All watermain piping shall be installed with a minimum of 5'-0" of cover.
12. All watermain piping shall be installed with a minimum of 1'-6" of vertical clearance and 10'-0" of horizontal clearance from sanitary and storm piping, measured from the outside of the pipes at the point of crossing.
13. If the material at the design grade is unsuitable as determined by the ENGINEER, the CONTRACTOR, when ordered in writing, shall excavate additional material to the depth necessary and shall backfill to the proposed grade with the select granular material.
14. The installation of 90 degree bends in the watermain is not allowed, unless approved by the Erie County Water Authority.
15. Thrust restraint for watermain piping through 12-inch diameter shall consist of thrust blocks and pipe joint restraint.
16. The CONTRACTOR shall notify the owner of any utility pole in advance of any excavation work that will take place within 5'-0" of the utility pole. The CONTRACTOR shall include the cost of temporary pole support in the appropriate bid item.Where utility poles are required to be supported during construction, the CONTRACTOR shall make all necessary arrangements with the utility company.
17. If materials are encountered during the construction that are suspected of being contaminated, the CONTRACTOR shall immediately notify the NYSDEC for direction regarding testing, separation, containment, and disposal procedures.
18. Existing fire hydrants removed during construction and not reinstalled as part of the work shall be scheduled and returned to the Erie County Water Authority Service Center, 3030 Union Road, Cheektowaga, New York 14227.
19. The CONTRACTOR shall cold patch all trench excavations in traveled areas including roads, driveways, sidewalks, and parking areas.
20. The CONTRACTOR shall not restrict access for school buses or any emergency vehicles.
21. The use of existing fire hydrants for any reason is prohibited without prior approval of the Erie County Water Authority. This includes newly installed fire hydrants that have been placed into service.
22. The CONTRACTOR shall submit procedures for testing and disinfection of the watermain to the ENGINEER for review prior to the start of testing.
23. The CONTRACTOR shall be present and assist in the Final Walk inspection. The CONTRACTOR shall provide sufficient personnel and equipment to demonstrate to the ENGINEER that all valves, fire hydrants, and curb stops operate as required.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD30_GENERAL_NOTES

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GENERAL NOTES	DWG. NO. SD30	
		DATE 3/05	REVISED 7/17

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Water Details & Notes

DRAWING NO.
C-407

Project no.: 21.011

Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

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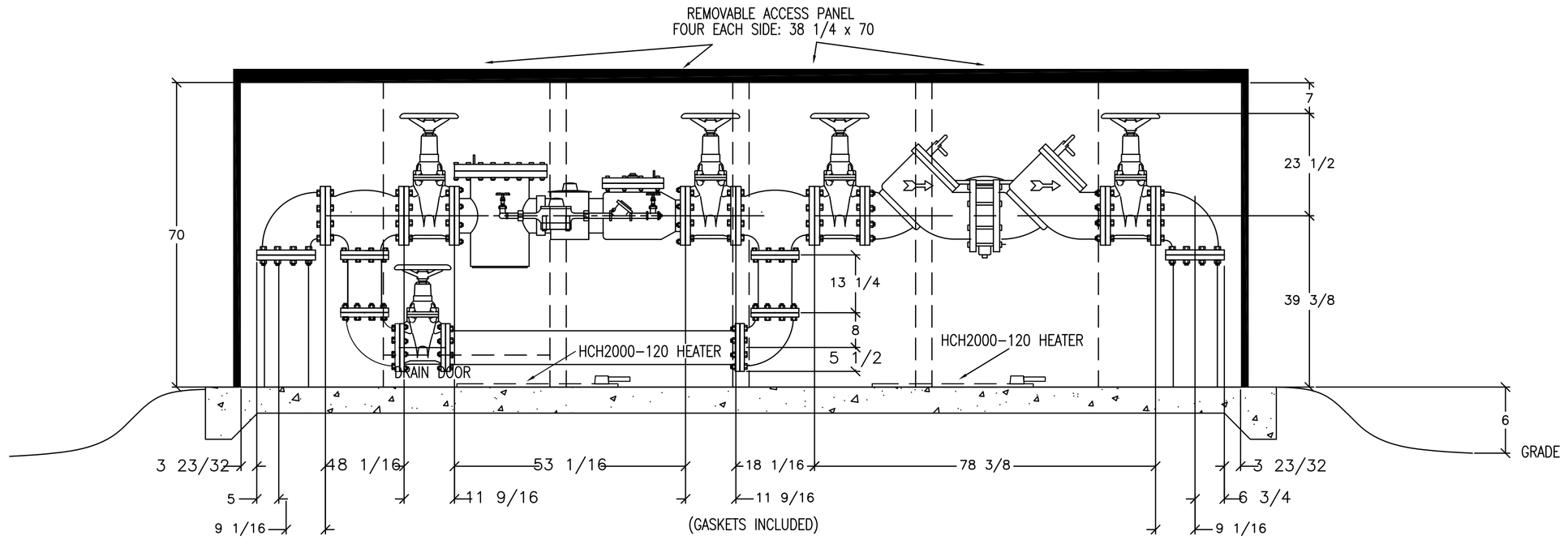

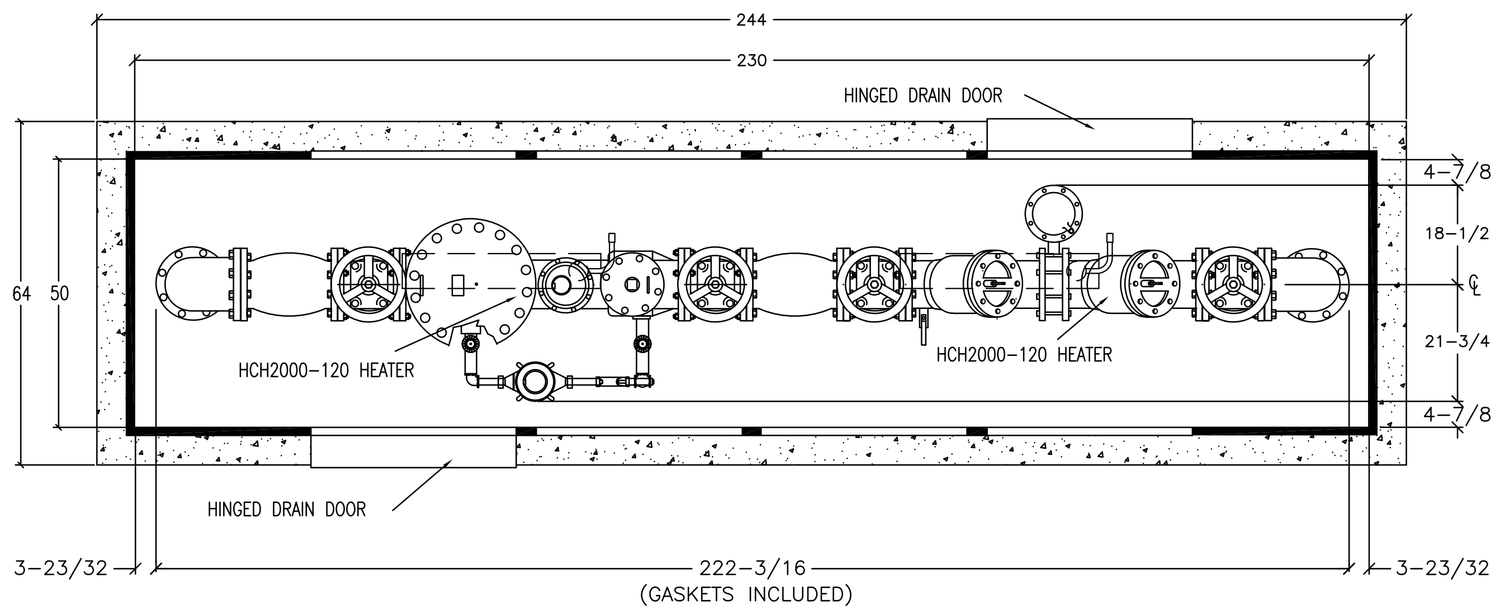

NOTES:

1. BACKFLOW PREVENTER DIMENSIONS FURNISHED BY WATTS
2. ALL DIMENSIONS ARE IN INCHES
3. WALL & INSULATION THICKNESS IS 1 1/2"
4. ROOF & INSULATION THICKNESS IS 3"
5. ENCLOSURE SHOWN IS SAFE-T-COVER MODEL 1000D-ALC00-17
6. EXTERIOR ENCLOSURE DIMENSIONS: 53"W x 233"L x 73" H
7. CONCRETE PAD IS 64"W x 244"L x 6"THK W/W.W.F. 6X6/10X10
8. METER SHOWN: 8" PROTECTUS III, SPOOL PIECE & METER SUPPLIED BY ECWA, VERIFY DIMENSIONS PRIOR TO ORDERING
9. RPZ SHOWN: 8" WATTS 909 NRS
10. CONTRACTOR TO INSTALL ELECTRIC SERVICE TO ENCLOSURE, COORDINATE SOURCE WITH OWNER
11. INSTALL A 120V GFI OUTLET IN THE ENCLOSURE
12. HEATERS TO HAVE THERMOSTAT CONTROL
13. ALL PIPING WITHIN THE ENCLOSURE SHALL BE DUCTILE IRON

LEGEND:

REMOVABLE ACCESS PANEL 38 1/4"W x 70"H w/DRAIN DOOR

REMOVABLE ACCESS PANEL 38 1/4"W x 70"H

8"METER & RPZ INSULATED ENCLOSURE

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Insulated Enclosure Detail

DRAWING NO.
C-408

Project no.: 21.011

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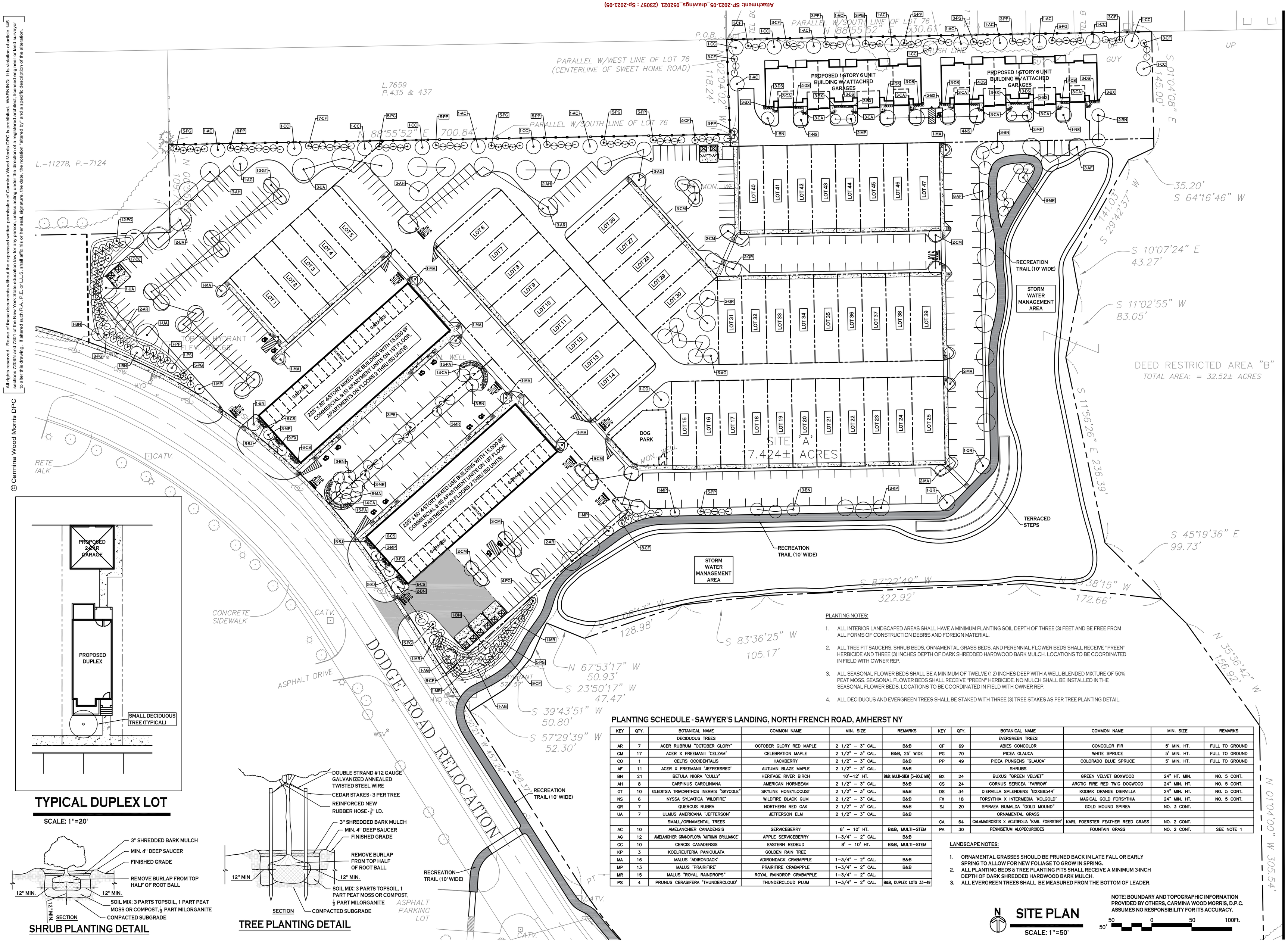
Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)



TYPICAL DUPLEX LOT

SCALE: 1"=20'

SHRUB PLANTING DETAIL

TREE PLANTING DETAIL

PLANTING NOTES:

1. ALL INTERIOR LANDSCAPED AREAS SHALL HAVE A MINIMUM PLANTING SOIL DEPTH OF THREE (3) FEET AND BE FREE FROM ALL FORMS OF CONSTRUCTION DEBRIS AND FOREIGN MATERIAL.
2. ALL TREE PIT SAUCERS, SHRUB BEDS, ORNAMENTAL GRASS BEDS, AND PERENNIAL FLOWER BEDS SHALL RECEIVE "PREEN" HERBICIDE AND THREE (3) INCHES DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
3. ALL SEASONAL FLOWER BEDS SHALL BE A MINIMUM OF TWELVE (12) INCHES DEEP WITH A WELL-BLENDED MIXTURE OF 50% PEAT MOSS. SEASONAL FLOWER BEDS SHALL RECEIVE "PREEN" HERBICIDE. NO MULCH SHALL BE INSTALLED IN THE SEASONAL FLOWER BEDS. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
4. ALL DECIDUOUS AND EVERGREEN TREES SHALL BE STAKED WITH THREE (3) TREE STAKES AS PER TREE PLANTING DETAIL.

PLANTING SCHEDULE - SAWYER'S LANDING, NORTH FRENCH ROAD, AMHERST NY

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		DECIDUOUS TREES			
AR	7	ACER RUBRUM "OCTOBER GLORY"	OCTOBER GLORY RED MAPLE	2 1/2" – 3" CAL.	B&B
CM	17	ACER X. FREEMANII "CELZAM"	CELEBRATION MAPLE	2 1/2" – 3" CAL.	B&B, 25' WIDE
CO	1	CELTIS OCCIDENTALIS	HACKBERRY	2 1/2" – 3" CAL.	B&B
AF	11	ACER X FREEMANII "JEFFERSRED"	AUTUMN BLAZE MAPLE	2 1/2" – 3" CAL.	B&B
BN	21	BETULA NIGRA "CULLY"	HERITAGE RIVER BIRCH	10'–12' HT.	B&B; MULTI-STEM (3-BOLE MIN)
AH	8	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2 1/2" – 3" CAL.	B&B
GT	10	GLEDITSIA TRIACANTHOS INERMIS "SKYCOLE"	SKYLINE HONEYLOCUST	2 1/2" – 3" CAL.	B&B
NS	6	NYSSA SYLVATICA "WILDFIRE"	WILDFIRE BLACK GUM	2 1/2" – 3" CAL.	B&B
QR	7	QUERCUS RUBRA	NORTHERN RED OAK	2 1/2" – 3" CAL.	B&B
UA	7	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2 1/2" – 3" CAL.	B&B
		SMALL/ORNAMENTAL TREES			
AC	10	AMELANCHIER CANADENSIS	SERVICEBERRY	8' – 10' HT.	B&B, MULTI-STEM
AG	12	AMELANCHIER GRANDIFLORA 'AUTUMN BRILLIANCE'	APPLE SERVICEBERRY	1–3/4" – 2" CAL.	B&B
CC	10	CERCIS CANADENSIS	EASTERN REDBUD	8' – 10' HT.	B&B, MULTI-STEM
KP	3	KOELREUTERIA PANICULATA	GOLDEN RAIN TREE		
MA	16	MALUS 'ADIRONDACK'	ADIRONDACK CRABAPPLE	1–3/4" – 2" CAL.	B&B
MP	13	MALUS 'PRAIRIFIRE'	PRAIRIFIRE CRABAPPLE	1–3/4" – 2" CAL.	B&B
MR	15	MALUS "ROYAL RAINDROPS"	ROYAL RAINDROP CRABAPPLE	1–3/4" – 2" CAL.	
PS	4	PRUNUS CERASIFERA 'THUNDERCLOUD'	THUNDERCLOUD PLUM	1–3/4" – 2" CAL.	B&B, DUPLEX LOTS 33–49
		EVERGREEN TREES			
CF	69	ABIES CONCOLOR	CONCOLOR FIR	5' MIN. HT.	FULL TO GROUND
PG	70	PICEA GLAUCA	WHITE SPRUCE	5' MIN. HT.	FULL TO GROUND
PP	49	PICEA PUNGENS 'GLAUCA'	COLORADO BLUE SPRUCE	5' MIN. HT.	FULL TO GROUND
		SHRUBS			
BX	24	BUXUS "GREEN VELVET"	GREEN VELVET BOXWOOD	24" HT. MIN.	NO. 5 CONT.
CS	24	CORNUS SERICEA 'FARROW'	ARCTIC FIRE RED TWIG DOGWOOD	24" MIN. HT.	NO. 5 CONT.
DS	34	DIERVILLA SPLENDENS 'G2X88544'	KODIAK ORANGE DIERVILLA	24" MIN. HT.	NO. 5 CONT.
FX	18	FORSYTHIA X INTERMEDIA 'KOLGOLD'	MAGICAL GOLD FORSYTHIA	24" MIN. HT.	NO. 5 CONT.
SJ	20	SPIRAEA BUMALDA "GOLD MOUND"	GOLD MOUND SPIREA	NO. 3 CONT.	
		ORNAMENTAL GRASS			
CA	64	CALAMAGROSTIS X ACUTIFOLIA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	NO. 2 CONT.	
PA	30	PENNISETUM ALOPECUROIDES	FOUNTAIN GRASS	NO. 2 CONT.	SEE NOTE 1

LANDSCAPE NOTES:

1. ORNAMENTAL GRASSES SHOULD BE PRUNED BACK IN LATE FALL OR EARLY SPRING TO ALLOW FOR NEW FOLIAGE TO GROW IN SPRING.
2. ALL PLANTING BEDS & TREE PLANTING PITS SHALL RECEIVE A MINIMUM 3-INCH DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH.
3. ALL EVERGREEN TREES SHALL BE MEASURED FROM THE BOTTOM OF LEADER.

N

SITE PLAN

SCALE: 1"=50'

50' 0 50 100Ft.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/9/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Landscape Plan

DRAWING NO.

L-100

Project no.: 21.011

1b

Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

Packet Pg. 723

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York
SITE DEVELOPMENT DRAWINGS

AGENCIES

ENGINEERING DEPARTMENT
NAME/TITLE: JEFFERY BURROUGHS, P.E. – TOWN ENGINEER
COMPANY/DEPT: TOWN OF AMHERST ENGINEERING DEPARTMENT
ADDRESS: 1100 NORTH FOREST ROAD
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716–631–7154

PLANNING & ZONING DEPARTMENT
NAME/TITLE: DANIEL HOWARD – PLANNING DIRECTOR
COMPANY/DEPT: TOWN OF AMHERST PLANNING DEPARTMENT
ADDRESS: 5583 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716–631–7051

LAND SURVEYOR
NAME/TITLE: GPI ENGINEERING, LANDSCAPE ARCHITECTURE SURVEYING, LLP
COMPANY/DEPT: 4950 GENESEE STREET, SUITE 100
ADDRESS: BUFFALO, NEW YORK 14225
TELEPHONE 716–633–4844

UTILITIES

NATURAL GAS
COMPANY/DEPT:. NATIONAL FUEL GAS CORP.
ADDRESS: 6363 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716–857–7000

TELEPHONE COMPANY
COMPANY/DEPT: VERIZON
ADDRESS: 65 FRANKLIN STREET
BUFFALO, NEW YORK 14203
TELEPHONE 716–840–8748

CABLE COMPANY
COMPANY/DEPT: TIME WARNER
ADDRESS: 789 CHURCH ROAD
WEST SENECA, NEW YORK
TELEPHONE 716–558–8615

ELECTRIC COMPANY
COMPANY/DEPT: NATIONAL GRID
ADDRESS: 144 KENSINGTON AVENUE
BUFFALO, NEW YORK 14214
TELEPHONE 716–236–2738

WATER
COMPANY/DEPT:. ERIE COUNTY WATER AUTHORITY
ADDRESS: 3030 UNION ROAD
CHEEKTOWAGA, NEW YORK 14227
TELEPHONE 716–684–1510

DIG SAFELY NEW YORK
TELEPHONE 1–800–962–7962

OWNER/DEVELOPER

NAME: Sawyer's Landing LLC
ADDRESS 43 Central Ave Suite #300
Lancaster, NY 14086
TELEPHONE 716 818-0207

ENGINEER

Carmina • Wood • Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

FEBRUARY 2021

DWG NO.	DRAWING TITLE
–	COVER SHEET
–	TOPOGRAPHIC MAP
–	BOUNDARY SURVEY
C–001	DEMOLITION & EROSION CONTROL PLAN
C–002	DEMOLITION & EROSION CONTROL DETAILS
C–100	OVERALL SITE PLAN
C–101	SITE PLAN
C–102	PARCEL MAP
C–103	SITE DETAILS
C–104	SITE DETAILS
C–200	GRADING PLAN
C–300	STORM DRAINAGE PLAN
C–301	STORM DRAINAGE DETAILS
C–302	STORM DRAINAGE DETAILS
C–303	STORM DRAINAGE DETAILS
C–400	UTILITY PLAN
C–401	SANITARY SEWER DETAILS
C–402	SANITARY SEWER DETAILS
C–403	SANITARY SEWER GENERAL NOTES
C–404	SANITARY SEWER TESTING NOTES
C–405	WATER DETAILS
C–406	WATER DETAILS
C–407	WATER DETAILS & NOTES
C–408	INSULATED ENCLOSURE DETAIL
L–100	LANDSCAPE PLAN

NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE.

● SET OR EX. 5/8" REBAR

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MAP COVER 2305

SWEET HOME ROAD (NORTH VARIES)

EXCEPTION L-10908, P.-363
MAP 39.353-1 PARCEL 1

CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA
L. 6640, P. 309, L. 7090, P. 207

PLEASANT ACRES PART II, MAP COVER 2273

PLEASANT ACRES PART III, MAP COVER 2305

SPADINA DRIVE

PLEASANT ACRES PART III, MAP COVER 2305

SOUTHWEST CORNER OF PLEASANT ACRES SUBDIV. PART II MAP COVER 2273

CATCH BASIN RIM:574.64' N INV:573.44'

PARALLEL W/SOUTH LINE OF LOT 76

N 88°55'52" E 530.61'

1312.39' N 88°55'52" E

POINT OF BEGINNING
AREA "B"
LAT: 43°01'40.40785"
LON: -78°47'14.98366"

PARALLEL W/WEST LINE OF LOT 76 (CENTERLINE OF SWEET HOME ROAD)

L.7659 P.435 & 437

N 88°55'52" E 700.84'

N 88°55'52" E 396.51'

N 20°40'20" W 1182.47'

S 14°01'10" E 145.00'

SOUTH LINE L.-9095, P.-348 PARALLEL WITH S. LINE LOT 76

EXCEPTION L.-11278, P.-7124

N88°55'52"E 540.78' M

584.39' D&M

541.38' M

N 02°04'02" W 1173.47'

S88°21'54"W 225.48' D&M

N02°04'02"W 120.85' D&M

90.42'

PARALLEL W/SOUTH LINE OF LOT 76

N 29°36'17" E 62.65'

MON. WELL

S 10°07'24" E 43.27'

S 11°02'55" W 83.05'

S 64°16'46" W 35.20'

S 20°29'37" W 141.03'

DEED RESTRICTED AREA "A"
TOTAL AREA: = 3.9146 ACRES

DEED RESTRICTED AREA "B"
TOTAL AREA: = 32.52± ACRES

TOP OF HYDRANT ELEV: 577.69'

LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC REPUTED OWNERS L.11307, PG.4915

SITE 'A' 17.424± ACRES

S 11°56'26" E 236.98'

S 45°19'36" E 99.73'

CATCH BASIN RIM:574.52' W INV:568.27' E INV:568.32'

CATCH BASIN RIM:574.42' W INV:569.90' E INV:569.97'

CATCH BASIN RIM:573.70' W INV:569.90' E INV:569.97'

12" CMP

CONCRETE SIDEWALK

N 67°53'17" W 50.93'

S 71°08'13" W 128.98'

S 83°36'25" W 105.17'

S 87°22'49" W 322.92'

N 83°38'15" W 172.66'

S 39°43'51" W 50.80'

S 23°50'17" W 47.47'

S 57°29'39" W 52.30'

N 35°56'42" W 159.92'

N 10°10'00" W 305.54'

DOUGHTY ROAD RELOCATION

L=539.31'
R=598.60'
DELTA=52°00'30"

N 85°10'51" W 40.58'

S 85°24'13" W 403.22'

599.16' D&M

NIAGARA MOHAWK POWER CORP. L.-9173, P.-51

202.71' N 85°38'22" W

R=6848.00' L=918.07'
S 85°46'39" W
CHORD 917.39

BRUSH LINE

ASPHALT PARKING LOT

ASPHALT DRIVE

TOP OF HYDRANT ELEV: 574.70'

SAN. M.H. RIM: 573.78' INV: 553.78' E-W

SAN. M.H. RIM:576.41' INV: 554.21' E-W

72" CONC. PIPE

SOUTH LINE OF LOT 76
NORTH LINE OF LOT 75

TRANSMISSION TOWER

LOCKPORT (ROUTE 990) EXPRESSWAY

SECTION II

- CATCH BASIN
- CONIFEROUS TREE
- DECIDUOUS SHRUB
- DECIDUOUS TREE
- GAS VALVE
- GUY WIRE
- WATER SERVICE VALVE
- WATER VALVE
- COMMUNICATIONS BOX
- HYDRANT
- LIGHT POLE
- SANITARY SEWER MANHOLE
- SIGN (SINGLE POLE)
- SIGN (DOUBLE POLE)
- UTILITY POLE

STATE OF NEW YORK — LICENSED LAND SURVEYOR

DATE	REVISION/TYPE

TOPOGRAPHIC SURVEY
PART OF LOT 76, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK

GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE
4950 GENESEE STREET, SUITE 100
BUFFALO, NEW YORK 14225
(716) 633-4844 FAX 633-4940

Job No. 2013062-SITE A Date: DECEMBER 22, 2020
Scale: 1" = 100' TAX No. 40.08-3-13.1 (PART OF)

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SWEET HOME (WIDTH VARIES) ROAD

CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA
L. 6640, P. 309, L. 7090, P. 207

PLEASANT ACRES PART II, MAP COVER 2273

PLEASANT ACRES PART III, MAP COVER 2305

SOUTHWEST CORNER OF PLEASANT ACRES SUBDIV. PART II MAP COVER 2273

P.O.B.

TEL BOX

UP

GUY

N 88°55'52" E 530.61'
PARALLEL W/SOUTH LINE OF LOT 76

PARALLEL W/WEST LINE OF LOT 76
(CENTERLINE OF SWEET HOME ROAD)

N 02°04'02" W
118.24'

S 01°04'08" E
145.00'

L.7659
P.435 & 437

N 88°55'52" E 700.84'

N 88°55'52" E 396.51'
PARALLEL W/SOUTH LINE OF LOT 76

N 29°36'12" E 62.65'

SOUTH LINE L.-9095, P.-348
PARALLEL WITH S. LINE LOT 76

EXCEPTION L.-11278, P.-7124

584.39' D&M
541.38' M

N88°55'52"E
540.78' M

N 00°55'59" W
109.75'

EXCEPTION L.-10808, P.-9632
MAP SK 353-1, PARCEL 1

120.85' D&M
N02°04'02"W

120.52'

N02°04'02"W
90.42'

173.47'
S88°21'54"W
216.48' D&M

DEED RESTRICTED AREA "A"
TOTAL AREA: = 3.914± ACRES

N 01°03'14" W 512.26'

LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC
REPUTED OWNERS
L.11307, PG.4915

SITE 'A'
17.424± ACRES

35.20'
S 64°16'46" W

141.03'
S 29°42'37" W

S 10°07'24" E
43.27'

S 11°02'55" W
83.05'

DEED RESTRICTED AREA "B"
TOTAL AREA: = 32.52± ACRES

S 11°56'26" E 236.39'

S 45°19'36" E
98.73'

L=747.17'
R=724.00'

N 67°53'17" W
50.93'

S 39°43'51" W
50.80'

S 71°08'13" W
128.98'

S 83°36'25" W
105.17'

S 87°22'49" W
322.92'

N 83°38'15" W
172.66'

S 23°50'17" W
47.47'

N 32°30'21" W 198.87'

S 57°29'39" W
52.30'

N 32°30'21" W 457.24'

258.37'

DODGE ROAD RELOCATION

PT

N 35°36'42" W
136.92'

N 01°04'00" W 305.54'

L=539.31'
R=586.62'
DELTA=52°40'30"

PC

N 85°10'51" W
40.58'

195.94'

S 65°24'13" W 403.22'

599.16' D&M

S 65°24'13" W

NIAGARA MOHAWK POWER CORP.
L.-9173, P.-51

SOUTH LINE OF LOT 76
NORTH LINE OF LOT 75

STATE OF NEW YORK
MARK J. ANDREWS
050455
LICENSED LAND SURVEYOR

DATE	REVISION/TYPE
12/4/20	REVISE PARCEL BOUNDARY

NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE.
● SET OR EX. 5/8" REBAR

SURVEY OF
PART OF LOT 76, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK

GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE
4950 GENESEE STREET, SUITE 100
BUFFALO, NEW YORK 14225
(716) 633-4844 FAX 633-4940

Job No. 2013062-SITE A Date: JUNE 27, 2019
Scale: 1" = 100' TAX No.

Attachment: SP-2021-05_drawings_052021 (23057 : Sp-2021-05)

Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

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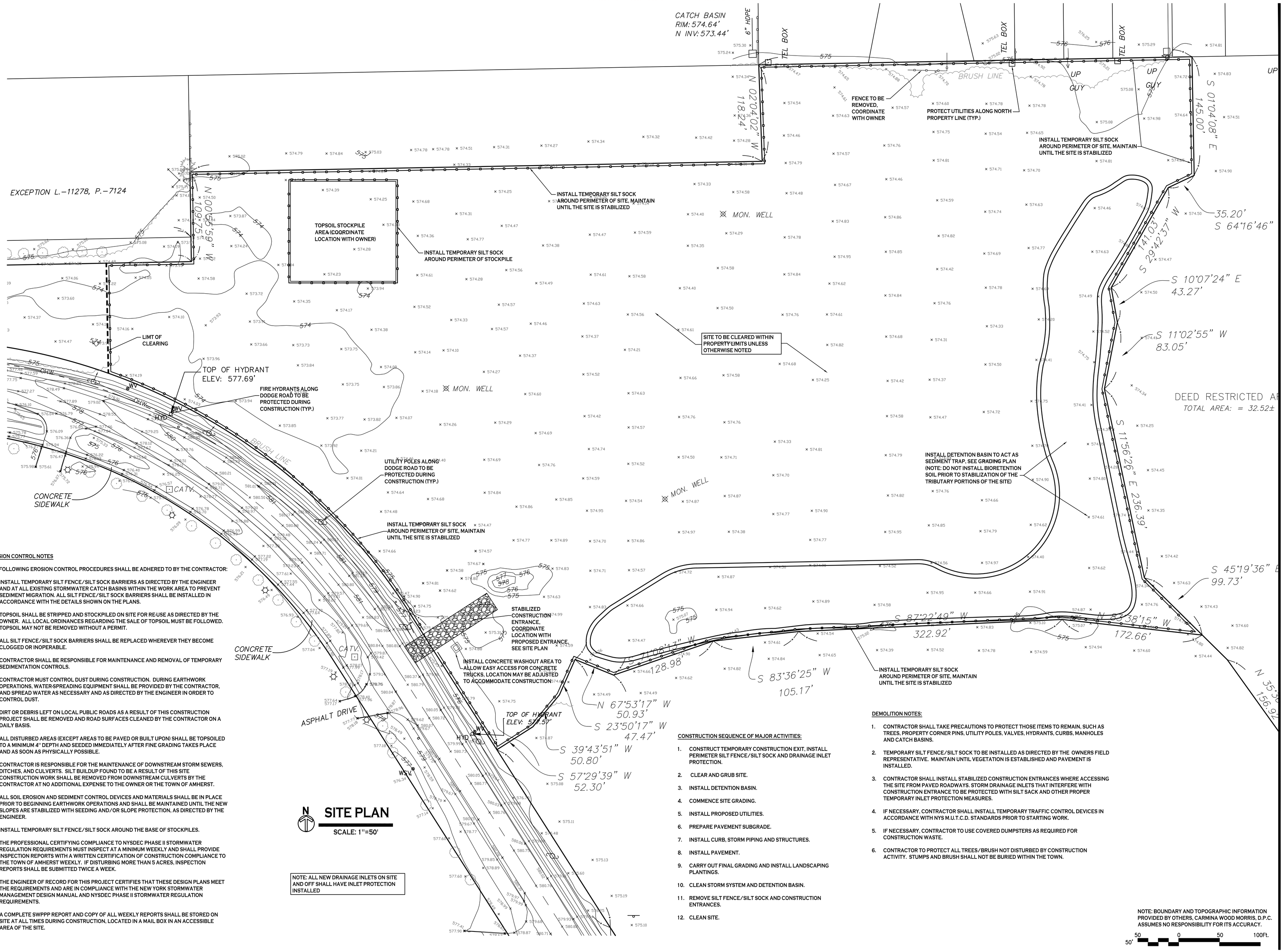

EROSION CONTROL NOTES

THE FOLLOWING EROSION CONTROL PROCEDURES SHALL BE ADHERED TO BY THE CONTRACTOR:

1. INSTALL TEMPORARY SILT FENCE/SILT SOCK BARRIERS AS DIRECTED BY THE ENGINEER AND AT ALL EXISTING STORMWATER CATCH BASINS WITHIN THE WORK AREA TO PREVENT SEDIMENT MIGRATION. ALL SILT FENCE/SILT SOCK BARRIERS SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS SHOWN ON THE PLANS.
2. TOPSOIL SHALL BE STRIPPED AND STOCKPILED ON SITE FOR RE-USE AS DIRECTED BY THE OWNER. ALL LOCAL ORDINANCES REGARDING THE SALE OF TOPSOIL MUST BE FOLLOWED. TOPSOIL MAY NOT BE REMOVED WITHOUT A PERMIT.
3. ALL SILT FENCE/SILT SOCK BARRIERS SHALL BE REPLACED WHEREVER THEY BECOME CLOGGED OR INOPERABLE.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE AND REMOVAL OF TEMPORARY SEDIMENTATION CONTROLS.
5. CONTRACTOR MUST CONTROL DUST DURING CONSTRUCTION. DURING EARTHWORK OPERATIONS, WATER-SPREADING EQUIPMENT SHALL BE PROVIDED BY THE CONTRACTOR, AND SPREAD WATER AS NECESSARY AND AS DIRECTED BY THE ENGINEER IN ORDER TO CONTROL DUST.
6. DIRT OR DEBRIS LEFT ON LOCAL PUBLIC ROADS AS A RESULT OF THIS CONSTRUCTION PROJECT SHALL BE REMOVED AND ROAD SURFACES CLEANED BY THE CONTRACTOR ON A DAILY BASIS.
7. ALL DISTURBED AREAS (EXCEPT AREAS TO BE PAVED OR BUILT UPON) SHALL BE TOPSOILED TO A MINIMUM 4" DEPTH AND SEEDED IMMEDIATELY AFTER FINE GRADING TAKES PLACE AND AS SOON AS PHYSICALLY POSSIBLE.
8. CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE OF DOWNSTREAM STORM SEWERS, DITCHES, AND CULVERTS. SILT BUILDUP FOUND TO BE A RESULT OF THIS SITE CONSTRUCTION WORK SHALL BE REMOVED FROM DOWNSTREAM CULVERTS BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER OR THE TOWN OF AMHERST.
9. ALL SOIL EROSION AND SEDIMENT CONTROL DEVICES AND MATERIALS SHALL BE IN PLACE PRIOR TO BEGINNING EARTHWORK OPERATIONS AND SHALL BE MAINTAINED UNTIL THE NEW SLOPES ARE STABILIZED WITH SEEDING AND/OR SLOPE PROTECTION, AS DIRECTED BY THE ENGINEER.
10. INSTALL TEMPORARY SILT FENCE/SILT SOCK AROUND THE BASE OF STOCKPILES.
11. THE PROFESSIONAL CERTIFYING COMPLIANCE TO NYSDEC PHASE II STORMWATER REGULATION REQUIREMENTS MUST INSPECT AT A MINIMUM WEEKLY AND SHALL PROVIDE INSPECTION REPORTS WITH A WRITTEN CERTIFICATION OF CONSTRUCTION COMPLIANCE TO THE TOWN OF AMHERST WEEKLY. IF DISTURBING MORE THAN 5 ACRES, INSPECTION REPORTS SHALL BE SUBMITTED TWICE A WEEK.
12. THE ENGINEER OF RECORD FOR THIS PROJECT CERTIFIES THAT THESE DESIGN PLANS MEET THE REQUIREMENTS AND ARE IN COMPLIANCE WITH THE NEW YORK STORMWATER MANAGEMENT DESIGN MANUAL AND NYSDEC PHASE II STORMWATER REGULATION REQUIREMENTS.
13. A COMPLETE SWPPP REPORT AND COPY OF ALL WEEKLY REPORTS SHALL BE STORED ON SITE AT ALL TIMES DURING CONSTRUCTION, LOCATED IN A MAIL BOX IN AN ACCESSIBLE AREA OF THE SITE.

CONSTRUCTION SEQUENCE OF MAJOR ACTIVITIES:

1. CONSTRUCT TEMPORARY CONSTRUCTION EXIT, INSTALL PERIMETER SILT FENCE/SILT SOCK AND DRAINAGE INLET PROTECTION.
2. CLEAR AND GRUB SITE.
3. INSTALL DETENTION BASIN.
4. COMMENCE SITE GRADING.
5. INSTALL PROPOSED UTILITIES.
6. PREPARE PAVEMENT SUBGRADE.
7. INSTALL CURB, STORM PIPING AND STRUCTURES.
8. INSTALL PAVEMENT.
9. CARRY OUT FINAL GRADING AND INSTALL LANDSCAPING PLANTINGS.
10. CLEAN STORM SYSTEM AND DETENTION BASIN.
11. REMOVE SILT FENCE/SILT SOCK AND CONSTRUCTION ENTRANCES.
12. CLEAN SITE.

DEMOLITION NOTES:

1. CONTRACTOR SHALL TAKE PRECAUTIONS TO PROTECT THOSE ITEMS TO REMAIN, SUCH AS TREES, PROPERTY CORNER PINS, UTILITY POLES, VALVES, HYDRANTS, CURBS, MANHOLES AND CATCH BASINS.
2. TEMPORARY SILT FENCE/SILT SOCK TO BE INSTALLED AS DIRECTED BY THE OWNERS FIELD REPRESENTATIVE. MAINTAIN UNTIL VEGETATION IS ESTABLISHED AND PAVEMENT IS INSTALLED.
3. CONTRACTOR SHALL INSTALL STABILIZED CONSTRUCTION ENTRANCES WHERE ACCESSING THE SITE FROM PAVED ROADWAYS. STORM DRAINAGE INLETS THAT INTERFERE WITH CONSTRUCTION ENTRANCE TO BE PROTECTED WITH SILT SACK AND OTHER PROPER TEMPORARY INLET PROTECTION MEASURES.
4. IF NECESSARY, CONTRACTOR SHALL INSTALL TEMPORARY TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH NYS M.U.T.C.D. STANDARDS PRIOR TO STARTING WORK.
5. IF NECESSARY, CONTRACTOR TO USE COVERED DUMPSTERS AS REQUIRED FOR CONSTRUCTION WASTE.
6. CONTRACTOR TO PROTECT ALL TREES/BRUSH NOT DISTURBED BY CONSTRUCTION ACTIVITY. STUMPS AND BRUSH SHALL NOT BE BURIED WITHIN THE TOWN.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

Carmina Wood Morris DPC
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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Demolition & Erosion Control Plan

DRAWING NO.

C-001

Project no.: 21.011

Attachment: SP-2021-05_drawings_052021 (2305?) : SP-2021-05)

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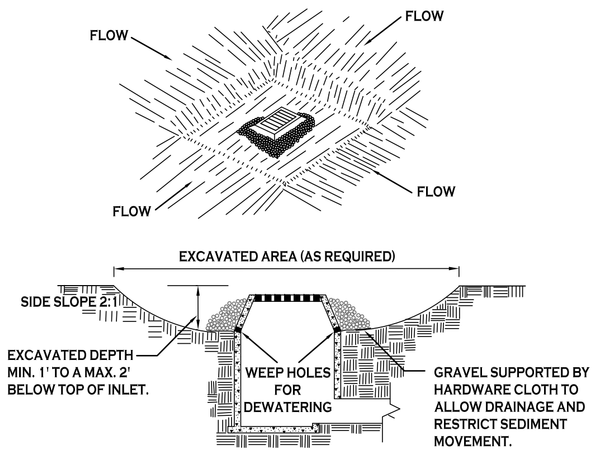


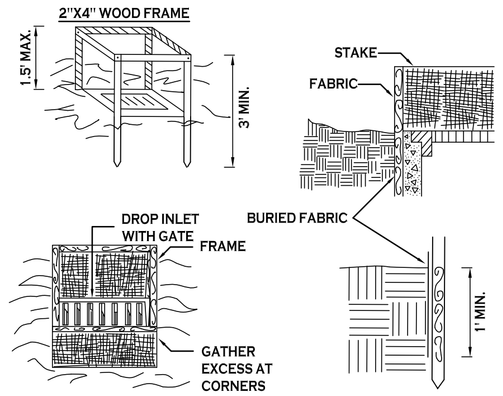
CONSTRUCTION SPECIFICATIONS

1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER EXCAVATION.
2. GRADE APPROACH TO THE INLET UNIFORMLY AROUND THE BASIN.
3. WEEP HOLES SHALL BE PROTECTED BY GRAVEL.
4. UPON STABILIZATION OF CONTRIBUTING DRAINAGE AREA, SEAL WEEP HOLES, FILL BASIN WITH STABLE SOIL TO FINAL GRADE, COMPACT IT PROPERLY AND STABILIZE WITH PERMANENT SEEDING.

   MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 1

NOT TO SCALE



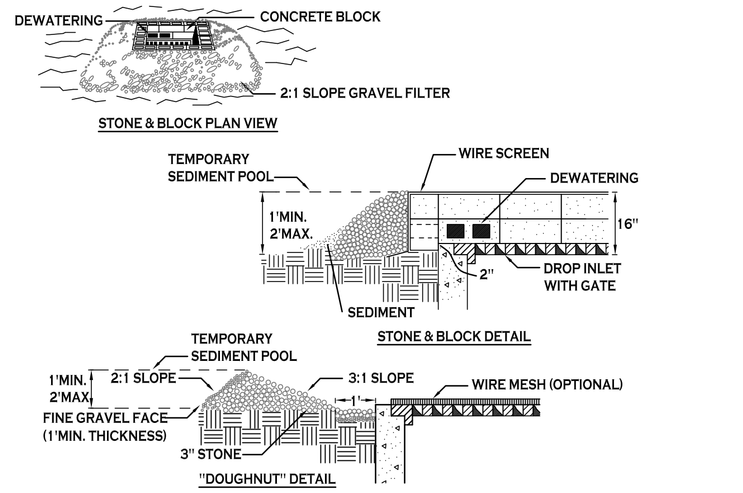
CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2" x 4" WOOD OR EQUIVALENT. METAL WITH A MINIMUM LENGTH OF 3 FEET.
4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2" x 4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.

   MAXIMUN DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 2

NOT TO SCALE



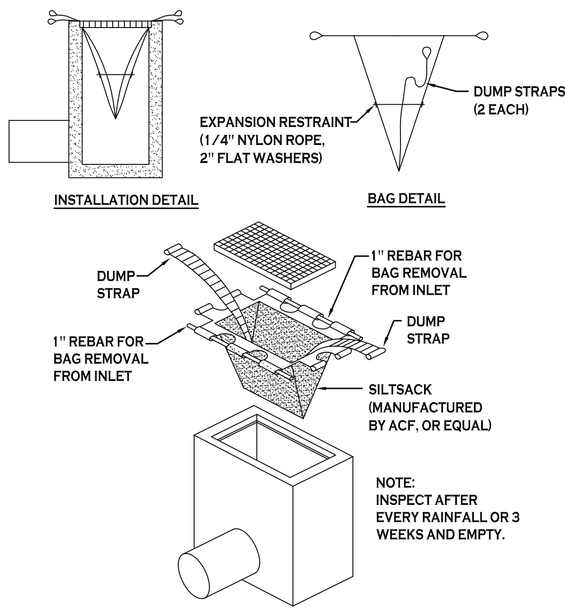
CONSTRUCTION SPECIFICATIONS

1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE FOR DEWATERING. FOUNDATION SHALL BE 2 INCHES MINIMUM BELOW REST OF INLET AND BLOCKS SHALL BE PLACED AGAINST INLET FOR SUPPORT.
2. HARDWARE CLOTH OR 1/2" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.
3. USE CLEAN STONE OR GRAVEL 1/2-3/4 INCH IN DIAMETER PLACED 2 INCHES BELOW TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER.
4. FOR STONE STRUCTURES ONLY, A 1 FOOT THICK LAYER OF THE FILTER STONE WILL BE PLACED AGAINST THE 3 INCH STONE AS SHOWN ON THE DRAWINGS.

   MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 3

NOT TO SCALE



SILT SACK DETAIL

NOT TO SCALE

NOTE: INSTALL ONE OF THE INLET PROTECTION OPTIONS SHOWN PRIOR TO CONSTRUCTION

CONSTRUCTION SPECIFICATIONS

1. WOVEN FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
3. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

SILT FENCE DETAIL

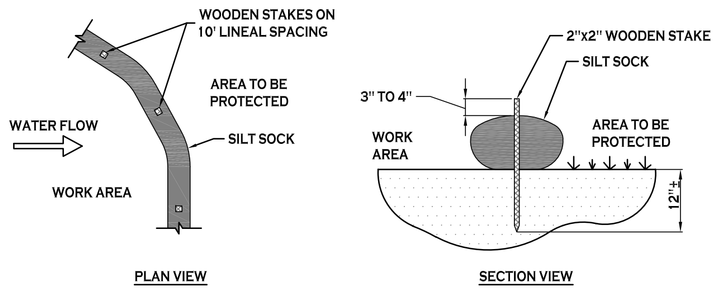
NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

STABILIZED CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE



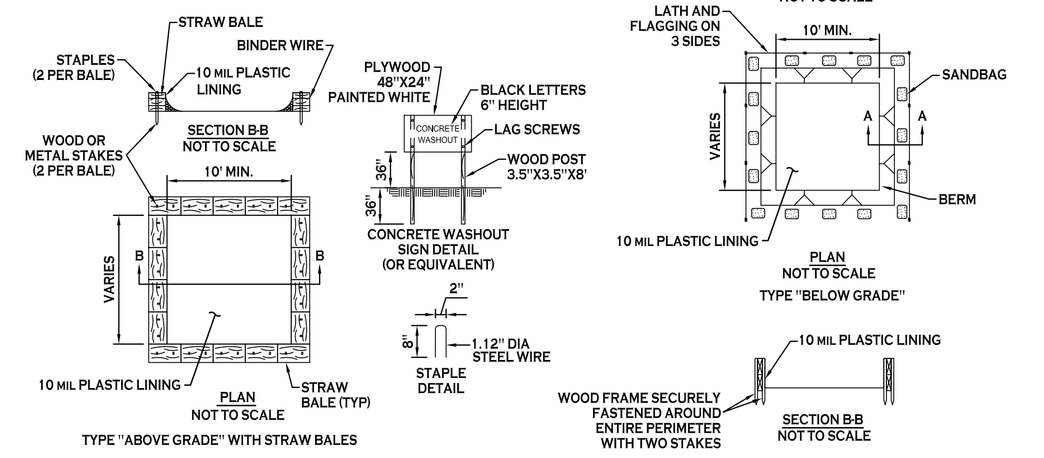
NOTES:

CONTRACTOR SHALL INSPECT AND MAINTAIN SILT SOCK AS NEEDED DURING THE DURATION OF CONSTRUCTION PROJECT.

CONTRACTOR SHALL REMOVE SEDIMENT COLLECTED AT THE BASE OF THE SILT SOCK WHEN IT HAS REACHED ½ OF THE EXPOSED HEIGHT OF THE SILT SOCK. ALTERNATIVELY, RATHER THAN CREATE A SOIL DISTURBING ACTIVITY, THE ENGINEER MAY CALL FOR ADDITIONAL SILT SOCK TO BE ADDED AT AREAS OF HIGH SEDIMENTATION, PLACED IMMEDIATELY ON TOP OF THE EXISTING SEDIMENT LADEN SILT SOCK.

SILT SOCK DETAIL

NOT TO SCALE



NOTES

1. ACTUAL LAYOUT TO BE DETERMINED IN THE FIELD.
2. A CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30' OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
3. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF OR RECYCLED.
4. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE BACKFILLED, REPAIRED, AND STABILIZED TO PREVENT EROSION.

CONCRETE WASHOUT DETAIL

NOT TO SCALE

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Demolition & Erosion Control Details

DRAWING NO.

C-002

Project no.: 21.011

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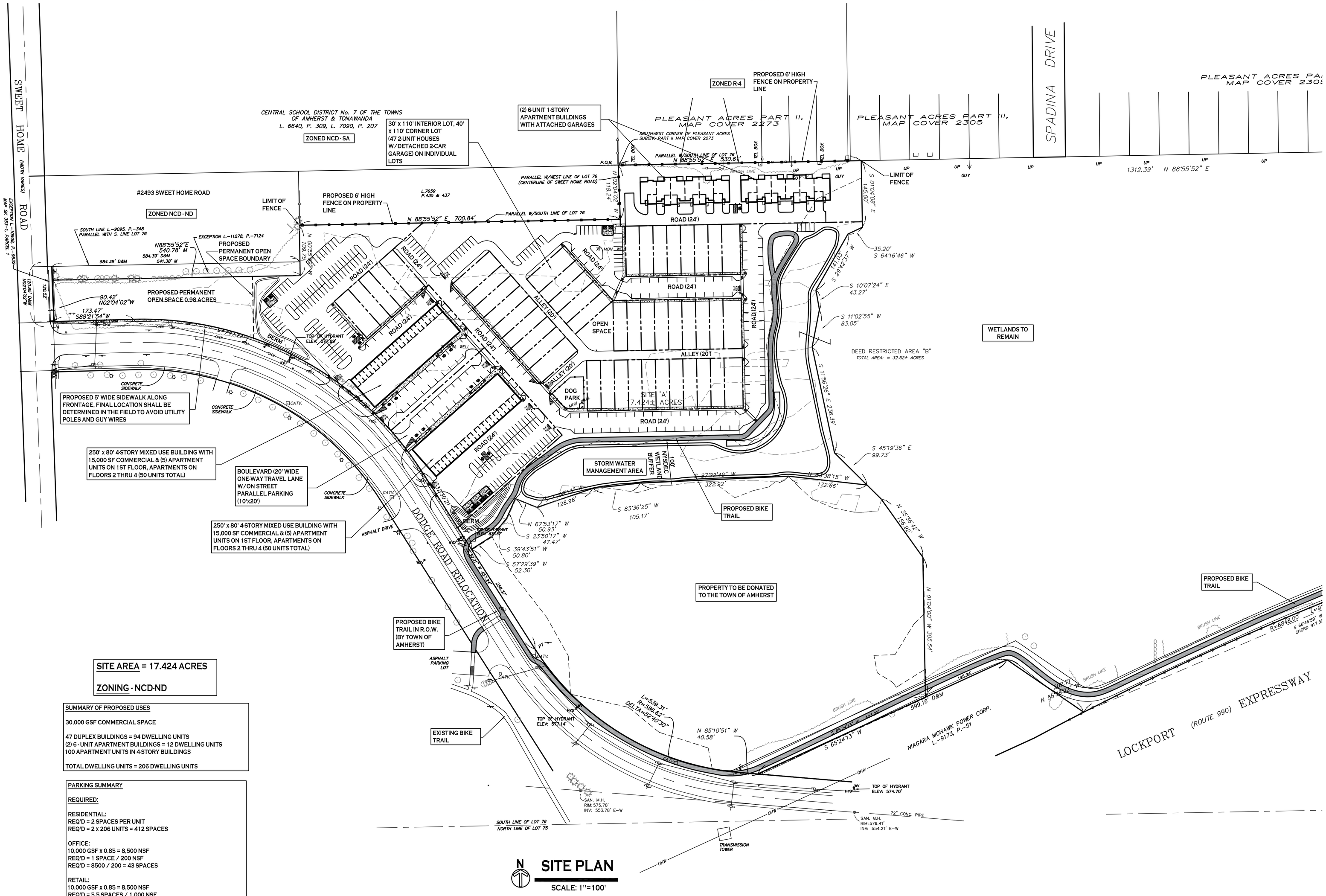

N

SITE PLAN

SCALE: 1"=100'

SITE AREA = 17.424 ACRES

ZONING - NCD-ND

SUMMARY OF PROPOSED USES

30,000 GSF COMMERCIAL SPACE

47 DUPLEX BUILDINGS = 94 DWELLING UNITS
(2) 6 - UNIT APARTMENT BUILDINGS = 12 DWELLING UNITS
100 APARTMENT UNITS IN 4-STORY BUILDINGS

TOTAL DWELLING UNITS = 206 DWELLING UNITS

PARKING SUMMARY

REQUIRED:

RESIDENTIAL:
REQ'D = 2 SPACES PER UNIT
REQ'D = 2 x 206 UNITS = 412 SPACES

OFFICE:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 1 SPACE / 200 NSF
REQ'D = 8500 / 200 = 43 SPACES

RETAIL:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 5.5 SPACES / 1,000 NSF
REQ'D = 8500 / 1000 x 5.5 = 47 SPACES

RESTAURANT:
REQ'D = 1 SPACE / 3 SEATS + 1 SPACE / 100 SF TAKE OUT AREA
REQ'D = 100 SEAT / 3 + 500 SF / 100 = 38 SPACES

TOTAL REQ'D = 540 SPACES

PROVIDED:

158 PARALLEL PARKING SPACES
213 9'x19' SPACES *
40 GARAGE SPACES IN 4-STORY BLDGS
94 GARAGE SPACES IN DETACHED GARAGES
505 TOTAL SPACES

* INCLUDES SPACES IN FRONT OF APARTMENT GARAGES

PERMANENT OPEN SPACE SUMMARY

TOTAL PROPOSED PERMANENT OPEN SPACE = 0.98 ACRES

WETLAND SUMMARY

FEDERAL IMPACTS PROPOSED = 6.089 AC
FEDERAL IMPACTS PREVIOUSLY PROPOSED = 13.01 AC
DECREASE = 6.921 AC (53% DECREASE)

NYSDEC IMPACTS PROPOSED = 1.20 AC
NYSDEC IMPACTS PREVIOUSLY PROPOSED = 9.46 AC
DECREASE = 8.26 AC (87% DECREASE)

NYSDEC BUFFER IMPACT PROPOSED = 3.65 AC
NYSDEC BUFFER IMPACTS PREVIOUSLY PROPOSED = 4.20 AC
DECREASE = 0.55 AC (13% DECREASE)

NOTE: NYSDEC IMPACTS INCLUDES FEDERAL WETLAND IMPACT OVERLAP AREAS

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

Carmina Wood Morris DPC
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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Overall Site Plan

DRAWING NO.

C-100

Project no.: 21.011

Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

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P.O.B.
PARALLEL W/WEST LINE OF LOT 76 (CENTERLINE OF SWEET HOME ROAD)
PARALLEL W/SOUTH LINE OF LOT 76, N 88°55'52" E 530.61'
N 02°04'02" W 118.24'
L.7659 P.435 & 437
N 88°55'52" E 700.84'
PARALLEL W/SOUTH LINE OF LOT 76
N 01°09'57" W 1109.69'
'11278, P.-7124
LIMIT OF FENCE
6' HIGH
TEL BOX
BRUSH LINE
UP
GUY
PATIO (TYP.)
PROPOSED 1 STORY 6 UNIT BUILDING W/ ATTACHED GARAGES
S 01°04'08" E 145.00'
69.03'
79.73'
35.20' S 64°16'46" W
141.03' S 29°42'37" W
S 10°07'24" E 43.27'
S 11°02'55" W 83.05'
S 11°56'26" E 236.39'
S 45°19'36" E 99.73'
N 35°36'42" W 156.92'
N 01°04'00" W 305.54'
N 89°38'15" W 172.66'
S 87°22'49" W 322.92'
S 71°06'17" W 128.98'
S 83°36'25" W 105.17'
N 67°53'17" W 50.93'
S 23°50'17" W 47.47'
S 39°43'51" W 50.80'
S 57°29'39" W 52.30'
S 32°30'21" W 457.24'
258.37'
RECREATION TRAIL (10' WIDE)
RECREATION TRAIL (10' WIDE)
TERRACED STEPS
STORM WATER MANAGEMENT AREA
STORM WATER MANAGEMENT AREA
PROPOSED PERMANENT OPEN SPACE BOUNDARY
DEED RESTRICTED AREA "B"
TOTAL AREA: = 32.52± ACRES
SITE 'A'
17.424± ACRES
PROPOSED PERMANENT OPEN SPACE BOUNDARY
PROPOSED 1 STORY 6 UNIT BUILDING W/ ATTACHED GARAGES
225' x 80' 4 STORY MIXED USE BUILDING WITH 15,000 SF COMMERCIAL & 60 APARTMENT UNITS ON 1ST FLOOR. APARTMENTS ON FLOORS 2 THRU 4 (60 UNITS)
225' x 80' 4 STORY MIXED USE BUILDING WITH 15,000 SF COMMERCIAL & 60 APARTMENT UNITS ON 1ST FLOOR. APARTMENTS ON FLOORS 2 THRU 4 (60 UNITS)
TOP OF HYDRANT ELEV: 577.69
TOP OF HYDRANT ELEV: 577.57'
DOG PARK
GATE
UTILITY POLE TO BE RELOCATED
CONCRETE SIDEWALK
ASPHALT DRIVE
DODGE ROAD RELOCATION
ASPHALT PARKING LOT
CROSSWALK
CROSSWALK
LOT 1 LOT 2 LOT 3 LOT 4 LOT 5 LOT 6 LOT 7 LOT 8 LOT 9 LOT 10 LOT 11 LOT 12 LOT 13 LOT 14 LOT 15 LOT 16 LOT 17 LOT 18 LOT 19 LOT 20 LOT 21 LOT 22 LOT 23 LOT 24 LOT 25 LOT 26 LOT 27 LOT 28 LOT 29 LOT 30 LOT 31 LOT 32 LOT 33 LOT 34 LOT 35 LOT 36 LOT 37 LOT 38 LOT 39 LOT 40 LOT 41 LOT 42 LOT 43 LOT 44 LOT 45 LOT 46 LOT 47
PROPOSED PERMANENT OPEN SPACE BOUNDARY
CATV.
OHW
HYD
WV
WSV

SITE PLAN
SCALE: 1"=50'

LOT DATA SUMMARY		
LOT NO.	LOT AREA	LOT DIMENSIONS
1,5,6,14,25,26,39,47	4400 SF	40' x 110'
2-4, 7-13, 15-24, 27-38 40-46	3300 SF	30' x 110'
49 (COMM./APTS)	3.56 AC	
50 (COMM./APTS)	1.68 AC	
51 (APARTMENTS)	1.62 AC	
52 (COMMON AREA)	6.81 AC	

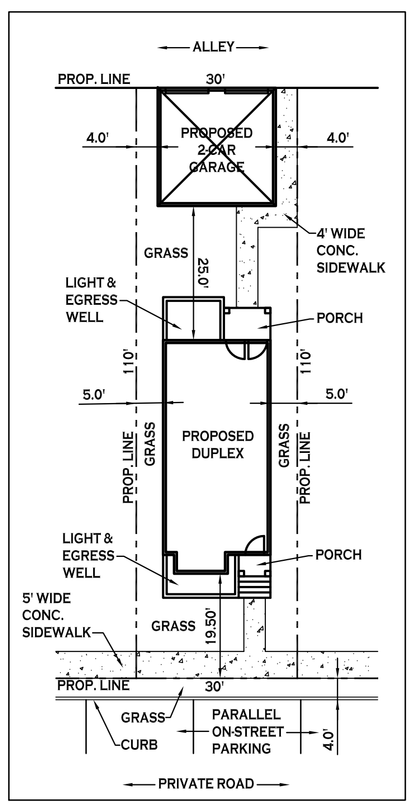
DETAIL LEGEND SEE SITE DETAIL SHEET
1. TYPE "A" CONCRETE CURB
2. 90° PARKING STALL
3. PAINTED TRAFFIC ARROWS
4A. STANDARD DUTY ASPHALT
4B. HEAVY DUTY ASPHALT
4C. EXTERIOR CONCRETE SLAB ON GRADE
4D. ASPHALT TRAIL
5. HANDICAPPED PAVEMENT MARKINGS
6. HANDICAPPED PARKING SIGN
7. STOP BAR
8. LIGHT POLE FOUNDATION
9. CONCRETE SIDEWALK
10. SIDEWALK CURB RAMP
11. DUMPSTER ENCLOSURE
12. BOARD ON BOARD FENCE

NOTE LEGEND
1. INSTALL STOP SIGN - M.U.T.C.D. SIGN NO. R1-1 B
2. INSTALL "DO NOT ENTER" SIGN, M.U.T.C.D. SIGN NO. R3-15C
3. LIMIT OF HEAVY DUTY PAVEMENT
4. RUNOUT CURB IN 3' OR MATCH EXISTING CURB
5. INSTALL "NO PARKING" SIGN, M.U.T.C.D. SIGN NO. P1-1C
6. LANDSCAPED AREA - SEE LANDSCAPE PLAN, IF NO PLANTINGS, INSTALL TOPSOIL & SEED
7. "KEEP RIGHT" SIGN
8. 6" WIDE WHITE PAVEMENT STRIPES @ 5' SPACING (CROSSWALK LINES)
9. 4" WIDE YELLOW PAVEMENT STRIPES @ 2' O.C. & @ 45° TO PARKING LINES
10. RAMP SIDEWALK @ 1:12 MAX.

SITE LEGEND
- PROPERTY LINE
- PROPOSED CURB
- PROPOSED SIDEWALK / CONCRETE PAD
- NUMBER OF PARKING SPACES (27)
- PROPOSED SIGN
- PROPOSED LIGHT POLE W/ SINGLE FIXTURE
- PROPOSED LIGHT POLE W/ DOUBLE FIXTURE
- PROPOSED WALL MOUNTED FIXTURE
- PROPOSED PAVEMENT MARKINGS (TYP. WHERE SHOWN)
- PROPSOED HEAVY DUTY ASPHALT PAVEMENT

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.



TYPICAL DUPLEX LOT
SCALE: 1"=20'

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Site Plan

DRAWING NO.
C-101

Project no.: 21.011

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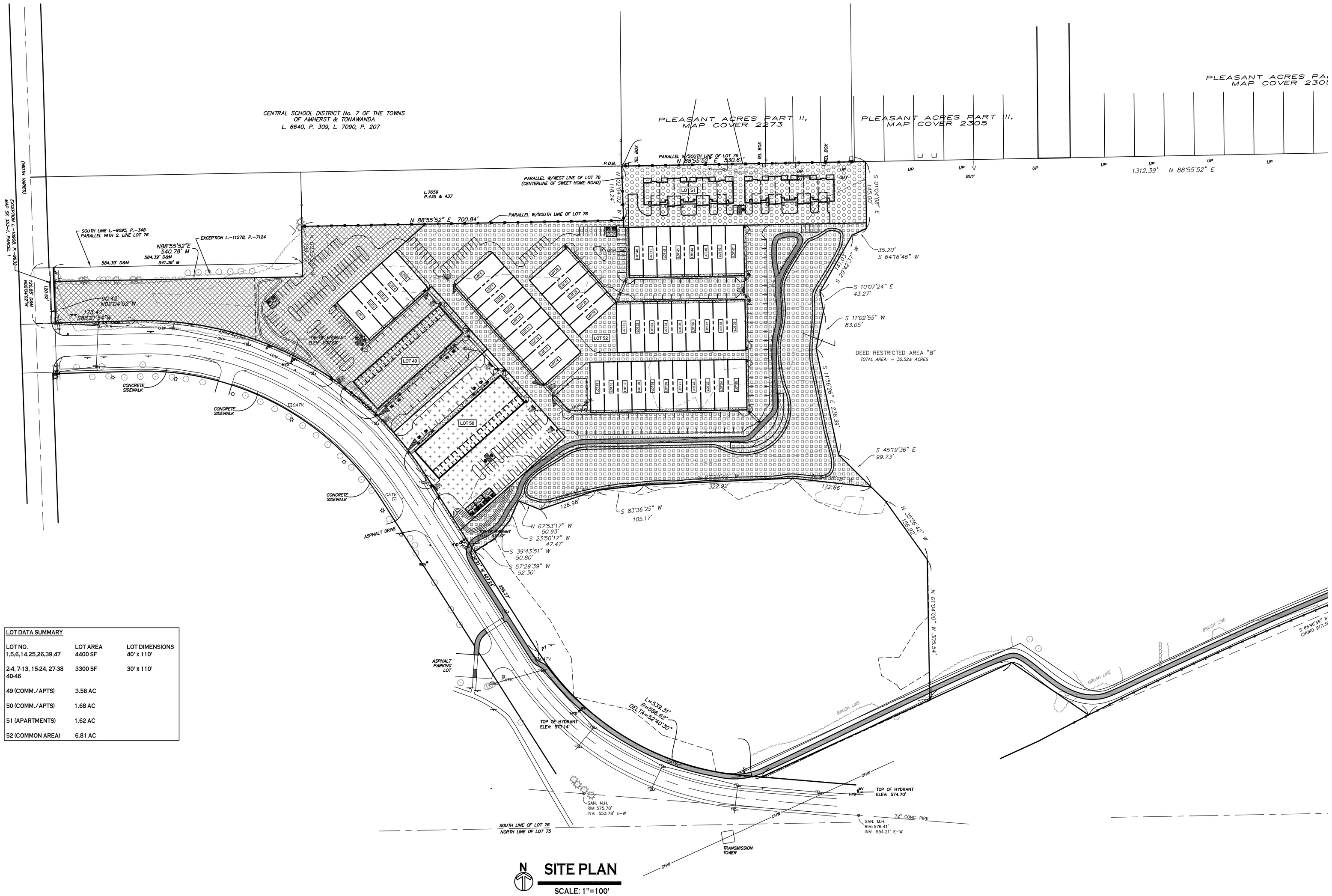
Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)



SITE PLAN

SCALE: 1"=100'

LOT DATA SUMMARY		
LOT NO.	LOT AREA	LOT DIMENSIONS
1,5,6,14,25,26,39,47	4400 SF	40' x 110'
2-4, 7-13, 15-24, 27-38 40-46	3300 SF	30' x 110'
49 (COMM./APTS)	3.56 AC	
50 (COMM./APTS)	1.68 AC	
51 (APARTMENTS)	1.62 AC	
52 (COMMON AREA)	6.81 AC	

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Parcel Map

DRAWING NO.

C-102

Project no.: 21.011

Attachment: SP-2021-05_drawings_052021 (2305?) : SP-2021-05)

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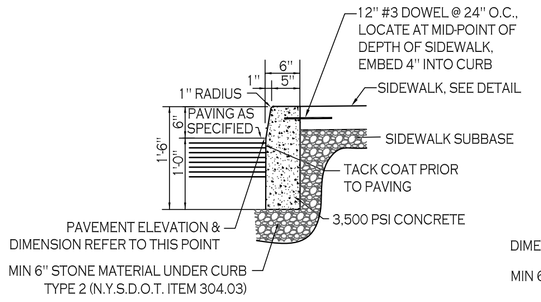
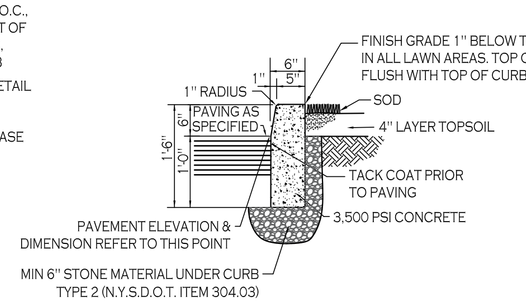


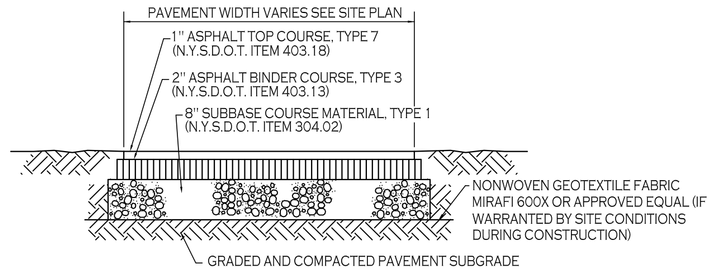
ABUTTING SIDEWALK



ABUTTING LANDSCAPE/GRASS

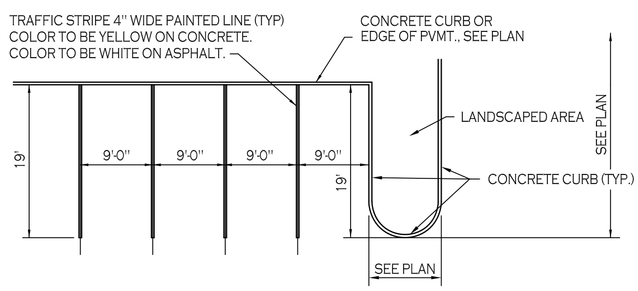
NOTES:
1. CONTROL JOINTS TO BE 2" DEEP AT 15'-0" O.C. - SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
2. WHERE THE CURB DROPS (IS FLUSH WITH ASPHALT) THE DEPTH OF CURB BELOW GRADE SHALL BE INCREASED TO 1'-6" AND OTHER DIMENSIONS ADJUSTED ACCORDINGLY.

TYPE "A" CONCRETE CURB - 1

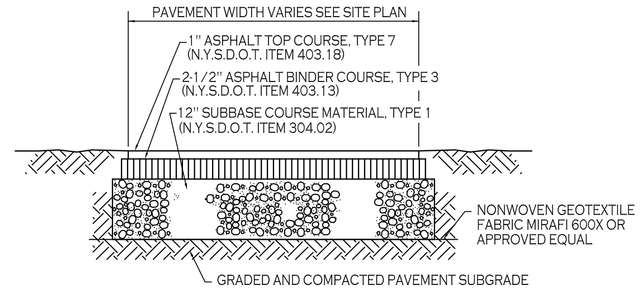


NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 401-3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304-3.

STANDARD DUTY ASPHALT SECTION - 4A

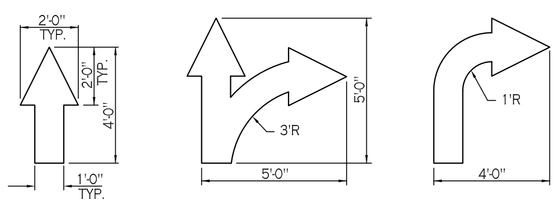


90° PARKING STALL LAYOUT - 2

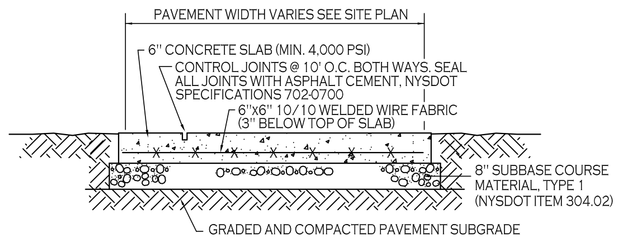


NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 401-3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304-3.

HEAVY DUTY ASPHALT SECTION - 4B

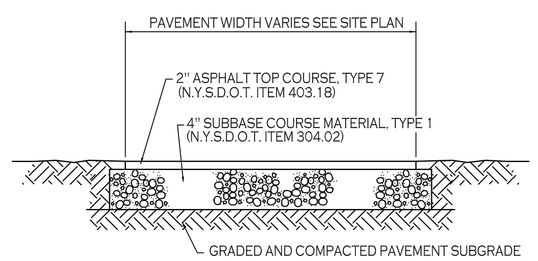


PAINTED TRAFFIC ARROWS - 3



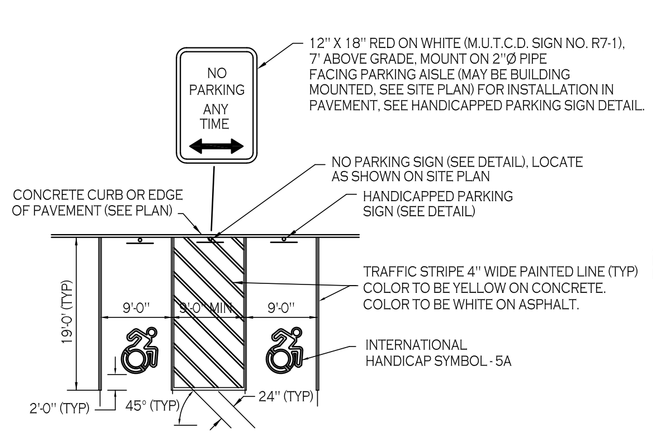
NOTE: CONCRETE PAVEMENT MATERIAL SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 501 AND CONSTRUCTION METHODS SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 502-3.

EXTERIOR CONCRETE SLAB-ON-GRADE SECTION - 4C

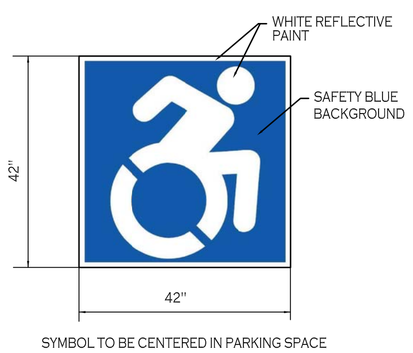


NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 401-3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304-3.

ASPHALT TRAIL SECTION - 4D

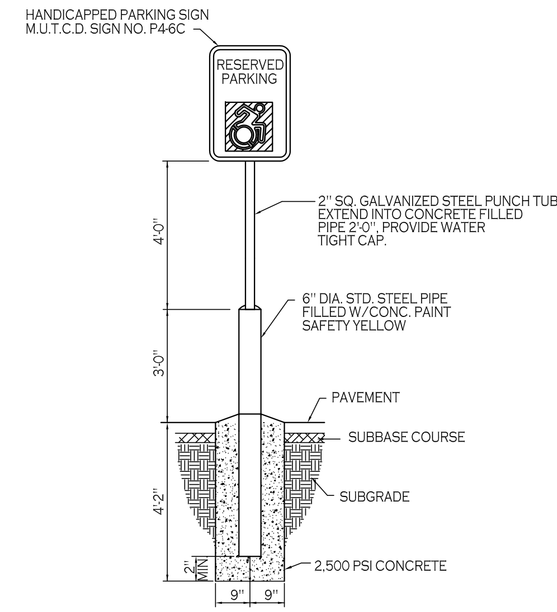


HANDICAPPED PAVEMENT MARKINGS & SIGNAGE - 5



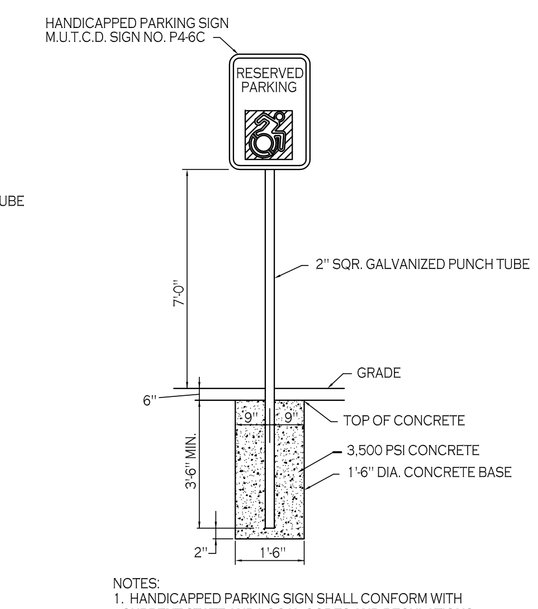
SYMBOL TO BE CENTERED IN PARKING SPACE

INTERNATIONAL HANDICAP SYMBOL - 5A



HANDICAPPED PARKING SIGN - 6

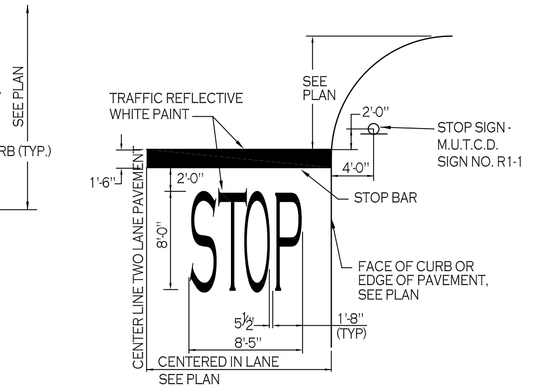
INSTALLED IN PAVEMENT



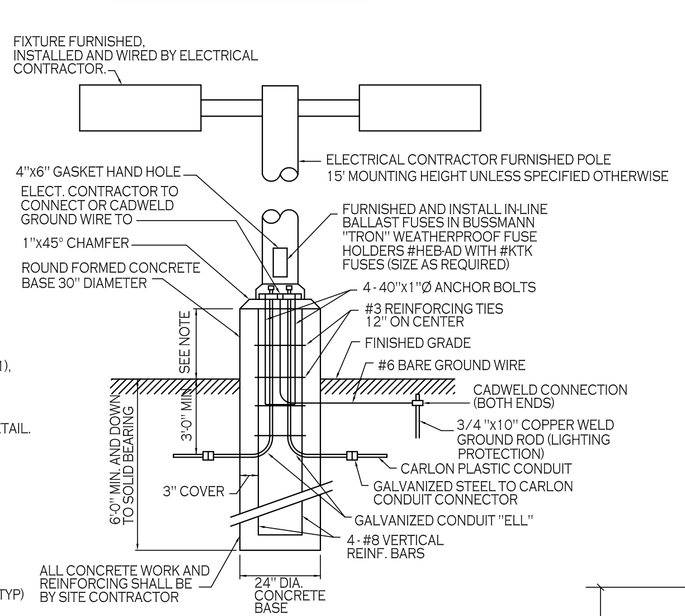
NOTES:
1. HANDICAPPED PARKING SIGN SHALL CONFORM WITH CURRENT STATE AND LOCAL CODES AND REGULATIONS.

HANDICAP PARKING SIGNS - 6

INSTALLED IN GRASS/LANDSCAPED AREA



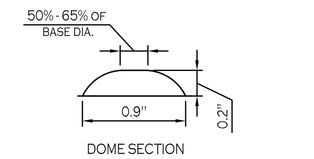
STOP BAR DETAIL - 7



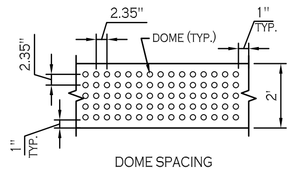
NOTES:
1. FOR LOCATIONS OF FOUNDATIONS SEE SITE PLAN
2. FOR LIGHT FIXTURE ORDERING INFORMATION SEE SITE LIGHTING PLAN
3. LIGHT POLE BASE EXPOSURE ABOVE GRADE SHALL BE:
   IN CURBED ISLANDS: 6" ABOVE TOP OF CURB ELEVATION
   IN PAVEMENT: 3" ABOVE GRADE
   IN NONCURBED GRASS AREAS: 6" ABOVE GRADE

LIGHT POLE FOUNDATION - 8

USE FOR 15' MOUNTING HEIGHT L.E.D. FIXTURES

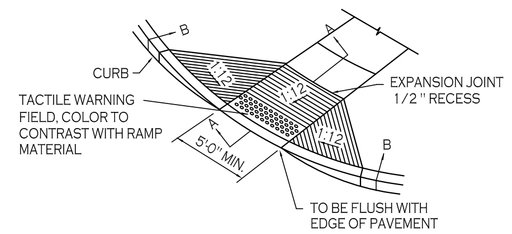


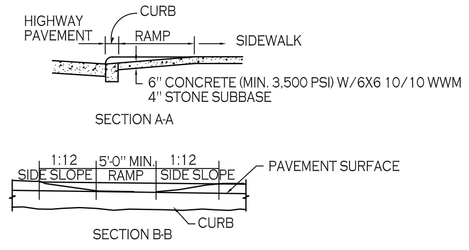
DOME SECTION



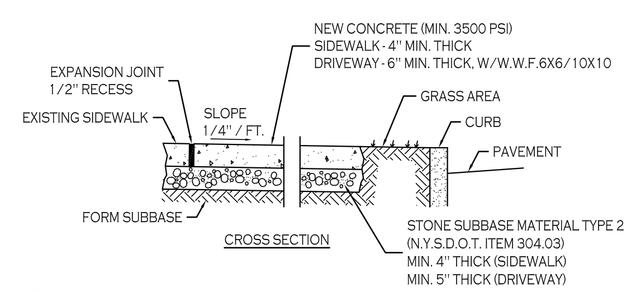
DOME SPACING

NOTE: TACTILE WARNING DEVICES SHALL BE PER ICC/ANSI A117.1-1998, SECTION 705.3.1.2 OR CURRENT UPDATE



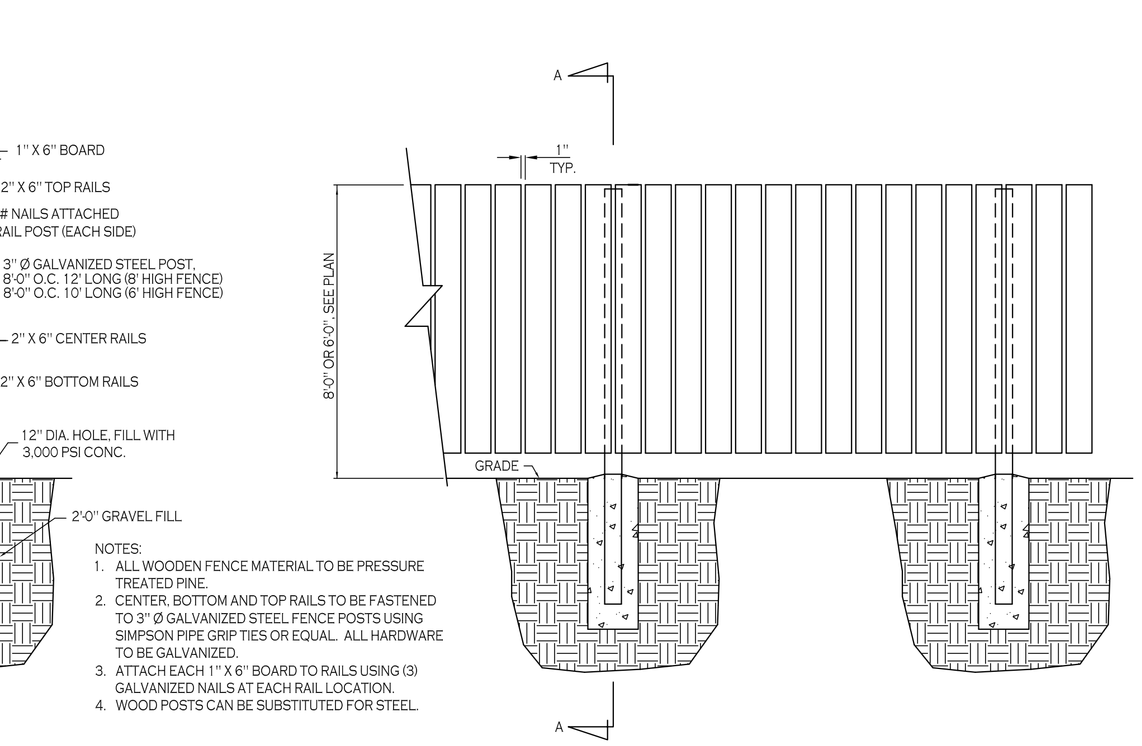


SIDEWALK CURB RAMP - 10



NOTES:
1. CONTROL JOINTS TO BE AT 5'-0" O.C., BOTH WAYS WHERE APPLICABLE. SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
2. CONCRETE SIDEWALK AND DRIVEWAY MATERIAL SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 501 AND CONSTRUCTION METHODS SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 608-3.
3. SUBBASE GRADE SHALL FOLLOW THE PROPOSED GRADE OF THE SIDEWALK AND SLOPE AWAY FROM BUILDING WHERE APPLICABLE, PROVIDE CONTINUOUS STONE PATH TO CURB UNDERDRAIN WHERE PROVIDED.
4. FULL DEPTH EXPANSION JOINTS SHALL BE INSTALLED EVERY 20' O.C., BOTHWAYS WHERE APPLICABLE. SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
5. SEE CURB DETAIL FOR DOWLING REQUIREMENTS WHERE ABUTTING CURB.
6. INSTALL 6" LONG #3 DOWELS @ 12" O.C. WHERE SIDEWALK ABUTS A BUILDING WALL AT AN ENTRANCE, THICKEN SIDEWALK TO 6" AT BUILDING WALL AND INSTALL DOWEL CENTERED IN THE 6" DEPTH. DOWELS AND THICKENING OF SIDEWALK SHALL EXTEND 18" EITHER SIDE OF ENTRANCE.
7. INSTALL 1/2" PREMOLDED EXPANSION JOINT WITH BACKER ROD & SEALANT WHERE SIDEWALK ABUTS BUILDING OR OTHER STRUCTURE.

CONCRETE SIDEWALK - 9



NOTES:
1. ALL WOODEN FENCE MATERIAL TO BE PRESSURE TREATED PINE.
2. CENTER, BOTTOM AND TOP RAILS TO BE FASTENED TO 3" Ø GALVANIZED STEEL FENCE POSTS USING SIMPSON PIPE GRIP TIES OR EQUAL. ALL HARDWARE TO BE GALVANIZED.
3. ATTACH EACH 1" X 6" BOARD TO RAILS USING (3) GALVANIZED NAILS AT EACH RAIL LOCATION.
4. WOOD POSTS CAN BE SUBSTITUTED FOR STEEL.

BOARD ON BOARD FENCE FENCE - 12

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Site Details

DRAWING NO.

C-103

Project no.: 21.011

Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

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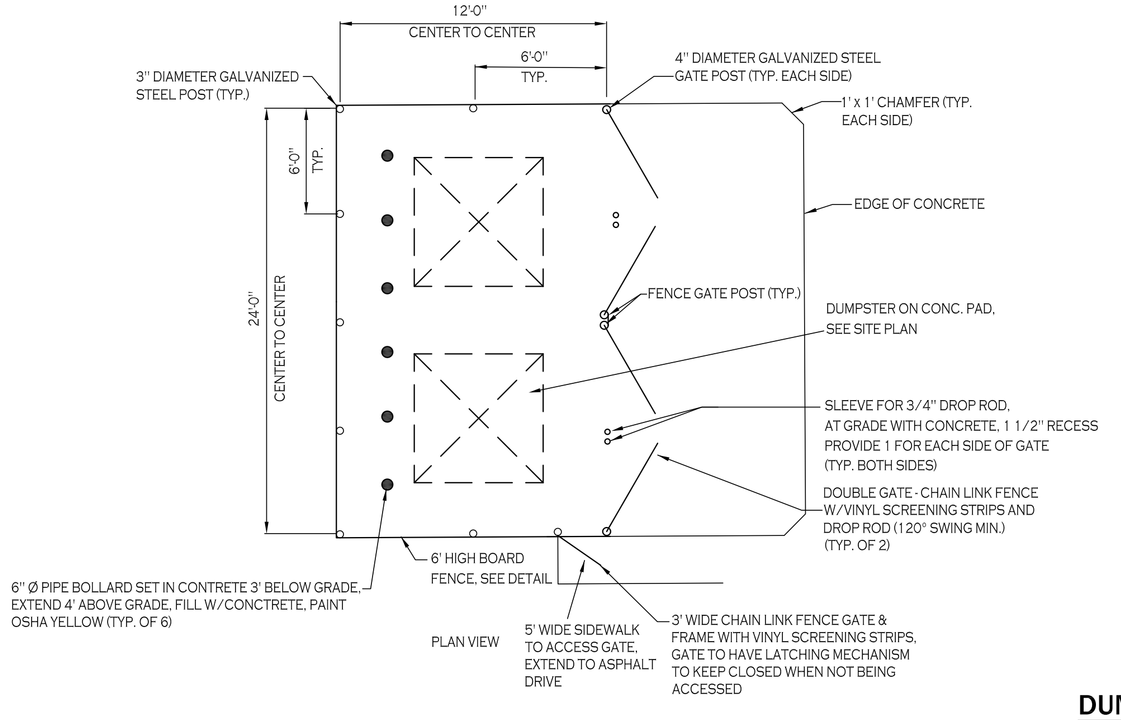
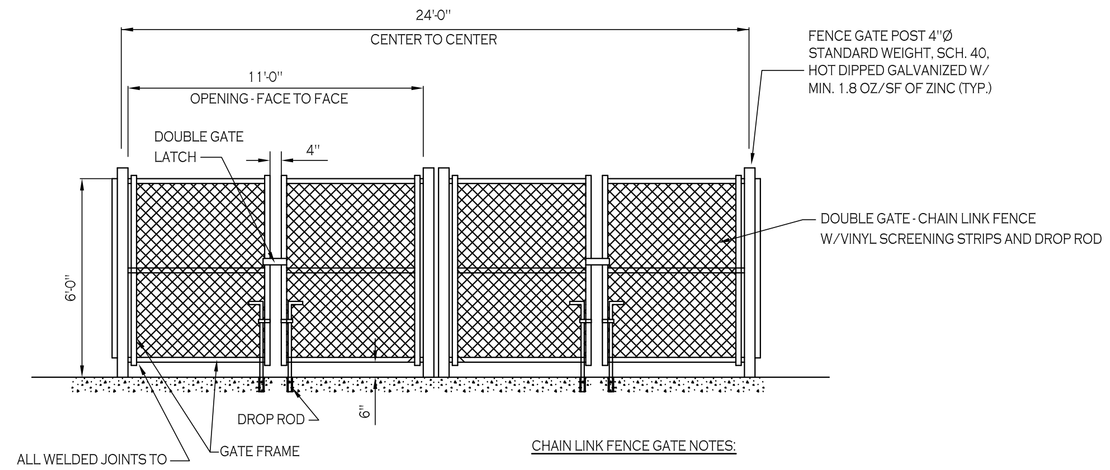
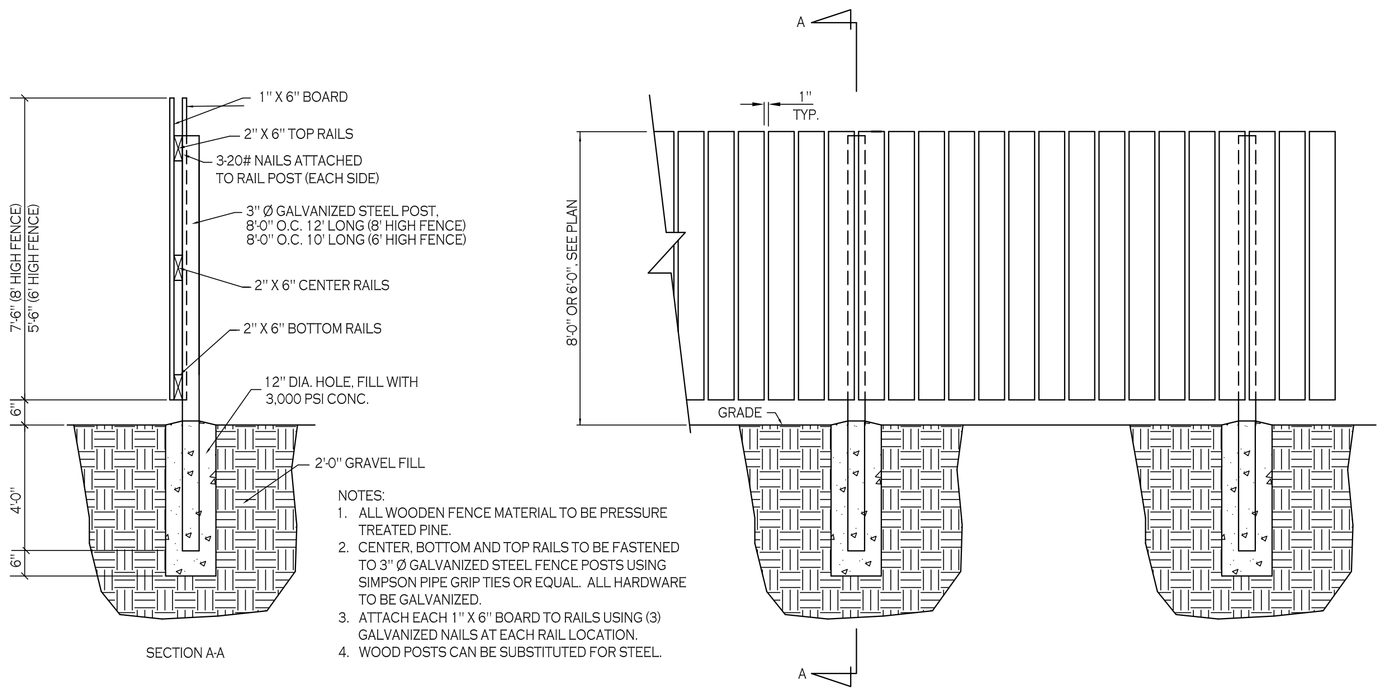




DUMPSTER ENCLOSURE - 11

CHAIN LINK FENCE GATE NOTES:

1. GATE POST FOOTINGS TO BE MIN. 36" DEEP x (4x) POST DIAMETER, EXTEND POST TO WITHIN 6" OF BOTTOM.
2. GATE FRAMES TO BE 2" SQ. GALVANIZED STEEL, WEIGHING 2.60 LB/FT IN ACCORDANCE WITH ASTM F 900.
3. CHAIN LINK FENCE FABRIC SHALL BE 2" MESH, 9 GAUGE, ZINC COATED STEEL CORE WIRE. INSTALL MESH WITH HOOK BOLTS AND TENSION BARS ON ALL 4 SIDES. ATTACH AT 15" MAX.
4. DOUBLE GATE LATCH TO BE FORKED TYPE CAPABLE OF RETAINING GATE IN CLOSED POSITION AND HAVE PROVISION FOR PAD LOCK. LATCH SHALL BE OPERABLE FROM EITHER SIDE OF GATE.
5. ALL HARDWARE TO BE HOT DIPPED GALVANIZED STEEL TO SUIT GATE SIZE.



NOTES:
1. ALL WOODEN FENCE MATERIAL TO BE PRESSURE TREATED PINE.
2. CENTER, BOTTOM AND TOP RAILS TO BE FASTENED TO 3" Ø GALVANIZED STEEL FENCE POSTS USING SIMPSON PIPE GRIP TIES OR EQUAL. ALL HARDWARE TO BE GALVANIZED.
3. ATTACH EACH 1" X 6" BOARD TO RAILS USING (3) GALVANIZED NAILS AT EACH RAIL LOCATION.
4. WOOD POSTS CAN BE SUBSTITUTED FOR STEEL.

BOARD ON BOARD FENCE FENCE - FOR DUMPSTER ENCLOSURE

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REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Site
Details

DRAWING NO.
C-104
Project no.: 21.011

Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

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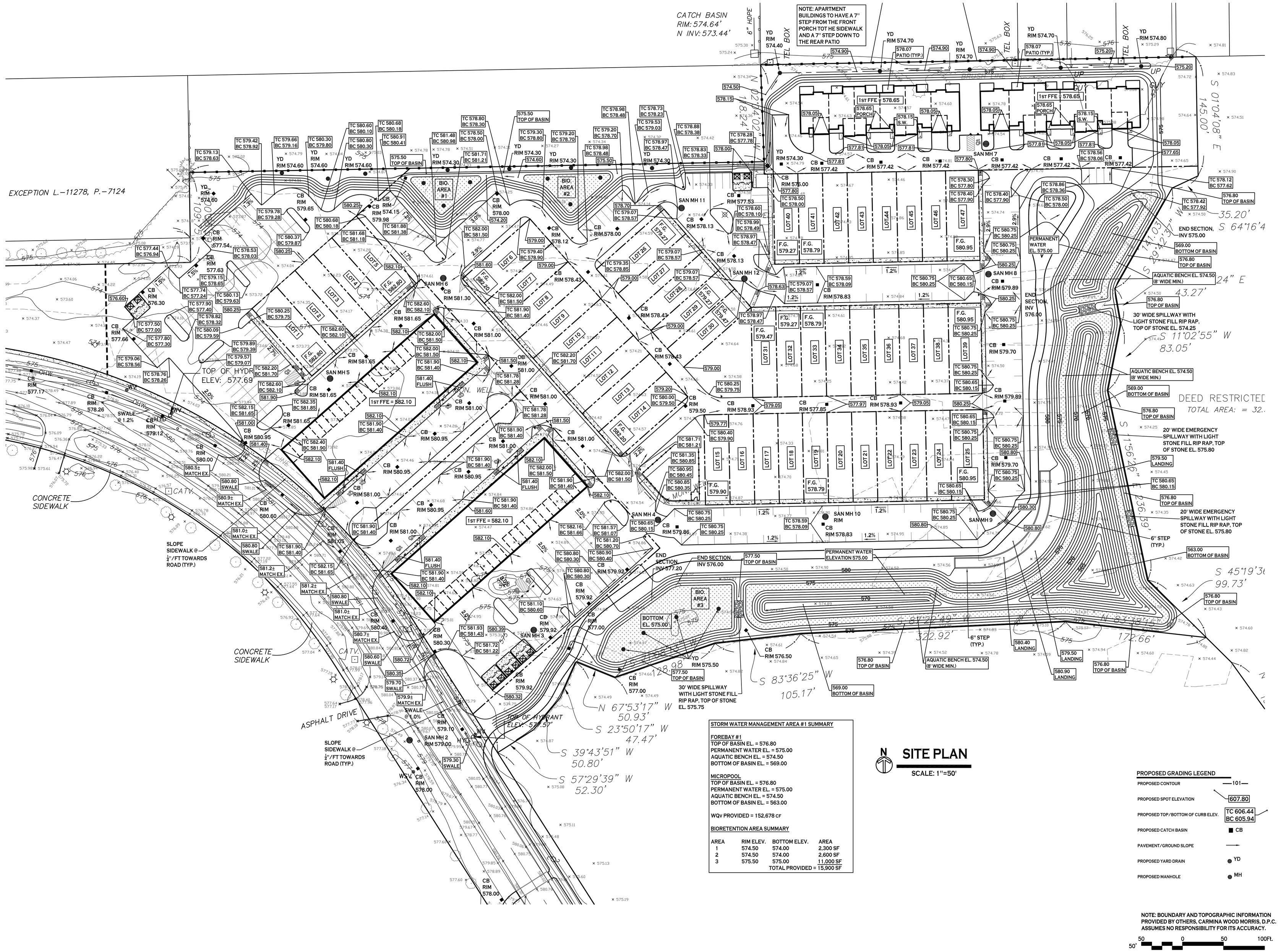
CATCH BASIN
RIM: 574.64'
N INV: 573.44'
6" HDPE
NOTE: APARTMENT BUILDINGS TO HAVE A 7" STEP FROM THE FRONT PORCH TOT HE SIDEWALK AND A 7" STEP DOWN TO THE REAR PATIO
EXCEPTION L.–11278, P.–7124
TOP OF HYDRANT ELEV.: 577.69'
CONCRETE SIDEWALK
ASPHALT DRIVE
SLOPE SIDEWALK @ ¼"/FT TOWARDS ROAD (TYP.)
SWALE @ 1.2%
SWALE @ 1.0%
1ST FFE = 582.10
1ST FFE = 578.65
BIO. AREA #1
BIO. AREA #2
BIO. AREA #3
SAN MH 1
SAN MH 2
SAN MH 3
SAN MH 4
SAN MH 5
SAN MH 6
SAN MH 7
SAN MH 8
SAN MH 9
SAN MH 10
SAN MH 11
SAN MH 12
PERMANENT WATER EL. 575.00
PERMANENT WATER ELEVATION 575.00
END SECTION, INV 575.00
END SECTION, INV 576.00
END SECTION, INV 577.20
AQUATIC BENCH EL. 574.50 (8' WIDE MIN.)
30' WIDE SPILLWAY WITH LIGHT STONE FILL RIP RAP, TOP OF STONE EL. 574.25
20' WIDE EMERGENCY SPILLWAY WITH LIGHT STONE FILL RIP RAP, TOP OF STONE EL. 575.80
30' WIDE SPILLWAY WITH LIGHT STONE FILL RIP RAP, TOP OF STONE EL. 575.75
6" STEP (TYP.)
DEED RESTRICTE
TOTAL AREA: = 32..
S 01°04'08" E 145.00'
S 64°16'4
35.20'
S 11°02'55" W 83.05'
S 1°56'26" E 236.39'
S 45°19'3
99.73'
S 8°22'49" W 322.92'
N 8°32'1
172.66'
S 83°36'25" W 105.17'
N 67°53'17" W 50.93'
S 23°50'17" W 47.47'
S 39°43'51" W 50.80'
S 57°29'39" W 52.30'
N 02°40'28" E 128.98'
N 01°09'32" W 609.00'
CB RIM 577.54
CB RIM 577.63
CB RIM 577.66
CB RIM 576.30
CB RIM 577.17
CB RIM 578.26
CB RIM 579.12
CB RIM 580.00
CB RIM 580.60
CB RIM 581.05
CB RIM 580.40
CB RIM 580.30
CB RIM 578.00
CB RIM 579.10
CB RIM 579.92
CB RIM 577.00
CB RIM 576.50
CB RIM 579.86
CB RIM 578,83
CB RIM 579.70
CB RIM 579.89
CB RIM 579.50
CB RIM 578.93
CB RIM 577.85
CB RIM 577.93
CB RIM 578.43
CB RIM 578.13
CB RIM 578.12
CB RIM 578.00
CB RIM 577.53
CB RIM 577.42
CB RIM 577.81
CB RIM 577.80
CB RIM 578.00
CB RIM 578.05
CB RIM 577.55
CB RIM 581.30
CB RIM 581.65
CB RIM 581.00
CB RIM 580.95
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Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

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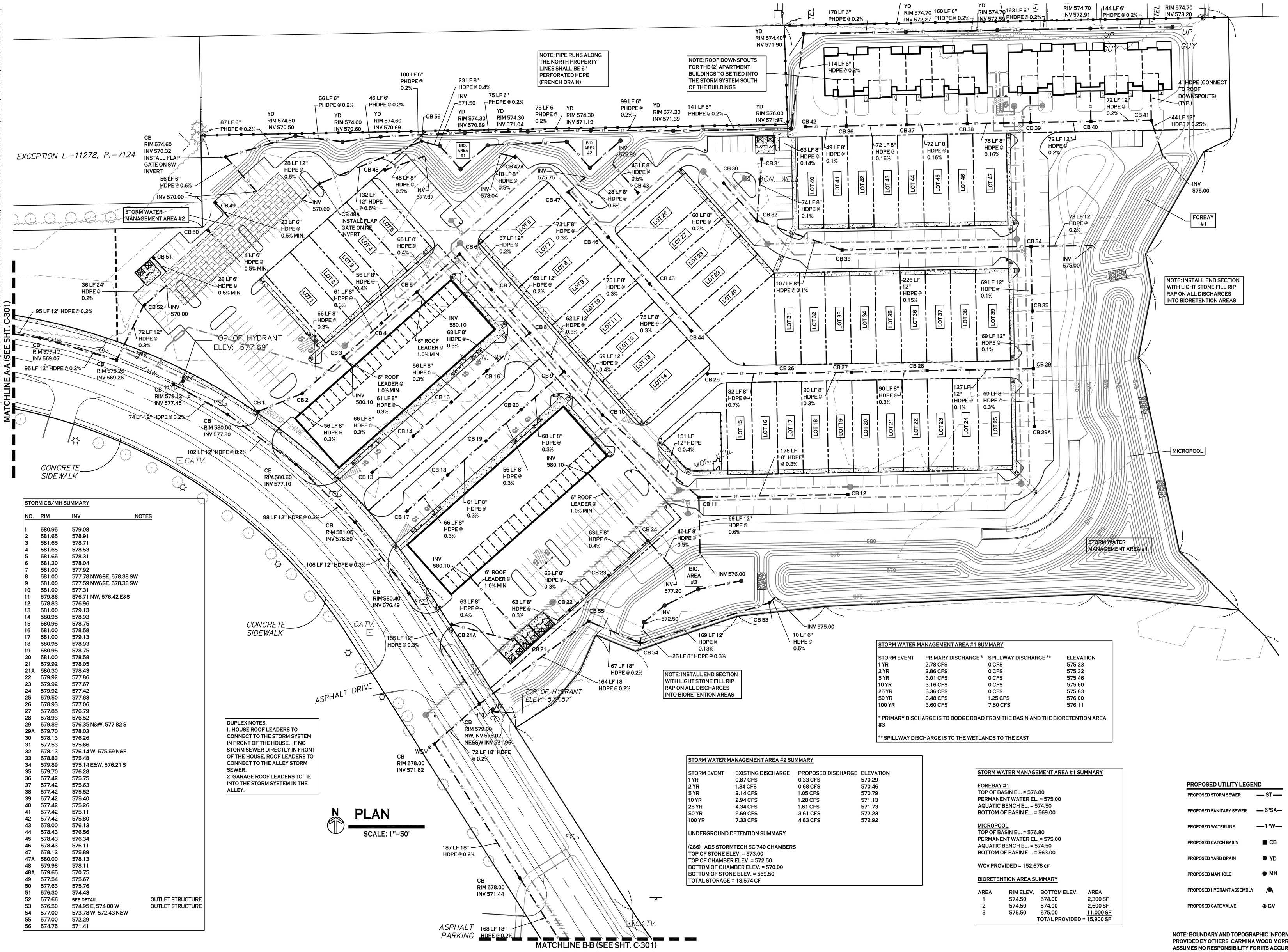

STORM WATER MANAGEMENT AREA #2 SUMMARY

STORM EVENT	EXISTING DISCHARGE	PROPOSED DISCHARGE	ELEVATION
1 YR	0.87 CFS	0.33 CFS	570.29
2 YR	1.34 CFS	0.68 CFS	570.46
5 YR	2.14 CFS	1.05 CFS	570.79
10 YR	2.94 CFS	1.28 CFS	571.13
25 YR	4.34 CFS	1.61 CFS	571.73
50 YR	5.69 CFS	3.61 CFS	572.23
100 YR	7.33 CFS	4.83 CFS	572.92

UNDERGROUND DETENTION SUMMARY

(286) ADS STORMTECH SC-740 CHAMBERS
TOP OF STONE ELEV. = 573.00
TOP OF CHAMBER ELEV. = 572.50
BOTTOM OF CHAMBER ELEV. = 570.00
BOTTOM OF STONE ELEV. = 569.50
TOTAL STORAGE = 18,574 CF

STORM WATER MANAGEMENT AREA #1 SUMMARY

STORM EVENT	PRIMARY DISCHARGE *	SPILLWAY DISCHARGE **	ELEVATION
1 YR	2.78 CFS	0 CFS	575.23
2 YR	2.86 CFS	0 CFS	575.32
5 YR	3.01 CFS	0 CFS	575.46
10 YR	3.16 CFS	0 CFS	575.60
25 YR	3.36 CFS	0 CFS	575.83
50 YR	3.48 CFS	1.25 CFS	576.00
100 YR	3.60 CFS	7.80 CFS	576.11

* PRIMARY DISCHARGE IS TO DODGE ROAD FROM THE BASIN AND THE BIORETENTION AREA #3

** SPILLWAY DISCHARGE IS TO THE WETLANDS TO THE EAST

STORM WATER MANAGEMENT AREA #1 SUMMARY

FOREBAY #1
TOP OF BASIN EL. = 576.80
PERMANENT WATER EL. = 575.00
AQUATIC BENCH EL. = 574.50
BOTTOM OF BASIN EL. = 569.00

MICROPOOL
TOP OF BASIN EL. = 576.80
PERMANENT WATER EL. = 575.00
AQUATIC BENCH EL. = 574.50
BOTTOM OF BASIN EL. = 563.00

WQv PROVIDED = 152,678 CF

BIORETENTION AREA SUMMARY

AREA	RIM ELEV.	BOTTOM ELEV.	AREA
1	574.50	574.00	2,300 SF
2	574.50	574.00	2,600 SF
3	575.50	575.00	11,000 SF
		TOTAL PROVIDED =	15,900 SF

PROPOSED UTILITY LEGEND

- PROPOSED STORM SEWER — ST —
- PROPOSED SANITARY SEWER — 6"SA —
- PROPOSED WATERLINE — 1"W —
- PROPOSED CATCH BASIN ■ CB
- PROPOSED YARD DRAIN ● YD
- PROPOSED MANHOLE ● MH
- PROPOSED HYDRANT ASSEMBLY
- PROPOSED GATE VALVE ⊕ GV

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 0 50 100FT.

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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Storm Drainage Plan

DRAWING NO.
C-300

Project no.: 21.011

Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

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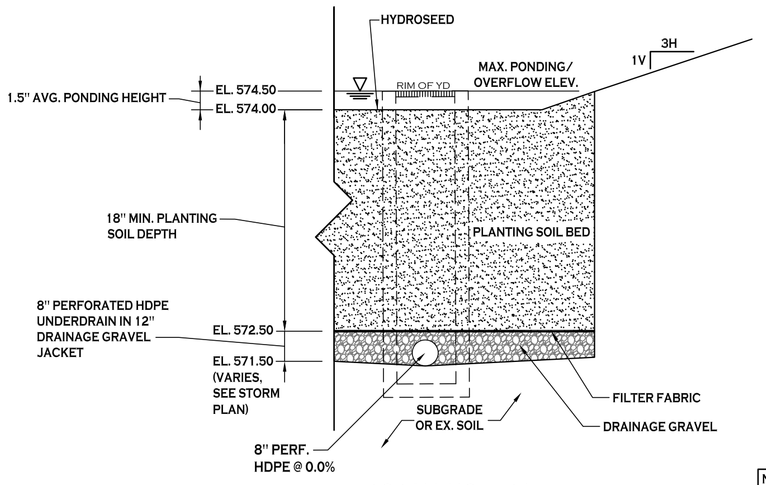
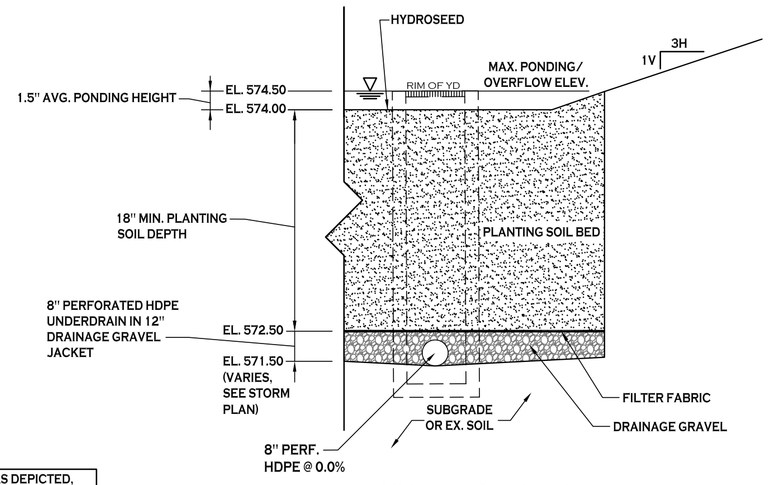
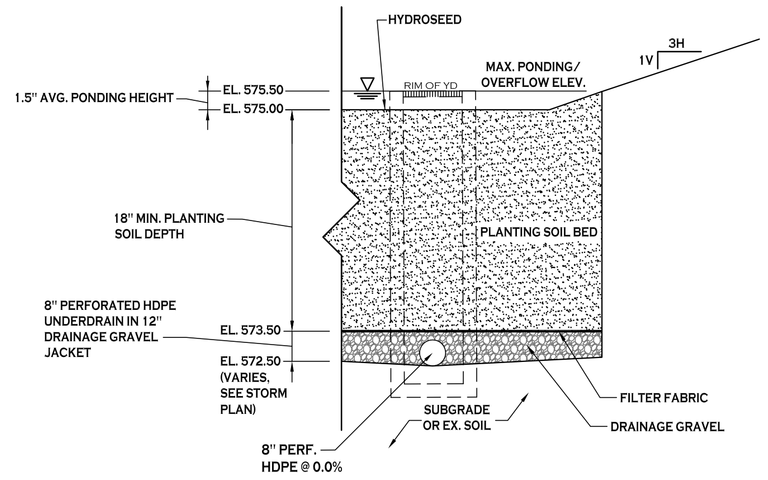


BIORETENTION AREA #1



BIORETENTION AREA #2

NOTE: AS DEPICTED, YARD DRAIN RIM ELEVATIONS ARE TO BE SET 6" ABOVE PROPOSED GRADE IN BIORETENTION AREAS.



BIORETENTION AREA #3

NOTES:
1. FILTER FABRIC TO BE NON-WOVEN CLASS 'C', MIRAFI 180-N OR APPROVED EQUIVALENT
2. MULCH TO BE SHREDDED HARDWOOD, AGED 12 MONTHS MIN.
3. DRAINAGE GRAVEL TO MEET AASHTO M-43. NO.67, SIZE 0.25" TO 0.75"
4. CONTRACTOR TO PROVIDE PLANTING SOIL SUBMITTAL SPECIFICATION FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.

NOTE: PLANTING SOIL SHALL BE LOAM/SAND MIX CONTAINING A MINIMUM OF 35 TO 60% SAND BY VOLUME AND LESS THAN 25% CLAY. SOIL SHOULD FALL WITHIN USCS TYPES SM OR ML WITH PERMEABILITY OF AT LEAST 0.5 FEET PER DAY. SOIL SHOULD BE FREE FROM STONES, STUMPS, ROOTS OR OTHER WOODY MATERIAL OVER 1" IN DIAMETER. PLACEMENT OF THE PLANTING SOIL SHOULD BE IN LIFTS OF 12" TO 18", LOOSELY COMPACTED.

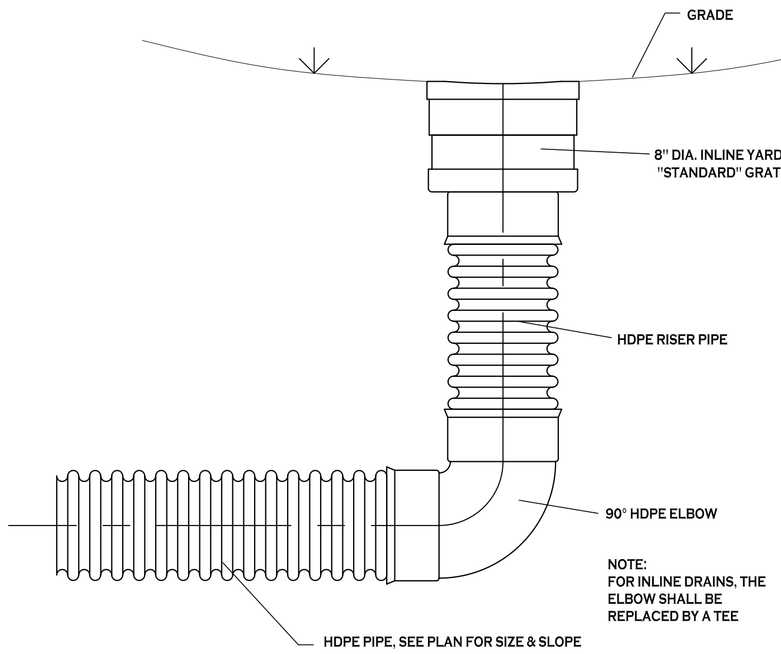
CHARACTERISTICS SHALL BE:
PH RANGE: 5.2 - 7.00
ORGANIC MATTER: 1.5 - 4.0%
MAGNESIUM: 35 LBS PER ACRE MIN.
PHOSPHORUS: 75 LBS PER ACRE MIN.
POTASSIUM: 85 LBS PER ACRE MIN.
SOLUBLE SALTS: 500 PPM
CLAY: 10 TO 25%
SILT: 30 TO 55%
SAND: 35 TO 60%

BIO-RETENTION AREA SEEDING SPEC (NORTHEAST WETLAND GRASS SEED MIX):

SEED MIXTURE	VARIETY	PERCENT BY NO. OF SEEDS
CREEPING BENTGRASS	AGROSTIS STOLONIFERA	63.0
ROUGH BLUEGRASS	POA TRIVIALIS	17.0
MEADOW FOXTAIL	ALOPECURUS ARUNDINACEUS	11.0
ANNUAL RYEGRASS	LOLIUM MULTIFLORUM	4.5
DEERTONGUE	PANICUM CLANDESTINUM	4.5

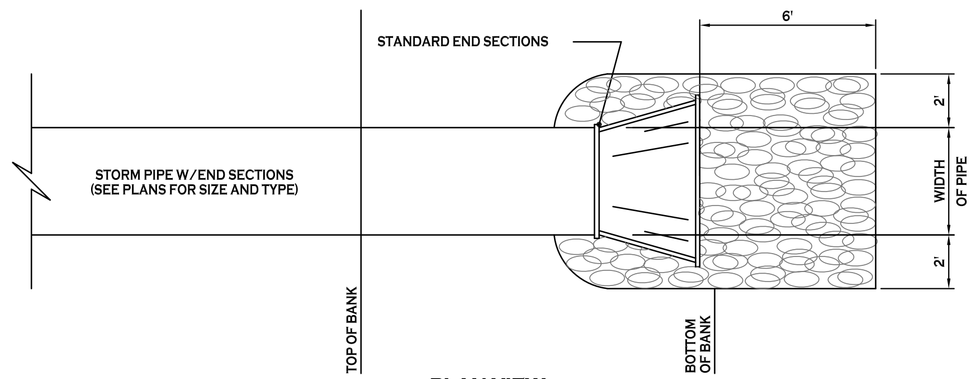
BIORETENTION AREA - TYPICAL SECTIONS

NOT TO SCALE

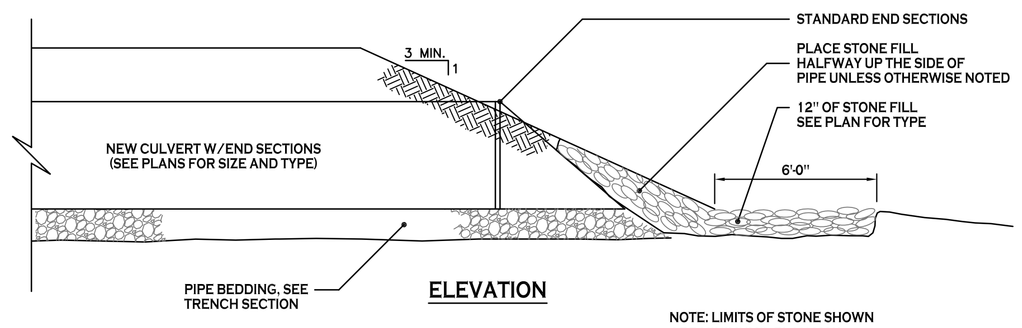


NOTE:
SEE TYPICAL TRENCH SECTION FOR BEDDING REQUIREMENTS

TYPICAL YARD DRAIN DETAIL



PLAN VIEW

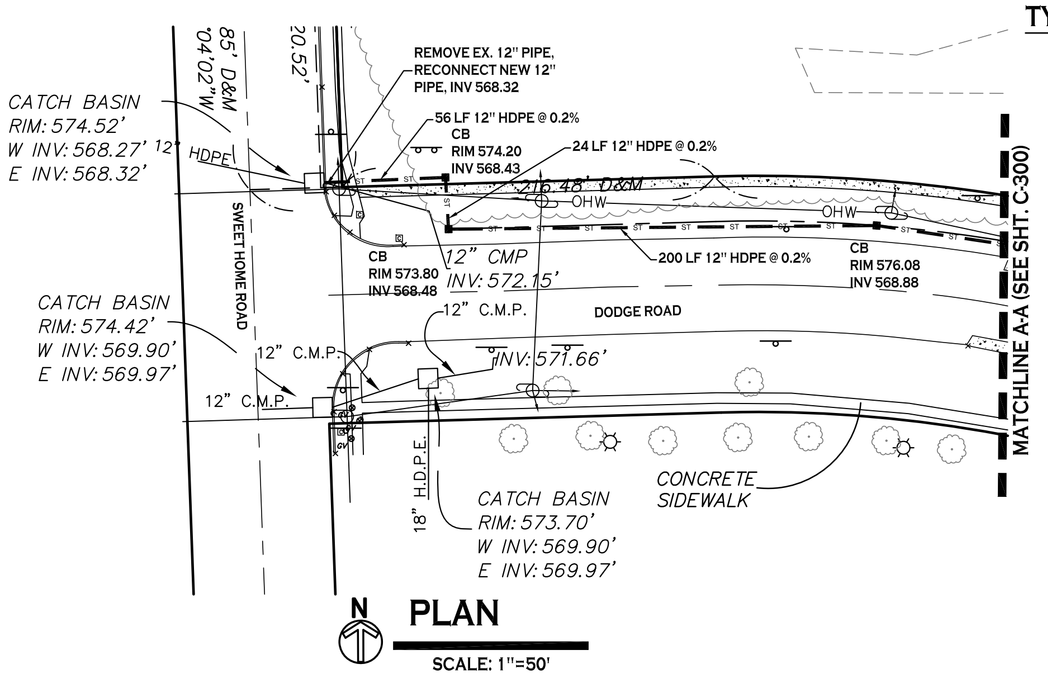


ELEVATION

NOTE: LIMITS OF STONE SHOWN ARE MINIMUMS, PLAN MAY INDICATE GREATER LIMITS

TYPICAL PIPE OUTLET W/ END SECTION & RIP RAP

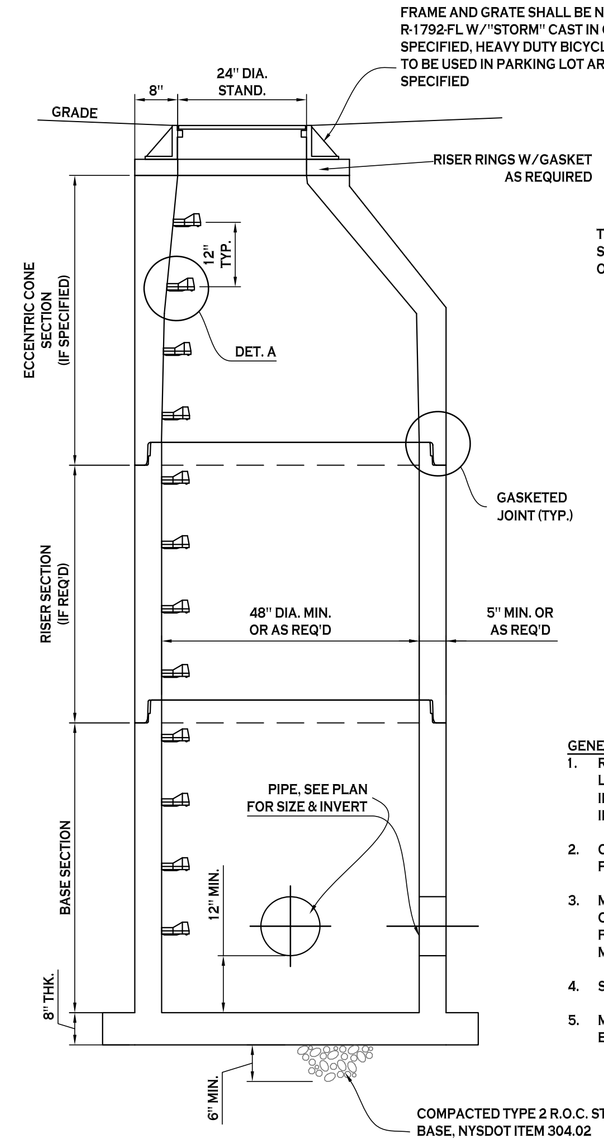
NOT TO SCALE



N

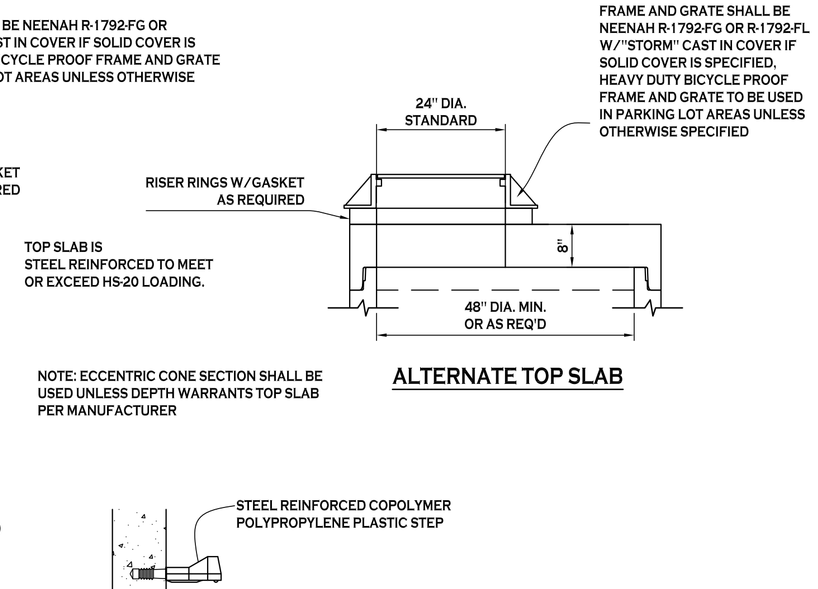
PLAN

SCALE: 1"=50'



TYPICAL STORM MANHOLE DETAIL

NOT TO SCALE

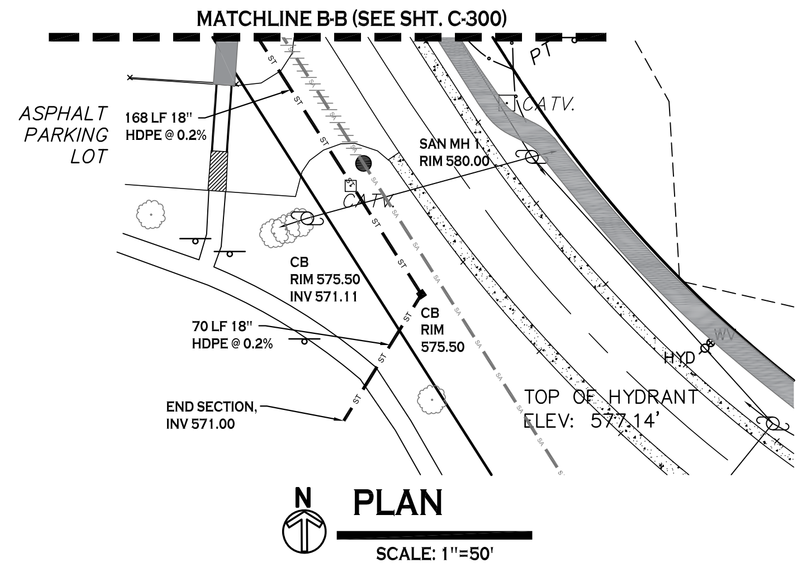


ALTERNATE TOP SLAB

NOTE: ECCENTRIC CONE SECTION SHALL BE USED UNLESS DEPTH WARRANTS TOP SLAB PER MANUFACTURER

DETAIL A

GENERAL NOTES:
1. REINFORCED STEEL TO CONFORM TO LATEST A.S.T.M. A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) IN BASE SLAB.
2. CONCRETE COMPRESSIVE STRENGTH - 4000 PSI MINIMUM.
3. MANHOLE DESIGN SPECIFICATIONS TO CONFORM TO LATEST A.S.T.M. C478 SPEC. FOR PRE-CAST REINFORCED CON-CRETE MANHOLE SECTIONS.
4. SINGLE POUR MONOLITHIC BASE SECTION.
5. MANHOLE TO BE COATED ON OUTSIDE WITH BITUMASTIC SEALER.



N

PLAN

SCALE: 1"=50'

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Wood
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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Storm Drainage Details

DRAWING NO.

C-301

Project no.: 21.011

Attachment: SP-2021-05_drawings_052021 (2305?) : SP-2021-05)

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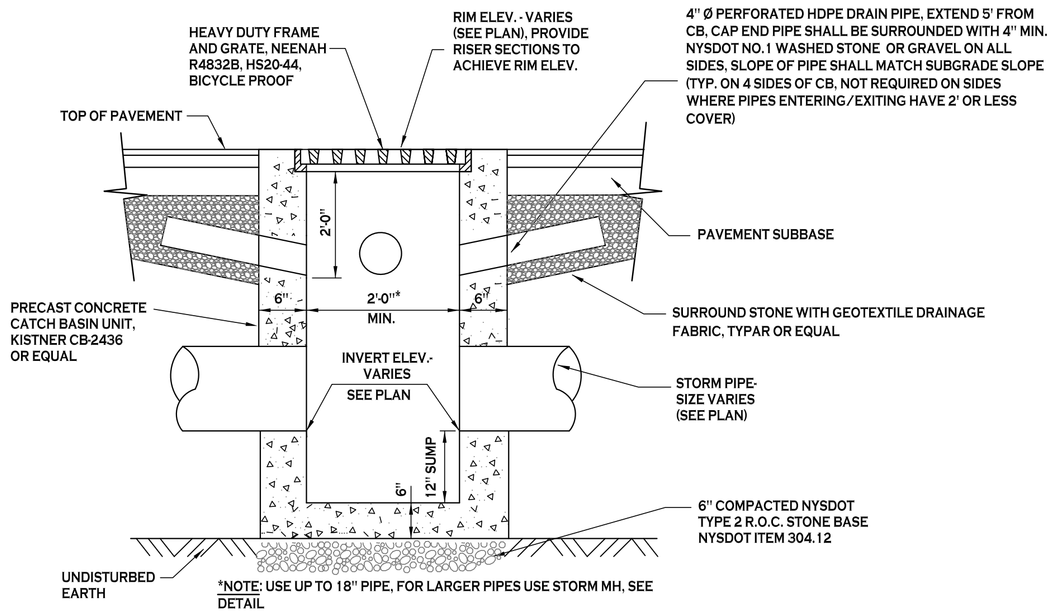
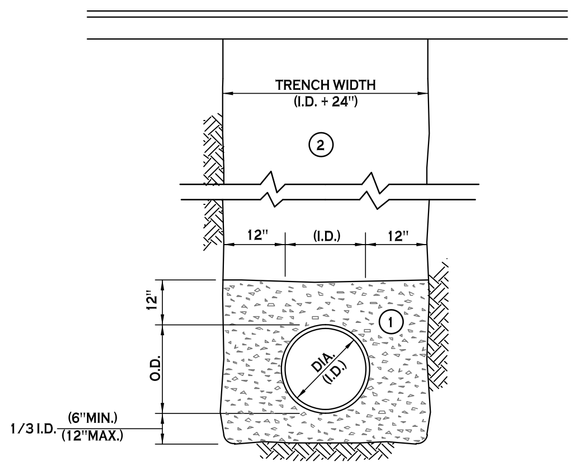


TYPICAL PRECAST CATCH BASIN

NOT TO SCALE



NOTES:

A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.

C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT 1985 EDITION)

(1) NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

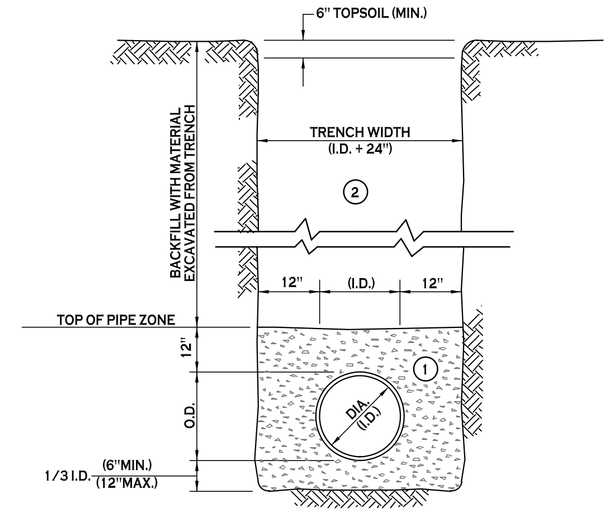
NO SLAG SHALL BE ALLOWED FOR MATERIAL (1)

(2) TYPE 2 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 304-2.02 TYPE 2. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN TWO INCHES AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL (2)

STORM SEWER TRENCH SECTION IN PAVED AREAS

NOT TO SCALE



NOTES:

A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.

C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT 1985 EDITION)

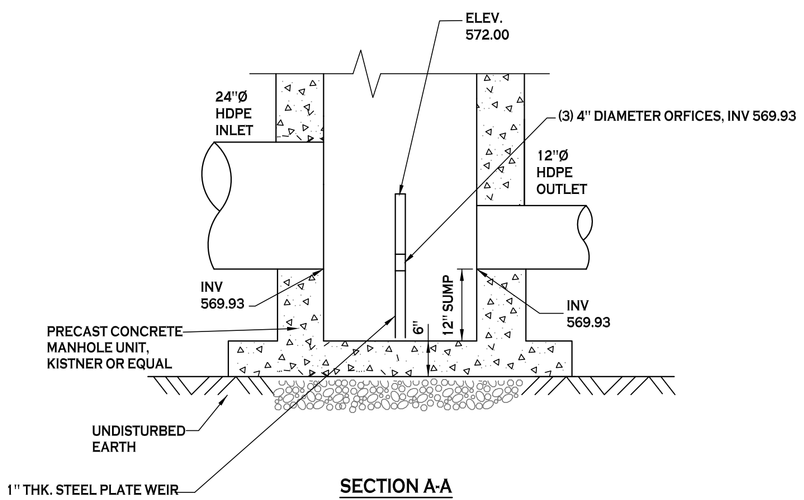
(1) NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL (1)

(2) BACKFILL MATERIAL SHALL BE NATIVE SOIL CONTAINING NO UNSUITABLE MATERIAL COMPACTED IN 6" LIFTS.

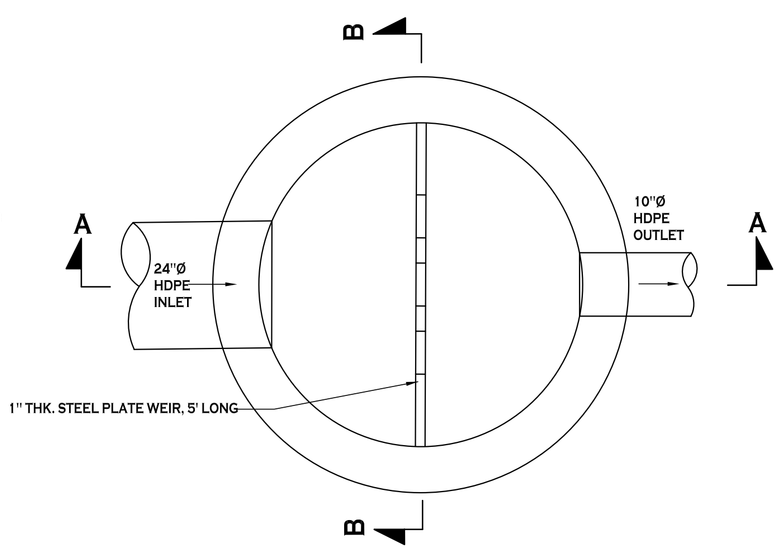
STORM SEWER TRENCH SECTION IN UNPAVED AREAS

NOT TO SCALE



SECTION A-A

NOTES:
1. FASTEN STEEL PLATE TO CB WALL WITH ANGLE CLIPS AND BOLTS
2. STEEL PLATE, ANGLE CLIPS, AND BOLTS TO BE HOT DIPPED GALVANIZED

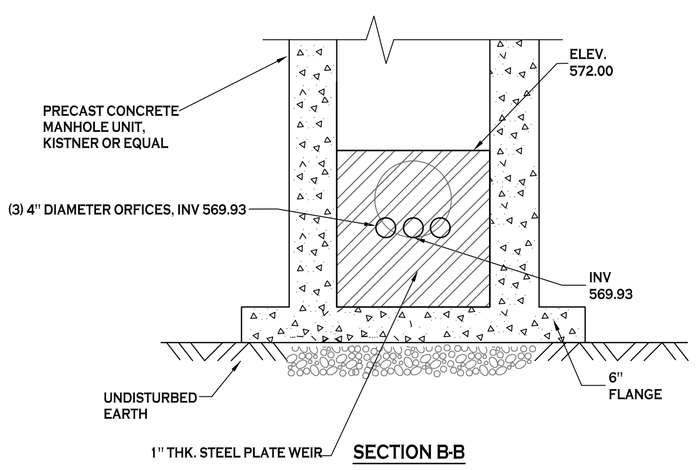


PLAN

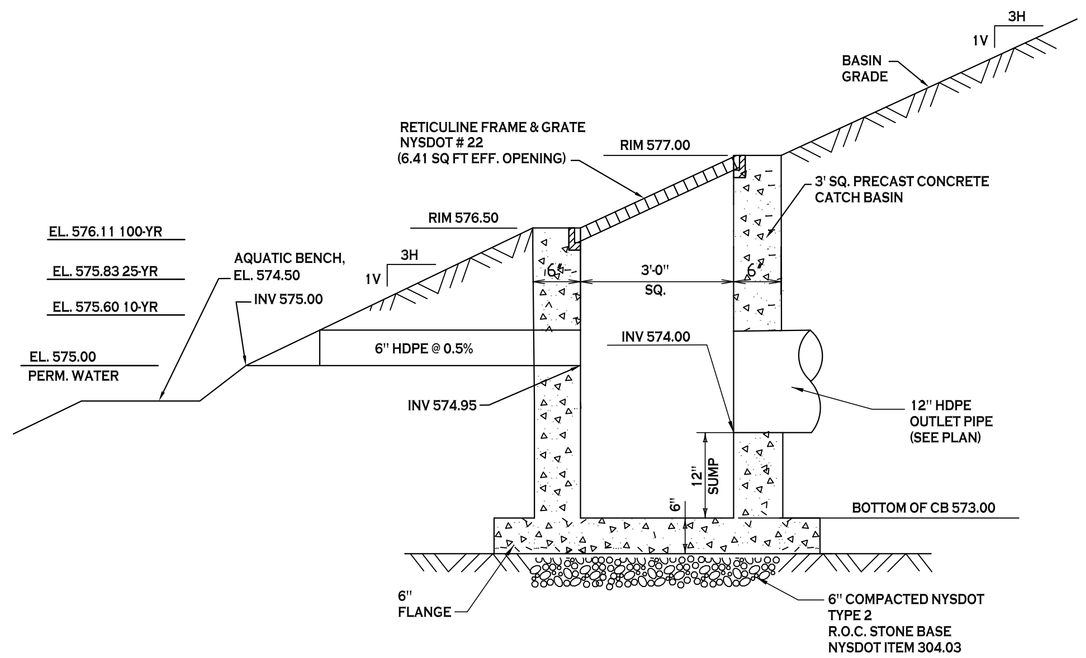
*NOTE: USE 5'-0" I.D. MANHOLE

OUTLET CONTROL STRUCTURE - CB 52

NOT TO SCALE



SECTION B-B



DETENTION BASIN OUTLET STRUCTURE - CB 53

N.T.S.

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Storm Drainage Details

DRAWING NO.

C-302

Project no.: 21.011

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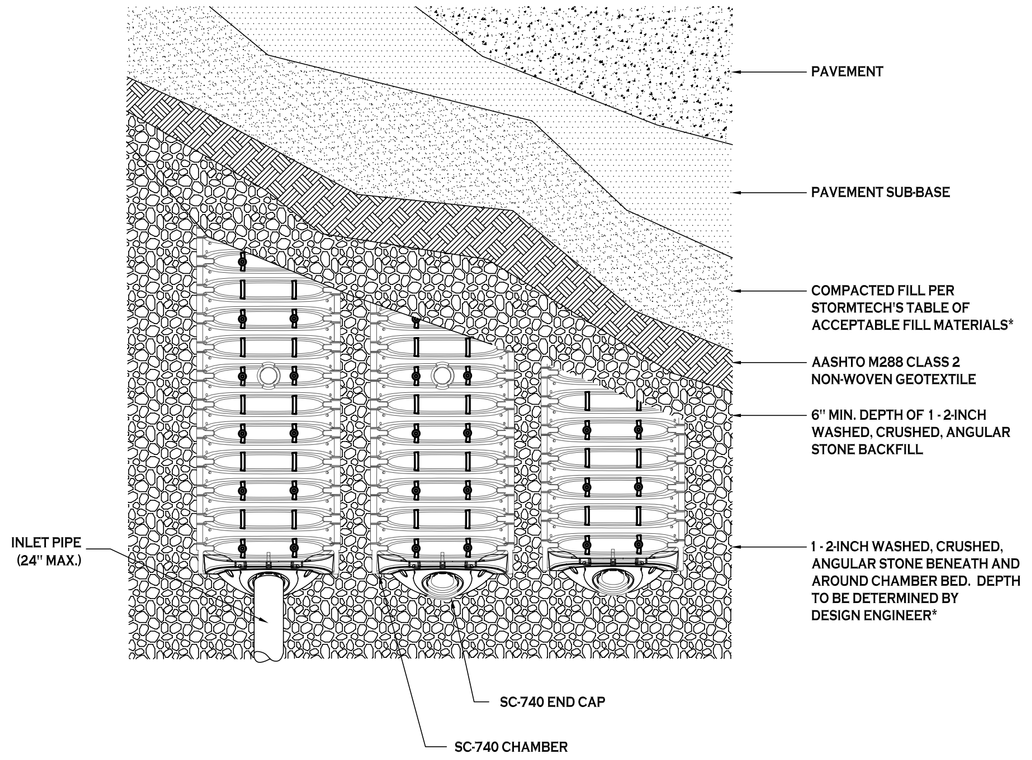


STORMTECH SC-740 CHAMBER SYSTEM
PLAN VIEW DETAIL

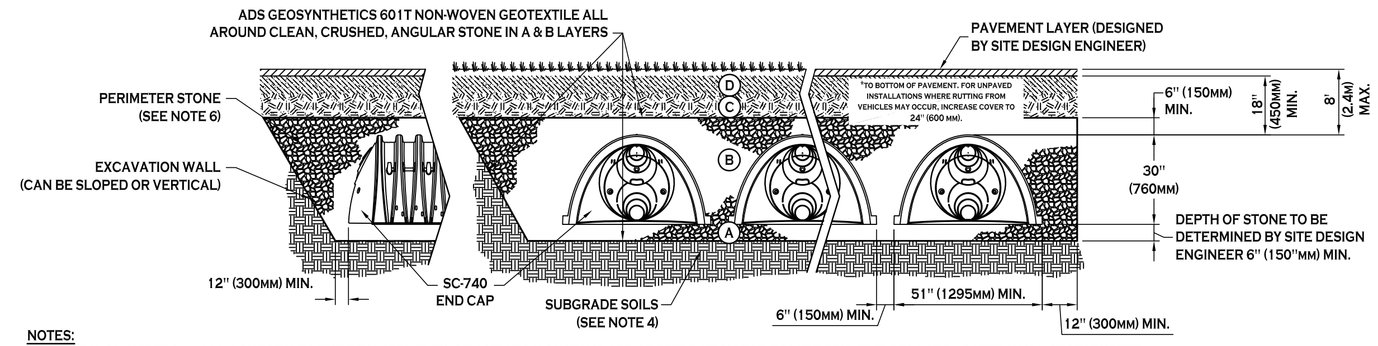
NOT TO SCALE

*SEE STORMTECH'S DESIGN MANUAL

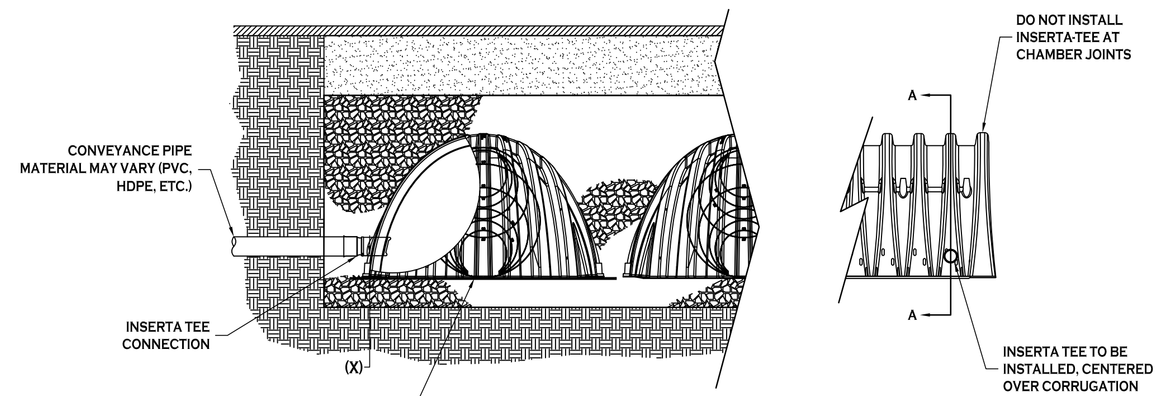
ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION/DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 MM) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LATER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 MM) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 MM) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 LBS (53 KN). DYNAMIC FORCE NOT TO EXCEED 20,000 LBS (89 KN).
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. [2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 MM) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



NOTES:
1. SC-740 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
6. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 MM)	4" (100 MM)
SC-740	10" (250 MM)	4" (100 MM)
DC-780	10" (250 MM)	4" (100 MM)
MC-3500	12" (300 MM)	6" (150 MM)
MC-4500	12" (300 MM)	8" (200 MM)
INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON		

NOTE:
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

INSERTA TEE DETAIL

NOT TO SCALE

INSPECTION AND MAINTENANCE

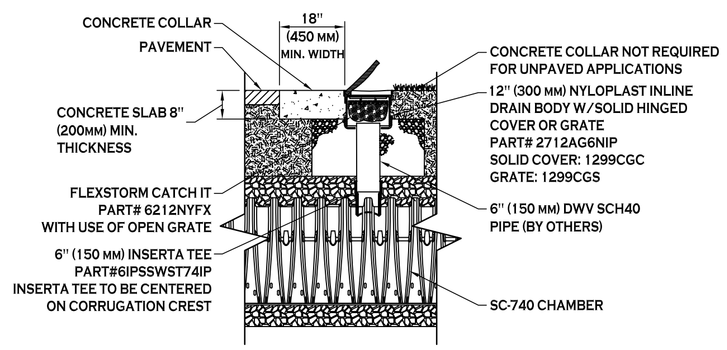
STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
- A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
- A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
- A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
- A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
- A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 MM) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
- B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
- B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
  - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
  - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
- B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 MM) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 M) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES:
1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



SC-740 6" INSPECTION PORT DETAIL

NOT TO SCALE

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/15/21
Drawn by: 2/24/21
Scale: As Noted

DRAWING NAME:

Storm Drainage Details

DRAWING NO.

C-303

Project no.: 21.011

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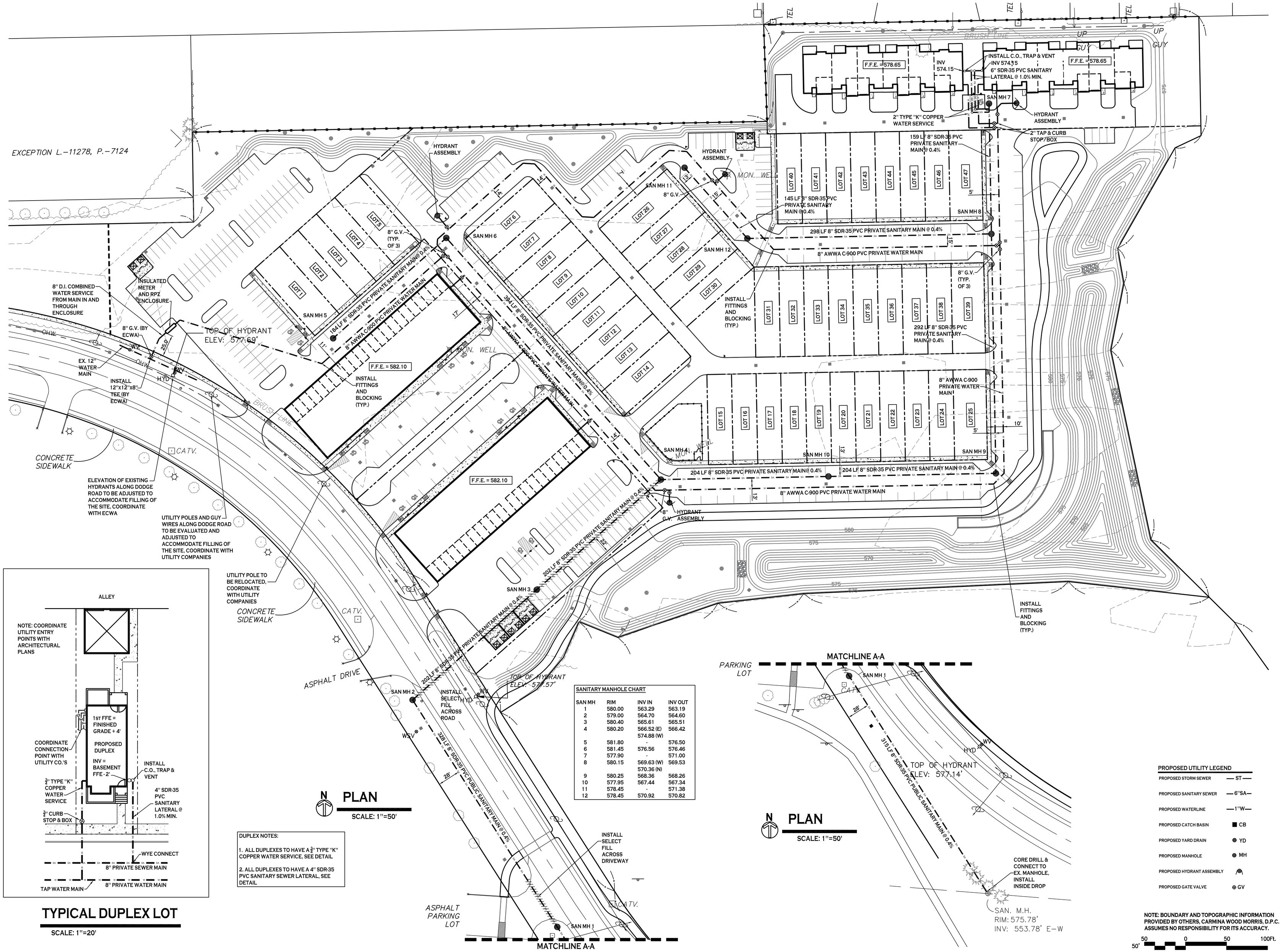
Attachment: SP-2021-05_drawings_052021 (2357 : SP-2021-05)



N PLAN
SCALE: 1"=50'

N PLAN
SCALE: 1"=50'

TYPICAL DUPLEX LOT

SCALE: 1"=20'

DUPLEX NOTES:

1. ALL DUPLEXES TO HAVE A ¾" TYPE "K" COPPER WATER SERVICE, SEE DETAIL
2. ALL DUPLEXES TO HAVE A 4" SDR-35 PVC SANITARY SEWER LATERAL, SEE DETAIL

SANITARY MANHOLE CHART

SAN MH	RIM	INV IN	INV OUT
1	580.00	563.29	563.19
2	579.00	564.70	564.60
3	580.40	565.61	565.51
4	580.20	566.52 (E)	566.42
		574.88 (W)	
5	581.80	-	576.50
6	581.45	576.56	576.46
7	577.90	-	571.00
8	580.15	569.63 (W)	569.53
		570.36 (N)	
9	580.25	568.36	568.26
10	577.95	567.44	567.34
11	578.45	-	571.38
12	578.45	570.92	570.82

PROPOSED UTILITY LEGEND

PROPOSED STORM SEWER	ST
PROPOSED SANITARY SEWER	6"SA
PROPOSED WATERLINE	1"W
PROPOSED CATCH BASIN	CB
PROPOSED YARD DRAIN	YD
PROPOSED MANHOLE	MH
PROPOSED HYDRANT ASSEMBLY	
PROPOSED GATE VALVE	GV

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

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487 Main Street Suite 500
Buffalo, New York 14203
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F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Utility Plan

DRAWING NO.

C-400

Project no.: 21.011

Attachment: SP-2021-05_drawings_052021 (2305?) : SP-2021-05)

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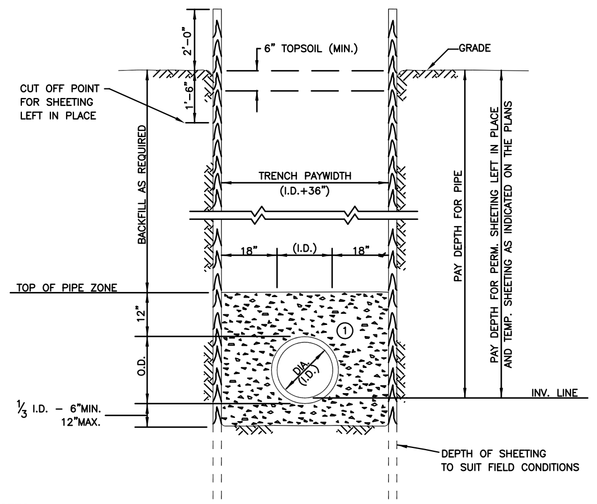
SHEETED TRENCH
(JANUARY 2012)



NOTES:

1. MAINTAIN 18" BETWEEN PIPE AND INSIDE FACE OF TEMPORARY SHEETING. IF SHEETING EXTENDS BELOW PIPE INVERT AS SHOWN, WHEN PVC PIPE MATERIAL IS USED, COMPACT MATERIAL ③ BEFORE PULLING THE SHEETING.
2. SHEETED TRENCH OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING EQUIPMENT.
3. SHEETING DRIVEN BELOW THE INVERT OF THE PIPE FOR BEDDING MATERIAL AND TOE SUPPORT WILL NOT BE CONSIDERED IN THE FORMULA FOR PAYMENT BUT SHOULD BE FIGURED BY THE CONTRACTOR IN DETERMINING HIS UNIT BID PRICE PER SQUARE FOOT OF SHEETING.
4. WHERE INDICATED ON THE PLANS OR AS ORDERED BY THE ENGINEER, TEMPORARY SHEETING WILL BE PAID FOR UNDER THE APPLICABLE BID ITEM. OTHER AREAS WHERE THE CONTRACTOR ELECTS TO USE TEMPORARY SHEETING NOT PREVIOUSLY AUTHORIZED BY THE ENGINEER SHALL BE AT HIS OPTION AND EXPENSE.

MATERIALS

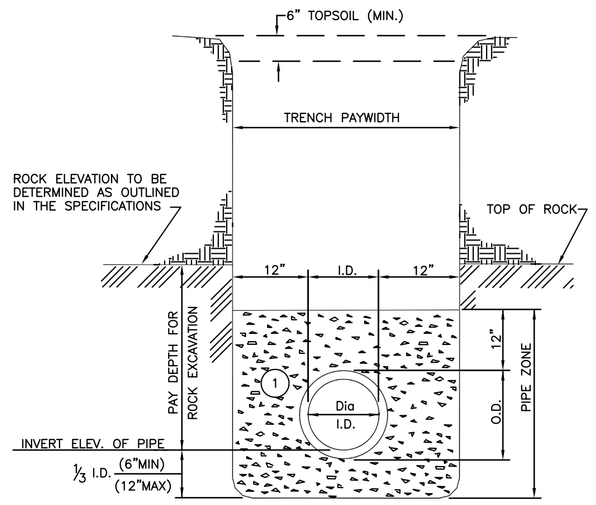
PIPE BEDDING MATERIAL (NYSDOT LATEST EDITION)

① NO.1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE CRUSHED STONE SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN 1" AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NOTE: SLAG SHALL NOT BE ALLOWED FOR MATERIALS ①

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1 12/01	REVISED TOPSOIL DIMENSION	STD.DETAIL 2
	Rev. 2 6/5/06	UPDATED MATERIALS TO NYSDOT LATEST EDITION	
	File: d-02	Date: 3/1/91	

ROCK TRENCH DETAIL
(JANUARY 2012)



NOTE:

A. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

B. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

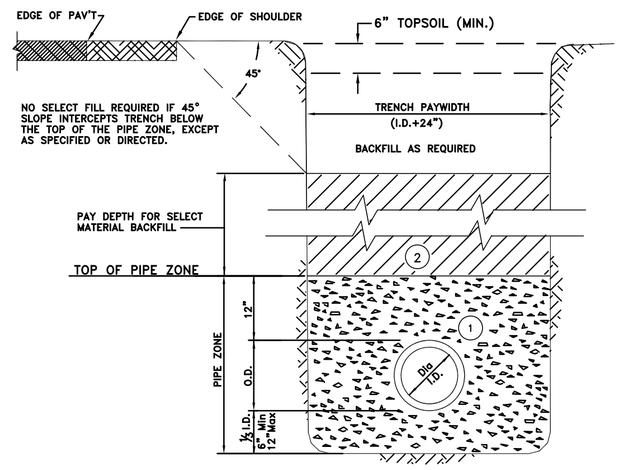
PIPE BEDDING MATERIAL (NYSDOT LATEST EDITION)

① NO.1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE CRUSHED STONE SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN 1" AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NOTE: SLAG SHALL NOT BE ALLOWED FOR MATERIALS ①

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1 1/6/94	ADDED 6" TOPSOIL (MIN.)	STD.DETAIL 3
	Rev. 2 2/7/94	ADDED NOTES A & B	
	File: d-03	Date: 3/1/91	

SELECT BACKFILL FOR TRENCH PARALLEL TO ROADWAYS
(JANUARY 2012)



NOTE:

A. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

B. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT LATEST EDITION)

① NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE CRUSHED STONE SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

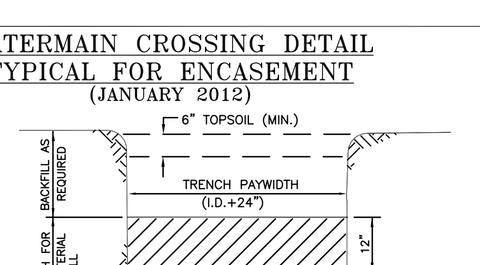
SELECT MATERIAL BACKFILL (NYSDOT LATEST EDITION)

② NO. 2 RUN OF CRUSHER STONE OR NO. 2 RUN OF CRUSHER GRAVEL WITH A GRADATION CONFORMING WITH NYSDOT SECTION 304-2.02 TYPE 4 AND NYSDOT SECTION 703-02. (COMPACTED IN 6" LIFTS TO 90% DENSITY)

NO SLAG SHALL BE ALLOWED FOR MATERIALS ① & ②

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 2 12/28/00	UPDATED MATERIALS TO NYSDOT LATEST EDITION	STD.DETAIL 4
	Rev. 3 12/01	Updated NYS DOT Editions	
	File: d-04	Date: 3/1/91	

WATERMAIN CROSSING DETAIL TYPICAL FOR ENCASEMENT
(JANUARY 2012)



NOTES:

A. IN ALL CASES WHERE THERE IS LESS THAN 18" CLEARANCE BETWEEN EXISTING WATER MAIN AND PROPOSED SEWER (INCLUDING HOUSE LATERALS) THE NEW WORK SHALL BE ENCASED IN CONCRETE AS SHOWN. WHEN A CASING PIPE IS SPECIFIED, NO CONCRETE ENCASEMENT IS REQUIRED.

B. THE CONCRETE ENCASEMENT SHALL EXTEND 3'-0" EACH SIDE OF THE WATER MAIN.

C. SEWERS SHALL BE LAID AT LEAST 10' (3.0 m) HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATERMAIN THE DISTANCE SHALL BE MEASURED EDGE TO EDGE. IN CASES WHERE IT IS NOT PRACTICAL TO MAINTAIN A 10' SEPARATION, THE APPROPRIATE REVIEWING AGENCY MAY ALLOW DEVIATION ON A CASE BY CASE BASIS, IF SUPPORTED BY DATA FROM THE DESIGN ENGINEER. SUCH DEVIATION MAY ALLOW INSTALLATION OF THE SEWER CLOSER TO A WATERMAIN, PROVIDED THE WATERMAIN IS IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF LOCATED ON ONE SIDE OF THE SEWER AND THE ELEVATION OF THE BOTTOM OF THE WATERMAIN IS AT LEAST 18" (46 cm) ABOVE THE TOP OF SEWER.

D. SEWERS CROSSING WATERMAINS SHALL BE LAID TO PROVIDE MINIMUM VERTICAL DISTANCE OF 18" (46 CM) BETWEEN THE OUTSIDE OF THE WATERMAIN AND THE OUTSIDE OF THE SEWER. THIS SHALL BE THE CASE WHEN THE WATERMAIN IS ABOVE OR BELOW THE SEWER. THE CROSSING SHALL BE ARRANGED SO THE JOINTS OF THE SEWER PIPE WILL BE EQUIDISTANT FROM AND AS FAR AWAY FROM THE WATERMAIN JOINTS AS POSSIBLE. WHERE THE WATERMAIN CROSSES UNDER A SEWER, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER TO PREVENT DAMAGE TO THE WATERMAIN.

E. WHEN IT IS IMPOSSIBLE TO OBTAIN THE PROPER HORIZONTAL AND VERTICAL SEPARATION AS STIPULATED ABOVE, THE SEWER SHALL BE EITHER ENCASED IN CONCRETE OR CONSTRUCTED OF PIPE MATERIAL EQUAL TO THE WATERMAIN AND PRESSURE TESTED AT 150 PSI TO ASSURE WATER TIGHTNESS.

F. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIALS PLACEMENT AND MAXIMUM PAY LIMITS.

G. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

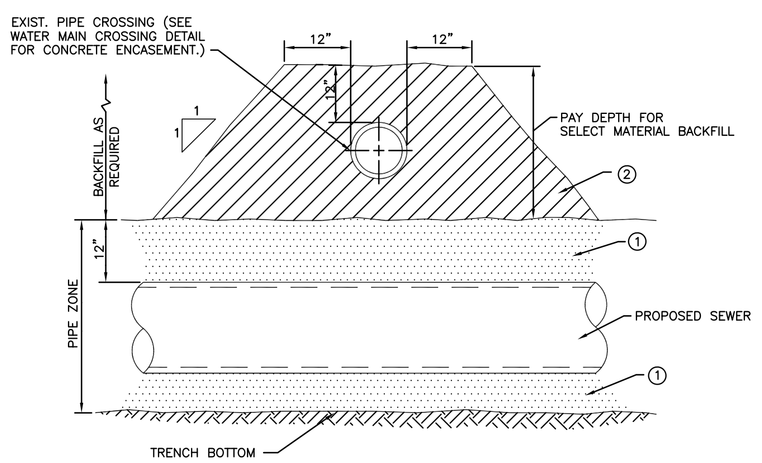
SELECT MATERIAL BACKFILL (NYSDOT LATEST EDITION)

② NO.2 RUN OF CRUSHER STONE OR NO.2 RUN OF CRUSHER GRAVEL WITH A GRADATION CONFORMING WITH NYSDOT SECTION 304-2.02 TYPE 4 AND NYSDOT SECTION 703-02. (COMPACTED IN 6"LIFTS TO 90% DENSITY)

NOTE: SLAG SHALL NOT BE ALLOWED FOR MATERIALS ②

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Revisions		STD.DETAIL 5
	2/7/94	ADDED 6" TOPSOIL(MIN.) & NOTE F&G	
	01/03/01	REVISED NOTE A	
	12/01	Revised Note "A"	
	File: d-05	Date: 3/1/91	

PIPE CROSSING SUPPORT DETAIL
(JANUARY 2012)



MATERIALS

PIPE BEDDING MATERIAL (NYSDOT LATEST EDITION)

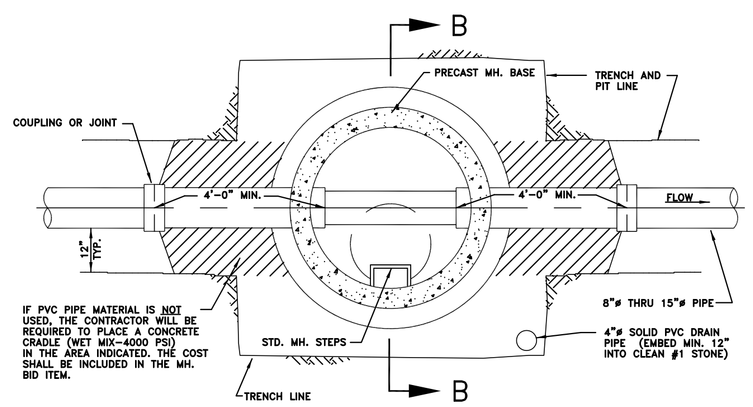
① NO.1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE CRUSHED STONE SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN 1" AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

SELECT MATERIAL BACKFILL (NYSDOT LATEST EDITION)

② NO.2 RUN OF CRUSHER STONE OR NO.2 RUN OF CRUSHER GRAVEL WITH A GRADATION CONFORMING WITH NYSDOT SECTION 304-2.02 TYPE 4 AND NYSDOT SECTION 703-02. (COMPACTED IN 6"LIFTS TO 90% DENSITY) NOTE: SLAG SHALL NOT BE ALLOWED FOR MATERIALS ① AND ②

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1 12/01	UPDATED MATERIALS TO NYSDOT LATEST EDITION	STD.DETAIL 9
	Rev. 2		
	File: d-09	Date: 3/1/91	

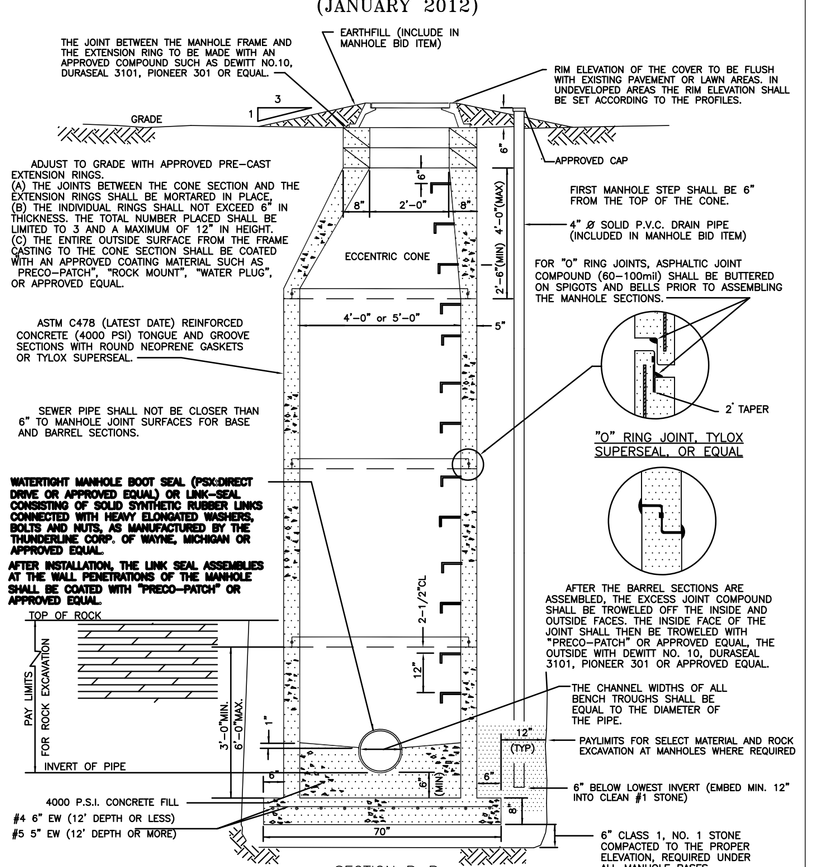
MONOLITHIC PRECAST BASE MANHOLES 4'-5' DIA. BASE FOR 15"ø SEWERS OR LESS
(JANUARY 2012)



PLAN

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1 12/01	REVISED 4" PVC TO SOLID PIPE IN #1 STONE BED	STD.DETAIL 10
	Rev. 2		
	File: d-10	Date: 3/1/91	

MONOLITHIC PRECAST BASE MANHOLES 4'-5' DIA. BASE FOR 15"ø SEWERS OR LESS (SECTION B-B)
(JANUARY 2012)



SECTION B-B

Revisions

07/15/98	ADD ROCK EXCAVATION PAYLIMITS
11/23/98	ADD 4"x4"x9" MARKER AND NOTES
12/01	REVISED 4" P.V.C. TO SOLID PIPE
03/04/03	ADDED WATER TIGHT BOOT SEAL NOTE
06/22/05	ADDED TYLOX SUPERSEAL NOTES
02/27/07	REMOVED WOOD POST AND NOTES
	CHANGED THE NUMBER OF EXTENSION RINGS FROM 2 TO 3

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT			STD.DETAIL 11
	File: d-11	Date: 3/1/91	

STANDARD FRAME AND COVER (PRIVATE SEWER)
(JANUARY 2012)

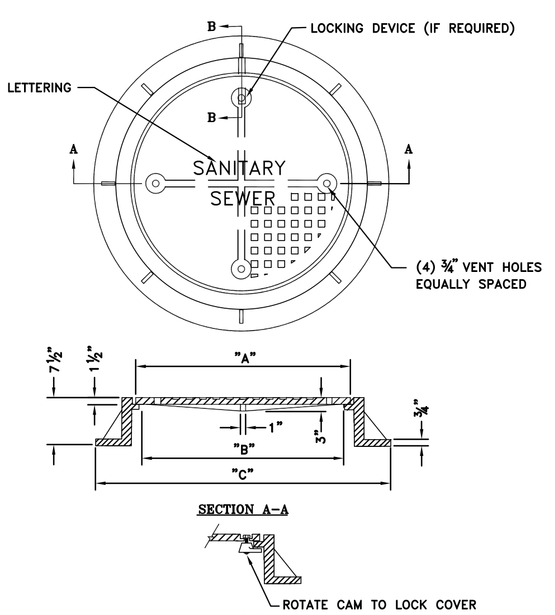


TABLE				
PIPE SIZE	DIMENSION "A"	DIMENSION "B"	DIMENSION "C"	WEIGHT OF COVER
8" THRU 18"	24"	22 1/4"	35"(MAX.)	150 LBS. ± 5%
OVER 18"	32"	30"	46"(MAX.)	200 LBS. ± 5%

STANDARD FRAME AND COVER NOTES

1. MATERIAL ASTM A48 CLASS 30B CAST IRON.
2. UNIT MUST WITHSTAND H-20 WHEEL LOADING.
3. ALL DIMENSIONS ARE TO BE CONSIDERED MINIMUM WITH THE EXCEPTION OF THE COVER, WHICH MUST CONFORM EXACTLY TO MAINTAIN INTERCHANGEABILITY WITHIN THE COUNTY.
4. COVER WEIGHT 210 LBS. (MAX)
5. COATING NOT REQUIRED.
6. FRAMES AND COVERS SHALL HAVE MACHINED BEARING SURFACES.
7. LOCKING DEVICE MUST BE SITUATED TO ALLOW EASY REMOVAL OF COVER.
8. NO COMMERCIAL "BRAND NAME" LETTERING WILL BE ALLOWED ON THE EXPOSED SURFACE OF THE COVER.

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1		STD.DETAIL 13P
	Rev. 2		
	Rev. 3		
	Rev. 4		
	File: d-13P	Date: 2/05	

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Sanitary Sewer Details

DRAWING NO.

C-401

Project no.: 21.011

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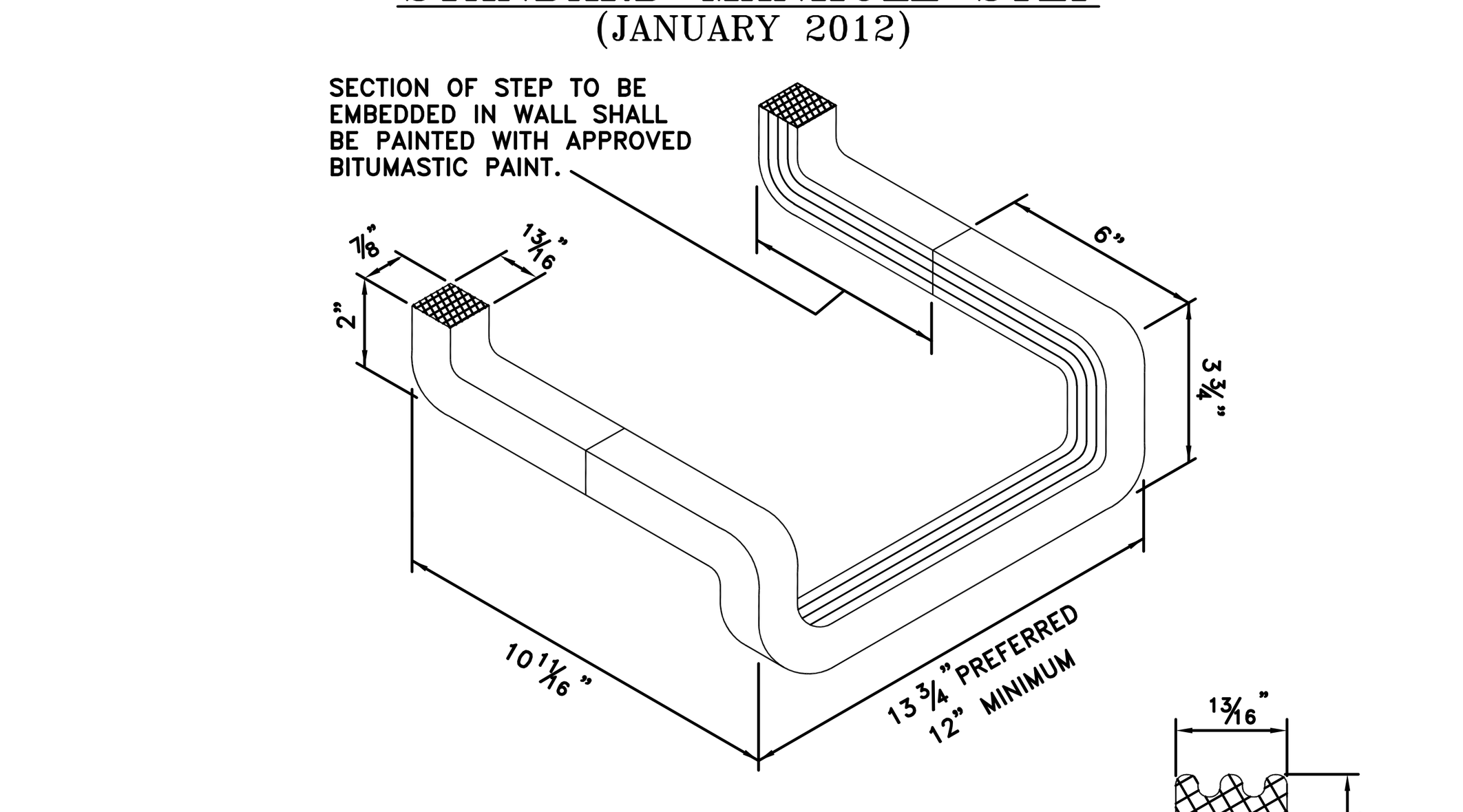
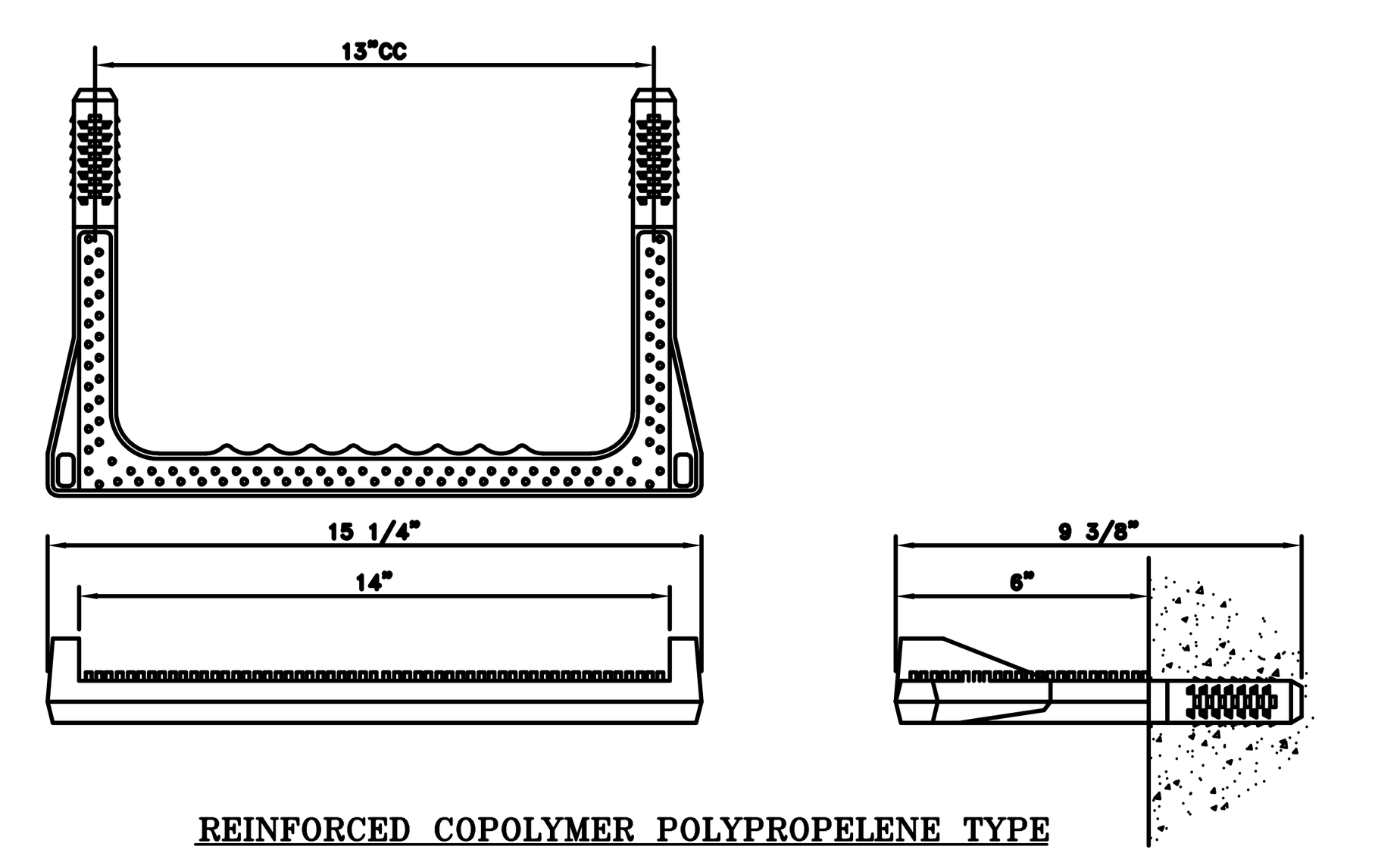
Attachment: SP-2021-05_drawings_052021 (23057 : Sp-2021-05)

STANDARD MANHOLE STEP
(JANUARY 2012)



(DROP FRONT TYPE)

NOTES:
1. MANHOLE STEPS SHALL BE OF FORGED ALUMINUM ALLOY.
2. AN ACCEPTABLE ALTERNATE IS THE STEEL REINFORCED COPOLYMER POLYPROPYLENE MANHOLE STEP.
3. THE STEPS SHALL BE EMBEDDED IN THE WALLS OF THE CONCRETE MANHOLE BARREL WHILE THE MANHOLE IS BEING CAST OR SECURELY GROUTED IN PLACE AFTER CASTING.



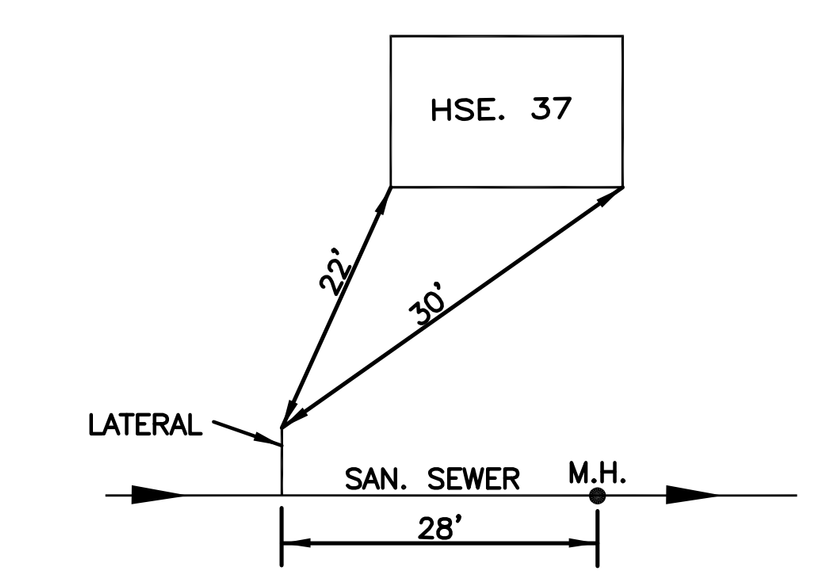
REINFORCED COPOLYMER POLYPROPELENE TYPE

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1 12/9/96 — ADDED REINFORCED COLPOLYMER TYPE STEP Rev. 2		STD.DETAIL 17
	File: d-17	Date: 3/1/91	

CONSTRUCTION SPECIFICATIONS FOR HOUSE LATERALS
(JANUARY 2012)

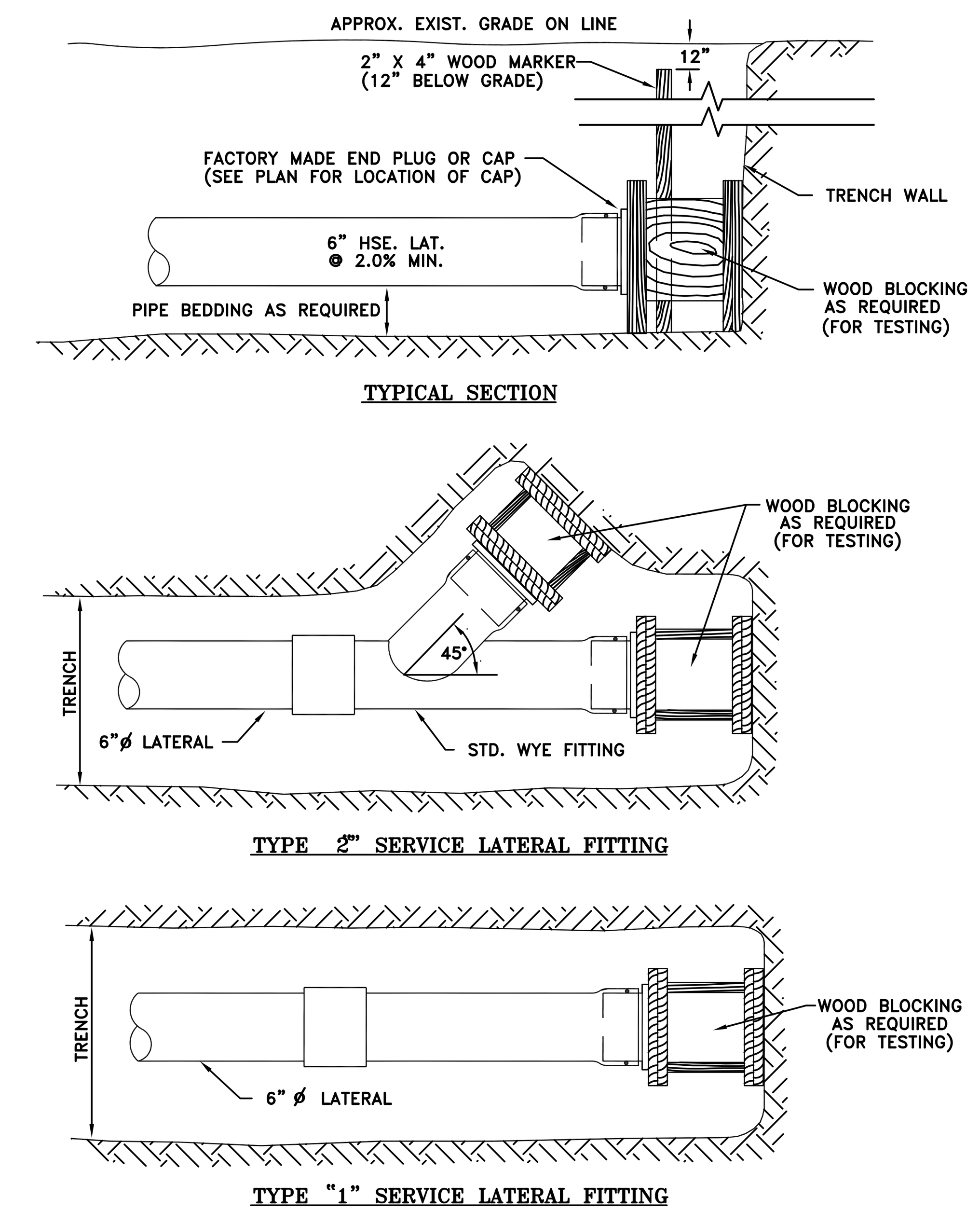
1. MATERIAL
   a. THICK WALL PVC – D – 3034, SDR-35
   b. EXTRA HEAVY CAST IRON
   c. DUCTILE IRON
2. FAR SIDE CROSSING
   a. LATERALS INSTALLED ACROSS TOWN ROADS MAY BE BY THE OPEN CUT METHOD WHERE ALLOWED BY THE HIGHWAY PERMIT.
   b. LATERALS INSTALLED ACROSS STATE OR COUNTY ROADS SHALL BE BY THE BORING AND JACKING METHOD (UNLESS OTHERWISE NOTED ON THE PLANS) USING A STEEL CASING PIPE. THE CARRIER PIPE SHALL CONFORM WITH THE MATERIAL SPECIFIED OR APPROVED BY THE ENGINEER.
   c. ALL PAVEMENT CROSSINGS (OPEN CUT METHOD) WITH LESS THAN 4'-0" COVER SHALL BE ENCASED WITH 2000 PSI CONCRETE.
   d. ALL FAR SIDE CROSSINGS SHALL BE INSTALLED UP TO ONE (1) FOOT OF THE R.O.W. LINE.
   e. THE CONTRACTOR SHALL SUPPLY A 2" X 4" WOOD MARKER EXTENDING FROM THE END OF THE CROSSING TO ONE FOOT BELOW GRADE. ALSO, RECORDS SHALL BE KEPT AS TO THE DEPTH OF THE HOUSE SERVICE AND A MINIMUM OF THREE (3) TIES SHALL BE ESTABLISHED FOR THE LOCATION OF THE SERVICE.
   f. LATERALS SHALL BE LAID AT A 2.0% MINIMUM GRADE. IN CASES OF A SHALLOW SEWER, A 1.0% SLOPE MAY BE APPROVED BY THE ENGINEER.
3. NEAR SIDE SERVICES
   a. THE CONTRACTOR SHALL SUPPLY WYE BRANCHES OF THE SAME MATERIAL AND CLASS AS THE SEWER MAIN.
   b. THE LOCATION OF THE WYE BRANCHES WILL BE DETERMINED BY THE CONTRACTOR AND ENGINEER IN THE FIELD AFTER CONFERRING WITH THE HOMEOWNER.
   c. THE LOCATION OF THE BRANCHES SHALL BE MEASURED FROM THE LAST DOWNSTREAM MANHOLE AND AT LEAST THREE (3) TIES FROM AN EXISTING STRUCTURE, NORMALLY THE HOME IT IS TO SERVICE.
   d. NEAR SIDE SERVICES SHALL BE INSTALLED UP TO ONE (1) FOOT OF THE R.O.W. LINE.
   e. THE CONTRACTOR SHALL PROVIDE A 2" X 4" WOOD MARKER EXTENDED FROM THE WYE BRANCH TO ONE (1) FOOT BELOW GRADE.
   f. ON ALL SERVICES WHERE THE MAIN IS GREATER THAN 8' IN DEPTH, THE CONTRACTOR SHALL PROVIDE A RISER PIPE TO AN ELEVATION 8' BELOW EXISTING GRADE.

NOTES:
1. RECORDS OF THE DEPTH OF COVER SHALL BE KEPT FOR ALL HOUSE LATERALS BUILT ACROSS PAVEMENTS. SUCH RECORDS SHALL IDENTIFY THE LATERALS BY THE USE OF HOUSE NUMBERS AND SHALL SHOW LOCATION OF THE END OF THE HOUSE LATERAL WITH A MINIMUM OF THREE(3) TIES AS SHOWN IN EXAMPLE BELOW.
2. THE CONTRACTOR SHALL OBTAIN ALL HIGHWAY/R.O.W. PERMITS PRIOR TO START OF WORK.
3. VENTS AND CLEAN OUTS MUST BE INSTALLED IN LAWN AREAS, NOT IN SIDEWALK OR DRIVEWAY AREAS, PREFERABLY BETWEEN THE CURB OR EDGE OF PAVEMENT AND THE SIDEWALK.



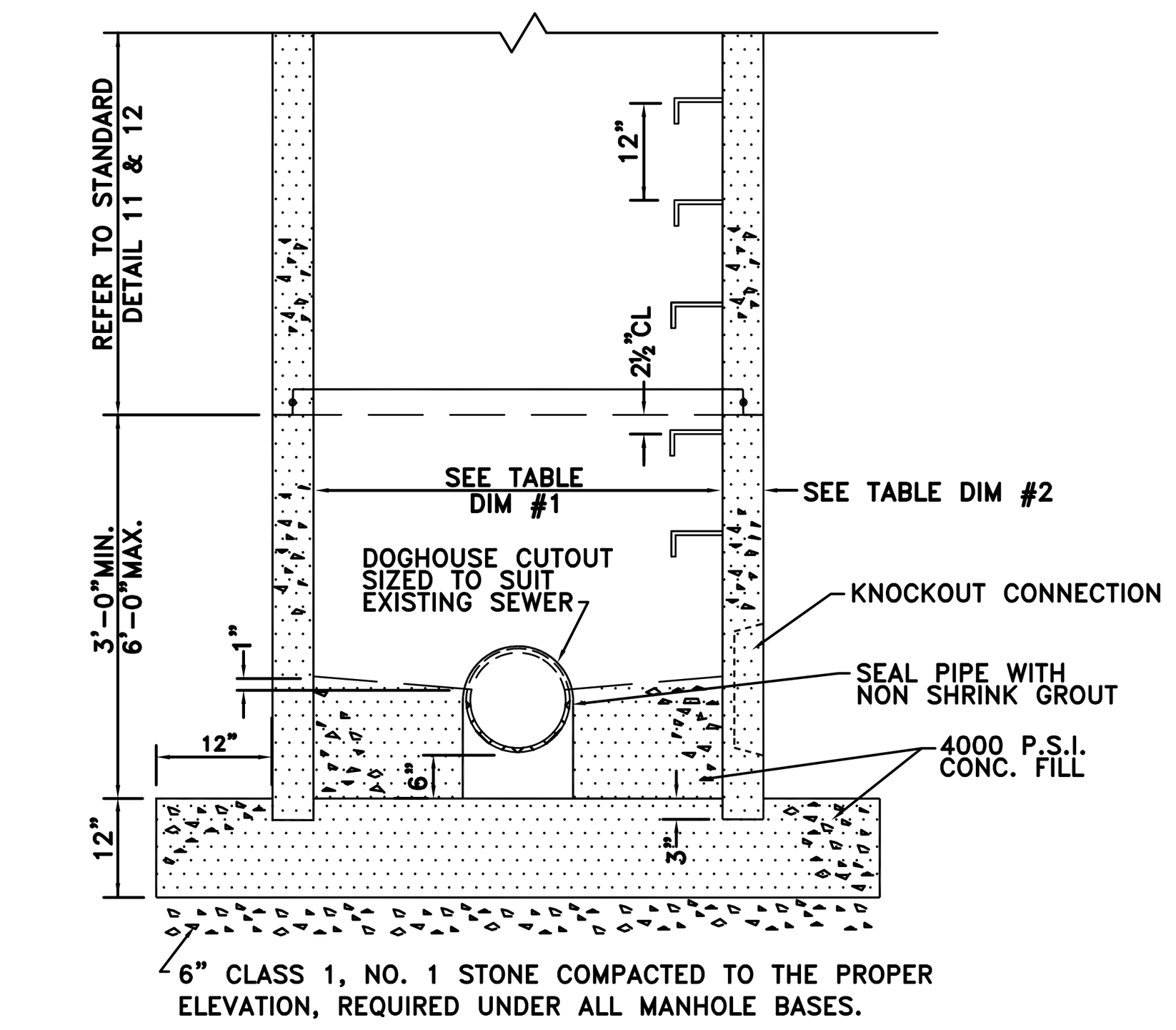
ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1 5/17/93 — NOTE 2c: DEPTH 4'-0" Rev. 2 12/9/96 — CHANGED NOTE 1 TO THREE(3) TIES Rev. 3 7/14/99 — ADDED TITLE Rev. 4 12/01 — ADDED NOTE 3 REGARDING LOCATION OF VENTS AND CLEAN OUTS		STD.DETAIL 23
	File: d-23	Date: 3/1/91	

CAP & BLOCKING METHODS FOR AIR TESTING
(JANUARY 2012)



ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1 Rev. 2		STD.DETAIL 26
	File: d-26	Date: 3/1/91	

PRECAST DOGHOUSE BASE MANHOLE
(JANUARY 2012)



6" CLASS 1, NO. 1 STONE COMPACTED TO THE PROPER ELEVATION, REQUIRED UNDER ALL MANHOLE BASES.

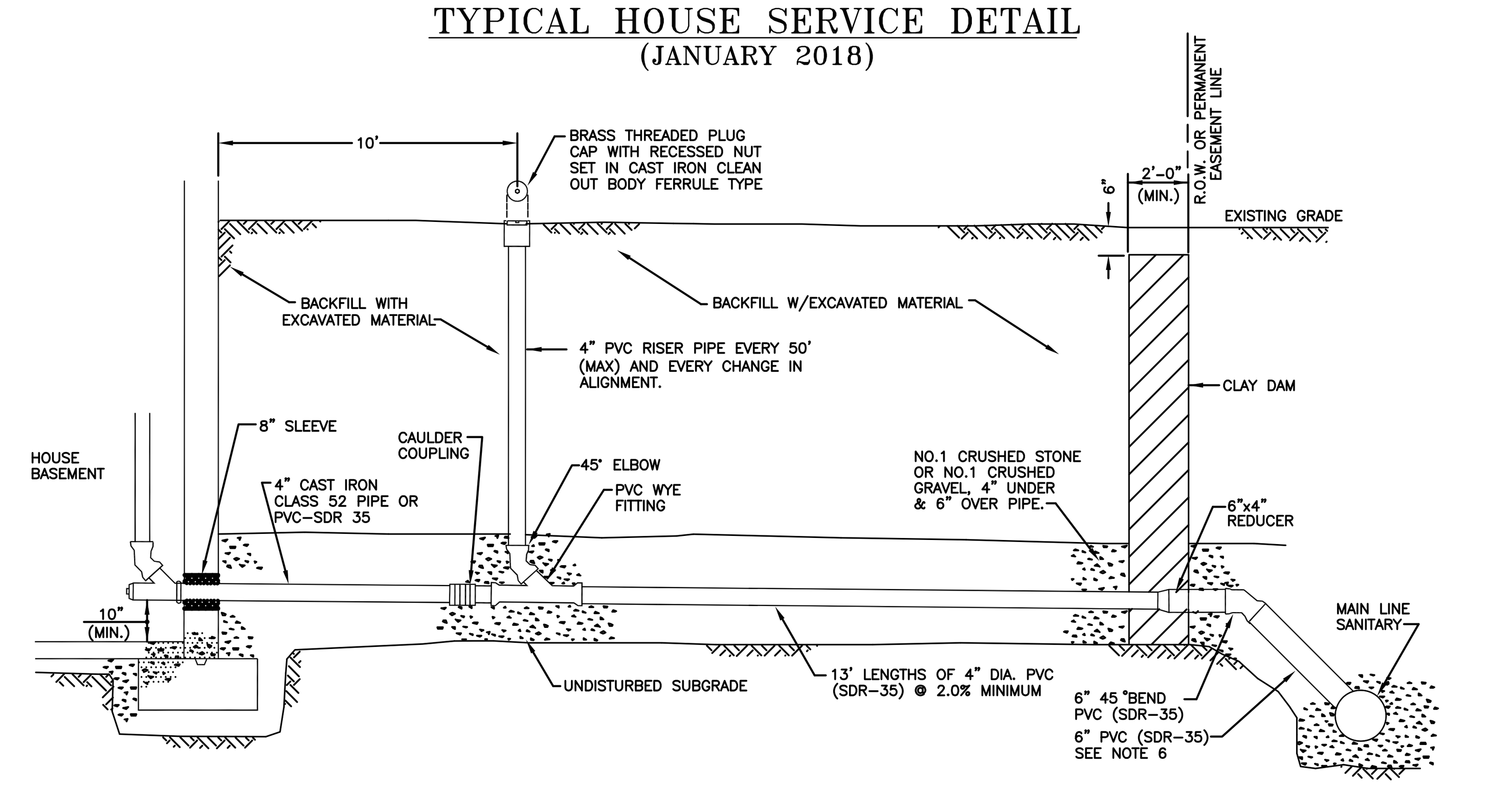
PIPE SIZE	DIMENSION #1	DIMENSION #2
8"-16"	4'-0"*	5"
18"	5'-0"	6"
21"-27"	5'-0"	6"
30"-36"	6'-0"	7"

* FOR DROP CONNECTIONS INSIDE DIAMETER SHALL BE 5'-0"

NOTE:
AREA AROUND DOGHOUSE CUTOUT & PIPE TO BE MADE WATERTIGHT UTILIZING A HYDRAULIC CEMENT MIXTURE (WATERPLUG,PRECO-PATCH, OR APPROVED EQUAL).

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1 11/08/91 — ADDED PIPE SIZE CHART & NOTE Rev. 2 2/7/94 — REVISED STONE UNDER MANHOLE BASE TO CLASS 1, NO. 1		STD.DETAIL 35
	File: d-35	Date:10/16/91	

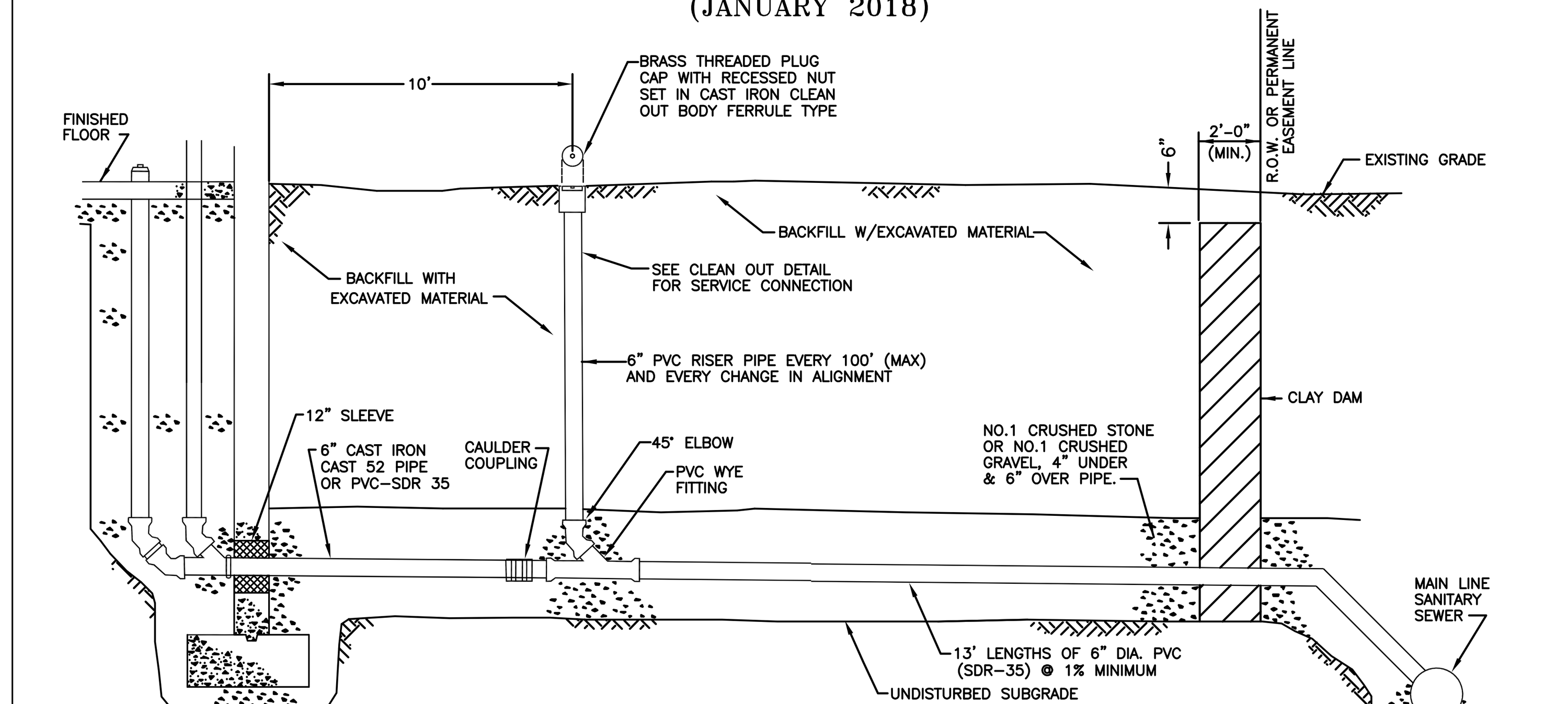
TYPICAL HOUSE SERVICE DETAIL
(JANUARY 2018)



NOTES:
1. NO INSPECTION WILL BE PROVIDED WITHOUT A PERMIT. INSPECTIONS REQUIRE 48 HR. ADVANCE NOTICE FOR SCHEDULING.
2. ALL WORK MUST BE INSPECTED BY A COUNTY INSPECTOR
3. PVC PIPE MATERIAL SHALL BE MANUFACTURED IN ACCORDANCE WITH THE REQUIREMENTS OF THE LATEST ASTM SPECIFICATION D-3033/D-3034. CAST IRON PIPE MATERIAL SHALL BE EXTRA HEAVY CAST IRON MEETING THE REQUIREMENTS OF ASTM A74-42.
4. A MANUAL VALVE SHALL BE INSTALLED ON BASEMENT LAUNDRY DRAIN LINE.
5. CLEAN OUTS MUST BE INSTALLED IN LAWN AREAS, NOT IN SIDEWALKS OR DRIVEWAY AREAS, PREFERABLY BETWEEN THE CURB OR EDGE OF PAVEMENT, AND THE SIDEWALK.
6. SELECT BACKFILL REQUIRED UNDER PAVED AREAS.
7. CONCRETE ENCASEMENT IF COVER DEPTH IS LESS THAN 4'-0" UNDER PAVED AREAS
8. FOR NEW CONSTRUCTION, AN 8x6 WYE WITH 6" PVC TO 6" 45° BEND, THEN 6" x 4" REDUCER IS USED.
9. A 6" CLEAN OUT IS REQUIRED AT R.O.W. WHENEVER THE MAIN SEWER IS UNDER THE PAVEMENT LIMITS OR AT FAR SIDE OF PAVEMENT.
10. ANY EXCAVATION TO BE LEFT OPEN OVERNIGHT SHALL BE COMPLETELY ENCLOSED IN FENCING, OR WHERE NECESSARY, COVERED WITH STEEL PLATES.
11. DOWN SPOUTS, SUMP PUMPS, AND FOOTING DRAINS ARE NOT PERMITTED TO BE CONNECTED TO THE HOUSE LATERAL.
12. FOR NEW STRUCTURES, NO CONNECTION SHALL BE MADE UNTIL BUILDING ROOF IS ERECTED AND BASEMENT FLOOR IS POURED.

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 6/05 — ADDED NOTE 20 & CLASS 52 TYPE CI PIPE Rev. 1/07 — REMOVED OLD NOTES 1,3,8,10,12,13 AND 20 REVISED TO 6"PVC-DET6, 48 HR ADV NOTICE Rev. 11/08 — ADDED PVC TRAP AND SLEEVE Rev. 01/12 — REVISED 4" CAST IRON TRAP Rev. 01/18 — REMOVED TRAP AND RISER VENT		STD. DETAIL 21
	File: d-21	Date: 3/1/91	

TYPICAL COMMERCIAL SERVICE WITHOUT BASEMENT DETAIL
(JANUARY 2018)

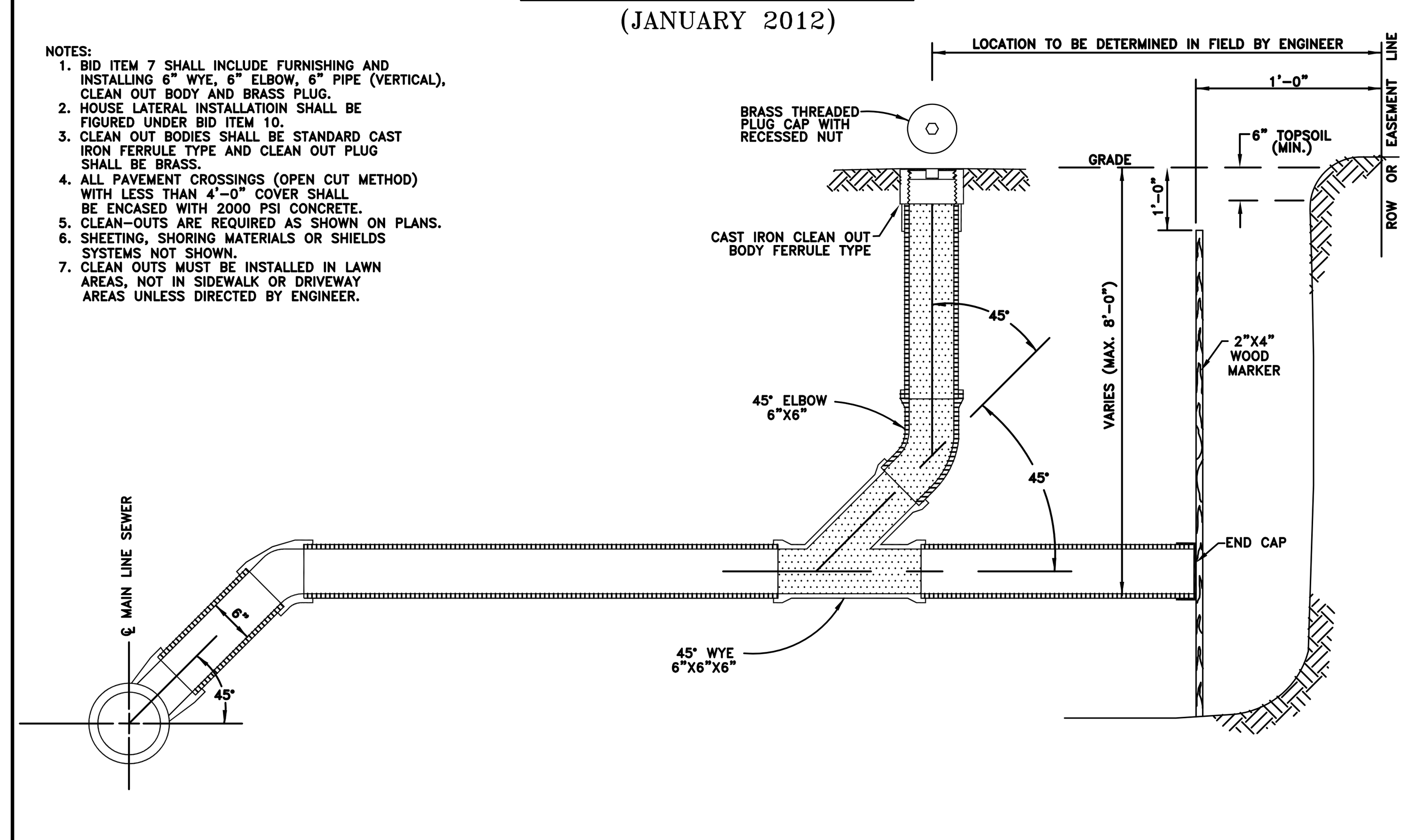


NOTES:
1. NO INSPECTION WILL BE PROVIDED WITHOUT A PERMIT. INSPECTIONS REQUIRE 24 HR. ADVANCE NOTICE FOR SCHEDULING.
2. ALL WORK MUST BE INSPECTED BY A COUNTY INSPECTOR
3. PVC PIPE MATERIAL SHALL BE MANUFACTURED IN ACCORDANCE WITH THE REQUIREMENTS OF THE LATEST ASTM SPECIFICATION D-3033/D-3034. CAST IRON PIPE MATERIAL SHALL BE EXTRA HEAVY CAST IRON MEETING THE REQUIREMENTS OF ASTM A74-42.
4. CLEANOUTS MUST BE INSTALLED IN LAWN AREAS, NOT IN SIDEWALK OR DRIVEWAY AREAS, PREFERABLY BETWEEN THE CURB OR EDGE OF PAVEMENT AND THE SIDEWALK.
5. SELECT BACKFILL REQUIRED UNDER PAVED AREAS.
6. CONCRETE ENCASEMENT IF COVER DEPTH IS LESS THAN 4'-0" UNDER PAVED AREAS
7. MIN. DEPTH OF COVER 3'-0"
8. CLEAN OUT MEASUREMENTS SHALL START FROM CENTERLINE OF MAIN SEWER FOR NEARSIDE LATERALS AND FROM THE 6" CLEAN OUT FOR FAR SIDE CONNECTIONS. A CLEAN OUT MAY BE REQUIRED FOR ANY ABRUPT CHANGES IN LATERAL DIRECTION FLOW.
9. A 6" CLEAN OUT IS REQUIRED AT R.O.W. WHENEVER THE MAIN SEWER IS UNDER THE PAVEMENT LIMITS OR AT FAR SIDE OF OF PAVEMENT.
10. ANY SEWER LAID THROUGH OR OVER A SEPTIC TANK MUST BE CAST IRON (SEPTIC TANK MUST BE FILLED WITH BANK RUN GRAVEL).
11. ANY EXCAVATION TO BE LEFT OPEN OVERNIGHT SHALL BE COMPLETELY ENCLOSED IN FENCING, OR WHERE NECESSARY, COVERED WITH STEEL PLATES.
12. DOWN SPOUTS, SUMP PUMPS, AND FOOTING DRAINS ARE NOT PERMITTED TO BE CONNECTED TO THE LATERAL.
13. FOR NEW STRUCTURES, NO CONNECTION SHALL BE MADE UNTIL BUILDING ROOF IS ERECTED AND BASEMENT FLOOR IS POURED.

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 6/05 — ADDED NOTE 18 & CLASS 52 TYPE CI PIPE Rev. 1/07 — REMOVED OLD NOTES 2 AND 18 ADDED 1% MIN. TO SERVICE PIPE DETAIL Rev. 11/08 — ADDED SLEEVE AND PVC-SDR 35 Rev. 1/12 — REVISED 6" CAST IRON TRAP NOTE Rev. 1/18 — REMOVED TRAP AND RISER VENT		STD. DETAIL 22
	File: d-22	Date: 3/1/91	

CLEAN-OUT DETAIL FOR SERVICE CONNECTION
(JANUARY 2012)

NOTES:
1. BID ITEM 7 SHALL INCLUDE FURNISHING AND INSTALLING 6" WYE, 6" ELBOW, 6" PIPE (VERTICAL), CLEAN OUT BODY AND BRASS PLUG.
2. HOUSE LATERAL INSTALLATION SHALL BE FIGURED UNDER BID ITEM 10.
3. CLEAN OUT BODIES SHALL BE STANDARD CAST IRON FERRULE TYPE AND CLEAN OUT PLUG SHALL BE BRASS.
4. ALL PAVEMENT CROSSINGS (OPEN CUT METHOD) WITH LESS THAN 4'-0" COVER SHALL BE ENCASED WITH 2000 PSI CONCRETE.
5. CLEAN-OUTS ARE REQUIRED AS SHOWN ON PLANS.
6. SHEETING, SHORING MATERIALS OR SHIELDS SYSTEMS NOT SHOWN.
7. CLEAN OUTS MUST BE INSTALLED IN LAWN AREAS, NOT IN SIDEWALK OR DRIVEWAY AREAS UNLESS DIRECTED BY ENGINEER.



ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1 5/93 4'-0" COVER, C.I. CAP "RECESSED NUT" Rev. 2 2/94 CHANGED DIM LINE FOR MAX. DEPTH Rev. 3 12/01 ADDED NOTE 7 Rev. 4 5/02 CHANGED C.I. CAP TO BRASS Rev. 5 6/05 1' MIN. FROM EDGE OF WALK NOTE Rev. 6 1/12 CHANGED C.I. TO BRASS NOTES 1 & 3		STD. DETAIL 28
	File: d-28	Date: 3/1/91	

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Sanitary Sewer Details

DRAWING NO.
C-402

Project no.: 21.011

Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

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GENERAL NOTES FOR
SANITARY SEWER CONSTRUCTION
WITHIN ERIE COUNTY SEWER DISTRICTS

1. The Erie County Division of Sewerage Management (DSM), who operates and maintains the existing sewer lines and appurtenances within Erie County Sewer Districts (ECSD), is to be notified at least 48 hours in advance of the start of construction.

2. Construction shall be in accordance with the Rules and Regulations for Erie County Sewer Districts.

3. All permits required by the Federal, State, County, City and/or Town governments to perform work must be obtained prior to the start of work, and paid for by the Contractor.

4. If easement and/or Out of District Agreements are required, they must be complete and ready to be filed before the project will be approved for construction.

5. The contractor shall comply in all respects to the Industrial Code Part (Rule No.) 53 relating to construction, excavation, and demolition operations at or near underground facilities, as issued by the State of New York Department of Labor, Board of Standard and Appeals.

6. The construction of the sanitary sewer facilities shall be under the supervision of a person or firm qualified to practice professional engineering in New York State under the Education Law of the State, whenever engineering services are required by such law for such purposes.

7. Where such sanitary sewer facilities are under the supervision of a professional engineer, he/she shall certify to the DSM and to the applicant that the constructed facilities have been under his/her supervision and that the work has been fully completed in accordance with the approved engineering reports, plans, specifications, and approvals.

8. The Contractor is solely responsible for all site safety. The Contractor's equipment and methods of operation shall be in full compliance with OSHA Standards and satisfy all Federal, State and Local Health and Safety Regulations.

9. The Contractor is advised a trench shield and/or shoring designed in accordance with OSHA Standards shall be used in all open trench excavations.

10. Any contractor and/or plumber performing work in a confined space (i.e. manholes, wetwells, and chambers) owned by an Erie County Sewer District, must certify to the County that they have their own Confined Space Entry Program that meets or exceeds OSHA's regulations. Certification must be notarized by a notary public.

11. The contractor shall expose existing utilities ahead of the pipe laying operation, so if minor adjustments must be made in the pipe elevation and/or alignment due to interference from these utilities, said changes can be made in advance of the work.

12. The contractor shall retain the services of a qualified tree expert to remove, where necessary, branches which interfere with the construction operation, or to repair trees having suffered damage by construction activities. The cost involved is to be included in the various items of the contract.

13. The proposed 8 through 12 inch diameter sanitary sewer pipe shall be polyvinyl chloride (PVC) sewer pipe conforming to the latest revisions of American Society for Testing and Materials (ASTM) designation D-3034, SDR-35, installed in accordance with the ASTM designation D-2321-83a or the latest revision thereof, or approved equal. Larger diameter pipes will be reviewed on a case by case basis.

14. Sewers shall be laid with straight alignment between manholes and shall be checked by using a laser beam or lamping.

15. Should a fluid condition be encountered at the trench bottom, the contractor is to undercut the trench and provide suitable fill material (stone & fabric) to stabilize the trench bottom.

16. Sanitary sewer bedding material shall be No. 1 crushed stone with a gradation conforming to the *DSM Specifications for Subdivisions and Sanitary Sewer Extensions.*

17. Backfill shall be of a suitable material removed from the excavation except where other material is specified. Debris, frozen material, large clods or stones, organic matter, or other unstable materials shall not be used for backfill within two (2') feet of the top of the pipe.

18. All pipes crossing under paved areas are to be backfilled to sub-grade with compacted select material (No. 2 crushed stone) to five (5') feet outside the pavement edges or as required by the highway permit. If any proposed sewer runs under paved areas and has less than four (4) feet of cover, then concrete encasement is required as shown on the DSM Typical Concrete Encasement Detail.

19. Sewers parallel to watermains - *Ten State Standards, Latest Edition, Chapter 30, Section 38.31, and Page 30-11:* Sewers shall be laid at least ten (10') feet (three (3) meters) horizontally from any existing or proposed water main. The distance shall be measured edge to edge. In cases where it is not practical to maintain a ten (10') foot separation, the appropriate reviewing agency may allow deviation on a case-by-case basis, if supported by data from the design engineer. Such deviation may allow installation of the sewer closer to a water main, provided that the water main is in a separate trench or on an undisturbed earth shelf located on one side of the sewer and at an elevation so the bottom of the water main is at least 18-inches (460 mm) above the top of the sewer.

If it is impossible to obtain proper horizontal and vertical separation as described above, both the water main and sewer must be constructed of slip-on or mechanical joint pipe complying with public water supply design standards of the regulatory agency and be pressure tested to 150 pounds per square inch (psi) (1034 kPa) to assure water tightness prior to backfilling.

20. Sewers crossing watermains - *Ten State Standards, Latest Edition, Chapter 30, Section 38.32, Page 30-11 to 30-12:* Sewers crossing water mains shall be laid to provide a minimum vertical distance of 18-inches (460 mm) between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to maintain line and grade.

21. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, one of the following methods must be specified:

    a. The sewer shall be designed and constructed equal to water pipe, and shall be pressure tested at 150 psi (1034 kPa) to assure water tightness prior to backfilling.
    b. Either the water main or the sewer line may be encased in a watertight carrier pipe which extends ten (10') feet (three (3) meters) on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be of materials approved by the regulatory agency for use in water main construction.
    c. The sewer shall be encased in concrete per the DSM Watermain Crossing Detail Typical For Encasement

22. The manhole covers are to bear the inscription "ECSD SANITARY" and comply with the DSM Standard Frame and Cover detail. For private projects the covers shall bear the inscription "SANITARY SEWER" and comply with the DSM Standard Frame and Cover (Private Sewer) detail.

23. Building sanitary sewer vents must be installed six (6) inches above finished grade in a grassy area with a mushroom cap. If the vent is in a sidewalk or paved area, then protect with 6" diameter bollards (2 minimum).

24. Cleanouts (c.o.) are required on 4" and 6" building sewers every fifty feet and one hundred feet respectively, and at every change of alignment.

25. Abandoned building sewer connections from the site, if any, require proof of a District Permit for Disconnection prior to the new connection being made.

26. The following pertains only for direct replacement of in service sanitary sewers:
    a. Each new pipe joint shall be ultrasonic tested after it is laid, but before the next pipe is laid. All tests shall be in accordance with the testing equipment manufacture recommendations.
    b. The ultrasonic test shall be performed in lieu of the hydrostatic and air tests.
    c. A video inspection of the entire sewer shall be performed. Forward the video inspection tape and related paperwork to DSM for review and approval.
    d. A deflection test is required in all cases.

27. For all sanitary sewer installations, a written certificate of construction completeness and compliance, including the results of the hydrostatic leakage test, lamp test, deflection test, air test, etc. shall be submitted to the Erie County Health Department and DSM within thirty (30) days after completion of construction.

28. For all public and private 8" diameter pipe or larger sanitary sewer installations, the developer/contractor must provide one (1) set of record drawings on "D" size paper (24" x 36") and in an electronic file format (CD or flash drive) compatible with the latest AutoCAD release.

29. All public sewer extension projects that consist of more than 750 LF of 8" diameter pipe or larger, shall furnish a 2 year maintenance bond to the DSM.

30. Final Certification will be issued upon the full completeness and compliance of the project including any requirement(s) of I&I remedial work.

Carmina Wood Morris DPC
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Buffalo, New York 14203
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F 716.842.0263

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Sanitary Sewer
General Notes

DRAWING NO.
C-403

Project no.: 21.011

Attachment: SP-2021-05_drawings_052021 (2305?) : SP-2021-05)

1b

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A. Requirements

1. After backfilling and prior to the final acceptance of the project, the Contractor will be required to perform the following three tests on all sewers built under this project:

a) Air Tests
b) Infiltration or Exfiltration
c) Deflection Test (15" dia. and smaller).

2. No more than 1,000 linear feet of installed sewer shall be allowed to remain untested.

3. In view of the fact that house laterals and riser pipes often contribute considerable infiltration, such laterals and risers are to be installed and capped, tied and blocked as the work progresses, prior to the air testing of the lines.

4. The Contractor's testing procedures shall be completed in accordance with OSHA Standards for confined space entry. The Contractor will be required to provide and operate all equipment necessary for full compliance for his operation. Equipment such as gas detectors, safety harnesses, ventilating blowers, respirators etc. shall be provided by the Contractor.

B. Air Tests (Required for All Diameters up to and including 36") 10 State Standards Section, 33.94

1) This test shall be performed no earlier than 14 calendar days after the trenches are backfilled.

2) The procedure for air testing shall be as specified herein. The minimum allowable time for the test pressure to decrease from 3.5 psi to 3.0 psi shall be not less than as called for in the following table:

Minimum Acceptance Times* For Length Shown (min:sec)

Pipe Diameter	Up to 100'	100 - 200'	200 - 300'	300 - 400'
6"	2:50	2:50	2:50	2:51
8"	3:47	3:47	3:48	5:04
12"	5:40	5:42	8:33	11:24
15"	7:05	8:54	13:21	17:48
18"	8:30	12:49	19:14	25:38
21"	9:55	17:27	26:11	34:54
24"	11:24	22:48	34:11	45:35
27"	14:25	28:51	43:16	57:42
30"	17:48	35:37	53:25	71:13
33"	21:33	43:56	64:38	86:10
36"	25:39	51:17	76:55	102:34

* Erie County Sewer District Inspector will extend time to the next full minute during the test.

3. Pipe lines in sizes up to 36 inches in diameter can be air tested from manhole to manhole for distances not to exceed 400 feet.

4. In wet trenches where pumping to lower the water table is impractical, approved 4" diameter, solid PVC drain pipe (with approved cap) shall be placed at each manhole to extend from a point 6 inches below the lowest invert to the top of the ground. Embed the pipe a minimum of 12" into clean #1 stone. Ground water elevations will be measured at each manhole in order to calculate the groundwater pressure acting on the pipe exterior. The initial air test pressure shall be increased as necessary to overcome the calculated groundwater pressure.

5. The testing procedures outlined shall be strictly adhered to.

6. All testing equipment shall be supplied by the Contractor and be in good working condition. Some of the major equipment required for air tests is:

a) Stop watch graduated in tenths of a second.
b) Compressor of 50 to 100 psi capacity.
c) Bulkheads for pipe.
d) Approximately 100 feet of 3/8" diameter air hose.
e) Pressure gauge - 0 to 5 psi graduated in 1/16th of a pound increments.
f) Three 3/8 inch diameter check valves.

C. Infiltration Tests (Applicable Only if Ground Water is Two Feet Above the Top of the Pipe)

1. This test shall be performed no earlier than 14 calendar days after the trenches are backfilled.

2. Infiltration tests for all sewers constructed under this project shall not exceed 100 gallons per inch diameter per mile of sewer, per 24 hours. Each individual run of sewer (from one manhole to the next manhole if greater than 100 feet) shall comply with the allowable rate of infiltration. All equipment for the tests shall be furnished by the Contractor and be in good working condition.

3. The allowable rate of infiltration given in gallons per mile is not to be construed as a commitment on the part of the District to accept an entire line, where overall infiltration is less than the allowable, while one or more runs contribute excessive infiltration.

4. The infiltration test is intended to measure the water tightness of a sewer as related to the infiltration of ground water and is only applicable if the water table level is 2 feet or higher above the top of the pipe for the entire length of the test section.

RECOMMENDED STANDARDS FOR WASTEWATER FACILITIES, 2014 EDITION

38.3 Relation to Water Mains

38.31 Horizontal and Vertical Separation

Sewers shall be laid at least 10 feet (3 m) horizontally from any existing or proposed water main. The distance shall be measured edge to edge. For gravity sewers where it is not practical to maintain a 10 foot (3 m) separation, the appropriate reviewing agency may allow deviation on a case-by-case basis, if supported by data from the design engineer. Such deviation may allow installation of the gravity sewer closer to a water main, provided that the water main is in a separate trench or on an undisturbed earth shelf located on one side of the gravity sewer and at an elevation so the bottom of the water main is at least 18 inches (460 mm) above the top of the sewer.
If it is impossible to obtain proper horizontal and vertical separation as described above for gravity sewers, both the water main and gravity sewer shall be constructed of slip-on or mechanical joint pipe complying with Section 8.1 and Section 8.7 of the "Recommended Standards for Water Works - 2012 Edition" and shall be pressure rated to at least 150 psi (1034 kPa) and pressure tested to ensure watertightness.

38.32 Crossings

Sewers crossing water mains shall be laid to provide a minimum vertical distance of 18 inches (460 mm) between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to maintain line and grade.
When it is impossible to obtain proper horizontal and vertical separation as stipulated above, one of the following methods shall be specified:
30-11
a. The sewer shall be designed and constructed equal to water pipe, as described in Paragraph 38.31.
b. Either the water main or the sewer line may be encased in a watertight carrier pipe that extends 10 feet (3 m) on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be made of materials approved by the regulatory agency for use in water main construction.

a) Approved 4" diameter solid PVC drain pipe (with an approved cap) shall be placed at each manhole to extend from a point 6 inches below the lowest invert to the top of the ground. Embed the pipe a minimum of 12" into clean #1 stone. Ground water elevations will be measured at each manhole so that the ground water level can be correlated with the infiltration measurements.

b) Before conducting the tests, the water table should be allowed to stabilize at its normal level and verified that it is 2 feet above the top of the pipe during the test period. The test is usually conducted between adjacent manholes with the upstream end of the sewer bulkheaded in a suitable manner to isolate the test section. All service laterals, stubs and fittings should be properly plugged or capped at the connections to the test pipe section to prevent the entrance of ground water at these locations.

c) A V-notch weir or other suitable measuring device should be installed in the inlet pipe of the downstream manhole. Infiltrating water is then allowed to build up and level off behind the weir until a steady, uniform flow occurs over the weir. Leakage is determined by direct reading from graduations on the weir consecutively for five (5) days and converting the flow quantity to gallons per unit length of pipe per unit of time.

d) An important factor in applying the test criteria is to properly correlate the variable water head over the length of the sewer being tested to the high ground water level. A minimum of 2 feet of water over the pipe is required at the upper manhole before the infiltration test will be allowed.

5. When a sewer run between two consecutive manholes or chambers is found to contribute infiltration at a rate above the allowable, inspection by television or other cameras may be made by the Contractor so that the defective section of sewer can be located and repaired. Each individual run of sewer (from one manhole to the next manhole if greater than 100 feet) shall comply with the allowable rate of infiltration of 100 gallons per inch diameter per mile of sewer per 24 hours.

D. Exfiltration Tests

1. This test shall be performed no earlier than 14 calendar days after the trenches are backfilled.

2. The exfiltration test for all diameter sewers shall be as described below. Although actual infiltration will normally be less than that indicated by the water exfiltration test, the test does provide a positive means of subjecting the completed sewer system to an actual pressure test. Since sanitary sewers are not designed or expected to operate as a pressure system, care must be exercised in conducting the test and correlating the results with the allowable exfiltration limits.

a) The test is usually conducted between adjacent manholes. Prior to the test, all service laterals, stubs and fittings within the test section should be plugged or capped and adequately braced or blocked to withstand the water pressure resulting from the test.

b) If manholes are to be included in the test, the inlet pipe to each manhole should be bulkheaded and the test section filled with water through the upstream manhole. To allow air to escape from the sewer, the flow should be at a steady rate until the water level in the upstream manhole provides an average pressure of 5 psi (11.6' head) at the center point of the test section or the upstream manhole is filled. If necessary, provisions should be made to bleed off entrapped air during the filling of the test section.

c) Once the test section is filled, the water should be allowed to stand for an adequate period of time (one day minimum) to allow for water absorption by the pipe and manhole. After water absorption has stabilized, the water level in the upstream manhole is brought up to the proper test level and this level established by measuring down from the manhole rim or other convenient datum point. After 24 hours, the water elevation should be measured from the same reference point and the loss of water during the test period calculated, or the water can be restored to the level existing at the beginning of the test, and the amount added used to determine the leakage.

d) To exclude both manholes from the test,it is necessary to bulkhead the outlet pipe of the upstream manhole. Provision must be made in the bulkhead for filling the pipe and expelling trapped air.

e) The water level at the upstream manhole shall be computed and varies above the top of the pipe. Since the sewer is installed on a grade, the test section downstream will most likely be subjected to a greater pressure. Therefore, the test pressure head at the upstream manhole should be adjusted such that the maximum pressure on the pipe being tested is no greater than 10 psi, (23 feet of head).

3. When a sewer run between two consecutive manholes or chambers is found to exfiltrate at a rate above the allowable, inspection by television or other cameras may be made by the Contractor during wet weather, so that the defective section of sewer can be located and repaired. Each individual run of sewer (from one manhole to the next manhole) shall comply with the allowable rate of infiltration of 100 gallons per inch diameter per mile of sewer per 24 hours.

E. Deflection Test

1. This test shall be performed no earlier than 30 calendar days after the trenches are backfilled.

2. All flexible (PVC) sewers 8" diameter or larger constructed under this project shall be internally checked with a five percent (5%) deflection "go-no-go pig" or Mandrel to determine if the pipes are deflecting excessively. Any section of pipe unable to pass the deflection test "pig test" shall be removed and replaced at the Contractor's expense.

3. Deflection testing mandrels or pig shall be pulled thru the pipe by hand or hand operated winch. Power winches or drives are not permitted.

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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Sanitary Sewer Testing Notes

DRAWING NO.
C-404

Project no.: 21.011

Packet Pg. 742

1b

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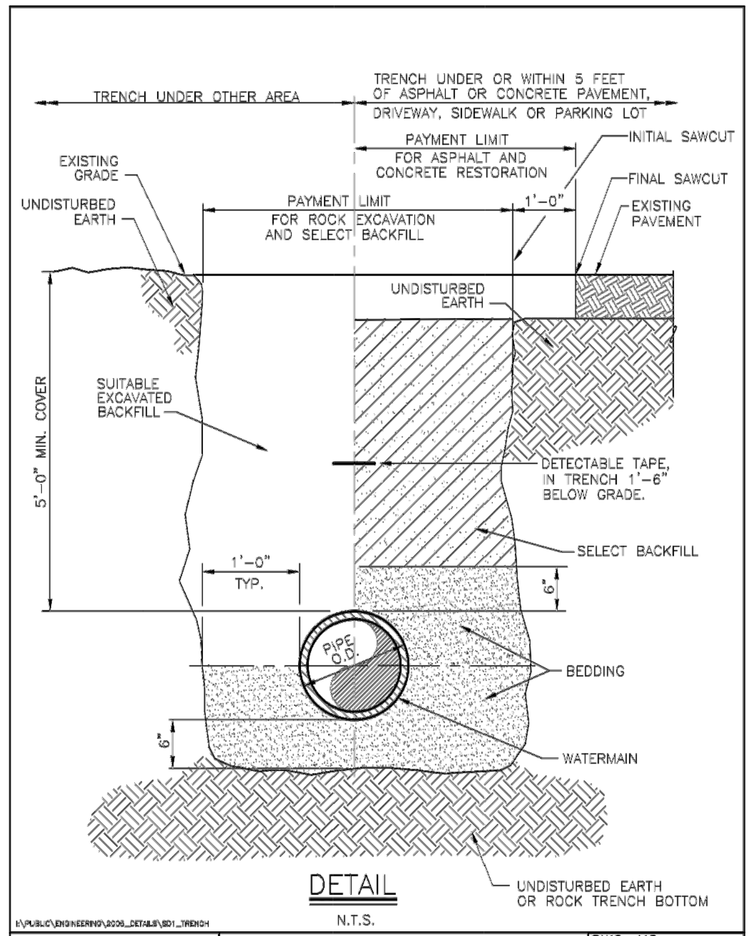
Attachment: SP-2021-05_drawings_052021 (2305?: SP-2021-05)

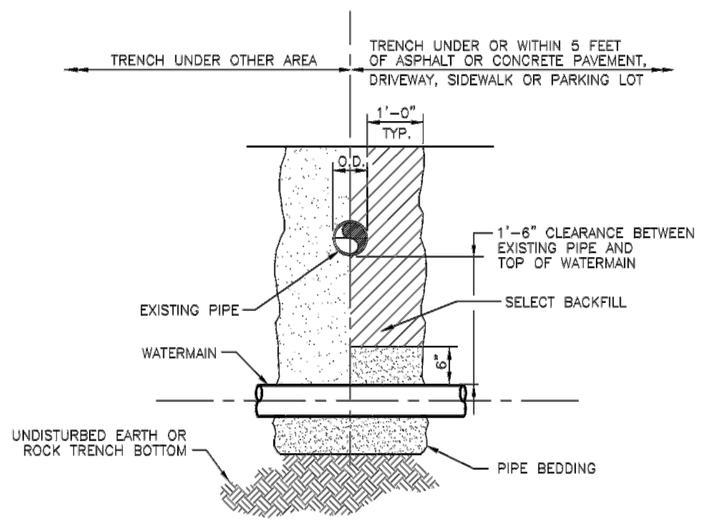
Packet Pg. 743



DETAIL
N.T.S.

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD1_TRENCH

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TRENCH THROUGH 12–INCH DIAMETER WATERMAIN	DWG. NO. SD1	
		DATE 4/28/92	REVISED 10/05



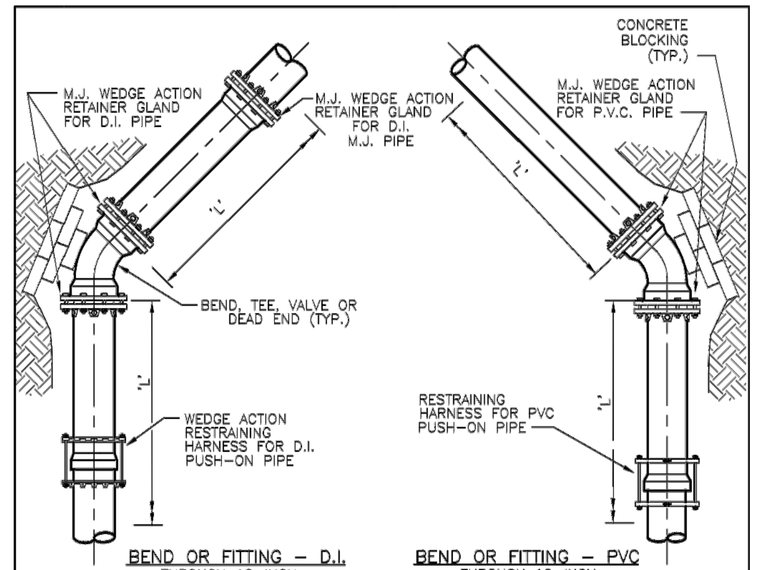
NOTES:

1. ALL EXISTING UTILITIES MUST BE SUPPORTED DURING CONSTRUCTION OF THE NEW WATERMAIN.
2. WHEN CROSSING A SEWERLINE WITH A NEW WATERMAIN, ONE FULL PIPE LENGTH (18 FT. MIN.) SHALL BE USED AT THE POINT OF CROSSING. THE WATERMAIN SHALL BE PLACED SO THAT BOTH JOINT ENDS ARE AS FAR AS POSSIBLE FROM THE EXISTING SEWERLINE.

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD3_PIPE_CROSSING

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL PIPE CROSSING	DWG. NO. SD2	
		DATE 4/28/92	REVISED 10/05



BEND OR FITTING – D.I.
THROUGH 12–INCH

BEND OR FITTING – PVC
THROUGH 10–INCH

RESTRAINED JOINT SCHEDULE					
PIPE SIZE	PIPE TYPE	11.25° ELBOW 'L'	22.5° ELBOW 'L'	45° ELBOW 'L'	TEE BRANCH, 90° BEND, VALVE OR DEAD END 'L'
6"	PVC	13'	25'	50'	120' MIN.
8"	PVC	15'	30'	59'	122' MIN.
8"	D.I.P.	15'	30'	59'	122' MIN.

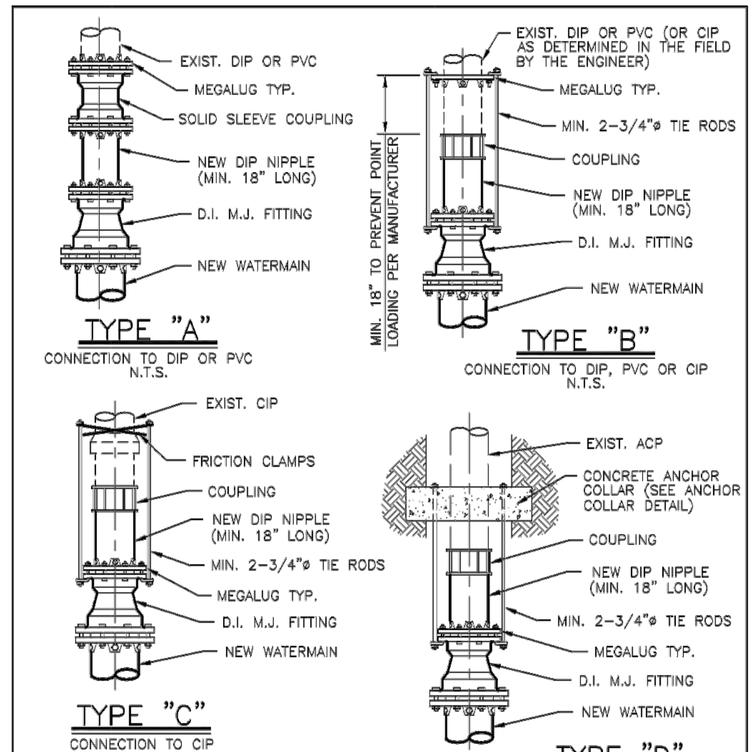
NOTES:

1. DIMENSION 'L' REPRESENTS THE LENGTH OF RESTRAINED PIPE REQUIRED IN FEET EACH SIDE OF THE PIPE FITTING.

PLAN
N.T.S.

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD4_REST_JOINT_SCHED

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL RESTRAINED JOINT SCHEDULE	DWG. NO. SD4	
		DATE 4/28/92	REVISED 10/05

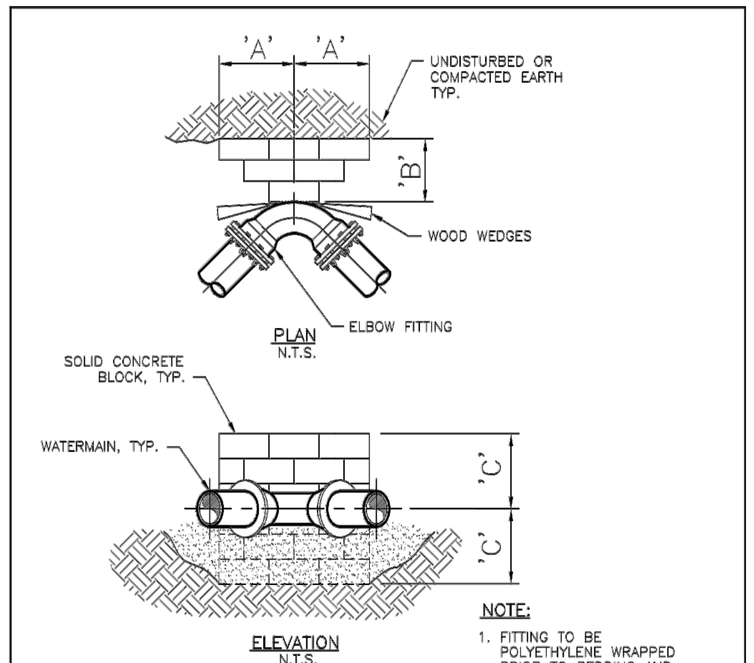


NOTES:

1. VALVES AND TEES MAY BE HARNESSED SIMILARLY.
2. HARNESSING IS FOR RESISTANCE TO INTERNAL PRESSURE–PIPE ITSELF MUST BE SUPPORTED ON FIRM BEDDING AND CAREFULLY BACKFILLED.
3. COAT ALL EXPOSED SURFACES OF HARNESS ASSEMBLY WITH BITUMINOUS COATING.
4. TIE RODS SHALL BE PLACED ON SIDES OF PIPE.

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD5_CONN_EXIST_MAIN

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TYPICAL CONNECTION TO EXISTING WATERMAIN THROUGH 12–INCH DIAMETER WATERMAIN	DWG. NO. SD5	
		DATE 3/05	REVISED 10/05



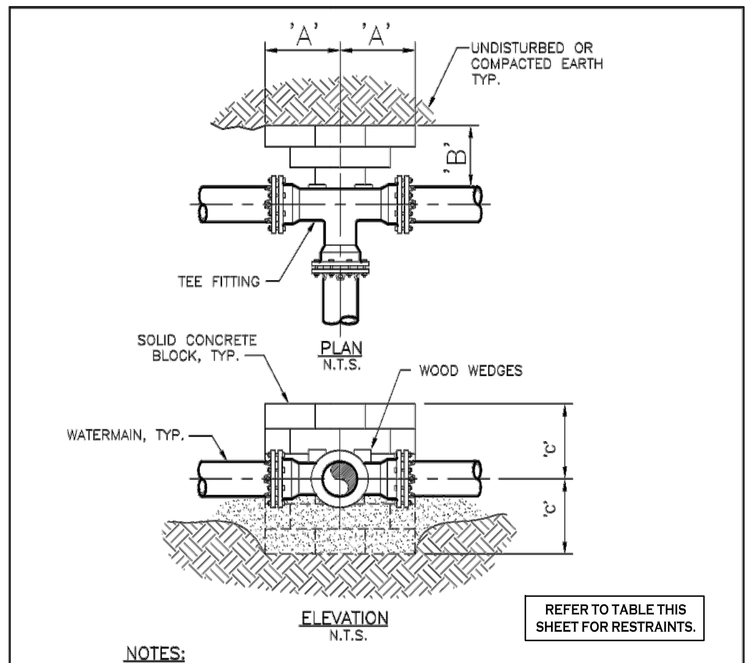
NOTE:

1. FITTING TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.

DIMENSION SCHEDULE												
PIPE SIZE	11.25° ELBOW			22.5° ELBOW			45° ELBOW			90° ELBOW		
	'A'	'B'	'C'	'A'	'B'	'C'	'A'	'B'	'C'	'A'	'B'	'C'
8"	1.5'	1.5'	2.5'	2.5'	1.5'	2.5'	3.0'	1.5'	3.5'	3.5'	1.5'	5.0'

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD6_THRUST_BLOCKS_ELBOW

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR ELBOW FITTING	DWG. NO. SD6	
		DATE 4/28/92	REVISED 10/05



REFER TO TABLE THIS SHEET FOR RESTRAINTS.

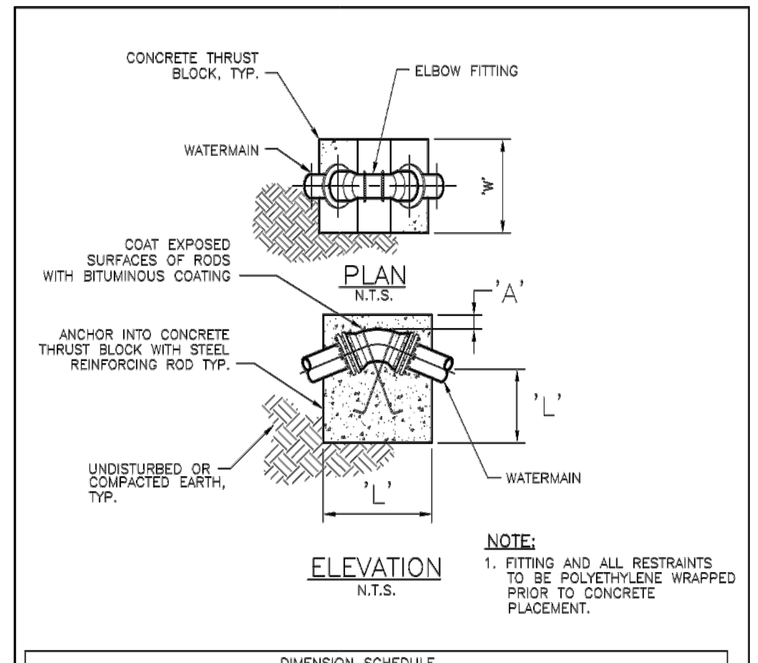
NOTES:

1. THRUST BLOCK REQUIRED FOR TEES, HYDRANT LATERAL TEES AND TAPPING SLEEVE INSTALLATIONS.
2. FITTING TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.

BRANCH TEE SIZE	DIMENSION SCHEDULE		
	'A'	'B'	'C'
6"	1'-0"	1'-0"	0'-6"
8"	1'-6"	1'-0"	0'-6"

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD7_THRUST_BLOCKS_TEE

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR TEE OR "DEAD END" FITTING	DWG. NO. SD7	
		DATE 4/28/92	REVISED 10/05



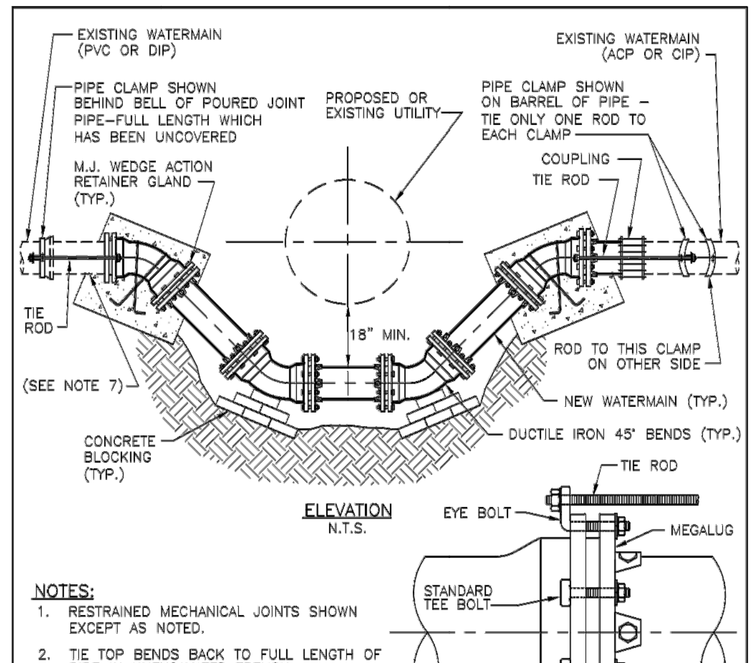
NOTE:

1. FITTING AND ALL RESTRAINTS TO BE POLYETHYLENE WRAPPED PRIOR TO CONCRETE PLACEMENT.

DIMENSION SCHEDULE													
PIPE SIZE	PIPE TYPE	11.25° ELBOW				22.5° ELBOW				45° ELBOW			
		'A'	'W'	'L'	ROD ø	'A'	'W'	'L'	ROD ø	'A'	'W'	'L'	ROD ø
8"	D.I.P	12"	1'-0"	1'-0"	1/2"	12"	1'-9"	1'-9"	1/2"	1'-6"	2'-0"	2'-0"	1/2"

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD8_THRUST_BLOCKS_VBEND

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR VERTICAL BEND	DWG. NO. SD8	
		DATE 4/28/92	REVISED 10/05



NOTES:

1. RESTRAINED MECHANICAL JOINTS SHOWN EXCEPT AS NOTED.
2. TIE TOP BENDS BACK TO FULL LENGTH OF PIPE IN UNEXCAVATED TRENCH.
3. VALVES, TEES AND HYDRANTS MAY BE HARNESSED SIMILARLY.
4. HARNESSING IS FOR RESISTANCE TO INTERNAL PRESSURES–PIPE ITSELF MUST BE SUPPORTED ON FIRM BEDDING AND CAREFULLY BACKFILLED.
5. COAT ALL EXPOSED SURFACES OF HARNESS ASSEMBLY WITH BITUMINOUS COATING.
6. TIE RODS SHALL BE PLACED ON SIDES OF PIPE.
7. IF EXISTING PIPE IS CIP OR PVC, CONNECT TO NEW FITTING ONLY WHEN ALLOWED BY ENGINEER.

TIE ROD SCHEDULE			
PIPE SIZE	PIPE TYPE	ROD ø	NUMBER OF RODS
8"	PVC	3/4"	2

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD10_HARN_OFFSET_EXIST_WMAIN

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL HARNESSING DETAILS–INSTALL OFFSET IN EXISTING WATERMAIN	DWG. NO. SD10	
		DATE 6/00	REVISED 10/05

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F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Water Details

DRAWING NO.

C-405

Project no.: 21.011

Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

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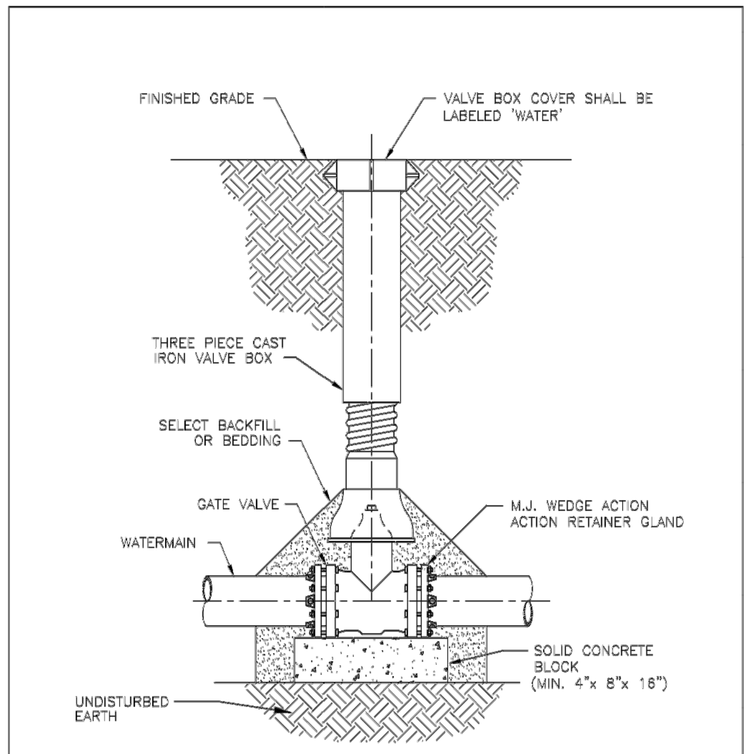
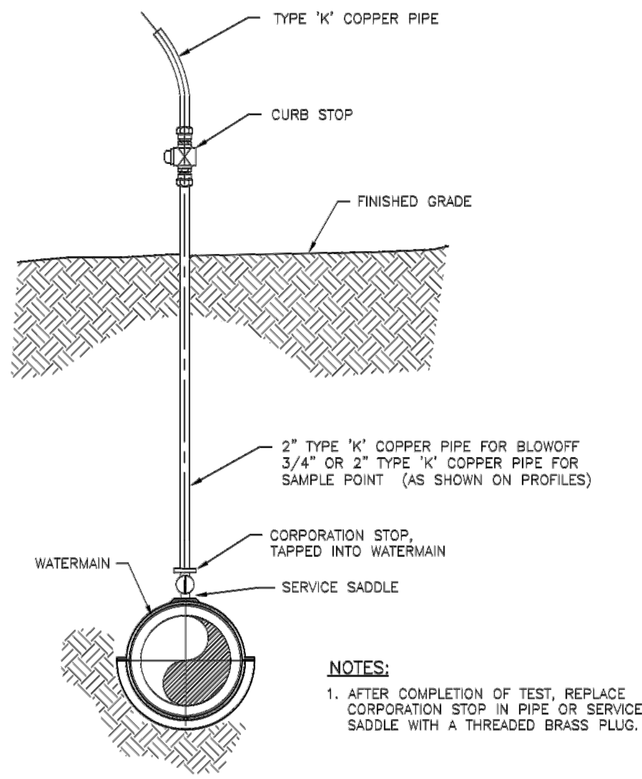


NOTES:
1. VALVE SHALL NOT SUPPORT VALVE BOX.
2. GATE VALVE SHALL BE INSTALLED LEVEL.
3. VALVE BOX SHALL BE PLUMB TO GRADE, WITH OPERATING NUT CENTERED IN BOX.

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD11_GATE_VALVE_SET

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GATE VALVE SETTING	DWG. NO. SD11	
		DATE 4/28/92	REVISED 02/17

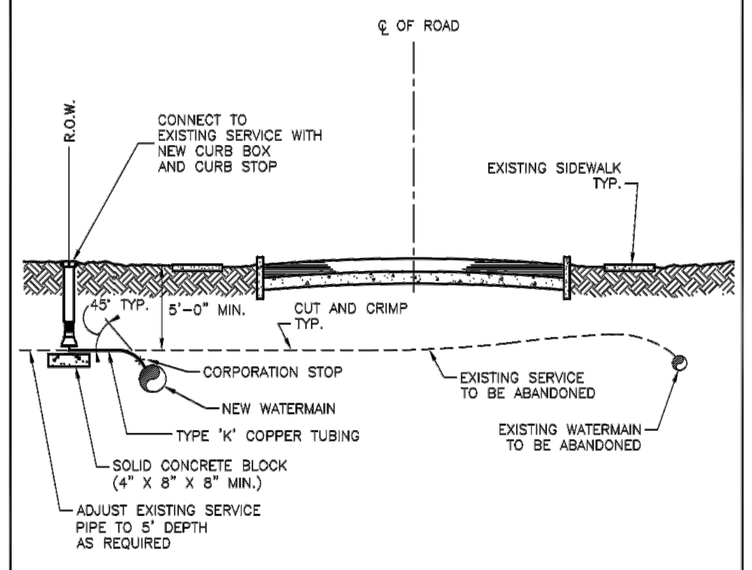


NOTES:
1. AFTER COMPLETION OF TEST, REPLACE CORPORATION STOP IN PIPE OR SERVICE SADDLE WITH A THREADED BRASS PLUG.

ELEVATION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD17_TEMP_BO_SAMP_PT

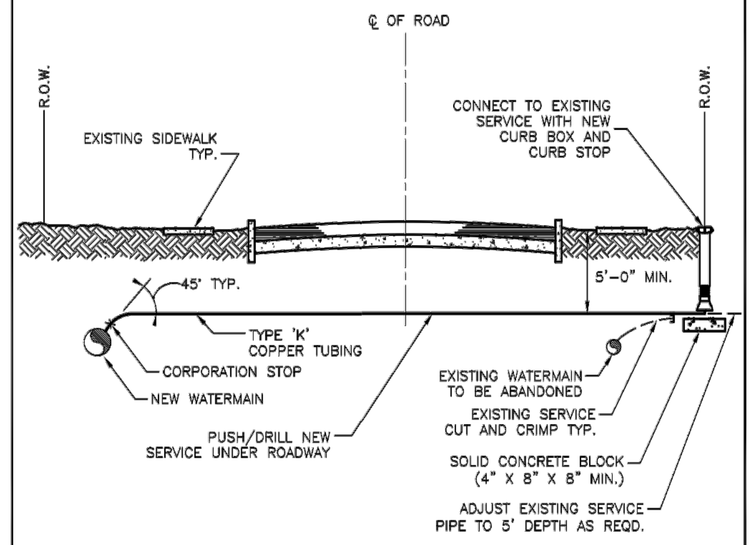
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TEMPORARY BLOW-OFF/SAMPLING POINT	DWG. NO. SD17	
		DATE 4/28/92	REVISED 10/05



NOTES:
1. EXISTING SERVICES SHALL BE CRIMPED AND ABANDONED IN PLACE.
2. SERVICE SADDLES SHALL BE USED UNDER THE FOLLOWING CONDITIONS:
   A. WHEN SERVICES ARE PLACED ON 4" OR SMALLER PIPES.
   B. WHEN SERVICES LARGER THAN 1" ARE PLACED ON A 6" PIPE.
   C. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON AN 8" PIPE.
   D. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON DUCTILE IRON PIPE.
   E. WHEN TAPPING ALL PLASTIC (PVC) PIPE.
   F. WHEN TAPPING ALL ASBESTOS-CEMENT PIPE.
3. CURB BOXES SHALL NOT BE PLACED IN SIDEWALKS, DRIVEWAYS, OR CURB RAMPS.
4. UNIONS ON COPPER TUBING ARE NOT ALLOWED UNLESS APPROVED BY ECWA PRIOR TO INSTALLATION.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD15_WS_SERV_REPLACE

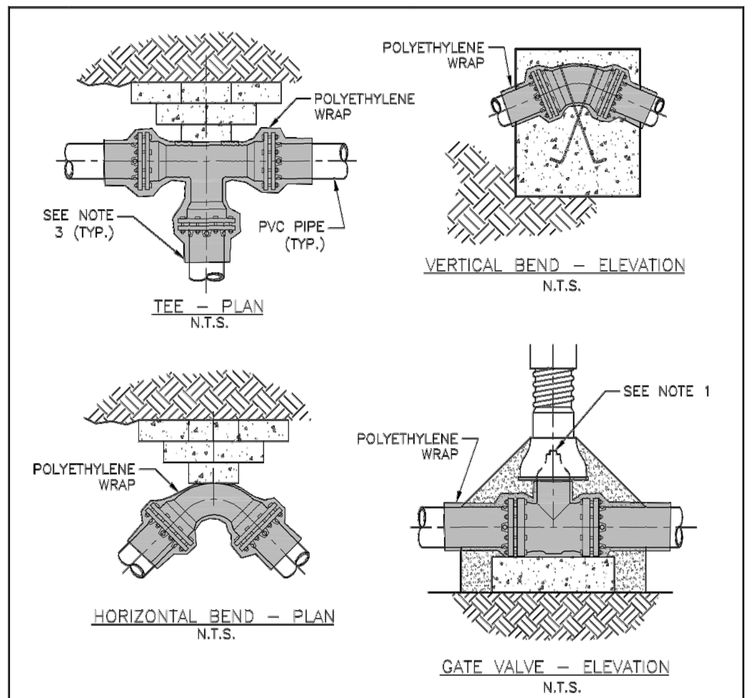
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL NEAR SIDE SERVICE REPLACEMENT/INSTALLATION	DWG. NO. SD15	
		DATE 4/92	REVISED 09/16



NOTES:
1. EXISTING SERVICES SHALL BE CRIMPED AND ABANDONED IN PLACE.
2. SERVICE SADDLES SHALL BE USED UNDER THE FOLLOWING CONDITIONS:
   A. WHEN SERVICES ARE PLACED ON 4" OR SMALLER PIPES.
   B. WHEN SERVICES LARGER THAN 1" ARE PLACED ON A 6" PIPE.
   C. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON AN 8" PIPE.
   D. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON DUCTILE IRON PIPE.
   E. WHEN TAPPING ALL PLASTIC (PVC) PIPE.
   F. WHEN TAPPING ALL ASBESTOS-CEMENT PIPE.
3. CURB BOXES SHALL NOT BE PLACED IN SIDEWALKS, DRIVEWAYS, OR CURB RAMPS.
4. USE POLYETHYLENE FOR 3/4" AND 1" SERVICES GREATER THAN 100 FEET IN LENGTH, AND FOR 1-1/2" AND 2" SERVICES GREATER THAN 60 FEET IN LENGTH. ALL POLYETHYLENE SERVICES SHALL INCLUDE A TRACER WIRE FOR DETECTION BY ECWA FORCES.
5. UNIONS ON COPPER TUBING ARE NOT ALLOWED UNLESS APPROVED BY ECWA PRIOR TO INSTALLATION.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD16_FS_SERV_REPLACE

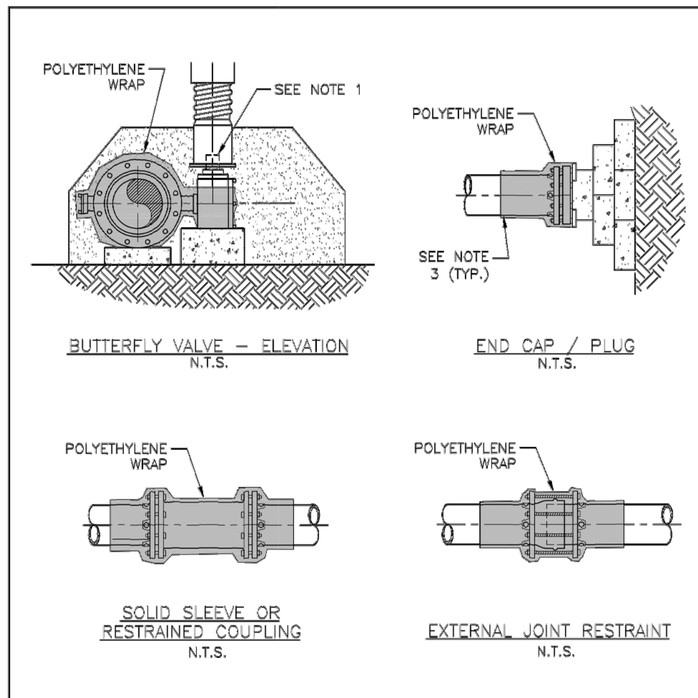
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL FAR SIDE SERVICE REPLACEMENT/INSTALLATION	DWG. NO. SD16	
		DATE 4/92	REVISED 09/16



NOTES:
1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP IS NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PIPE (OR POLYWRAP IF DIP) WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD39A_POLYWRAPPING_FITTINGS

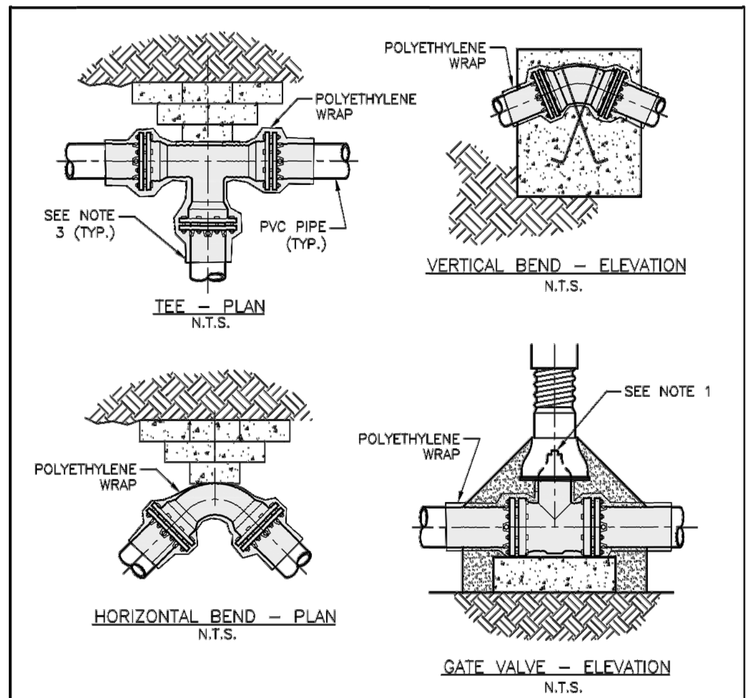
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING CAST/DUCTILE IRON FITTINGS	DWG. NO. SD39A	
		DATE 3/18	REVISED 12/18



NOTES:
1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP IS NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PIPE (OR POLYWRAP IF DIP) WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD39B_POLYWRAPPING_FITTINGS

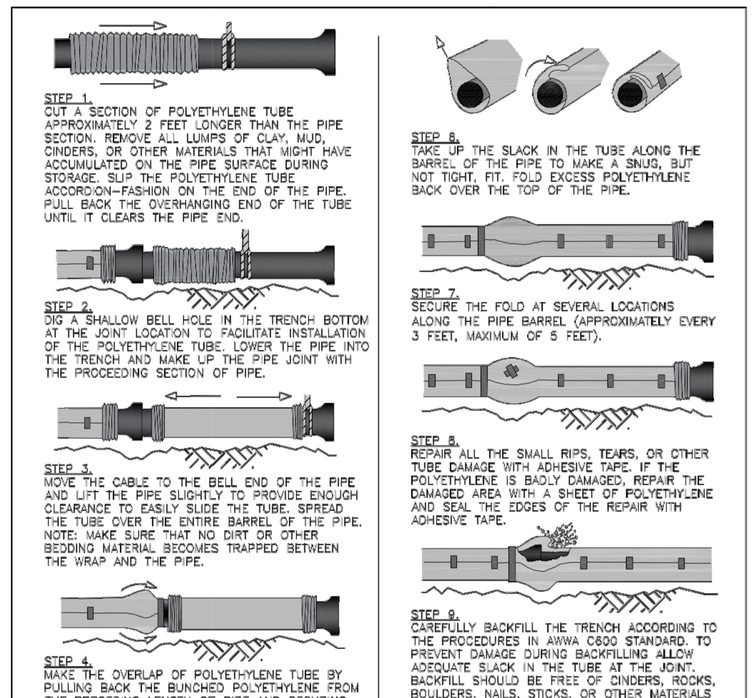
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING CAST/DUCTILE IRON FITTINGS	DWG. NO. SD39B	
		DATE 12/18	REVISED



NOTES:
1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON GATE VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PVC PIPE WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD39_POLYWRAPPING_FITTINGS

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING DUCTILE IRON FITTINGS ON PVC PIPE	DWG. NO. SD39	
		DATE 3/18	REVISED



NOTES:
1 - POLYETHYLENE WRAP (POLYWRAP) SHALL BE OF PROPER DIAMETER TO FIT OVER BELLS AND EXTERNAL WEDGE-ACTION RETAINER GLANDS.
2 - CAST AND DUCTILE IRON FITTINGS (BENDS, TEES, VALVES, ETC.) ARE TO BE WRAPPED IN POLYWRAP AND SECURED IN PLACE.
3 - DO NOT USE CHAINS, METAL WIRE, OR OTHER SUPPORTING SYSTEMS WHICH MAY DAMAGE THE POLYETHYLENE ENCASEMENT. REPLACE DAMAGED POLYWRAP ACCORDINGLY.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD32_POLY_WRAP

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYETHYLENE ENCASEMENT OF DUCTILE IRON PIPE	DWG. NO. SD32	
		DATE 08/16	REVISED 02/19

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REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Water Details

DRAWING NO.
C-406

Project no.: 21.011

Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

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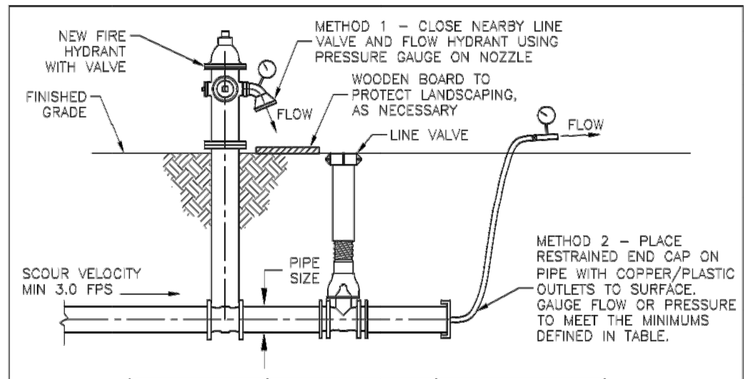


PIPE SIZE (IN)	REQUIRED FLOW (GPM)	METHOD 1 HYDRANT FLOW		METHOD 2 END CAP FLOW	
		2 1/2" NOZZLE PRESSURE (PSI)	4" NOZZLE PRESSURE (PSI)	2" I.D. PRESSURE (PSI)	3" I.D. PRESSURE (PSI)
6	275	7	1	7	2
8	500	9	2	22	5
10	750	20	4	50	10
12	1100	44	7	–	22
16	1900	–	20	–	62
20	3000	–	50	–	–

I.D. = INNER DIAMETER

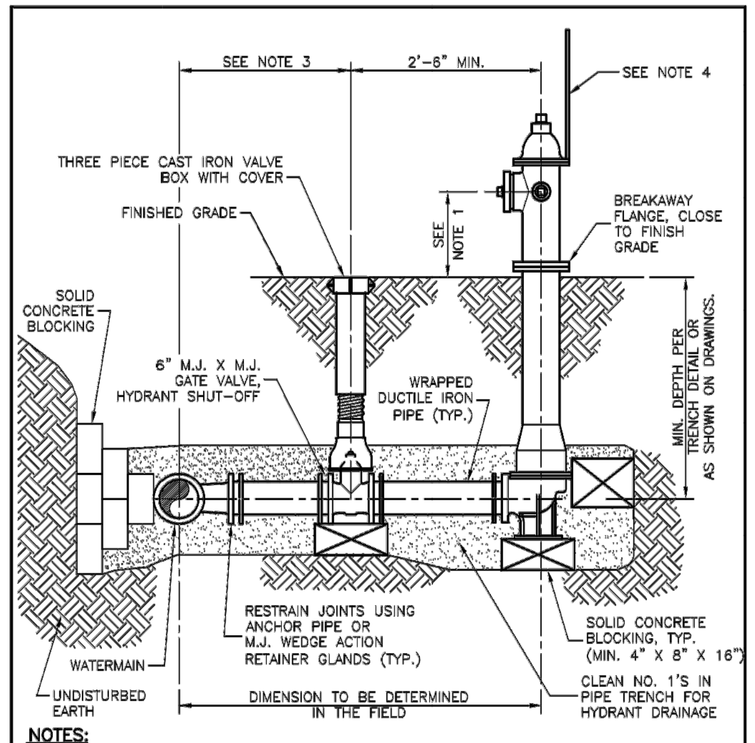
NOTES:

1. TO OBTAIN SCOUR VELOCITY (3.0 FPS) IN THE WATERLINE, CONTRACTOR SHALL ACHIEVE FLOWRATE AT NOZZLE DEFINED IN TABLE. PRESSURE GAUGE USED SHALL SHOW A HIGHER PRESSURE THAN THE MINIMUMS DEFINED IN THE TABLE.
2. OUTLET PRESSURE MEASURED BY PITOT GAUGE.
3. ENGINEER SHALL PROVIDE CALCULATIONS IF CONNECTIONS ARE OTHER THAN THOSE SHOWN, IF MULTIPLE CONNECTIONS ARE USED, OR AS REQUESTED BY ECWA.
4. TO FLUSH THREE PIPE VOLUMES, MINIMUM FLUSHING TIME (IN SECONDS) EQUALS THE LENGTH OF PIPE BEING FLUSHED, IN FEET.

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD36_WATERLINE_FLUSHING

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL WATERLINE FLUSHING	DWG. NO. SD36	
		DATE 6/16	REVISED 3/18



NOTES:

1. CENTERLINE OF THE LOWEST NOZZLE TO FINISHED GRADE SHALL BE A MIN. OF 15" & MAX. OF 18".
2. HYDRANT RISER SHALL BE INSTALLED PLUMB.
3. VALVE BOX SHALL NOT BE PLACED IN PAVEMENT.
4. RELOCATE HYDRANT MARKER (IF PRESENT), FOR WATERLINE REPLACEMENT PROJECTS ONLY.
5. HYDRANT FACE TO BE A MINIMUM OF 3' FROM THE BACK FACE OF ALL CURBS OR A MINIMUM OF 5' FROM ALL EDGES OF PAVEMENT (IF NO CURB).

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD13_HYD_INST

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL FIRE HYDRANT INSTALLATION	DWG. NO. SD13	
		DATE 6/00	REVISED 11/16

NOTES

1. All elevations refer to USGS NAVD83 datum.
2. The CONTRACTOR shall obtain necessary permits and furnish copies to the ENGINEER prior to commencing work.
3. The CONTRACTOR'S work area shall be confined to the limits of the right-of-ways and easements. The CONTRACTOR shall obtain any additional easements or work releases should the CONTRACTOR require additional area to accommodate his operations.
4. The CONTRACTOR shall provide maintenance and protection of traffic in accordance with the Erie County Highway Department standards and the NYSDOT Manual of Uniform Traffic Control Devices.
5. The locations and depths of existing underground utilities as shown on the plans and profiles are approximate. Other underground utilities not shown may be encountered. The CONTRACTOR shall perform test pits to verify the location and elevation of utilities at interconnections and crossings as shown, directed, or required. The CONTRACTOR shall excavate in advance of the pipe laying operation and expose all existing underground utilities to prevent damage during construction and to determine required changes in grade necessary to install the watermain to avoid conflicts.
6. The CONTRACTOR shall install those measures required to limit erosion of areas disturbed by the work. Clearing shall be performed on an as-needed basis, phased to reduce erosion and visual impact.
7. Blasting will not be permitted.
8. No more than one connection may be made to any existing watermain prior to testing, disinfection, and approval of the Waterline Installation Completed Works Approval Report(s) by the Erie County Water Authority and the Erie County Health Department.
9. The Erie County Water Authority shall only operate existing valves and fire hydrants, including newly installed valves and fire hydrants that have been placed into service. The CONTRACTOR is advised that watertight conditions may not exist when existing valves are closed.
10. The CONTRACTOR shall have all equipment, manpower, and materials required on site and ready for use prior to commencing any shut-down or removing any existing facilities from service. The CONTRACTOR shall notify all affected customers in writing of any shut-down at least 48 hours in advance. The CONTRACTOR shall notify the appropriate fire stations 48 hours in advance prior to taking any fire hydrants out of service. Any fire hydrants not in service shall be bagged in burlap or plastic. Any shut-down shall be limited to 4 consecutive hours. It may be necessary to schedule shut-downs at night, weekends, or other off hours so as to not affect schools, businesses or other customers, as determined by the ENGINEER. Shut-down requests shall be submitted to the Erie County Water Authority a minimum of 5 business days in advance of the requested shut-down date.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD29_GENERAL_NOTES

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GENERAL NOTES	DWG. NO. SD29	
		DATE 3/05	REVISED 7/17

11. All watermain piping shall be installed with a minimum of 5'-0" of cover.
12. All watermain piping shall be installed with a minimum of 1'-6" of vertical clearance and 10'-0" of horizontal clearance from sanitary and storm piping, measured from the outside of the pipes at the point of crossing.
13. If the material at the design grade is unsuitable as determined by the ENGINEER, the CONTRACTOR, when ordered in writing, shall excavate additional material to the depth necessary and shall backfill to the proposed grade with the select granular material.
14. The installation of 90 degree bends in the watermain is not allowed, unless approved by the Erie County Water Authority.
15. Thrust restraint for watermain piping through 12-inch diameter shall consist of thrust blocks and pipe joint restraint.
16. The CONTRACTOR shall notify the owner of any utility pole in advance of any excavation work that will take place within 5'-0" of the utility pole. The CONTRACTOR shall include the cost of temporary pole support in the appropriate bid item.Where utility poles are required to be supported during construction, the CONTRACTOR shall make all necessary arrangements with the utility company.
17. If materials are encountered during the construction that are suspected of being contaminated, the CONTRACTOR shall immediately notify the NYSDEC for direction regarding testing, separation, containment, and disposal procedures.
18. Existing fire hydrants removed during construction and not reinstalled as part of the work shall be scheduled and returned to the Erie County Water Authority Service Center, 3030 Union Road, Cheektowaga, New York 14227.
19. The CONTRACTOR shall cold patch all trench excavations in traveled areas including roads, driveways, sidewalks, and parking areas.
20. The CONTRACTOR shall not restrict access for school buses or any emergency vehicles.
21. The use of existing fire hydrants for any reason is prohibited without prior approval of the Erie County Water Authority. This includes newly installed fire hydrants that have been placed into service.
22. The CONTRACTOR shall submit procedures for testing and disinfection of the watermain to the ENGINEER for review prior to the start of testing.
23. The CONTRACTOR shall be present and assist in the Final Walk inspection. The CONTRACTOR shall provide sufficient personnel and equipment to demonstrate to the ENGINEER that all valves, fire hydrants, and curb stops operate as required.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD30_GENERAL_NOTES

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GENERAL NOTES	DWG. NO. SD30	
		DATE 3/05	REVISED 7/17

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REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Water Details & Notes

DRAWING NO.
C-407

Project no.: 21.011

Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

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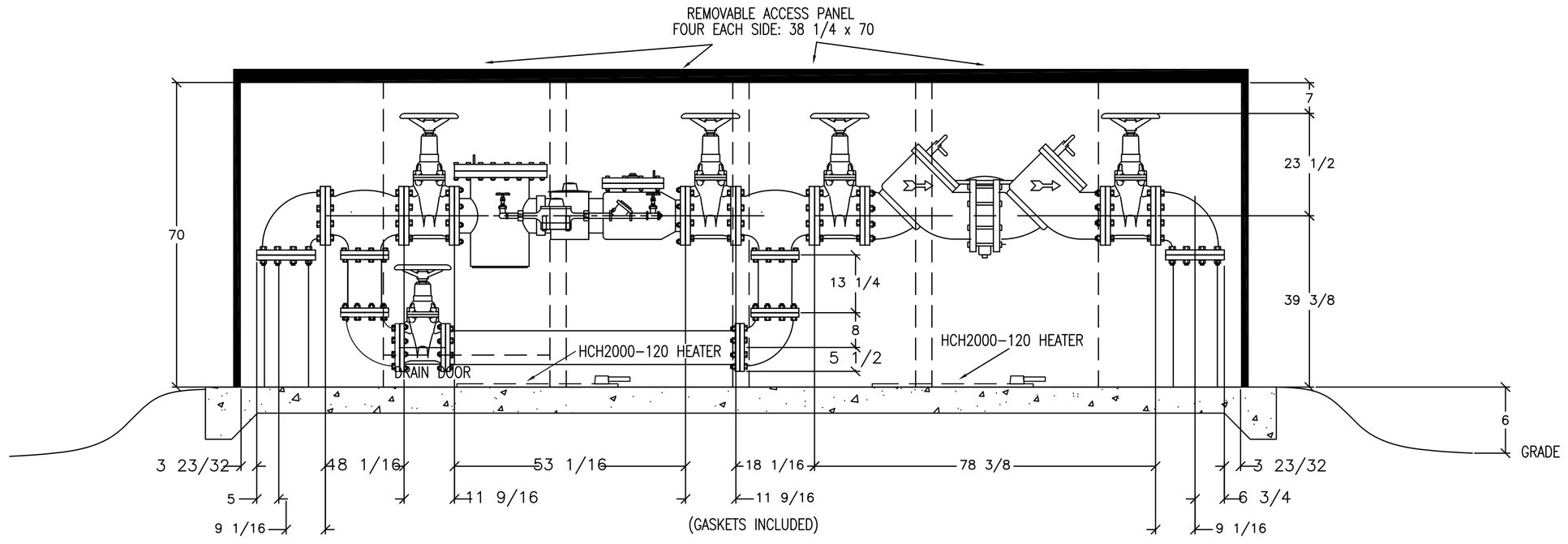

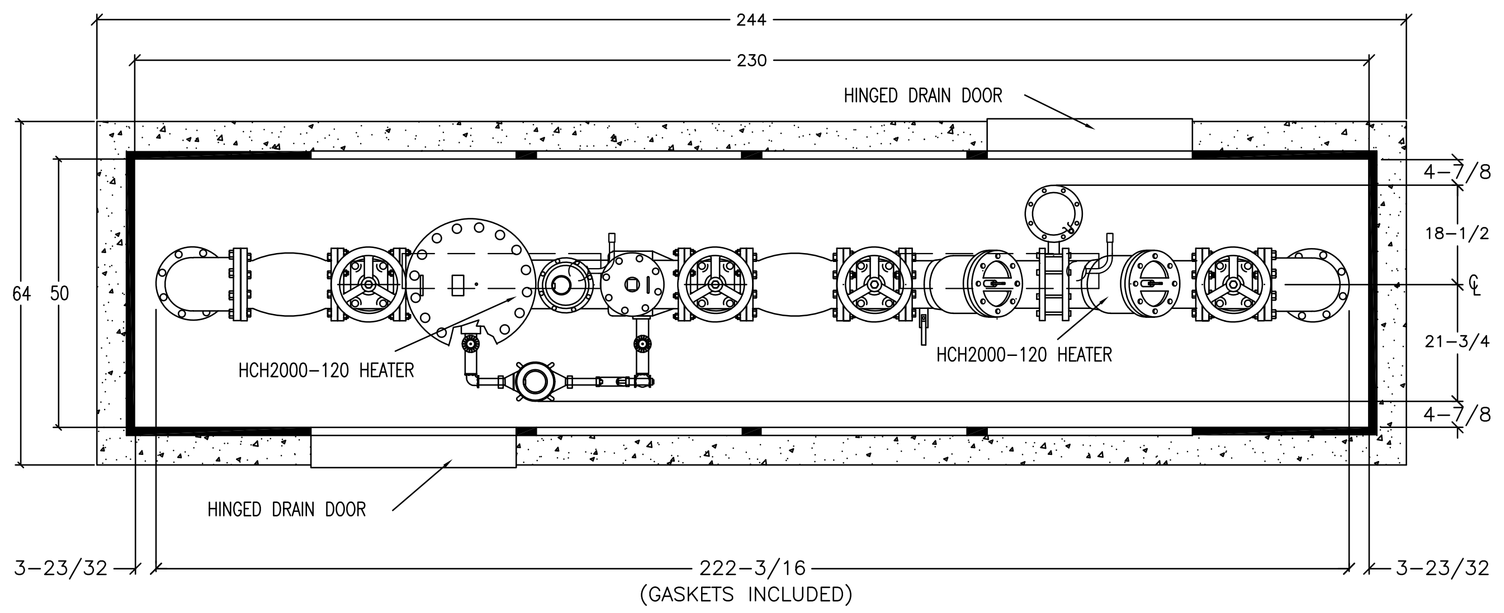

NOTES:

1. BACKFLOW PREVENTER DIMENSIONS FURNISHED BY WATTS
2. ALL DIMENSIONS ARE IN INCHES
3. WALL & INSULATION THICKNESS IS 1 1/2"
4. ROOF & INSULATION THICKNESS IS 3"
5. ENCLOSURE SHOWN IS SAFE-T-COVER MODEL 1000D-ALC00-17
6. EXTERIOR ENCLOSURE DIMENSIONS: 53"W x 233"L x 73" H
7. CONCRETE PAD IS 64"W x 244"L x 6"THK W/W.W.F. 6X6/10X10
8. METER SHOWN: 8" PROTECTUS III, SPOOL PIECE & METER SUPPLIED BY ECWA, VERIFY DIMENSIONS PRIOR TO ORDERING
9. RPZ SHOWN: 8" WATTS 909 NRS
10. CONTRACTOR TO INSTALL ELECTRIC SERVICE TO ENCLOSURE, COORDINATE SOURCE WITH OWNER
11. INSTALL A 120V GFI OUTLET IN THE ENCLOSURE
12. HEATERS TO HAVE THERMOSTAT CONTROL
13. ALL PIPING WITHIN THE ENCLOSURE SHALL BE DUCTILE IRON

LEGEND:

REMOVABLE ACCESS PANEL 38 1/4"W x 70"H w/DRAIN DOOR

REMOVABLE ACCESS PANEL 38 1/4"W x 70"H

8"METER & RPZ INSULATED ENCLOSURE

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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Insulated Enclosure Detail

DRAWING NO.
C-408

Project no.: 21.011

Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

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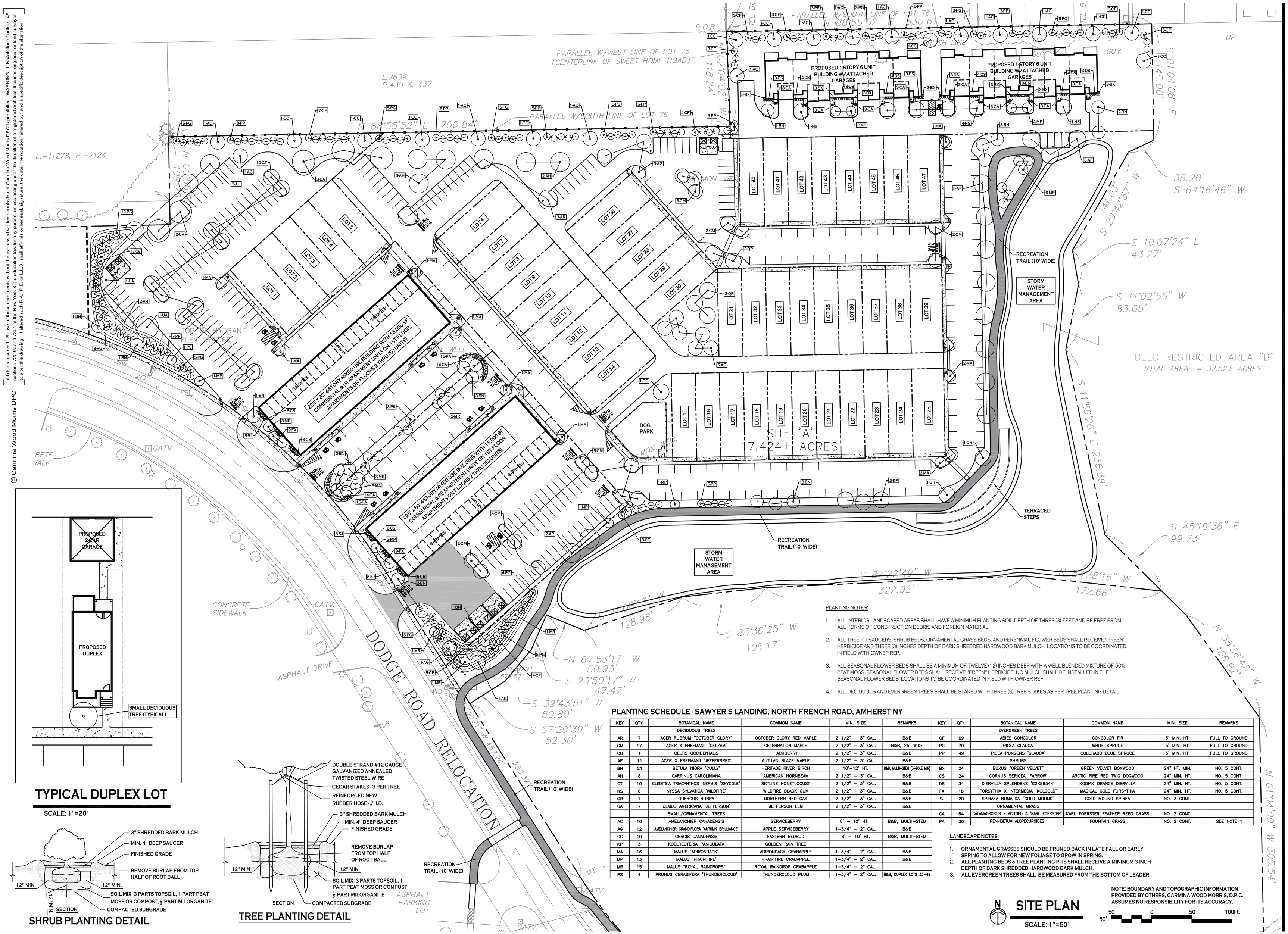

TYPICAL DUPLEX LOT

SCALE: 1"=20'

SHRUB PLANTING DETAIL

TREE PLANTING DETAIL

PLANTING NOTES:

1. ALL INTERIOR LANDSCAPED AREAS SHALL HAVE A MINIMUM PLANTING SOIL DEPTH OF THREE (3) FEET AND BE FREE FROM ALL FORMS OF CONSTRUCTION DEBRIS AND FOREIGN MATERIAL.
2. ALL TREE PIT SAUCERS, SHRUB BEDS, ORNAMENTAL GRASS BEDS, AND PERENNIAL FLOWER BEDS SHALL RECEIVE "PREEN" HERBICIDE AND THREE (3) INCHES DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
3. ALL SEASONAL FLOWER BEDS SHALL BE A MINIMUM OF TWELVE (12) INCHES DEEP WITH A WELL-BLENDED MIXTURE OF 50% PEAT MOSS. SEASONAL FLOWER BEDS SHALL RECEIVE "PREEN" HERBICIDE. NO MULCH SHALL BE INSTALLED IN THE SEASONAL FLOWER BEDS. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
4. ALL DECIDUOUS AND EVERGREEN TREES SHALL BE STAKED WITH THREE (3) TREE STAKES AS PER TREE PLANTING DETAIL.

PLANTING SCHEDULE - SAWYER'S LANDING, NORTH FRENCH ROAD, AMHERST NY

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		DECIDUOUS TREES			
AR	7	ACER RUBRUM "OCTOBER GLORY"	OCTOBER GLORY RED MAPLE	2 1/2" – 3" CAL.	B&B
CM	17	ACER X. FREEMANII "CELZAM"	CELEBRATION MAPLE	2 1/2" – 3" CAL.	B&B, 25' WIDE
CO	1	CELTIS OCCIDENTALIS	HACKBERRY	2 1/2" – 3" CAL.	B&B
AF	11	ACER X FREEMANII "JEFFERSRED"	AUTUMN BLAZE MAPLE	2 1/2" – 3" CAL.	B&B
BN	21	BETULA NIGRA "CULLY"	HERITAGE RIVER BIRCH	10'–12' HT.	B&B; MULTI-STEM (3-BOLE MIN)
AH	8	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2 1/2" – 3" CAL.	B&B
GT	10	GLEDITSIA TRIACANTHOS INERMIS "SKYCOLE"	SKYLINE HONEYLOCUST	2 1/2" – 3" CAL.	B&B
NS	6	NYSSA SYLVATICA "WILDFIRE"	WILDFIRE BLACK GUM	2 1/2" – 3" CAL.	B&B
QR	7	QUERCUS RUBRA	NORTHERN RED OAK	2 1/2" – 3" CAL.	B&B
UA	7	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2 1/2" – 3" CAL.	B&B
		SMALL/ORNAMENTAL TREES			
AC	10	AMELANCHIER CANADENSIS	SERVICEBERRY	8' – 10' HT.	B&B, MULTI-STEM
AG	12	AMELANCHIER GRANDIFLORA 'AUTUMN BRILLIANCE'	APPLE SERVICEBERRY	1–3/4" – 2" CAL.	B&B
CC	10	CERCIS CANADENSIS	EASTERN REDBUD	8' – 10' HT.	B&B, MULTI-STEM
KP	3	KOELREUTERIA PANICULATA	GOLDEN RAIN TREE		
MA	16	MALUS 'ADIRONDACK'	ADIRONDACK CRABAPPLE	1–3/4" – 2" CAL.	B&B
MP	13	MALUS 'PRAIRIFIRE'	PRAIRIFIRE CRABAPPLE	1–3/4" – 2" CAL.	B&B
MR	15	MALUS "ROYAL RAINDROPS"	ROYAL RAINDROP CRABAPPLE	1–3/4" – 2" CAL.	
PS	4	PRUNUS CERASIFERA 'THUNDERCLOUD'	THUNDERCLOUD PLUM	1–3/4" – 2" CAL.	B&B, DUPLEX LOTS 33–49
		EVERGREEN TREES			
CF	69	ABIES CONCOLOR	CONCOLOR FIR	5' MIN. HT.	FULL TO GROUND
PG	70	PICEA GLAUCA	WHITE SPRUCE	5' MIN. HT.	FULL TO GROUND
PP	49	PICEA PUNGENS 'GLAUCA'	COLORADO BLUE SPRUCE	5' MIN. HT.	FULL TO GROUND
		SHRUBS			
BX	24	BUXUS "GREEN VELVET"	GREEN VELVET BOXWOOD	24" HT. MIN.	NO. 5 CONT.
CS	24	CORNUS SERICEA 'FARROW'	ARCTIC FIRE RED TWIG DOGWOOD	24" MIN. HT.	NO. 5 CONT.
DS	34	DIERVILLA SPLENDENS 'G2X88544'	KODIAK ORANGE DIERVILLA	24" MIN. HT.	NO. 5 CONT.
FX	18	FORSYTHIA X INTERMEDIA 'KOLGOLD'	MAGICAL GOLD FORSYTHIA	24" MIN. HT.	NO. 5 CONT.
SJ	20	SPIRAEA BUMALDA "GOLD MOUND"	GOLD MOUND SPIREA	NO. 3 CONT.	
		ORNAMENTAL GRASS			
CA	64	CALAMAGROSTIS X ACUTIFOLIA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	NO. 2 CONT.	
PA	30	PENNISETUM ALOPECUROIDES	FOUNTAIN GRASS	NO. 2 CONT.	SEE NOTE 1

LANDSCAPE NOTES:

1. ORNAMENTAL GRASSES SHOULD BE PRUNED BACK IN LATE FALL OR EARLY SPRING TO ALLOW FOR NEW FOLIAGE TO GROW IN SPRING.
2. ALL PLANTING BEDS & TREE PLANTING PITS SHALL RECEIVE A MINIMUM 3-INCH DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH.
3. ALL EVERGREEN TREES SHALL BE MEASURED FROM THE BOTTOM OF LEADER.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

N

SITE PLAN

SCALE: 1"=50'

50' 0 50 100Ft.

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/9/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Landscape Plan

DRAWING NO.

L-100

Project no.: 21.011



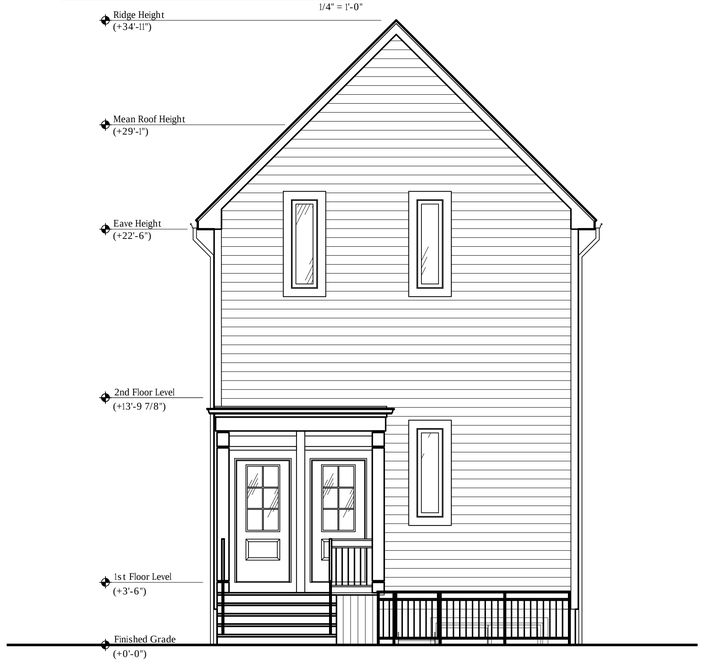
Front Elevation

1/4" = 1'-0"



Right Elevation

1/4" = 1'-0"



Rear Elevation

1/4" = 1'-0"



Left Elevation

1/4" = 1'-0"

SEVERYN DEVELOPMENT
BETTER BUILT HOMES
Severyn Development, Inc.
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Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing
Two Family

Portion Of 1081 North French Road Amherst, NY
2/23/21

SUTTON architecture
"Design 2 Build"
5409 Main Street
716-932-7156

Attachment: SP-2021-05_drawings_052021 (23057 : Sp-2021-05)



South Elevation

1/8" = 1'-0"



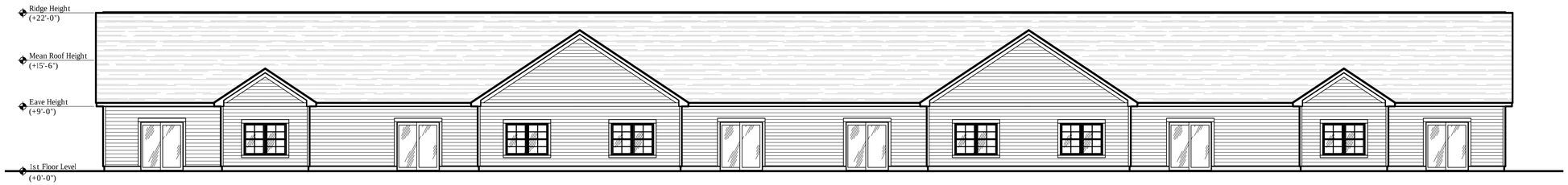
East Elevation

1/8" = 1'-0"



West Elevation

1/8" = 1'-0"



North Elevation

1/8" = 1'-0"

SEVERYN DEVELOPMENT
BETTER BUILT HOMES

Severyn Development, Inc.
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Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing
6 Unit Multifamily

Portion Of 1081 North French Road Amherst, NY
2/23/21

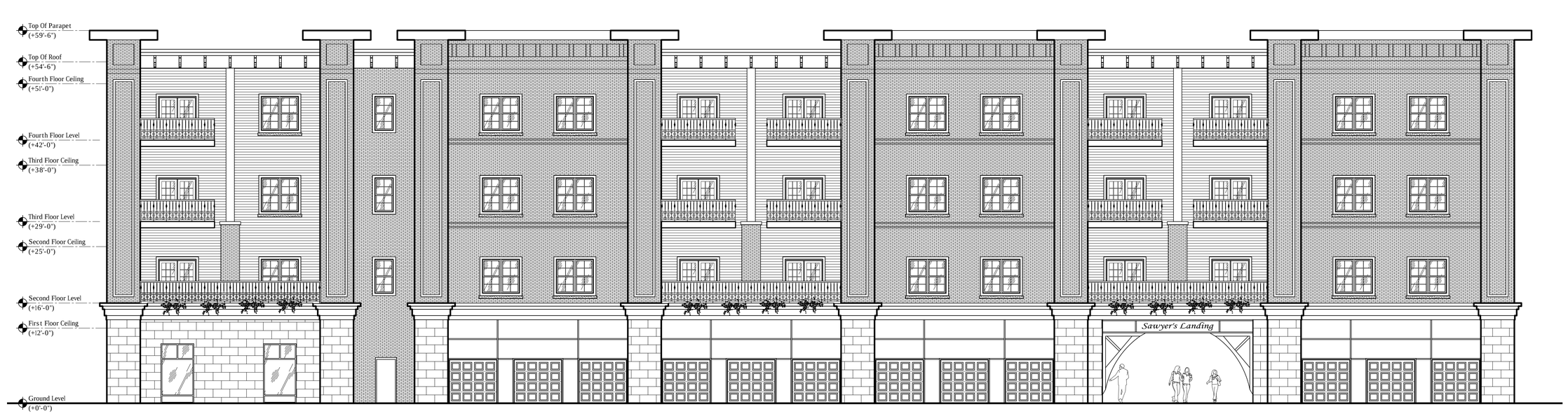
SUTTON architecture
"Design 2 Build"
5409 Main Street
716-932-7156

Attachment: SP-2021-05_drawings_052021 (23057 : Sp-2021-05)



North Elevation

1/8" = 1'-0"



South Elevation

1/8" = 1'-0"

SEVERYN DEVELOPMENT
BETTER BUILT HOMES

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Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing
4 Story Mixed Use

Portion Of 1081 North French Road Amherst, NY
2/23/21

SUTTON architecture
"Design 2 Build"

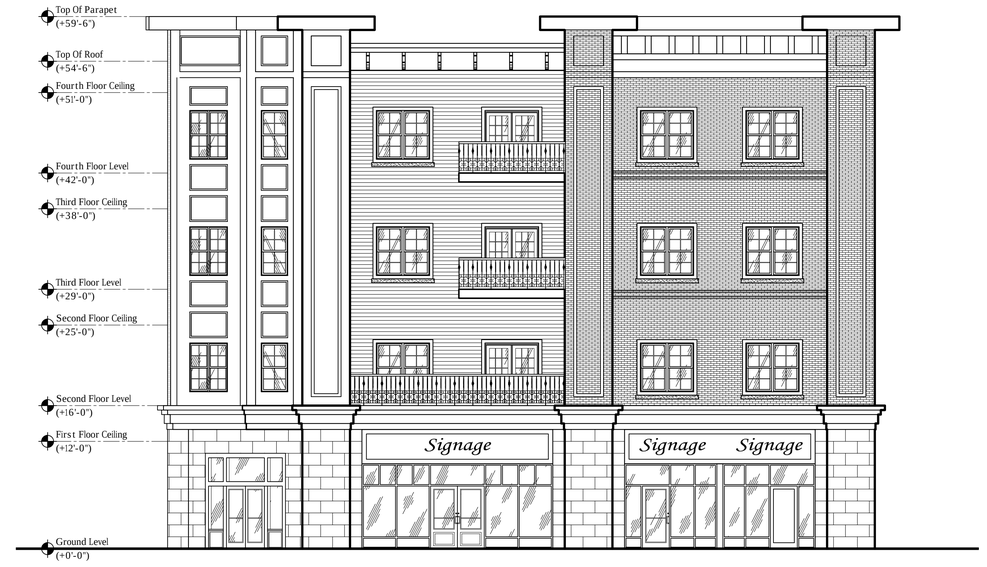
5409 Main Street
716-932-7156

Attachment: SP-2021-05_drawings_052021 (23057 : Sp-2021-05)



East Elevation

1/8" = 1'-0"



West Elevation

1/8" = 1'-0"

SEVERYN DEVELOPMENT
BETTER BUILT HOMES

Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing
4 Story Mixed Use

Portion Of 1081 North French Road Amherst, NY
2/23/21

SUTTON architecture
"Design 2 Build"
5409 Main Street
716-932-7156

Attachment: SP-2021-05_drawings_052021 (23057 : Sp-2021-05)

Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)

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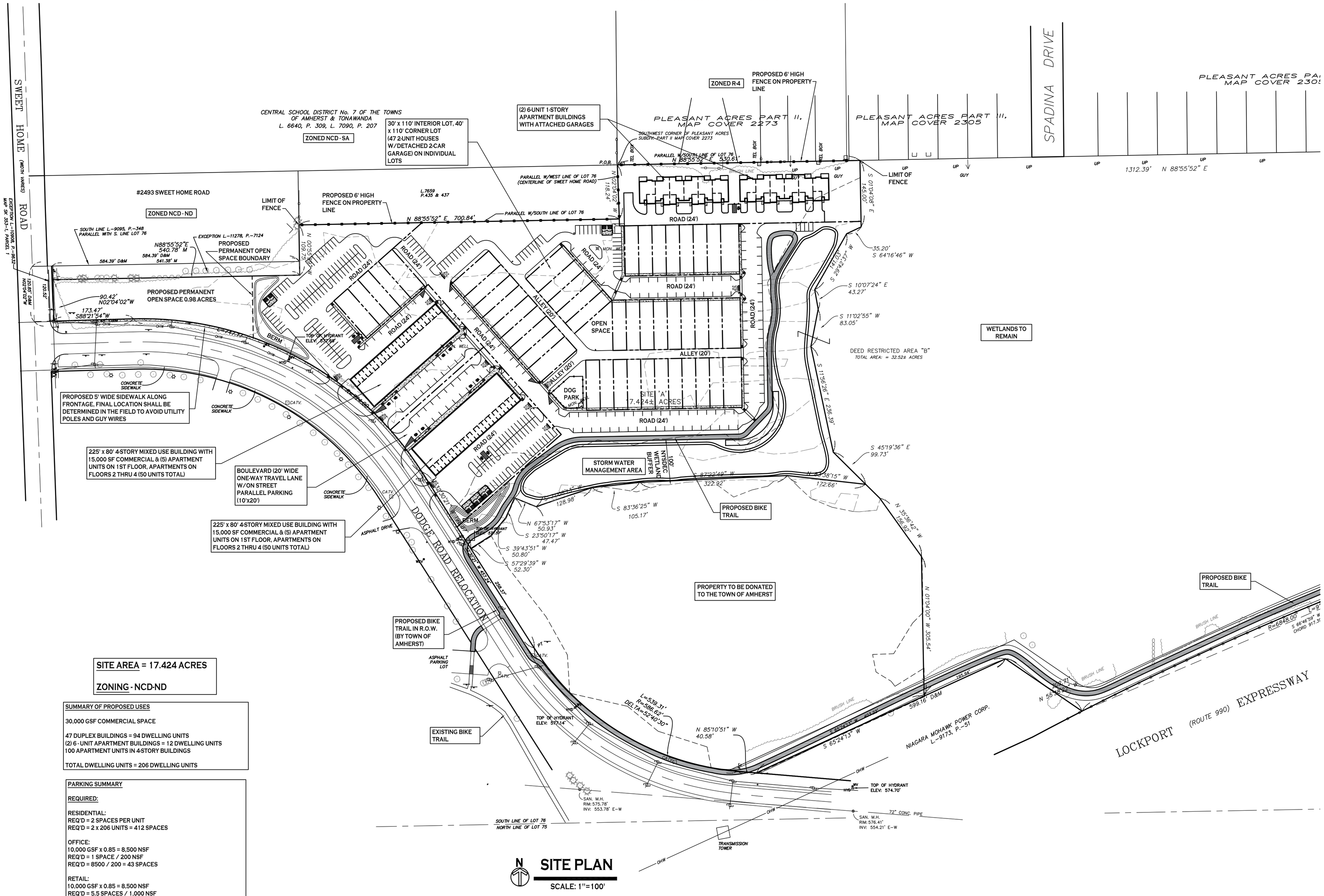

SITE PLAN

SCALE: 1"=100'

SITE AREA = 17.424 ACRES

ZONING - NCD-ND

SUMMARY OF PROPOSED USES

30,000 GSF COMMERCIAL SPACE

47 DUPLEX BUILDINGS = 94 DWELLING UNITS
(2) 6 - UNIT APARTMENT BUILDINGS = 12 DWELLING UNITS
100 APARTMENT UNITS IN 4-STORY BUILDINGS

TOTAL DWELLING UNITS = 206 DWELLING UNITS

PARKING SUMMARY

REQUIRED:

RESIDENTIAL:
REQ'D = 2 SPACES PER UNIT
REQ'D = 2 x 206 UNITS = 412 SPACES

OFFICE:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 1 SPACE / 200 NSF
REQ'D = 8500 / 200 = 43 SPACES

RETAIL:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 5.5 SPACES / 1,000 NSF
REQ'D = 8500 / 1000 x 5.5 = 47 SPACES

RESTAURANT:
REQ'D = 1 SPACE / 3 SEATS + 1 SPACE / 100 SF TAKE OUT AREA
REQ'D = 100 SEAT / 3 + 500 SF / 100 = 38 SPACES

TOTAL REQ'D = 540 SPACES

PROVIDED:

158 PARALLEL PARKING SPACES
213 9'x19' SPACES *
40 GARAGE SPACES IN 4-STORY BLDGS
94 GARAGE SPACES IN DETACHED GARAGES
505 TOTAL SPACES

* INCLUDES SPACES IN FRONT OF APARTMENT GARAGES

PERMANENT OPEN SPACE SUMMARY

TOTAL PROPOSED PERMANENT OPEN SPACE = 0.98 ACRES

WETLAND SUMMARY

FEDERAL IMPACTS PROPOSED = 6.089 AC
FEDERAL IMPACTS PREVIOUSLY PROPOSED = 13.01 AC
DECREASE = 6.921 AC (53% DECREASE)

NYSDEC IMPACTS PROPOSED = 1.20 AC
NYSDEC IMPACTS PREVIOUSLY PROPOSED = 9.46 AC
DECREASE = 8.26 AC (87% DECREASE)

NYSDEC BUFFER IMPACT PROPOSED = 3.65 AC
NYSDEC BUFFER IMPACTS PREVIOUSLY PROPOSED = 4.20 AC
DECREASE = 0.55 AC (13% DECREASE)

NOTE: NYSDEC IMPACTS INCLUDES FEDERAL WETLAND IMPACT OVERLAP AREAS

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/22/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Overall Site Plan

DRAWING NO.

C-100

Project no.: 21.011

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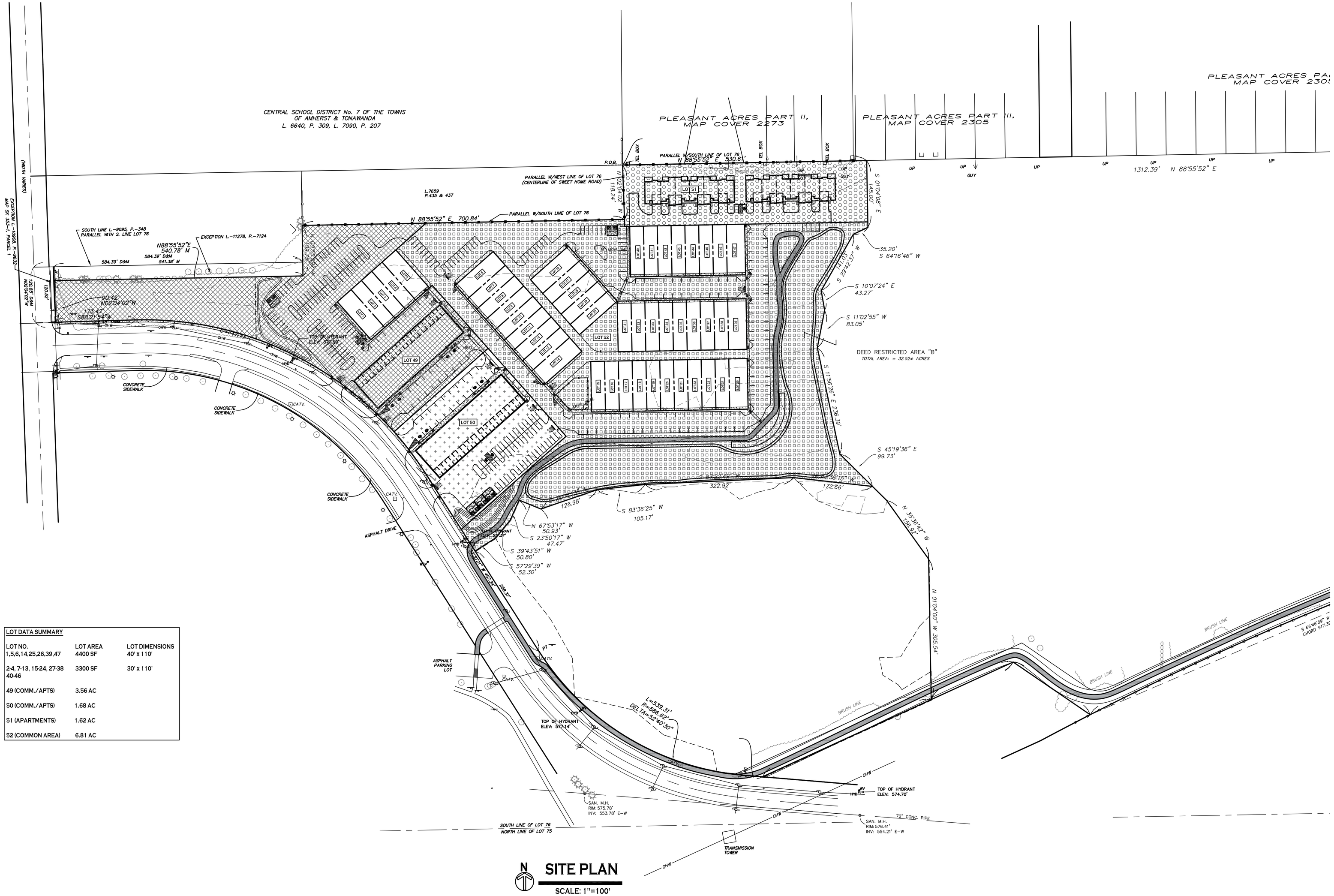
Attachment: SP-2021-05_drawings_052021 (23057 : SP-2021-05)



LOT DATA SUMMARY		
LOT NO.	LOT AREA	LOT DIMENSIONS
1,5,6,14,25,26,39,47	4400 SF	40' x 110'
2-4, 7-13, 15-24, 27-38 40-46	3300 SF	30' x 110'
49 (COMM./APTS)	3.56 AC	
50 (COMM./APTS)	1.68 AC	
51 (APARTMENTS)	1.62 AC	
52 (COMMON AREA)	6.81 AC	

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/22/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Parcel Map

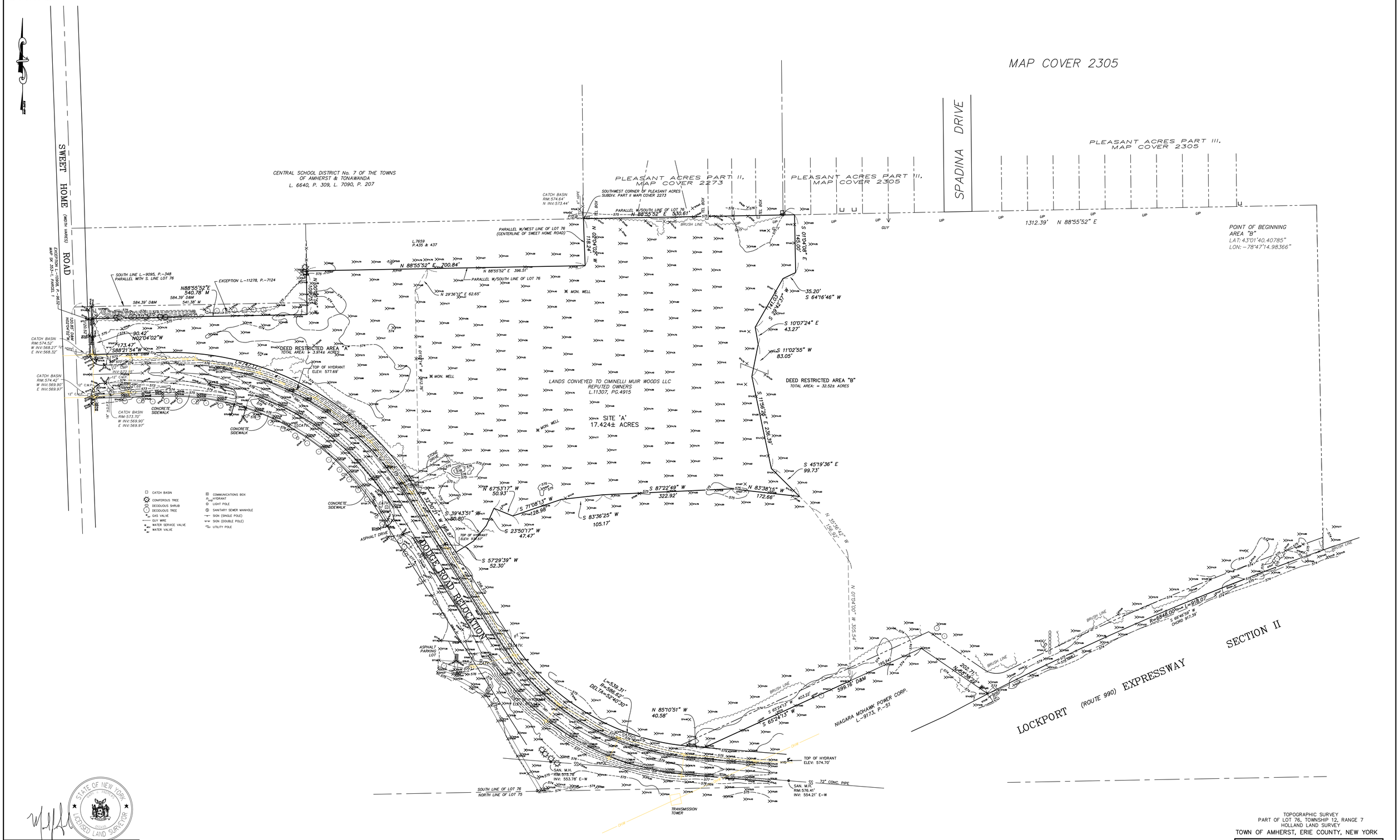
DRAWING NO.

C-102

Project no.: 21.011

NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE.
● SET OR EX. 5/8" REBAR

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF SECTION 7209 PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW.



DATE	REVISION/TYPE

TOPOGRAPHIC SURVEY
PART OF LOT 76, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK

GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE
4950 GENESEE STREET, SUITE 100
BUFFALO, NEW YORK 14225
(716) 633-4844 FAX 633-4940

Job No. 2013062-SITE A Date: DECEMBER 22, 2020
Scale: 1" = 100' TAX No. 40.08-3-13.1 (PART OF)

Attachment: SP-2021-05_drawings_052021 (23057 : Sp-2021-05)

DRAFT (5/20/21)
TOWN OF AMHERST
PLANNING BOARD
SITE PLAN RESOLUTION
SP-2021-05

PETITIONER

Sawyer's Landing LLC
c/o Sean Hopkins, Esq.
5500 Main Street, Suite 343
Williamsville, NY 14221

PROPERTY LOCATION

1081 North French Road (portion)

WHEREAS, the Town of Amherst Planning Board on Thursday, May 20, 2021 held a public hearing on a Site Plan for a mixed-use development, and

WHEREAS, the Planning Board reviewed the plans and specifications for the proposed project, and

WHEREAS, the Site Plan was referred to the Town's various review agencies, and

WHEREAS, in accordance with Section 8-7-8 of the Zoning Ordinance, the Planning Board finds that:

A. The site plan includes usable space for active and passive recreation, including pedestrian connections.

B. The site plan includes open space lands for public ownership and use offered for dedication or other disposition to the Town or other public entity.

C. School sites and facilities are adequate to accommodate the proposed site plan.

D. The site plan does not include the extension of roadways to adjacent property.

WHEREAS, in accordance with Section 8-7-9 of the Zoning Ordinance, the Planning Board finds that:

A. The proposed site plan is consistent with the development plan if one is required.

B. The proposed site plan is consistent with the purpose and specific requirements of the Zoning Ordinance and generally consistent with the policies of the Comprehensive Plan.

C. Adequate services and utilities will be available prior to occupancy.

D. The site plan is consistent with all other applicable laws.

Attachment: SP-2021-05_Draft_Resolution_052021 (23057 : Sp-2021-05)

DRAFT (5/20/21)
TOWN OF AMHERST
PLANNING BOARD
SITE PLAN RESOLUTION
SP-2021-05

PETITIONER	PROPERTY LOCATION
Sawyer's Landing LLC	1081 North French Road (portion)

E. Pursuant to Local Law #3-82, as amended, the Planning Board has determined that the requirements of SEQR are complete and that the subject proposal is not expected to have a significant adverse effect on the environment. The previously undertaken SEQR process included DEIS, FEIS and culminated in the Town Board's issuance of a SEQR Findings Statement on December 17, 2007. Lead Agency was re-established for review of the proposed amendment to the Findings Statement to allow the proposed mixed-use development, and the Findings Statement was revised on October 19, 2020.

F. Wetland permits were issued for this project by NYSDEC on December 17, 2019 and the US Army Corps of Engineers under Section 404 of the Clean Water Act on December 12, 2019. Both permits authorize work on the project until November 30, 2024.

NOW THEREFORE BE IT FURTHER RESOLVED that the Planning Board, in accordance with Section 8-7 of the Zoning Ordinance **approves/denies** said Site Plan subject to the following conditions:

1. That the consideration of signs is specifically excluded from this approval as they require a separate review and approval by the Town.

2. That all dumpsters/trash containers and all mechanical equipment, utility structures, multiple meter boards, generators, and similar appurtenances, including those which are mounted on any part of a primary structure shall be appropriately screened with a fence, wall, and/or landscaping. Provide gate on dumpster enclosure that shall be closed whenever dumpster is not being serviced, enclosure shall be high enough to screen the dumpster(s) within.

3. That as-built record drawings, including location of utilities, be provided to the Engineering Department prior to issuance of a Certificate of Occupancy by the Building Department.

The foregoing resolution was adopted by the Town of Amherst Planning Board, _____; moved by _____; seconded by _____; ayes _, noes _; absent - ____.

_____ _____
Robert J. Gilmour, Chair Date

Attachment: SP-2021-05_Draft_Resolution_052021 (23057 : Sp-2021-05)

DRAFT (5/20/21)

TOWN OF AMHERST
PLANNING BOARD
SITE PLAN RESOLUTION
SP-2021-05

PETITIONER	PROPERTY LOCATION
Sawyer's Landing LLC	1081 North French Road (portion)

EK/bf
X:\Current_Planning\Files\Site Plans\2021\SP-2021-05_(1081 N_FrenchRd)_2021\SP-2021-05_Draft_Resolution_052021.docx

cc: Town Clerk
Commissioner of Building
Town Engineer
Fire Chiefs
Traffic/Safety
Highway Superintendent
ECDEP
NYSDOT
NYSDEC
Sean Hopkins, Hopkins Sorgi & McCarthy, 5500 Main St., Suite 343, Williamsville, NY 14221
William Severyn, Severyn Development, 43 Central Ave. Suite 300, Lancaster, NY 14086
Adam Faeth, Ciminelli Real Estate Corp., 50 Fountain Plaza, Suite 500, Buffalo, NY 14202
Chris Wood, Carmina Wood Morris, 487 Main St, Suite 500, Buffalo, NY 14203
David Sutton, Sutton Architects, 5409 Main St, 2nd Floor, Williamsville, NY 14221

Approved Plan:
Received:

Attachment: SP-2021-05_Draft_Resolution_052021 (23057 : Sp-2021-05)

Application for Site Plan Approval 1021 North French Road [Including Subdivision of Project Site] - Proposed Mixed-Use Project - Site "A" of Muir Woods Property
Applicant: Sawyers Landing LLC

Prepared By: Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221
Tel: 510-4338
E-mail: shopkins@hsr-legal.com

TOWN OF AMHERST PLANNING DEPARTMENT

Application for Major Site Plan Review

For Official Use

File #: SP-2021-05 **Acreage** 17.42 **Fee $** 13,315.00

Address Verified by Assessor's Office
VERIFIED BY DATE

Site Plan Review

		Fill In Applicable Fees
1 acre or less	$1,250.00	$1,250.00
Each Additional acre or fraction thereof	$ 650.00/acre	$11,050.00
Amendments to Site Plans	$1,200.00	
Request for Relief of / or Change to Conditions of Site Plan Approval	$1,200.00	
Request for Extension of Site Plan Approval	$ 450.00	
Stormwater Pollution Prevention Plan		
1-4.99 Acres	$ 500.00	
5-10 Acres	$ 750.00	
>10 Acres	$1,000.00	$1,000.00
Affidavit Fee for Public Hearing	$ 15.00	$15.00
	TOTAL FEE:	$ 13,315.00

Materials Received by Planning Department
RECEIVED BY DATE

RECEIVED FEB 22 2021 TOWN OF AMHERST PLANNING DEPT.

Materials Accepted by Town Clerk & Fee Paid
ACCEPTED BY DATE

To Be Completed By Applicant

Petitioner: Name: Sawyers Landing LLC c/o Sean W. Hopkins, Esq.

Address: 5500 Main Street, Suite 343

Williamsville, New York 14221

city state zip code

Phone: 510-4338 Fax: _____ E Mail: shopkins@hsr-legal.com

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

MAJOR SITE PLAN APPLICATION ***con't.*** ***PAGE 2***

Representative (Architect, Engineer, Landscape Architect, Surveyor, or Attorney):

Name: Christopher Wood, P.E.

Address: Carmina Wood Morris DPC

483 Main Street, Suite 600

Buffalo (city) New York (state) 14203 (zip code)

Phone: 842-3165 [Ext. 103] Fax: 842-0263

E Mail: cwood@cwm-ae.com

Project Location (must be verified by Town Assessor's Office):

Address: Portion of 1081 North French Road

SBL No(s): 40.08-3-13.1/A

Project Name: Proposed Mixed-Use Project

Project Description:

See attached Exhibit "2" for Project Description. The layout of the proposed mixed-use project to be located on the New Community District - General Commercial ("NCD-GC") zoned property at 1081 North French Road as depicted on the Overall Site Plan [Drawing C-100] prepared by Carmina Wood Morris DPC. A reduced size copy of the Overall Site Plan is provided at Exhibit "3". and a reduced size copy of the Site Plan [Drawing C-101] is provided at Exhibit "4". The proposed mixed-use project includes the subdivision of the 17.42 acre Project Site into 52 parcels as depicted on the Parcel Map [Drawing C-102] prepared by Carmina Wood Morris DPC. A reduced size copy of the Parcel Map [Drawing C-102] is provided at Exhibit "5".

Town of Amherst Planning Department 5583 Main Street Williamsville-NY-14221
(716) 631-7051- Fax: (716) 631-7153

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

If this petition is an amendment to a previously approved site plan, please describe the proposed changes (include type and size of existing structures and number of existing parking spaces):

Not Applicable.

Gross Floor Area (non-residential):	0 existing	30,000 sq. ft. proposed	30,000 sq. ft. total
Number of Residential Units:	0 existing	206 proposed	206 total
Number of Parking Spaces:	0 existing	505 proposed	505 total

Acreage of Parcel: 17.42 Acres

Frontage on Public Roads: The proposed parcel will have approximately 1,120 ft. on Dodge Road and approximately 120 ft. of frontage on Sweet Home Road.

Existing Zoning District(s) NCD-GC

[Note: A completed Part 1 of the Full Environmental Assessment Form prepared pursuant to the State Environmental Quality Review Act ("SEQRA") is attached as Exhibit "1" of this Site Plan Application.]

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Town of Amherst Planning Department 5583 Main Street Williamsville-NY-14221
(716) 631-7051- Fax: (716) 631-7153

Exhibit 1 – Part 1 of the Full Environmental Assessment Form prepared pursuant to the State Environmental Quality Review Act ("SEQRA") with attached Page 5[a] and Attachments "A" and "B"

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Full Environmental Assessment Form Part 1 - Project and Setting

Prepared By: Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221
Tel: 716.510-4338
E-mail: shopkins@hsr-legal.com

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project: Proposed Mixed-Use Project - Site A of Muir Woods		
Project Location (describe, and attach a general location map): Portion of 1081 North French Road - Town of Amherst - Erie County		
Brief Description of Proposed Action (include purpose or need): The proposed action consists of a request for Site Plan Approval [including the subdivision of the Project Site] for a mixed use project consisting of 2 four story mixed-use buildings [15,000 sq. ft of commercial space and 50 units per building], 47 two-family town homes on individual lots and 2 single-story apartment buildings [6 units per building] along with all related site improvements depicted on the fully engineered plans prepared by Carmina Wood Morris DPC. A reduced size copy of the Overall Site Plan [Drawing C-100] is provided at Exhibit "3". The action has been defined broadly to include all required discretionary approvals and permits as well as all site improvements including the proposed driveway connections to Dodge Road, access aisles, parking spaces, driveways, wetland impacts, lighting, landscaping, on-site storm water management improvements, sanitary sewer and water lines and connections and all other required utility improvements. The project purpose is to develop Site "A" of overall Muir Woods Project Site as a mixed-use project. The proposed mixed-use project is a Type I action pursuant to SEQRA and the Town Board issued an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") on October 19, 2020 to allow mixed-use development of the Project Site. On October 19, 2020, the Town Board also adopted a resolution to amend the Town's Comprehensive to designate the Project Site as appropriate for mixed-use.		
Name of Applicant/Sponsor: Sawyers Landing LLC c/o Sean Hopkins, Esq.	Telephone: 716.510-4338 E-Mail: shopkins@hsr-legal.com	
Address: 5500 Main Street, Suite 343		
City/PO: Williamsville, NY	State: NY	Zip Code: 14221
Project Contact (if not same as sponsor; give name and title/role):	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:
Property Owner (if not same as sponsor): Ciminelli Muir Woods, LLC c/o Adam Faeth, Esq.	Telephone: 716.631-8000 E-Mail: afaeth@ciminelli.com	
Address: 50 Fountain Plaza, Suite 500		
City/PO: Buffalo	State: NY	Zip Code: 14202

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees ☑Yes ☐No	Sewage Works Corporation and PIPs	To be determined
b. City, Town or Village Planning Board or Commission ☑Yes ☐No	Planning Board - Site Plan Approval [includes Subdivision Approval - 52 lots]	February 22, 2021
c. City, Town or Village Zoning Board of Appeals ☐Yes ☑No		
d. Other local agencies ☑Yes ☐No	Building Department - Building Permits; Amherst IDA [PILOT, etc.]	To be determined
e. County agencies ☑Yes ☐No	ECPDW - Highway Work Permit; ECWA - Water; ECHD - Sewer and Water	To be determined
f. Regional agencies ☐Yes ☑No		
g. State agencies ☑Yes ☐No	NYSDEC - Amended Wetland Permit; DSCA Approval, Sewage Work Corp. & SPDES Permit	Amended Wetland Permit issued on 12/24/20; To be determined.
h. Federal agencies ☑Yes ☐No	USACE - Amended Wetland Permit [Pending]	July 1, 2020

i. Coastal Resources.

i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐Yes ☑No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☑Yes ☐No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☑Yes ☐No

If Yes, identify the plan(s):

NYS Heritage Areas:West Erie Canal Corridor [Note: The project will not have any impacts on the West Erie Canal Corridor.]

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes ☑No

If Yes, identify the plan(s):

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
Site "A" of the Muir Woods property is zoned New Community District - Neighborhood District ("NCD-ND") pursuant to the Town of Amherst Zoning Map.

b. Is the use permitted or allowed by a special or conditional use permit? ☐ Yes ☑ No

c. Is a zoning change requested as part of the proposed action? ☐ Yes ☑ No
If Yes,
i. What is the proposed new zoning for the site?

C.4. Existing community services.

a. In what school district is the project site located? Sweet Home Central School District

b. What police or other public protection forces serve the project site?
Town of Amherst Police Department

c. Which fire protection and emergency medical services serve the project site?
Volunteer Fire Department

d. What parks serve the project site?
Various Town Parks including Nature View Park

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)?Mixed-use project consisting of 2 four-story buildings with 15,000 sq. ft. of 1st floor commercial space and 50 apartments per building; 47 two-family townhomes; and two six-unit single-story apartment buildings.

b. a. Total acreage of the site of the proposed action? 28.47 acres
b. Total acreage to be physically disturbed? 17.0 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 326 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % Units:

d. Is the proposed action a subdivision, or does it include a subdivision? ☑ Yes ☐ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
The 45 two-family townhome buildings will consist of individual lots and mixed-use buildings may consist of separate parcels.
ii. Is a cluster/conservation layout proposed? ☐ Yes ☐ No
iii. Number of lots proposed? 52 [47 lots for the two-family townhomes]
iv. Minimum and maximum proposed lot sizes? Minimum 3300 sf Maximum 6.81 Acres

e. Will the proposed action be constructed in multiple phases? ☑ Yes ☐ No
i. If No, anticipated period of construction: ____ months
ii. If Yes:
- Total number of phases anticipated 3-4
- Anticipated commencement date of phase 1 (including demolition) Fall month 2021 year
- Anticipated completion date of final phase July month 2024 year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases:
The infrastructure necessary for each phase will be installed to ensure compliance with applicable technical standards including those for stormwater management.

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

f. Does the project include new residential uses? ☑Yes ☐No
If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase		20		50
At completion of all phases		47		112

The build-out of the residential components will be based on market conditions.

g. Does the proposed action include new non-residential construction (including expansions)? ☑Yes ☐No
If Yes, There will be 15,000 sq. ft. of commercial space in each of the two 4-story mixed-use buildings.
i. Total number of structures 2
ii. Dimensions (in feet) of largest proposed structure: 55' height; 80' width; and 225' length
iii. Approximate extent of building space to be heated or cooled: 30,000 square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☑Yes ☐No
If Yes,
i. Purpose of the impoundment: Storm water management
ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☑Other specify: Storm water runoff from impervious surfaces.
iii. If other than water, identify the type of impounded/contained liquids and their source.
N/A
iv. Approximate size of the proposed impoundment. Volume: ____ million gallons; surface area: 1.5 acres
v. Dimensions of the proposed dam or impounding structure: N/A height; ____ length
vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):
Impoundment area is an excavation consisting of earth fill.

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? ☐Yes ☑No
(Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite)
If Yes:
i. What is the purpose of the excavation or dredging?
ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?
- Volume (specify tons or cubic yards):
- Over what duration of time?

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.

iv. Will there be onsite dewatering or processing of excavated materials? ☐Yes ☐No
If yes, describe.

v. What is the total area to be dredged or excavated? ____ acres
vi. What is the maximum area to be worked at any one time? ____ acres
vii. What would be the maximum depth of excavation or dredging? ____ feet
viii. Will the excavation require blasting? ☐Yes ☐No
ix. Summarize site reclamation goals and plan:

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☑Yes ☐No
If Yes:
i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): The proposed mixed-use project will result in 4.89 acres of impacts to federal wetlands (reduction of 7.87 acres), 1.20 acres of impacts to NYSDEC Freshwater Wetlands (reduction of 8.26 acres) and 3.65 acres of impacts to regulated 100 ft. Adjacent Areas of of the NYSDEC Freshwater Wetlands (reduction of .55 acres).

[The New York State Department of Environmental Conservation issued an Amended Wetland Permit on December 24, 2020. A copy of the Amended Wetland Permit is provided at Exhibit "8".]

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ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

iii. Will the proposed action cause or result in disturbance to bottom sediments? ☐Yes ☑No
If Yes, describe:

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☑No
If Yes:

- acres of aquatic vegetation proposed to be removed:
- expected acreage of aquatic vegetation remaining after project completion:
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access):
- proposed method of plant removal:
- if chemical/herbicide treatment will be used, specify product(s):

v. Describe any proposed reclamation/mitigation following disturbance:

c. Will the proposed action use, or create a new demand for water? ☑Yes ☐No
If Yes:

i. Total anticipated water usage/demand per day: 50,820 gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑Yes ☐No
If Yes:

- Name of district or service area: ECWA Consolidated Water District
- Does the existing public water supply have capacity to serve the proposal? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No
- Do existing lines serve the project site? ☑Yes ☐No

iii. Will line extension within an existing district be necessary to supply the project? ☐Yes ☑No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project:
- Source(s) of supply for the district:

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐Yes ☐No
If, Yes:

- Applicant/sponsor for new district:
- Date application submitted or anticipated:
- Proposed source(s) of supply for new district:

v. If a public water supply will not be used, describe plans to provide water supply for the project:

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑Yes ☐No
If Yes:

i. Total anticipated liquid waste generation per day: 50,820 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each):
Sanitary wastewater

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑Yes ☐No
If Yes:

- Name of wastewater treatment plant to be used: Tonawanda Creek Wastewater Treatment Plant
- Name of district: Town of Amherst Consolidated Sanitary Sewer District
- Does the existing wastewater treatment plant have capacity to serve the project? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No

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- Do existing sewer lines serve the project site? ☑Yes ☐No
- Will a line extension within an existing district be necessary to serve the project? ☐Yes ☑No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☑No

If Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑Yes ☐No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or 8.0 acres (impervious surface)

_____ Square feet or 28.47 acres (parcel size)

ii. Describe types of new point sources. Parking lots and roof tops

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

Stormwater runoff will be conveyed into the on-site stormwater management system to be installed per the applicable stringent stormwater quality and quantity standards of the NYS Department of Environmental Conservation ("NYSDEC")

- If to surface waters, identify receiving water bodies or wetlands: NYSDEC & Federal wetlands on the east portion of the Project Site.
- Will stormwater runoff flow to adjacent properties? ☐Yes ☑No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☑Yes ☐No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☑No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:

- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

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h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? ☐Yes ☑No A Traffic Impact Study was prepared by SRF Associates DPC dated August 3, 2020 and 4 copies have been submitted with the Site Plan Application dated February 22, 2020.

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐Weekend ☐ Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): _____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☑Yes ☐No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: _____

To be determined

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):

National Grid

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐Yes ☑No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 7:00 to 7:00
- Saturday: 8:00 to 6:00
- Sunday: As needed
- Holidays: Not Applicable

ii. During Operations:

- Monday - Friday: 8:00 to 11:00
- Saturday: 8:00 to 11:00
- Sunday: 8:00 to 10:00
- Holidays: 8:00 to 10:00

The hours of operation during "During Operations" as listed above apply to the first floor commercial space in the two mixed-use buildings. The hours are estimates since the tenants that will lease the first floor commercial space including both office and retail tenants have not yet been identified.

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m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

Construction activities will include the use of construction equipment during daytime hours that will exceed ambient background noise levels. The construction related noise impacts are a temporary unavoidable impact.

ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☑ No

Describe:

n. Will the proposed action **have outdoor lighting?** ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

Lighting will be installed in compliance with the lighting standards contained in the Town of Amherst Zoning Code. There will not be any lighting spillover onto contiguous properties.

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☑ No

Describe:

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures:

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally, describe the proposed storage facilities:

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☑ Yes ☐ No

If Yes:

i. Describe proposed treatment(s):

Potential use of lawn fertilizer and pesticides on maintained portions of property in accordance with applicable standards for application and use of lawn fertilizer and pesticides.

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☑ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☑ Yes ☐ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: 2 tons per week (unit of time)
- Operation : 2 tons per week (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: wood and metal waste may be recycled by the contract at their discretion
- Operation: Town of Amherst recycling program will be followed

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: approved NYSDEC landfill via contractor or private disposal company
- Operation: approved NYSDEC landfill via private disposal company

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s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility: _____

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☑ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)
☑ Forest ☐ Agriculture ☐ Aquatic ☑ Other (specify): Wetlands

ii. If mix of uses, generally describe:

There are mixture of uses in the vicinity of the Project Site including residential uses to the north in the Bucyrus Heights Subdivision, an elementary school, apartments and office buildings on Sweet Home Road and permanent open space to the east of Site "A".

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	0	8.0	+ 8.0
• Forested	12.17	1.87	-10.3
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	0	0	0
• Agricultural (includes active orchards, field, greenhouse etc.)	0	0	0
• Surface water features (lakes, ponds, streams, rivers, etc.)	0	0	0
• Wetlands (freshwater or tidal)	16.3	10.2	- 6.1
• Non-vegetated (bare rock, earth or fill)	0	0	0
• Other Describe: Greenspace, Landscaping, Pond	0	8.4	+8.4

The categories as listed above include the large wetland area subject to the jurisdiction of both the NYSDEC and USACE consisting of approximately 9.81 acres that was previously approved for development by the Town Board that will consist of Permanent Open Space to be donated to the Town of Amherst.

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c. Is the project site presently used by members of the community for public recreation? ☐Yes ☑No
i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☑Yes ☐No
If Yes,
i. Identify Facilities:
1. Heritage Heights Elementary School (Sweet Home School District- 2545 Sweet Home Road); 2. Creative Play Learning Center (Private Day Care Facility- 647 Dodge Road); and 3. Four Seasons Child Care & Preschool (Private Day Care Facility- 1639 North French Road).

e. Does the project site contain an existing dam? ☐Yes ☑No
If Yes:
i. Dimensions of the dam and impoundment:
- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____
iii. Provide date and summarize results of last inspection:
_____
_____

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐Yes ☑No
If Yes:
i. Has the facility been formally closed? ☐Yes ☐No
- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:
_____
_____

iii. Describe any development constraints due to the prior solid waste activities: _____
_____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐Yes ☑No
If Yes:
i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:
_____
_____

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐Yes ☑No
If Yes:
i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐Yes ☐No
☐ Yes – Spills Incidents database — Provide DEC ID number(s): _____
☐ Yes – Environmental Site Remediation database — Provide DEC ID number(s): _____
☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures: _____
_____
_____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐Yes ☑No
If yes, provide DEC ID number(s): _____

iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):
_____
_____

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v. Is the project site subject to an institutional control limiting property uses? ☐ Yes ☑ No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐ Yes ☐ No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? >5 feet

b. Are there bedrock outcroppings on the project site? ☐ Yes ☑ No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____ %

c. Predominant soil type(s) present on project site:

Getzville silt loam	94 %
Swormville clay loam	6 %
	%

d. What is the average depth to the water table on the project site? Average: >5 feet

e. Drainage status of project site soils:
☐ Well Drained: _____ % of site
☐ Moderately Well Drained: _____ % of site
☑ Poorly Drained 100 % of site

f. Approximate proportion of proposed action site with slopes:
☑ 0-10%: 100 % of site
☐ 10-15%: _____ % of site
☐ 15% or greater: _____ % of site

g. Are there any unique geologic features on the project site? ☐ Yes ☑ No
If Yes, describe: _____

h. Surface water features.
i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☑ Yes ☐ No
ii. Do any wetlands or other waterbodies adjoin the project site? ☑ Yes ☐ No
If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.
iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑ Yes ☐ No
iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name Federal Waters, NYS Wetland Approximate Size NYS Wetland (in a...
- Wetland No. (if regulated by DEC) TE-33

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐ Yes ☑ No
If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐ Yes ☑ No

j. Is the project site in the 100-year Floodplain? ☐ Yes ☑ No

k. Is the project site in the 500-year Floodplain? ☑ Yes ☐ No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐ Yes ☑ No
If Yes:
i. Name of aquifer: _____

The proposed mixed-use project will result in 4.89 acres of impacts to federal wetlands (reduction of 7.87 acres), 1.20 acres of impacts to NYSDEC Freshwater Wetlands (reduction of 8.26 acres) and 3.65 acres of impacts to regulated 100 ft. Adjacent Areas of NYSDEC Freshwater Wetlands (reduction of .55 acres). A copy of the Amended Wetland Permit issued by the New York State Department of Environmental Conservation authorizing the impacts to the NYSDEC Freshwater Wetlands and the regulated 100 ft. Adjacent Area to accommodate the proposed mixed-use project on Site A of the Muir Woods property is provided at Attachment "A" of this Part 1 of the Full Environmental Assessment Form.

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m. Identify the predominant wildlife species that occupy or use the project site:
Typical suburban species

n. Does the project site contain a designated significant natural community? ☐Yes ☑No
If Yes:
i. Describe the habitat/community (composition, function, and basis for designation):
ii. Source(s) of description or evaluation:
iii. Extent of community/habitat:
- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐Yes ☑No

If Yes:
i. Species and listing (endangered or threatened):

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☑Yes ☐No

If Yes:
i. Species and listing:
Spiny Softshell - The Project Sponsor does not believe that Spiny Softshell is present on Site A of the Muir Woods property.

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐Yes ☑No
If yes, give a brief description of how the proposed action may affect that use:

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐Yes ☑No
If Yes, provide county plus district name/number:

b. Are agricultural lands consisting of highly productive soils present? ☐Yes ☑No
i. If Yes: acreage(s) on project site?
ii. Source(s) of soil rating(s):

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐Yes ☑No
If Yes:
i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature
ii. Provide brief description of landmark, including values behind designation and approximate size/extent:

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐Yes ☑No
If Yes:
i. CEA name:
ii. Basis for designation:
iii. Designating agency and date:

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e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? ☑ Yes ☐ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: Eligible property:Heritage Heights Elementary School

iii. Brief description of attributes on which listing is based:

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☑ Yes ☐ No

[Ccopy of the No Impact Determination letter issued by the NYSOPRP dated October 10, 2001 is provided at Attachment "B".]

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s):

ii. Basis for identification:

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☐ Yes ☑ No

If Yes:

i. Identify resource:

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.):

iii. Distance between project and resource: _____ miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation:

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

Documentation evaluating potential adverse environmental impacts pursuant to the State Environmental Quality Review Act ("SEQRA") including the fully engineered plans prepared by Carmina Wood Morris DPC have been submitted with the Site Plan Application.

G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name: Sawyers Landing LLC Date: February 22, 2021

Signature _____ Title Attorney for Project Sponsor

Sean W. Hopkins, Esq.

PRINT FORM

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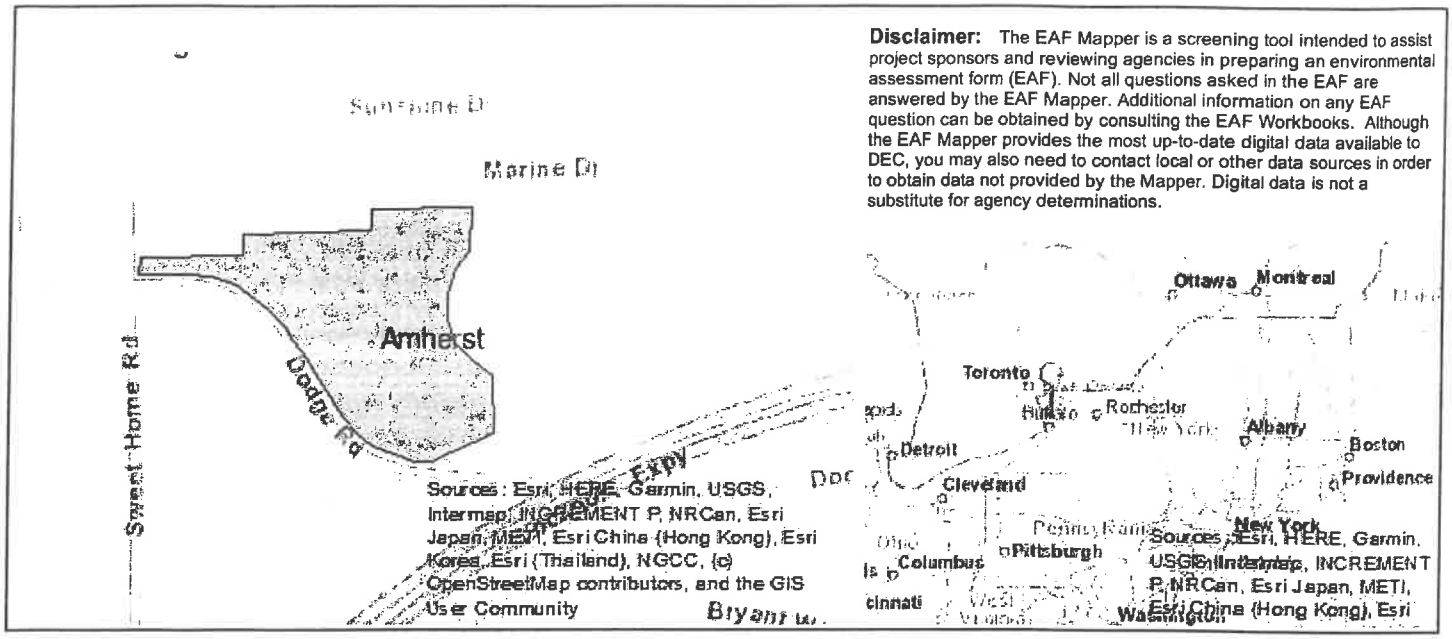
EAF Mapper Summary Report

Thursday, June 18, 2020 8:50 AM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.

B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Yes - Digital mapping data are not available for all Special Planning Districts. Refer to EAF Workbook.
C.2.b. [Special Planning District - Name]	NYS Heritage Areas:West Erie Canal Corridor
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	Yes
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.iv [Surface Water Features - Wetlands Name]	Federal Waters, NYS Wetland
E.2.h.iv [Surface Water Features - Wetlands Size]	NYS Wetland (in acres):34.6
E.2.h.iv [Surface Water Features - DEC Wetlands Number]	TE-33
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	No

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E.2.k. [500 Year Floodplain]	Yes
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	No
E.2.o. [Endangered or Threatened Species]	No
E.2.p. [Rare Plants or Animals]	Yes
E.2.p. [Rare Plants or Animals - Name]	Spiny Softshell
E.3.a. [Agricultural District]	No
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Yes - Digital mapping data for archaeological site boundaries are not available. Refer to EAF Workbook.
E.3.e.ii [National or State Register of Historic Places or State Eligible Sites - Name]	Eligible property:Heritage Heights Elementary School
E.3.f. [Archeological Sites]	Yes
E.3.i. [Designated River Corridor]	No

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TOWN OF AMHERST ATTACHMENT
State Environmental Quality Review
ENVIRONMENTAL ASSESSMENT FORM
Proposed Mixed-Use Project - Portion of 1081 North French Road

1. For each applicable category of proposed new structures, including additions to existing structures, provide the following information for all soil types on the project site (*according to Soil Survey of Erie County, NY; Table 11, Building Site Development, pp 294-305):*

Soil Name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Getzville Silt Loam	Severe	Severe	Severe	Severe	Moderate
Swormville Clay Loam	Severe	Severe	Severe	Severe	Severe

2. If the Soil survey indicates either "severe" or "moderate" suitability for the proposed types of construction, a geotechnical and hydrological analysis based on one test per 3.5 acres of project area must be provided (per Town Board resolution, 3/17/03, amended 6/16/03).

   _____ Geotechnical report attached _____ Not applicable

   [Note: 3 copies of the Geotechnical Report that has been ordered for the relevant portion of 1081 North French Road to be developed as a mixed-use project will be submitted to the Planning Department. A comprehensive Geotechnical Report for the entire overall Muir Woods Property was previously submitted.

3. Is your property located: On Youngs Road between Dodge and Klein Roads? ☐ Yes ■ No
   On Wehrle Dr. between Spindrift Dr. and Oakwood Rd? ☐ Yes ■ No

   If so, the property may be within an area of the Town that is affected by a moratorium on connections to the sanitary sewer system.

4. Are there alternative locations on the site for this project? ☐ Yes ■ No

5. Location and size of real property owned by petitioner within one (1) mile of subject proposal:
   X Not Applicable

6. Are you aware of current or future plans or intentions by others in the Town of Amherst to develop property within 1000± ft. of the present project request: ■ Yes No

   Describe A student housing community is proposed on property to the east of the Project Site commonly referred to as Site "B" of Muir Woods.

   (Potential environmental impacts from adjacent or nearby projects undergoing the approval process will receive a coordinated environmental review to determine cumulative effects on common receivers (e.g. traffic and drainage corridors) and other relevant environmental concerns.)

7. Maximum number of vehicular trips to be generated per peak hour upon completion of project 106
   Source: Traffic Impact Study prepared by SRF Associates DPC dated August 3, 2020. 3 copies of the Traffic Impact Study have been submitted with the Site Plan Application.

8. Will blasting occur during construction? ☐ Yes ■ No

9. Does the project propose to connect and be tributary to the public sanitary sewer system? ■ Yes ☐ No

10. Proposed net additional gallons per day (gpd) of sanitary sewer discharge upon completion of project:
    50,820 average flow 203,280 peak flow.

    (Average flows of 2,500 gpd or greater will require an Engineer's Report that includes a detailed downstream sewer capacity analysis and the identification of and commitment to required I/I offset work during peak wastewater flow conditions.)

11. Based on the Town's *2011 Reconnaissance Level Survey of Historic Resources,* is your property 'blue-rated' for historic significance? Yes ■ No
    [There are not any buildings located on the Project Site.]

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Attachment "A" of Part 1 of Full Environmental Assessment Form - Amended Wetland Permit Issued by the New York State Separtment of Environmental Conservation dated December 24, 2020

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

PERMIT

Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
Ciminelli Muir Woods LLC
50 Fountain Plaza, Suite 500
Buffalo, NY 14202
(716) 631-8000

Facility:
MUIR WOODS DEVELOPMENT
1121 N French Rd
Amherst, NY 14228

Facility Location: in AMHERST in ERIE COUNTY
Facility Principal Reference Point: NYTM-E: 191.586 NYTM-N: 4770.823
Latitude: 43°01'38.9" Longitude: 78°47'07.2"

Authorized Activity: Construction of a mixed-use project named "Muir Woods" consisting of approximately two 4-story mixed-use buildings consisting of commercial space and residential units, 90 two-family townhouses and 2 six-unit apartment buildings, approximately 133 detached single-family residential units and 515 cottage-style and apartment-style housing units with various amenities; and gas, electric, sanitary, potable water and storm water (the necessary infrastructure), while maintaining open space on approximately 224 acres in the Audubon New Community District. The Muir Woods project property is a 326 acre site bounded by the Lockport Expressway (Interstate Route 990) and Dodge Road on the south, Sweet Home Road on the west, North French Road on the north and Campbell Boulevard on the east. The project will result in permanent impacts to approximately 2.39 acres of State regulated wetlands (TE-22, TE-23 and TE-34), and 11.38 acres of State regulated 100 foot wide wetland adjacent area. As mitigation for those impacts the project includes creation of 19.58 acres of in-kind and out-of-kind wetlands on-site, in six areas, to replace the functions and benefits of the impacted wetlands. There will be 4.3 acres of stream channel enhancement on-site as mitigation for State wetland regulated adjacent area impacts. The project also includes construction at 520 Campbell Road property as detailed on plan sheets referenced in Natural Resource Condition No. 4.

Permit Authorizations

Freshwater Wetlands - Under Article 24
Permit ID 9-1422-00398/00001

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

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Water Quality Certification - Under Section 401 - Clean Water Act
Permit ID 9-1422-00398/00002

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: DAVID S DENK, Regional Permit Administrator
Address: NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY 14203 -2915

Authorized Signature: David S. Denk Digitally signed by David S. Denk DN: cn=David S. Denk, o=NYS DEC, ou=Div. of Env. Permits, email=david.denk@dec.ny.gov, c=US Date: 2020.12.24 10:29:47 -05'00' Date ___/___/___

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: FRESHWATER WETLANDS; WATER QUALITY CERTIFICATION

1. **No Work Prior to Approval of Legal Instrument for Preservation of Undeveloped Areas of Site** No work authorized by this permit may begin until the Department approves a legal instrument, such as a deed restriction and/or conservation easement, that will preserve in perpetuity the natural resource values of the undeveloped areas of the site. This condition does not apply to the 520 Campbell Boulevard property.

2. **Declaration of Restrictions 520 Campbell Boulevard Property** A Declaration of Restrictions permanently prohibiting any future development of the 6.88 acres of jurisdictional federal wetlands and portion of the upland area on 520 Campbell Boulevard as depicted on the Wetland Restriction Exhibit Map must be incorporated into the deeds for lots 1 – 12 and 21. By 60 days after Water Quality Certification issuance, the permittee shall file with the real property records of the Erie County Clerk`s Office, the deed for each applicable lot containing this notice. The permittee shall within two weeks following the filing of the deed(s) submit proof of filing from the County Clerk's Office

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showing the Liber and page number at which the deed notice was filed and the date of filing for one of the affected lots to: Regional Permit Administrator, NYSDEC Region 9 Headquarters, 270 Michigan Ave, Buffalo, NY 14203-2915.

3. **Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by Ciminelli Development Company, Inc. and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009.

4. **Conformance with Plans Site B** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include the "Concept Plan - Muir Woods" dated 08 November 2019 amended to show Conifer Planting Area (attached).

5. **Conformance with Plans - 520 Campbell Boulevard** All activities authorized by this permit for the 520 Campbell Boulevard property must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans include those sheets entitled: The Preserve at Muir Woods (DEC Planting Exhibit, DEC Earthwork Exhibit and the Wetland Restriction Exhibit) by Greenman-Pedersen, Inc. dated May 2018.

6. **Conformance with Plans Site A** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include Drawing C-100 dated July 20, 2020 and received by this Department on August 10, 2020.

7. **Future Phases** Prior to development of Muir Woods Sites A and B, the permittee must obtain specific approval of engineered plans for Sites A and B to ensure compliance with the terms and condition of this permit, the approved wetland mitigation plans and the most current Findings Statement for the overall Muir Woods Project issued pursuant to the State Environmental Quality Review Act. The permittee shall submit the engineered plans for the development of Sites A and B for review by the Department simultaneous with submission of such engineered plans to the Town of Amherst. If required by the Department, the permittee shall make any necessary modifications to the engineered plans to ensure compliance with the terms and conditions of this permit, the approved wetland mitigation plans and the most current Findings Statement.

8. **Permit Conditions Prevail over Plans** If any condition of this permit conflicts with the approved plans noted in Condition Number 1, the permit conditions shall prevail over the plans unless specific written approval for such a change is obtained from this Department prior to implementation.

9. **Pre-construction Meeting to Review Permit** Prior to commencing work at the project site, the permittee shall schedule a pre-construction meeting with Department staff (Contact: Mr. David Denk, Regional Permit Administrator, NYSDEC, Division of Environmental Permits, Telephone : 716/851- 7165 and/or Mr. Charles P. Rosenburg, NYSDEC, Division of Fish and Wildlife, Telephone: 716/851-7010) and selected contractors to review the conditions contained in this permit.

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10. Mark Areas of No Disturbance on the Muir Woods Site Grade stakes and/or other appropriate measures (substantial contractor fencing, perhaps in combination with necessary silt fencing) shall be used to ensure that no equipment enters identified areas of no disturbance within the immediate area under construction (i.e.- Site A, Site B, Site C or Site D) on the Muir Woods project site. Boundaries of the on-site mitigation areas shall likewise be marked to define the limits of that work.

11. Install Controls Along Limits of Disturbance Before any soil is disturbed within a specific Site Development Area, as detailed in Condition #6 above, the permittee shall install securely anchored silt fencing and/or continuous staked hay bales along the limits-of-disturbance as shown on the plans or drawings referenced in this permit. Such erosion and sedimentation controls shall be maintained until unpaved portions of the subject site are stabilized by a self-sustaining cover of vegetation that is adequate to prevent erosion and sedimentation on and off the site. Sediment which has accumulated at the controls shall be removed periodically as necessary during the construction period. Before the controls are removed, the permittee shall remove all sediment that has accumulated at the controls.

12. Work Within Ares Depicted on Plans All construction activity, including operation of machinery, excavation, filling, grading, clearing of vegetation, disposal of waste, street paving and stockpiling of material must take place within the Site Development Areas or mitigation areas as depicted on the project plans referenced by this permit. Construction activity is prohibited within areas to be left in a natural condition or locations on the property not within the Site Development Areas or mitigation areas designated by this permit. Disturbance to the wetlands and their regulated 100 foot wide adjacent areas shall be strictly limited to the work areas identified in the plans, and specifically the MAP SHOWING WETLAND IMPACT AREAS - NEW YORK STATE WETLANDS, and APPENDIX M - PROPOSED ON-SITE MITIGATION PLAN.

13. Invasive Species (Non-Native Vegetation) To prevent the unintentional introduction or spread of invasive species, the permittee must ensure that all construction equipment is cleaned of mud, seeds, vegetation and other debris before entering any approved Site Development Areas within State regulated wetlands or their 100 foot wide adjacent areas, as well as all on-site wetland mitigation areas.

14. Prevention of Invasive Species The permittee shall prevent the establishment of invasive species (purple loosestrife, Phragmites, reed canary-grass, Japanese knotweed, glossy buckthorn and common buckthorn) across all disturbed areas within the wetland mitigation area for five growing seasons. If any of these invasive species become established, monitoring and treatment may be extended for an additional 5 years at the Department's discretion.

15. Wetland Mitigation is Mandatory Completion of all freshwater wetland mitigation is mandatory regardless of whether or not construction proceeds to completion. The required mitigation must be completed by the expiration date of this permit. Mitigation will be subject to remediation, if necessary, pursuant to Condition #16 below. All mitigation areas shall be monitored for a period of ten (10) years or until the mitigation is deemed successful by this Department. Monitoring reports shall be prepared for the first four (4) years after construction of the mitigation areas and every other year (years 6, 8 and 10) thereafter. This Department may, at its discretion, modify the 10-year monitoring period and/or monitoring report requirement at any time. Monitoring reports shall be submitted to Mr. Charles P. Rosenburg, Habitat Manager, NYSDEC, Bureau of Ecosystem Health, 270 Michigan Avenue, Buffalo, NY 14203-2915 Telephone: 716/851-7024.

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16. **On-Site Mitigation to be in Accordance with Mitigation Plan** The on-site mitigation shall be in accordance with Appendix M - Proposed On-Site Wetland Mitigation for Muir Woods prepared by Earth Dimensions, Inc. revised May 25, 2009 and with the modifications shown in Exhibit 22 of the July 20, 2020 application binder.

17. **Planting Row of Native Conifers** The permittee shall plant a row of native conifer trees in the location shown on the attached plan. The tree plantings must be a minimum of 6 feet tall, spaced 15 feet apart, and must be planted no later than October 15th following the completion of construction of the adjacent apartment units.

18. **Survival Rate for Mitigation Plantings** The permittee shall prepare a care, maintenance, inspection, and replacement schedule for the tree and shrub plantings described in the mitigation plan to ensure an 85% survival rate for five growing seasons. This condition includes all on-site landscape "buffer" plantings.

19. **Herbicides, Pesticides in Wetland or Adjacent Area** The use of herbicides and other pesticides in State regulated wetlands or their 100 foot wide adjacent areas is a regulated activity and may only be conducted pursuant to a valid Article 33 Pesticides Permit.

20. **Requirement for SPDES General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities** Since development of the Muir Woods site in the Town of Amherst will involve land disturbance of one (1) or more acres, the permittee is required to obtain coverage under State Pollutant Discharge Elimination System (SPDES) General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities. A Notice of Intent (NOI) is required to be sent to NYSDEC, Division of Water, 625 Broadway, 4th Floor, Albany, New York 12233-3505, Telephone: 518/402-8111 and approved before construction commences. Alternatively, an eNOI may be filed electronically as described on the Department's website. The General Permit GP-0-15-002 and NOI form are available on the Department's website at www.dec.state.ny.us.

21. **Visibly Turbid Discharges Prohibited** Visibly turbid discharges from project dewatering operations, excavation and grading activities are strictly prohibited to any "water body" (pond, wetland, stream or water course). Any such discharges shall be (1) retained in an appropriately maintained upland settling basin, filtered through crushed stone, sand, filter fabric fences, hay bales etc., or (2) directed to a grassy area sufficiently distant from any water body to preclude such entry.

22. **Stockpiling of Soil** Stockpiling of excavated soil is prohibited at locations within any portion of the TE-22, TE-23 and TE-34 Wetlands or their regulated 100 foot wide adjacent areas, or within any mapped 100-year floodplain beyond the Site Development Areas or mitigation areas identified in the plans.

23. **Stabilize Disturbed Areas** All areas of soil disturbance resulting from this project shall be seeded with an appropriate perennial grass seed and mulched with straw, or hydro-seeded. Mulch shall be maintained until suitable vegetative cover is established.

24. **Temporary Mulch, Final Seeding** If seeding is impracticable due to the time of year, a temporary mulch shall be applied and final seeding shall be performed at the earliest opportunity when weather conditions favor germination and growth.

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25. **Disposal of Material** Any non-merchantable tree and brush debris, demolition debris, excess construction materials, and/or excess excavated materials shall be immediately and completely disposed of on an approved upland site more than 100 feet from any regulated freshwater wetland. These materials shall be suitably stabilized so as not to re-enter any water body, wetland, or wetland adjacent area; and must be disposed of in accordance with all local, state, and federal statutes, regulations, or ordinances.

26. **Placement of Interpretive Signs Required** Permanent interpretive signs shall be placed at various wetland boundary locations throughout the Muir Woods project site . The permittee shall submit a proposal for the signs to the Department for approval. The interpretive signs shall be a minimum of 12 inches by 12 inches and shall be placed on permanent posts.

27. **Annual Project Inspection / Meeting** The permittee shall schedule an annual inspection/meeting to update Department staff on project progress and compliance with conditions of this permit for the on-site wetland mitigation area.

28. **Wetland Monuments** Monuments shall be placed every 200 feet along the outer edge of the wetland preservation areas. The monuments shall be 30" long, 5/8" rebar and cap embedded flush and in the center of the top exposed surface of concrete in a minimum 4 inch diameter, 4.5 foot long section of PVC Schedule 40 drain pipe filled with concrete, extending vertically1.5 to 2 feet above existing grade at each location. The caps shall say "Conservation Area Marker, Do Not Disturb". These monuments are to be permanently maintained.

29. **Wetland Boundaries** The boundaries of the TE-22, TE-23 and TE-34 Wetlands shall be fixed for the period of this permit (expires November 30, 2024). At that time, new boundary delineations for those wetlands will be required by this Department (to be performed or confirmed by a Department Biologist). Since project activities will be subject to the updated wetland boundary delineations and pertinent regulations at that time, any future permit modification (if necessary) would be reviewed based on the updated delineations and pertinent regulations. As such, modifications to the current project plan may be necessary depending upon the updated wetland delineations and permit regulations in effect at that time.

30. **State Not Liable for Damage** The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

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31. **State May Order Removal or Alteration of Work** If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

32. **State May Require Site Restoration** If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may lawfully require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.

33. **Precautions Against Contamination of Waters** All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. **Water Quality Certification** The authorized project, as conditioned pursuant to the Certificate, complies with Section 301, 302, 303, 306, and 307 of the Federal Water Pollution Control Act, as amended and as implemented by the limitations, standards, and criteria of state statutory and regulatory requirements set forth in 6 NYCRR Section 608.9(a). The authorized project, as conditioned, will also comply with applicable New York State water quality standards, including but not limited to effluent limitations, best usages and thermal discharge criteria, as applicable, as set forth in 6 NYCRR Parts 701, 702, 703, and 704.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. **Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

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The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. **Relationship of this Permit to Other Department Orders and Determinations** Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. **Applications For Permit Renewals, Modifications or Transfers** The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY14203 -2915

4. **Submission of Renewal Application** The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Freshwater Wetlands, Water Quality Certification.

5. **Permit Modifications, Suspensions and Revocations by the Department** The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

a. materially false or inaccurate statements in the permit application or supporting papers;

b. failure by the permittee to comply with any terms or conditions of the permit;

c. exceeding the scope of the project as described in the permit application;

d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;

e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. **Permit Transfer** Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification
The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit
The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits
The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights
This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Attachment "B" of Part 1 of Full Environmental Assessment Form - No Impact Determination Letter Issued by Ruth Pierpont, Director, New York State Office of Parks, Recreation and Historic Preservation, dated October 10, 2001

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

NEW YORK STATE
Bernadette Castro
Commissioner

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189

518-237-8643

October 10, 2001

Carolyn A. Pierce
CCRG
105 Robie Avenue
Buffalo, New York 14214

Dear Ms. Pierce:

Re: SEQRA
Muir Woods Mixed-Use Development
Amherst/Erie County
01PR0345

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Parks, Recreation and Historic Preservation Law, Section 14.09.

Based upon this review, it is the OPRHP's opinion that your project will have No Impact upon cultural resources in or eligible for inclusion in the State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Director

RLP:cmp

RECEIVED
OCT 16 2001
CIMINELLI DEVELOPMENT COMPANY, INC.

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Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Exhibit 2 – Description of the Proposed Mixed-Use Project on a Portion of 1081 North French Road [Site "A" of the Muir Woods Property]

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

EXHIBIT 2 OF SITE PLAN APPLICATION

DESCRIPTION OF PROPOSED MIXED-USE PROJECT TO BE LOCATION ON A PORTION OF 1081 NORTH FRENCH ROAD [SITE "A" OF MUIR WOODS PROPERTY]

The proposed project consists of a mixed-use project on a portion of 1081 North French Road [Site "A" of Muir Woods Property] (the "Project Site"). The Project Site is properly zoned for the proposed mixed-use project. The mixed-use project consists of 2 four-story mixed-use buildings [15,000 sq. ft. of 1st floor commercial space and 50 units per building], 47 two-family town homes on individual lots, and 2 single-story apartment buildings [6 units per building] along with all related site improvements depicted on the fully engineered plans prepared by Christopher Wood, P.E. of Carmina Wood Morris DPC submitted with this Site Plan Application. A reduced size copy of the Overall Site Plan [Drawing C-100] is provided at Exhibit "3". The Elevation Plans as prepared by Sutton Architecture PLLC are provided at Exhibit "8". The fully engineered plans for the mixed-use project consist of the following:

- Cover Sheet;
- Topographic Survey;
- Boundary Survey;
- Demolition & Erosion Control Plan [Drawing C-001];
- Demolition & Erosion Control Details Plan [Drawing C-002];
- Overall Site Plan [Drawing C-100];
- Site Plan [Drawing C-101];
- Parcel Map [Drawing C-102];
- Site Details Plan [Drawing C-103];
- Site Details Plan [Drawing C-104];
- Grading Plan [Drawing C-200];
- Storm Drainage Plan [Drawing C-300];
- Storm Drainage Details Plan [Drawing C-301];

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

- Storm Drainage Plan [Drawing C-302];
- Storm Drainage Details Plan [Drawing C-303];
- Storm Drainage Details Plan [Drawing C-304];
- Utility Plan [Drawing C-400];
- Sanitary Sewer Details Plan [Drawing C-401];
- Sanitary Sewer Details Plan [Drawing C-402];
- Sanitary Sewer General Notes Plan [Drawing C-403];
- Sanitary Sewer Testing Notes Plan [Drawing C-404];
- Water Details Plan [Drawing C-405];
- Water Details & Notes Plan [Drawing C-407];
- Insulated Enclosure Detail Plan [Drawing C-408]; and
- Landscape Plan as Prepared by Robert Walter, RLA [Drawing L-100]

For purposes of the review process, the proposed mixed-use project has been defined broadly to include all required discretionary approvals and permits as well as all site improvements including the proposed driveway connections to Dodge Road, access aisles, parking spaces, driveways, wetland impacts, lighting, landscaping, on-site storm water management improvements, sanitary sewer and water lines and connections and all other required utility improvements.[1] The project purpose is to develop Site "A" of overall Muir Woods Project Site as an innovative mixed-use project on property that has been designated for development for several decades. The proposed mixed-use project is a Type I action pursuant to SEQRA. The Town Board issued an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") on October 19, 2020 to allow mixed-use development of the Project Site.[2]

[1] A completed Part 1 of the Full Environmental Assessment Form with attached Page 5[a] and Attachments "A" and "B" is provided at Exhibit "1".

[2] A copy Resolution 2020-791 as adopted by the Town of Amherst Town Board on October 19, 2020 for the purpose of Issuing an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") for allowing mixed-use development on the Project Site is provided at Exhibit "9".

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

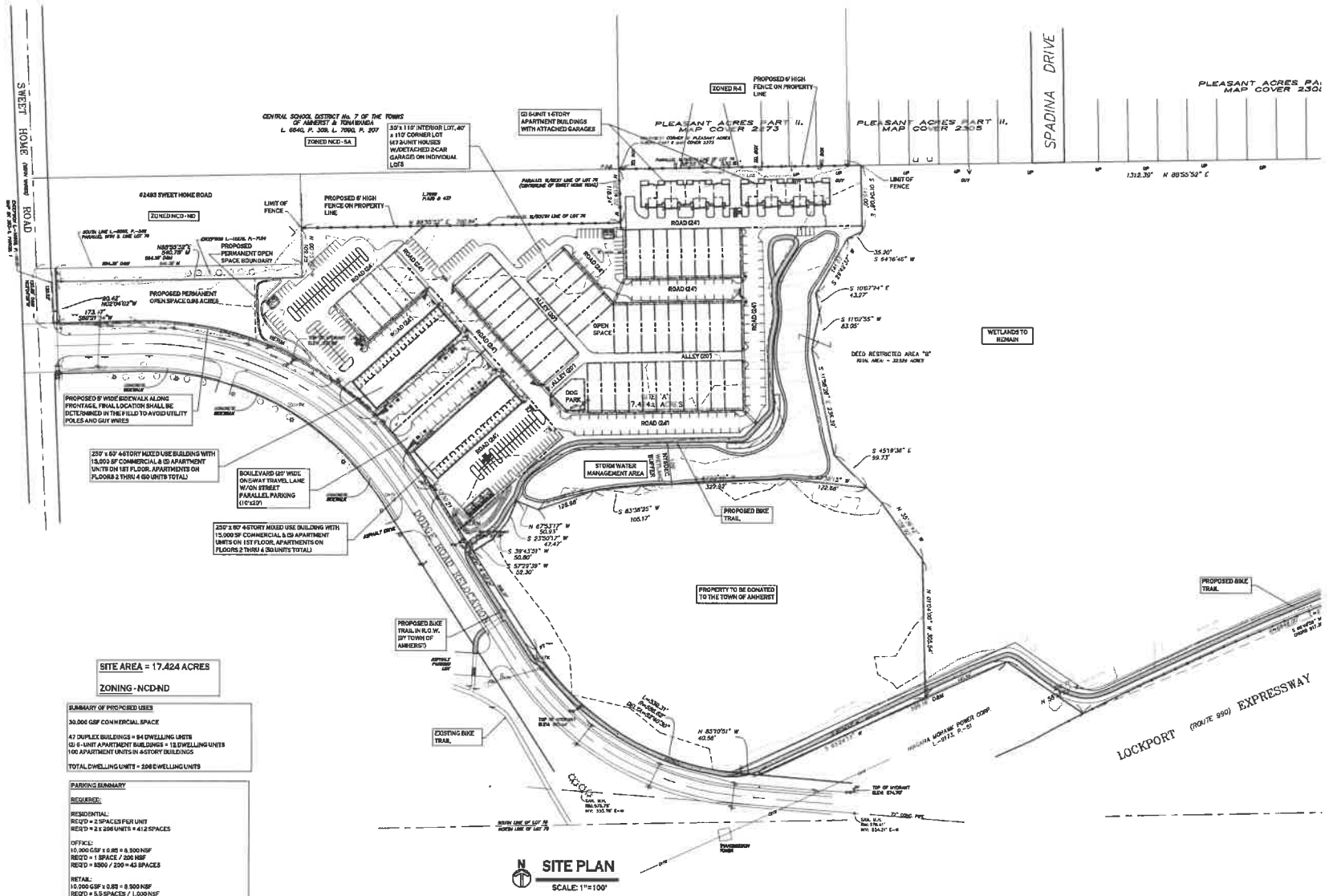
Additionally, on October 19, 2020, the Town Board also adopted a resolution to amend the Town's Comprehensive to designate the Project Site as appropriate for mixed-use.[3]

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

[3] A copy of Resolution 2020-792 as Adopted by the Town of Amherst Town Board on October 19, 2020 for the purpose of approving an Amendment to the Town of Amherst Comprehensive Plan to accommodate mixed-use development on the Project Site is provided at Exhibit "10".

Exhibit 3 – Reduced Size Copy of Overall Site Plan [Drawing C-100] as Prepared by Christopher Wood, P.E., of Carmina Wood Morris DPC

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)



N

SITE PLAN

SCALE: 1"=100'

SITE AREA = 17.424 ACRES

ZONING - NCD/ND

SUMMARY OF PROPOSED USES

30,000 GSF COMMERCIAL SPACE

47 DUPLEX BUILDINGS = 94 DWELLING UNITS
(2) 6-UNIT APARTMENT BUILDINGS = 12 DWELLING UNITS
100 APARTMENT UNITS IN 4-STORY BUILDINGS

TOTAL DWELLING UNITS = 206 DWELLING UNITS

PARKING SUMMARY

REQUIRED:

RESIDENTIAL:
REQ'D = 2 SPACES PER UNIT
REQ'D = 2 x 206 UNITS = 412 SPACES

OFFICE:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 1 SPACE / 200 NSF
REQ'D = 8500 / 200 = 43 SPACES

RETAIL:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 5.5 SPACES / 1,000 NSF
REQ'D = 8500 / 1000 x 5.5 = 47 SPACES

RESTAURANT:
REQ'D = 1 SPACE / 3 SEATS + 1 SPACE / 100 SF TAKE OUT AREA
REQ'D = 100 SEAT / 3 + 500 SF / 100 = 38 SPACES

TOTAL REQ'D = 540 SPACES

PROVIDED:

158 PARALLEL PARKING SPACES
213 PVI'S* SPACES *
49 GARAGE SPACES IN 4-STORY BLDGS
94 GARAGE SPACES IN DETACHED GARAGES
TOTAL SPACES

* INCLUDES SPACES IN FRONT OF APARTMENT GARAGES

PERMANENT OPEN SPACE SUMMARY

TOTAL PROPOSED PERMANENT OPEN SPACE = 0.98 ACRES

WETLAND SUMMARY

FEDERAL IMPACTS PROPOSED = 6.089 AC
FEDERAL IMPACTS PREVIOUSLY PROPOSED = 13.01 AC
DECREASE = 6.921 AC (53% DECREASED)

NYSDEC IMPACTS PROPOSED = 1.20 AC
NYSDEC IMPACTS PREVIOUSLY PROPOSED = 8.48 AC
DECREASE = 8.20 AC (87% DECREASED)

NYSDEC BUFFER IMPACT PROPOSED = 3.65 AC
NYSDEC BUFFER IMPACTS PREVIOUSLY PROPOSED = 4.20 AC
DECREASE = 0.55 AC (13% DECREASED)

NOTE: NYSDEC IMPACTS INCLUDES FEDERAL WETLAND IMPACT OVERLAP AREAS

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 0 100 200FT

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Buffalo, New York 14203
P 716.842.3165
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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

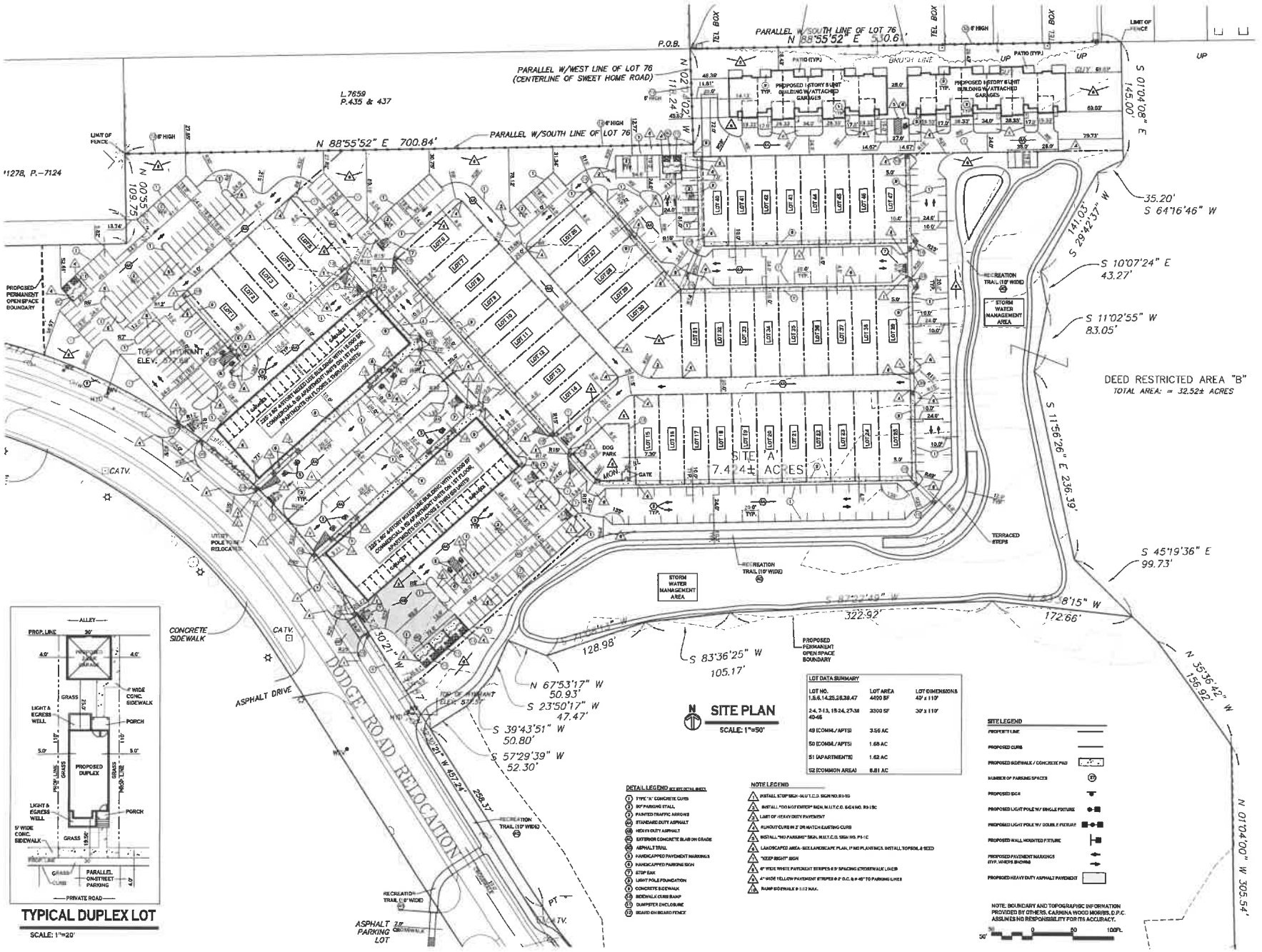
DRAWING NAME:
Overall Site Plan

DRAWING NO.
C-100

Project no.: 21.011

Exhibit 4 – Reduced Size Copy of Site Plan [Drawing C-101] as Prepared by Christopher Wood, P.E., of Carmina Wood Morris DPC

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)



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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Site Plan

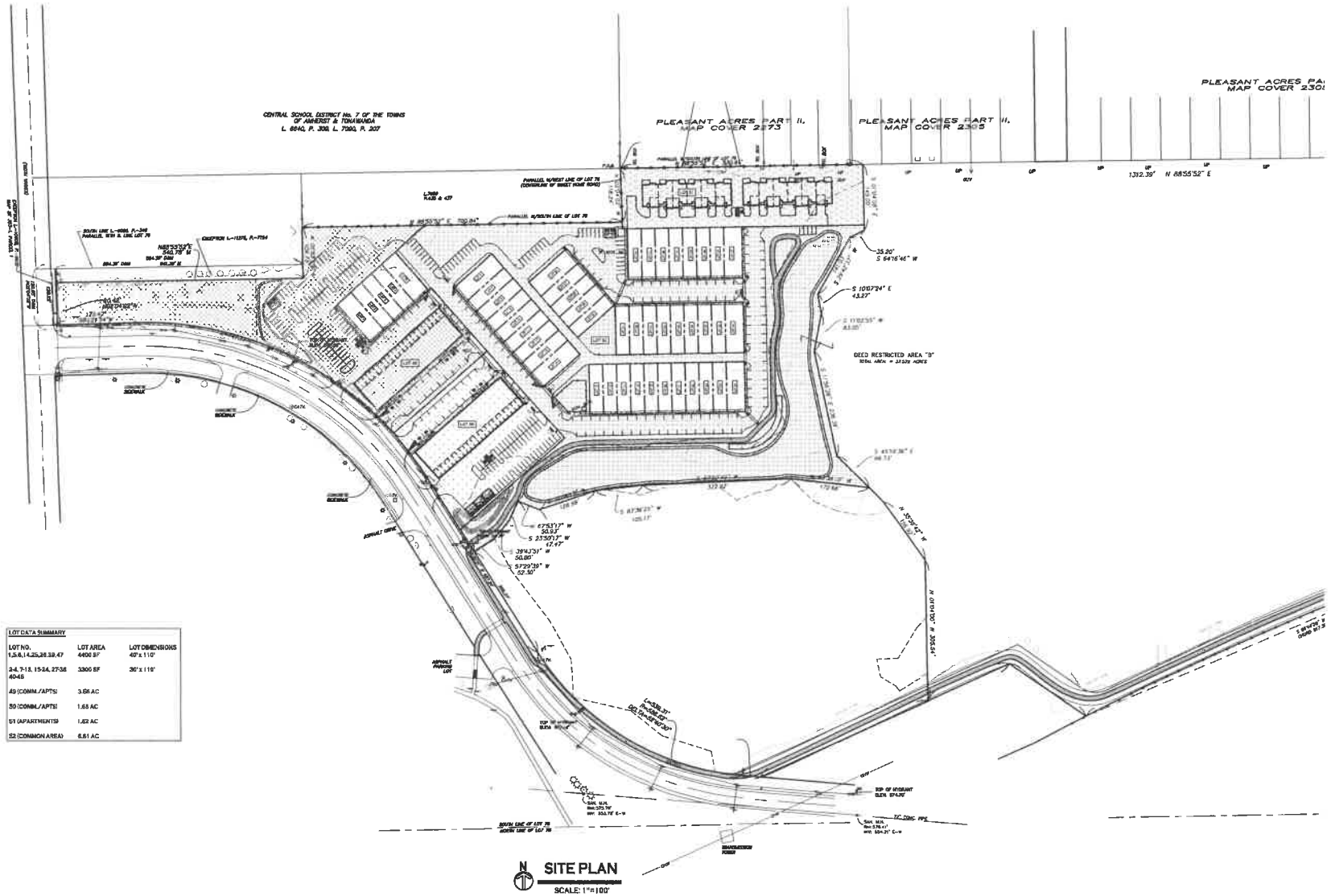
DRAWING NO.
C-101
Project no.: 21.011

Packet Pg. 797

1.d

Exhibit 5 – Reduced Size Copy of Parcel Map [Drawing C-102] as Prepared by Christopher Wood, P.E., of Carmina Wood Morris DPC

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)



LOT DATA SUMMARY		
LOT NO.	LOT AREA	LOT DIMENSIONS
1,5,6,14,25,26,39,47	4400 SF	40' x 110'
2-4, 7-13, 15-24, 27-38, 40-46	3300 SF	30' x 110'
49 (COMM./APTS)	3.56 AC	
50 (COMM./APTS)	1.65 AC	
51 (APARTMENTS)	1.62 AC	
52 (COMMON AREA)	6.51 AC	

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 0 100 200FT.

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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Parcel Map

DRAWING NO.
C-102

Project no.: 21.011

Exhibit 6 – Reduced Size Copy of Storm Drainage Plan [Drawing C-300] as Prepared by Christopher Wood, P.E., of Carmina Wood Morris DPC

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

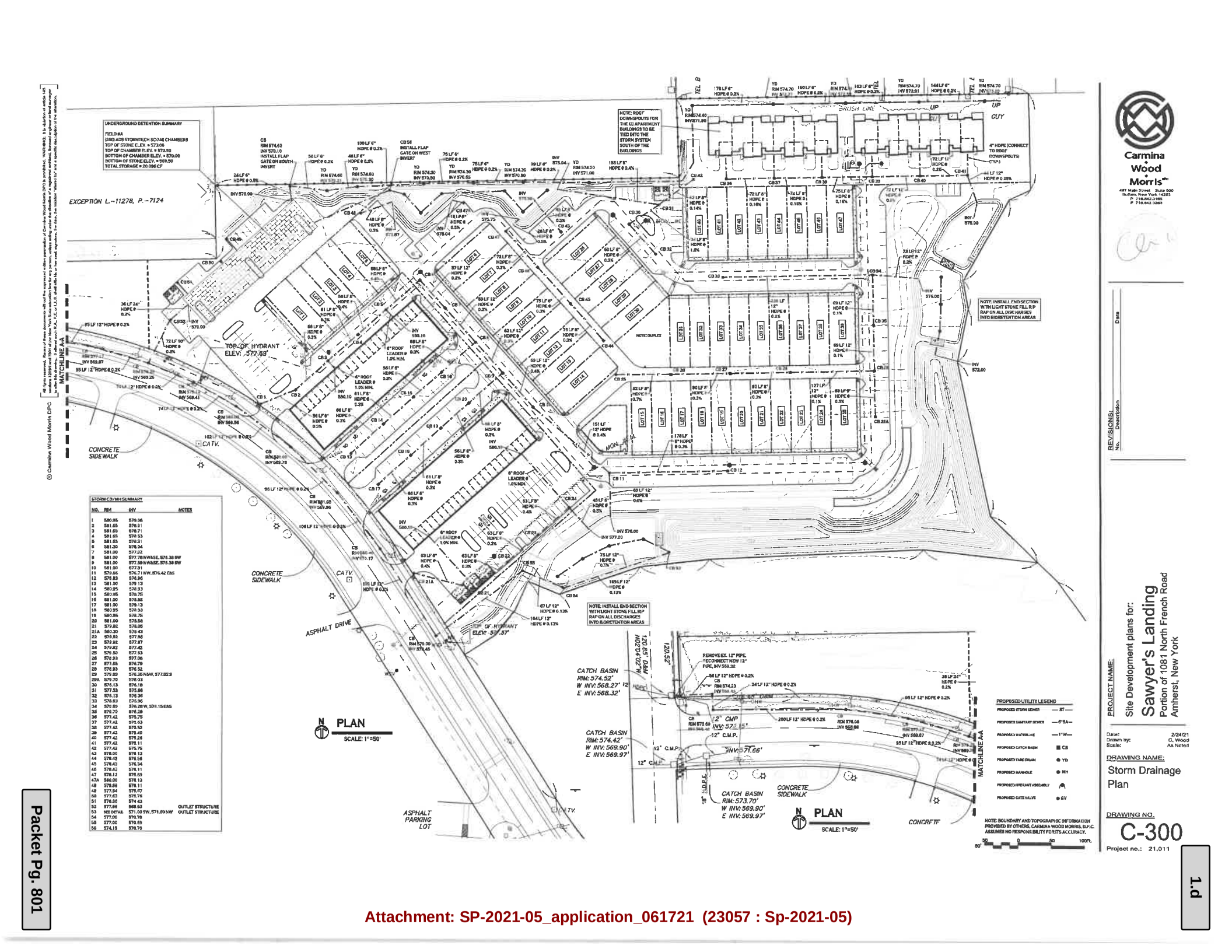
UNDERGROUND DETENTION SUMMARY
FIELD #3
(2)60 ADS STORMTECH SC740 CHAMBERS
TOP OF STONE ELEV. = 573.00
TOP OF CHAMBER ELEV. = 572.50
BOTTOM OF CHAMBER ELEV. = 570.00
BOTTOM OF STONE ELEV. = 569.50
TOTAL STORAGE = 20,096 CF
NOTE: ROOF DOWNSPOUTS FOR THE (2) APARTMENT BUILDINGS TO BE TIED INTO THE STORM SYSTEM SOUTH OF THE BUILDINGS
EXCEPTION L.-11278, P.-7124
TOP OF HYDRANT ELEV.: 577.69'
TOP OF HYDRANT ELEV.: 577.57'
CONCRETE SIDEWALK
ASPHALT DRIVE
ASPHALT PARKING LOT
CATV.
MATCHLINE A-A
NOTE: INSTALL END SECTION WITH LIGHT STONE FILL RIP RAP ON ALL DISCHARGES INTO BIORETENTION AREAS
NOTE: DUPLEX
PLAN
SCALE: 1"=50'
CATCH BASIN RIM: 574.52' W INV: 568.27' 12" E INV: 568.32'
CATCH BASIN RIM: 574.42' W INV: 569.90' E INV: 569.97'
CATCH BASIN RIM: 573.70' W INV: 569.90' E INV: 569.97'
12" C.M.P.
INV: 571.66'
CONCRETE SIDEWALK
CONCRETE
REMOVE EX. 12" PIPE, RECONNECT NEW 12" PIPE, INV 569.32
200 LF 12" HDPE @ 0.2%
95 LF 12" HDPE @ 0.2%
36 LF 24" HDPE @ 0.2%
34 LF 12" HDPE @ 0.2%
PROPOSED UTILITY LEGEND
PROPOSED STORM SEWER
PROPOSED SANITARY SEWER
PROPOSED WATERLINE
PROPOSED CATCH BASIN
PROPOSED YARD DRAIN
PROPOSED MANHOLE
PROPOSED HYDRANT ASSEMBLY
PROPOSED GATE VALVE
NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.
STORM CB/MH SUMMARY
NO. RIM INV NOTES
1 580.95 579.06
2 581.65 578.91
3 581.65 578.71
4 581.65 578.53
5 581.65 578.31
6 581.00 578.04
7 581.00 577.82
8 581.00 577.78 INVASE, 576.38 SW
9 581.00 577.59 INVASE, 576.38 SW
10 581.00 577.31
11 579.65 576.71 INW, 576.42 EAS
12 578.83 576.96
13 581.00 579.13
14 580.95 578.93
15 580.95 578.75
16 581.00 578.88
17 581.00 579.13
18 580.95 578.53
19 580.95 578.75
20 581.00 578.88
21 579.92 578.05
21A 580.30 579.43
22 579.92 577.86
23 579.92 577.87
24 579.92 577.42
25 579.50 577.53
26 578.93 577.06
27 577.85 576.79
28 578.93 576.52
29 579.89 576.35 NAW, 577.82 S
29A 579.70 578.03
30 578.13 576.18
31 577.53 575.66
32 578.13 576.36
33 578.83 575.96
34 579.89 576.28 W, 576.15 EAS
35 579.70 576.28
36 577.42 575.75
37 577.42 575.53
38 577.42 575.52
39 577.42 575.40
40 577.42 575.26
41 577.42 575.11
42 577.42 575.75
43 578.00 576.13
44 578.43 576.56
45 578.43 576.34
46 578.43 576.11
47 578.12 575.89
47A 580.00 578.13
48 579.56 578.11
49 577.54 575.67
50 577.63 575.76
51 576.30 574.43
52 577.66 569.83 OUTLET STRUCTURE
53 SEE DETAIL 571.00 SW, 571.89 NW OUTLET STRUCTURE
54 577.00 570.78
55 577.00 570.69
56 574.15 570.75
Carmina Wood Morris
487 Main Street, Suite 500
Buffalo, New York 14203
P 716.842.3195
F 716.842.2085
REVISIONS:
No. Description Date
PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York
Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted
DRAWING NAME:
Storm Drainage Plan
DRAWING NO.
C-300
Project no.: 21.011
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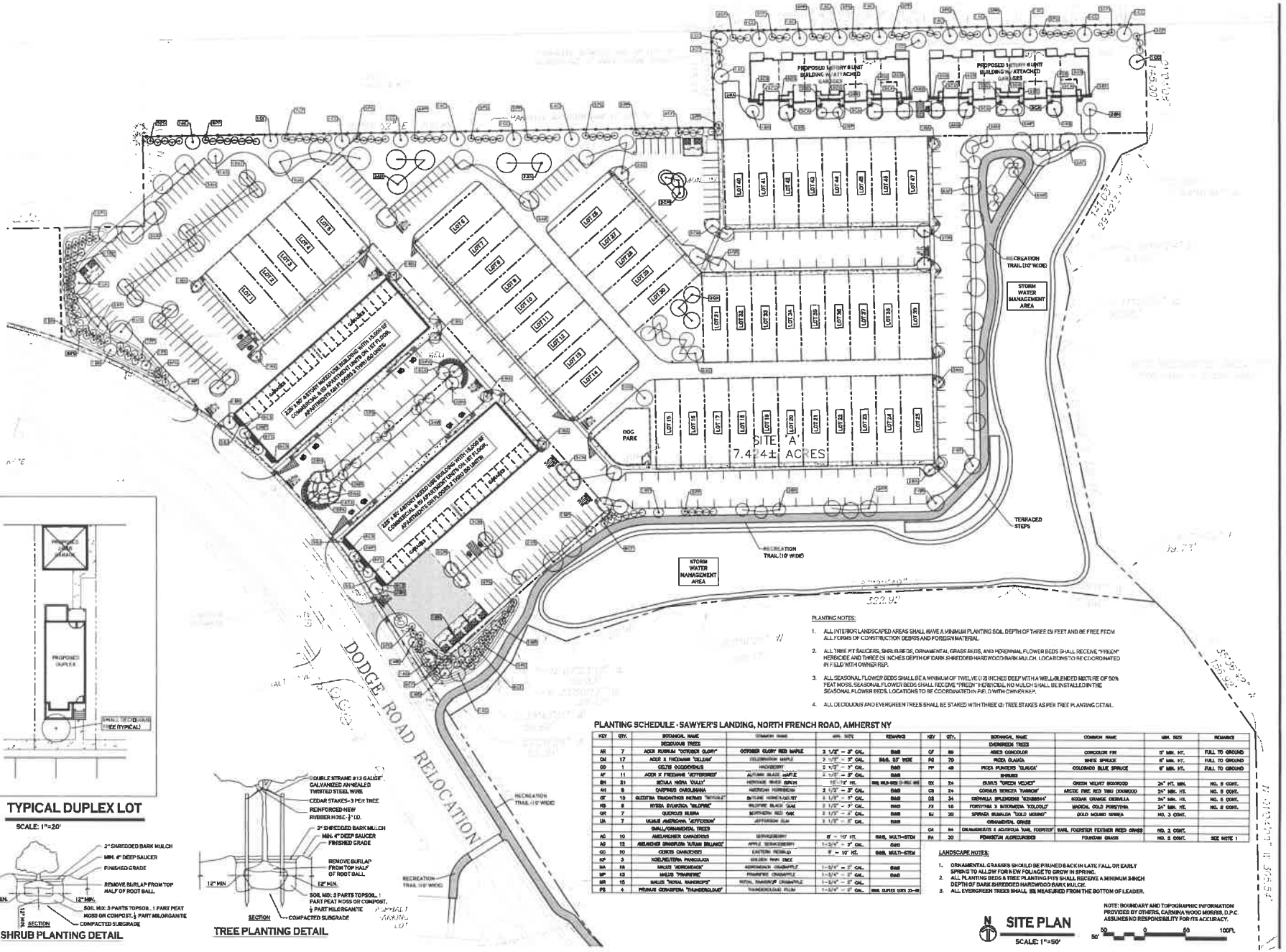
Exhibit 7 – Reduced Size Copy of Landscape Plan [Drawing L-100] as Prepared by Robert Walter, Registered Landscape Architect

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)



PLANTING NOTES:

1. ALL INTERIOR LANDSCAPED AREAS SHALL HAVE A MINIMUM PLANTING SOIL DEPTH OF THREE (3) FEET AND BE FREE FROM ALL FORMS OF CONSTRUCTION DEBRIS AND FOREIGN MATERIAL.
2. ALL TREE PIT SAUCERS, SHRUB BEDS, ORNAMENTAL GRASS BEDS, AND HERENNIAL FLOWER BEDS SHALL RECEIVE "PRIEN" HERBICIDE AND THREE (3) INCHES DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
3. ALL SEASONAL FLOWER BEDS SHALL BE A MINIMUM OF TWELVE (12) INCHES DEEP WITH A WELL-BLENDED MIXTURE OF 50% PEAT MOSS. SEASONAL FLOWER BEDS SHALL RECEIVE "PRIEN" HERBICIDE. NO MULCH SHALL BE INSTALLED IN THE SEASONAL FLOWER BEDS. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
4. ALL DECIDUOUS AND EVERGREEN TREES SHALL BE STAKED WITH THREE (3) TREE STAKES AS PER TREE PLANTING DETAIL.

PLANTING SCHEDULE - SAWYER'S LANDING, NORTH FRENCH ROAD, AMHERST NY

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		DECIDUOUS TREES			
AR	7	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	2 1/2" – 3" CAL.	B&B
CM	17	ACER X FREEMANII 'CELZAM'	CELEBRATION MAPLE	2 1/2" – 3" CAL.	B&B, 12' WIDE
CO	1	CELTIS OCCIDENTALIS	HACKBERRY	2 1/2" – 3" CAL.	B&B
AF	11	ACER X FREEMANII 'JEFFERSRED'	AUTUMN BLAZE MAPLE	2 1/2" – 3" CAL.	B&B
BH	21	BETULA NIGRA 'CULLY'	HERITAGE RIVER BIRCH	10'-12' HT.	MIN. MULTI-STEM (3-5)
AH	9	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2 1/2" – 3" CAL.	B&B
GT	10	GLEDITSIA TRIACANTHOS INERMIS 'SKYCOLE'	SKYLINE HONEYLOCUST	2 1/2" – 3" CAL.	B&B
NS	6	NYSSA SYLVATICA 'WILDFIRE'	WILDFIRE BLACK GUM	2 1/2" – 3" CAL.	B&B
QR	7	QUERCUS RUBRA	NORTHERN RED OAK	2 1/2" – 3" CAL.	B&B
UA	7	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2 1/2" – 3" CAL.	B&B
		SMALL ORNAMENTAL TREES			
AC	10	AMELANCHIER CANADENSIS	SERVICEBERRY	8' – 10' HT.	B&B, MULTI-STEM
AG	12	AMELANCHIER GRANDIFLORA 'AUTUMN BRILLIANCE'	APPLE SERVICEBERRY	1-3/4" – 2" CAL.	B&B
CC	10	CERCIS CANADENSIS	EASTERN REDBUD	8' – 10' HT.	B&B, MULTI-STEM
KP	3	KOELREUTERIA PANICULATA	GOLDEN RAIN TREE		
MA	16	MALUS 'ADIRONDACK'	ADIRONDACK CRABAPPLE	1-3/4" – 2" CAL.	B&B
MF	12	MALUS 'PRAIRIFIRE'	PRAIRIFIRE CRABAPPLE	1-3/4" – 2" CAL.	B&B
MR	15	MALUS 'ROYAL RAINDROPS'	ROYAL RAINDROPS CRABAPPLE	1-3/4" – 2" CAL.	
PS	4	PRUNUS SERRASFERA 'THUNDERCLOUD'	THUNDERCLOUD PLUM	1-3/4" – 2" CAL.	B&B, SUPER VARS 25-45
		EVERGREEN TREES			
CF	80	ABIES CONCOLOR	CONCOLOR FIR	5' MIN. HT.	FULL TO GROUND
PG	70	PICEA GLAUCA	WHITE SPRUCE	5' MIN. HT.	FULL TO GROUND
PP	48	PICEA PUNGENS 'GLAUCA'	COLORADO BLUE SPRUCE	5' MIN. HT.	FULL TO GROUND
		SHRUBS			
BX	24	BUXUS 'GREEN VELVET'	GREEN VELVET BOXWOOD	24" MIN. HT.	NO. 5 CONT.
CS	24	CORNUS SERICEA 'FARROW'	ARCTIC FIRE RED TWIG DOGWOOD	24" MIN. HT.	NO. 5 CONT.
DS	34	DEUTZIA SPLENDENS 'KLMDS514'	KOOKIAN ORANGE DEUTZIA	24" MIN. HT.	NO. 5 CONT.
FX	18	FORSYTHIA X INTERMEDIA 'KOLGOLD'	MAGICAL GOLD FORSYTHIA	24" MIN. HT.	NO. 5 CONT.
SJ	20	SPIRAEA JAPONICA 'GOLD MOUND'	GOLD MOUND SPIREA	NO. 3 CONT.	
		ORNAMENTAL GRASS			
CA	84	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	NO. 2 CONT.	
PA	30	PENNISETUM ALOPECUROIDES	FOUNTAIN GRASS	NO. 2 CONT.	SEE NOTE 1

LANDSCAPE NOTES:

1. ORNAMENTAL GRASSES SHOULD BE PRUNED BACK IN LATE FALL OR EARLY SPRING TO ALLOW FOR NEW FOLIAGE TO GROW IN SPRING.
2. ALL PLANTING BEDS & TREE PLANTING PITS SHALL RECEIVE A MINIMUM 3-INCH DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH.
3. ALL EVERGREEN TREES SHALL BE MEASURED FROM THE BOTTOM OF LEADER.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

SITE PLAN
SCALE: 1"=50'

50' 0 50' 100'FT.

TYPICAL DUPLEX LOT
SCALE: 1"=20'

SHRUB PLANTING DETAIL

TREE PLANTING DETAIL

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Buffalo, New York 14203
P 716.842.3165
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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/9/21
Drawn by: C. Wood
Scale: As Noted

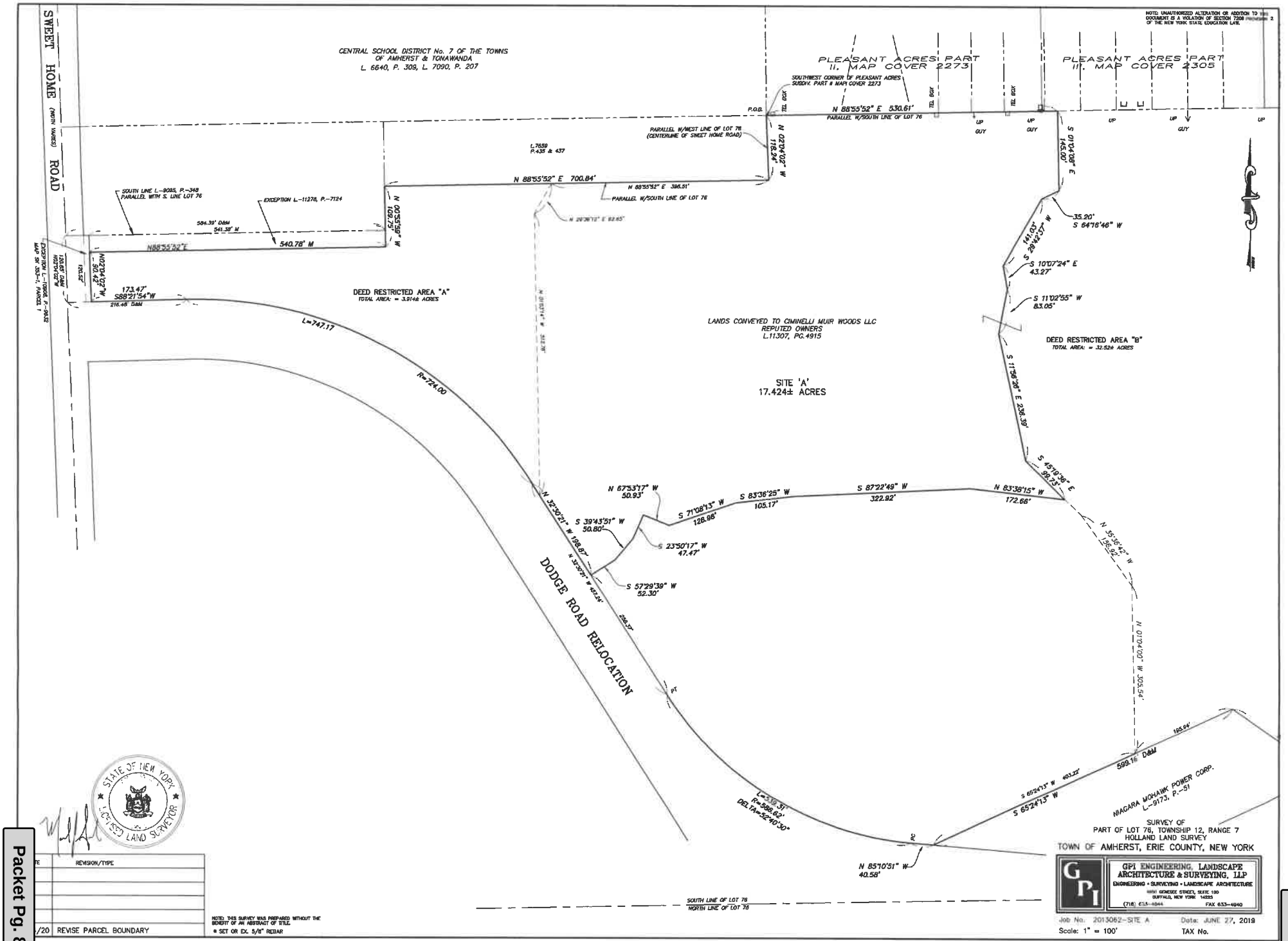
DRAWING NAME:
Landscape Plan

DRAWING NO.
L-100
Project no.: 21.011

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Exhibit 6 – Reduced Size Copy of Storm Drainage Plan [Drawing C-300] as Prepared by Christopher Wood, P.E., of Carmina Wood Morris DPC

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)


SWEET HOME (MAIN VARIES) ROAD
CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA
L 6640, P. 309, L 7090, P. 207
PLEASANT ACRES PART II, MAP COVER 2273
PLEASANT ACRES PART III, MAP COVER 2305
NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW.
SOUTHWEST CORNER OF PLEASANT ACRES SUBDIV. PART II MAP COVER 2273
P.O.B.
N 88°55'52" E 530.61'
PARALLEL W/SOUTH LINE OF LOT 76
PARALLEL W/WEST LINE OF LOT 76 (CENTERLINE OF SWEET HOME ROAD)
N 02°04'02" W 118.24'
L.7659 P.435 & 437
N 88°55'52" E 700.84'
N 88°55'52" E 396.51'
PARALLEL W/SOUTH LINE OF LOT 76
N 00°55'59" W 109.75'
SOUTH LINE L.-9085, P.-348 PARALLEL WITH S. LINE LOT 76
EXCEPTION L.-11278, P.-7124
584.39' D&M
541.38' M
540.78' M
N88°55'52"E
N 00°04'02" W 120.42'
120.35'
180.65' D&M N02°04'02"W
EXCEPTION L.-10808, P.-9832 MAP SH 353-1, PARCEL 1
173.47'
S88°21'54"W
216.48' D&M
DEED RESTRICTED AREA "A"
TOTAL AREA: = 3.914± ACRES
L=747.17
R=724.00
LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC
REPUTED OWNERS
L.11307, PG.4915
SITE 'A'
17.424± ACRES
DEED RESTRICTED AREA "B"
TOTAL AREA: = 32.52± ACRES
S 01°04'08" E 145.00'
S 64°18'46" W 35.20'
S 28°42'57" W 141.03'
S 10°07'24" E 43.27'
S 11°02'55" W 83.05'
S 11°36'26" E 238.39'
S 45°19'36" E 99.73'
N 83°38'15" W 172.66'
S 87°22'49" W 322.92'
S 83°36'25" W 105.17'
S 71°08'13" W 128.86'
N 67°53'17" W 50.93'
S 39°43'51" W 50.80'
S 23°50'17" W 47.47'
S 57°29'39" W 52.30'
N 32°30'21" W 198.87'
N 32°30'21" W 452.24'
DODGE ROAD RELOCATION
N 35°15'42" W 126.92'
N 01°04'00" W 325.54'
185.84'
599.16' D&M
S 65°24'13" W 403.22'
S 65°24'13" W
L=318.31'
R=388.62'
DELTA=52°40'30"
PT
PC
N 85°10'51" W 40.58'
NIAGARA MOHAWK POWER CORP. L.-9173, P.-51
SOUTH LINE OF LOT 76
NORTH LINE OF LOT 76
UP GUY
TEL. BOX
STATE OF NEW YORK LICENSED LAND SURVEYOR
REVISION/TYPE
/20 REVISE PARCEL BOUNDARY
NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE.
⊕ SET OR EX. 5/8" REBAR
SURVEY OF
PART OF LOT 76, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK
GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE
(716) 633-4044 FAX 633-4040
Job No. 2013062-SITE A
Date: JUNE 27, 2019
Scale: 1" = 100'
TAX No.

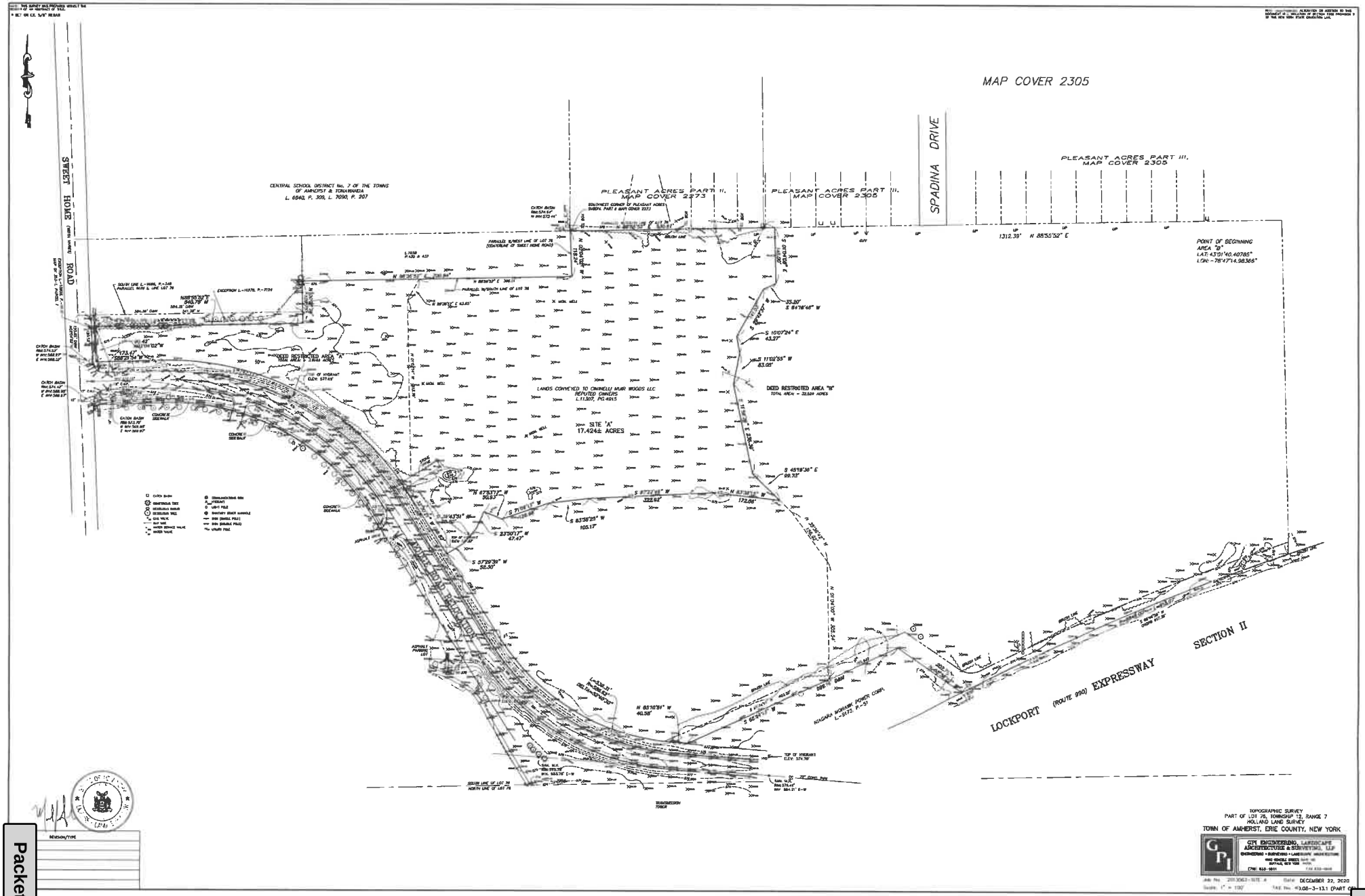
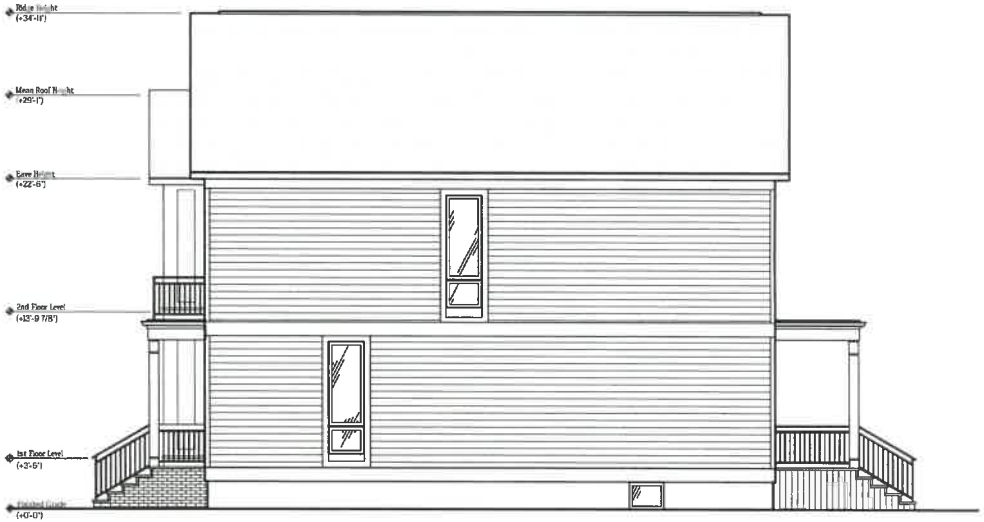

MAP COVER 2305
SPADINA DRIVE
PLEASANT ACRES PART II, MAP COVER 2273
PLEASANT ACRES PART III, MAP COVER 2305
PLEASANT ACRES PART III, MAP COVER 2305
CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA L. 6840, P. 309, L. 7090, P. 207
SWEET HOME ROAD
POINT OF BEGINNING AREA 79± LAT: 43°01'40.40785" LON: -78°47'14.98386"
DEED RESTRICTED AREA "A" TOTAL AREA = 2.844 ACRES
DEED RESTRICTED AREA "B" TOTAL AREA = 32.529 ACRES
LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC REPUTED OWNERS L.11307, Pg.4915
SITE 'A' 17.424± ACRES
SECTION II
LOCKPORT (ROUTE 990) EXPRESSWAY
NIAGARA MOHAWK POWER CORP. L.9173, P.51
TOPOGRAPHIC SURVEY
PART OF LOT 78, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK
GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
DECEMBER 22, 2020

Exhibit 8 – 11" x 17" Size Copies of Elevation Plans for Two-Family Townhomes on Individual Lots, Six-Unit Single-Story Buildings and Four-Story Mixed Use Buildings as Prepared by Sutton Architecture PLLC

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)



Front Elevation



Right Elevation

1/4" = 1'-0"



Rear Elevation

1/4" = 1'-0"



Left Elevation

1/4" = 1'-0"

SEVERYN DEVELOPMENT
BETTER BUILT HOMES
Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing
Two Family

Portion Of 1081 North French Road Amherst, NY
2/23/21

SUTTON architecture
"Design 2 Build"
5409 Main Street
716-932-7156

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)



South Elevation

1/8" = 1'-0"



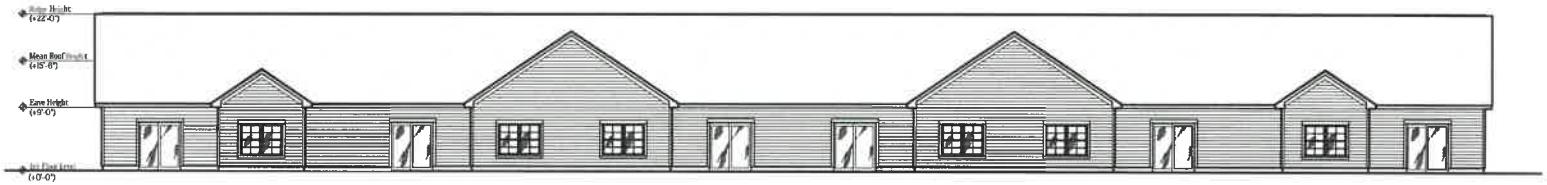
East Elevation

1/8" = 1'-0"



West Elevation

1/8" = 1'-0"



North Elevation

1/8" = 1'-0"

SEVERYN DEVELOPMENT
BETTER BUILT HOMES

Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing
6 Unit Multifamily

Portion Of 1081 North French Road Amherst, NY
2/23/21

SUTTON architecture
"Design 2 Build"
5409 Main Street
716-932-7156

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)



North Elevation

1/8" = 1'-0"



South Elevation

1/8" = 1'-0"

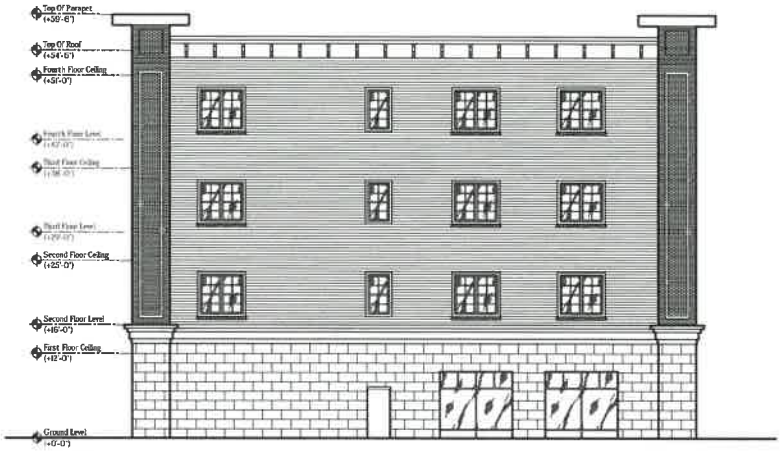
SEVERYN DEVELOPMENT
BETTER BUILT HOMES
Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing
4 Story Mixed Use

Portion Of 1081 North French Road Amherst, NY
2/23/21

SUTTON architecture
"Design 2 Build"
5409 Main Street
716-832-7158

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)



East Elevation

1/8" = 1'-0"



West Elevation

1/8" = 1'-0"

SD SEVERYN DEVELOPMENT
BETTER BUILT HOMES
Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing

4 Story Mixed Use

Portion Of 1081 North French Road Amherst, NY

2/23/21

SUTTON architecture
"Design 2 Build"
5409 Main Street
716-932-7156

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Exhibit 9 – Resolution 2020-791 as Adopted by the Town of Amherst Town Board on October 19, 2020 for the Purpose of Issuing an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") for Mixed-Use Development on 1081 North French Road [Site "A" of Muir Woods Property]

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Amherst Town Board
5583 Main Street
Williamsville, NY 14221
www.amherst.ny.us

Francina J. Spoth
Town Clerk

Meeting: 10/19/20 07:00 PM
Department: Town Clerk
Initiated by: **Kathleen Cooper**
Co-Sponsored by:

DOC ID: 22383 **RESOLUTION 2020-791** **ROLL CALL VOTE (ADOPTED)**

Amendment to the SEQR Findings Statement for "Muir Woods - Site A" (1081 N. French Road)

Amendment to the SEQR Findings Statement for
"Muir Woods - Site A"
[1081 North French Road (NCD); Z-2002-09C]

RESOLVED, that pursuant to 6NYCRR Part 617 (SEQR) and Town Code Section 104, as amended, that the requirements of SEQR have been completed, and be it further

RESOLVED, that pursuant to NYS Town Law Section 272-a, the Town Board concurs with the findings of the Planning Board as stated in their resolution of August 20, 2020 to amend the "Development Program" within the SEQR Findings Statement approved by the Town Board on August 5, 2020 to permit "Site A" located at the western end of the overall Muir Woods site located at 1081 North French Road (NCD) to be developed as a mixed-use residential/commercial project instead of flex office/R&D buildings.

RESOLVED, that Ciminelli Muir Woods, LLC has offered to donate to the Town approximately 43 acres of Permanent Open Space located between Site "A" and Site "B" of the Overall Muir Wood Property as depicted on a plan prepared by Greenman-Pedersen Consulting Engineers Inc. dated October 13, 2020;

RESOLVED, the approximately 43 acres of Permanent Open Space includes a portion of the Muir Woods Project with frontage on Dodge Road and is also contiguous to the southern boundary of a portion of the Bucyrus Heights Subdivision and the approximately 43 acres of Permanent Open Space includes extensive existing vegetation and also includes wetlands subject to the jurisdiction of the United States Army Corps of Engineers ("USACE") and wetlands and regulated 100 ft. adjacent areas subject to the jurisdiction of the New York State Department of Environmental Conservation ("NYSDEC"); and

RESOLVED, the Town Board hereby finds as follows: i.) Acquisition of the approximately 43 acres of Permanent Open Space on the Muir Woods Project Site is consistent with the Conceptual Land Use Plan for the Town contained at Figure 6 of the adopted Bicentennial Comprehensive Plan that designates this acreage as "Recreation, Open Space & Gateways"; and, ii.) Acquisition of the approximately 43 acres of Permanent Open Space on the Muir Woods Project Site as described herein will result in benefits to the Town and its residents including homeowners in the Bucyrus Heights Subdivision.

RESOLVED, the Town Board has evaluated the potential adverse environmental impacts associated with the acquisition of the 43 acres of Permanent Open Space and determined that such acquisition will not result in any potentially significant adverse environmental impacts.

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

RESOLVED, that the Town Board hereby authorizes the acquisition of the approximately 43 acres of Permanent Open Space on the Muir Woods Project Site as described herein via a donation from Ciminelli Muir Woods, LLC subject to the following terms and conditions:

1. The adoption of this resolution by the Town Board for the purpose of acquiring the Permanent Open Space described herein does not include the Town Board designating the Permanent Open Space as "parkland". The Town Board shall adopt a separate resolution in the future if it determines designating the Permanent Open Space as "parkland" is appropriate.

2. Ciminelli Muir Woods, LLC, its successors and assigns, shall retain an easement with respect to the approximately 43 acres of Permanent Open Space for the purpose of completing required wetland mitigation and wetland mitigation monitoring in accordance with the terms and conditions contained in wetland permits issued by the USACE and the NYSDEC. Upon the USACE and the NYSDEC determining that the required wetland mitigation has been completed to their satisfaction and the expiration of the monitoring period, the easement shall terminate.

3. Prior to the recording of a deed from Ciminelli Muir Woods, LLC to the Town of Amherst for the purpose of conveying ownership of the Permanent Open Space as described herein, a Declaration of Restrictive Covenants shall be recorded at the Erie County Clerk's Office for the restricting the use of the approximately 43 acres of Permanent Open Space in accordance with the terms and conditions of wetland permits issued by the USACE and the NYSDEC and also for the purpose of prohibiting future development of the approximately 43 acres of Permanent Open Space.

4. Ciminelli Muir Woods, LLC shall be responsible for the expenses associated with the preparation of a survey and an Abstract of Title for the Permanent Open Space as described herein and the recording fees for the deed to be recorded at the Erie County Clerk's Office.

5. The documentation required to effectuate the transfer of the Permanent Open Space as described herein and to comply with the above conditions shall be subject to review and approval by the Town Attorney's Office.

6. The Supervisor is authorized to execute any documentation required to effectuate the acquisition of the 43 acres of Permanent Open Space in accordance with the terms and conditions contained in this resolution.

10/06/2020

A motion to open the public hearing was made by Supervisor Kulpa, seconded by Councilmember Lavin and unanimously approved 4-0. The public hearing was opened at 7:51 PM.

Sean W. Hopkins, Esq., presented for both resolution #791 and #792 and answered questions from the Board.

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

There were no speakers from the public, therefore Supervisor Kulpa moved to adjourn the public hearing and set a Decision Date for October 19th. The motion was seconded by Councilmember Lavin and unanimously approved 4-0. The public hearing was adjourned at 8:13 PM.

10/19/2020
A motion to open the public hearing was made by Supervisor Kulpa, seconded by Councilmember Lavin and unanimously approved 5-0. The public hearing was opened at 7:18 PM.

Sean W. Hopkins, Esq., presented under Res #792.

There were no speakers from the public, therefore Supervisor Kulpa moved to close the public hearing, seconded by Councilmember Lavin and unanimously approved 5-0. The public hearing was closed at 7:20 PM.

A motion to adopt the amended SEQR Findings Statement was made by Supervisor Kulpa, seconded by Deputy Supervisor Berger and approved via Roll Call vote 4-1 (nay, Bucki).

RESULT:	**ROLL CALL VOTE (ADOPTED) [4 TO 1]**
MOVER:	Brian J. Kulpa, Supervisor
SECONDER:	Jacqualine Berger, Deputy Supervisor
AYES:	Kulpa, Berger, Lavin, Szukala
NAYS:	Bucki

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Exhibit 10 – Resolution 2020-792 as Adopted by the Town of Amherst Town Board on October 19, 2020 for the Purpose of Approving an Amendment to the Town of Amherst Comprehensive Plan

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Amherst Town Board
5583 Main Street
Williamsville, NY 14221
www.amherst.ny.us

Francina J. Spoth
Town Clerk

Meeting: 10/19/20 07:00 PM
Department: Town Clerk
Initiated by: **Kathleen Cooper**
Co-Sponsored by:

DOC ID: 22366 **RESOLUTION 2020-792** **ROLL CALL VOTE (ADOPTED)**

Amendment to the Comprehensive Plan for "Muir Woods - Site A" (1081 N. French Road)

Amendment to the Comprehensive Plan for
"Muir Woods - Site A"
[1081 North French Road (NCD); BCPA-2020-02]

RESOLVED, that pursuant to 6NYCRR Part 617 (SEQR) and Town Code Section 104, as amended, that the requirements of SEQR have been completed, and be it further

RESOLVED, that pursuant to NYS Town Law Section 272-a and Section 11.6 of the Town Comprehensive Plan, the Town Board concurs with the findings of the Planning Board as stated in their resolution of August 20, 2020 to amend the Conceptual Land Use Plan (Figure 6) and the University Focal Planning Area (Figure 21) of the Comprehensive Plan for "Muir Woods - Site A" located at 1081 North French Road (NCD) to permit mixed-use residential/commercial use on Site A.

For additional information (copy & paste link):
https://share.amherst.ny.us:443/docman/doc_files_list.php?hash=uaaidrb0hpn0mkelzsugvr62

10/06/2020
A motion to open the public hearing was made by Supervisor Kulpa, seconded by Councilmember Lavin and unanimously approved 4-0. The public hearing was opened at 7:51 PM.

Sean W. Hopkins, Esq., presented for both resolution #791 and #792 and answered questions from the Board.

There were no speakers from the public, therefore Supervisor Kulpa moved to adjourn the public hearing and set a Decision Date for October 19th. The motion was seconded by Councilmember Lavin and unanimously approved 4-0. The public hearing was adjourned at 8:13 PM.

10/19/2020
A motion to open the public hearing was made by Supervisor Kulpa, seconded by Deputy Supervisor Berger and unanimously approved 5-0. The public hearing was opened at 7:07 PM.

Sean W. Hopkins, Esq., presented.

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

There were no speakers from the public, therefore Supervisor Kulpa moved to close the public hearing, seconded by Deputy Supervisor Berger and unanimously approved 5-0. The public hearing was closed at 7:18 PM.

A motion to approve the Negative Declaration was made by Supervisor Kulpa, seconded by Deputy Supervisor Berger and approved 4-1 (nay, Bucki). A motion to adopt the resolution was made by Supervisor Kulpa, seconded by Deputy Supervisor Berger and approved via Roll Call vote 4-1 (nay, Bucki).

RESULT:	**ROLL CALL VOTE (ADOPTED) [4 TO 1]**
MOVER:	Brian J. Kulpa, Supervisor
SECONDER:	Jacqualine Berger, Deputy Supervisor
AYES:	Kulpa, Berger, Lavin, Szukala
NAYS:	Bucki

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

HSM

February 26, 2021

Ellen Kost, AICP, Assistant Planning Director
Town of Amherst Planning Department
5583 Main Street
Williamsville, NY 14221

Re: Proposed Mixed Use Project - Site A of Muir Woods [SP-2021-05]
Portion of 1081 North French Road – Town of Amherst
File No. 10024.12

Dear Ellen:

Attached as Exhibit "1" is a copy of the Amended Wetland Permit [LRB-2001-00067] issued by the United States Army Corps of Engineers ("USACE") on February 25, 2021 authorizing impacts to 6.089 acres of federal wetlands [reduction of 6.921 acres of previously authorized impacts to federal wetlands] in order to accommodate the mixed-use development of Site "A" of the Muir Woods Property in accordance with the project layout depicted on the Concept Site Plan prepared by Christopher Wood, P.E. of Carmina Wood Morris DPC attached as Sheet 1 of 3.

Please feel free to call me at 510-4338 or via e-mail if you have any questions regarding this letter or the Amended Wetland Permit issued by the USACE on February 25, 2021 or the status of the pending request for Major Site Plan Approval for the proposed mixed-use project.

Thank you for your continued cooperation.

Sincerely,

HOPKINS SORGI & MCCARTHY PLLC

Sean W. Hopkins, Esq.

cc: Adam Faeth, Esq., Ciminelli Real Estate Corporation [Via e-mail and mail]
William Severyn, Severyn Development Inc. [Via e-mail and mail]
Christopher Wood, P.E., Carmina Wood Morris DPC [Via e-mail]
Scott J. Livingstone, Earth Dimensions, Inc. [Via e-mail]
Jody Celeste, Earth Dimensions, Inc. [Via e-mail]

HOPKINS SORGI & MCCARTHY PLLC
Attorneys at Law
5500 Main Street, Suite 343 • Williamsville, New York 14221
Direct: 716-510-4338 • E-mail: shopkins@hsr-legal.com • www.hsr-legal.com

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Exhibit 1 – Amended Wetland Permit Issued by the United States Army Corps of Engineers dated February 25, 2021

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

DEPARTMENT OF THE ARMY
BUFFALO DISTRICT, CORPS OF ENGINEERS
1776 NIAGARA STREET
BUFFALO, NEW YORK 14207-3199

February 25, 2021

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

Mr. Adam Faeth
Development Manager
Ciminelli Muir Woods LLC
350 Essjay Road Suite 101
Williamsville, NY 14221

Dear Mr. Faeth:

This is in reply to your submittal dated July 20, 2020 in which you requested a modification of Department of the Army Permit No. LRB-2001-00067. The project is located on a 326-acre parcel in the Town of Amherst, Erie County, New York. Specifically, you seek authorization to change the proposed use of an area identified as Site A from research and development and flex office space to a mixed-use commercial and residential development. This includes two 4-story mixed-use buildings, two-family townhouses, 6-unit apartment buildings, and a recreational trail to connect Site A with Site B. Wetland impacts have been reduced from 13.01 acres to 6.089 acres in Site A. A reduction of 6.921 acres. In addition, because of the reconfigured project including the significant reduction of wetland impacts, you have requested that the requirement of off-site compensatory mitigation be removed. Lastly, you have requested that 134 acres of the overall Muir Woods site located northeast of Site B, is donated to the Town of Amherst. This area will remain as open space in perpetuity. Permit compliance with mitigation requirements will remain as it currently is on the 134-acre site as a responsibility of Ciminelli Muir Woods LLC.

A Public Notice was published and coordinated with agencies and adjacent property owners using standard procedures. No comments were received as a result of the Public Notice. Based upon our evaluation, I concluded your request will not result in any unacceptable environmental or navigational impacts. Therefore, I am modifying Department of the Army permit No. LRB-2001-00067 to reflect the changes outlined in your request and identified on the attached drawings. All other terms and conditions of Permit No. LRB-2001-00067 remain in full force and effect.

Sheets 1, 2, and 3 of 3 are hereby made part of Permit No. LRB-2001-00067. Sheet 1 of 3 of this modification is an update to Sheets 2, 3, and 5 of 6 of the original permit. Sheet 2 and 3 of 3 of this modification are updates to Sheet 5 of 6 of the original permit. In addition, the following Special Conditions No. 6 and 8 of Permit No. LRB-2001-00067 are modified so that they no

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

longer include the requirement of off-site compensatory mitigation, as indicated below with the original and the following modified condition:

1. Special Condition Number 6: As mitigation to compensate for unavoidable and permanent impacts to 17.83 acres of Federal wetlands and 1.29 acres of Federal tributaries (approximately 5227 linear feet), the permittee shall create, at a minimum; 26.91 acres of wetland on-site, and 27.37 acres of wetland off-site. In addition, the permittee shall enhance 4.3 acres of tributary (approximately 2630 linear feet) on-site, all in accordance with the approved on-site and off-site mitigation plan that is made part of this permit. The mitigation area must be constructed in accordance with the approved plan as well as all permit conditions.

   Modified Special Condition Number 6: As mitigation to compensate for unavoidable and permanent impacts to 10.91 acres of Federal wetlands and 1.29 acres of Federal tributaries (approximately 5227 linear feet), the permittee shall create, at a minimum; 26.91 acres of wetland on-site. In addition, the permittee shall enhance 4.3 acres of tributary (approximately 2630 linear feet) on-site, all in accordance with the approved on-site mitigation plan that is made part of this permit. The mitigation area must be constructed in accordance with the approved plan as well as all permit conditions.

2. Special Condition Number 8: The approved compensatory mitigation must be in strict conformance with the plans approved by the Corps of Engineers. Such approved plans were prepared by Ciminelli Development Company, Incorporated and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009, including the Proposed On-Site Wetland Mitigation Plan, and the Proposed Off-Site Wetland Mitigation Plan dated November 16, 2009. The stated mitigation plans are hereby incorporated into and made part of the permit as Attachments 1 and 2. The permittee shall implement the mitigation in accordance with the plans and all permit conditions. Where permit conditions differ from the mitigation plan, the permit conditions shall be the ruling condition.

   Modified Special Condition Number 8: The approved compensatory mitigation must be in strict conformance with the plans approved by the Corps of Engineers. Such approved plans were prepared by Ciminelli Development Company, Incorporated and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009, including the Proposed On-Site Wetland Mitigation Plan dated November 16, 2009. The stated on-site mitigation plan is hereby incorporated into and made part of the permit as Attachments 1. The permittee shall implement the mitigation in accordance with the plans and all permit conditions. Where permit conditions differ from the mitigation plan, the permit conditions shall be the ruling condition.

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

Questions pertaining to this matter should be directed to Martin Crosson at 716-879-4346, by writing to the following address: U.S. Army Corps of Engineers, 1776 Niagara Street, Buffalo, New York 14207 or by E-mail at: martin.h.crosson@usace.army.mil

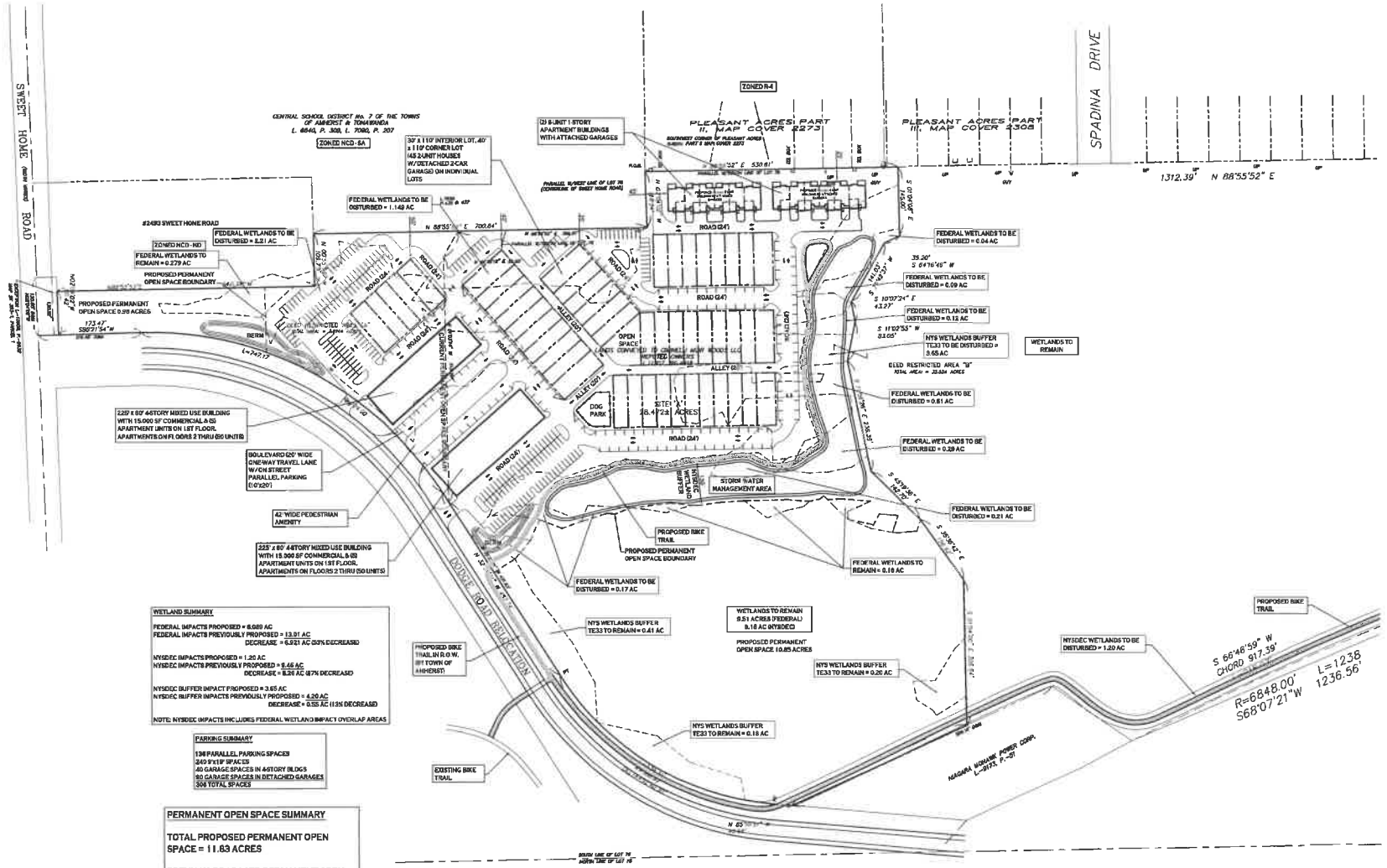
BY AUTHORITY OF THE SECRETARY OF THE ARMY

Steven V. Metivier

For: Mark Scalabrino
Acting Chief, Regulatory Branch

Enclosures

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)



N SITE PLAN
SCALE: 1"=100'

Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 1 of 3

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS. CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

© Carmina Wood Morris DPC
All rights reserved. Reuse of these documents without the expressed written permission of Carmina Wood Morris DPC is prohibited. WARNING: It is a violation of article 145 sections 7209(2) and 7301 of the New York State education law for any person, unless acting under the direction of a registered architect, licensed engineer or land surveyor to alter this drawing. If altered such R.A., P.E. or L.S. shall affix his or her seal, signature, the date, the notation "altered by" and a specific description of the alteration.

Carmina Wood Morris
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0061

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Muir Woods Site "A"
Sweet Home & Dodge Road
Amherst, New York

Date: 7/1/20
Drawn by: C. Wood
Scale: As Noted

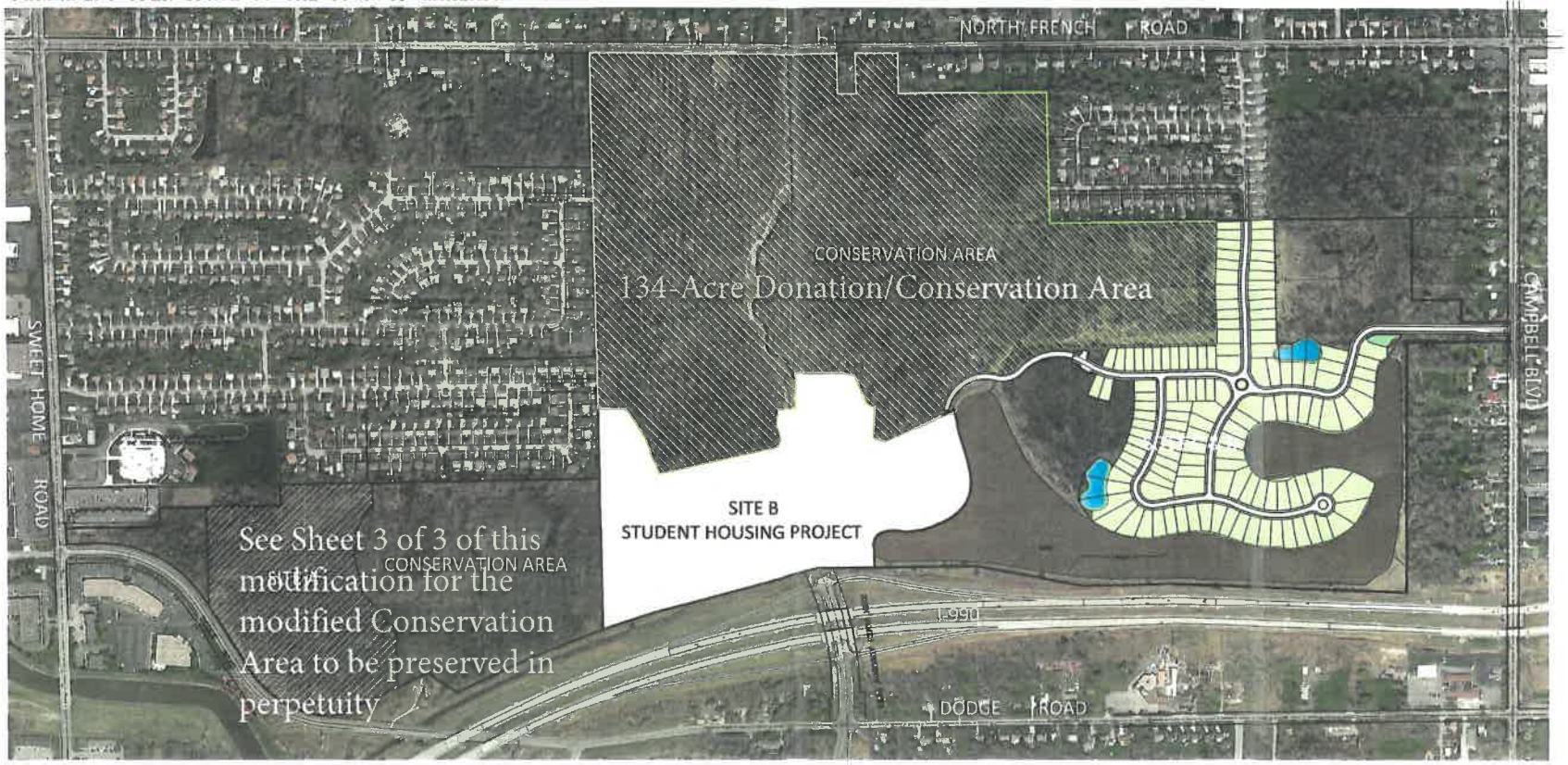
DRAWING NAME:
Concept Site Plan

DRAWING NO.
C-100
Project no.: 19.192

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

MUIR WOODS OVERALL PROJECT AREA

PROPOSED DONATION OF APPROXIMATELY 134 ACRES OF
PERMANENT OPEN SPACE TO THE TOWN OF AMHERST

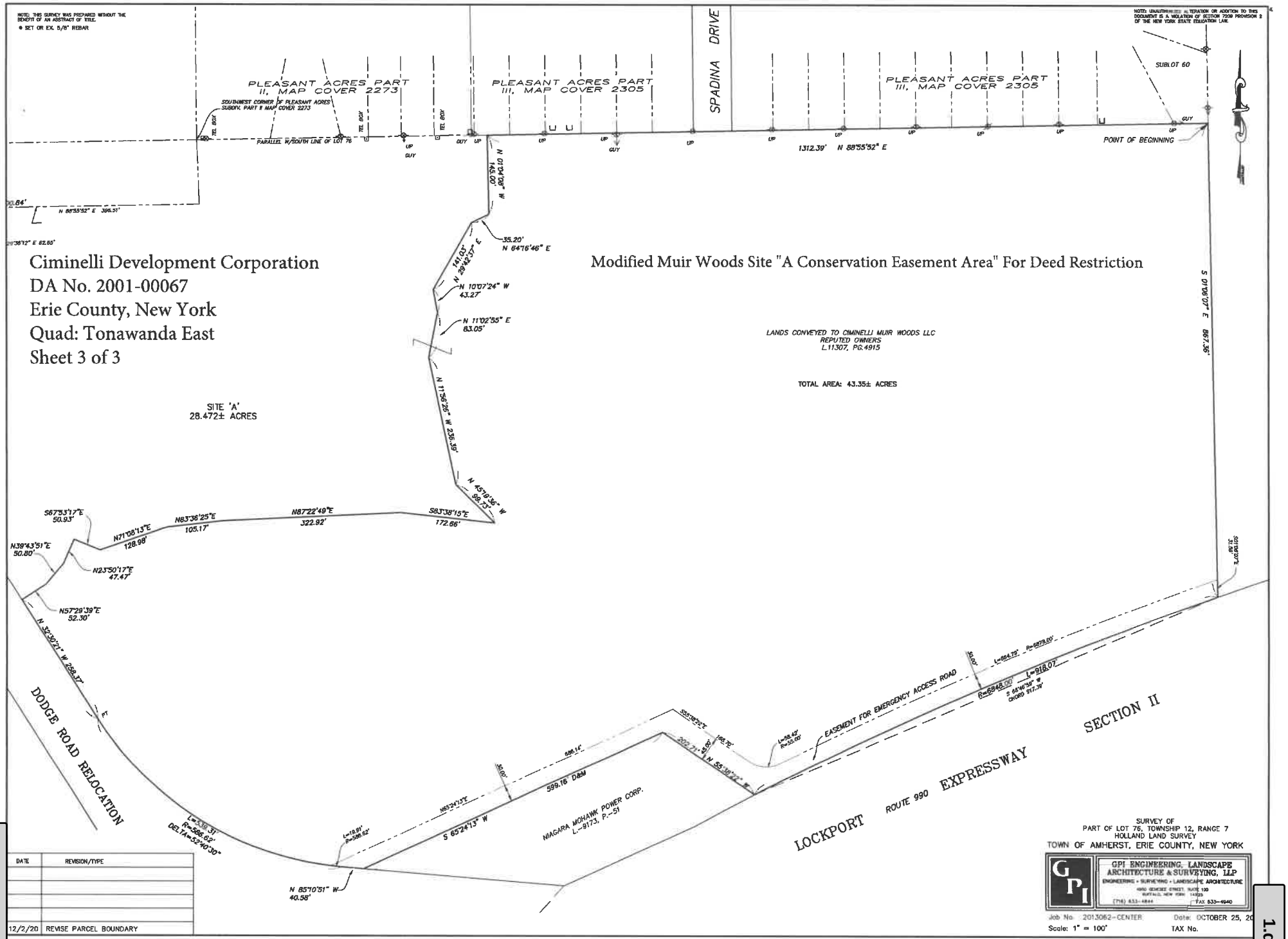


CONSERVATION AREA TO BE DONATED

Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 2 of 3

GPI GREENMAN-PEDERSEN, INC. CONSULTING ENGINEERS ENGINEERING • SURVEYING • PLANNING

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

HSM

December 26, 2020

Ellen Kost, AICP, Assistant Planning Director
Town of Amherst Planning Department
5583 Main Street
Williamsville, NY 14221

Re: Proposed Mixed Use Project - Site A of Muir Woods [Z-2002-09C & BCPA-2020-02]
Portion of 1081 North French Road
Applicant/Project Sponsor: Ciminelli Real Estate Corporation
File No. 10024.12

Dear Ellen:

Attached as Exhibit "1" is a copy of the Amended Wetland Permit [Permit No. 9-1422-00398/0001] issued by the New York State Department of Environmental Conservation ("NYSDEC") on December 24, 2020 authorizing the impacts to NYSDEC Freshwater Wetlands and the associated regulated 100 ft. Adjacent Area in order to accommodate the mixed-use development of Site "A" of the Muir Woods Property in accordance with the project layout depicted on the Concept Site Plan prepared by Christopher Wood, P.E. of Carmina Wood Morris DPC.

Attached as Exhibit "2" is a copy of the Public Notice of the United States Army Corps of Engineers ("USACE") dated December 21, 2020. The comment period on the pending requested Amended Wetland Permit being sought from the USACE expires on January 11, 2021. The Project Sponsor anticipates receiving an Amended Wetland Permit from the USACE by the end of January.

Please feel free to call me at 510-4338 or via e-mail if you have any questions regarding this letter or the Amended Wetland Permit issued by the NYSDEC on December 24, 2020 or the status of the mixed-use project.

Thank you for your continued cooperation.

Sincerely,

HOPKINS SORGI & MCCARTHY PLLC

Sean W. Hopkins, Esq.

cc: Adam Faeth, Esq., Ciminelli Real Estate Corporation [Via e-mail and mail]
William Severyn, Severyn Development Inc. [Via e-mail and mail]
Christopher Wood, P.E., Carmina Wood Morris DPC [Via e-mail]

HOPKINS SORGI & MCCARTHY PLLC
Attorneys at Law
5500 Main Street, Suite 343 • Williamsville, New York 14221
Direct: 716-510-4338 • E-mail: shopkins@hsr-legal.com • www.hsr-legal.com

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Scott J. Livingstone, Earth Dimensions, Inc. [Via e-mail]
Jody Celeste, Earth Dimensions, Inc. [Via e-mail]

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Exhibit 1 – Amended Wetland Permit Issued by the NYS Department of Environmental Conservation dated December 24, 2020

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 9
270 Michigan Avenue, Buffalo, NY 14203-2915
P: (716) 851-7165 I F: (716) 851-7168
www.dec.ny.gov

December 24, 2020

Mr. Adam Faeth
Ciminelli Real Estate Corporation
50 Fountain Plaza, Suite 500
Buffalo, New York 14202

Muir Woods Development – "Site A"
Permit Transmittal Letter
Permit No. 9-1422-00398/00001

Dear Mr. Faeth:

Enclosed is your permit which was issued in accordance with applicable provisions of the Environmental Conservation Law. The permit is valid for only that project, activity or operation expressly authorized. If modifications are desired after permit issuance, you must submit the proposed revisions and receive written approval from the Permit Administrator prior to initiating any change. If the Department determines that the modification represents a material change in the scope of the authorized project, activity, operation or permit conditions, you will be required to submit a new application for permit.

Please review all permit conditions carefully. In particular, identify your initial responsibilities under this permit in order to assure timely action if required. Since failure to comply precisely with permit conditions may be treated as a violation of the environmental conservation law, you are requested to provide a copy of the permit to the project contractor, facility operator, and other persons directly responsible for permit implementation (if any).

If you have any questions, please contact this office at the above address.

Respectfully,
David S. Denk
Regional Permit Administrator

Enclosure
ecc: NYSDEC Law Enforcement
Maureen Brady, NYSDEC Office of General Counsel
Mr. Chuck Rosenburg, NYSDEC Division of Fish and Wildlife
Mr. Martin Crossen, USACOE
Sean Hopkins, Esq., Hopkins Sorgi & McCarthy PLLC

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

PERMIT
Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
Ciminelli Muir Woods LLC
50 Fountain Plaza, Suite 500
Buffalo, NY 14202
(716) 631-8000

Facility:
MUIR WOODS DEVELOPMENT
1121 N French Rd
Amherst, NY 14228

Facility Location: in AMHERST in ERIE COUNTY
Facility Principal Reference Point: NYTM-E: 191.586 NYTM-N: 4770.823
Latitude: 43°01'38.9" Longitude: 78°47'07.2"

Authorized Activity: Construction of a mixed-use project named "Muir Woods" consisting of approximately two 4-story mixed-use buildings consisting of commercial space and residential units, 90 two-family townhouses and 2 six-unit apartment buildings, approximately 133 detached single-family residential units and 515 cottage-style and apartment-style housing units with various amenities; and gas, electric, sanitary, potable water and storm water (the necessary infrastructure), while maintaining open space on approximately 224 acres in the Audubon New Community District. The Muir Woods project property is a 326 acre site bounded by the Lockport Expressway (Interstate Route 990) and Dodge Road on the south, Sweet Home Road on the west, North French Road on the north and Campbell Boulevard on the east. The project will result in permanent impacts to approximately 2.39 acres of State regulated wetlands (TE-22, TE-23 and TE-34), and 11.38 acres of State regulated 100 foot wide wetland adjacent area. As mitigation for those impacts the project includes creation of 19.58 acres of in-kind and out-of-kind wetlands on-site, in six areas, to replace the functions and benefits of the impacted wetlands. There will be 4.3 acres of stream channel enhancement on-site as mitigation for State wetland regulated adjacent area impacts. The project also includes construction at 520 Campbell Road property as detailed on plan sheets referenced in Natural Resource Condition No. 4.

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Permit Authorizations

Freshwater Wetlands - Under Article 24
Permit ID 9-1422-00398/00001

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

Water Quality Certification - Under Section 401 - Clean Water Act
Permit ID 9-1422-00398/00002

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: DAVID S DENK, Regional Permit Administrator
Address: NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY 14203 -2915

Authorized Signature: David S. Denk Digitally signed by David S. Denk DN: cn=David S. Denk, o=NYS DEC, ou=Div. of Env. Permits, email=david.denk@dec.ny.gov, c=US Date: 2020.12.24 10:29:47 -05'00' Date ___/___/___

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: FRESHWATER WETLANDS; WATER QUALITY CERTIFICATION

1. **No Work Prior to Approval of Legal Instrument for Preservation of Undeveloped Areas of Site** No work authorized by this permit may begin until the Department approves a legal instrument, such as a deed restriction and/or conservation easement, that will preserve in perpetuity the natural resource values of the undeveloped areas of the site. This condition does not apply to the 520 Campbell Boulevard property.

2. **Declaration of Restrictions 520 Campbell Boulevard Property** A Declaration of Restrictions permanently prohibiting any future development of the 6.88 acres of jurisdictional federal wetlands and portion of the upland area on 520 Campbell Boulevard as depicted on the Wetland Restriction Exhibit Map must be incorporated into the deeds for lots 1 – 12 and 21. By 60 days after Water Quality Certification issuance, the permittee shall file with the real property records of the Erie County Clerk`s Office, the deed for each applicable lot containing this notice. The permittee shall within two weeks following the filing of the deed(s) submit proof of filing from the County Clerk's Office

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

showing the Liber and page number at which the deed notice was filed and the date of filing for one of the affected lots to: Regional Permit Administrator, NYSDEC Region 9 Headquarters, 270 Michigan Ave, Buffalo, NY 14203-2915.

3. **Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by Ciminelli Development Company, Inc. and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009.

4. **Conformance with Plans Site B** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include the "Concept Plan - Muir Woods" dated 08 November 2019 amended to show Conifer Planting Area (attached).

5. **Conformance with Plans - 520 Campbell Boulevard** All activities authorized by this permit for the 520 Campbell Boulevard property must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans include those sheets entitled: The Preserve at Muir Woods (DEC Planting Exhibit, DEC Earthwork Exhibit and the Wetland Restriction Exhibit) by Greenman-Pedersen, Inc. dated May 2018.

6. **Conformance with Plans Site A** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include Drawing C-100 dated July 20, 2020 and received by this Department on August 10, 2020.

7. **Future Phases** Prior to development of Muir Woods Sites A and B, the permittee must obtain specific approval of engineered plans for Sites A and B to ensure compliance with the terms and condition of this permit, the approved wetland mitigation plans and the most current Findings Statement for the overall Muir Woods Project issued pursuant to the State Environmental Quality Review Act. The permittee shall submit the engineered plans for the development of Sites A and B for review by the Department simultaneous with submission of such engineered plans to the Town of Amherst. If required by the Department, the permittee shall make any necessary modifications to the engineered plans to ensure compliance with the terms and conditions of this permit, the approved wetland mitigation plans and the most current Findings Statement.

8. **Permit Conditions Prevail over Plans** If any condition of this permit conflicts with the approved plans noted in Condition Number 1, the permit conditions shall prevail over the plans unless specific written approval for such a change is obtained from this Department prior to implementation.

9. **Pre-construction Meeting to Review Permit** Prior to commencing work at the project site, the permittee shall schedule a pre-construction meeting with Department staff (Contact: Mr. David Denk, Regional Permit Administrator, NYSDEC, Division of Environmental Permits, Telephone : 716/851- 7165 and/or Mr. Charles P. Rosenburg, NYSDEC, Division of Fish and Wildlife, Telephone: 716/851-7010) and selected contractors to review the conditions contained in this permit.

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

10. Mark Areas of No Disturbance on the Muir Woods Site Grade stakes and/or other appropriate measures (substantial contractor fencing, perhaps in combination with necessary silt fencing) shall be used to ensure that no equipment enters identified areas of no disturbance within the immediate area under construction (i.e.- Site A, Site B, Site C or Site D) on the Muir Woods project site. Boundaries of the on-site mitigation areas shall likewise be marked to define the limits of that work.

11. Install Controls Along Limits of Disturbance Before any soil is disturbed within a specific Site Development Area, as detailed in Condition #6 above, the permittee shall install securely anchored silt fencing and/or continuous staked hay bales along the limits-of-disturbance as shown on the plans or drawings referenced in this permit. Such erosion and sedimentation controls shall be maintained until unpaved portions of the subject site are stabilized by a self-sustaining cover of vegetation that is adequate to prevent erosion and sedimentation on and off the site. Sediment which has accumulated at the controls shall be removed periodically as necessary during the construction period. Before the controls are removed, the permittee shall remove all sediment that has accumulated at the controls.

12. Work Within Ares Depicted on Plans All construction activity, including operation of machinery, excavation, filling, grading, clearing of vegetation, disposal of waste, street paving and stockpiling of material must take place within the Site Development Areas or mitigation areas as depicted on the project plans referenced by this permit. Construction activity is prohibited within areas to be left in a natural condition or locations on the property not within the Site Development Areas or mitigation areas designated by this permit. Disturbance to the wetlands and their regulated 100 foot wide adjacent areas shall be strictly limited to the work areas identified in the plans, and specifically the MAP SHOWING WETLAND IMPACT AREAS - NEW YORK STATE WETLANDS, and APPENDIX M - PROPOSED ON-SITE MITIGATION PLAN.

13. Invasive Species (Non-Native Vegetation) To prevent the unintentional introduction or spread of invasive species, the permittee must ensure that all construction equipment is cleaned of mud, seeds, vegetation and other debris before entering any approved Site Development Areas within State regulated wetlands or their 100 foot wide adjacent areas, as well as all on-site wetland mitigation areas.

14. Prevention of Invasive Species The permittee shall prevent the establishment of invasive species (purple loosestrife, Phragmites, reed canary-grass, Japanese knotweed, glossy buckthorn and common buckthorn) across all disturbed areas within the wetland mitigation area for five growing seasons. If any of these invasive species become established, monitoring and treatment may be extended for an additional 5 years at the Department's discretion.

15. Wetland Mitigation is Mandatory Completion of all freshwater wetland mitigation is mandatory regardless of whether or not construction proceeds to completion. The required mitigation must be completed by the expiration date of this permit. Mitigation will be subject to remediation, if necessary, pursuant to Condition #16 below. All mitigation areas shall be monitored for a period of ten (10) years or until the mitigation is deemed successful by this Department. Monitoring reports shall be prepared for the first four (4) years after construction of the mitigation areas and every other year (years 6, 8 and 10) thereafter. This Department may, at its discretion, modify the 10-year monitoring period and/or monitoring report requirement at any time. Monitoring reports shall be submitted to Mr. Charles P. Rosenburg, Habitat Manager, NYSDEC, Bureau of Ecosystem Health, 270 Michigan Avenue, Buffalo, NY 14203-2915 Telephone: 716/851-7024.

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

16. **On-Site Mitigation to be in Accordance with Mitigation Plan** The on-site mitigation shall be in accordance with Appendix M - Proposed On-Site Wetland Mitigation for Muir Woods prepared by Earth Dimensions, Inc. revised May 25, 2009 and with the modifications shown in Exhibit 22 of the July 20, 2020 application binder.

17. **Planting Row of Native Conifers** The permittee shall plant a row of native conifer trees in the location shown on the attached plan. The tree plantings must be a minimum of 6 feet tall, spaced 15 feet apart, and must be planted no later than October 15th following the completion of construction of the adjacent apartment units.

18. **Survival Rate for Mitigation Plantings** The permittee shall prepare a care, maintenance, inspection, and replacement schedule for the tree and shrub plantings described in the mitigation plan to ensure an 85% survival rate for five growing seasons. This condition includes all on-site landscape "buffer" plantings.

19. **Herbicides, Pesticides in Wetland or Adjacent Area** The use of herbicides and other pesticides in State regulated wetlands or their 100 foot wide adjacent areas is a regulated activity and may only be conducted pursuant to a valid Article 33 Pesticides Permit.

20. **Requirement for SPDES General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities** Since development of the Muir Woods site in the Town of Amherst will involve land disturbance of one (1) or more acres, the permittee is required to obtain coverage under State Pollutant Discharge Elimination System (SPDES) General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities. A Notice of Intent (NOI) is required to be sent to NYSDEC, Division of Water, 625 Broadway, 4th Floor, Albany, New York 12233-3505, Telephone: 518/402-8111 and approved before construction commences. Alternatively, an eNOI may be filed electronically as described on the Department's website. The General Permit GP-0-15-002 and NOI form are available on the Department's website at www.dec.state.ny.us.

21. **Visibly Turbid Discharges Prohibited** Visibly turbid discharges from project dewatering operations, excavation and grading activities are strictly prohibited to any "water body" (pond, wetland, stream or water course). Any such discharges shall be (1) retained in an appropriately maintained upland settling basin, filtered through crushed stone, sand, filter fabric fences, hay bales etc., or (2) directed to a grassy area sufficiently distant from any water body to preclude such entry.

22. **Stockpiling of Soil** Stockpiling of excavated soil is prohibited at locations within any portion of the TE-22, TE-23 and TE-34 Wetlands or their regulated 100 foot wide adjacent areas, or within any mapped 100-year floodplain beyond the Site Development Areas or mitigation areas identified in the plans.

23. **Stabilize Disturbed Areas** All areas of soil disturbance resulting from this project shall be seeded with an appropriate perennial grass seed and mulched with straw, or hydro-seeded. Mulch shall be maintained until suitable vegetative cover is established.

24. **Temporary Mulch, Final Seeding** If seeding is impracticable due to the time of year, a temporary mulch shall be applied and final seeding shall be performed at the earliest opportunity when weather conditions favor germination and growth.

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

25. **Disposal of Material** Any non-merchantable tree and brush debris, demolition debris, excess construction materials, and/or excess excavated materials shall be immediately and completely disposed of on an approved upland site more than 100 feet from any regulated freshwater wetland. These materials shall be suitably stabilized so as not to re-enter any water body, wetland, or wetland adjacent area; and must be disposed of in accordance with all local, state, and federal statutes, regulations, or ordinances.

26. **Placement of Interpretive Signs Required** Permanent interpretive signs shall be placed at various wetland boundary locations throughout the Muir Woods project site . The permittee shall submit a proposal for the signs to the Department for approval. The interpretive signs shall be a minimum of 12 inches by 12 inches and shall be placed on permanent posts.

27. **Annual Project Inspection / Meeting** The permittee shall schedule an annual inspection/meeting to update Department staff on project progress and compliance with conditions of this permit for the on-site wetland mitigation area.

28. **Wetland Monuments** Monuments shall be placed every 200 feet along the outer edge of the wetland preservation areas. The monuments shall be 30" long, 5/8" rebar and cap embedded flush and in the center of the top exposed surface of concrete in a minimum 4 inch diameter, 4.5 foot long section of PVC Schedule 40 drain pipe filled with concrete, extending vertically1.5 to 2 feet above existing grade at each location. The caps shall say "Conservation Area Marker, Do Not Disturb". These monuments are to be permanently maintained.

29. **Wetland Boundaries** The boundaries of the TE-22, TE-23 and TE-34 Wetlands shall be fixed for the period of this permit (expires November 30, 2024). At that time, new boundary delineations for those wetlands will be required by this Department (to be performed or confirmed by a Department Biologist). Since project activities will be subject to the updated wetland boundary delineations and pertinent regulations at that time, any future permit modification (if necessary) would be reviewed based on the updated delineations and pertinent regulations. As such, modifications to the current project plan may be necessary depending upon the updated wetland delineations and permit regulations in effect at that time.

30. **State Not Liable for Damage** The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

31. **State May Order Removal or Alteration of Work** If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

32. **State May Require Site Restoration** If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may lawfully require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.

33. **Precautions Against Contamination of Waters** All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. **Water Quality Certification** The authorized project, as conditioned pursuant to the Certificate, complies with Section 301, 302, 303, 306, and 307 of the Federal Water Pollution Control Act, as amended and as implemented by the limitations, standards, and criteria of state statutory and regulatory requirements set forth in 6 NYCRR Section 608.9(a). The authorized project, as conditioned, will also comply with applicable New York State water quality standards, including but not limited to effluent limitations, best usages and thermal discharge criteria, as applicable, as set forth in 6 NYCRR Parts 701, 702, 703, and 704.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. **Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. **Relationship of this Permit to Other Department Orders and Determinations** Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. **Applications For Permit Renewals, Modifications or Transfers** The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY14203 -2915

4. **Submission of Renewal Application** The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Freshwater Wetlands, Water Quality Certification.

5. **Permit Modifications, Suspensions and Revocations by the Department** The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

a. materially false or inaccurate statements in the permit application or supporting papers;

b. failure by the permittee to comply with any terms or conditions of the permit;

c. exceeding the scope of the project as described in the permit application;

d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;

e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. **Permit Transfer** Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification
The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit
The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits
The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights
This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Exhibit 2 – Public Notice as Published by the United States Army Corps of Engineers dated December 21, 2020

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Public Notice

U.S. Army Corps
of Engineers
Buffalo District
CELRB-TDR

Applicant: Ciminelli Real Estate Corporation

Published: December 21, 2020
Expires: January 11, 2021

Application No: 2001-00067 (2020 Site A Modification)
Section: New York

All written comments should reference the above Application No. and be addressed to:
Attn: Martin Crosson
U.S. Army Corps of Engineers, Buffalo District
1776 Niagara Street
Buffalo, NY 14207

THE PURPOSE OF THIS PUBLIC NOTICE IS TO SOLICIT COMMENTS FROM THE PUBLIC REGARDING THE WORK DESCRIBED BELOW. NO DECISION HAS BEEN MADE AS TO WHETHER OR NOT A PERMIT WILL BE ISSUED AT THIS TIME.

Application for Permit Modification under Authority of Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act (33 U.S.C. 1344).

APPLICANT: Ciminelli Real Estate Corporation/Ciminelli Muir Woods, LLC ("Ciminelli"). Ciminelli has requested a modification to an existing permit described below.

WATERWAY & LOCATION: approximately 98 acres of Federal wetlands, a 32 acre lake and approximately 4.4 acres of tributaries have been previously identified as jurisdictional on the 326 acre parcel permitted for development known as "Muir Woods". The permitted project is located in the Town of Amherst, County of Erie and State of New York.

LATITUDE & LONGITUDE: Latitude North: 43°01'46"
Longitude West: -78°46'33"

EXISTING CONDITIONS: On May 14, 2012 a permit was issued to Ciminelli for placement of fill into 17.83 acres of Federal wetland and 1.29 acres of federally regulated tributaries for the multi-use development known as "Muir Woods". The current jurisdictional determination remains valid until the existing permit expiration date of November 30, 2024.

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PROPOSED MODIFICATION: Ciminelli proposes to modify the existing permit to change the proposed use of the area identified as Site A of the "Muir Woods" site. Under the existing permit, Site A was to consist of research and development and flex office space. The applicant is currently proposing to change the previously proposed use of Site A to a mixed-use commercial and residential development. The concept plan for the proposed project includes two 4-story mixed-use buildings, in addition to two-family townhouses and 6-unit apartment buildings. Also in association with the proposed changes, a new recreational bike/walking trail that will enter Site A from the southeast connection with Site B ultimately connecting to the rest of the on-site trail system and the Town's recreational trail that connects to the North Campus of the University of Buffalo and the Ellicott Creek Trailway system. The applicant has indicated these modifications are necessary due to changes in economic conditions in the real estate market, and also due to their consideration of input from the Town of Amherst municipal boards and the local public.

PROJECT PURPOSE
Basic: Construction of a multi-use development.
Overall: Modification of an existing permitted Ciminelli construction project by changing the proposed use of Site A of the Muir Woods site to the planned development from Research and Development and flex office space to mixed-use commercial and residential development with associated amenities on Site A due to market changes and consideration of the Town of Amherst municipal boards and local public input.

Water Dependency Determination: As with the existing permit, this newly proposed modification resulting in changes in project purpose and use within Site A, impacts to waters of the US have been determined to not be water dependent. Therefore, alternatives that do not require impacts to US waters are presumed to exist. The applicant adequately demonstrated that US waters have been avoided and minimized to the greatest extent practicable. As a result, wetland impacts have been reduced from the currently permitted 13.010 acres to 6.089 in Site A.

Mitigation: The currently permitted wetland impact in Site A is 13.010 acres. The new proposed impact to Site A wetlands are 6.089 acres resulting in a reduction in wetland impacts by 6.921 acres. As a result of the decrease in wetland impacts in Site A, the previously approved off-site mitigation consisting of creation of 27.37 acres of wetland habitat in the Town of Newstead has been proposed to be removed as a permit requirement. The previously approved and currently permitted on-site mitigation for Site A consisting of creation of approximately 10.47 acres of wetland remains unchanged. In addition, the increase in avoided wetland area and the reduction in developed area proposed in Site A results in an increase to the amount of wetland area to be preserved on-site as permanent open space from 3.91 acres to 11.83 acres.

Location and details of the above described work are shown on the attached maps and drawings.

Comments or questions pertaining to the work described in this notice should reference the Application Number and be directed to the attention of Martin Crosson, who can be contacted at the above address, by calling (716) 879-4346, or by e-mail at: martin.h.crosson@usace.army.mil. A lack of response will be interpreted as meaning that there is no objection to the work as proposed.

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Comments submitted in response to this notice will be fully considered during the public interest review for this permit application. All written comments will be made a part of the administrative record which is available to the public under the Freedom of Information Act. The Administrative Record, or portions thereof, may also be posted on a Corps of Engineers internet web site. Due to resource limitations, this office will normally not acknowledge the receipt of comments or respond to individual letters of comment.

Any individual may request a public hearing by submitting their written request, stating the specific reasons for holding a hearing, in the same manner and time period as other comments.

Pursuant to Section 106 of the National Historic Preservation Act, this proposed modification to Site A does not constitute an action that requires additional consultation with the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP). In a letter dated September 10, 2009 NYSOPRHP indicated the proposed project will have No Effect upon cultural resources in or eligible for inclusion in the National Registers of Historic Places. The proposed modification does not change the previously considered permit area or determination.

Pursuant to Section 7 of the Endangered Species Act (16 U.S.C. 1531), the Corps of Engineers has concluded consultation with the USFWS to evaluate potential impacts to the northern long-eared bat (NLEB). The Corps has previously determined that the project may affect the NLEB, but that the scope of the work falls within the parameters of the 4(d) Rule. Therefore, consultation has concluded. The existing permit for the project included the entire Site A area. This proposed modification does not constitute an action that requires further coordination or consideration under the Endangered Species Act (16 U.S.C. 1531).

Pursuant to Section 401(d) of the Clean Water Act, A Water Quality Certification will be issued or waived for this proposed project modification by the State of New.

Public hearings for the purposes of the Corps permit program will be held when the District Commander determines he can obtain additional information, not available in written comments, that will aid him in the decision-making process for this application. A Corps hearing is not a source of information for the general public, nor a forum for the resolution of issues or conflicting points of view (witnesses are not sworn, and cross examination is prohibited). Hearings will not be held to obtain information on issues unrelated to the work requiring a permit, such as property ownership, neighbor disputes, or the behavior or actions of the public or applicant on upland property not regulated by the Department of the Army. Information obtained from a public hearing is given no greater weight than that obtained from written comments. Therefore, you should not fail to make timely written comments because a hearing might be held.

The decision to approve or deny this permit modification request will be based on an evaluation of the probable impact, including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may

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be relevant to the proposal will be considered including the cumulative effects thereof; among these are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, flood plain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and in general, the needs and welfare of the people.

The Corps of Engineers is soliciting comments from the public; Federal, state and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

SIGNED

Diane C. Kozlowski
Chief, Regulatory Branch

NOTICE TO POSTMASTER: It is requested that this notice be posted continuously and conspicuously for 20 days from the date of issuance.

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Traffic Impact Study

for the proposed

Muir Woods - Site A
Proposed Mixed-Use Project
1081 North French Road

Town of Amherst
Erie County, New York
August 3, 2020

Project No. 40027

Prepared For:

Ciminelli Real Estate Corporation
350 Essjay Road
Williamsville, New York 14221

Prepared By:

SRF Associates
www.srfa.net
Transportation Planning / Engineering / Design

3495 Winton Place
Building E, Suite 110
Rochester, New York 14623

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LIST OF REFERENCES

1. Highway Capacity Manual, Sixth Edition. Transportation Research Board. National Research Council, Washington, DC. 2016.
2. New York State Department of Transportation (NYSDOT) Traffic Data Viewer. 2020. Retrieved from https://www.dot.ny.gov/tdv.
3. Trip Generation, Tenth Edition. Institute of Transportation Engineers. Washington, DC. 2017.
4. Traffic Impact Study for Submittal to Town of Amherst The Hub Amherst. Kimley-Horn of New York, P.C. 2017.
5. Traffic Impact Study for Access Modification Report For Break in Access Application For Northerly Extension of John James Audubon Parkway As A Town of Amherst Roadway. GPI Engineering. 2020.

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EXECUTIVE SUMMARY

OVERVIEW

The purpose of this report is to identify and evaluate the potential traffic impacts associated with the proposed development of Site "A" of the overall Muir Woods Property as a mixed-use project. Site "A" of the Muir Woods Property consists of approximately 28.47 acres located 1081 North French Road in the Town of Amherst, Erie County, New York ("Project Site"). The Applicant is seeking to amend the Amended Findings Statement issued by the Town of Amherst Town Board ("Town Board") pursuant to the State Environmental Quality Review Act ("SEQRA") on August 5, 2019 to accommodate a change of the previously proposed use of the Project Site as 237,000 sq. ft. of flex office and R&D space to a mixed-use project as described in this report and depicted on the Concept Site Plan prepared by Carmina Wood Morris DPC.

The operating characteristics of the proposed access points and impacts to the adjacent roadway network are identified and mitigating measures, if any, are provided to minimize capacity or safety concerns.

In an effort to define traffic impact, this analysis establishes existing base traffic conditions, projects background traffic flow including area growth and/or additional traffic resulting from new development in the area, and determines the traffic operations that would result the full development of the proposed mixed-use project.

The Project Site consists of vacant land and is located along the north side of Dodge Road, west of Interstate 990, in the Town of Amherst, Erie County, New York. Surrounding the proposed development is residential development and Heritage Heights Elementary School to the north, vacant land to the east, offices to the south, and a medical plaza to the west. Land uses in the vicinity of the Project Site include residential, office, medical, and educational uses. The study area consists of the following intersections:

- Dodge Road/Sweet Home Road
- Dodge Road/ North Forest Road

Access to the Project Site will be provided via three proposed driveways connecting to Dodge Road as follows: one full access driveway located at the southerly/easterly end of the Project Site, one full access driveway located at the northerly/westerly end of the Project Site, and a driveway separated by a 42 ft. wide median which has been designed to be a pedestrian amenity area (i.e. one driveway is enter-only and the other is exit only).

Construction of the proposed mixed-use project is anticipated to be completed within two years. Town of Amherst officials were contacted to discuss projects within the study area that are under construction and/or approved. Three projects were identified that are either under construction, approved for construction, or completed after data was collected in 2017: The Hub Amherst at 2949 North Forest Road, a student housing community on Site "B" of the overall Muir Woods Property, and a mixed-use building at 315 Campbell Boulevard.

Traffic related to full build out of The Hub Development was used to develop the 2020 base traffic volumes. Additional traffic related to the proposed student housing community on Site "B" of the Muir Woods Property has been added to the base traffic volumes at the study area intersections. To account for normal increases in background traffic growth including the mixed-use building 315 Campbell @ Dodge, as well as any other unforeseen developments in the project study area, a growth rate of 1% per year has been applied to the base traffic volumes. This growth rate is

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based upon historical traffic growth derived from NYSDOT traffic volume data for the area as well as consideration of the approved projects previously mentioned.

CONCLUSIONS & RECOMMENDATIONS

This study evaluates the potential traffic impacts resulting from the Muir Woods Site A Development. This study also provides the Town of Amherst and other governmental agencies with detailed information providing a hard look at potential traffic impacts for the purpose of the environmental review of the proposed mixed-use project pursuant to the State Environmental Quality Review Act ("SEQRA").

Based upon the analyses, the results indicate that the proposed mixed-use project will not have significant adverse traffic impacts on the existing roadway network. The following sets forth conclusions based upon the results of the analyses:

1. The proposed mixed-use project is expected to generate approximately 47 entering/85 exiting vehicle trips during the AM peak hour and 106 entering/82 exiting vehicle trips during the PM peak hour.

2. The proposed mixed-use project will not result in any potentially significant adverse traffic impacts to the study area intersections. No mitigation is warranted at the study area intersections as a result of the proposed mixed-use project.

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I. INTRODUCTION

The purpose of this report is to identify the potential traffic impacts associated with the proposed Muir Woods Site A Development in the Town of Amherst, Erie County, New York. The operating characteristics of the proposed access points and impacts to the adjacent roadway network are identified and mitigating measures, if any, are provided to minimize capacity or safety concerns.

In an effort to define traffic impact, this analysis establishes 2020 existing base traffic conditions, projects background traffic flow including area growth and/or additional traffic resulting from new development in the area, and determines the traffic operations that would result from full development of the proposed project.

II. LOCATION

The proposed mixed-use project is located along the north side of Dodge Road, west of Interstate 990, in the Town of Amherst, Erie County, New York. The site is currently vacant. Surrounding the proposed development is residential development and Heritage Heights Elementary School to the north, vacant land to the east, offices to the south, and a medical plaza to the west. Land uses in the vicinity of the project site include residential, office, medical, and educational uses. The study area consists of the following existing intersections:

- Dodge Road/Sweet Home Road
- Dodge Road/ North Forest Road

The site location and study area are shown in **Figure 1** (all figures are included at the end of the report).

III. EXISTING HIGHWAY SYSTEM

The following information outlined in **Table I** provides a description of the existing roadway network within the project study area.

TABLE I: EXISTING HIGHWAY SYSTEM

ROADWAY	ROUTE[1]	FUNC. CLASS[2]	JURIS.[3]	SPEED LIMIT[4]	# OF TRAVEL LANES[5]	TRAVEL PATTERN/ DIRECTION	EST. AADT[6]	AADT SOURCE[7]
Dodge Road (from Sweet Home Road to Campbell Road)	CR 45	Minor Arterial	ECDPW	40	2	Two-way/ East-West	7,058	NYSDOT (2016)
Sweet Home Road (from N Ellicott Road to Commerce Drive)	CR 301	Minor Arterial	ECDPW	45	4	Two-way/ North-South	22,713	NYSDOT (2016)
Sweet Home Road (from Commerce Drive to N French Road)	CR 301	Minor Arterial	ECDPW	45	4	Two-way/ North-South	16,008	NYSDOT (2016)

Notes:

1. "CR" = County Route.

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2. State Functional Classification of Roadway: Urban.
3. Jurisdiction: "ECDPW" = Erie County Department of Public Works.
4. Posted or Statewide Limit in Miles per Hour (MPH).
5. Excludes turning/auxiliary lanes developed at intersections.
6. Estimated Annual Average Daily Traffic (AADT) in Vehicles per Day (vpd).
7. "NYSDOT" = New York Department of Transportation. Source (Year). Obtained volumes represent the most recent available data.

Figure 2 illustrates the lane geometry at each of the study intersections and the AADT/ADT volumes on the study roadways.

IV. EXISTING TRAFFIC CONDITIONS

A. Peak Intervals for Analysis

Given the functional characteristics of the land uses proposed for the Project Site (residential, office and retail), the peak hours selected for analysis are the weekday commuter AM and PM peaks. The combination of site traffic and adjacent through traffic produces the greatest demand during these time periods.

B. Existing Traffic Volume Data

Historical weekday commuter AM (7:00-9:00 AM) and PM (4:00-6:00 PM) peak hour volumes were obtained from the Greater Buffalo Niagara Regional Transportation Council (GRBNRTC) and the Traffic Impact Statement for The Hub Amherst at the study area intersections, as noted in *Section II*, on Tuesday February 28, 2017 and Monday, July 17, 2017. The peak hour traffic periods generally occurred between 7:30-8:30 AM and 4:45-5:45 PM at the study intersections. Given the current traffic situation due to business restrictions resulting from COVID-19, it is not possible to collect more current traffic data.

All turning movement count data was collected on a typical weekday. The traffic volumes were reviewed to confirm the accuracy and relative balance of the collective traffic counts. Traffic volumes were adjusted to reflect 2020 traffic conditions by adding traffic associated with any developments (e.g. The Hub residential development) that have been constructed or are currently under construction since the data collection in 2017. The 2020 weekday AM and PM peak hour base volumes used for analysis purposes in this study are reflected in **Figure 3**.

C. Field Observations

Signal timing information was obtained by the Town of Amherst at the signalized intersection within the study area to determine peak hour phasing plans and phase durations during each interval.

D. Existing Crash History Analysis

Crash data has been requested from local agencies and an analysis will be provided once all data is received.

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V. FUTURE AREA DEVELOPMENT AND LOCAL GROWTH

Construction of the proposed mixed-use project is anticipated to be completed within two years. Town of Amherst officials were contacted to discuss projects within the study area that are under construction and/or approved. Three projects were identified that are either under construction, approved for construction, or completed after data was collected in 2017: The Hub Amherst at 2949 North Forest Road, a student housing project on Site "B" of the Muir Woods Property , and a mixed-use building at 315 Campbell Boulevard.

Traffic related to full build out of The Hub Development was used to develop the 2020 base traffic volumes. Additional traffic related to the proposed student housing project on Site "B" of the Muir Woods Property has been added to the base traffic volumes at the study area intersections. To account for normal increases in background traffic growth including the mixed-use building 315 Campbell Boulevard, as well as any other unforeseen developments in the project study area, a growth rate of one percent (1%) per year has been applied to the base traffic volumes. This growth rate is based upon historical traffic growth derived from NYSDOT traffic volume data for the area as well as consideration of the approved projects previously mentioned. The 2022 background traffic volumes are depicted in **Figure 4** for the build out time period.

VI. PROPOSED DEVELOPMENT

A. Description

The proposed mixed-use project will construct:

- (45) 2-unit attached townhomes
- (2) 6-unit 1-story apartment buildings
- (2) 4-story mixed-use buildings with (12) commercial units and (5) apartment units on the 1st floor; apartments on floors 2-4 (50 units total)

An estimated 1,875 square feet (SF) per commercial tenant for the 12 commercial units. Of the 12 units, it is estimated that 8 units will consist of retail use and 4 units will consist of general office space. Access to the Project Site will be provided via three proposed driveways connecting to Dodge Road as follows: one full access driveway located at the southerly/easterly end of the site, one full access driveway located at the northerly/westerly end of the site, and a one-way couple separated by a 42 ft wide pedestrian amenity area (i.e. one driveway is enter-only and the other is exit only).

B. Site Traffic Generation

The volume of traffic generated by a site is dependent on the intended land use and size of the development. Trip generation is an estimate of the number of trips generated by a specific building or land use. These trips represent the volume of traffic entering and exiting the development. Trip Generation, 10th Edition is used as a reference for this information. Data published by the ITE is the nationally accepted standard for generating trips for new uses. The trip rate for the peak hour of the generator may or may not coincide in time or volume with the trip rate for the peak hour of adjacent street traffic. Volumes generated during the peak hour of adjacent street traffic, in this case, the weekday AM and PM peaks, represent a more critical volume when analyzing the capacity of the system; those intervals will provide the basis of this analysis. All trip generation information has been included in the appendix.

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Table II summarizes the volume of projected site trips during the weekday AM and PM peak hours.

TABLE II
SITE GENERATED TRIPS

DESCRIPTION	ITE LUC	SIZE/ UNITS	AM PEAK HOUR		PM PEAK HOUR	
			ENTER	EXIT	ENTER	EXIT
Houses w/ 2- Car Detached Garage	210	90 units	17	50	56	33
1-Story Apartments	220	12 units	1	5	6	3
4-Story Apartment Units	221	100 units	9	25	27	17
General Office Building	710	15,000 SF	14	2	2	14
Variety/Retail Store	814	15,000 SF	6	3	15	15
		Total Site Trips	***47***	***85***	***106***	***82***

Notes:
1. "ITE LUC" = ITE Land Use Code.

The proposed mixed-use project is expected to generate approximately 47 entering/85 exiting vehicle trips during the AM weekday peak hour and 106 entering/82 exiting vehicle trips during the PM weekday peak hour.

C. Site Traffic Distribution

The cumulative effect of site traffic on the transportation network is dependent on the origins and destinations of that traffic and the location of the access drive serving the Project Site.

The proposed arrival/departure distribution of traffic to be generated at this site is considered a function of several parameters, including the following:

- Employment centers in the local area and region;
- Population centers in the local area and region;
- Proximity and access to Interstate 990;
- Proximity to the North Campus of the University at Buffalo;
- Site access drive locations and internal roadway circulation;
- Existing highway network;
- Existing traffic patterns; and
- Existing traffic conditions and controls

Based on these parameters, **Figure 6** shows the anticipated trip distribution patterns for the proposed development. **Figure 7** illustrates the peak hour of site-generated traffic based on those percentages for the proposed development.

VII. FULL DEVELOPMENT VOLUMES

The projected design hour traffic volumes were developed for the weekday AM and PM peak hours by combining the future background traffic conditions (Figure 4), and projected site generated for the proposed development (Figure 7) to yield the total traffic conditions expected under full development conditions. **Figure 8** illustrate the total weekday AM and PM peak hour

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volumes anticipated for the proposed mixed-use project under full development conditions respectively.

VIII. CAPACITY ANALYSIS

Capacity analysis is a technique used for determining a measure of effectiveness for a section of roadway and/or intersection based on the number of vehicles during a specific time period. The measure of effectiveness used for the capacity analysis is referred to as a Level of Service (LOS). Levels of Service are calculated to provide an indication of the amount of delay that a motorist experiences while traveling along a roadway or through an intersection. Since the most amount of delay to motorists usually occurs at intersections, capacity analysis typically focuses on intersections, as opposed to highway segments.

Six Levels of Service are defined for analysis purposes. They are assigned letter designations, from "A" to "F", with LOS "A" representing the best conditions and LOS "F" the worst. Suggested ranges of service capacity and an explanation of Levels of Service are included in the Appendix.

The standard procedure for capacity analysis of signalized and un-signalized intersections is outlined in the Highway Capacity Manual (HCM 2016) published by the Transportation Research Board. Traffic analysis software, Synchro 10, which is based on procedures and methodologies contained in the HCM, was used to analyze operating conditions at study area intersections. The procedure yields a Level of Service (LOS) based on the HCM as an indicator of how well intersections operate.

Existing base and background operating conditions during the peak study periods are evaluated to determine a basis for comparison with the projected future conditions. The future traffic conditions generated by the proposed development under Phase I and full build out were analyzed to assess the operations of the intersections in the study area. Capacity results for existing, background, and full development conditions are listed in **Table III**. The discussion following the table summarizes capacity conditions. All capacity analysis calculations are included in the Appendices.

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TABLE III: CAPACITY ANALYSIS RESULTS

INTERSECTION	2020 BASE CONDITIONS				2022 BACKGROUND CONDITIONS				FULL BUILD CONDITIONS			
	AM		PM		AM		PM		AM		PM	
Sweet Home Road / Commerce Drive/Dodge Road (S)												
EB left - Commerce Road	D	40.5	C	30.3	D	41.1	C	30.9	D	41.1	C	32.1
EB thru/right - Commerce Drive	B	14.2	E	77.7	B	14.3	F	88.5	B	15.0	F	100.2
WB left- Dodge Road	C	27.7	F	191.3	C	28.0	F	*	C	29.3	F	*
WB thru/right - Dodge Road	E	76.4	B	19.3	F	86.8	B	19.9	F	106.8	C	22.9
NB left - Sweet Home Road	C	31.5	C	32.4	C	33.3	C	34.3	C	33.3	C	34.8
NB thru/right - Sweet Home Road	C	20.9	B	18.8	C	21.0	B	19.2	C	21.2	C	20.5
SB left - Sweet Home Road	B	17.6	B	10.1	B	19.0	B	10.3	C	21.2	B	11.9
SB thru/right - Sweet Home Road	C	30.0	C	32.2	C	30.8	C	33.8	C	30.7	C	33.7
Overall LOS	***C***	***34.0***	***D***	***37.6***	***D***	***36.3***	***D***	***40.3***	***D***	***40.4***	***D***	***47.7***
Dodge Road / Proposed North Driveway (U)												
SEB thru/left - Dodge Road	N/A				N/A				A	8.3	A	8.5
SWB - Proposed North Driveway									B	14.9	B	14.9
Dodge Road / Proposed Middle Exit Only Driveway (U)												
SWB - Proposed Middle Exit Only Driveway	N/A				N/A				B	13.3	B	13.4
Dodge Road / Proposed South Driveway (U)												
SEB thru/left - Dodge Road	N/A				N/A				A	8.2	A	8.5
SWB - Proposed South Driveway									C	16.2	C	16.1
Dodge Road / North ForestRoad (U)												
WB thru/left - Dodge Road	A	9.2	A	8.3	A	9.3	A	8.4	A	9.5	A	8.6
NB - North Forest Road	D	27.5	D	28.6	D	31.1	E	35.9	E	39.6	F	59.6

NOTES:

1. A(2.8) = Level of Service (Delay in seconds per vehicle)
2. (U) = Unsignalized
3. N/A = Approach does not exist and/or was not analyzed during this condition
4. F(*) = Delay greater than 200 seconds per vehicle

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Sweet Home Rd/Commerce Drive-Dodge Road

All approaches operate at LOS "D" or better during the AM and PM peak hours under all conditions with the exception of the westbound through/right turn movement which operates at LOS "F" under background and future conditions during the AM peak hour; in addition the westbound left turn and the eastbound through/right turn movements also operate at LOS "F" under background conditions during the PM peak hour. The southbound left turn movement is projected to change from LOS "B" to "C" between background and full development conditions during the AM peak hour. No other changes in LOS are projected as a result of the development. The existing traffic signal is fully actuated and will automatically adjust, within the set parameters, to accommodate the additional traffic. No mitigation is warranted or recommended at this intersection as a result of the proposed development.

Dodge Road/Proposed Driveways

All of the proposed driveways are projected to operate at LOS "C" or better during both peak hours under full development conditions.

Dodge Road/North Forest Road

All approaches operate at LOS "D" or better during the AM peak hour under the existing base and background conditions. During the PM peak hour, the northbound approach operates at LOS "E" under background conditions. Under full development conditions, the northbound approach is projected to operate at LOS "E" during the AM peak hour and LOS "F" with delays on the order of 59.6 seconds per vehicle during the PM peak hour. The development will add 7(16) northbound left turns during the AM(PM) peak hours. The traffic volumes that are exiting northbound North Forest Road are relatively small and a traffic signal is not warranted at this location. No mitigation is warranted or recommended at this intersection as a result of the proposed development.

IX. CONCLUSIONS

This study evaluates the potential traffic impacts resulting from the Muir Woods Site A Development. This study also provides the Town of Amherst and other governmental agencies with detailed information providing a hard look at potential traffic impacts for the purpose of the environmental review of the proposed mixed-use project pursuant to the State Environmental Quality Review Act ("SEQRA").

Based upon the analyses, the results indicate that the proposed mixed-use project will not have significant adverse traffic impacts on the existing roadway network. The following sets forth conclusions based upon the results of the analyses:

1. The proposed mixed-use project is expected to generate approximately 47 entering/85 exiting vehicle trips during the AM peak hour and 106 entering/82 exiting vehicle trips during the PM peak hour.

2. The proposed mixed-use project will not result in any potentially significant adverse traffic impacts to the study area intersections. No mitigation is warranted at the study area intersections as a result of the proposed mixed-use project.

X. FIGURES

Figures 1 through 8 are included on the following pages.

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

FIGURE 1 - SITE LOCATION AND STUDY AREA



Legend

- Study Intersection
- Proposed Driveway
- Site Location
- Study Area

PROPOSED MUIR WOODS SITE A DEVELOPMENT

TOWN OF AMHERST, NY

0 250 500 1000

Feet

N

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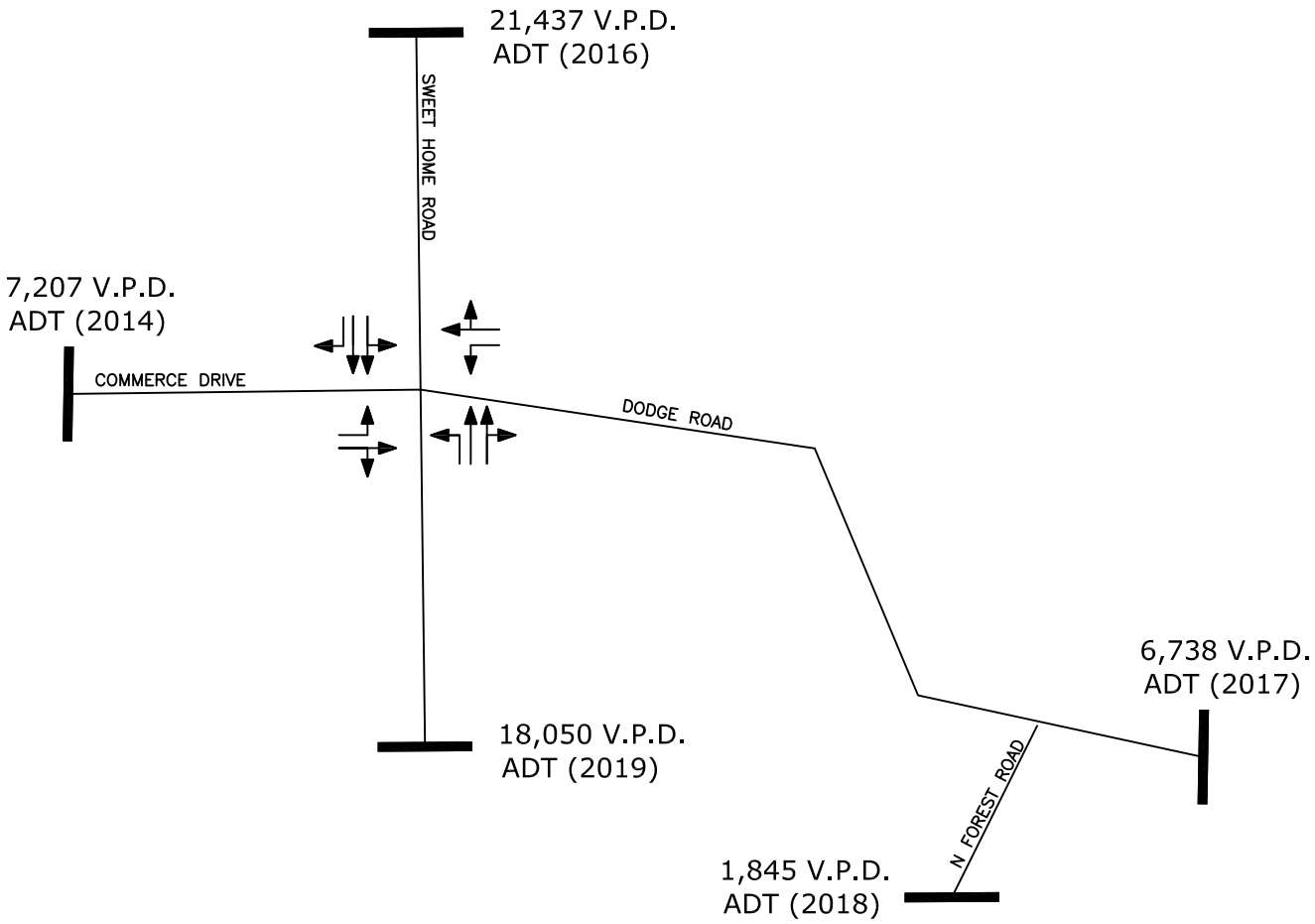
Transportation

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)



NOTES:
1. All counts by NYSDOT
2. V.P.D. = Vehicles per Day

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FIGURE 2

LANE GEOMETRY &
AVERAGE DAILY TRAFFIC

PROPOSED MUIR WOODS SITE A,
TOWN OF AMHERST, NY

KEY

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

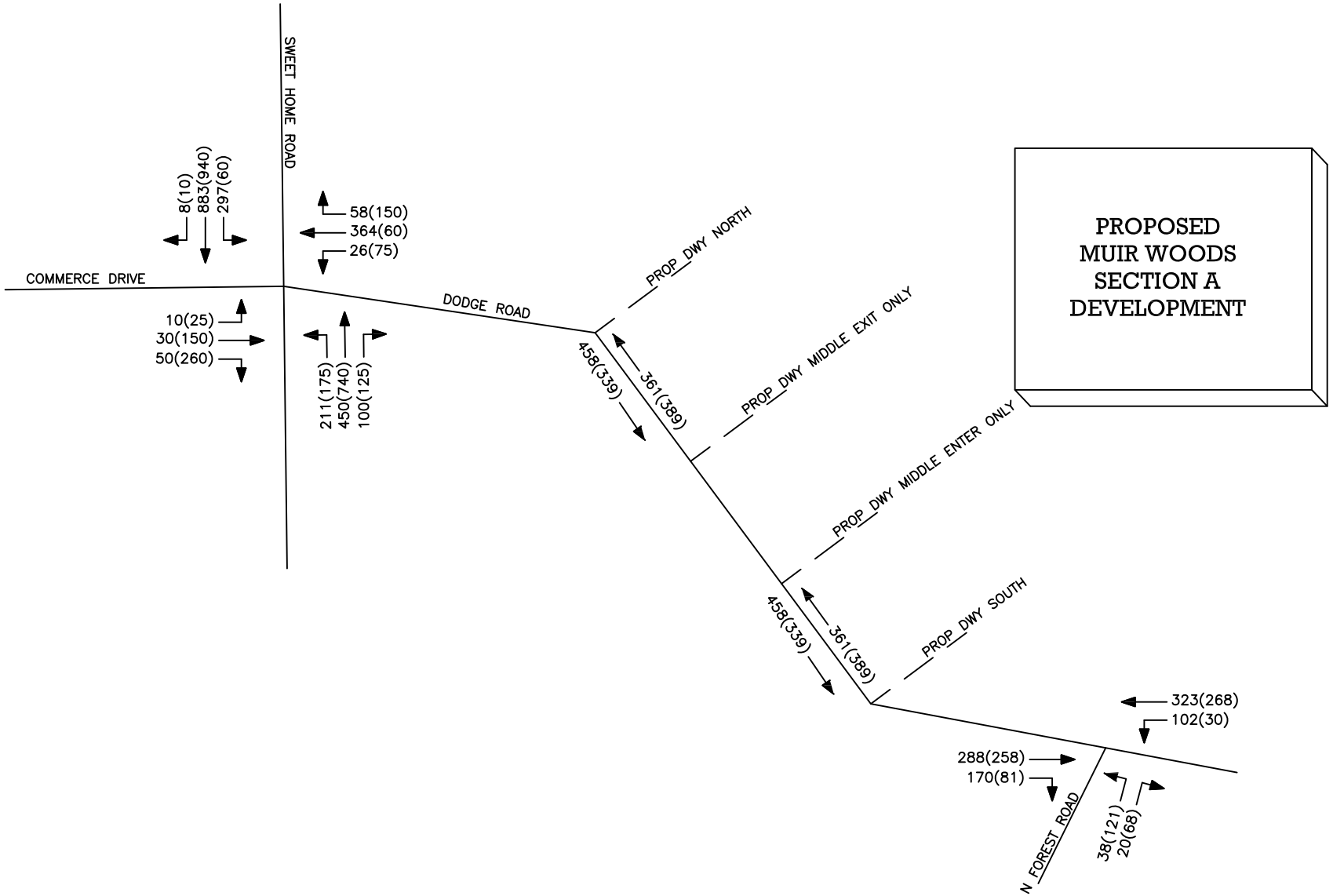

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FIGURE 3

PEAK HOUR VOLUMES
2020 BASE CONDITIONS

PROPOSED MUIR WOODS SITE A,
TOWN OF AMHERST, NY

KEY

00(00) = AM(PM)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

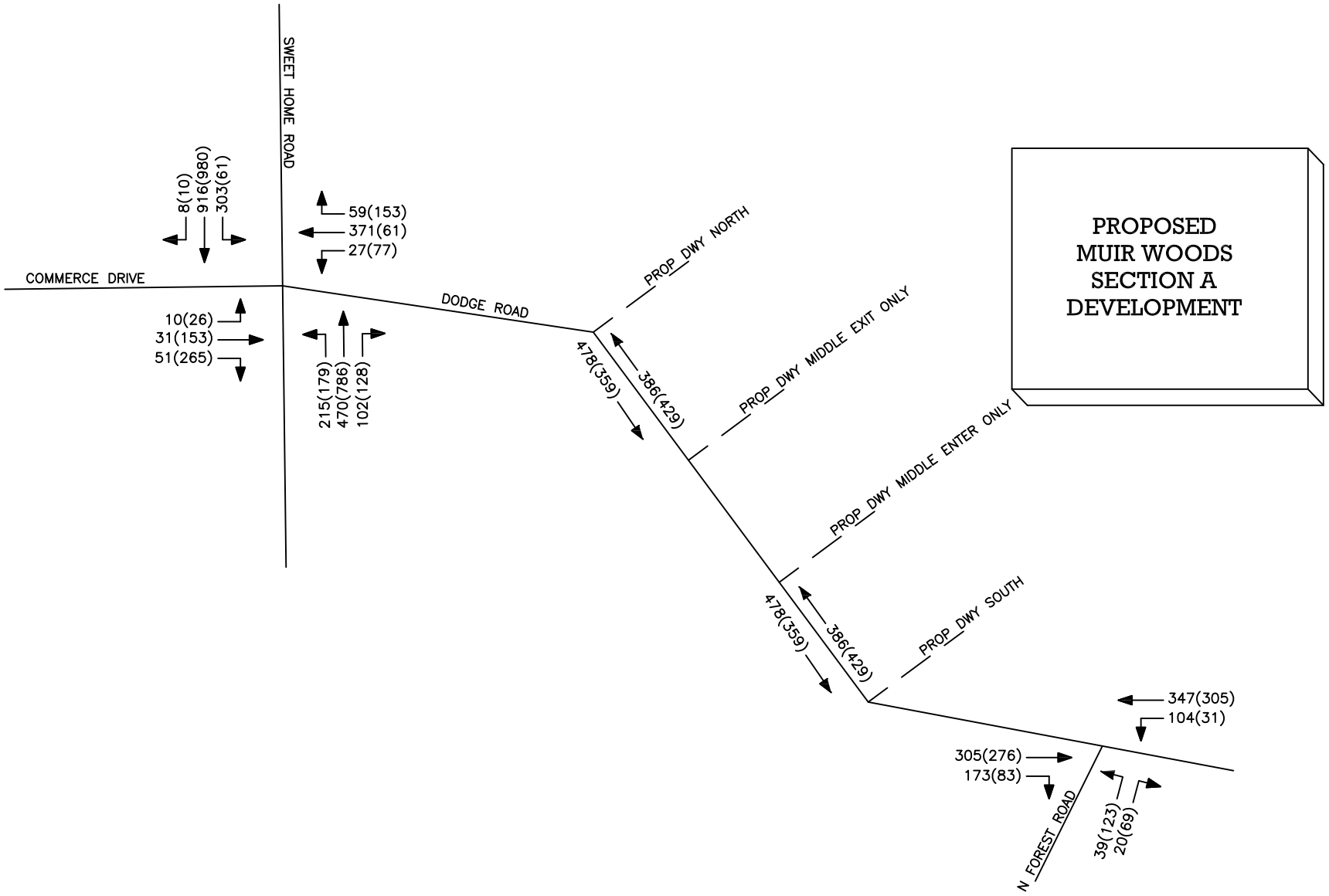

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FIGURE 4

PEAK HOUR VOLUMES
2022 BACKGROUND CONDITIONS

PROPOSED MUIR WOODS SITE A,

KEY

00(00) = AM(PM)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

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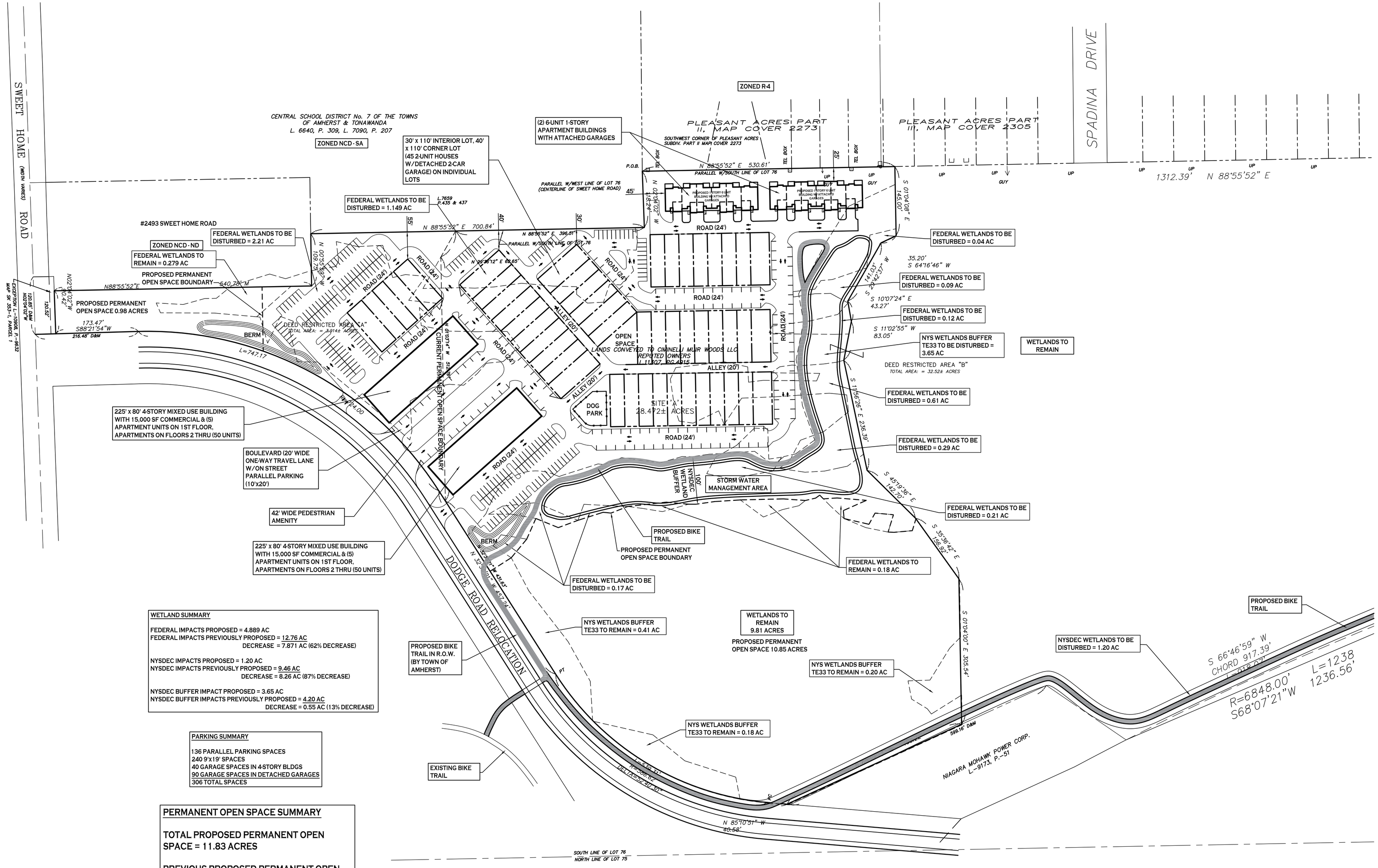


SITE PLAN

SCALE: 1"=100'

WETLAND SUMMARY

FEDERAL IMPACTS PROPOSED = 4.889 AC
FEDERAL IMPACTS PREVIOUSLY PROPOSED = 12.76 AC
DECREASE = 7.871 AC (62% DECREASE)

NYSDEC IMPACTS PROPOSED = 1.20 AC
NYSDEC IMPACTS PREVIOUSLY PROPOSED = 9.46 AC
DECREASE = 8.26 AC (87% DECREASE)

NYSDEC BUFFER IMPACT PROPOSED = 3.65 AC
NYSDEC BUFFER IMPACTS PREVIOUSLY PROPOSED = 4.20 AC
DECREASE = 0.55 AC (13% DECREASE)

PARKING SUMMARY

136 PARALLEL PARKING SPACES
240 9'x19' SPACES
40 GARAGE SPACES IN 4-STORY BLDGS
90 GARAGE SPACES IN DETACHED GARAGES
306 TOTAL SPACES

PERMANENT OPEN SPACE SUMMARY

TOTAL PROPOSED PERMANENT OPEN SPACE = 11.83 ACRES

PREVIOUS PROPOSED PERMANENT OPEN SPACE = 3.91 ACRES

NET INCREASE = 7.92 ACRES

SITE DATA

28.47 ACRES TOTAL
ZONED: NCD - ND

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Muir Woods Site "A"

Sweet Home & Dodge Road
Amherst, New York

Date: 7/1/20
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Concept Site Plan

DRAWING NO.

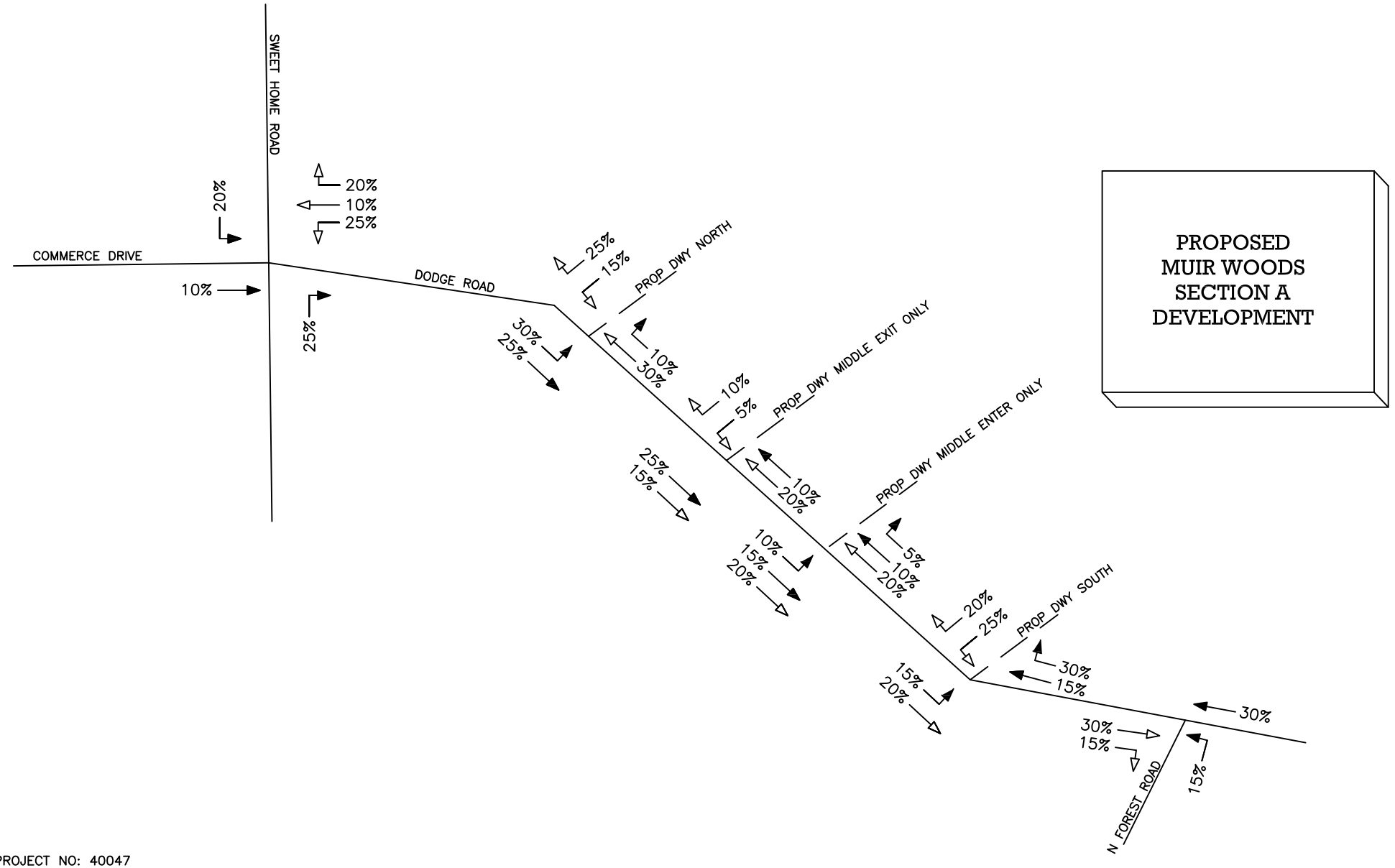
C-100

Project no.: 19.192

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Packet Pg. 861

1.d



PROJECT NO: 40047

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FIGURE 6

TRIP DISTRIBUTION

PROPOSED MUIR WOODS SITE A,
TOWN OF AMHERST, NY

KEY

00(00) = AM(PM)
ENTERING TRIPS →
EXITING TRIPS →

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

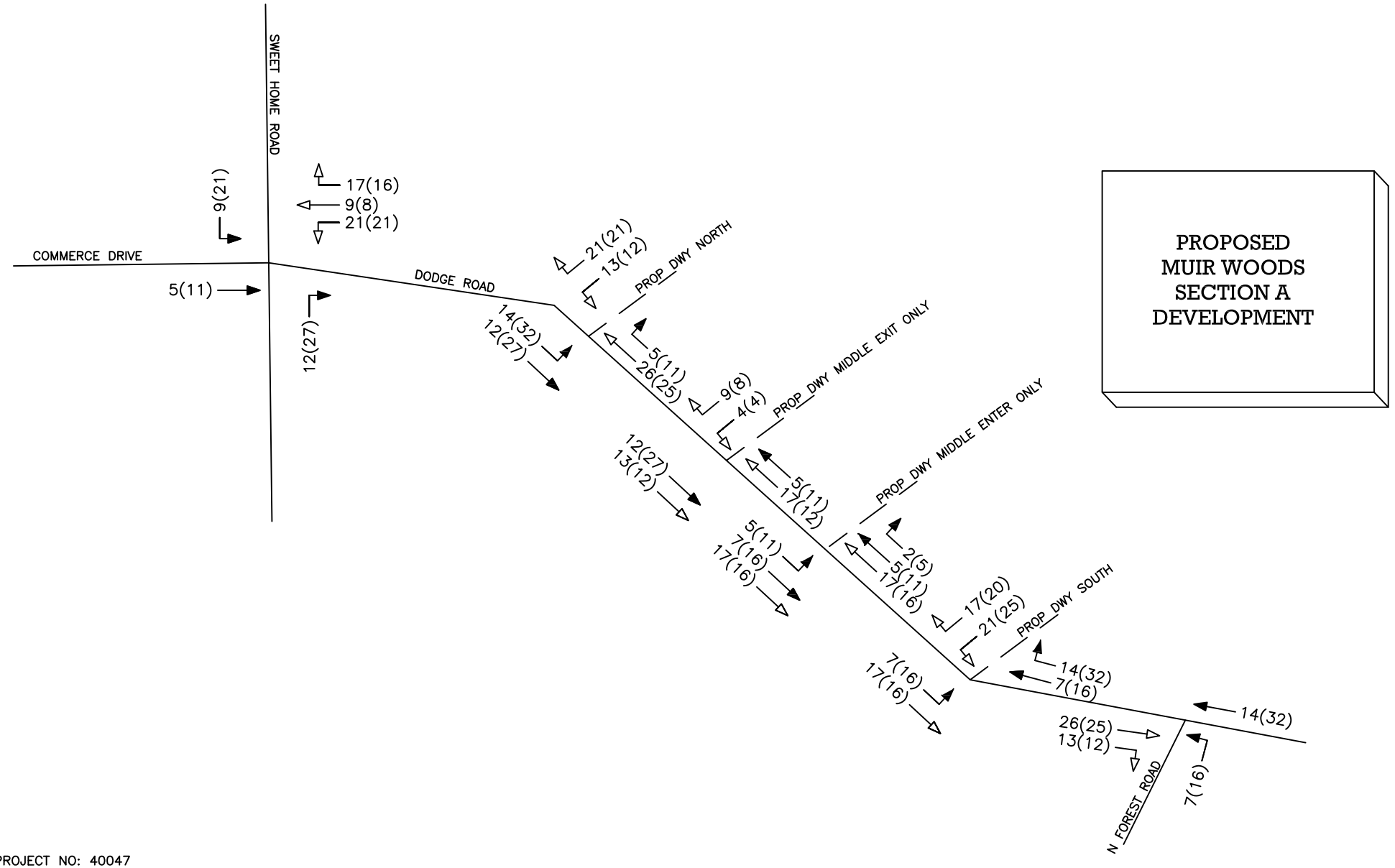

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FIGURE 7

SITE GENERATED TRIPS

PROPOSED MUIR WOODS SITE A,
TOWN OF AMHERST, NY

KEY

00(00) = AM(PM)
ENTERING TRIPS →
EXITING TRIPS →

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

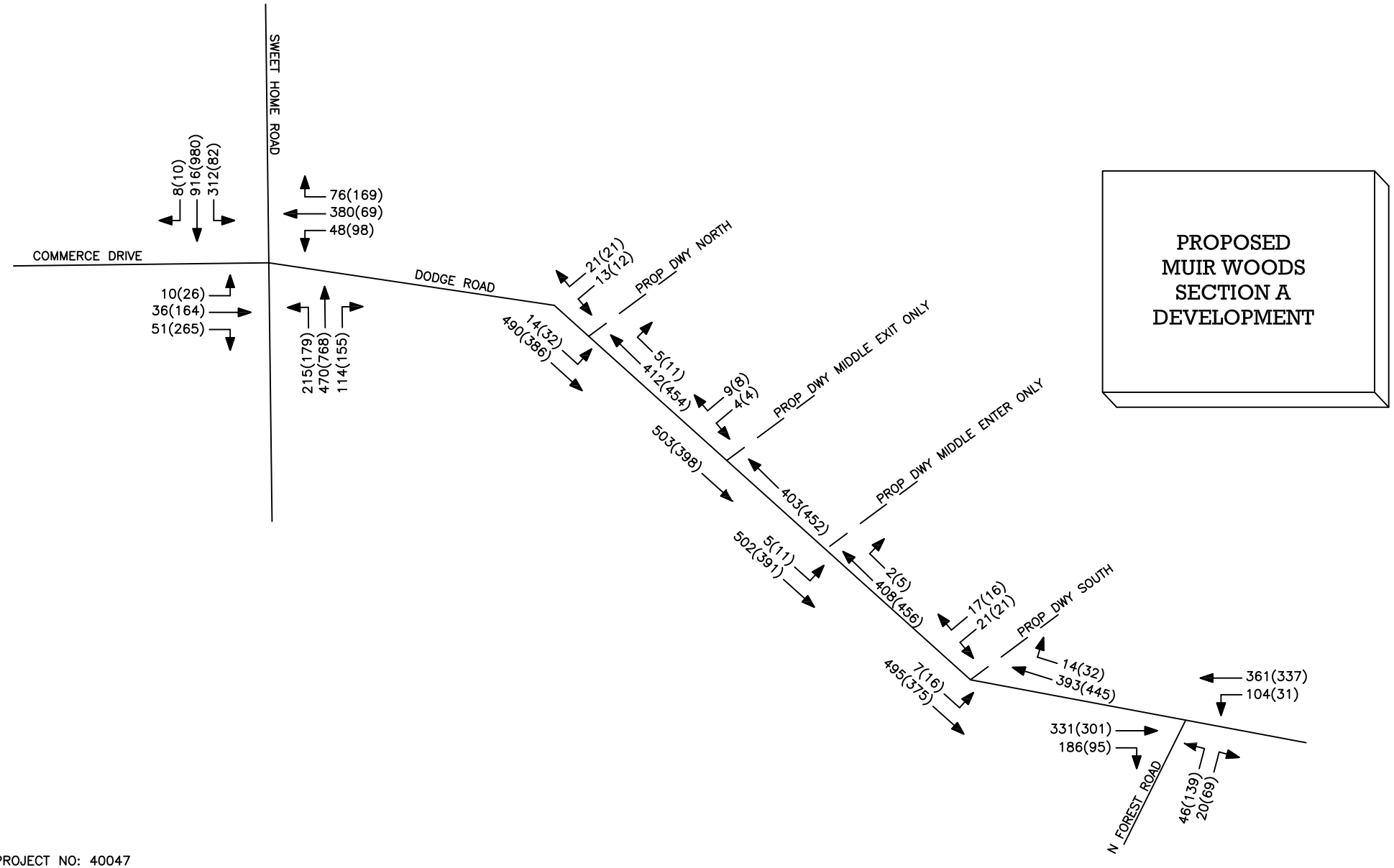

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FIGURE 8

PEAK HOUR VOLUMES
FULL DEVELOPMENT CONDITIONS

PROPOSED MUIR WOODS SITE A,
TOWN OF AMHERST, NY

KEY

00(00) = AM(PM)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

APPENDICES

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

A1

Collected Traffic Volume Data

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

TRI-STATE TRAFFIC DATA
www.TSTData.com
184 Baker Rd
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610-466-1469
Serving Transportation Professionals Since 1995

Amherst, NY
N Forest Rd/Dodge Rd
Tuesday, February 28, 2017
Location: 43.023716, -78.788008

Count Name: N Forest Rd/Dodge Rd
Site Code:
Start Date: 02/28/2017
Page No: 1

Turning Movement Data

Start Time	Dodge Rd Westbound					North Forest Rd Northbound					Dodge Rd Eastbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
7:00 AM	32	3	0	0	35	2	12	0	0	14	21	30	0	0	51	100
7:15 AM	51	5	0	0	56	1	8	0	0	9	23	37	0	0	60	125
7:30 AM	77	15	0	0	92	4	10	0	0	14	54	55	0	0	109	215
7:45 AM	101	41	0	0	142	5	5	0	0	10	53	85	0	0	138	290
Hourly Total	261	64	0	0	325	12	35	0	0	47	151	207	0	0	358	730
8:00 AM	83	19	0	0	102	2	5	0	0	7	37	53	0	0	90	199
8:15 AM	59	25	0	0	84	6	14	0	0	20	24	59	0	0	83	187
8:30 AM	37	10	0	0	47	3	12	0	0	15	32	45	0	0	77	139
8:45 AM	44	14	0	0	58	4	14	0	1	18	26	50	0	0	76	152
Hourly Total	223	68	0	0	291	15	45	0	1	60	119	207	0	0	326	677
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	56	8	0	0	64	35	35	0	0	70	20	37	0	0	57	191
4:15 PM	51	2	0	0	53	13	30	0	0	43	16	44	0	0	60	156
4:30 PM	58	5	0	0	63	16	34	0	0	50	19	51	0	0	70	183
4:45 PM	45	5	0	0	50	7	25	0	0	32	18	61	0	0	79	161
Hourly Total	210	20	0	0	230	71	124	0	0	195	73	193	0	0	266	691
5:00 PM	84	6	0	0	90	32	38	0	0	70	22	86	0	0	108	268
5:15 PM	78	11	0	0	89	10	22	0	0	32	19	55	0	0	74	195
5:30 PM	39	3	0	0	42	4	23	0	0	27	11	67	0	0	78	147
5:45 PM	53	3	0	0	56	3	17	0	0	20	15	37	0	0	52	128
Hourly Total	254	23	0	0	277	49	100	0	0	149	67	245	0	0	312	738
6:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Grand Total	949	175	0	0	1124	147	304	0	1	451	410	852	0	0	1262	2837
Approach %	84.4	15.6	0.0	-	-	32.6	67.4	0.0	-	-	32.5	67.5	0.0	-	-	-
Total %	33.5	6.2	0.0	-	39.6	5.2	10.7	0.0	-	15.9	14.5	30.0	0.0	-	44.5	-
Lights	936	175	0	-	1111	144	303	0	-	447	408	841	0	-	1249	2807
% Lights	98.6	100.0	-	-	98.8	98.0	99.7	-	-	99.1	99.5	98.7	-	-	99.0	98.9
Buses	8	0	0	-	8	3	1	0	-	4	2	8	0	-	10	22
% Buses	0.8	0.0	-	-	0.7	2.0	0.3	-	-	0.9	0.5	0.9	-	-	0.8	0.8
Trucks	5	0	0	-	5	0	0	0	-	0	0	3	0	-	3	8
% Trucks	0.5	0.0	-	-	0.4	0.0	0.0	-	-	0.0	0.0	0.4	-	-	0.2	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-

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Location: 43.023716, -78.788008

Count Name: N Forest Rd/Dodge Rd
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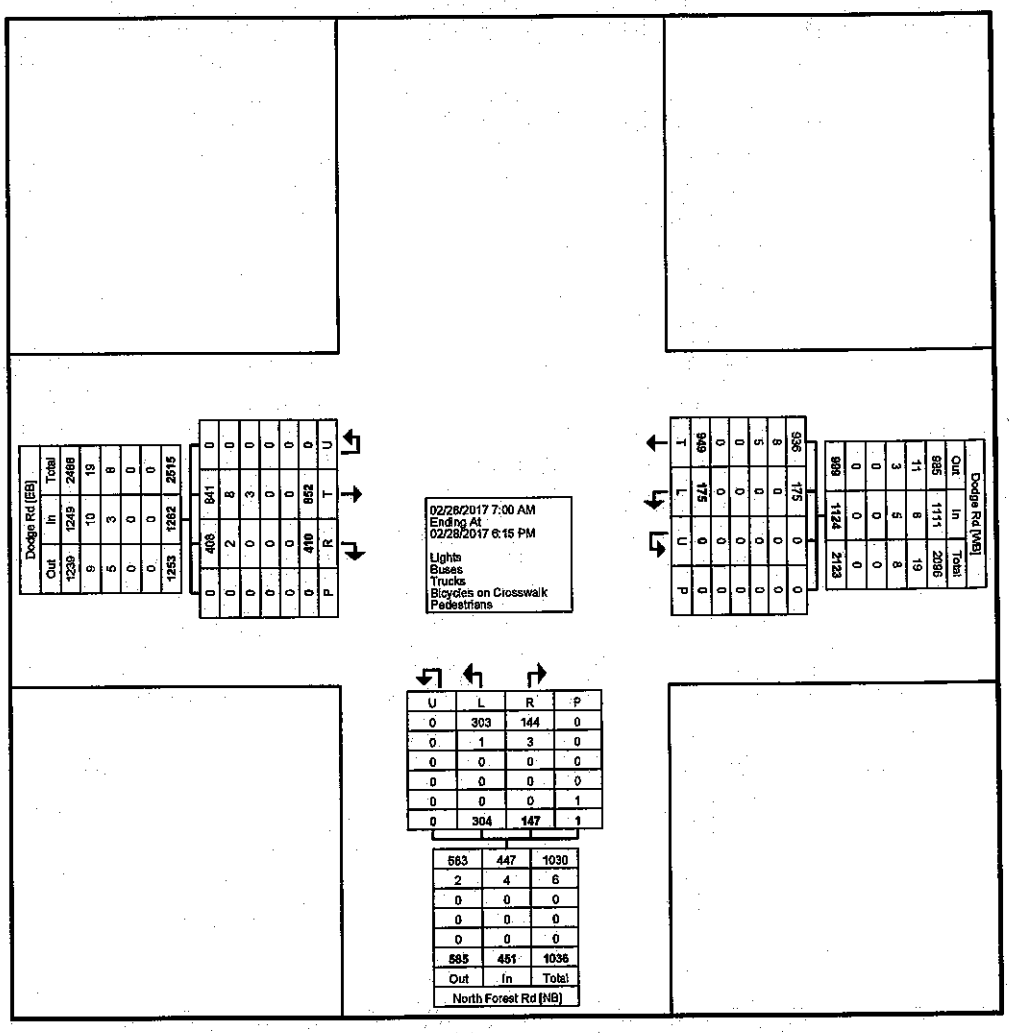
Start Date: 02/28/2017
Page No: 2



Turning Movement Data Plot

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

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Amherst, NY
N Forest Rd/Dodge Rd
Tuesday, February 28, 2017
Location: 43.023716, -78.788008

Count Name: N Forest Rd/Dodge Rd
Site Code:
Start Date: 02/28/2017

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Dodge Rd Westbound					North Forest Rd Northbound					Dodge Rd Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	
7:30 AM	77	15	0	0	92	4	10	0	0	14	54	55	0	0	109	215
7:45 AM	101	41	0	0	142	5	5	0	0	10	53	85	0	0	138	290
8:00 AM	83	19	0	0	102	2	5	0	0	7	37	53	0	0	90	199
8:15 AM	59	25	0	0	84	6	14	0	0	20	24	59	0	0	83	187
Total	320	100	0	0	420	17	34	0	0	51	168	252	0	0	420	891
Approach %	76.2	23.8	0.0	-	-	33.3	66.7	0.0	-	-	40.0	60.0	0.0	-	-	-
Total %	35.9	11.2	0.0	-	47.1	1.9	3.8	0.0	-	5.7	18.9	28.3	0.0	-	47.1	-
PHF	0.792	0.610	0.000	-	0.739	0.708	0.607	0.000	-	0.638	0.778	0.741	0.000	-	0.761	0.768
Lights	318	100	0	-	418	15	33	0	-	48	168	248	0	-	416	882
% Lights	99.4	100.0	-	-	99.5	88.2	97.1	-	-	94.1	100.0	98.4	-	-	99.0	99.0
Buses	1	0	0	-	1	2	1	0	-	3	0	2	0	-	2	6
% Buses	0.3	0.0	-	-	0.2	11.8	2.9	-	-	5.9	0.0	0.8	-	-	0.5	0.7
Trucks	1	0	0	-	1	0	0	0	-	0	0	2	0	-	2	3
% Trucks	0.3	0.0	-	-	0.2	0.0	0.0	-	-	0.0	0.0	0.8	-	-	0.5	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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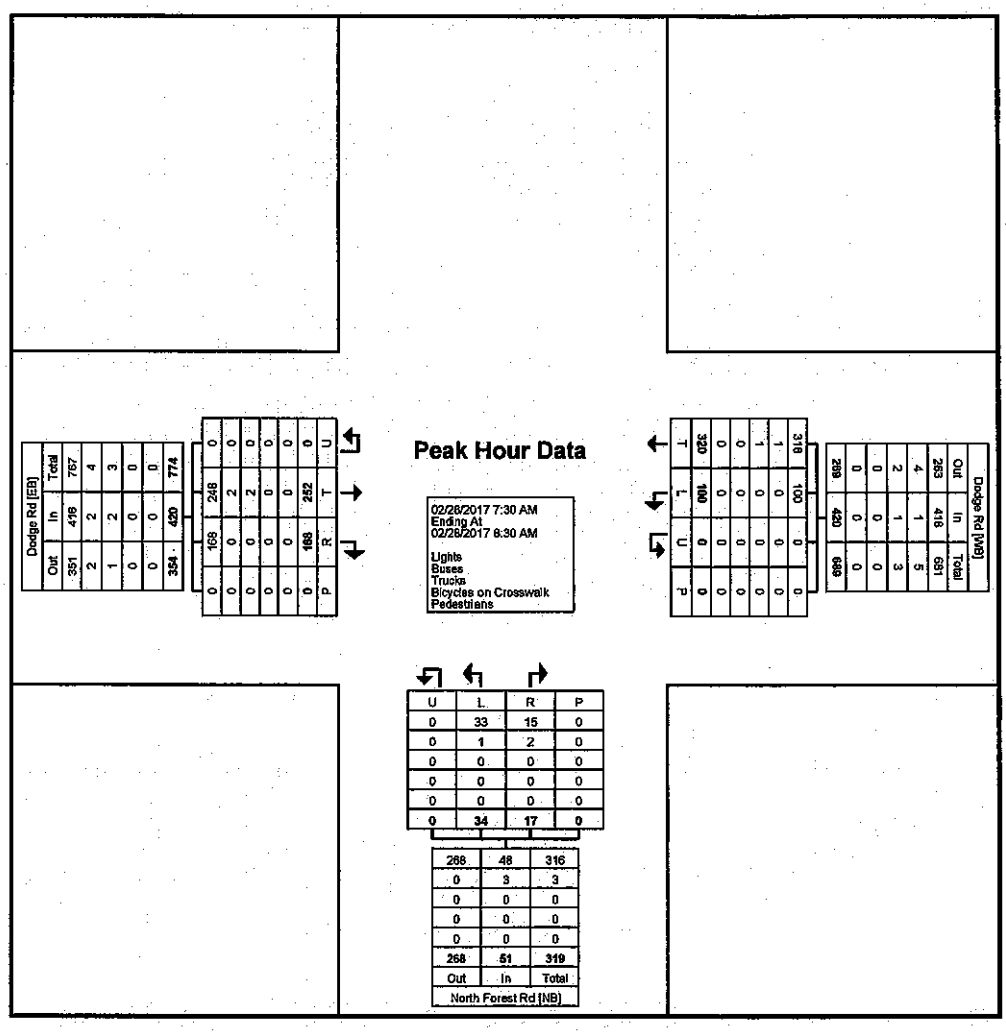
Page No: 4



Turning Movement Peak Hour Data Plot (7:30 AM)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

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N Forest Rd/Dodge Rd
Tuesday, February 28, 2017
Location: 43.023716, -78.788008

Count Name: N Forest Rd/Dodge Rd
Site Code:
Start Date: 02/28/2017

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Dodge Rd Westbound					North Forest Rd Northbound					Dodge Rd Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	
4:30 PM	58	5	0	0	63	16	34	0	0	50	19	51	0	0	70	183
4:45 PM	45	5	0	0	50	7	25	0	0	32	18	61	0	0	79	161
5:00 PM	84	6	0	0	90	32	38	0	0	70	22	86	0	0	108	268
5:15 PM	78	11	0	0	89	10	22	0	0	32	19	55	0	0	74	195
Total	265	27	0	0	292	65	119	0	0	184	78	253	0	0	331	807
Approach %	90.8	9.2	0.0	-	-	35.3	64.7	0.0	-	-	23.6	76.4	0.0	-	-	-
Total %	32.8	3.3	0.0	-	36.2	8.1	14.7	0.0	-	22.8	9.7	31.4	0.0	-	41.0	-
PHF	0.789	0.614	0.000	-	0.811	0.508	0.783	0.000	-	0.657	0.886	0.735	0.000	-	0.766	0.753
Lights	265	27	0	-	292	65	119	0	-	184	78	253	0	-	331	807
% Lights	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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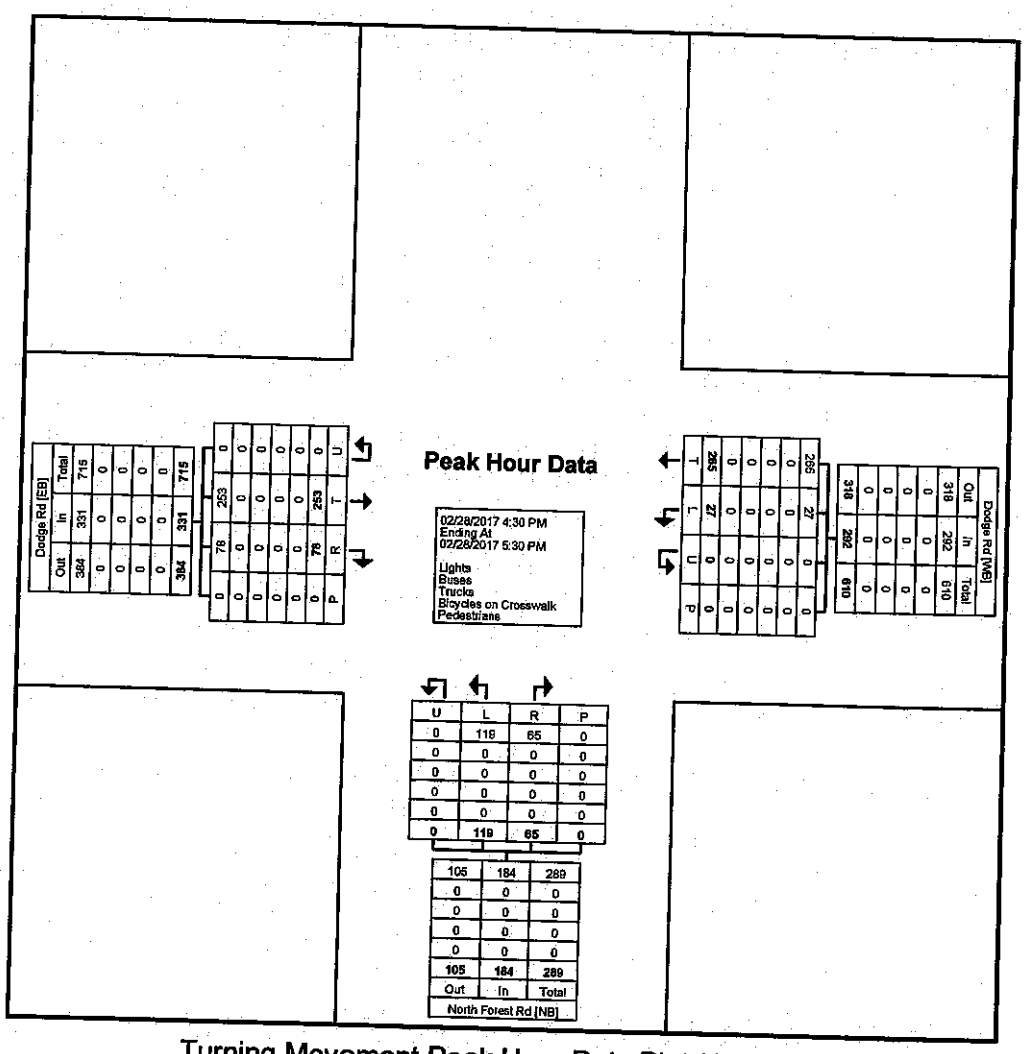
Amherst, NY
N Forest Rd/Dodge Rd
Tuesday, February 28, 2017
Location: 43.023716, -78.788008

Count Name: N Forest Rd/Dodge Rd
Site Code:
Start Date: 02/28/2017
Page No: 6



Turning Movement Peak Hour Data Plot (4:30 PM)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

TIS - THE HUB - 2949 N. FOREST
KIMLEY-HORN, 3/2017

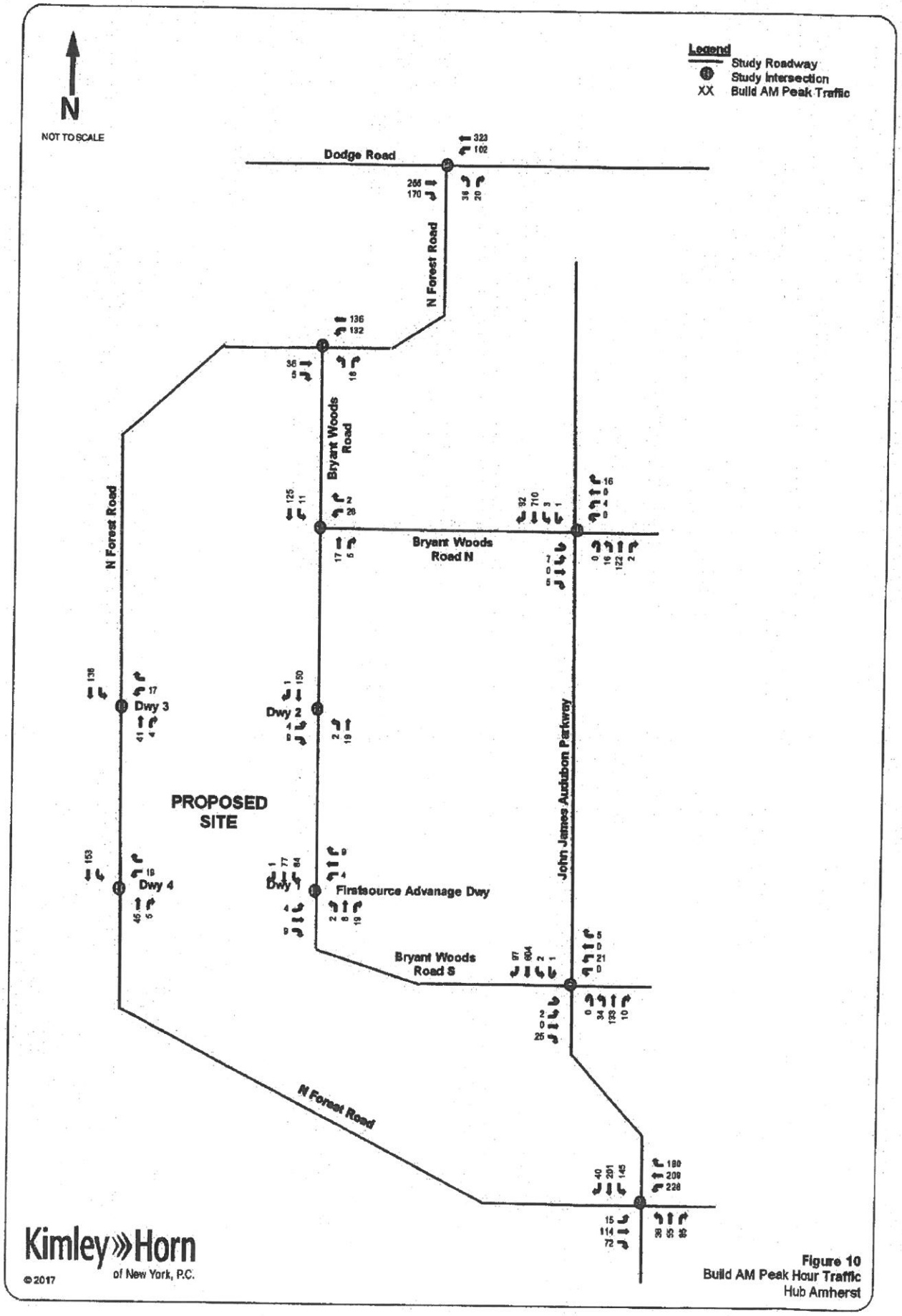


Figure 10
Build AM Peak Hour Traffic
Hub Amherst

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

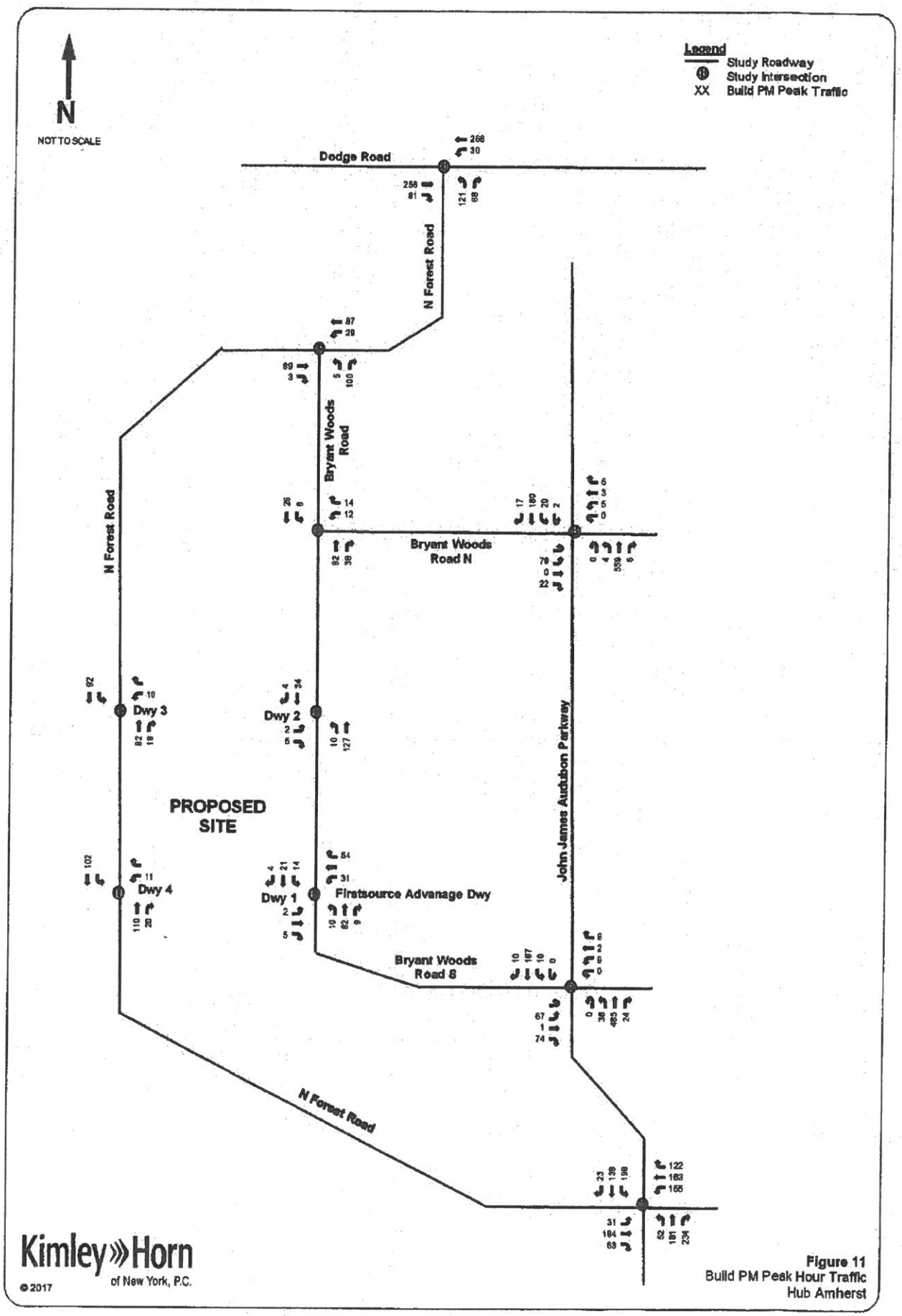


Figure 11
Build PM Peak Hour Traffic
Hub Amherst

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Peak Hour Data for Intersection

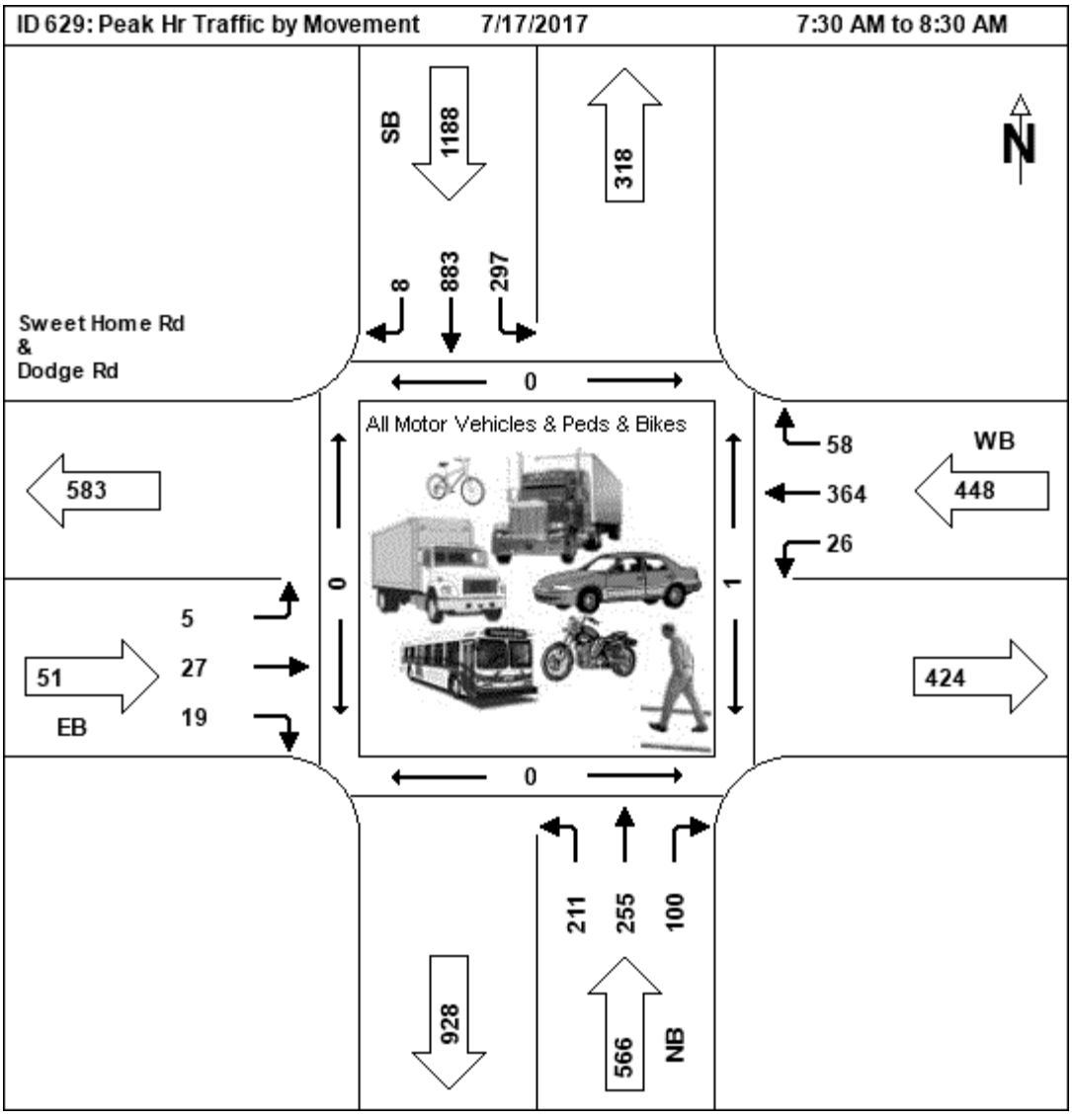
Int ID: 629
Community: Amherst
Road 1: Sweet Home Rd
Road 2: Dodge Rd
Corridor: NA
Road 3: Commerce Dr
Road 4:

|<< < > >>| 1-2 of 2

AM Peak Hour
07/17/2017

Start Time	NB Left	NB Thru	NB Right	NB Ped	NB App Total	EB Left	EB Thru	EB Right	EB Ped	EB App Total	SB Left	SB Thru	SB Right	SB Ped	SB App Total	WB Left	WB Thru	WB Right	WB Ped	WB App Total	Int Total
7:30 AM	65	54	17	1	136	3	14	4	0	21	60	290	2	0	352	3	97	11	0	111	620
7:45 AM	50	69	31	0	150	0	3	0	0	3	75	196	0	0	271	6	120	8	0	134	558
8:00 AM	49	66	25	0	140	1	5	4	0	10	66	175	2	0	243	10	72	22	0	104	497
8:15 AM	47	66	27	0	140	1	5	11	0	17	96	222	4	0	322	7	75	17	0	99	578
Total	211	255	100	1	566	5	27	19	0	51	297	883	8	0	1188	26	364	58	0	448	2253
PHF	0.81	0.92	0.81		0.94	0.42	0.48	0.43		0.61	0.77	0.76	0.50		0.84	0.65	0.76	0.66		0.84	
HV %	6	4	6			60	0	32			1	3	0			12	1	2			

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes



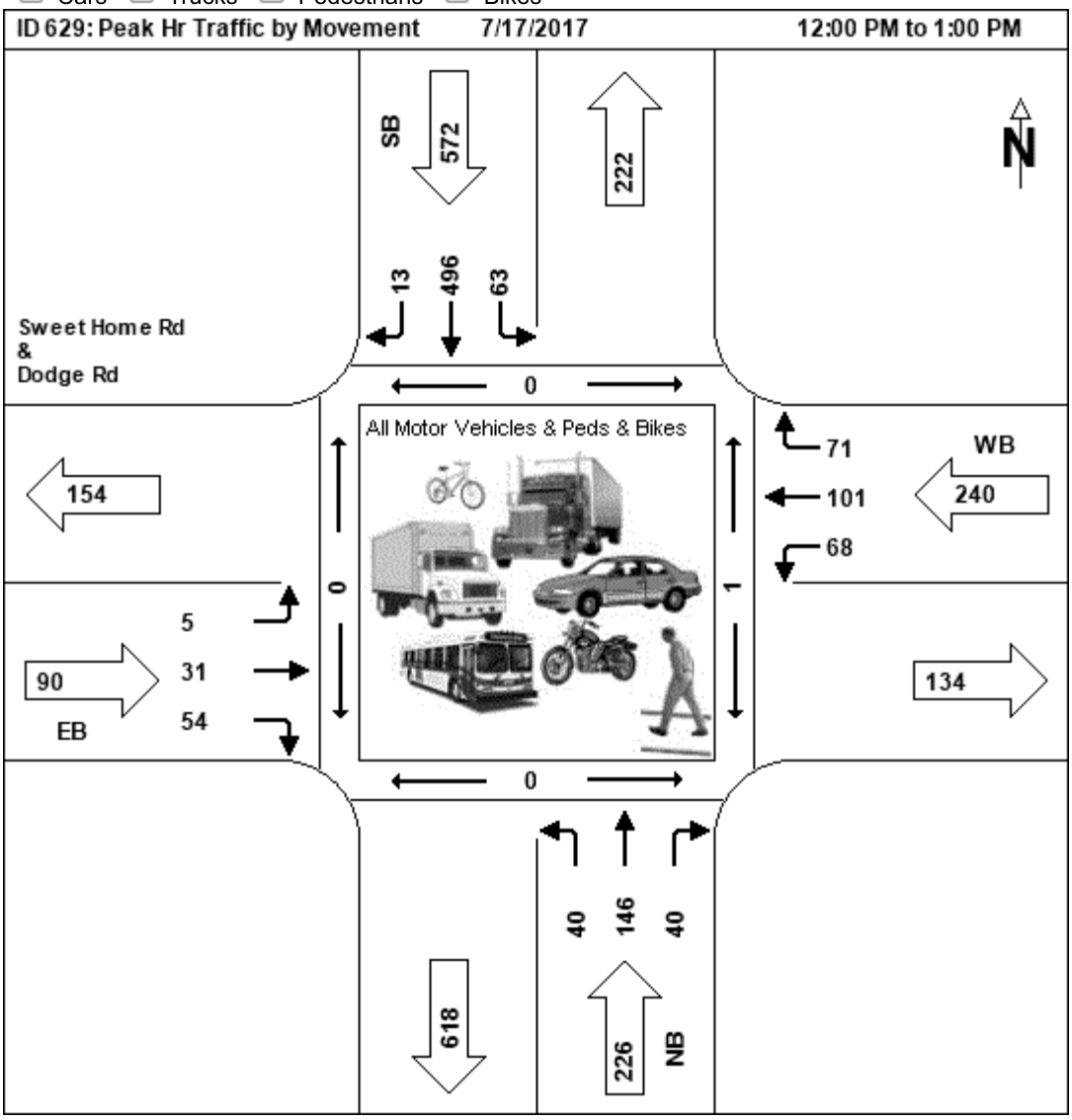
Midday Peak Hour
07/17/2017

Start Time	NB Left	NB Thru	NB Right	NB Ped	NB App Total	EB Left	EB Thru	EB Right	EB Ped	EB App Total	SB Left	SB Thru	SB Right	SB Ped	SB App Total	WB Left	WB Thru	WB Right	WB Ped	WB App Total	Int Total

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

12:00 PM	6	34	11	1	51	0	6	12	0	18	20	127	4	0	151	26	19	26	0	71	291
12:15 PM	10	15	4	0	29	5	16	13	0	34	17	110	2	0	129	12	23	26	0	61	253
12:30 PM	3	34	10	0	47	0	5	14	0	19	19	120	3	0	142	11	24	11	0	46	254
12:45 PM	21	63	15	0	99	0	4	15	0	19	7	139	4	0	150	19	35	8	0	62	330
Total	40	146	40	1	226	5	31	54	0	90	63	496	13	0	572	68	101	71	0	240	1128
PHF	0.48	0.58	0.67		0.57	0.25	0.48	0.90		0.66	0.79	0.89	0.81		0.95	0.65	0.72	0.68		0.85	
HV %	13	8	5			20	3	4			2	2	0			1	0	1			

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes

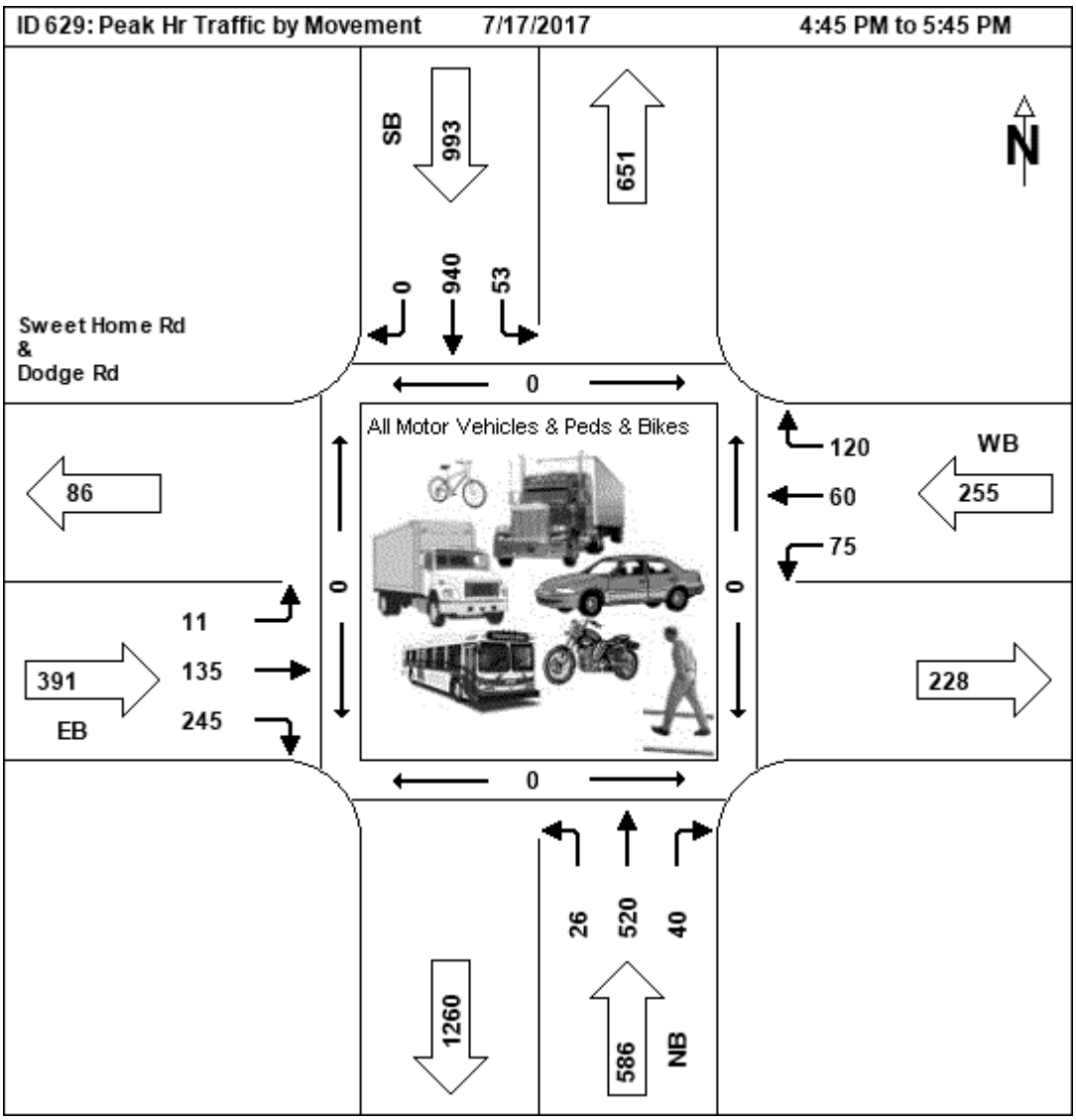


PM Peak Hour
07/17/2017

	NB					EB					SB					WB					
Start Time	Left	Thru	Right	Ped	App Total	Left	Thru	Right	Ped	App Total	Left	Thru	Right	Ped	App Total	Left	Thru	Right	Ped	App Total	Int Total
4:45 PM	8	132	12	0	152	2	28	51	0	81	24	190	0	0	214	30	22	21	0	73	520
5:00 PM	5	119	6	0	130	4	51	116	0	171	10	258	0	0	268	20	22	50	0	92	661
5:15 PM	7	149	10	0	166	4	27	34	0	65	14	266	0	0	280	18	10	21	0	49	560
5:30 PM	6	119	12	0	137	1	27	44	0	72	5	226	0	0	231	7	6	28	0	41	481
Total	26	519	40	0	585	11	133	245	0	389	53	940	0	0	993	75	60	120	0	255	2222
PHF	0.81	0.87	0.83		0.88	0.69	0.65	0.53		0.57	0.55	0.88			0.89	0.63	0.68	0.60		0.69	
HV %	12	1	5			18	2	1			0	1				0	2	1			

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

A2

Miscellaneous Traffic Data and Calculations

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

STATION: **531020**

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR294** ROAD NAME: **NORTH FOREST RD** FROM: **1.0 N OF NY263** TO: **DODGE RD** COUNTY: **Erie**
DIRECTION: Northbound FACTOR GROUP: 30 REC. SERIAL #: W699 FUNC. CLASS: 16 TOWN: **AMHERST**
STATE DIR CODE: 6 WK OF YR: 16 PLACEMENT: .57m S of Bryant Woods S NHS: no LION#:
DATE OF COUNT: 04/19/2015 @ REF MARKER: JURIS: Village BIN:
NOTES LANE 1: North ADDL DATA: Class Speed CC Stn: RR CROSSING:
COUNT TYPE: VEHICLES BATCH ID: DOT-SJWR5Cww17a CLASS HPMS SAMPLE: 3010446
COUNT TAKEN BY: ORG CODE: TTG INITIALS: DKS PROCESSED BY: ORG CODE: DOT INITIALS: SJW

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M																											
7	T																											
8	W																											
9	T																											
10	F																											
11	S																											
12	S																											
13	M																											
14	T																											
15	W																											
16	T																											
17	F																											
18	S																											
19	S																											
20	M	**2**	**0**	**0**	**0**	**1**	**4**	**12**	**48**	**64**	**42**	**59**	**47**	**74**	**74**	**68**	**100**	**94**	**82**	**63**	**32**	**41**	**20**	**17**	**11**	955	100	15
21	T	**3**	**0**	**1**	**0**	**0**	**1**	**11**	**48**	**43**	**39**	**47**	**66**	**77**	**69**	**81**	**114**	**96**	**98**	**72**	**37**	**40**	**22**	**13**	**8**	986	114	15
22	W	**5**	**1**	**1**	**2**	**2**	**1**	**12**	**48**	**55**	**42**	**46**	**58**	**81**	**59**	**79**	**97**	**98**	**82**	**56**	**47**	**35**	**27**	**23**				
23	T																											
24	F																											
25	S																											
26	S																											
27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

ADT

4 0 1 1 1 1 12 48 54 41 51 57 77 67 76 104 96 87 64 39 39 23 18 10 971

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
3	71	2	65	104	11%	1.000	1.047

ESTIMATED

AADT
927

ROAD #: **CR294** ROAD NAME: **NORTH FOREST RD** FROM: **1.0 N OF NY263** TO: **DODGE RD** COUNTY: **Erie**
STATION: **531020** STATE DIR CODE: **6** PLACEMENT: **.57m S of Bryant Woods S** **DATE OF COUNT: 04/19/2015**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

STATION: **531020**

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR294** ROAD NAME: **NORTH FOREST RD** FROM: **1.0 N OF NY263** TO: **DODGE RD** COUNTY: **Erie**
DIRECTION: Southbound FACTOR GROUP: 30 REC. SERIAL #: W805 FUNC. CLASS: 16 TOWN: **AMHERST**
STATE DIR CODE: 7 WK OF YR: 16 PLACEMENT: .57m S of Bryant Woods S NHS: no LION#:
DATE OF COUNT: 04/19/2015 @ REF MARKER: JURIS: Village BIN:
NOTES LANE 1: South ADDL DATA: Class Speed CC Stn: RR CROSSING:
COUNT TYPE: VEHICLES BATCH ID: DOT-SJWR5Cww17a CLASS HPMS SAMPLE: 3010446
COUNT TAKEN BY: ORG CODE: TTG INITIALS: dks PROCESSED BY: ORG CODE: DOT INITIALS: SJW

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M																											
7	T																											
8	W																											
9	T																											
10	F																											
11	S																											
12	S																											
13	M																											
14	T																											
15	W																											
16	T																											
17	F																											
18	S																											
19	S																											
20	M	**1**	**1**	**1**	**1**	**1**	**11**	**42**	**77**	**104**	**51**	**48**	**44**	**53**	**52**	**71**	**69**	**104**	**79**	**50**	**23**	**18**	**13**	**12**	**3**	929	104	8
21	T	**1**	**1**	**2**	**0**	**0**	**12**	**42**	**84**	**91**	**53**	**56**	**55**	**67**	**63**	**60**	**56**	**85**	**97**	**44**	**28**	**15**	**10**	**7**	**9**	938	97	17
22	W	**1**	**1**	**1**	**2**	**1**	**13**	**41**	**72**	**87**	**57**	**51**	**55**	**63**	**51**	**54**	**66**	**79**	**96**	**56**	**31**	**16**	**15**	**12**				
23	T																											
24	F																											
25	S																											
26	S																											
27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
1	**1**	**2**	**1**	**0**	**12**	**42**	**78**	**94**	**54**	**52**	**51**	**61**	**55**	**62**	**64**	**89**	**91**	**50**	**27**	**16**	**13**	**10**	**6**	**932**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
3	71	2	65	94	10%	1.000	1.047	**AADT 890**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR45** ROAD NAME: **DODGE RD**
DIRECTION: Eastbound FACTOR GROUP: 30
STATE DIR CODE: 6 WK OF YR: 32
DATE OF COUNT: 08/07/2017
NOTES LANE 1: EB 1 Lane - 40 mph

COUNT TAKEN BY: ORG CODE: MBN INITIALS: APV

FROM: **SWEET HOME RD** TO: **NY 270 CAMPBELL BLVD**
REC. SERIAL #: Y110 FUNC. CLASS: 16
PLACEMENT: 450 FEET EAST OF AUDUBON PK NHS: no
@ REF MARKER: JURIS: Village
ADDL DATA: Class Speed CC Stn:
COUNT TYPE: AXLE PAIRS BATCH ID: DOT-R05c32aMBN0000-20170
PROCESSED BY: ORG CODE: DOT INITIALS: CW

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	T																											
2	W																											
3	T																											
4	F																											
5	S																											
6	S																											
7	M																		472	223	157	142	81	43	41			
8	T	23	10	6	6	4	17	55	207	272	174	158	216	271	230	243	301	447	457	249	168	165	116	61	41	3897	457	17
9	W	27	14	6	7	3	13	69	195	244	172	177	212	283	268	250	319	412	437	234	185	162	133	51	37	3910	437	17
10	T	18	10	7	5	6	8	60	158	204	154	182	202	301	264	267	326	438	436	228	158	152	114	66	46	3810	438	16
11	F	27	8	13	8	6	16	64	172																			
12	S																											
13	S																											
14	M																											
15	T																											
16	W																											
17	T																											
18	F																											
19	S																											
20	S																											
21	M																											
22	T																											
23	W																											
24	T																											
25	F																											
26	S																											
27	S																											
28	M																											
29	T																											
30	W																											
31	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																									ADT
24	**10**	**8**	**6**	**5**	**14**	**62**	**183**	**240**	**167**	**172**	**210**	**285**	**254**	**253**	**315**	**432**	**450**	**234**	**167**	**155**	**111**	**55**	**41**	**3853**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
4	87	4	87	450	12%	1.000	1.100	**AADT 3503**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR45** ROAD NAME: **DODGE RD**
DIRECTION: Westbound FACTOR GROUP: 30
STATE DIR CODE: 7 WK OF YR: 32
DATE OF COUNT: 08/07/2017
NOTES LANE 1: WB 1 Lane - 40 mph

COUNT TAKEN BY: ORG CODE: MBN INITIALS: APV

FROM: **SWEET HOME RD** TO: **NY 270 CAMPBELL BLVD**
REC. SERIAL #: Y110 FUNC. CLASS: 16
PLACEMENT: 450 FEET EAST OF AUDUBON PK NHS: no
@ REF MARKER: JURIS: Village
ADDL DATA: Class Speed CC Stn:
COUNT TYPE: AXLE PAIRS BATCH ID: DOT-R05c32aMBN0000-2017

PROCESSED BY: ORG CODE: DOT INITIALS: CW

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	T																											
2	W																											
3	T																											
4	F																											
5	S																											
6	S																											
7	M																		250	150	104	92	61	38	18			
8	T	**17**	**5**	**2**	**7**	**8**	**27**	**124**	**380**	**419**	**243**	**185**	**169**	**293**	**250**	**231**	**233**	**211**	**287**	**189**	**121**	**109**	**66**	**54**	**17**	3647	419	8
9	W	**9**	**5**	**6**	**6**	**13**	**22**	**125**	**348**	**424**	**225**	**194**	**200**	**202**	**243**	**280**	**212**	**234**	**268**	**206**	**133**	**102**	**68**	**59**	**15**	3599	424	8
10	T	**16**	**3**	**1**	**7**	**9**	**31**	**120**	**335**	**390**	**219**	**208**	**208**	**208**	**243**	**285**	**225**	**252**	**261**	**187**	**127**	**106**	**68**	**50**	**26**	3585	390	8
11	F	**11**	**5**	**5**	**3**	**11**	**27**	**111**	**302**																			
12	S																											
13	S																											
14	M																											
15	T																											
16	W																											
17	T																											
18	F																											
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28	M																											
29	T																											
30	W																											
31	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
13	**4**	**4**	**6**	**10**	**27**	**120**	**341**	**411**	**229**	**196**	**192**	**234**	**245**	**265**	**223**	**232**	**266**	**183**	**121**	**102**	**66**	**50**	**19**	**3559**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
5	87	5	87	411	12%	1.000	1.100

ESTIMATED

AADT
3235

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

1.d

STATION: **534822**

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Northbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 23
DATE OF COUNT: 06/03/2019
NOTES LANE 0: North

COUNT TAKEN BY: ORG CODE: TTG INITIALS: DKS

FROM: **COMMERCE DRIVE**
REC. SERIAL #: W807
PLACEMENT: 151' N of Sunshine Dr
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS

PROCESSED BY: ORG CODE: DOT INITIALS: JH

TO: **N FRENCH RD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05V23aTTG5196HPMS SAMPLE:

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	S																											
2	S																											
3	M																**774**	**1037**	**1082**	**627**	**443**	**469**	**345**	**209**	**140**			
4	T	**69**	**39**	**23**	**11**	**18**	**46**	**199**	**447**	**506**	**431**	**399**	**484**	**556**	**524**	**607**	**754**	**1009**	**977**	**661**	**468**	**428**	**347**	**201**	**141**	9345	1009	16
5	W	**83**	**50**	**29**	**19**	**27**	**43**	**207**	**467**	**509**	**430**	**409**	**541**	**597**	**521**	**671**	**841**	**1058**	**958**	**630**	**444**	**451**	**358**	**195**	**135**	9673	1058	16
6	T	**89**	**37**	**19**	**18**	**19**	**69**	**186**	**466**	**515**	**474**	**403**	**509**	**563**	**563**	**658**	**825**	**1015**	**1079**	**699**	**549**	**498**	**378**	**235**				
7	F																											
8	S																											
9	S																											
10	M																											
11	T																											
12	W																											
13	T																											
14	F																											
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26	W																											
27	T																											
28	F																											
29	S																											
30	S																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
79	**41**	**24**	**16**	**21**	**52**	**194**	**454**	**503**	**439**	**399**	**504**	**565**	**529**	**637**	**788**	**1017**	**1011**	**645**	**470**	**456**	**352**	**207**	**137**	**9540**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	80	4	80	1017	11%	0.987	1.113

ESTIMATED (one way)

AADT
8571

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Southbound FACTOR GROUP: 30
STATE DIR CODE: 2 WK OF YR: 23
DATE OF COUNT: 06/03/2019
NOTES LANE 0: South

COUNT TAKEN BY: ORG CODE: TTG INITIALS: DKS

FROM: **COMMERCE DRIVE**
REC. SERIAL #: R314
PLACEMENT: 151' N of Sunshine Dr
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS
PROCESSED BY: ORG CODE: DOT INITIALS: JH

TO: **N FRENCH RD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05V23aTTG5196HPMS SAMPLE:

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	S																											
2	S																											
3	M																**699**	**811**	**832**	**567**	**382**	**321**	**258**	**169**	**84**			
4	T	**43**	**33**	**20**	**20**	**51**	**171**	**524**	**1071**	**994**	**566**	**536**	**553**	**542**	**550**	**618**	**636**	**794**	**850**	**622**	**297**	**303**	**219**	**180**	**95**	10288	1071	7
5	W	**55**	**29**	**17**	**25**	**42**	**175**	**509**	**1093**	**1076**	**641**	**534**	**616**	**658**	**581**	**586**	**741**	**804**	**788**	**592**	**379**	**319**	**248**	**132**	**88**	10728	1093	7
6	T	**51**	**28**	**12**	**19**	**45**	**168**	**510**	**1095**	**978**	**632**	**570**	**657**	**697**	**639**	**635**	**714**	**823**	**897**	**616**	**377**	**315**	**308**	**189**				
7	F																											
8	S																											
9	S																											
10	M																											
11	T																											
12	W																											
13	T																											
14	F																											
15	S																											
16	S																											
17	M																											
18	T																											
19	W																											
20	T																											
21	F																											
22	S																											
23	S																											
24	M																											
25	T																											
26	W																											
27	T																											
28	F																											
29	S																											
30	S																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																									ADT
49	**30**	**16**	**21**	**45**	**169**	**507**	**1072**	**1003**	**605**	**540**	**601**	**624**	**582**	**605**	**689**	**797**	**831**	**591**	**354**	**310**	**255**	**166**	**88**	**10550**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	80	4	80	1072	10%	0.987	1.113

ESTIMATED (one way)

AADT
9479

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Northbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 15
DATE OF COUNT: 04/06/2020
NOTES LANE 1: North
NOTES LANE 2: North
COUNT TAKEN BY: ORG CODE: TTG INITIALS: JB

FROM: **N ELLICOTT RD**
REC. SERIAL #: W796
PLACEMENT: 605ft N of N Ellicott Creek
@ REF MARKER:
ADDL DATA: Class Speed
COUNT TYPE: VEHICLES
PROCESSED BY: ORG CODE: DOT INITIALS: CPA

TO: **COMMERCE DRIVE**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05C15cTTG5196

COUNTY: **Erie**
TOWN:
LION#:
BIN: 3367090
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M															**393**	**465**	**479**	**413**	**323**	**216**	**173**	**102**	**83**	**53**			
7	T	**35**	**23**	**26**	**24**	**22**	**64**	**243**	**301**	**262**	**259**	**316**	**328**	**380**	**389**	**430**	**478**	**462**	**403**	**294**	**237**	**166**	**120**	**81**	**65**	5408	478	15
8	W	**30**	**26**	**25**	**16**	**18**	**87**	**235**	**303**	**264**	**225**	**242**	**286**	**320**	**329**	**353**	**467**	**400**	**397**	**318**	**242**	**183**	**135**	**90**	**75**	5066	467	15
9	T	**40**	**22**	**24**	**22**	**23**	**78**	**231**	**270**	**258**	**239**	**266**	**294**	**346**	**309**	**418**	**419**	**477**	**421**	**284**	**231**	**146**	**114**	**96**	**72**	5100	477	16
10	F	**44**	**29**	**25**	**26**	**19**	**53**	**164**	**213**	**248**	**199**																	
11	S																											
12	S																											
13	M																											
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15	W																											
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23	T																											
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26	S																											
27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

37	**25**	**25**	**22**	**20**	**70**	**218**	**272**	**258**	**230**	**275**	**303**	**349**	**342**	**398**	**457**	**454**	**408**	**305**	**232**	**167**	**118**	**88**	**66**	**ADT 5139**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
5	92	5	92	457	9%	1.000	1.054	**AADT 4876**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD** FROM: **N ELLICOTT RD** TO: **COMMERCE DRIVE** COUNTY: **Erie**

DIRECTION: Southbound FACTOR GROUP: 30 REC. SERIAL #: JH88 FUNC. CLASS: 16 TOWN:

STATE DIR CODE: 2 WK OF YR: 15 PLACEMENT: 605ft N of N Ellicott Creek NHS: no LION#:

DATE OF COUNT: 04/06/2020 @ REF MARKER: JURIS: Village BIN: 3367090

NOTES LANE 1: South ADDL DATA: Class Speed CC Stn: RR CROSSING:

NOTES LANE 2: South COUNT TYPE: VEHICLES BATCH ID: DOT-R05C15cTTG5196 HPMS SAMPLE:

COUNT TAKEN BY: ORG CODE: TTG INITIALS: JB PROCESSED BY: ORG CODE: DOT INITIALS: CPA

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M															**404**	**497**	**481**	**434**	**284**	**212**	**129**	**97**	**72**	**69**			
7	T	**31**	**29**	**9**	**16**	**27**	**86**	**208**	**320**	**270**	**294**	**276**	**331**	**371**	**388**	**428**	**472**	**470**	**384**	**262**	**229**	**133**	**86**	**70**	**82**	5272	472	15
8	W	**35**	**21**	**15**	**15**	**28**	**88**	**220**	**300**	**264**	**272**	**320**	**266**	**314**	**227**	**248**	**298**	**282**	**248**	**187**	**129**	**97**	**70**	**44**	**58**	4046	320	10
9	T	**25**	**17**	**11**	**12**	**17**	**52**	**122**	**173**	**154**	**137**	**186**	**198**	**222**	**212**	**224**	**308**	**256**	**281**	**165**	**153**	**91**	**74**	**41**	**48**	3179	308	15
10	F	**25**	**9**	**13**	**13**	**20**	**38**	**116**	**194**	**135**	**149**																	
11	S																											
12	S																											
13	M																											
14	T																											
15	W																											
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27	M																											
28	T																											
29	W																											
30	T																											
		29	**19**	**12**	**14**	**23**	**66**	**166**	**247**	**206**	**213**	**261**	**265**	**302**	**276**	**326**	**394**	**372**	**337**	**224**	**181**	**112**	**82**	**57**	**64**	**4248**		

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon) **ADT**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
5	92	5	92	394	9%	1.000	1.054

ESTIMATED

AADT

4030

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Northbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 28
DATE OF COUNT: 07/05/2016
NOTES LANE 0: NB 2 lane - 45 mph

COUNT TAKEN BY: ORG CODE: CSE INITIALS: CDM

FROM: **COMMERCE DRIVE**
REC. SERIAL #: 1867
PLACEMENT: 525 ft N of Bucyrus Dr
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS

PROCESSED BY: ORG CODE: MBN INITIALS: AHL

TO: **N FRENCH RD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05MBN-28-5-July-6-2016

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	F																											
2	S																											
3	S																											
4	M																											
5	T											**397**	**468**	**580**	**510**	**566**	**692**	**905**	**889**	**578**	**443**	**430**	**359**	**229**	**159**			
6	W	**73**	**44**	**20**	**17**	**22**	**45**	**168**	**374**	**471**	**384**	**409**	**448**	**529**	**483**	**557**	**696**	**887**	**1021**	**711**	**498**	**442**	**371**	**225**	**192**	9087	1021	17
7	T	**96**	**51**	**22**	**20**	**21**	**60**	**154**	**375**	**494**	**367**	**368**	**439**	**526**	**522**	**602**	**639**	**856**	**931**	**582**	**459**	**434**	**361**	**270**	**167**	8816	931	17
8	F	**105**	**57**	**27**	**25**	**36**	**53**	**138**	**358**	**407**																		
9	S																											
10	S																											
11	M																											
12	T																											
13	W																											
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27	W																											
28	T																											
29	F																											
30	S																											
31	S																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
91	**51**	**23**	**21**	**26**	**53**	**153**	**369**	**457**	**376**	**391**	**452**	**545**	**505**	**575**	**676**	**883**	**947**	**624**	**467**	**435**	**364**	**241**	**173**	**8898**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	71	4	71	947	11%	1.000	1.093

ESTIMATED (one way)

AADT
8141

ROAD #: **CR301** ROAD NAME: **SWEET HOME RD** FROM: **COMMERCE DRIVE** TO: **N FRENCH RD** COUNTY: **Erie**
STATION: **534822** STATE DIR CODE: **1** PLACEMENT: **525 ft N of Bucyrus Dr** **DATE OF COUNT: 07/05/2016**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Southbound FACTOR GROUP: 30
STATE DIR CODE: 2 WK OF YR: 28
DATE OF COUNT: 07/05/2016
NOTES LANE 0: SB 2 lane - 45 mph

COUNT TAKEN BY: ORG CODE: CSE INITIALS: CDM

FROM: **COMMERCE DRIVE**
REC. SERIAL #: 1867
PLACEMENT: 525 ft N of Bucyrus Dr
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS

PROCESSED BY: ORG CODE: MBN INITIALS: AHL

TO: **N FRENCH RD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05MBN-28-5-July-6-2016

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	F																											
2	S																											
3	S																											
4	M																											
5	T											470	454	539	500	503	502	618	686	463	376	257	240	176	126			
6	W	56	33	9	16	32	135	372	705	742	499	460	444	525	530	497	544	627	705	507	365	306	289	206	108	8712	742	8
7	T	60	32	19	17	33	124	387	685	746	501	501	484	551	523	521	558	629	700	497	385	286	255	203	103	8800	746	8
8	F	65	31	30	28	35	111	354	655	571																		
9	S																											
10	S																											
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30	S																											
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AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
60	**32**	**19**	**20**	**33**	**123**	**371**	**682**	**686**	**500**	**477**	**461**	**538**	**518**	**507**	**535**	**625**	**697**	**489**	**375**	**283**	**261**	**195**	**112**	**8599**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	71	4	71	697	8%	1.000	1.093

ESTIMATED (one way)

AADT
7867

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR45** ROAD NAME: **DODGE RD**
DIRECTION: Eastbound FACTOR GROUP: 30
STATE DIR CODE: 6 WK OF YR: 46
DATE OF COUNT: 11/07/2016
NOTES LANE 1: One Lane EB - 35 MPH

COUNT TAKEN BY: ORG CODE: TTG INITIALS: DKS

FROM: **SWEET HOME RD**
REC. SERIAL #: EZ53
PLACEMENT: 850' E of Audubon Pkwy
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS
PROCESSED BY: ORG CODE: R05 INITIALS: RPJ

TO: **NY 270 CAMPBELL BLVD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05V46aTTG5196

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	T																											
2	W																											
3	T																											
4	F																											
5	S																											
6	S																											
7	M															**269**	**339**	**457**		**259**	**156**		**60**	**53**	**27**			
8	T	**37**	**11**	**6**	**3**	**4**	**20**												**482**	**264**	**153**	**114**	**75**	**55**	**30**			
9	W	**16**	**11**	**5**	**6**	**6**	**19**	**47**	**184**	**175**	**128**	**138**	**211**	**256**	**193**	**233**	**330**	**484**	**513**	**212**	**143**	**134**	**76**	**61**	**45**	3626	513	17
10	T	**16**	**7**	**2**	**6**	**5**	**17**	**53**	**204**	**170**	**144**	**152**	**213**	**250**	**220**	**268**	**365**	**466**	**447**	**226**	**159**	**141**	**94**	**62**	**43**	3730	466	16
11	F	**30**																										
12	S																											
13	S																											
14	M																											
15	T																											
16	W																											
17	T																											
18	F																											
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23	W																											
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27	S																											
28	M																											
29	T																											
30	W																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
25	**10**	**4**	**5**	**5**	**19**	**49**	**191**	**170**	**134**	**143**	**209**	**250**	**203**	**254**	**341**	**463**	**475**	**237**	**151**	**128**	**75**	**57**	**36**	**3634**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
5	70	5	70	475	13%	0.987	1.017

ESTIMATED

AADT
3573

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR45** ROAD NAME: **DODGE RD**
DIRECTION: Westbound FACTOR GROUP: 30
STATE DIR CODE: 7 WK OF YR: 46
DATE OF COUNT: 11/07/2016
NOTES LANE 1: One Lane WB - 35 MPH

COUNT TAKEN BY: ORG CODE: TTG INITIALS: DKS

FROM: **SWEET HOME RD**
REC. SERIAL #: EZ96
PLACEMENT: 850' E of Audubon Pkwy
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS
PROCESSED BY: ORG CODE: R05 INITIALS: RPJ

TO: **NY 270 CAMPBELL BLVD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05V46aTTG5196

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	T																											
2	W																											
3	T																											
4	F																											
5	S																											
6	S																											
7	M															**233**	**227**	**267**		**162**	**127**		**54**	**33**	**19**			
8	T	**9**	**6**	**2**	**10**	**9**	**34**												**329**	**165**	**105**	**91**	**48**	**40**	**21**			
9	W	**7**	**7**	**2**	**14**	**7**	**38**	**138**	**416**	**453**	**239**	**188**	**168**	**207**	**226**	**250**	**227**	**241**	**275**	**178**	**103**	**81**	**63**	**43**	**14**	3585	453	8
10	T	**10**	**5**	**1**	**9**	**14**	**37**	**144**	**421**	**469**	**222**	**187**	**175**	**209**	**212**	**227**	**213**	**250**	**254**	**178**	**120**	**70**	**64**	**38**	**16**	3545	469	8
11	F	**9**																										
12	S																											
13	S																											
14	M																											
15	T																											
16	W																											
17	T																											
18	F																											
19	S																											
20	S																											
21	M																											
22	T																											
23	W																											
24	T																											
25	F																											
26	S																											
27	S																											
28	M																											
29	T																											
30	W																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
9	**6**	**2**	**11**	**10**	**36**	**139**	**413**	**455**	**227**	**186**	**170**	**205**	**216**	**234**	**219**	**250**	**282**	**169**	**113**	**80**	**56**	**38**	**18**	**3544**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
5	70	5	70	455	13%	0.987	1.017	**AADT 3485**

ROAD #: **CR45** ROAD NAME: **DODGE RD** FROM: **SWEET HOME RD** TO: **NY 270 CAMPBELL BLVD** COUNTY: **Erie**
STATION: **534232** STATE DIR CODE: **7** PLACEMENT: **850' E of Audubon Pkwy** **DATE OF COUNT: 11/07/2016**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

STATION: 535024

New York State Department of Transportation
Roadway Traffic Count Hourly Report

ROUTE/ROAD:	COMMERCE DR	FROM:	WOODRIDGE DR	TO:	SWEET HOME RD	REGION-COUNTY:	5-ERIE
FED DIR CODE:	3, 7	REF. MARKER:		FUNC. CLASS:	19 - U Local System	MUNI:	Amherst-Town-0019
ST DIR CODE:	7	END MILEPOST:	.82	FACTOR GROUP:	30	BIN:	
DOT ID:	157446	LANES BY DIR:	1 East 1 West	CC STN:		RR CROSSING:	
BEGIN DATE:	9/21/2014	WEEK OF YEAR:	38	ADDL DATA:		HPMS SAMPLE:	
NOTES 1:	West	PLACEMENT:	.2m E of John Glenn DR	JURISDICTION:	03-Town	1 WAY CODE:	
NOTES 2:						COUNT TYPE:	Vehicle
TAKEN BY:	TTG-DKS	PROCESSED BY:	DOT-VJR	BATCH ID:	DOT-R5 WW39A	SPEED LIMIT:	

DATE	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	DAILY TOTAL	HIGH COUNT	HIGH HOUR
9/21, Sun																	**82**	**77**	**96**	**81**	**42**	**34**	**28**	**12**	452		
9/22, Mon	**13**	**7**	**4**	**3**	**28**	**66**	**336**	**761**	**730**	**393**	**330**	**457**	**486**	**431**	**429**	**673**	**855**	**684**	**321**	**185**	**154**	**82**	**34**	**35**	7497	855	16-17
9/23, Tue	**28**	**5**	**45**	**6**	**36**	**69**	**347**	**783**	**739**	**414**	**319**	**330**	**491**	**397**	**374**	**650**	**842**	**707**	**351**	**226**	**137**	**72**	**35**	**28**	7431	842	16-17
9/24, Wed	**24**	**14**	**42**	**6**	**31**	**61**	**351**	**761**	**721**	**414**	**288**	**355**	**467**	**408**	**447**	**646**	**785**	**759**	**322**	**215**	**127**	**88**	**39**	**36**	7407	785	16-17
9/25, Thu	**22**	**11**	**37**	**8**	**27**	**77**	**336**																		518		
AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6 AM to Fri Noon)																									**AWDT**		
	25	**10**	**41**	**7**	**31**	**69**	**343**	**768**	**730**	**407**	**312**	**381**	**481**	**412**	**417**	**656**	**827**	**717**	**331**	**209**	**139**	**81**	**36**	**33**	7463		

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY Roadway High Hour	Roadway % of day	East High Hour	East % of day	West High Hour	West % of day
4	87	3	73	827	11.1	578	14.2	431	12.7

ESTIMATED AADT		
Roadway	East	West
7027	3821	3206

FACTOR

Month	Seasonal	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Axl
9	1.06	1.00	1.00	1.00	1.00	1.00			1.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

New York State Department of Transportation

EB Traffic Count Hourly Report

STATION: 535024

ROUTE/ROAD:	COMMERCE DR	FROM:	WOODRIDGE DR	TO:	SWEET HOME RD	REGION-COUNTY:	5-ERIE
FED DIR CODE:	3	REF. MARKER:		FUNC. CLASS:	19 - U Local System	MUNI:	Amherst-Town-0019
ST DIR CODE:	7	END MILEPOST:	.82	FACTOR GROUP:	30	BIN:	
DOT ID:	157446	LANES BY DIR:	1 East	CC STN:		RR CROSSING:	
BEGIN DATE:	9/21/2014	WEEK OF YEAR:	38	ADDL DATA:		HPMS SAMPLE:	
NOTES 1:	West	PLACEMENT:	.2m E of John Glenn DR	JURISDICTION:	03-Town	1 WAY CODE:	
NOTES 2:						COUNT TYPE:	Vehicle
TAKEN BY:	TTG-DKS	PROCESSED BY:	DOT-VJR	BATCH ID:	DOT-R5 WW39A	SPEED LIMIT:	

DATE	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	DAILY TOTAL	HIGH COUNT	HIGH HOUR
9/21, Sun																	**39**	**33**	**38**	**49**	**21**	**12**	**10**	**5**	207		
9/22, Mon	**5**	**1**	**2**	**1**	**9**	**26**	**65**	**334**	**289**	**185**	**176**	**304**	**261**	**213**	**214**	**406**	**583**	**509**	**192**	**123**	**78**	**31**	**13**	**21**	4041	583	16-17
9/23, Tue	**22**	**4**	**41**	**1**	**14**	**25**	**74**	**351**	**315**	**193**	**149**	**186**	**266**	**208**	**179**	**402**	**602**	**534**	**213**	**132**	**68**	**31**	**11**	**16**	4037	602	16-17
9/24, Wed	**20**	**12**	**39**	**1**	**13**	**20**	**80**	**354**	**292**	**192**	**147**	**199**	**258**	**203**	**224**	**402**	**550**	**577**	**179**	**132**	**67**	**40**	**18**	**20**	4039	577	17-18
9/25, Thu	**17**	**7**	**34**	**2**	**10**	**32**	**72**																		174		
AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6 AM to Fri Noon)																									**AWDT**		
	20	**8**	**38**	**1**	**12**	**26**	**73**	**346**	**299**	**190**	**157**	**230**	**262**	**208**	**206**	**403**	**578**	**540**	**195**	**129**	**71**	**34**	**14**	**19**	4058		

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY Roadway High Hour	Roadway % of day	East High Hour	East % of day	West High Hour	West % of day	ESTIMATED AADT Roadway	East	West
4	87	3	73	827	11.1	578	14.2	431	12.7	7027	3821	3206

FACTOR

Month	Seasonal	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Axl
9	1.06	1.00	1.00	1.00	1.00	1.00			1.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

New York State Department of Transportation

WB Traffic Count Hourly Report

STATION: 535024

ROUTE/ROAD:	COMMERCE DR	FROM:	WOODRIDGE DR	TO:	SWEET HOME RD	REGION-COUNTY:	5-ERIE
FED DIR CODE:	7	REF. MARKER:		FUNC. CLASS:	19 - U Local System	MUNI:	Amherst-Town-0019
ST DIR CODE:	7	END MILEPOST:	.82	FACTOR GROUP:	30	BIN:	
DOT ID:	157446	LANES BY DIR:	1 West	CC STN:		RR CROSSING:	
BEGIN DATE:	9/21/2014	WEEK OF YEAR:	38	ADDL DATA:		HPMS SAMPLE:	
NOTES 1:	West	PLACEMENT:	.2m E of John Glenn DR	JURISDICTION:	03-Town	1 WAY CODE:	
NOTES 2:						COUNT TYPE:	Vehicle
TAKEN BY:	TTG-DKS	PROCESSED BY:	DOT-VJR	BATCH ID:	DOT-R5 WW39A	SPEED LIMIT:	

DATE	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	DAILY TOTAL	HIGH COUNT	HIGH HOUR
9/21, Sun																	**43**	**44**	**58**	**32**	**21**	**22**	**18**	**7**	245		
9/22, Mon	**8**	**6**	**2**	**2**	**19**	**40**	**271**	**427**	**441**	**208**	**154**	**153**	**225**	**218**	**215**	**267**	**272**	**175**	**129**	**62**	**76**	**51**	**21**	**14**	3456	441	08-09
9/23, Tue	**6**	**1**	**4**	**5**	**22**	**44**	**273**	**432**	**424**	**221**	**170**	**144**	**225**	**189**	**195**	**248**	**240**	**173**	**138**	**94**	**69**	**41**	**24**	**12**	3394	432	07-08
9/24, Wed	**4**	**2**	**3**	**5**	**18**	**41**	**271**	**407**	**429**	**222**	**141**	**156**	**209**	**205**	**223**	**244**	**235**	**182**	**143**	**83**	**60**	**48**	**21**	**16**	3368	429	08-09
9/25, Thu	**5**	**4**	**3**	**6**	**17**	**45**	**264**																		344		
AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6 AM to Fri Noon)																									**AWDT**		
	5	**2**	**3**	**5**	**19**	**43**	**270**	**422**	**431**	**217**	**155**	**151**	**220**	**204**	**211**	**253**	**249**	**177**	**137**	**80**	**68**	**47**	**22**	**14**	3405		

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY Roadway High Hour	Roadway % of day	East High Hour	East % of day	West High Hour	West % of day	ESTIMATED AADT Roadway	East	West
4	87	3	73	827	11.1	578	14.2	431	12.7	7027	3821	3206

FACTOR

Month	Seasonal	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Axl
9	1.06	1.00	1.00	1.00	1.00	1.00			1.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Northbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 44
DATE OF COUNT: 10/24/2016
NOTES LANE 1: North
NOTES LANE 2: North
COUNT TAKEN BY: ORG CODE: TTG INITIALS: JM

FROM: **N ELLICOTT RD**
REC. SERIAL #: GC47
PLACEMENT: 654ft N of N Ellicott Creek
@ REF MARKER:
ADDL DATA: Class Speed
COUNT TYPE: VEHICLES
PROCESSED BY: ORG CODE: DOT INITIALS: SJW

TO: **COMMERCE DRIVE**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05C44aTTG5196

COUNTY: **Erie**
TOWN:
LION#:
BIN: 3367090
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	S																											
2	S																											
3	M																											
4	T																											
5	W																											
6	T																											
7	F																											
8	S																											
9	S																											
10	M																											
11	T																											
12	W																											
13	T																											
14	F																											
15	S																											
16	S																											
17	M																											
18	T																											
19	W																											
20	T																											
21	F																											
22	S																											
23	S																											
24	M																				**551**	**457**	**315**	**218**	**155**			
25	T	**95**	**35**	**29**	**38**	**46**	**131**	**528**	**977**	**1072**	**621**	**470**	**562**	**659**	**616**	**761**	**837**	**1028**	**1036**	**714**	**520**	**461**	**360**	**232**	**156**	11984	1072	8
26	W	**87**	**42**	**14**	**36**	**41**	**120**	**507**	**931**	**1085**	**628**	**527**	**554**	**618**	**722**	**758**	**852**	**1058**	**1061**	**744**	**555**	**425**	**426**	**251**	**161**	12203	1085	8
27	T	**93**	**37**	**25**	**42**	**40**	**142**	**488**	**951**	**1036**	**600**	**492**	**506**	**588**	**599**	**693**	**862**	**982**	**1040**	**630**	**540**	**454**	**365**	**282**	**188**	11675	1040	17
28	F	**98**	**56**	**37**	**43**	**40**	**111**	**446**	**959**	**988**	**626**																	
29	S																											
30	S																											
31	M																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
93	**42**	**26**	**40**	**42**	**126**	**492**	**954**	**1045**	**619**	**496**	**541**	**622**	**646**	**737**	**850**	**1023**	**1046**	**696**	**542**	**449**	**366**	**246**	**165**	**11904**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	87	4	87	1046	9%	1.000	1.074

ESTIMATED

AADT
11084

ROAD #: **CR301** ROAD NAME: **SWEET HOME RD** FROM: **N ELLICOTT RD** TO: **COMMERCE DRIVE** COUNTY: **Erie**
STATION: **536335** STATE DIR CODE: **1** PLACEMENT: **654ft N of N Ellicott Creek** **DATE OF COUNT: 10/24/2016**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Southbound FACTOR GROUP: 30
STATE DIR CODE: 2 WK OF YR: 44
DATE OF COUNT: 10/24/2016
NOTES LANE 1: South
NOTES LANE 2: South
COUNT TAKEN BY: ORG CODE: TTG INITIALS: MJ

FROM: **N ELLICOTT RD**
REC. SERIAL #: L442
PLACEMENT: 654ft N of N Ellicott Creek
@ REF MARKER:
ADDL DATA: Class Speed
COUNT TYPE: VEHICLES
PROCESSED BY: ORG CODE: DOT INITIALS: SJW

TO: **COMMERCE DRIVE**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05C44aTTG5196

COUNTY: **Erie**
TOWN:
LION#:
BIN: 3367090
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	S																											
2	S																											
3	M																											
4	T																											
5	W																											
6	T																											
7	F																											
8	S																											
9	S																											
10	M																											
11	T																											
12	W																											
13	T																											
14	F																											
15	S																											
16	S																											
17	M																											
18	T																											
19	W																											
20	T																											
21	F																											
22	S																											
23	S																											
24	M																				**399**	**311**	**182**	**134**	**102**			
25	T	**69**	**25**	**16**	**24**	**51**	**179**	**474**	**943**	**769**	**596**	**571**	**643**	**718**	**609**	**625**	**1000**	**1321**	**1416**	**779**	**448**	**300**	**211**	**146**	**121**	12054	1416	17
26	W	**57**	**23**	**24**	**40**	**51**	**179**	**485**	**1005**	**901**	**661**	**630**	**647**	**771**	**713**	**752**	**1206**	**1380**	**1346**	**870**	**459**	**302**	**274**	**166**	**118**	13060	1380	16
27	T	**83**	**42**	**20**	**29**	**70**	**156**	**527**	**1040**	**912**	**650**	**572**	**592**	**808**	**663**	**688**	**983**	**1331**	**1307**	**742**	**489**	**337**	**227**	**167**	**125**	12560	1331	16
28	F	**58**	**43**	**18**	**35**	**45**	**162**	**447**	**952**	**841**	**664**																	
29	S																											
30	S																											
31	M																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
67	**33**	**20**	**32**	**54**	**169**	**483**	**985**	**856**	**643**	**591**	**627**	**766**	**662**	**688**	**1063**	**1344**	**1356**	**797**	**449**	**312**	**224**	**153**	**116**	**12490**

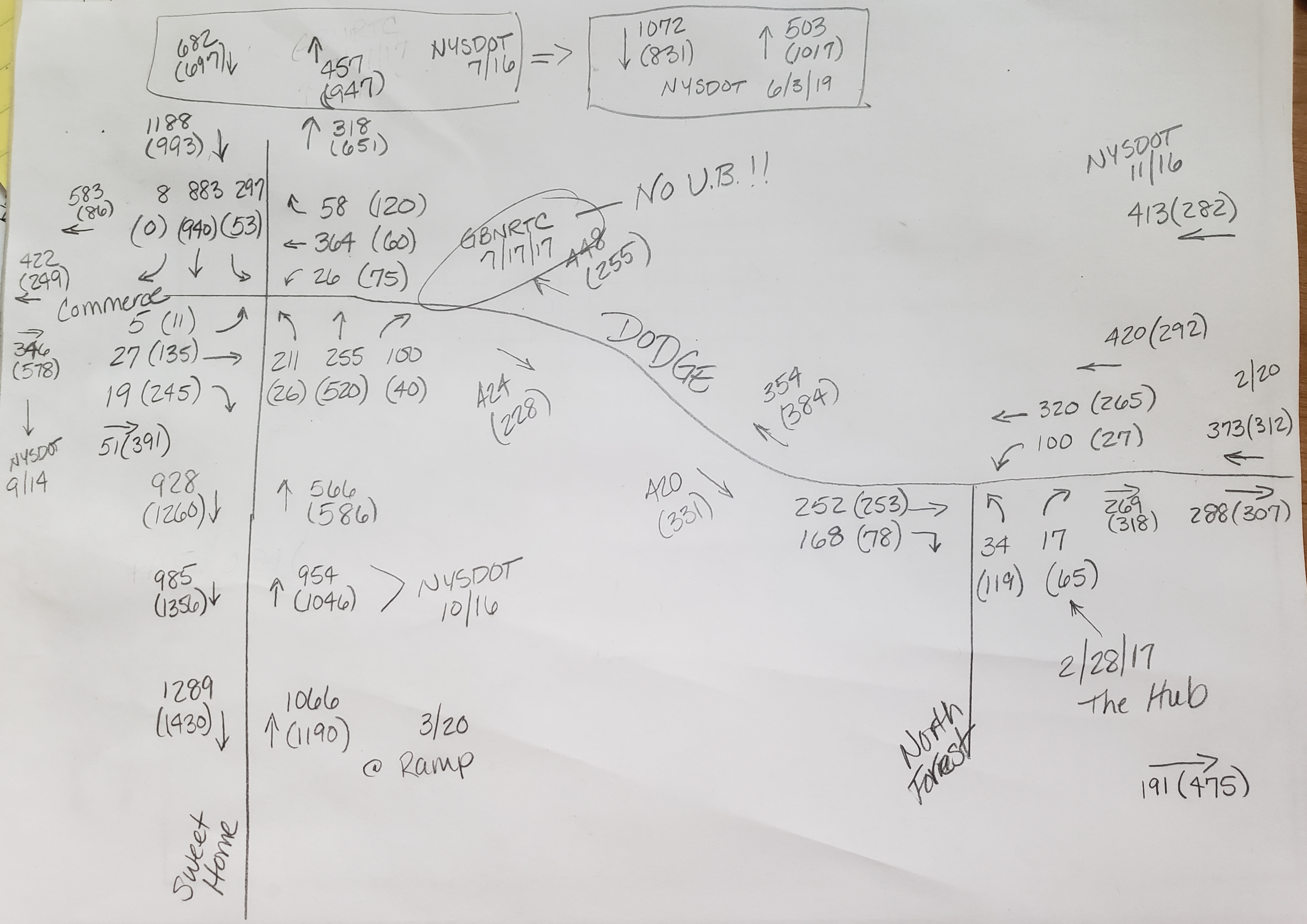
DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	87	4	87	1356	11%	1.000	1.074

ESTIMATED

AADT
11629

ROAD #: **CR301** ROAD NAME: **SWEET HOME RD** FROM: **N ELLICOTT RD** TO: **COMMERCE DRIVE** COUNTY: **Erie**
STATION: **536335** STATE DIR CODE: **2** PLACEMENT: **654ft N of N Ellicott Creek** **DATE OF COUNT: 10/24/2016**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)


682 (697)
457 (947)
NYSDOT 7/16
1072 (831)
503 (1017)
NYSDOT 6/3/19
1188 (993)
318 (651)
583 (86)
8 883 297
(0) (940) (53)
58 (120)
364 (60)
26 (75)
GBNRTC 7/17/17
NO U.B.!!
448 (255)
NYSDOT 11/16
413 (282)
422 (249)
Commerce
5 (11)
27 (135)
19 (245)
346 (578)
211 255 100
(26) (520) (40)
DODGE
424 (228)
354 (384)
420 (292)
2/20
320 (265)
100 (27)
373 (312)
51 (391)
NYSDOT 9/14
928 (1260)
566 (586)
420 (331)
252 (253)
168 (78)
34 (119)
17 (65)
269 (318)
288 (307)
985 (1356)
954 (1046)
NYSDOT 10/16
2/28/17
The Hub
1289 (1430)
1066 (1190)
3/20
@ Ramp
North Forest
191 (475)
Sweet Home

SRF ASSOCIATES
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Transportation Planning / Engineering / Design

Muir Woods Site A, Town of Amherst, NY

Documentation of Ambient Traffic Volume Growth

Roadway	Segment starts at	Segment end at	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Annual Growth
North Forest Road	1.0 N of NY263/Turtle Creek Apt DWY	Dodge Road								2,189			1,809		1,825	1,845		-2.81%
Dodge Road	Sweet Home Road	NY270 Campbell Road					6,363			5,440				7,058	6,738			0.72%
Sweet Home Road	Commerce Drive	North French Road			16,280				16,606		15,052			16,008			18,050	0.86%
Sweet Home Road	N Ellicott Road	Commerce Drive	23,552		21,115			21,021						21,437				-0.78%
Commerce Drive	Woodbridge Road	Sweet Home Road										7,027						

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PROJECT DETAILS

Project Name:	Muir Woods	Type of Project:	
Project No:		City:	
Country:		Built-up Area(Sq.ft):	
Analyst Name:	Amy Dake	Clients Name:	
Date:	6/22/2020	ZIP/Postal Code:	
State/Province:		No. of Scenarios:	2
Analysis Region:			

SCENARIO SUMMARY

Scenarios	Name	No. of Land Uses	Phases of Development	No. of Years to Project Traffic	User Group	Estimated New Vehicle Trips		
						Entry	Exit	Total
Scenario - 1	AM Peak Hour	5	1	0		47	85	132
Scenario - 2	PM Peak Hour	5	1	0		106	82	181

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Scenario - 1

Scenario Name: AM Peak Hour
User Group:
Dev. phase: 1
No. of Years to Project Traffic : 0
Analyst Note:
Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method / Rate/Equation	Entry / Split%	Exit / Split%	Total
210 - Single-Family Detached Housing	General Urban/Suburban	Dwelling Units	90	Weekday, Peak Hour of Adjacent Street Traffic,	Average	17	50	67
Data Source: Trip Gen Manual, 10th Ed +					0.74	25%	75%	
220 - Multifamily Housing (Low-Rise)	General Urban/Suburban	Dwelling Units	12	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LOG)	1	5	6
Data Source: Trip Gen Manual, 10th Ed +					Ln(T) =0.95Ln(X) - 0.51	23%	77%	
221 - Multifamily Housing (Mid-Rise) [Private]	General Urban/Suburban	Dwelling Units	100	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LOG)	9	25	34
Data Source: Trip Gen Manual, 10th Ed +					Ln(T) =0.98Ln(X) - 0.98	26%	74%	
710 - General Office Building	General Urban/Suburban	1000 Sq. Ft. GFA	15	Weekday, Peak Hour of Adjacent Street Traffic,	Average	14	2	17
Data Source: Trip Gen Manual, 10th Ed +					1.16	86%	14%	
875 - Department Store	General Urban/Suburban	1000 Sq. Ft. GFA	15	Weekday, Peak Hour of Adjacent Street	Average	6	3	9
Data Source: Trip Gen Manual, 10th Ed +					0.58	64%	36%	

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
210 - Single-Family Detached Housing	100	100	1	1	25	75
220 - Multifamily Housing (Low-Rise)	100	100	1	1	23	77
221 - Multifamily Housing (Mid-Rise) [Private]	100	100	1	1	26	74
710 - General Office Building	100	100	1	1	86	14
875 - Department Store	100	100	1	1	64	36

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
210 - Single-Family Detached Housing	17	50	0	0	17	50
	67		0		67	
220 - Multifamily Housing (Low-Rise)	1	5	0	0	1	5
	6		0		6	
221 - Multifamily Housing (Mid-Rise) [Private]	9	25	0	0	9	25
	34		0		34	
710 - General Office Building	15	2	0	0	14	2
	17		0		17	
875 - Department Store	6	3	0	0	6	3
	9		0		9	

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
210 - Single-Family Detached Housing	17	50	67
220 - Multifamily Housing (Low-Rise)	1	5	6

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

221 - Multifamily Housing (Mid-Rise) [Private]	9	25	34
710 - General Office Building	14	2	17
875 - Department Store	6	3	9

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	47	85	132
External Vehicle Trips	47	85	132
New Vehicle Trips	47	85	132

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Scenario - 2

Scenario Name: PM Peak Hour
User Group:
Dev. phase: 1
No. of Years to Project Traffic : 0
Analyst Note:
Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method / Rate/Equation	Entry / Split%	Exit / Split%	Total
210 - Single-Family Detached Housing	General Urban/Suburban	Dwelling Units	90	Weekday, Peak Hour of Adjacent Street Traffic,	Average	56	33	89
Data Source: Trip Gen Manual, 10th Ed +					0.99	63%	37%	
220 - Multifamily Housing (Low-Rise)	General Urban/Suburban	Dwelling Units	12	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LOG)	6	3	9
Data Source: Trip Gen Manual, 10th Ed +					Ln(T) =0.89Ln(X) - 0.02	63%	37%	
221 - Multifamily Housing (Mid-Rise)	General Urban/Suburban	Dwelling Units	100	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LOG)	27	17	44
Data Source: Trip Gen Manual, 10th Ed +					Ln(T) =0.96Ln(X) - 0.63	61%	39%	
710 - General Office Building	General Urban/Suburban	1000 Sq. Ft. GFA	15	Weekday, Peak Hour of Adjacent Street Traffic,	Average	2	14	17
Data Source: Trip Gen Manual, 10th Ed +					1.15	16%	84%	
875 - Department Store [Private]	General Urban/Suburban	1000 Sq. Ft. GFA	15	Weekday, Peak Hour of Adjacent Street	Average	15	15	30
Data Source: Trip Gen Manual, 10th Ed +					1.95	50%	50%	

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
210 - Single-Family Detached Housing	100	100	1	1	63	37
220 - Multifamily Housing (Low-Rise)	100	100	1	1	63	37
221 - Multifamily Housing (Mid-Rise)	100	100	1	1	61	39
710 - General Office Building	100	100	1	1	16	84
875 - Department Store [Private]	100	100	1	1	50	50

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
210 - Single-Family Detached Housing	56	33	0	0	56	33
	89		0		89	
220 - Multifamily Housing (Low-Rise)	6	3	0	0	6	3
	9		0		9	
221 - Multifamily Housing (Mid-Rise)	27	17	0	0	27	17
	44		0		44	
710 - General Office Building	3	14	0	0	2	14
	17		0		17	
875 - Department Store [Private]	15	15	0	0	15	15
	30		0		30	

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
210 - Single-Family Detached Housing	56	33	89
220 - Multifamily Housing (Low-Rise)	6	3	9

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

221 - Multifamily Housing (Mid-Rise)	27	17	44
710 - General Office Building	2	14	17
875 - Department Store [Private]	15	15	30

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	106	82	188
External Vehicle Trips	106	82	188
New Vehicle Trips	106	82	188

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

PROPOSED MUIR WOODS SECTION A
TOWN OF AMHERST, NY
AM PEAK

Fig 3 Fig 4 Fig 6 Fig 7 Fig 8

Num of yrs: 2

LOCATION NUMBER	INTERSECTION DESCRIPTION	2020 Existing Volume	2022 Bkgd Vol 1.00%	Muir Woods Site B	2022 Bkgrd Volume	Proposed Muir Woods Section A Enter Dist. %	Exit Dist. %	Trips IN 47	Trips OUT 85	Total Site Trips	FULL Build Volumes
1	Sweet Home Road Dodge Road/Commerce Drive										
	SR	8	8		8						8
	ST	883	901	15	916						916
	SL	297	303		303	20%		9		9	312
	WR	58	59		59		20%		17	17	76
	WT	364	371		371		10%		9	9	380
	WL	26	27		27		25%		21	21	48
	NR	100	102		102	25%		12		12	114
	NT	450	459	11	470						470
	NL	211	215		215						215
	ER	50	51		51						51
	ET	30	31		31	10%		5		5	36
	EL	10	10		10						10
2	Dodge Road Proposed North Driveway										
	SR						25%		21	21	21
	ST										
	SL						15%		13	13	13
	WR					10%		5		5	5
	WT	361	368	18	386		30%		26	26	412
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	458	467	11	478	25%		12		12	490
	EL					30%		14		14	14
3	Dodge Road Proposed Middle Out Driveway										
	SR						10%		9	9	9
	ST										
	SL						5%		4	4	4
	WR										
	WT	361	368	18	386	10%	15%	5	13	17	403
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	458	467	11	478	25%	15%	12	13	25	503
	EL										
4	Dodge Road Proposed Middle In Driveway										
	SR										
	ST										
	SL										
	WR					5%		2		2	2
	WT	361	368	18	386	10%	20%	5	17	22	408
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	458	467	11	478	15%	20%	7	17	24	502
	EL					10%		5		5	5
5	Dodge Road Proposed South Driveway										
	SR						20%		17	17	17
	ST										
	SL						25%		21	21	21
	WR					30%		14		14	14
	WT	361	368	18	386	15%		7		7	393
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	458	467	11	478		20%		17	17	495
	EL					15%		7		7	7
6	Dodge Road North Forest Road										
	SR										
	ST										
	SL										
	WR										
	WT	323	329	18	347	30%		14		14	361
	WL	102	104		104						104
	NR	20	20		20						20
	NT										
	NL	38	39		39	15%		7		7	46
	ER	170	173		173		15%		13	13	186
	ET	288	294	11	305		30%		26	26	331
	EL										

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PROPOSED MUIR WOODS SECTION A
TOWN OF AMHERST, NY
PM PEAK

Fig 3 Fig 4 Fig 6 Fig 7 Fig 8

Num of yrs: 2

LOCATION NUMBER	INTERSECTION DESCRIPTION	2020 Existing Volume	2022 Bkgd Vol 1.00%	Muir Woods Site B	2022 Bkgrd Volume	Proposed Muir Woods Section A Enter Dist. %	Proposed Muir Woods Section A Exit Dist. %	Proposed Muir Woods Section A Trips IN 106	Proposed Muir Woods Section A Trips OUT 82	Total Site Trips	FULL Build Volumes
1	Sweet Home Road Dodge Road/Commerce Drive										
	SR	10	10		10						10
	ST	940	959	21	980						980
	SL	60	61		61	20%		21		21	82
	WR	150	153		153		20%		16	16	169
	WT	60	61		61		10%		8	8	69
	WL	75	77		77		25%		21	21	98
	NR	125	128		128	25%		27		27	155
	NT	740	755	13	768						768
	NL	175	179		179						179
	ER	260	265		265						265
	ET	150	153		153	10%		11		11	164
	EL	25	26		26						26
2	Dodge Road Proposed North Driveway										
	SR						25%		21	21	21
	ST										
	SL						15%		12	12	12
	WR					10%		11		11	11
	WT	389	397	32	429		30%		25	25	454
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	339	346	13	359	25%		27		27	386
	EL					30%		32		32	32
3	Dodge Road Proposed Middle Out Driveway										
	SR						10%		8	8	8
	ST										
	SL						5%		4	4	4
	WR										
	WT	389	397	32	429	10%	15%	11	12	23	452
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	339	346	13	359	25%	15%	27	12	39	398
	EL										
4	Dodge Road Proposed Middle In Driveway										
	SR										
	ST										
	SL										
	WR					5%		5		5	5
	WT	389	397	32	429	10%	20%	11	16	27	456
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	339	346	13	359	15%	20%	16	16	32	391
	EL					10%		11		11	11
5	Dodge Road Proposed South Driveway										
	SR						20%		16	16	16
	ST										
	SL						25%		21	21	21
	WR					30%		32		32	32
	WT	389	397	32	429	15%		16		16	445
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	339	346	13	359		20%		16	16	375
	EL					15%		16		16	16
6	Dodge Road North Forest Road										
	SR										
	ST										
	SL										
	WR										
	WT	268	273	32	305	30%		32		32	337
	WL	30	31		31						31
	NR	68	69		69						69
	NT										
	NL	121	123		123	15%		16		16	139
	ER	81	83		83		15%		12	12	95
	ET	258	263	13	276		30%		25	25	301
	EL										

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SWEET HOME/DODGE/COMMERCE

1.d

Phase Times (next/2/2/2, next/2/2/7/6) E/W									
	1	2	3	4	5	6 SB	7	8	
Movement	SBL	NB			NBL	[redacted]		[redacted]	
Minimum Green	10	40	0	0	10	40	0	15	0 - 255 sec.
Passage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 sec.
Yellow	3.2	4.3	0.0	0.0	3.2	4.3	0.0	3.9	0.0 - 25.5 sec.
Red Clearance	1.1	1.4	0.0	0.0	1.1	1.4	0.0	1.8	0.0 - 25.5 sec. or 0 - 255 sec.
Max 1	20	45	0	0	20	45	0	30	0 - 255 sec
Max 2	0	0	0	0	0	0	0	0	0 - 255 sec
Walk	0	7	0	0	0	7	0	7	0 - 255 sec
Ped Clear	0	15	0	0	0	15	0	15	0 - 255 sec
Seconds Per Actuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 sec.
Time Before Reduction	0	0	0	0	0	0	0	0	0 - 255 sec
Time to Reduce	0	0	0	0	0	0	0	0	0 - 255 sec
Minimum Gap	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0 - 25.5 sec.
Max Variable Initial	0	0	0	0	0	0	0	0	0 - 255 sec
Max Extend	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 sec.
Auto Max	0	0	0	0	0	0	0	0	0 - 255 sec
Inhibit Min Yellow									X = On
Red Decimal Off									X = On

Other Controller Functions (next/2/2/9)									
Phase -->	1	2	3	4	5	6	7	8	
Inhibit Simultaneous Gap Out									X = On
Last Car Passage	2	0 = recall phase, 1 = last car passage, 2 = NOT recall - Not last car passage							
Red Revert (+2seconds)	0.0	0 - 25.5 sec.							
Auto Ped Clear		X = On							
Flashing Don't Walk Thru Yellow		X = On							
Soft Recall / Red Rest Delay	0.0	0 - 25.5 sec.							
Change Sequence	X	X = On (After a download with a power on - off cycle)							
Phase -->	1	2	3	4	5	6	7	8	
Red Clear Extension Detector	0	0	0	0	0	0	0	0	0 = none 1 - 32 = detector 1 - 32
Red Clear Extension Red Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0 - 25.5 sec.

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A3

Level of Service: Criteria and Definitions

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Level of Service Criteria

Highway Capacity Manual 2016

SIGNALIZED INTERSECTIONS

Level of Service is a qualitative measure describing operational conditions within a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. Level of Service for signalized intersections is defined in terms of delay specifically, average total delay per vehicle for a 15 minute analysis period. The ranges are as follows:

Level of Service	Control Delay per vehicle (seconds)
A	< 10
B	10 – 20
C	20 – 35
D	35 – 55
E	55 – 80
F	>80

UNSIGNALIZED INTERSECTIONS

Level of Service for unsignalized intersections is also defined in terms of delay. However, the delay criteria are different from a signalized intersection. The primary reason for this is driver expectation that a signalized intersection is designed to carry higher volumes than an unsignalized intersection. The total delay threshold for any given Level of Service is less for an unsignalized intersection than for a signalized intersection. The ranges are as follows:

Level of Service	Control Delay per vehicle (seconds)
A	< 10
B	10 – 15
C	15 – 25
D	25 – 35
E	35 - 50
F	>50

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A4

Level of Service Calculations: Existing Conditions

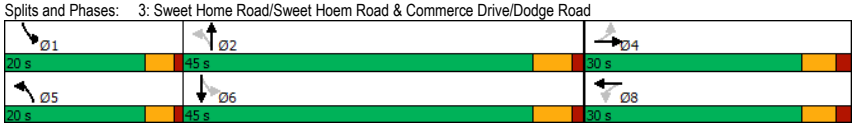
Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	30	50	26	364	58	211	450	100	297	883	8
Future Volume (vph)	10	30	50	26	364	58	211	450	100	297	883	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.906			0.979			0.973			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1128	1434	0	1612	1839	0	1703	3366	0	1787	3502	0
Flt Permitted	0.163			0.693			0.117			0.308		
Satd. Flow (perm)	194	1434	0	1176	1839	0	210	3366	0	579	3502	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		62			8			34			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	60%	0%	32%	12%	1%	2%	6%	4%	6%	1%	3%	0%
Adj. Flow (vph)	12	37	62	32	449	72	260	556	123	367	1090	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	99	0	32	521	0	260	679	0	367	1100	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.5	24.5		24.5	24.5		49.5	34.2		49.0	34.0	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.56	0.39		0.56	0.39	
v/c Ratio	0.23	0.22		0.10	1.01		0.74	0.51		0.72	0.82	
Control Delay	40.5	14.2		27.7	76.4		31.5	20.9		17.6	30.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	40.5	14.2		27.7	76.4		31.5	20.9		17.6	30.0	
LOS	D	B		C	E		C	C		B	C	
Approach Delay		17.0			73.5			23.8			26.9	
Approach LOS		B			E			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 88.2			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 34.0		Intersection LOS: C	
Intersection Capacity Utilization 72.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	288	170	102	323	38	20
Future Volume (vph)	288	170	102	323	38	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.950				0.953	
Flt Protected				0.988	0.968	
Satd. Flow (prot)	1783	0	0	1863	1753	0
Flt Permitted				0.988	0.968	
Satd. Flow (perm)	1783	0	0	1863	1753	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Adj. Flow (vph)	374	221	132	419	49	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	595	0	0	551	75	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.5%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	288	170	102	323	38	20
Future Vol, veh/h	288	170	102	323	38	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	374	221	132	419	49	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	595	0	1168	485
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	683	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	991	-	216	586
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	505	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	991	-	178	586
Mov Cap-2 Maneuver	-	-	-	-	178	-
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	417	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	27.5
HCM LOS			D

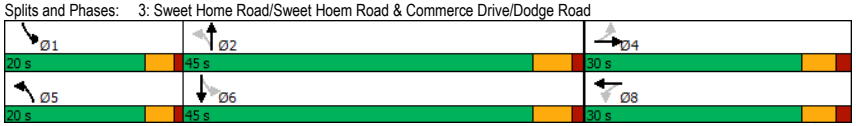
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	234	-	-	991	-
HCM Lane V/C Ratio	0.322	-	-	0.134	-
HCM Control Delay (s)	27.5	-	-	9.2	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.3	-	-	0.5	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	150	260	75	60	150	175	740	125	60	940	10
Future Volume (vph)	25	150	260	75	60	150	175	740	125	60	940	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.905			0.893			0.978			0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1530	1696	0	1805	1675	0	1612	3476	0	1805	3567	0
Flt Permitted	0.435			0.164			0.095			0.188		
Satd. Flow (perm)	700	1696	0	312	1675	0	161	3476	0	357	3567	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		88			127			24			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	18%	2%	1%	0%	2%	1%	12%	1%	5%	0%	1%	0%
Adj. Flow (vph)	33	197	342	99	79	197	230	974	164	79	1237	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	539	0	99	276	0	230	1138	0	79	1250	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.4	24.4		24.4	24.4		55.8	45.4		45.0	36.6	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.62	0.50		0.50	0.41	
v/c Ratio	0.17	1.03		1.18	0.51		0.73	0.65		0.27	0.86	
Control Delay	30.3	77.7		191.3	19.3		32.4	18.8		10.1	32.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	30.3	77.7		191.3	19.3		32.4	18.8		10.1	32.2	
LOS	C	E		F	B		C	B		B	C	
Approach Delay		75.0			64.7			21.1			30.9	
Approach LOS		E			E			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 90.3			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 37.6		Intersection LOS: D	
Intersection Capacity Utilization 81.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	258	81	30	268	121	68
Future Volume (vph)	258	81	30	268	121	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.968				0.951	
Flt Protected				0.995	0.969	
Satd. Flow (prot)	1839	0	0	1890	1751	0
Flt Permitted				0.995	0.969	
Satd. Flow (perm)	1839	0	0	1890	1751	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	344	108	40	357	161	91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	452	0	0	397	252	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.1%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	6.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	258	81	30	268	121	68
Future Vol, veh/h	258	81	30	268	121	68
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	344	108	40	357	161	91

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	452	0	835	398
Stage 1	-	-	-	-	398	-
Stage 2	-	-	-	-	437	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1119	-	340	656
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	655	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1119	-	325	656
Mov Cap-2 Maneuver	-	-	-	-	325	-
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	626	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	28.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	397	-	-	1119	-
HCM Lane V/C Ratio	0.635	-	-	0.036	-
HCM Control Delay (s)	28.6	-	-	8.3	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	4.2	-	-	0.1	-

A5

Level of Service Calculations: Background Conditions

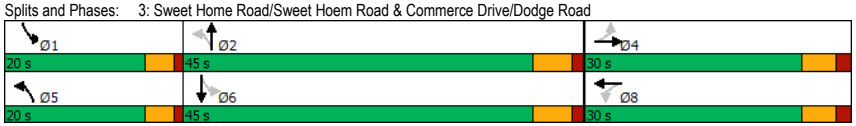
Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	31	51	27	371	59	215	470	102	303	916	8
Future Volume (vph)	10	31	51	27	371	59	215	470	102	303	916	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.906			0.979			0.973			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1128	1435	0	1612	1839	0	1703	3366	0	1787	3502	0
Flt Permitted	0.163			0.692			0.112			0.298		
Satd. Flow (perm)	194	1435	0	1174	1839	0	201	3366	0	561	3502	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		63			8			33			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	60%	0%	32%	12%	1%	2%	6%	4%	6%	1%	3%	0%
Adj. Flow (vph)	12	38	63	33	458	73	265	580	126	374	1131	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	101	0	33	531	0	265	706	0	374	1141	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.5	24.5		24.5	24.5		51.2	35.6		50.2	35.1	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.57	0.40		0.56	0.39	
v/c Ratio	0.23	0.23		0.10	1.05		0.75	0.52		0.75	0.83	
Control Delay	41.1	14.3		28.0	86.8		33.3	21.0		19.0	30.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	41.1	14.3		28.0	86.8		33.3	21.0		19.0	30.8	
LOS	D	B		C	F		C	C		B	C	
Approach Delay		17.1			83.4			24.3			27.9	
Approach LOS		B			F			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 89.6			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.05			
Intersection Signal Delay: 36.3		Intersection LOS: D	
Intersection Capacity Utilization 73.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	305	173	104	347	39	20
Future Volume (vph)	305	173	104	347	39	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.951				0.954	
Flt Protected				0.989	0.968	
Satd. Flow (prot)	1784	0	0	1865	1755	0
Flt Permitted				0.989	0.968	
Satd. Flow (perm)	1784	0	0	1865	1755	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Adj. Flow (vph)	396	225	135	451	51	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	621	0	0	586	77	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.0%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	305	173	104	347	39	20
Future Vol, veh/h	305	173	104	347	39	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	396	225	135	451	51	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	621	0	1230	509
Stage 1	-	-	-	-	509	-
Stage 2	-	-	-	-	721	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	969	-	198	568
Stage 1	-	-	-	-	608	-
Stage 2	-	-	-	-	485	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	969	-	161	568
Mov Cap-2 Maneuver	-	-	-	-	161	-
Stage 1	-	-	-	-	608	-
Stage 2	-	-	-	-	395	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	31.1
HCM LOS			D

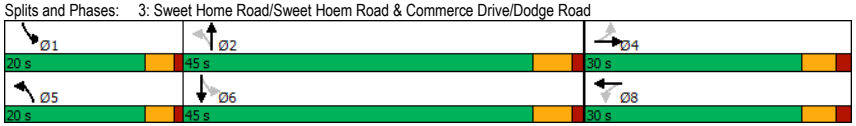
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	213	-	-	969	-
HCM Lane V/C Ratio	0.36	-	-	0.139	-
HCM Control Delay (s)	31.1	-	-	9.3	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.5	-	-	0.5	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	153	265	77	61	153	179	768	128	61	980	10
Future Volume (vph)	26	153	265	77	61	153	179	768	128	61	980	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.905			0.893			0.979			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1530	1696	0	1805	1675	0	1612	3480	0	1805	3571	0
Flt Permitted	0.421			0.164			0.093			0.174		
Satd. Flow (perm)	678	1696	0	312	1675	0	158	3480	0	331	3571	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		88			128			24			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	18%	2%	1%	0%	2%	1%	12%	1%	5%	0%	1%	0%
Adj. Flow (vph)	34	201	349	101	80	201	236	1011	168	80	1289	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	550	0	101	281	0	236	1179	0	80	1302	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.4	24.4		24.4	24.4		57.2	46.6		46.2	37.7	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.62	0.51		0.50	0.41	
v/c Ratio	0.19	1.07		1.23	0.52		0.75	0.66		0.29	0.89	
Control Delay	30.9	88.5		206.8	19.9		34.3	19.2		10.3	33.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	30.9	88.5		206.8	19.9		34.3	19.2		10.3	33.8	
LOS	C	F		F	B		C	B		B	C	
Approach Delay		85.1			69.3			21.7			32.5	
Approach LOS		F			E			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 91.6			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.23			
Intersection Signal Delay: 40.3		Intersection LOS: D	
Intersection Capacity Utilization 83.7%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	276	83	31	305	123	69
Future Volume (vph)	276	83	31	305	123	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.969				0.951	
Flt Protected				0.995	0.969	
Satd. Flow (prot)	1841	0	0	1890	1751	0
Flt Permitted				0.995	0.969	
Satd. Flow (perm)	1841	0	0	1890	1751	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	368	111	41	407	164	92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	479	0	0	448	256	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.4%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	8.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	276	83	31	305	123	69
Future Vol, veh/h	276	83	31	305	123	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	368	111	41	407	164	92

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	479	0	913	424
Stage 1	-	-	-	-	424	-
Stage 2	-	-	-	-	489	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1094	-	306	634
Stage 1	-	-	-	-	664	-
Stage 2	-	-	-	-	621	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1094	-	291	634
Mov Cap-2 Maneuver	-	-	-	-	291	-
Stage 1	-	-	-	-	664	-
Stage 2	-	-	-	-	591	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	35.9
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	361	-	-	1094	-
HCM Lane V/C Ratio	0.709	-	-	0.038	-
HCM Control Delay (s)	35.9	-	-	8.4	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	5.2	-	-	0.1	-

A6

Level of Service Calculations: Full Build Conditions

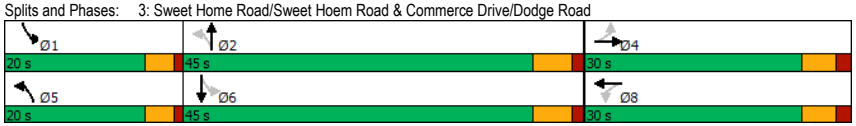
Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	36	51	48	380	76	215	470	114	312	916	8
Future Volume (vph)	10	36	51	48	380	76	215	470	114	312	916	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		150	0		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.912			0.975			0.971			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1128	1458	0	1612	1831	0	1703	3358	0	1787	3502	0
Flt Permitted	0.163			0.688			0.113			0.285		
Satd. Flow (perm)	194	1458	0	1167	1831	0	203	3358	0	536	3502	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		63			10			38			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	60%	0%	32%	12%	1%	2%	6%	4%	6%	1%	3%	0%
Adj. Flow (vph)	12	44	63	59	469	94	265	580	141	385	1131	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	107	0	59	563	0	265	721	0	385	1141	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.5	24.5		24.5	24.5		50.8	35.3		50.5	35.1	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.57	0.39		0.56	0.39	
v/c Ratio	0.23	0.24		0.18	1.11		0.75	0.54		0.77	0.83	
Control Delay	41.1	15.0		29.3	106.8		33.3	21.2		21.2	30.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	41.1	15.0		29.3	106.8		33.3	21.2		21.2	30.7	
LOS	D	B		C	F		C	C		C	C	
Approach Delay		17.7			99.5			24.5			28.3	
Approach LOS		B			F			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 89.6			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 40.4		Intersection LOS: D	
Intersection Capacity Utilization 75.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	331	186	104	361	46	20
Future Volume (vph)	331	186	104	361	46	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.951				0.959	
Flt Protected				0.989	0.966	
Satd. Flow (prot)	1784	0	0	1865	1760	0
Flt Permitted				0.989	0.966	
Satd. Flow (perm)	1784	0	0	1865	1760	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Adj. Flow (vph)	430	242	135	469	60	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	672	0	0	604	86	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.3%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	331	186	104	361	46	20
Future Vol, veh/h	331	186	104	361	46	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	430	242	135	469	60	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	672	0	1290	551
Stage 1	-	-	-	-	551	-
Stage 2	-	-	-	-	739	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	928	-	182	538
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	476	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	928	-	146	538
Mov Cap-2 Maneuver	-	-	-	-	146	-
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	382	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	39.6
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	187	-	-	928	-
HCM Lane V/C Ratio	0.458	-	-	0.146	-
HCM Control Delay (s)	39.6	-	-	9.5	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	2.2	-	-	0.5	-

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	14	490	412	5	13	21
Future Volume (vph)	14	490	412	5	13	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999		0.916	
Flt Protected		0.999			0.981	
Satd. Flow (prot)	0	1861	1861	0	1674	0
Flt Permitted		0.999			0.981	
Satd. Flow (perm)	0	1861	1861	0	1674	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		240	235		405	
Travel Time (s)		5.5	5.3		9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	533	448	5	14	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	548	453	0	37	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.6

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	14	490	412	5	13	21
Future Vol, veh/h	14	490	412	5	13	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	533	448	5	14	23

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	453	0	-	0	1014	451
Stage 1	-	-	-	-	451	-
Stage 2	-	-	-	-	563	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1108	-	-	-	264	608
Stage 1	-	-	-	-	642	-
Stage 2	-	-	-	-	570	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1108	-	-	-	259	608
Mov Cap-2 Maneuver	-	-	-	-	259	-
Stage 1	-	-	-	-	630	-
Stage 2	-	-	-	-	570	-

Approach	SE	NW	SW
HCM Control Delay, s	0.2	0	14.9
HCM LOS			B

Minor Lane/Major Mvmt	NWT	NWR	SEL	SETSWLn1	
Capacity (veh/h)	-	-	1108	-	401
HCM Lane V/C Ratio	-	-	0.014	-	0.092
HCM Control Delay (s)	-	-	8.3	0	14.9
HCM Lane LOS	-	-	A	A	B
HCM 95th %tile Q(veh)	-	-	0	-	0.3

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	0	503	403	0	4	9
Future Volume (vph)	0	503	403	0	4	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.904	
Flt Protected					0.986	
Satd. Flow (prot)	0	1863	1863	0	1660	0
Flt Permitted					0.986	
Satd. Flow (perm)	0	1863	1863	0	1660	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		235	240		378	
Travel Time (s)		5.3	5.5		8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	547	438	0	4	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	547	438	0	14	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.2

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	0	503	403	0	4	9
Future Vol, veh/h	0	503	403	0	4	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	547	438	0	4	10

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	985	438
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	547	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	275	619
Stage 1	0	-	-	0	651	-
Stage 2	0	-	-	0	580	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	275	619
Mov Cap-2 Maneuver	-	-	-	-	275	-
Stage 1	-	-	-	-	651	-
Stage 2	-	-	-	-	580	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	NWT	SETSWLn1
Capacity (veh/h)	-	- 447
HCM Lane V/C Ratio	-	- 0.032
HCM Control Delay (s)	-	- 13.3
HCM Lane LOS	-	- B
HCM 95th %tile Q(veh)	-	- 0.1

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	5	502	408	2	0	0
Future Volume (vph)	5	502	408	2	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999			
Flt Protected						
Satd. Flow (prot)	0	1863	1861	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	1861	0	0	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		240	291		382	
Travel Time (s)		5.5	6.6		8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	546	443	2	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	551	445	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.7%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	7	495	393	14	21	17
Future Volume (vph)	7	495	393	14	21	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.995		0.941	
Flt Protected		0.999			0.973	
Satd. Flow (prot)	0	1861	1853	0	1706	0
Flt Permitted		0.999			0.973	
Satd. Flow (perm)	0	1861	1853	0	1706	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		291	117		311	
Travel Time (s)		6.6	2.7		7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	538	427	15	23	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	546	442	0	41	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 41.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.7

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	7	495	393	14	21	17
Future Vol, veh/h	7	495	393	14	21	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	538	427	15	23	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	442	0	-	0	989	435
Stage 1	-	-	-	-	435	-
Stage 2	-	-	-	-	554	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1118	-	-	-	274	621
Stage 1	-	-	-	-	653	-
Stage 2	-	-	-	-	575	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1118	-	-	-	271	621
Mov Cap-2 Maneuver	-	-	-	-	271	-
Stage 1	-	-	-	-	646	-
Stage 2	-	-	-	-	575	-

Approach	SE	NW	SW
HCM Control Delay, s	0.1	0	16.2
HCM LOS			C

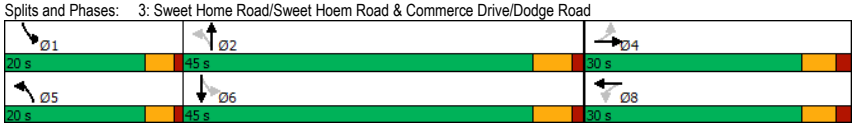
Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	1118	-	362
HCM Lane V/C Ratio	-	-	0.007	-	0.114
HCM Control Delay (s)	-	-	8.2	0	16.2
HCM Lane LOS	-	-	A	A	C
HCM 95th %tile Q(veh)	-	-	0	-	0.4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	164	265	98	69	169	179	768	155	82	980	10
Future Volume (vph)	26	164	265	98	69	169	179	768	155	82	980	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		150	0		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.907			0.894			0.975			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1530	1700	0	1805	1677	0	1612	3462	0	1805	3571	0
Flt Permitted	0.369			0.164			0.093			0.153		
Satd. Flow (perm)	594	1700	0	312	1677	0	158	3462	0	291	3571	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		82			124			30			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	18%	2%	1%	0%	2%	1%	12%	1%	5%	0%	1%	0%
Adj. Flow (vph)	34	216	349	129	91	222	236	1011	204	108	1289	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	565	0	129	313	0	236	1215	0	108	1302	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.4	24.4		24.4	24.4		57.1	45.8		47.0	37.7	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.62	0.50		0.51	0.41	
v/c Ratio	0.22	1.10		1.57	0.58		0.75	0.70		0.39	0.88	
Control Delay	32.1	100.2		333.9	22.9		34.8	20.5		11.9	33.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	32.1	100.2		333.9	22.9		34.8	20.5		11.9	33.7	
LOS	C	F		F	C		C	C		B	C	
Approach Delay		96.4			113.7			22.8			32.0	
Approach LOS		F			F			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 91.5			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.57			
Intersection Signal Delay: 47.7		Intersection LOS: D	
Intersection Capacity Utilization 85.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	301	95	31	337	139	69
Future Volume (vph)	301	95	31	337	139	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.968				0.955	
Flt Protected				0.996	0.968	
Satd. Flow (prot)	1839	0	0	1892	1756	0
Flt Permitted				0.996	0.968	
Satd. Flow (perm)	1839	0	0	1892	1756	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	401	127	41	449	185	92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	528	0	0	490	277	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	13

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	301	95	31	337	139	69
Future Vol, veh/h	301	95	31	337	139	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	401	127	41	449	185	92

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	528	0	996	465
Stage 1	-	-	-	-	465	-
Stage 2	-	-	-	-	531	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1049	-	273	602
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	594	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1049	-	259	602
Mov Cap-2 Maneuver	-	-	-	-	259	-
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	563	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	59.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	319	-	-	1049	-
HCM Lane V/C Ratio	0.869	-	-	0.039	-
HCM Control Delay (s)	59.6	-	-	8.6	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	7.9	-	-	0.1	-

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	32	386	454	11	12	21
Future Volume (vph)	32	386	454	11	12	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.997		0.914	
Flt Protected		0.996			0.982	
Satd. Flow (prot)	0	1855	1857	0	1672	0
Flt Permitted		0.996			0.982	
Satd. Flow (perm)	0	1855	1857	0	1672	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		240	235		405	
Travel Time (s)		5.5	5.3		9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	420	493	12	13	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	455	505	0	36	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 56.8%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.9

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	32	386	454	11	12	21
Future Vol, veh/h	32	386	454	11	12	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	420	493	12	13	23

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	505	0	-	0	989	499
Stage 1	-	-	-	-	499	-
Stage 2	-	-	-	-	490	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1060	-	-	-	274	572
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	616	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1060	-	-	-	262	572
Mov Cap-2 Maneuver	-	-	-	-	262	-
Stage 1	-	-	-	-	584	-
Stage 2	-	-	-	-	616	-

Approach	SE	NW	SW
HCM Control Delay, s	0.7	0	14.9
HCM LOS			B

Minor Lane/Major Mvmt	NWT	NWR	SEL	SETSWLn1
Capacity (veh/h)	-	-	1060	- 400
HCM Lane V/C Ratio	-	-	0.033	- 0.09
HCM Control Delay (s)	-	-	8.5	0 14.9
HCM Lane LOS	-	-	A	A B
HCM 95th %tile Q(veh)	-	-	0.1	- 0.3

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑		Y	
Traffic Volume (vph)	0	398	452	0	4	8
Future Volume (vph)	0	398	452	0	4	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.907	
Flt Protected					0.985	
Satd. Flow (prot)	0	1863	1863	0	1664	0
Flt Permitted					0.985	
Satd. Flow (perm)	0	1863	1863	0	1664	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		235	240		378	
Travel Time (s)		5.3	5.5		8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	433	491	0	4	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	433	491	0	13	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.2

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑		Y	
Traffic Vol, veh/h	0	398	452	0	4	8
Future Vol, veh/h	0	398	452	0	4	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	433	491	0	4	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	924	491
Stage 1	-	-	-	-	491	-
Stage 2	-	-	-	-	433	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	299	578
Stage 1	0	-	-	0	615	-
Stage 2	0	-	-	0	654	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	299	578
Mov Cap-2 Maneuver	-	-	-	-	299	-
Stage 1	-	-	-	-	615	-
Stage 2	-	-	-	-	654	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	13.4
HCM LOS			B

Minor Lane/Major Mvmt	NWT	SETSWLn1
Capacity (veh/h)	-	- 441
HCM Lane V/C Ratio	-	- 0.03
HCM Control Delay (s)	-	- 13.4
HCM Lane LOS	-	- B
HCM 95th %tile Q(veh)	-	- 0.1

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	11	391	456	5	0	0
Future Volume (vph)	11	391	456	5	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999			
Flt Protected		0.999				
Satd. Flow (prot)	0	1861	1861	0	0	0
Flt Permitted		0.999				
Satd. Flow (perm)	0	1861	1861	0	0	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		240	291		382	
Travel Time (s)		5.5	6.6		8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	425	496	5	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	437	501	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.8%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	16	375	445	32	21	16
Future Volume (vph)	16	375	445	32	21	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.991		0.943	
Flt Protected		0.998			0.972	
Satd. Flow (prot)	0	1859	1846	0	1707	0
Flt Permitted		0.998			0.972	
Satd. Flow (perm)	0	1859	1846	0	1707	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		291	117		311	
Travel Time (s)		6.6	2.7		7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	408	484	35	23	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	425	519	0	40	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 42.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.8

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	16	375	445	32	21	16
Future Vol, veh/h	16	375	445	32	21	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	408	484	35	23	17

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	519	0	-	0	944	502
Stage 1	-	-	-	-	502	-
Stage 2	-	-	-	-	442	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1047	-	-	-	291	569
Stage 1	-	-	-	-	608	-
Stage 2	-	-	-	-	648	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1047	-	-	-	285	569
Mov Cap-2 Maneuver	-	-	-	-	285	-
Stage 1	-	-	-	-	595	-
Stage 2	-	-	-	-	648	-

Approach	SE	NW	SW
HCM Control Delay, s	0.3	0	16.1
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	1047	-	363
HCM Lane V/C Ratio	-	-	0.017	-	0.111
HCM Control Delay (s)	-	-	8.5	0	16.1
HCM Lane LOS	-	-	A	A	C
HCM 95th %tile Q(veh)	-	-	0.1	-	0.4

Packet P

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STORMWATER POLLUTION PREVENTION PLAN for CONSTRUCTION ACTIVITIES

Sawyer's Landing

Dodge & Sweet Home Road
Town of Amherst, Erie County, New York

Prepared for

Sawyer's Landing LLC

c/o Severyn Development
43 Central Ave Suite #300
Lancaster, NY 14086

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February 2021



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

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101 SCOPE

A. **PURPOSE:** Sawyer's Landing LLC (SL) has placed an emphasis on following the New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit for Stormwater Discharges from Construction Activity governing storm water discharges during construction, and in accordance with erosion control practices. The Contractor's participation in this program is mandatory and its non-compliance is subject to various remedies, including without limitation, monetary set-offs, withholding payments; reimbursement for costs, expenses (including reasonable attorney's fees), fines and civil penalties incurred by SL; and/or liquidated damages. This section provides a descriptive explanation of SL's Storm Water Pollution Prevention Program and required Contractor participation.

The Engineer of record for this project certifies that this SWPPP meets the requirements and is in compliance with the New York State Stormwater Management Design Manual and latest NYSDEC Phase II stormwater regulation requirements.

B. **SPDES General Permit for Stormwater Discharges from Construction Activity:** Regulations promulgated by the NYSDEC to regulate the discharge of storm water from construction activities on sites where more than one (1) acre of soil is disturbed. One of the ways to comply with these regulations for affected sites is to request coverage under the General Permit for Construction Activities for New York State. In order to use the General Permit, a Notice of Intent (NOI) form must be completed and electronically submitted to the NYSDEC at least 5 business days prior to any earth-disturbing activities (this time frame may increase to 60 business days if a full review of the SWPPP is determined necessary by the NYSDEC) and a Storm Water Pollution Prevention Plan (SWPPP) for the site must be prepared and followed during the construction activities. Once a copy of the SPDES permit is received from NYSDEC after filing, it will be included in Appendix L of this report.

Approval from a regulated, traditional land use control MS4:

1. An **owner or operator** of a construction activity that is <u>not</u> subject to the requirements of a regulated, traditional land use control MS4 must first develop a SWPPP in accordance with all applicable requirements of this permit and then submit a completed NOI form to the NYSDEC.

2. An **owner or operator** of a construction activity that is subject to the requirements of a regulated, traditional land use control MS4 must first

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develop a SWPPP in accordance with all applicable requirements of this permit and then have its SWPPP reviewed and accepted by the MS4 prior to submitting the NOI to the NYSDEC. The **owner or operator** shall have the "MS4 SWPPP Acceptance" form signed by the principal executive officer or ranking elected official from the regulated, traditional land use control MS4, or by a duly authorized representative of that person, and then submit that form along with the NOI to the address referenced under "Notice of Intent (NOI) Submittal".

C. **RESPONSIBILITIES OF THE CONTRACTOR:** The Contractor shall manage the discharge of storm water from the site in accordance with the NYSDEC General Permit for Construction Activities conditions and the following provisions of this section. The Operator shall be responsible for conducting the storm water management practices in accordance with the permit. The Contractor shall be responsible for providing **qualified inspector**s to conduct the inspections required by the SWPPP. The Contractor shall be responsible for any enforcement action taken or imposed by federal, state, or local agencies, including the cost of fines, construction delays, and remedial actions resulting from the Contractor's failure to comply with the permit provisions. It shall be the responsibility of the Contractor to make any changes to the SWPPP necessary when the Contractor or any of his subcontractors elects to use borrow or fill or material storage sites, either contiguous to or remote from the construction site, when such sites are used solely for this construction site. Such sites are considered to be part of the construction site covered by the permit and this SWPPP. Off-site borrow, fill, or material storage sites which are used for multiple construction projects are not subject to this requirement, unless specifically required by state or local jurisdictional entity regulations. The Contractor should consider this requirement in negotiating with earthwork subcontractors, since the choice of an off-site borrow, fill, or material storage site may impact their duty to implement, make changes to, and perform inspections required by the SWPPP for the site.

D. **NOTICE OF INTENT:** The Operator has petitioned the NYSDEC for coverage under the storm water discharges during construction at this site to be covered by the SPDES General Permit for Construction Activity for the State of New York. A Notice of Intent (NOI) for coverage under this permit has been filed by the Operator. The SWPPP must be prepared prior to submittal of the NOI form. The Operator will require the Contractor to be a co-permittee with the Operator. The Contractor will be required to post the NOI at the construction site along with any building permits.

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E. **CONTRACTOR CERTIFICATION & TRAINING:** Proof of Training/Certification of the Contractor's Designated individual shall be kept on site at all times.

F. **REQUIREMENTS FOR THE GENERAL CONTRACTOR AND SUBCONTRACTOR(S):** The General Contractor and Subcontractor(s) shall sign the "Contractor's Certification Statement" (located in the Appendix of this report) verifying they have been instructed on how to comply with and fully understand the requirements of the SPDES General Permit for Construction Activity for the State of New York and the SWPPP. These certifications must be signed, by a responsible corporate officer or other party meeting the "Signatory Requirements" of the SPDES General Permit, on behalf of each entity, prior to the beginning of any construction activities.

G. **STORM WATER POLLUTION PREVENTION PROGRAM LOCATION REQUIREMENTS:** The SWPPP is meant to be a working document that shall be maintained at the site of the Construction Activities at all times throughout the project, shall be readily available upon request by the Operator's personnel or NYSDEC or any other agency with regulatory authority over storm water issues, and shall be kept on-site until the site complies with the Final Stabilization section of this document. A sign or other notice must be posted near the main entrance of the construction site which contains a completed NOI, the location of the SWPPP and the name and phone number of a contact person responsible for scheduling SWPPP viewing times, and any other state specific requirements.

H. **INSPECTIONS AND RECORD-KEEPING:**

A. **General Construction Site Inspection and Maintenance Requirements**

1. The **owner or operator** must ensure that all erosion and sediment control practices and all post-construction stormwater management practices identified in the SWPPP are maintained in effective operating condition at all times.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York, or protect the public health and safety and/or the environment.

B. **Owner or operator Maintenance Inspection Requirements**

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1. The **owner or operator** shall inspect, in accordance with the requirements in the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, the erosion and sediment controls identified in the SWPPP to ensure that they are being maintained in effective operating condition at all times.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the **owner or operator** can stop conducting the maintenance inspections. The **owner or operator** shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of the General Permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the **owner or operator** can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved final stabilization and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. **Qualified inspector Inspection Requirements**

The **owner or operator** shall have a **qualified inspector** conduct site inspections in conformance with the following requirements:

Note: The **trained contractor** identified in Part III.A.6 of the General Permit **cannot** conduct the **qualified inspector** site inspections unless they meet the **qualified inspector** qualifications included in Appendix A of the General Permit. In order to perform these inspections, the trained contractor would have to be a:

- Licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- Registered Landscape Architect, or
- Someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape

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Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity.

1. A **qualified inspector** shall conduct site inspections for all construction activities identified in Tables 1 and 2 of Appendix B of the General Permit, with the exception of:

   a. The construction of a single family residential subdivision with 25% or less impervious cover at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C of the General Permit and not directly discharging to one of the 303(d) segments listed in Appendix E of the General Permit;

   b. The construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E of the General Permit;

   c. Construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

   d. Construction activities located in the watersheds identified in Appendix D of the General Permit that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the **qualified inspector** shall conduct site inspections in accordance with the following timetable:

   a. For construction sites where soil disturbance activities are on-going, the **qualified inspector** shall conduct a site inspection at least once every seven (7) calendar days.

   b. For construction sites where soil disturbance activities are on-going and the **owner or operator** has received authorization in accordance with Part II.C.3 of the General Permit to **disturb greater than five (5) acres** of soil at any one time, the **qualified inspector**

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shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

c. For construction sites where soil disturbance activities have been **temporarily suspended (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas**, the **qualified inspector** shall conduct a site inspection at least once every thirty (30) calendar days. The **owner or operator** shall notify the Regional Office stormwater contact person (see contact information in Appendix F of the General Permit) or, in areas under the jurisdiction of a regulated, traditional land use control MS4, the MS4 (provided the MS4 is not the **owner or operator** of the construction activity) in writing prior to reducing the frequency of inspections.

d. For construction sites where **soil disturbance activities have been shut down with partial project completion**, the **qualified inspector** can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved final stabilization and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The **owner or operator** shall notify the Regional Office stormwater contact person or, in areas under the jurisdiction of a regulated, traditional land use control MS4, the MS4 (provided the MS4 is not the **owner or operator** of the construction activity). in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the **owner or operator** shall have the **qualified inspector** perform a final inspection and certify that all disturbed areas have achieved final stabilization, and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "Final Stabilization" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The **owner or operator** shall then submit the completed NOT form to the address in Part II.A.1 of the General Permit.

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3. At a minimum, the **qualified inspector** shall inspect all erosion and sediment control practices to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved final stabilization, all points of discharge to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the construction site, and all points of discharge from the construction site.

4. The **qualified inspector** shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

   a. Date and time of inspection;

   b. Name and title of person(s) performing inspection;

   c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

   d. A description of the condition of the runoff at all points of discharge from the construction site. This shall include identification of any discharges of sediment from the construction site. Include discharges from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

   e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the construction site which receive runoff from disturbed areas. This shall include identification of any discharges of sediment to the surface waterbody;

   f. Identification of all erosion and sediment control practices that need repair or maintenance;

   g. Identification of all erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

   h. Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection;

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i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s); and

k. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The **qualified inspector** shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The **qualified inspector** shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The **qualified inspector** shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the **qualified inspector** shall notify the **owner or operator** and appropriate contractor or subcontractor identified in Part III.A.6. of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the **qualified inspector**. Pursuant to Part II.C.2 of the General Permit, the inspection reports shall be maintained on site with the SWPPP.

Record Retention - The **owner or operator** shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the site achieves final stabilization. This period may be extended by the Department, in its sole discretion, at any time upon written notification.

l. **SWPPP MODIFICATIONS:** The inspection report should also identify if any revisions to the SWPPP are warranted due to unexpected conditions. The SWPPP is meant

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to be a dynamic working guide that is to be kept current and amended whenever there is a change in design, construction, operation, or maintenance at the construction site that has or could have a significant effect on the discharge of pollutants or when the plan proves to be ineffective in eliminating or significantly minimizing pollutant discharges. The Contractor's failure to modify or report deficiencies to the Operator will result in the Contractor being liable for fines and construction delays resulting from any federal, state, or local agency enforcement action.

J. **FINAL STABILIZATION AND TERMINATION OF PERMIT COVERAGE:** A site can be considered finally stabilized when all soil disturbing activities have been completed and a uniform perennial vegetative cover with a density of **85%** for the unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures have been established and the facility no longer discharges storm water associated with construction activities and a Notice of Termination (NOT) form filed by the Operator(s) with the NYSDEC. The Operator's Project Manager must complete the NOT. The NOT must be signed by the signatory (or equivalent position) on the NOI and subsequently submitted to the appropriate agency. The Operator's Project Manager must provide a completed copy of the NOT to the Contractor for inclusion in the SWPPP, which will then be optically scanned into the final SWPPP document as required. This filing terminates coverage under the General Permit and terminates the Contractor's responsibility to implement the SWPPP, but the requirements of the SWPPP, including periodic inspections, must be continued until the NOT is filed. The **owner or operator** shall also have the **qualified inspector** perform a final site inspection prior to signing and submitting the NOT to the Department. The local MS4/Stormwater Management Officer must also sign the NOT and may require a final site inspection to be completed prior to. Final payment and/or the release of retainage will be withheld until all provisions of the SWPPP have been submitted, completed and accepted by the Operator.

102 PROJECT NAME AND LOCATION

Sawyer's Landing

Dodge Road

Town of Amherst, County of Erie, New York

Easting: 190681.1

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Northing: 4770798.8

Estimated Area of Site ≈ 17.4 acres

Estimated Area to be disturbed by Construction Activities ≈ 16.4 acres

A general location map is included as Appendix A.

103 OPERATOR'S NAME AND ADDRESS

Sawyer's Landing LLC

c/o Severyn Development

43 Central Avenue

Lancaster, NY 14086

Contact Person: William Severyn

Telephone: 716–818-0207

104 PROJECT DESCRIPTION

This project is a development of a 17.4 acre site located on the north side of Dodge Road, west of Sweet Home Road in the Town of Amherst. Both Dodge Road and Sweet Home Road are Erie County roads. Proposed is the construction of a mixed use development to include (2) 4-story buildings with a total of 30,000 sf of commercial and 100 apartments, (47) duplex lots and (2) 1-story apartment buildings with a total of 12 units. A bike trail will be constructed on site, this trail will connect to the existing Town of Amherst bike trail on the south side of Dodge Road. The approximately 1 acre westerly portion will remain undisturbed and be deed restricted as permanent open space. The site is currently undeveloped consisting of woods and overgrown brush/grass. NYSDEC and Federal wetlands were delineated on site by Earth Dimensions, Inc. Approximately 6.1 acres of Federal and 1.2 acres of NYSDEC wetlands have been permitted to be impacted. The proposed site development area to be disturbed for this project is approximately 16.4 acres.

Soil disturbing activities will include:

A. Construction of temporary construction exit points

B. Clearing & grubbing of the site within disturbance limits

C. Installation of detention basins, bioretention areas including topsoil & seed

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D. Installation of storm sewer pipes and inlets

E. Construction of utilities

F. Construction of curb and parking lot

G. Final grading & landscaping

H. Construction of building

This project is owned by Sawyer's Landing LLC and will be developed by the same. The work area consists of approximately 16.4 acres for which erosion and sediment controls have been developed and fully addressed in this written plan and the Erosion and Sediment Control Plans. See the construction documents for additional details.

105 RUNOFF COEFFICIENT, SOILS, AND RAINFALL INFORMATION

The initial runoff curve number for the pre-construction site is "CN" = 78. The post-construction runoff curve number for the site will be "CN" = 91. The site is 17.4 acres of which approximately 16.4 acres will be disturbed by construction activities.

See soils information located in Appendix H.

The site is in Erie County, which receives an average of approximately 45 inches rainfall annually with the highest amounts of rainfall received in the months of May thru September. Annual snow for this area is approximately 120 inches.

106 WATERS

The runoff generated from this site will discharge to the storm system on Dodge Road which is tributary to Ellicott Creek.

107 INDIAN COUNTRY LANDS

This project is not located on Indian Lands.

108 ENDANGERED AND THREATENED SPECIES

No endangered or threatened species have been determined to be on the site.

109 CRITICAL HABITAT

See section 108 above.

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110 HISTORIC PLACES

The assessed property is shown on the NYSHPO map as an archeologically sensitive area. A NYSHPO "no effect" letter is included in Appendix I.

111 WETLANDS AND/OR OTHER SURFACE WATERS

Federal and NYSDEC wetlands were delineated on site by Earth Dimensions, Inc. Approximately 6.1 acres of Federal and 1.2 acres of NYSDEC wetlands have been permitted to be impacted. The USACOE and NYSDEC wetland permits are included in Appendix K of this report.

112 EROSION AND SEDIMENT CONTROLS

112.1 STABILIZATION PRACTICES

Stabilization practices for this site include:

A. Land clearing activities shall be done only in areas where earthwork will be performed and shall progress as earthwork is needed.

B. Use of stabilization method for all slopes with a slope greater than 1V:3H.

C. Permanent seeding and planting of all unpaved areas using the hydromulching grass seeding technique.

D. Mulching exposed areas.

E. Vegetation preservation in undisturbed areas.

F. Frequent watering to minimize wind erosion during construction.

a. **For sites where 5 acres or more are disturbed at any one time**: In areas where soil disturbance activity has been temporarily or permanently ceased, temporary and/or permanent soil stabilization measures shall be installed and/or implemented within seven (7) days from the date the soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the most current version of the New York Standards and Specifications for Erosion and Sediment Control.

b. The **owner or operator** shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

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c. The **owner or operator** shall install any additional measures needed to protect water quality.

112.2 STRUCTURAL PRACTICES

Structural practices for this site include:

A. Inlet protection using a method detailed in the Construction Documents.

B. Perimeter protection using temporary silt fence/silt sock or silt sock.

C. Outlet protection using rip-rap stone and end sections.

D. Stabilized Construction Entrance.

E. Temporary stone wash off areas.

F. Storm sewer, curb/gutter.

G. Sediment traps and basins.

112.3 SEQUENCE OF MAJOR ACTIVITIES

The Contractor will be responsible for implementing the following erosion control and storm water management control measures. The Contractor may designate these tasks to certain subcontractors as he sees fit, but the ultimate responsibility for implementing these controls and ensuring their proper functioning remains with the Contractor. The order of activities will be as follows:

A. Construct temporary construction exits at locations shown on the Demolition & Erosion Control Plan Sheet.

B. Install perimeter silt fence/silt socks/silt sock in the locations shown on the Demolition & Erosion Control Plan Sheet.

C. Clear & Grub site.

D. Installation of detention basin to act as sediment basin.

E. Commence site grading.

F. If less than 5 acres of the site have been disturbed and construction activity has ceased for more than 14 days, temporarily seed and water to stabilize this area. If more than 5 acres of the site have been disturbed and construction activity has ceased for more than 7 days, temporarily seed and water to stabilize this area.

G. Installation of proposed utilities.

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H. Install base material as required for pavement/buildings.

I. Finalize pavement subgrade preparation.

J. Construction of buildings.

K. Construct all curb, drainage inlets, storm sewer pipes and storm sewer manholes, as shown on the plans. Install temporary inlet protection at the locations of all inlets.

L. Dust control.

L. Remove inlet protection around inlets and manholes no more than 48 hours prior to placing stabilized base course.

N. Carry out final grading and seeding and planting.

O. Install bioretention areas (do not install bioretention soil or underdrains until surrounding area is stabilized).

P. Clean storm system following construction, clean detention basin of any silt and return to design grades.

Q. Remove silt fencing/silt sock only after all paving is complete and exposed surfaces are stabilized.

R. Remove temporary construction exits only prior to pavement construction in these areas.

Note: Sediment control storage during construction (traps & basins) during construction shall be 134 cy per acre of disturbance per NYSDEC requirements.

112.4 STORM WATER MANAGEMENT

The existing site is generally flat and slopes west with portions sloping east. The portion that slopes west settles in a low area and once the capacity of that area is exceeded, sheet flow continues towards Sweet Home Road and is collected by an existing 12" pipe on the north side of Dodge Road. This pipe flows to the Erie County system on Sweet Home Road. The portion that flows east flows to the offsite wetlands.

Currently Dodge Road does not have a drainage system. A series of catch basins and pipes will be installed in the green area on the north side of Dodge Road to collect the road drainage. The west portion of this system will connect to the existing closed drainage system on Sweet Home Road. The east portion will discharge to the Ellicott Creek diversion channel using and existing discharge point. This new system will also convey the proposed discharge from the site as described below.

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The proposed onsite storm sewer system consists of smooth interior and perforated HDPE pipes connected by a series of catch basins, manholes and yard drains. The site is split into a storm water management area on the east and west sides.

West Side

The west side of the site has (2) bioretention areas which portions of the westerly area will discharge to. These bioretention areas along with the remainder of the west portion of the site will discharge to the underground detention area. Note that the yard drains installed along the north property line discharge to the underground detention area. An outlet structure in the SW portion of this area will control runoff to at or below existing runoff flow rates. The discharge from the outlet control structure will discharge to the new system on Dodge Road which flows to the Sweet Home Road system.

Underground Detention Summary

(286) ADS Stormtech SC-740 chambers
Top of stone elev. = 573.00
Top of chamber elev. = 572.50
Bottom of chamber elev. = 570.00
Bottom of stone elev. = 569.50
Total storage = 18,574 CF

Event	Ex. Discharge	Pro. Discharge	Elev.
1 yr	0.87 cfs	0.33 cfs	570.29
2 yr	1.34 cfs	0.68 cfs	570.46
5 yr	2.14 cfs	1.05 cfs	570.79
10 yr	2.94 cfs	1.28 cfs	571.13
25 yr	4.34 cfs	1.61 cfs	571.73
50 yr	5.69 cfs	3.61 cfs	572.23
100 yr	7.33 cfs	4.83 cfs	572.92

East Side

The east side of the site has a bioretention area and wet detention pond which this portion of the site discharges to. The NE portion of the site discharges to a forebay which spills into the main micropool portion of the wet detention basin. The SE portion of the site discharges to the bioretention area which also spills into the main micropool portion of the site. An outlet control structure is located in

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the SE portion of the micropool and controls the discharge from this storm water management area. Spillways are also located on the east portion of the micropool which will discharge to the existing wetlands to the east in order to not cut off all flow from this site into this area. The discharge from the outlet control structure will discharge to the new system on Dodge Road which flows to the Ellicott Creek diversion channel.

The bioretention areas and wet detention pond for the project area are sized to provide 100% of the required Runoff Reduction Volume (RRv) and Water Quality Volume (WQv) treatment for the overall site in accordance with Chapter 4 of the NYSDEC Stormwater design manual. The soils in the vicinity of the bioretention areas are mainly USDA hydrologic group 'D' and therefore the system will be installed with underdrains per NYSDEC requirements. The bioretention areas will consist of 6" and 8" perforated HDPE underdrains in 12" of drainage gravel, followed by filter fabric and 18" minimum of planting soil. Overflow yard drains will be installed to allow 6" maximum temporary ponding for RRv treatment. The east bioretention area (area #3) spills into the wet detention pond and the underdrain pipe ties together with the pond discharge and flows to Dodge Road. The east bioretention areas (areas #1 & #2) have a catch basin to act as the spillway and this catch basin and the underdrain pipes discharge to the underground detention area.

Storm Water Management Area Summary

Forebay
Top of basin elev. = 576.80
Permanent water elev. = 575.00
Aquatic bench elev. = 574.50
Bottom of basin elev. = 569.00

Micropool
Top of basin elev. = 576.80
Permanent water elev. = 575.00
Aquatic bench elev. = 574.50
Bottom of basin elev. = 563.00

Overall Storm Water Summary

WQv Provided = 152,678 cf (pond)
WQv Provided = 6,948 cf (bioretention)
WQv Provided = 159,626 cf (total)

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Bioretention Area Summary:

Area	Rim Elev.	Bottom Elev.	Area
1	574.50	574.00	2,300 sf
2	574.50	574.00	2,600 sf
3	575.50	575.00	11,000 sf
		Total Provided =	15,900 sf

Water Quality Summary:
WQv req'd = 28,804 cf (0.661 ac-ft)
RRv min. req'd = 5,518 cf (0.127 ac-ft)
RRv provided = 8,662 cf (0.199 ac-ft)
WQv provided = 159,626 cf (3.665 ac-ft)
Total RRv + WQv provided = 8,662 cf + 159,626 cf = 168,287 cf (3.868 ac-ft)

Detention: Comparison of the existing 1-year vs. the proposed 1-year runoff
Comparison of the existing 10-year vs. the proposed 10-year runoff
Comparison of the existing 100-year vs. the proposed 100-year runoff

Storm pipes: 10-year storm

Refer to the engineer's report in Appendix N for additional details.

113 OTHER CONTROLS

113.1 OFF-SITE VEHICLE TRACKING

A stabilized construction exit will be provided to help reduce vehicle tracking of sediments. Existing paved areas will remain as long as possible and will be used for vehicle wash areas and to further aid in the reduction of vehicle tracking of sediments. The paved streets adjacent to the site entrance shall be inspected daily and swept as necessary to remove any excess mud, dirt, or rock tracked from the site. Dump trucks hauling material to/from the construction site will be covered with a tarpaulin. The job site superintendent will be responsible for seeing that these procedures are followed.

113.2 EXCAVATION SPOIL MATERIALS

Excavation spoil materials are generated during the excavation of the development's building and utilities installation. These materials must be properly managed to prevent them from contributing to storm water discharges. The materials generated from the development of this project will be hauled off-site or stockpiled for re-use in designated areas which will have temporary erosion &

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sediment control measures installed. Any removal from site will be done under the necessary permits required by the local governing agencies.

113.3 DUST CONTROL

Minimizing wind erosion and controlling dust will be accomplished by one or more of the following methods:

A. Frequent watering of excavation and fill areas.

B. Providing gravel or paving at entrance/exit drives, parking areas and transit paths.

113.4 WASTE DISPOSAL

If needed, all waste materials will be collected and stored in securely lidded metal dumpsters rented from an approved waste management company. The dumpster will comply with all local and state solid waste management regulations.

All trash and construction debris from the site will be deposited in the dumpsters. The dumpsters will be emptied when full and then hauled to a NYSDEC approved landfill for proper disposal. No construction waste will be buried on-site. All personnel will be instructed regarding the correct procedures for waste disposal.

113.5 SANITARY WASTE

If needed, portable toilet units or field offices with toilet facilities connected to the municipal sanitary sewer will be used for sanitary purposes. All portable toilet units will be emptied a minimum of once per week by a licensed portable facility provided in compliance with local and state regulations.

113.6 CONCRETE WASTE FROM CONCRETE TRUCKS

A. Emptying of excess unhardened concrete and/or washout from concrete delivery trucks will be allowed on the job site, but in either (1) specifically designated diked areas which have been prepared to prevent contact between concrete and/or washout and storm water which will be discharged from the site or (2) in locations where waste concrete will be poured into forms to make rip-rap or other useful concrete products.

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B. Hardened waste concrete from the designated diked areas described above will be disposed of in accordance with applicable local and state regulations with regards to disposal of construction debris.

113.7 HAZARDOUS SUBSTANCES & HAZARDOUS WASTE

A. All hazardous waste materials will be disposed of by the Contractor in the manner specified by local, state, and/or federal regulations and by the manufacturer of such products. Site personnel will be instructed in these practices by the job superintendent, who will also be responsible for seeing these practices are followed. Material Safety Data Sheets (MSDS's) for each substance with hazardous properties that is used on the job site will be obtained and used for the proper management of potential wastes that may result from these products. An MSDS will be posted in the immediate area where such products are stored and/or used and another copy of each MSDS will be maintained in the SWPPP file at the job site construction office. Each employee who must handle a substance with hazardous properties will be instructed on the use of MSDS sheets and the specific information in the applicable MSDS for the product he/she is using, particularly regarding spill control techniques.

B. The contractor will implement the Spill Prevention Control and Countermeasures (SPCC) Plan found within this SWPPP and will train all personnel in the proper cleanup and handling of spilled materials. No spilled hazardous materials of hazardous wastes will be allowed to come in contact with storm water discharges. If such contact occurs, the storm water discharge shall be contained on site until appropriate measures in compliance with state and federal regulations are taken to dispose of such contaminated storm water. It shall be the responsibility of the job superintendent to properly train all personnel in the use of the SPCC plan.

C. Any spills of hazardous materials which are in excess of the Reportable Quantities as defined by the EPA regulations shall be immediately reported to the EPA National Response Center at 1-100-424-1102. From SWPPP-9 "Reportable Quantity Release Form" must be filled out.

D. In order to minimize the potential for a spill of hazardous materials to come in contact with storm water, the following steps will be implemented:

1. All materials with hazardous properties (such as pesticides, petroleum products, fertilizers, detergents, construction chemicals,

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acids, paints, paint solvents, cleaning solvents, additives for soil stabilization, concrete curing compounds and additives, etc.) will be stored in a secure location, under cover, when not in use.

2. The minimum practical quantity of all such materials will be kept on the job site.

3. A spill control and containment kit (containing for example, absorbent such as kitty litter or sawdust, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided at the storage site.

4. All of the product in a container will be used before the container is disposed of. All such containers will be triple rinsed with water prior to disposal. The rinse water used in these containers will be disposed of in a manner in compliance with state and federal regulations and will not be allowed to mix with storm water discharges.

5. All products will be stored in and used from the original container with the original product label.

6. All products will be used in strict compliance with instructions on the product label.

7. The disposal of excess or used products will be in strict compliance with instructions on the product label.

113.8 CONTAMINATED SOILS

A. Any contaminated soils (resulting from spills of materials with hazardous properties) which may result from construction activities will be contained and cleaned up immediately in accordance with the procedures given in the Spill Prevention Control and Countermeasures (SPCC) Plan and in accordance with applicable state and federal regulations.

B. The job site superintendent will be responsible for seeing that these procedures are followed.

114 COMPLIANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS

The Contractor will obtain copies of any and all local and state regulations which are applicable to storm water management, erosion control, and

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pollution minimization at this job site and will comply fully with such regulations. The Contractor will submit written evidence of such compliance if requested by the Operator or any agent of a regulatory body. The Contractor will comply with all conditions of the SPDES General Permit for Construction Activity for the State of New York, including the conditions related to maintaining the SWPPP and evidence of compliance with the SWPPP at the job site and allowing regulatory personnel access to the job site and to records in order to determine compliance.

The SWPPP for this site development project requires regulated MS4 approval from the Town of Amherst. All changes to the SWPPP must be approved by the Town of Amherst prior to applying changes to the SWPPP in the field.

115 INSPECTION AND MAINTENANCE PROCEDURES

The following inspection and maintenance practices will be used to maintain erosion and sediment controls and stabilization measures.

1. All control measures will be inspected by the owner/operator at least weekly and shall continue until the site complies with the Final Stabilization section of this document (See Section 116).

2. All control measures will be inspected by a Qualified Professional at least weekly and shall continue until the site complies with the Final Stabilization section of this document (See Section 116).

3. All measures will be maintained in good working order; if repairs or other measures are found to be necessary, they will be initiated within 24 hours of report.

4. Built up sediment will be removed from silt fence/silt sock when it has reached one-third the height of the fence.

5. Silt fence/silt socks will be inspected for depth of sediment, tears, etc., to see if the fabric is securely attached to the fence posts, and to see that the fence posts are securely in the ground.

6. Temporary and permanent seeding and all other stabilization measures will be inspected for bare spots, washouts, and healthy growth.

7. A maintenance inspection report will be made after each inspection. Copies of the report forms to be completed by the inspector are included in this SWPPP.

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8. The job site superintendent will be responsible for selecting and training the individuals who will be responsible for these inspections, maintenance and repair activities, and filling out inspection and maintenance reports.

9. Personnel selected for the inspection and maintenance responsibilities will receive training from the job site superintendent. They will be trained in all the inspection and maintenance practices necessary for keeping the erosion and sediment controls that are used onsite in good working order. They will also be trained in the completion of, initiation of actions required by, and the filing of the inspection forms. Documentation of this personnel training will be kept on site with the SWPPP.

10. Disturbed areas and materials storage areas will be inspected for evidence of or potential for pollutants entering stormwater systems.

11. Report to the NYSDEC within 24 hours any noncompliance with the SWPPP that will endanger public health or the environment. Follow up with a written report within 5 days of the noncompliance event. The following events require 24 hour reporting: a) any unanticipated bypass which exceeds any effluent limitation in the permit, b) any upset which exceeds any effluent limitation in the permit, and c) a violation of a maximum daily discharge limitation for any of the pollutants listed by the NYSDEC in the permit to be reported within 24 hours. The written submission must contain a description of the non-compliance and its cause; the period of non-compliance, including exact dates and times, and if the non-compliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the non-compliance.

12. Releases of hazardous substances or oil in excess of reportable quantities (as established under 40 CFR 110, 40 CFR 117 or 40 CFR 302) must be reported.

Upon completion of construction, the property owner is responsible for ensuring that the stormwater facilities are regularly inspected and maintained. Maintenance and inspection procedures are as follows.

1. On a quarterly basis and following significant rainfall events or snow-melts, perform the following:

    - Inspect catch basins, storm manholes, yard drains, storm piping and stormwater pond for debris and accumulation of sediment.

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- Remove and properly dispose of any collected debris and sediment in accordance with applicable state, federal and local regulations.
- Flush piping with water if necessary to remove accumulated sediment.
- Bioretention areas shall be maintained per the NYSDEC Maintenance and Management Checklist included in this SWPPP.
- Check all stone outfall structures for erosion and re-stone if necessary to prevent further erosion.
- Inspect grassed/landscaped areas for un-vegetated areas or areas with less than 85% healthy stand of grass and reseed and mulch as necessary. Water daily if reseeded in July and August.
- A record of all inspections should be kept.

2. Maintain all lawn areas by regular mowing, including the grassed slopes of the stormwater pond and any grass swales. Any eroded areas shall be regarded, seeded and mulched immediately.

116 INSPECTION AND MAINTENANCE REPORT FORMS

Once installation of any required or optional erosion control device or measure has been implemented, inspections shall be performed by a Qualified Professional at least once every seven (7) calendar days. For construction sites where soil disturbance activities are on-going and the **owner or operator** has received authorization in accordance with Part II.C.3 of the General Permit to disturb greater than five (5) acres of soil at any one time, the **qualified inspector** shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days. The owner and contractor shall obtain from the MS4 an approval for disturbing more than five-acres at any given time. For construction sites where active construction has been suspended, inspection frequency under the general permit can be reduced to once every 30 days, provided temporary stabilization measures have been applied to all disturbed areas. The forms found in this SWPPP shall be used by the inspectors to inventory and report the condition of each measure to assist in maintaining the erosion and sediment control measures in good working order.

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These report forms shall become an integral part of the SWPPP and shall be made readily accessible to governmental inspection officials, the Operator's Engineer, and the Operator for review upon request during visits to the project site. In addition, copies of the reports shall be provided to any of these persons, upon request, via mail or facsimile transmission. Inspection and maintenance report forms are to be maintained by the permittee for five years following the final stabilization of the site.

117 OTHER RECORD-KEEPING REQUIREMENTS

The Contractor shall keep the following records related to construction activities at the site:

- Dates when major grading activities occur and the areas which were graded
- Dates and details concerning the installation of structural controls
- Dates when construction activities cease in an area
- Dates when an areas is stabilized, either temporarily or permanently
- Dates of rainfall and the amount of rainfall
- Dates and descriptions of the character and amount of any spills of hazardous materials
- Records of reports filed with regulatory agencies if reportable quantities of hazardous materials spilled

118 SPILL PREVENTION CONTROL AND COUNTERMEASURES (SPCC) PLAN

118.1 MATERIALS COVERED

The following materials or substances are expected to be present onsite during construction:

- Concrete/Additives/Wastes
- Cleaning solvents
- Sanitary wastes
- Detergents
- Petroleum based products
- Paints/Solvents
- Pesticides
- Solid and construction wastes
- Acids

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- Fertilizers
- Soil stabilization additives

118.2 MATERIAL MANAGEMENT PRACTICES

The following are the material management practices that will be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff. The job site superintendent will be responsible for ensuring that these procedures are followed.

A. Good Housekeeping

The following good housekeeping practices will be followed onsite during the construction project.

1. An effort will be made to store only enough products required to do the job.
2. All materials stored onsite will be stored in a neat, orderly manner and, if possible, under a roof or in a containment area. At a minimum, all containers will be stored with their lids on when not in use. Drip pans shall be provided under all dispensers.
3. Products will be kept in their original containers with the original manufacturer's label in legible condition.
4. Substances will not be mixed with one another unless recommended by the manufacturer.
5. Whenever possible, all of a product will be used up before disposing of the container.
6. Manufacturer's recommendations for proper use and disposal will be followed.
7. The job site superintendent will be responsible for daily inspections to ensure proper use and disposal of materials.

B. Hazardous Products

These practices will be used to reduce the risks associated with hazardous materials. Material Safety Data Sheets (MSDS's) for each substance with hazardous properties that is used on the job site will be obtained and used for the proper management of potential wastes that may result from

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these products. An MSDS will be posted in the immediate area where such product is stored and/or used and another copy of each MSDS will be maintained in the SWPPP file at the job site construction trailer office. Each employee who must handle a substance with hazardous properties will be instructed on the use of MSDS sheets and the specific information in the applicable MSDS for the product he/she is using, particularly regarding spill control techniques.

1. Products will be kept in original containers with the original labels in legible condition.

2. Original labels and material safety data sheets (MSDS's) will be procured and used for each material.

3. If surplus product must be disposed of, manufacturer's or local/state/federal recommended methods for proper disposal will be followed.

4. A spill control and containment kit (containing for example, absorbent such as kitty litter or sawdust, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided at the storage site.

5. All of the product in a container will be used before the container is disposed of. All such containers will be triple rinsed with water prior to disposal. The rinse water used in these containers will be disposed of in a manner in compliance with state and federal regulations and will not be allowed to mix with storm water discharges.

C. Hazardous Waste

All hazardous waste materials will be disposed of by the Contractor in the manner specified by local, state, and/or federal regulations and by the manufacturer of such products. Site personnel will be instructed in these practices by the job site superintendent, who will also be responsible for seeing that these practices are followed.

D. Product Specific Practices

The following product specific practices will be followed on the job site.

1. Petroleum Products

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All onsite vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers which are clearly labeled. Any petroleum storage tanks stored onsite will be located within a containment area that is designed with an impervious surface between the tank and the ground. The secondary containment must be designed to provide a containment volume that is equal to 110% of the volume of the largest tank. Drip pans shall be provided for all dispensers. Any asphalt substances used onsite will be applied according to the manufacturer's recommendations. The location of any fuel tanks and/or equipment storage areas must be identified on a plan by the contractor once the locations have been determined.

2. Fertilizers

Fertilizers will be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer will be worked in the soil to limit exposure to stormwater. Storage will be in a covered shed. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.

3. Paints, Paint Solvents, and Cleaning Solvents

All containers will be tightly sealed and stored when not in use. Excess paint and solvents will not be discharged to the storm sewer system but will be properly disposed of according to manufacturer's instructions or state and federal regulations.

4. Concrete Wastes

Concrete trucks will be allowed to wash out or discharge surplus concrete or drum wash water on the site, but only in either (1) specifically designated diked areas which have been prepared to prevent contact between the concrete and/or wash out and storm water which will be discharged from the site or (2) in locations where waste concrete can be poured into forms to make riprap or other useful concrete products.

The hardened residue from the concrete wash out diked areas will be disposed of in the same manner as other non-hazardous construction waste materials or may be broken up and used on site

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as deemed appropriate by the Contractor. The job site superintendent will be responsible for seeing that these procedures are followed.

All concrete wash out areas will be located in an area where the likelihood of the area contributing to storm water discharges is negligible. If required, additional BMPs must be implemented to prevent concrete wastes from contributing to storm water discharges. The location of concrete wash out area(s) must be identified on a plan by the contractor once the locations have been determined. In addition, a standard detail on the construction of the concrete wash out shall be included on this plan.

E. Solid and Construction Wastes

All waste materials will be collected and stored in an appropriately covered container and/or securely lidded metal dumpster rented from a local waste management company which must be a solid waste management company licensed to do business in New York and the Town of Amherst. The dumpster will comply with all local and state solid waste management regulations.

All trash and construction debris from the site will be deposited in the dumpster. The dumpster will be emptied a minimum of twice per week or more often if necessary, and the trash will be hauled to a landfill approved by the NYSDEC. No construction waste materials will be buried on site. All personnel will be instructed regarding the correct procedures for waste disposal.

All waste dumpsters and roll-off containers will be located in an area where the likelihood of the containers contributing to storm water discharges is negligible. If required, additional BMPs must be implemented, such as sandbags around the base, to prevent wastes from contributing to storm water discharges. The location of waste dumpsters and roll-off containers must be identified on a plan by the contractor once the locations have been determined.

F. Sanitary Wastes

Portable toilet units or field offices with toilet facilities connected to the municipal sanitary sewer will be used for sanitary purposes. All portable

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toilet units will be emptied a minimum of once per week by a licensed portable facility provided in compliance with local and state regulations.

All sanitary waste units will be located in an area where the likelihood of the unit contributing to storm water discharges is negligible. If required, additional BMPs must be implemented, such as sandbags around the base, to prevent wastes from contributing to storm water discharges. The location of sanitary waste units must be identified on a plan by the contractor once the locations have been determined.

G. Contaminated Soils

Any contaminated soils (resulting from spills of materials with hazardous properties) which may result from construction activities will be contained and cleaned up immediately in accordance with the procedures given in the Materials Management Plan and in accordance with applicable state and federal regulations.

118.3 SPILL PREVENTION AND RESPONSE PROCEDURES

The Contractor will train all personnel in the proper handling and cleanup of spilled materials. No spilled hazardous materials or hazardous wastes will be allowed to come in contact with storm water discharges. If such contact occurs, the storm water discharge will be contained on site until appropriate measures in compliance with state and federal regulations are taken to dispose of such contaminated storm water. It shall be the responsibility of the job site superintendent to properly train all personnel in spill prevention and clean up procedures.

A. In order to minimize the potential for a spill of hazardous materials to come into contact with storm water, the following steps will be implemented:

1. All materials with hazardous properties (such as pesticides, petroleum products, fertilizers, detergents, construction chemicals, acids, paints, paint solvents, cleaning solvents, additives for soil stabilization, concrete curing compounds and additives, etc.) will be stored in a secure location, with their lids on, preferably under cover, when not in use.

2. The minimum practical quantity of all such materials will be kept on the job site.

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3. A spill control and containment kit (containing, for example, absorbent materials, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided at the storage site.

4. Manufacturer's recommended methods for spill cleanup will be clearly posted and site personnel will be trained regarding these procedures and the location of the information and cleanup supplies.

B. In the event of a spill, the following procedures should be followed

1. All spills will be cleaned up immediately after discovery.

2. The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with the hazardous substances.

3. The project manager and the Engineer of Record will be notified immediately.

   Spills of toxic or hazardous materials will be reported to the appropriate federal, state, and/or local government agency, regardless of the size of the spill. Spills of amounts that exceed Reportable Quantities of certain substances specifically mentioned in federal regulations (40 CFR 110, 40 CFR 117, and 40 CFR 302) must be immediately reported to the EPA National Response Center, telephone 1-100-424-1102. From SWPPP-9 "Reportable Quantity Release Form" must be filled out.

4. If the spill exceeds a Reportable Quantity, the SWPPP must be modified within seven (7) calendar days of knowledge of the discharge to provide a description of the release, the circumstances leading to the release, and the date of the release. The plans must identify measures to prevent the recurrence of such releases and to respond to such releases.

C. The job site superintendent will be the spill prevention and response coordinator. He will designate the individuals who will receive spill prevention and response training. These individuals will each become responsible for a particular phase of prevention and response. The names

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of these personnel will be posted in the material storage area and in the office trailer onsite.

119 CONTROL OF NON-STORM WATER DISCHARGES

Certain types of discharges are allowable under the NYSDEC SPDES General Permit for Construction Activity for the State of New York, and it is the intent of this SWPPP to allow such discharges. These types of discharges will be allowed under the conditions that no pollutants will be allowed to come in contact with the water prior to or after its discharge. The control measures which have been outlined previously in this SWPPP will be strictly followed to ensure that no contamination of these non-storm water discharges takes place. The following allowable non-storm water discharges which may occur at the job site include:

A. Discharges from firefighting activities.

B. Fire hydrant flushings (see note below)

C. Waters used to wash vehicles or control dust in order to minimize offsite sediment tracking.

D. Routine external building washdown which does not use detergents.

E. Pavement wash waters where spills or leaks of hazardous materials have not occurred or detergents have not been used.

F. Air conditioning condensate.

G. Springs or other uncontaminated groundwater, including dewatering ground water infiltration.

H. Foundation or footing drains where no contamination with process materials such as solvents is present.

Note: The Contractor shall discharge any super-chlorinated water from water distribution pipe disinfection activities into sanitary sewer system.

120 STORM WATER CONTROL FACILITY MAINTENANCE

Upon completion of construction, SL shall be responsible for maintenance of the storm sewer system and all ponds, bioretention areas, etc. per a Stormwater Maintenance Agreement to the Town of Amherst that shall be filed with the County of Erie.

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The frequency of inspections for the bioretention areas shall match the frequencies listed on the "Bioretention Operation, Maintenance and Management Inspection Checklist" in Appendix O of the SWPPP.

The proposed catch basins, as per section 115, shall be inspected 4 times per year for removal of floatable debris. Any silt buildup over 6" in depth shall be removed and disposed of properly off-site.

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Appendix A

Site Location Map

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Stormwater Interactive Map



The coordinates of the point you clicked on are:

UTM 18	**Easting:**	190681.063	**Northing:**	4770798.806
Longitude/Latitude	**Longitude:**	-78.796	**Latitude:**	43.027

The approximate address of the point you clicked on is:
26-42 Dodge Rd, Getzville, New York, 14068

County: Erie
Town: Amherst
USGS Quad: TONAWANDA EAST

DEC Administrative Boundaries

Region 9:
(Western New York) Allegany, Chautauqua, Cattaraugus, Erie, Niagara and Wyoming counties. For more information visit http://www.dec.ny.gov/about/617.html.

Regulated MS4s

UA 2000: 11350
Standard: Buffalo
Municipality: AMHERST
SWIS: 142200
Regulated: Automatic

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Appendix B

NYSDEC Notice of Intent (NOI)

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NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR _____ (for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-20-001

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-

RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)
Sawyer's Landing LLC

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
Severyn

Owner/Operator Contact Person First Name
Will

Owner/Operator Mailing Address
43 Central Ave

City
Lancaster

State
NY

Zip
14086 -

Phone (Owner/Operator)
716 - 912 - 0969

Fax (Owner/Operator)
___ - ___ - ____

Email (Owner/Operator)
william.severyn.ny@gmail.com

FED TAX ID
__ - _____ (not required for individuals)

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Project Site Information

Project/Site Name
Sawyer's Landing

Street Address (NOT P.O. BOX)
Dodge Road

Side of Street
● North ○ South ○ East ○ West

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Amherst

State: NY
Zip: 14228 -
County: Erie
DEC Region: 9

Name of Nearest Cross Street
Sweet Home Road

Distance to Nearest Cross Street (Feet)
0

Project In Relation to Cross Street
○ North ○ South ● East ○ West

Tax Map Numbers
Section-Block-Parcel
40.08-3-13.1

Tax Map Numbers

1. Provide the Geographic Coordinates for the project site. To do this, go to the NYSDEC Stormwater Interactive Map on the DEC website at:

https://gisservices.dec.ny.gov/gis/stormwater/

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located the centroid of your project site, go to the bottom right hand corner of the map for the X, Y coordinates. Enter the coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)
-7 8796
Ex. -73.749

Y Coordinates (Northing)
43027
Ex. 42.652

2. What is the nature of this construction project?

● **New Construction**

○ **Redevelopment with increase in impervious area**

○ **Redevelopment with no increase in impervious area**

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3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use	Post-Development Future Land Use
● FOREST	○ SINGLE FAMILY HOME
○ PASTURE/OPEN LAND	○ SINGLE FAMILY SUBDIVISION
○ CULTIVATED LAND	○ TOWN HOME RESIDENTIAL
○ SINGLE FAMILY HOME	○ MULTIFAMILY RESIDENTIAL
○ SINGLE FAMILY SUBDIVISION	○ INSTITUTIONAL/SCHOOL
○ TOWN HOME RESIDENTIAL	○ INDUSTRIAL
○ MULTIFAMILY RESIDENTIAL	○ COMMERCIAL
○ INSTITUTIONAL/SCHOOL	○ MUNICIPAL
○ INDUSTRIAL	○ ROAD/HIGHWAY
○ COMMERCIAL	○ RECREATIONAL/SPORTS FIELD
○ ROAD/HIGHWAY	○ BIKE PATH/TRAIL
○ RECREATIONAL/SPORTS FIELD	○ LINEAR UTILITY (water, sewer, gas, etc.)
○ BIKE PATH/TRAIL	○ PARKING LOT
○ LINEAR UTILITY	○ CLEARING/GRADING ONLY
○ PARKING LOT	○ DEMOLITION, NO REDEVELOPMENT
○ OTHER	○ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
	● OTHER: Mixed use

Number of Lots:

***Note:** for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

Total Site Area	Total Area To Be Disturbed	Existing Impervious Area To Be Disturbed	Future Impervious Area Within Disturbed Area
17.4	16.4	0.0	8.0

5. Do you plan to disturb more than 5 acres of soil at any one time? ● Yes ○ No

6. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	B	C	D
%	%	%	100 %

7. Is this a phased project? ○ Yes ● No

8. Enter the planned start and end dates of the disturbance activities.

Start Date: 7/1/2021 – End Date: 7/1/2022

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9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.

Name

Ellicott Creek

9a. Type of waterbody identified in Question 9?

- ○ Wetland / State Jurisdiction On Site (Answer 9b)
- ○ Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 9b)
- ○ Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ● Stream / Creek Off Site
- ○ River On Site
- ○ River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ○ Other Type Off Site

9b. How was the wetland identified?

- ○ Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ○ Other (identify)

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001? ○ Yes ● No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001? ○ Yes ● No

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? ○ Yes ● No
If no, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ○ Yes ● No
If Yes, what is the acreage to be disturbed?

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ○ Yes ● No

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15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ● Yes ○ No ○ Unknown

16. What is the name of the municipality/entity that owns the separate storm sewer system?

Erie County

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ Yes ● No ○ Unknown

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law? ○ Yes ● No

19. Is this property owned by a state authority, state agency, federal government or local government? ○ Yes ● No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) ○ Yes ● No

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? ● Yes ○ No

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)? ● Yes ○ No
If No, skip questions 23 and 27-39.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? ● Yes ○ No

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24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ● **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer
Carmina Wood Morris DPC

Contact Name (Last, Space, First)
Wood Christopher

Mailing Address
487 Main St

City
Buffalo

State Zip
NY 14127-

Phone
716-842-3165

Fax
716-842-0263

Email
cwood@cwm-ae.com

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name
Christopher

MI

Last Name
Wood

Signature

Date
03/03/2021

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25. Has a construction sequence schedule for the planned management practices been prepared? ● Yes ○ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ● Check Dams
- ○ Construction Road Stabilization
- ● Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ○ Sediment Basin
- ○ Sediment Traps
- ● Silt Fence
- ● Stabilized Construction Entrance
- ● Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ○ Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ● Mulching
- ● Protecting Vegetation
- ○ Recreation Area Improvement
- ● Seeding
- ○ Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ○ Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ○ Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ○ Retaining Wall
- ○ Riprap Slope Protection
- ○ Rock Outlet Protection
- ○ Streambank Protection

Other

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Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

- ● **Preservation of Undisturbed Areas**
- ● **Preservation of Buffers**
- ○ **Reduction of Clearing and Grading**
- ○ **Locating Development in Less Sensitive Areas**
- ○ **Roadway Reduction**
- ○ **Sidewalk Reduction**
- ○ **Driveway Reduction**
- ○ **Cul-de-sac Reduction**
- ○ **Building Footprint Reduction**
- ○ **Parking Reduction**

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

- ● All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).
- ○ Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

0.661 **acre-feet**

29. Identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required(#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

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Table 1 - Runoff Reduction (RR) Techniques and Standard Stormwater Management Practices (SMPs)

	Total Contributing Area (acres)		Total Contributing Impervious Area (acres)
RR Techniques (Area Reduction)			
● Conservation of Natural Areas (RR-1)	1.0	and/or	0.0
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)		and/or	
○ Tree Planting/Tree Pit (RR-3)		and/or	
○ Disconnection of Rooftop Runoff (RR-4)		and/or	
RR Techniques (Volume Reduction)			
○ Vegetated Swale (RR-5)			
○ Rain Garden (RR-6)			
○ Stormwater Planter (RR-7)			
○ Rain Barrel/Cistern (RR-8)			
○ Porous Pavement (RR-9)			
○ Green Roof (RR-10)			
Standard SMPs with RRv Capacity			
○ Infiltration Trench (I-1)			
○ Infiltration Basin (I-2)			
○ Dry Well (I-3)			
○ Underground Infiltration System (I-4)			
● Bioretention (F-5)	4.0		3.0
○ Dry Swale (O-1)			
Standard SMPs			
○ Micropool Extended Detention (P-1)			
○ Wet Pond (P-2)			
○ Wet Extended Detention (P-3)			
○ Multiple Pond System (P-4)			
● Pocket Pond (P-5)	3.0		4.0
○ Surface Sand Filter (F-1)			
○ Underground Sand Filter (F-2)			
○ Perimeter Sand Filter (F-3)			
○ Organic Filter (F-4)			
○ Shallow Wetland (W-1)			
○ Extended Detention Wetland (W-2)			
○ Pond/Wetland System (W-3)			
○ Pocket Wetland (W-4)			
○ Wet Swale (O-2)			

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Table 2 - Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Alternative SMP	Total Contributing Impervious Area (acres)
○ Hydrodynamic	
○ Wet Vault	
○ Media Filter	
○ Other [ ]	

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Name

Manufacturer

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

Total RRv provided

0.199 **acre-feet**

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28).

○ **Yes** ● **No**

If Yes, go to question 36.
If No, go to question 32.

32. Provide the Minimum RRv required based on HSG.
[Minimum RRv Required = (P)(0.95)(Ai)/12, Ai=(S)(Aic)]

Minimum RRv Required

0.127 **acre-feet**

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

● **Yes** ○ **No**

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

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33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRv Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question 29.

WQv Provided

3.664 **acre-feet**

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRv provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a). 3.863

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? ● **Yes** ○ **No**

If Yes, go to question 36.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.

CPv Required

0.42 **acre-feet**

CPv Provided

0.42 **acre-feet**

36a. The need to provide channel protection has been waived because:

○ Site discharges directly to tidal waters or a fifth order or larger stream.

○ Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (37a), if applicable.

Total Overbank Flood Control Criteria (Qp)

Pre-Development

4.34 **CFS**

Post-development

3.63 **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development

7.33 **CFS**

Post-development

4.38 **CFS**

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37a. The need to meet the Qp and Qf criteria has been waived because:

- ○ Site discharges directly to tidal waters or a fifth order or larger stream.
- ○ Downstream analysis reveals that the Qp and Qf controls are not required

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? ● Yes ○ No

If Yes, Identify the entity responsible for the long term Operation and Maintenance

Sawyer's Landing LLC

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required(#28). (See question 32a) This space can also be used for other pertinent project information.

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40. Identify other DEC permits, existing and new, that are required for this project/facility.

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Solid Waste
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ● Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers
- ○ Stream Bed or Bank Protection / Article 15
- ○ Endangered or Threatened Species(Incidental Take Permit)
- ○ Individual SPDES
- ○ SPDES Multi-Sector GP NYR
- ○ Other
- ● None

41. Does this project require a US Army Corps of Engineers Wetland Permit? ● **Yes** ○ **No**
If Yes, Indicate Size of Impact. .

42. Is this project subject to the requirements of a regulated, traditional land use control MS4? ● **Yes** ○ **No**
(If No, skip question 43)

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ● **Yes** ○ **No**

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. NYR

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Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name: Will

MI:

Print Last Name: Severyn

Owner/Operator Signature: William T Severyn

Date: 03/03/2021

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Appendix C

MS4 SWPPP Acceptance Form

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NYS Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit

*(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information	
1. Owner/Operator Name:	Sawyer's Landing LLC
2. Contact Person:	Will Severyn
3. Street Address:	43 Central Ave
4. City/State/Zip:	Lancaster, NY 14086
II. Project Site Information	
5. Project/Site Name:	Sawyer's Landing
6. Street Address:	Dodge Road
7. City/State/Zip:	Amherst, NY 14228
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information	
8. SWPPP Reviewed by:	
9. Title/Position:	
10. Date Final SWPPP Reviewed and Accepted:	
IV. Regulated MS4 Information	
11. Name of MS4:	
12. MS4 SPDES Permit Identification Number: NYR20A	
13. Contact Person:	
14. Street Address:	
15. City/State/Zip:	
16. Telephone Number:	

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MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

Date:

VI. Additional Information

(NYS DEC - MS4 SWPPP Acceptance Form - January 2015)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Appendix D

NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity Permit No. GP-0-20-001

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70

of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

1-23-20

Authorized Signature

Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

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Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;

2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State.*

3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

*Discharge*s authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the *Stormwater Pollution Prevention Plan* ("SWPPP") the reason(s) for the

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deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:

   (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharge*s;

   (ii) Control stormwater *discharge*s, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;

   (iii) *Minimize* the amount of soil exposed during *construction activity*;

   (iv) *Minimize* the disturbance of *steep slopes*;

   (v) *Minimize* sediment *discharge*s from the site;

   (vi) Provide and maintain *natural buffer*s around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharge*s, unless *infeasible*;

   (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;

   (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and

   (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.

b. **Soil Stabilization**. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments

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listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

c. **Dewatering**. *Discharges* from *dewatering* activities, including *discharges* from *dewatering* of trenches and excavations, must be managed by appropriate control measures.

d. **Pollution Prevention Measures**. Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards.* At a minimum, such measures must be designed, installed, implemented and maintained to:

(i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;

(ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and

(iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

e. **Prohibited *Discharges*.** The following *discharges* are prohibited:

(i) Wastewater from washout of concrete;

(ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

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(iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;

(iv) Soaps or solvents used in vehicle and equipment washing; and

(v) Toxic or hazardous substances from a spill or other release.

f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices ("SMPs") are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

(i) Runoff Reduction Volume ("RRv"): Reduce the total Water Quality Volume ("WQv") by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

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For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site discharges directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria ("Qp"): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria ("Qf"): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

b. *Sizing Criteria* for *New Development* in Enhanced Phosphorus Removal Watershed

(i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be

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calculated in accordance with the criteria in Section 10.3 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible*.

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site *discharges* directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

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c. Sizing Criteria for Redevelopment Activity

(i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.

(1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or

(2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or

(3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or

(4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

(ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iii) *Overbank* Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

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d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharges* necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;

2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharges* authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharges* authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharges* will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

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E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharges*; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.

3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: "Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned"; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharges* from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.

4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **not** authorized by this permit:

1. *Discharges* after *construction activities* have been completed and the site has undergone *final stabilization*;

2. *Discharges* that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;

3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;

4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

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operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;

6. *Construction activities* for residential, commercial and institutional projects:

   a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

7. *Construction activities* for linear transportation projects and linear utility projects:

   a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

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8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:

   a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.

      - 1-5 acres of disturbance - 20 feet
      - 5-20 acres of disturbance - 50 feet
      - 20+ acres of disturbance - 100 feet, or

   b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
      (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
      (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
      (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
      (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or

   c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

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(i) No Affect
(ii) No Adverse Affect
(iii) Executed Memorandum of Agreement, or

d. Documentation that:

(i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharges* from *construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the "MS4 SWPPP Acceptance" form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.

3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of *Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4* . This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

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B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (http://www.dec.ny.gov/). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

   NOTICE OF INTENT
   NYS DEC, Bureau of Water Permits
   625 Broadway, 4th Floor
   Albany, New York 12233-3505

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.

3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.

4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.

2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:

   a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (http://www.dec.ny.gov/) for more information,

   b. where required, all necessary Department permits subject to the *Uniform Procedures Act ("UPA")* (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators* of *construction activities* that are required to obtain *UPA* permits

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must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

c. the final SWPPP has been prepared, and

d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.

3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

   a. For *construction activities* that are not subject to the requirements of a *regulated, traditional land use control MS4*:

      (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or

      (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has not been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;

      (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

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b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:

(i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed "*MS4* SWPPP Acceptance" form, or

(ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed "MS4 SWPPP Acceptance" form.

4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination ("NOT") has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor's or subcontractor's certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land*

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use control MS4, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

a. The *owner or operator* shall have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.

c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

d. The *owner or operator* shall install any additional site-specific practices needed to protect water quality.

e. The *owner or operator* shall include the requirements above in their SWPPP.

4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..

5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.

6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

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regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of *a construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

   An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4,* the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.

2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

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operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.

2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.

3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.

4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:

    a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

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b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*;

c. to address issues or deficiencies identified during an inspection by the *qualified inspector,* the Department or other regulatory authority; and

d. to document the final construction conditions.

5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.

6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor.* The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

   The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

   "I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with

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the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharges* from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:

   a. Background information about the scope of the project, including the location, type and size of project

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b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge*(s);

c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);

d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;

e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;

f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;

g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;

h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;

i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection

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schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;

k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and

l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

   Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

   The post-construction stormwater management practice component of the SWPPP shall include the following:

   a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

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b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;

c. A Stormwater Modeling and Analysis Report that includes:
   (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;

   (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;

   (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;

   (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;

   (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and

   (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;

d. Soil testing results and locations (test pits, borings);

e. Infiltration test results, when required; and

f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

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3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria,* Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators* of *construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators* of the *construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

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begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- New York State Erosion and Sediment Control Certificate Program holder
- Registered Landscape Architect, or
- someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:

   a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located

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in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:

a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.

b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

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d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization,* and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.B.1 of this permit.

e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization,* all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site*, and all points of *discharge* from the *construction site*.

4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

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(Part IV.C.4.a)

a. Date and time of inspection;

b. Name and title of person(s) performing inspection;

c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

d. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This shall include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;

f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;

g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;

i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);

k. Identification and status of all corrective actions that were required by previous inspection; and

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l. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the *qualified inspector.* Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.

2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:

   a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

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b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;

c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.

d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.

3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.

4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the "MS4 Acceptance" statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector*'s final site inspection certification(s) required in Part V.A.3. of this permit.

5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:

a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

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b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),

c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,

d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

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Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator,* its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to $37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

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E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit , or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:

    a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

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(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(i) the chief executive officer of the agency, or

(ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

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superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.

3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.

4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4,* or by a duly authorized representative of that person.

   It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

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include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge*(s), the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner's or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

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3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.

4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.

2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

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R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

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APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

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Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property –means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both "sewage" and "stormwater".

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for "*Construction Activity(ies)*" also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for "*Commence (Commencement of) Construction Activities*" and "*Larger Common Plan of Development or Sale*" *also.*

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system

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and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

Embankment –means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department's rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

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Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term "plan" in "larger common plan of development or sale" is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same "common plan" is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State;
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a *combined sewer*; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer –means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

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New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

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Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

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SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

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Steep Slope – means land area designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint sources*. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint sources*, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

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training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

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APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single family home not located in one of the watersheds listed in Appendix C or not *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E
- Construction of a barn or other *agricultural building*, silo, stock yard or pen.

The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects
- Pond construction
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover
- Cross-country ski trails and walking/hiking trails
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

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Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

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Table 2

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

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Table 2 (Continued)

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover,* and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

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APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River - Figure 1
- Onondaga Lake Watershed - Figure 2
- Greenwood Lake Watershed -Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

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Figure 1 - New York City Watershed East of the Hudson

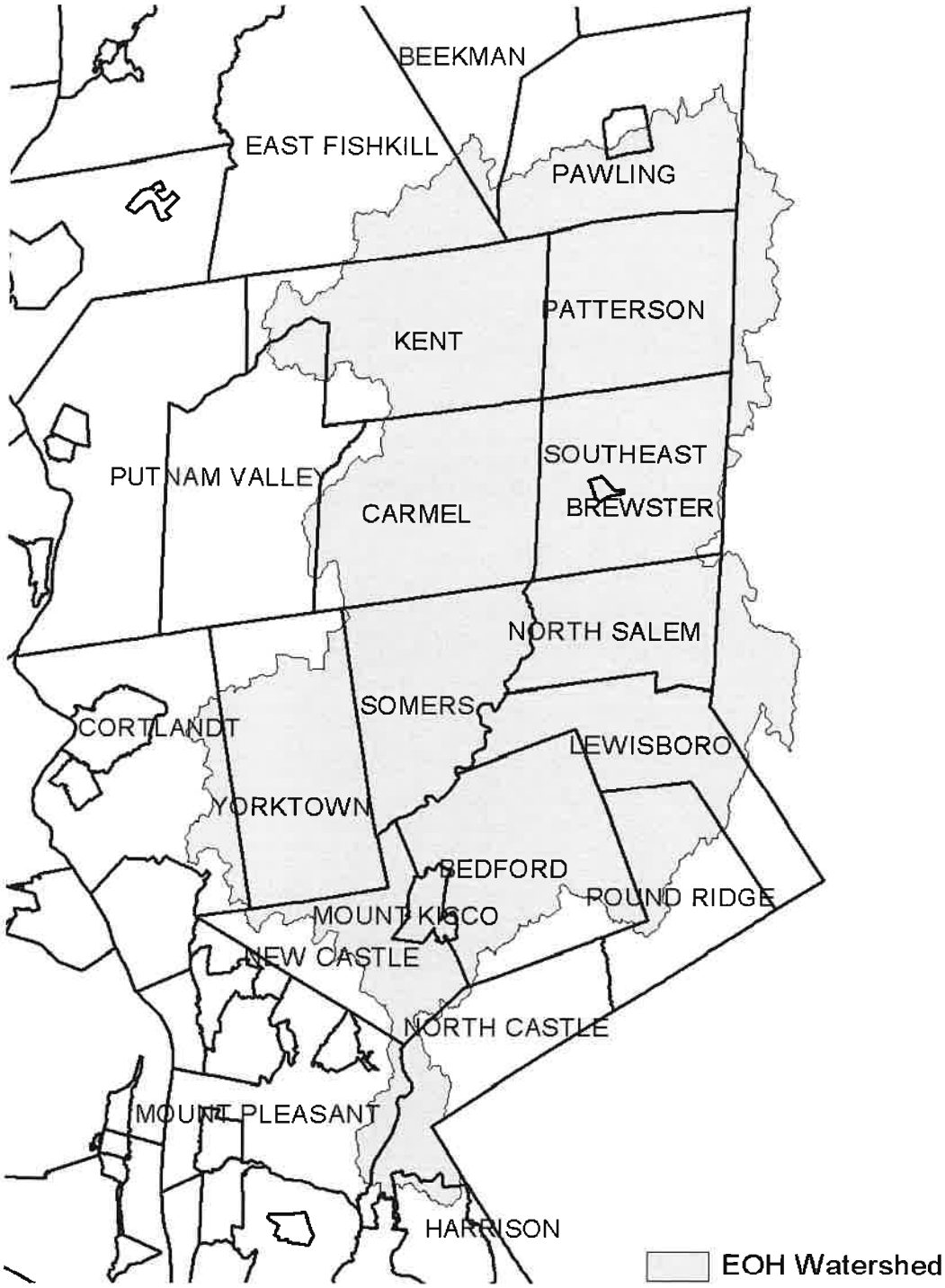

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Figure 2 - Onondaga Lake Watershed



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Appendix C

Figure 3 - Greenwood Lake Watershed



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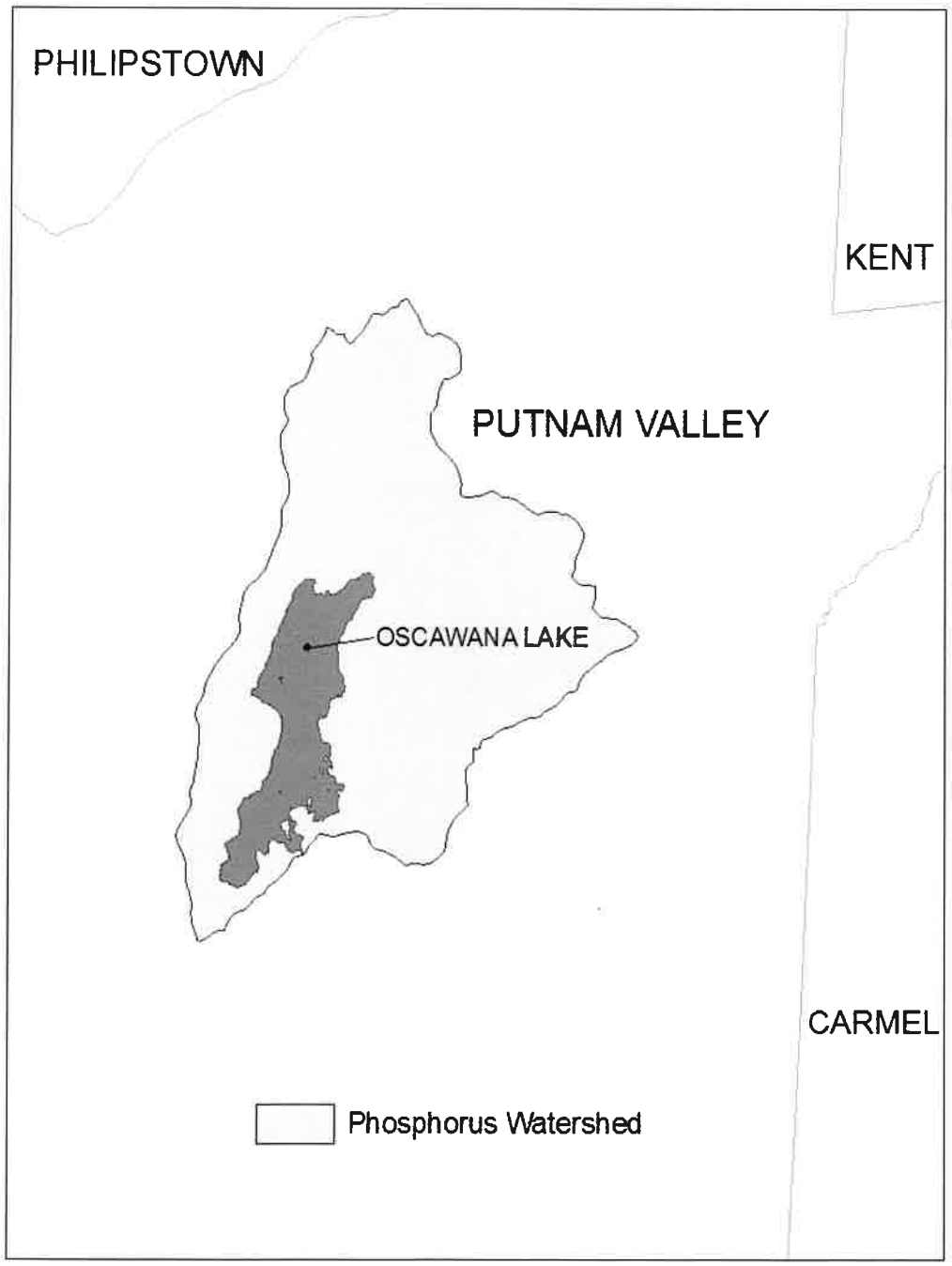
Appendix C

Figure 4 - Oscawana Lake Watershed



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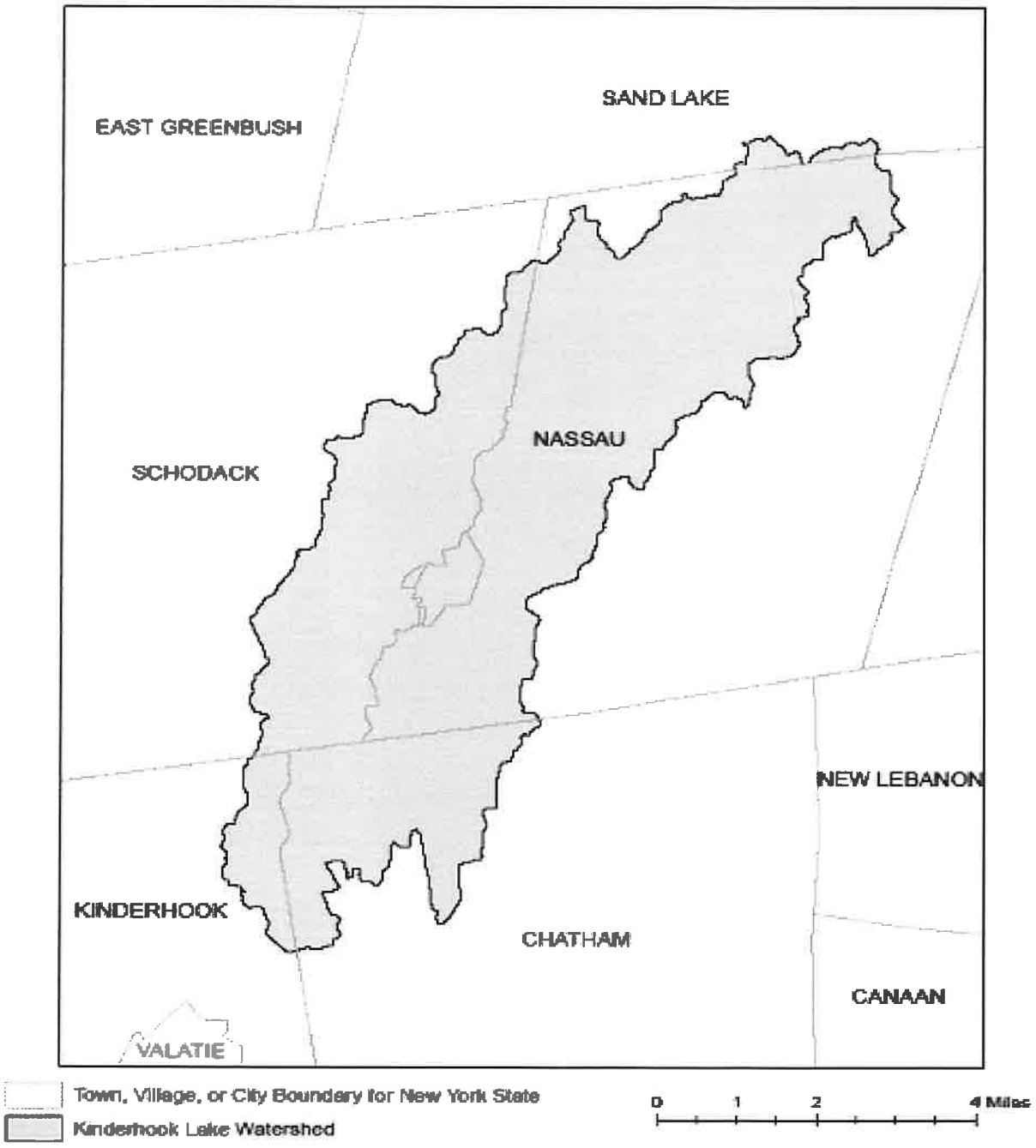
Appendix C

Figure 5 - Kinderhook Lake Watershed



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River - See Figure 1 in Appendix C

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APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

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303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

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303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

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303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

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303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

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303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

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APPENDIX F – List of NYS DEC Regional Offices

Region	Covering the following counties:	Division of Environmental Permits (DEP) Permit Administrators	Division of Water (DOW) Water (SPDES) Program
1	Nassau and Suffolk	50 Circle Road Stony Brook, NY 11790 Tel. (631) 444-0365	50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0405
2	Bronx, Kings, New York, Queens and Richmond	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4997	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4933
3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester	21 South Putt Corners Road New Paltz, NY 12561-1696 Tel. (845) 256-3059	100 Hillside Avenue, Suite 1w White Plains, NY 10603 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1150 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2069	1130 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	1115 State Route 86, Po Box 296 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, NY 12885-1172 Tel. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Appendix E

Forms

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

STORM WATER POLLUTION PREVENTION PLAN
CONTRACTOR'S CERTIFICATION STATEMENT

Sawyer's Landing

CONTRACTOR'S CERTIFICATION:

"I certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP for the construction site identified in such SWPPP as a condition of authorization to discharge storm water. I also understand that the operator must comply with the terms and conditions of the New York State Pollutant Discharge Elimination System (SPDES) general permit for storm water discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards."

Note: The contractor shall have at least one NYSDEC trained individual onsite at all times when earthwork and other SWPPP associated work is being performed from each contractor(s) and subcontractor(s). Each contractor(s) and subcontractor(s) shall provide copies of these individuals' certifications to the Town of Amherst.

Name: _____
(Print)

Signature: _____

Title: _____

Company Name: _____

Address: _____

Telephone Number: _____

Date: _____

Scope of Services: _____

Trained Individual(s) Responsible for Implementation: _____

This form must be signed by a responsible corporate officer or other party meeting the "Signatory Requirements" of the NYSDEC SPDES General Permit

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

SWPPP Preparer Certification Form

SPDES General Permit for Stormwater Discharges From Construction Activity (GP-0-20-001)

Project Site Information

Project/Site Name

Sawyer's Landing

Owner/Operator Information

Owner/Operator (Company Name/Private Owner/Municipality Name)

Sawyer's Landing LLC

Certification Statement – SWPPP Preparer

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Christopher		Wood
First name	MI	Last Name

Signature

3/3/21
Date

Revised: January 2020

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Owner/Operator Certification Form

SPDES General Permit For Stormwater Discharges From Construction Activity (GP-0-20-001)

Project/Site Name: Sawyer's Landing

eNOI Submission Number: _____

eNOI Submitted by: ☐ Owner/Operator ☑ SWPPP Preparer ☐ Other

Certification Statement - Owner/Operator

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Owner/Operator First Name M.I. Last Name

William T Severyn

Signature

3/3/21

Date

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Appendix F

NYSDEC Notice of Termination (NOT)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505
(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ___ ___ ___ ___ ___ ___

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person: | 4a.Telephone:

4b. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. □ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP. ***Date final stabilization completed** (month/year): _____

9b. □ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ___ ___ ___ ___ ___ ___
(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. □ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? □ yes □ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? □ yes □ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

_____

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? □ yes □ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

□ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.

□ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).

□ For post-construction stormwater management practices that are privately owned, a mechanism is in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the owner or operator's deed of record.

□ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university or hospital), government agency or authority, or public utility; policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____ (acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? □ yes □ no

(If Yes, complete section VI - "MS4 Acceptance" statement

V. Additional Information/Explanation:

(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:	
Title/Position:	
Signature:	Date:

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

VII. Qualified Inspector Certification - Final Stabilization:

I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):

I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

IX. Owner or Operator Certification

I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2015)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Appendix G

Construction Documents

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York
SITE DEVELOPMENT DRAWINGS

AGENCIES

ENGINEERING DEPARTMENT
NAME/TITLE: JEFFERY BURROUGHS, P.E. – TOWN ENGINEER
COMPANY/DEPT: TOWN OF AMHERST ENGINEERING DEPARTMENT
ADDRESS: 1100 NORTH FOREST ROAD
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716-631-7154

PLANNING & ZONING DEPARTMENT
NAME/TITLE: DANIEL HOWARD – PLANNING DIRECTOR
COMPANY/DEPT: TOWN OF AMHERST PLANNING DEPARTMENT
ADDRESS: 5583 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716-631-7051

LAND SURVEYOR
NAME/TITLE:
COMPANY/DEPT: GPI ENGINEERING, LANDSCAPE ARCHITECTURE SURVEYING, LLP
ADDRESS: 4950 GENESEE STREET, SUITE 100
BUFFALO, NEW YORK 14225
TELEPHONE 716-633-4844

UTILITIES

NATURAL GAS
COMPANY/DEPT: NATIONAL FUEL GAS CORP.
ADDRESS: 6363 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716-857-7000

TELEPHONE COMPANY
COMPANY/DEPT: VERIZON
ADDRESS: 65 FRANKLIN STREET
BUFFALO, NEW YORK 14203
TELEPHONE 716-840-8748

CABLE COMPANY
COMPANY/DEPT: TIME WARNER
ADDRESS: 789 CHURCH ROAD
WEST SENECA, NEW YORK
TELEPHONE 716-558-8615

ELECTRIC COMPANY
COMPANY/DEPT: NATIONAL GRID
ADDRESS: 144 KENSINGTON AVENUE
BUFFALO, NEW YORK 14214
TELEPHONE 716-236-2738

WATER
COMPANY/DEPT: ERIE COUNTY WATER AUTHORITY
ADDRESS: 3030 UNION ROAD
CHEEKTOWAGA, NEW YORK 14227
TELEPHONE 716-684-1510

DIG SAFELY NEW YORK
TELEPHONE 1-800-962-7962

OWNER/DEVELOPER

NAME: Sawyer's Landing LLC
ADDRESS 43 Central Ave Suite #300
Lancaster, NY 14086

TELEPHONE 716 818-0207

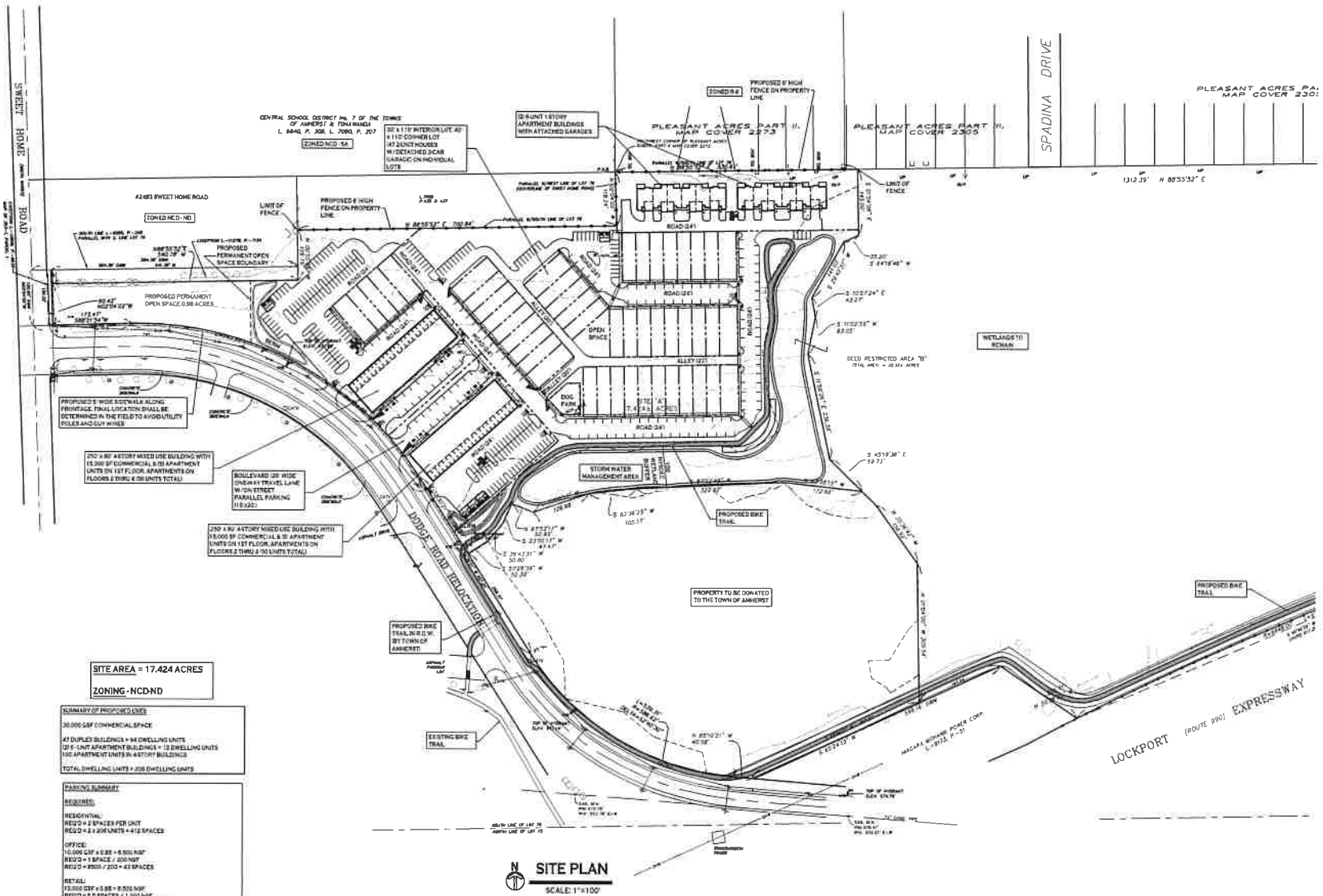
ENGINEER

Carmina • Wood • Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

FEBRUARY 2021

DWG NO.	DRAWING TITLE
–	COVER SHEET
–	TOPOGRAPHIC MAP
–	BOUNDARY SURVEY
C-001	DEMOLITION & EROSION CONTROL PLAN
C-002	DEMOLITION & EROSION CONTROL DETAILS
C-100	OVERALL SITE PLAN
C-101	SITE PLAN
C-102	PARCEL MAP
C-103	SITE DETAILS
C-104	SITE DETAILS
C-200	GRADING PLAN
C-300	STORM DRAINAGE PLAN
C-301	STORM DRAINAGE DETAILS
C-302	STORM DRAINAGE DETAILS
C-303	STORM DRAINAGE DETAILS
C-400	UTILITY PLAN
C-401	SANITARY SEWER DETAILS
C-402	SANITARY SEWER DETAILS
C-403	SANITARY SEWER GENERAL NOTES
C-404	SANITARY SEWER TESTING NOTES
C-405	WATER DETAILS
C-406	WATER DETAILS
C-407	WATER DETAILS & NOTES
C-408	INSULATED ENCLOSURE DETAIL
L-100	LANDSCAPE PLAN

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)



SITE PLAN
SCALE: 1"=100'

© Carmina Wood Morris DPC

Carmina Wood Morris
497 Main Street Suite 300
Buffalo, New York 14203
P 716.842.2185
F 716.842.0761

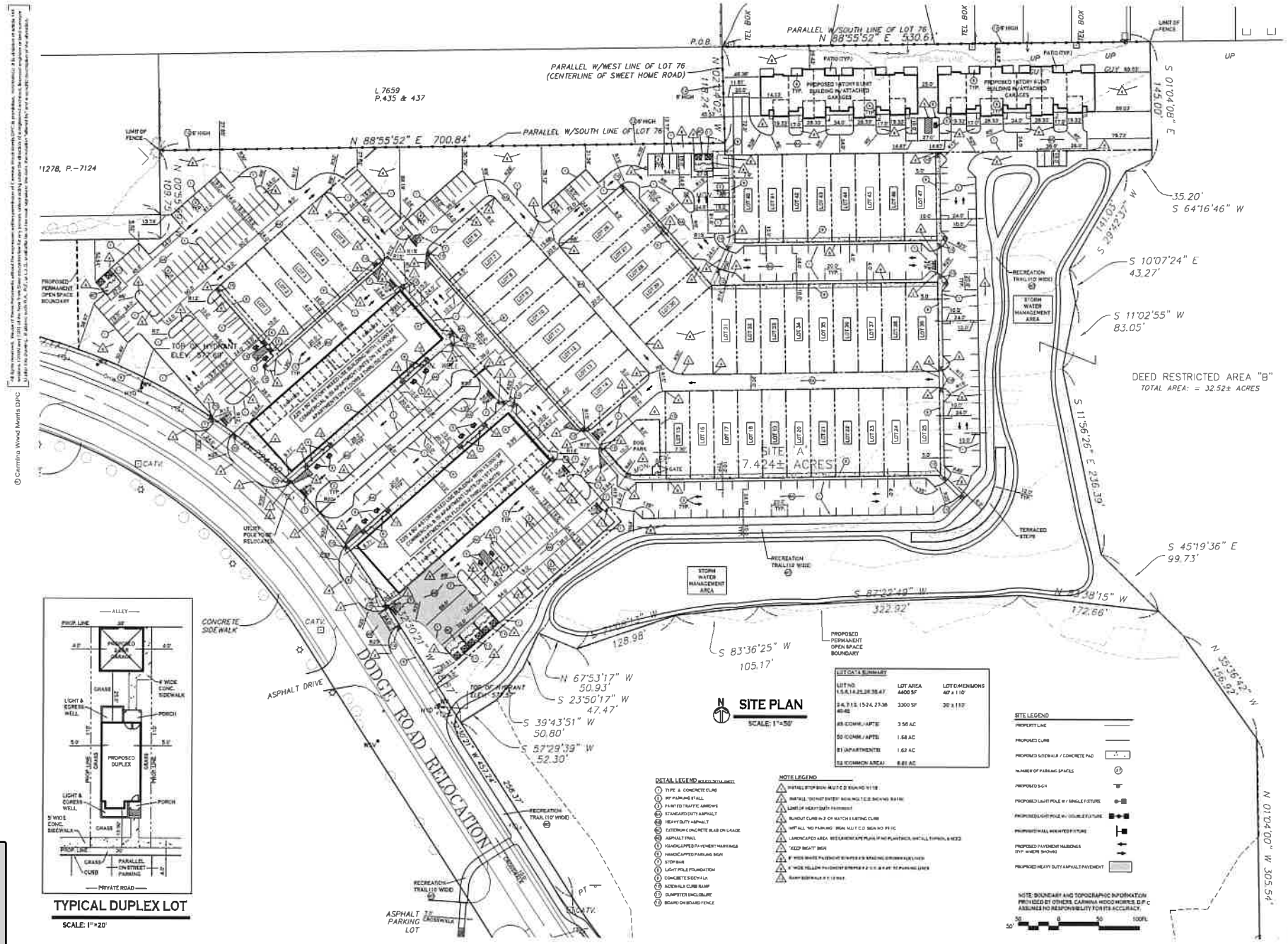
REVISIONS:
No. Description Date
Nil.

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Overall Site Plan

DRAWING NO.
C-100
Project no.: 21.011



SITE PLAN
SCALE: 1"=50'

TYPICAL DUPLEX LOT
SCALE: 1"=20'

Carmina Wood Morris
467 Main Street Suite 500
Buffalo, New York 14203
P 716.842.2185
F 716.842.0263

REVISIONS:
No. Description Date

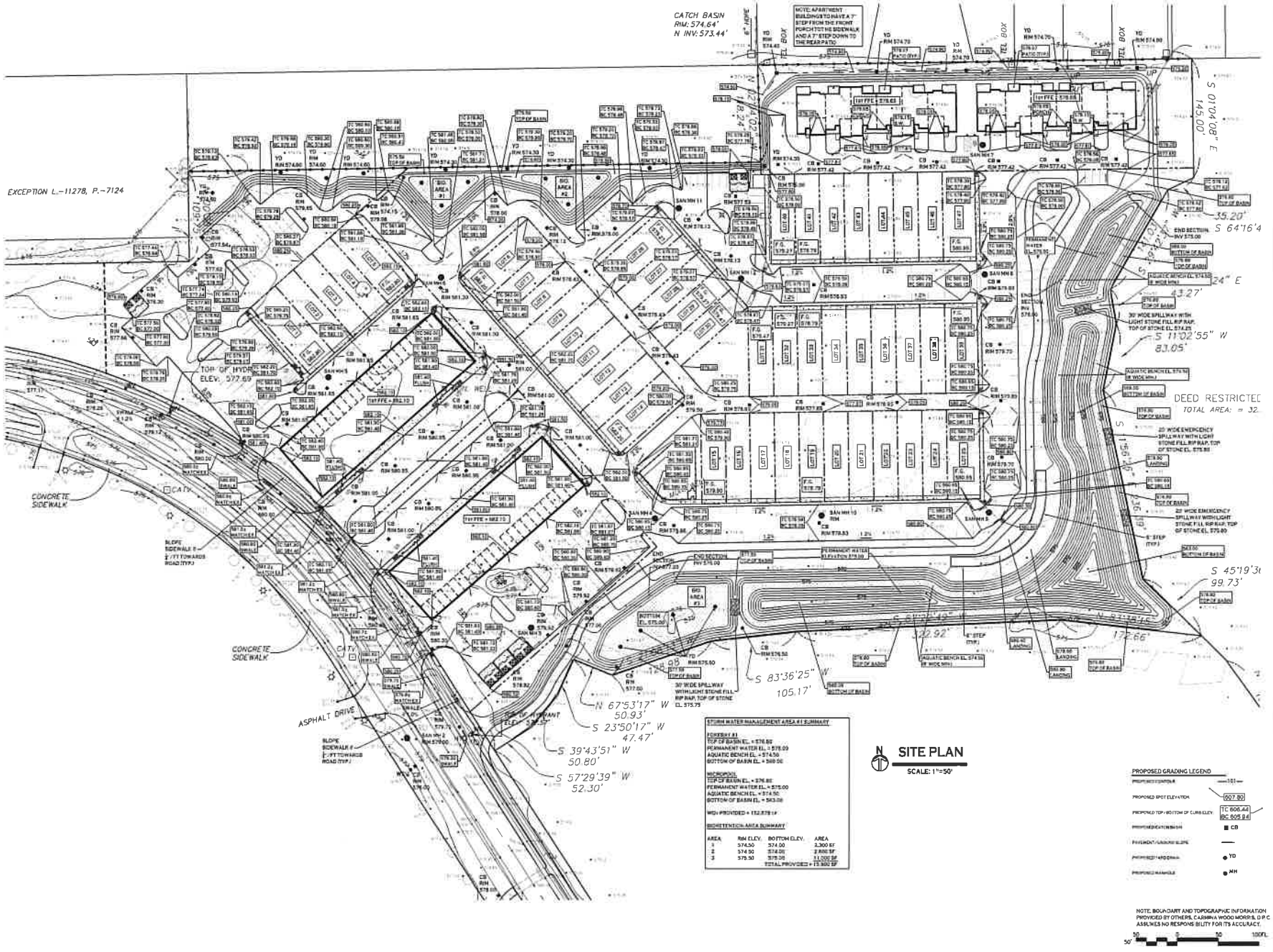
PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 7/24/21
Drawn by: C. Wood
Scale: As Plotted

DRAWING NAME:
Site Plan

DRAWING NO.
C-101
Project no.: 21.01

© Carmina Wood Morris DPC



SITE PLAN
SCALE: 1"=50'

Carmina Wood Morris
487 Main Street - Suite 500
Buffalo, New York 14203
P 716.842.3185
F 716.842.0961

REVISIONS:
No. Description Date

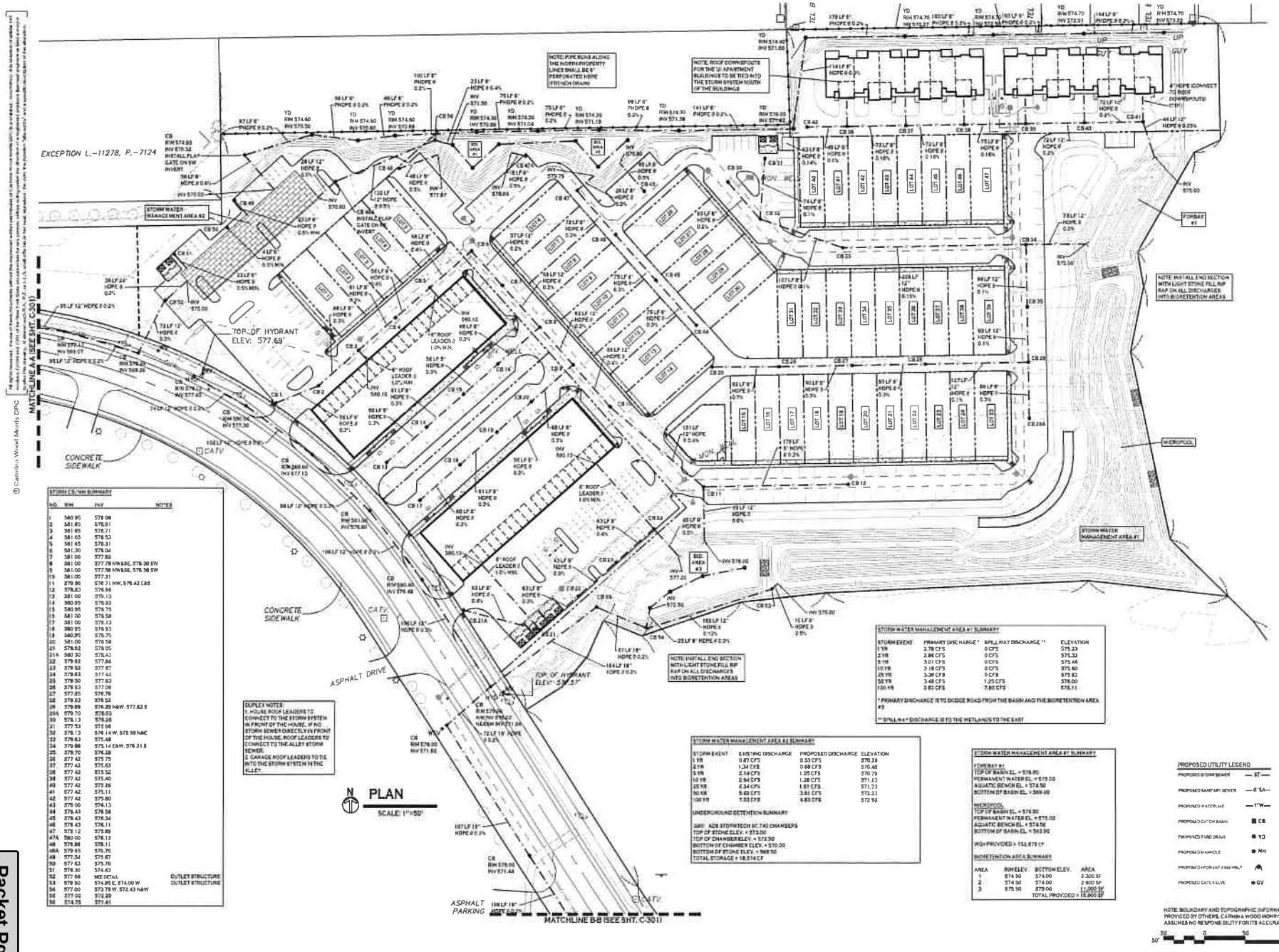
PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 3/2/21
Drawn by: C. Wood
Scale: As noted

DRAWING NAME:
Grading Plan

DRAWING NO.
C-200
Project no.: 21.011

© Carmina Wood Morris DPC



Carmina Wood Morris
487 Main Street - Suite 500
Buffalo, New York 14203
P 716.842.3186
F 716.842.0761

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Storm Drainage Plan

DRAWING NO.
C-300

Project no.: 21.011

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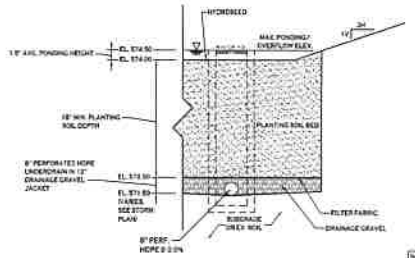
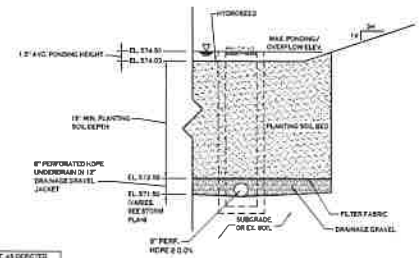
Packet Pg. 1069

1.d

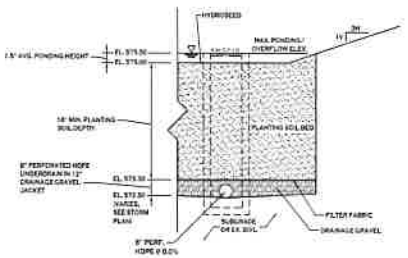
Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)



BIORETENTION AREA #1



BIORETENTION AREA #2



BIORETENTION AREA #3

NOTE: AS DEPICTED TYPICALLY IN BIORETENTION AREAS, PROPOSED GRADE ELEVATIONS ARE TO BE SET 6" ABOVE PROPOSED GRADE IN BIORETENTION AREAS.

BIORETENTION AREA - TYPICAL SECTIONS

NOT TO SCALE

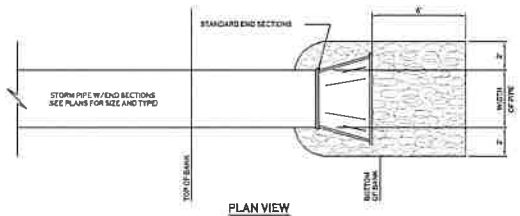
NOTES:
1. FILTER FABRIC TO BE NON-WOVEN CLASS 'C', MIRAFI 140 OR APPROVED EQUIVALENT.
2. MULCH TO BE SHREDDED HARDWOOD, AGED 12 MONTHS MIN.
3. DRAINAGE GRAVEL TO MEET AASHTO M-43, NO.57, SIZE 0.25" TO 0.75"
4. CONTRACTOR TO PROVIDE PLANTING SOIL SUBMITTAL SPECIFICATION FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION

NOTE: PLANTING SOIL SHALL BE LOAM/SAND MIX CONTAINING A MINIMUM OF 35 TO 99% SAND BY VOLUME AND LESS THAN 25% CLAY. SOIL SHOULD FALL WITHIN USCS TYPES SM OR SL WITH PERMEABILITY OF AT LEAST 0.5 FEET PER DAY. SOIL SHOULD BE FREE FROM STONES, STUMPS, ROOTS OR OTHER WOODY MATERIAL OVER 1" IN DIAMETER. PLACEMENT OF THE PLANTING SOIL SHOULD BE IN LIFTS OF 12" TO 18", LOOSELY COMPACTED.

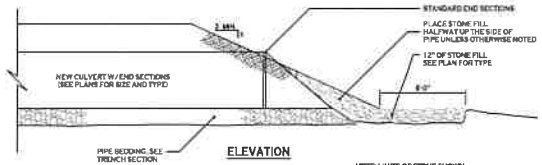
CHARACTERISTICS SHALL BE:
PH RANGE: 5.2 - 7.00
ORGANIC MATTER: 1.5 - 4.0%
MAGNESIUM: 35 LBS PER ACRE MIN.
PHOSPHERUS: 75 LBS PER ACRE MIN
POTASSIUM: 85 LBS PER ACRE MIN.
SOLUBLE SALTS: 500 PPM
CLAY: 10 TO 25%
SILT: 30 TO 55%
SAND: 35 TO 60%

BIO-RETENTION AREA SEEDING SPEC (NORTHEAST WETLAND GRASS SEED MIX):

SEED MIXTURE	VARIETY	PERCENT BY NO. OF SEEDS
CAREX STRICTA	AGROSTIS STOLONIFERA	83.0
SCIRPUS CYPERINUS	POA TRIVIALIS	17.0
ELYMUS VIRGINICUS	ALOPECURUS ARUNDINACEUS	11.0
JUNCUS EFFUSUS	LOLIUM MULTIFLORUM	4.5
DESCHAMPSIA CESPITOSA	FESTUCA ELANOR STRICTA	4.5



PLAN VIEW

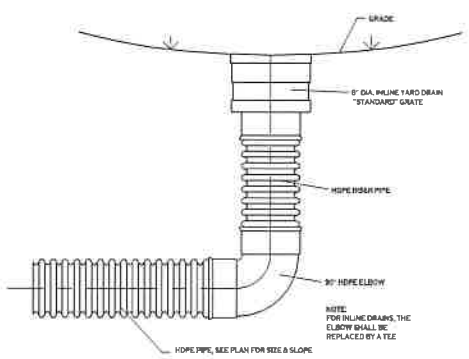


ELEVATION

NOTE: LIMITS OF STONE SHOWN ARE MINIMUMS. PLAN MAY INDICATE GREATER LIMITS

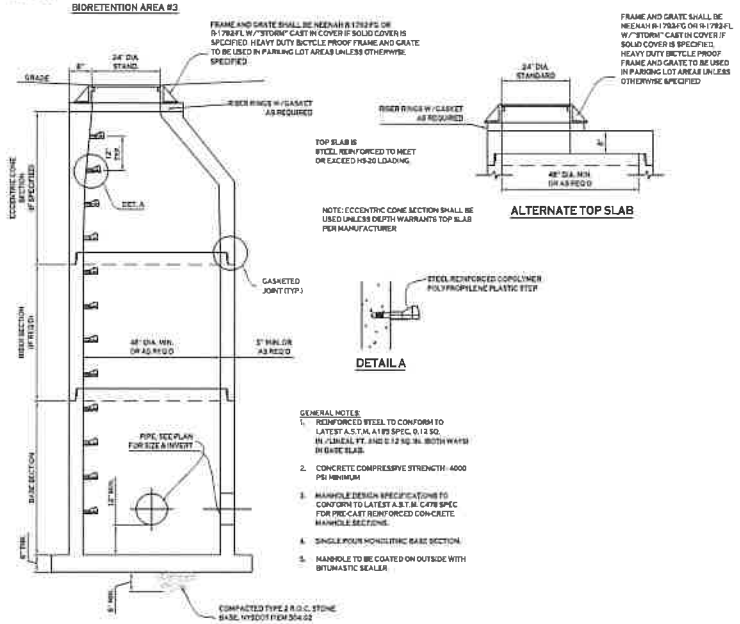
TYPICAL PIPE OUTLET W/ END SECTION & RIP RAP

NOT TO SCALE



NOTE: SEE TYPICAL TRENCH SECTION FOR BEDDING REQUIREMENTS

TYPICAL YARD DRAIN DETAIL



TOP SLAB IS 8"CEL REINFORCED TO MEET OR EXCEED H-20 LOADING

NOTE: ECCENTRIC CONE SECTION SHALL BE USED UNLESS DEPTH WARRANTS TOP SLAB PER MANUFACTURER

ALTERNATE TOP SLAB

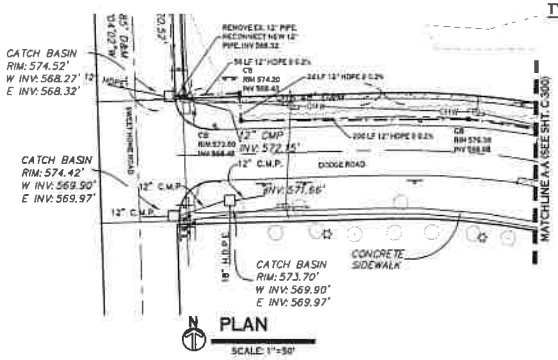
FRAME AND GRATE SHALL BE NEENAH R-1783-FS OR R-1782-FL W/ "STORM" CAST IN COVER IF SOLID COVER IS SPECIFIED. HEAVY DUTY BICYCLE PROOF FRAME AND GRATE TO BE USED IN PARKING LOT AREAS UNLESS OTHERWISE SPECIFIED

DETAIL A

GENERAL NOTES:
1. REINFORCED STEEL TO CONFORM TO LATEST A.S.T.M. A185 SPEC., 6 X 6 SQ. IN. WELDED WT. AND 6 X 12 SQ. IN. BOTH WAYS IN BASE SLAB.
2. CONCRETE COMPRESSIVE STRENGTH: 4000 PSI MINIMUM
3. MANHOLE DESIGN SPECIFICATIONS TO CONFORM TO LATEST A.S.T.M. C478 SPEC FOR PRE-CAST REINFORCED CONCRETE MANHOLE SECTIONS.
4. SINGLE POUR MONOLITHIC BASE SECTION.
5. MANHOLE TO BE COATED ON OUTSIDE WITH BITUMASTIC SEALER

TYPICAL STORM MANHOLE DETAIL

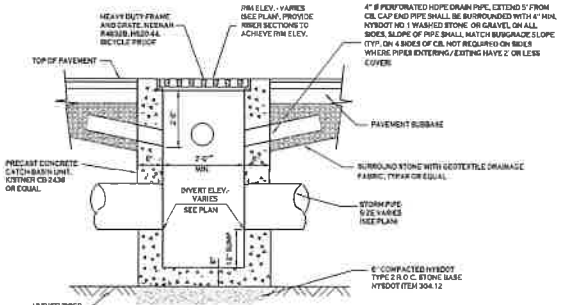
NOT TO SCALE



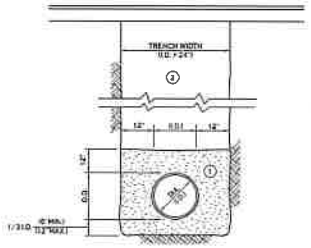
N PLAN

SCALE: 1"=50'





TYPICAL PRECAST CATCH BASIN
NOT TO SCALE



NOTES:
A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.
C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.
D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT | 1985 EDITION)

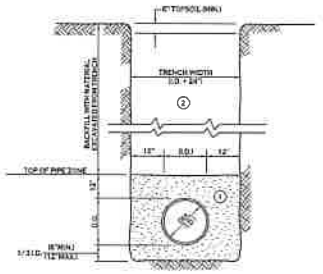
① NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703.02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL ①

② TYPE 2 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYDOT SECTION 304.2.02 TYPE 2. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN TWO INCHES AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL ②

STORM SEWER TRENCH SECTION IN PAVED AREAS
NOT TO SCALE



NOTES:
A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.
C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.
D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

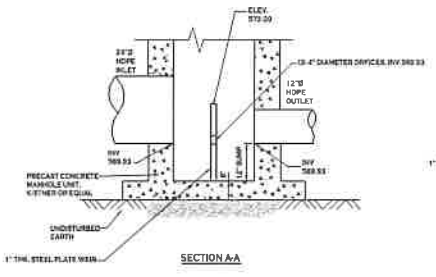
PIPE BEDDING MATERIAL (NYSDOT | 1985 EDITION)

① NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703.02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL ①

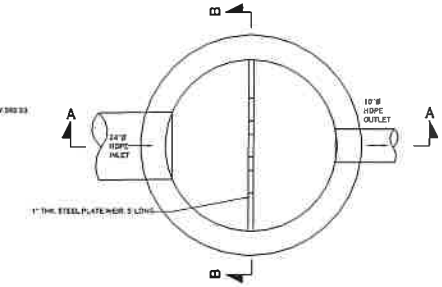
② BACKFILL MATERIAL SHALL BE NATIVE SOIL CONTAINING NO UNSUITABLE MATERIAL COMPACTED IN 6" LIFTS.

STORM SEWER TRENCH SECTION IN UNPAVED AREAS
NOT TO SCALE



SECTION A-A

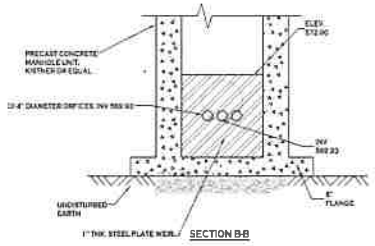
NOTES:
1. FASTEN STEEL PLATE TO CB WALL WITH ANGLE CLIPS AND BOLTS
2. STEEL PLATE, ANGLE CLIPS, AND BOLTS TO BE HOT DIPPED GALVANIZED



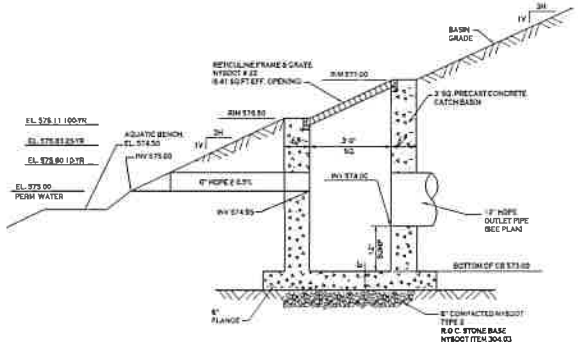
PLAN

* NOTE: USE 5'-0" I.D. MANHOLE

OUTLET CONTROL STRUCTURE - CB 52
NOT TO SCALE



SECTION B-B



DETENTION BASIN OUTLET STRUCTURE - CB 53
N.T.S.

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Carmina Wood Morris DPC
444 Main Street, Suite 320
Buffalo, New York 14203
P: 716.842.1085
F: 716.842.0287

REVISIONS:
No. Description Date

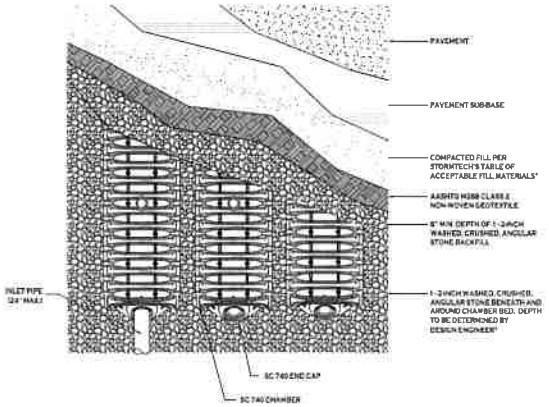
PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Storm Drainage Details

DRAWING NO.
C-302
Project no.: 21,011

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)



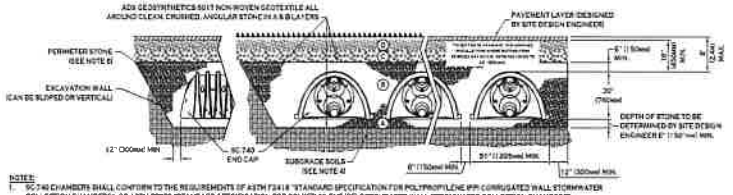
STORMTECH SC-740 CHAMBER SYSTEM PLAN VIEW DETAIL

NOT TO SCALE

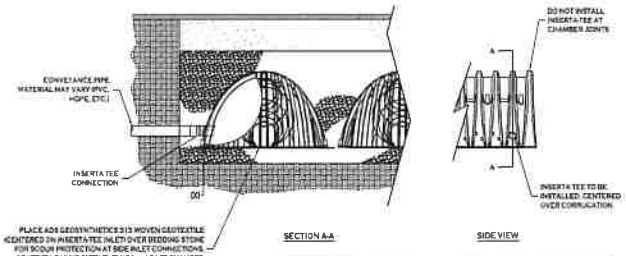
ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION/DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1]: A-1, A-2-4, A-3 OR AASHTO M43[1]: 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,500 lbs (89 kN).
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1]: 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1]: 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[3,4]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43 STONE)".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS



NOTES:
1. SC-740 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
6. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION



NOTE:
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
MC-3500	12" (300 mm)	6" (150 mm)
MC-4500	12" (300 mm)	8" (200 mm)

INSERTA TEE FITTINGS AVAILABLE FOR SOR-26, SOR-35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON

INSERTA TEE DETAIL

NOT TO SCALE

INSPECTION AND MAINTENANCE

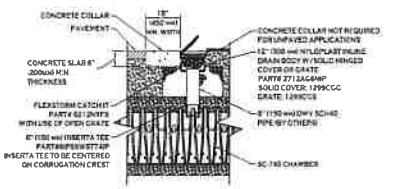
STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
  - () MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
  - () FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 rad) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES:
1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



SC-740 6" INSPECTION PORT DETAIL

NOT TO SCALE

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Carmina Wood Morris
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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

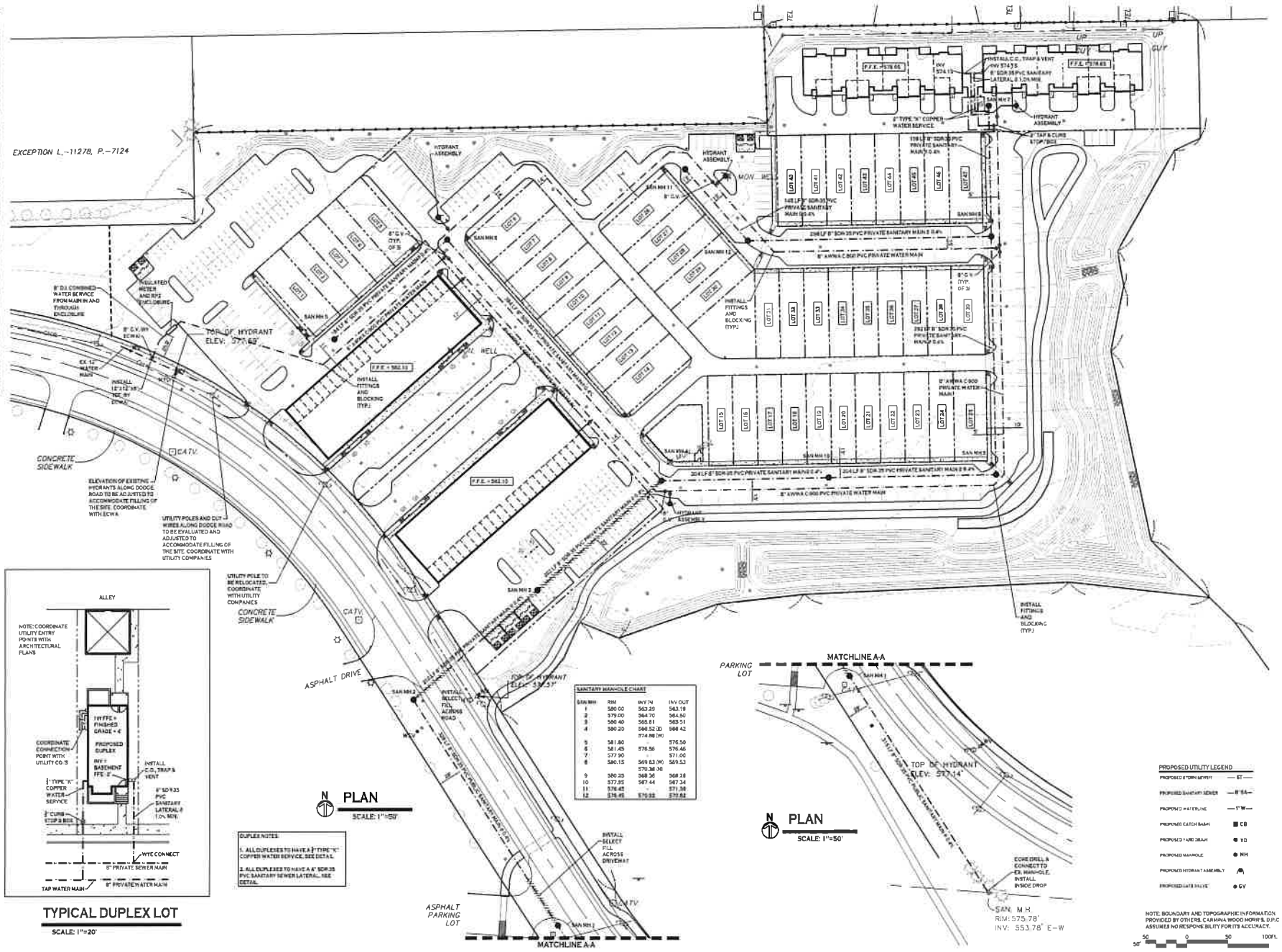
Date: 2/15/21
Drawn by: 2/24/21
Scale: As Noted

DRAWING NAME:
Storm Drainage Details

DRAWING NO.
C-303

Project no: 21.011

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)



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Carmina Wood Morris DPC

REVISIONS:

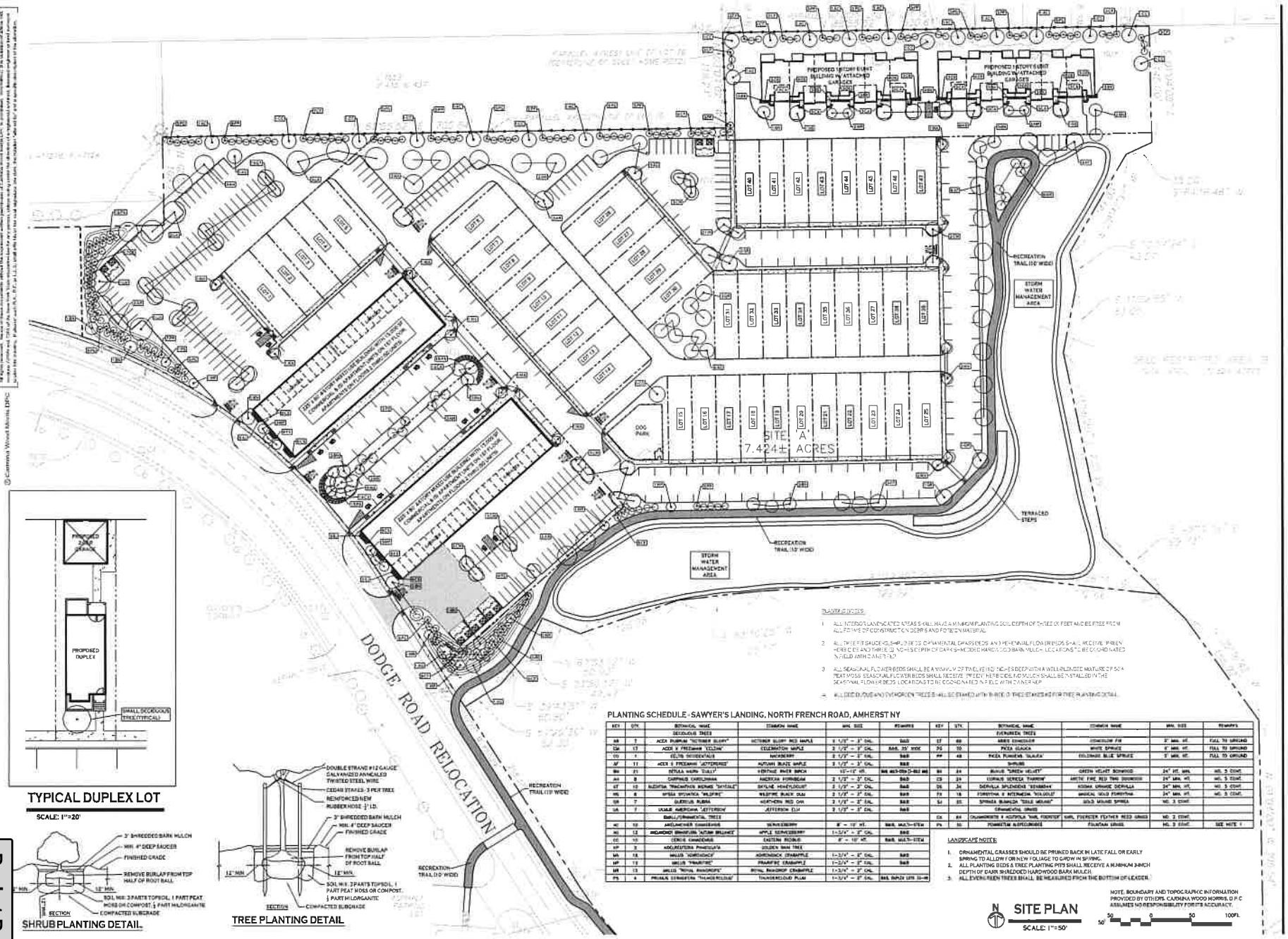
PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Utility Plan

DRAWING NO.
C-400

Project no.: 21,011



PLANTING NOTES:

1. ALL INTERIOR LANDSCAPED AREAS SHALL HAVE A MINIMUM PLANTING SOIL DEPTH OF THREE (3) FEET AND BE FREE FROM ALL FORMS OF CONSTRUCTION DEBRIS AND FOREIGN MATERIAL.
2. ALL TREE PITS AND SHRUB BEDS, ORNAMENTAL GRASS BEDS AND PERENNIAL FLOWER BEDS SHALL RECEIVE THREE (3) INCHES DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH. LOCATIONS TO BE CONFIRMED IN FIELD WITH OWNER.
3. ALL SEASONAL FLOWER BEDS SHALL BE A MINIMUM OF TWELVE (12) INCHES DEEP WITH A WELL-BLENDED MIXTURE OF 50% PEAT MOSS. SEASONAL FLOWER BEDS SHALL RECEIVE TREFLY HERBICIDE. NO MULCH SHALL BE INSTALLED IN THE SEASONAL FLOWER BEDS. LOCATIONS TO BE CONFIRMED IN FIELD WITH OWNER.
4. ALL DECIDUOUS AND EVERGREEN TREES SHALL BE STAKED WITH THREE (3) TREE STAKES AND FOR TREE PLANTING DETAIL.

PLANTING SCHEDULE - SAWYER'S LANDING, NORTH FRENCH ROAD, AMHERST NY

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		DECIDUOUS TREES			
AR	7	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	2 1/2" – 3" CAL.	B&B
CM	17	ACER X FREEMANII 'CELZAM'	CELEBRATION MAPLE	2 1/2" – 3" CAL.	B&B, 25' WIDE
CO	1	CELTIS OCCIDENTALIS	HACKBERRY	2 1/2" – 3" CAL.	B&B
AF	11	ACER X FREEMANII 'AUTUMN BLAZE'	AUTUMN BLAZE MAPLE	2 1/2" – 3" CAL.	B&B
BN	21	BETULA NIGRA 'DURA-1'	HERITAGE RIVER BIRCH	10'-12' HT.	B&B MULTI-STEM
AM	8	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2 1/2" – 3" CAL.	B&B
GT	10	GLEDITSIA TRIACANTHOS INERMIS 'SKYCOLE'	SKYLINE HONEYLOCUST	2 1/2" – 3" CAL.	B&B
WS	8	NYSSA SYLVATICA 'WILDFIRE'	WILDFIRE BLACK GUM	2 1/2" – 3" CAL.	B&B
QR	7	QUERCUS RUBRA	NORTHERN RED OAK	2 1/2" – 3" CAL.	B&B
UA	7	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2 1/2" – 3" CAL.	B&B
		SMALL/ORNAMENTAL TREES			
AC	12	AMELANCHIER CANADENSIS	SERVICEBERRY	8' – 10' HT.	B&B, MULTI-STEM
MJ	13	MALUS/PYRUS 'AUTUMN BRILLIANCE'	APPLE SERVICEBERRY	1-3/4" – 2" CAL.	B&B
CC	10	CERCIS CANADENSIS	EASTERN REDBUD	8' – 10' HT.	B&B, MULTI-STEM
RP	3	KOELREUTERIA PANICULATA	GOLDEN RAIN TREE		
MA	18	MALUS 'ADIRONDACK'	ADIRONDACK CRABAPPLE	1-3/4" – 2" CAL.	B&B
MP	13	MALUS 'PRAIRIFIRE'	PRAIRIFIRE CRABAPPLE	1-3/4" – 2" CAL.	B&B
MR	13	MALUS 'ROYAL RAINDROPS'	ROYAL RAINDROP CRABAPPLE	1-3/4" – 2" CAL.	
PS	4	PRUNUS SERRULATA 'THUNDERCLOUD'	THUNDERCLOUD PLUM	1-3/4" – 2" CAL.	B&B, SAMPLE LOTS 33-44
		EVERGREEN TREES			
AB	68	ABIES CONCOLOR	CONCOLOR FIR	5' MIN. HT.	FULL TO GROUND
PG	10	PICEA GLAUCA	WHITE SPRUCE	6' MIN. HT.	FULL TO GROUND
PP	48	PICEA PUNGENS 'GLAUCA'	COLORADO BLUE SPRUCE	5' MIN. HT.	FULL TO GROUND
		SHRUBS			
BH	24	BUXUS 'GREEN VELVET'	GREEN VELVET BOXWOOD	24" HT. MIN.	MO. 3 CONT.
CS	24	CORNUS SERICEA 'FARROW'	ARCTIC FIRE RED TWIG DOGWOOD	24" MIN. HT.	MO. 3 CONT.
DS	24	DIERVILLA SPLENDENS 'SEIBERT4'	KODIAK ORANGE DIERVILLA	24" MIN. HT.	MO. 3 CONT.
FX	18	FORSYTHIA X INTERMEDIA 'BOUCLE'	MAGICAL GOLD FORSYTHIA	24" MIN. HT.	MO. 3 CONT.
SJ	35	SPIRAEA JAPONICA 'DOUG MEDARC'	DOUG MOUND SPIREA	MO. 3 CONT.	
		ORNAMENTAL GRASS			
CK	84	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	MO. 2 CONT.	
PA	30	PENNISETUM ALOPECUROIDES	FOUNTAIN GRASS	MO. 3 CONT.	SEE NOTE 1

LANDSCAPE NOTES:

1. ORNAMENTAL GRASSES SHOULD BE PRUNED BACK IN LATE FALL OR EARLY SPRING TO ALLOW FOR NEW FOLIAGE TO GROW IN SPRING.
2. ALL PLANTING BEDS & TREE PLANTING PITS SHALL RECEIVE A MINIMUM 3-INCH DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH.
3. ALL EVERGREEN TREES SHALL BE MEASURED FROM THE BOTTOM OF LEADER.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS. CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR IT'S ACCURACY.

N SITE PLAN
SCALE: 1"=50'

50 0 50 100FT.

TYPICAL DUPLEX LOT
SCALE: 1"=20'

SHRUB PLANTING DETAIL

TREE PLANTING DETAIL

Carmina Wood Morris DPC
487 Main Street, Suite 500
Buffalo, New York 14203
P 716.842.3181
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/9/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Landscape Plan

DRAWING NO.
L-100
Project no.: 21.011

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Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Appendix H

Soils Information

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Soil Map—Erie County, New York



Map Scale: 1:3,590 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Erie County, New York
Survey Area Data: Version 20, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 26, 2019—Oct 10, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ge	Getzville silt loam	27.2	87.5%
Ld	Lamson mucky very fine sandy loam	1.8	5.7%
Sw	Swormville clay loam	2.1	6.8%
Totals for Area of Interest		**31.1**	**100.0%**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Appendix I

SHPO Information

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189
518-237-8643

Bernadette Castro
Commissioner

October 10, 2001

Carolyn A. Pierce
CCRG
105 Robie Avenue
Buffalo, New York 14214

Dear Ms. Pierce:

Re: SEQRA
Muir Woods Mixed-Use Development
Amherst/Erie County
01PR0345

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Parks, Recreation and Historic Preservation Law, Section 14.09.

Based upon this review, it is the OPRHP's opinion that your project will have No Impact upon cultural resources in or eligible for inclusion in the State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Director

RLP:cmp

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OCT 16 2001
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An Equal Opportunity/Affirmative Action Agency
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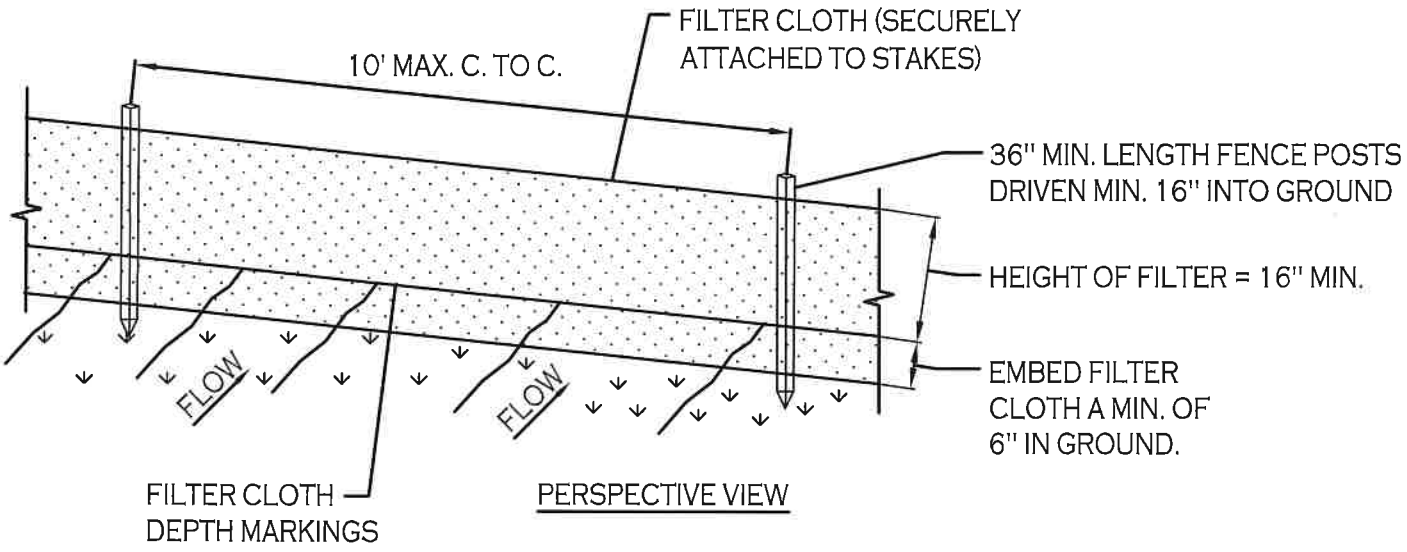
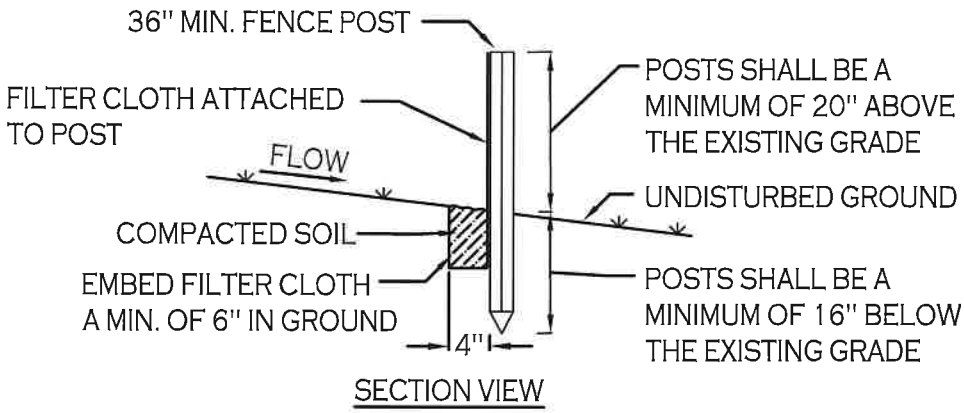
Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Appendix J

Standard Erosion Control Details

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)





CONSTRUCTION SPECIFICATIONS

1. WOVEN FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.

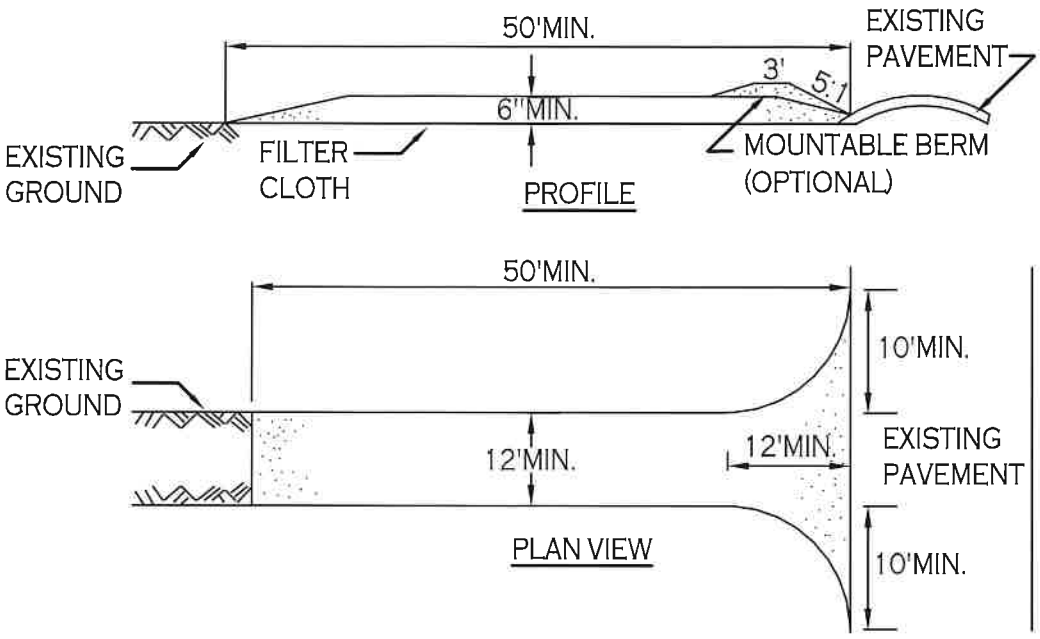
2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.

3. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

SILT FENCE DETAIL

NOT TO SCALE

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)



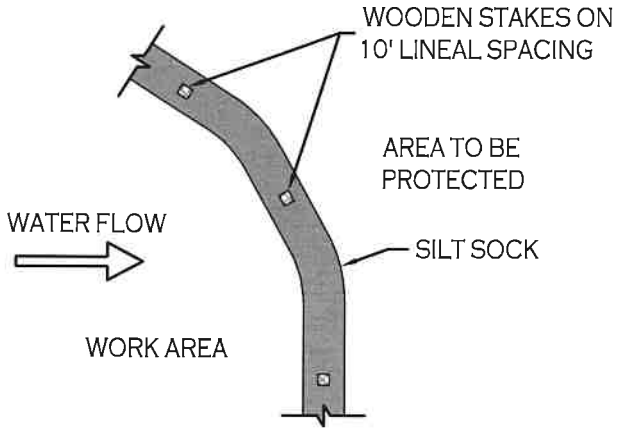
CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

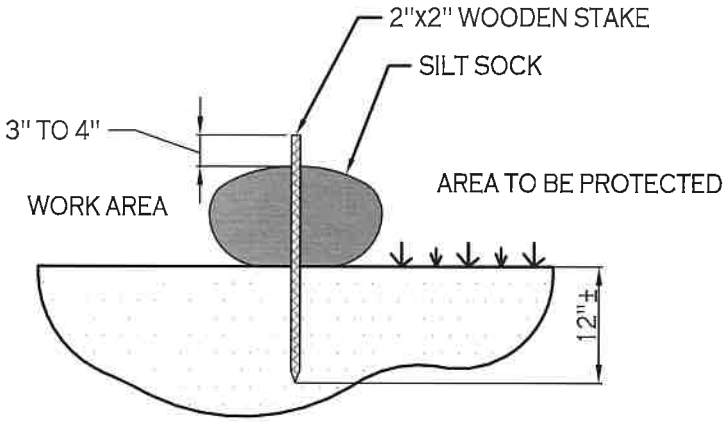
STABILIZED CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)



PLAN VIEW



SECTION VIEW

NOTES:

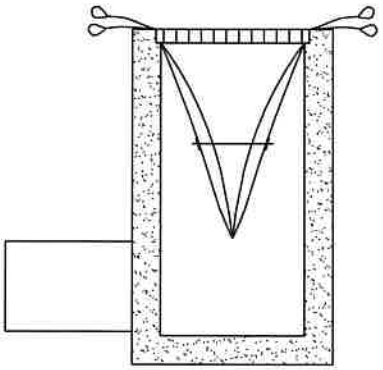
CONTRACTOR SHALL INSPECT AND MAINTAIN SILT SOCK AS NEEDED DURING THE DURATION OF CONSTRUCTION PROJECT.

CONTRACTOR SHALL REMOVE SEDIMENT COLLECTED AT THE BASE OF THE SILT SOCK WHEN IT HAS REACHED $\frac{1}{2}$ OF THE EXPOSED HEIGHT OF THE SILT SOCK. ALTERNATIVELY, RATHER THAN CREATE A SOIL DISTURBING ACTIVITY, THE ENGINEER MAY CALL FOR ADDITIONAL SILT SOCK TO BE ADDED AT AREAS OF HIGH SEDIMENTATION, PLACED IMMEDIATELY ON TOP OF THE EXISTING SEDIMENT LADEN SILT SOCK.

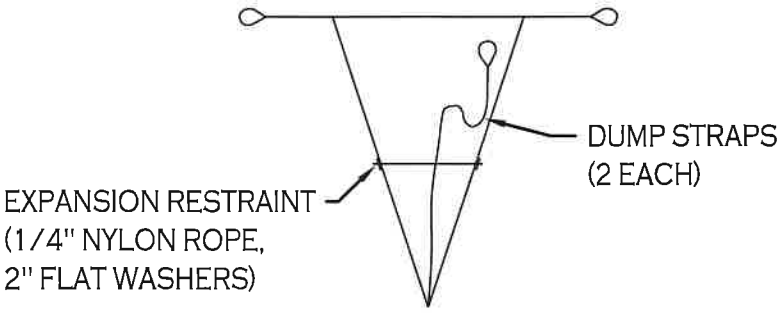
SILT SOCK DETAIL

NOT TO SCALE

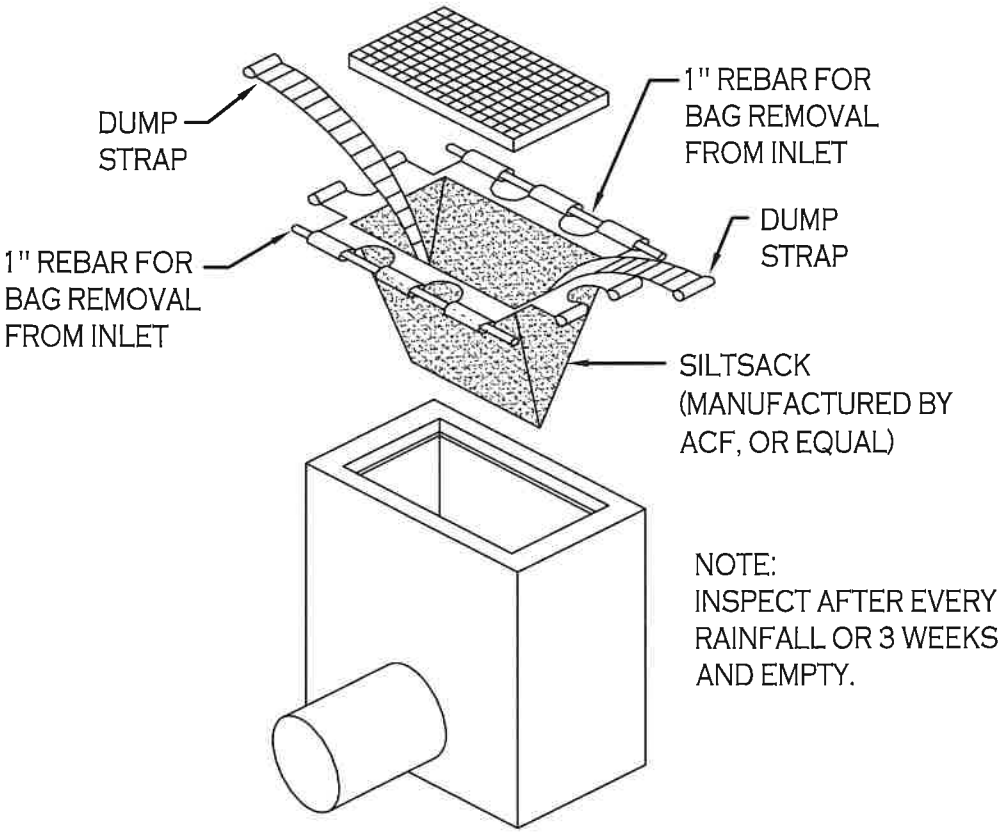
Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)



INSTALLATION DETAIL



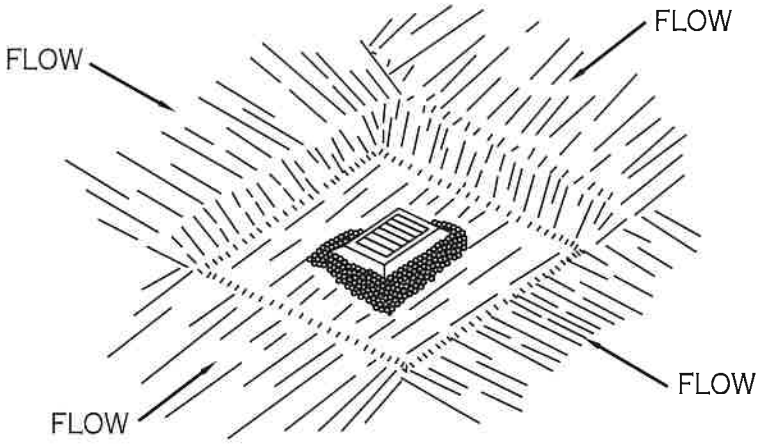
BAG DETAIL

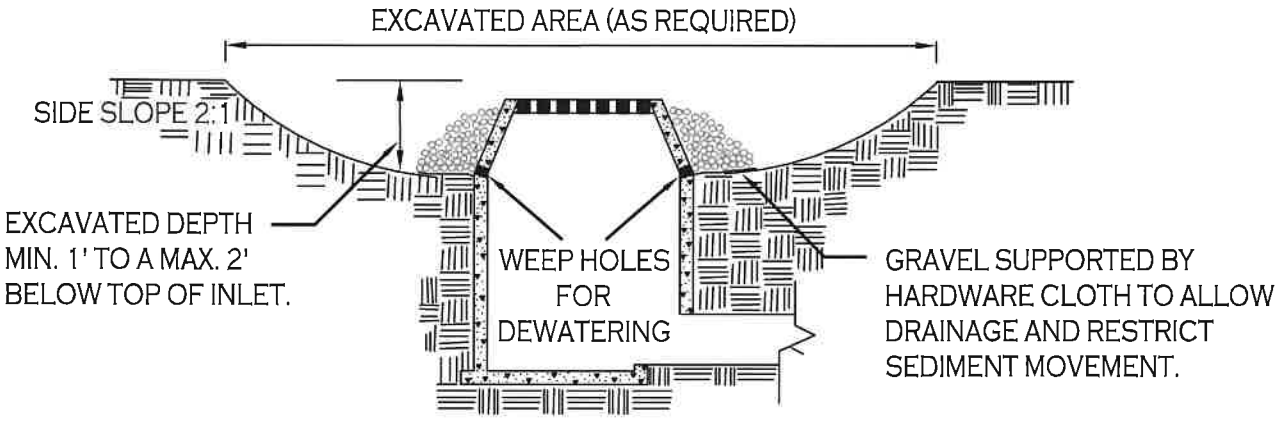


SILT SACK DETAIL

NOT TO SCALE

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)





CONSTRUCTION SPECIFICATIONS

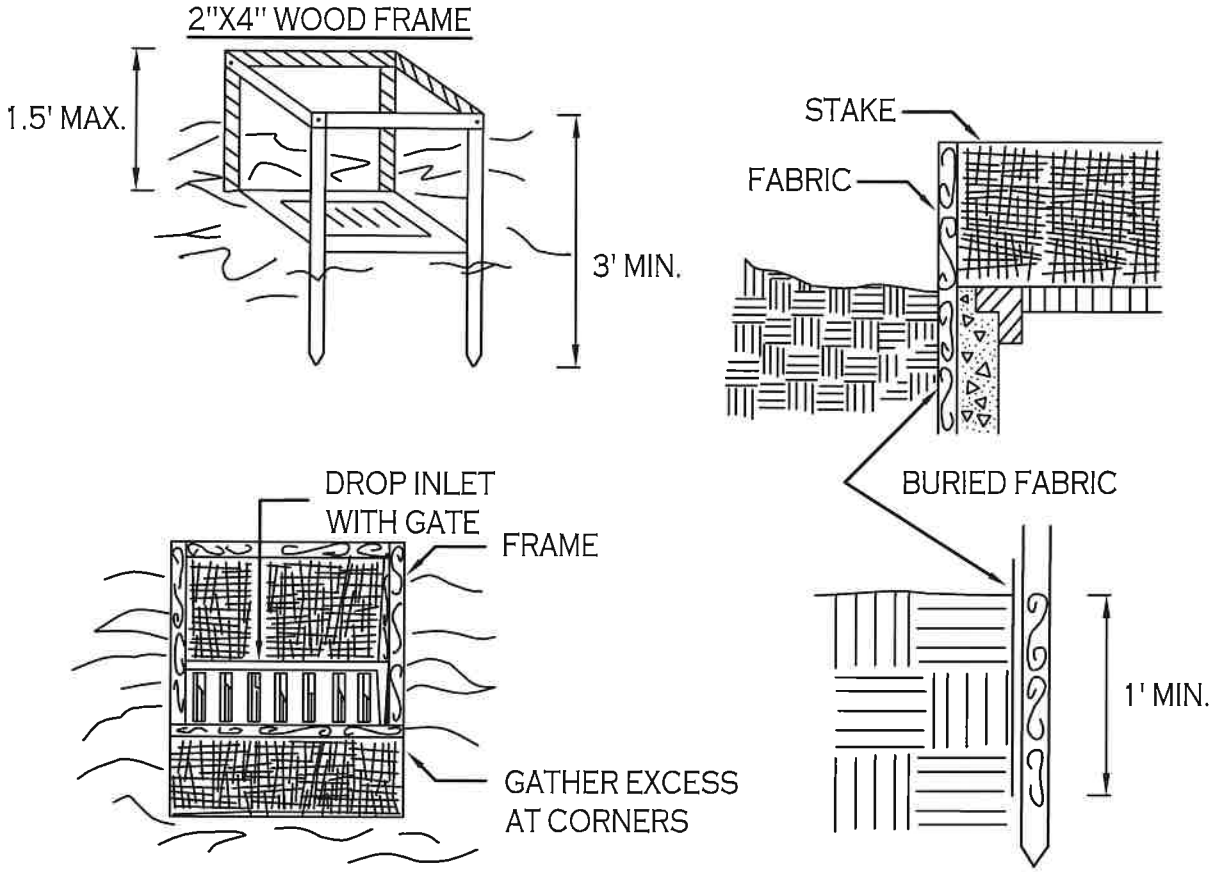
1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER EXCAVATION.
2. GRADE APPROACH TO THE INLET UNIFORMLY AROUND THE BASIN.
3. WEEP HOLES SHALL BE PROTECTED BY GRAVEL.
4. UPON STABILIZATION OF CONTRIBUTING DRAINAGE AREA, SEAL WEEP HOLES, FILL BASIN WITH STABLE SOIL TO FINAL GRADE, COMPACT IT PROPERLY AND STABILIZE WITH PERMANENT SEEDING.

MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 1

NOT TO SCALE

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)



CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.

2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.

3. STAKE MATERIALS WILL BE STANDARD 2" x 4" WOOD OR EQUIVALENT. METAL WITH A MINIMUM LENGTH OF 3 FEET.

4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.

5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.

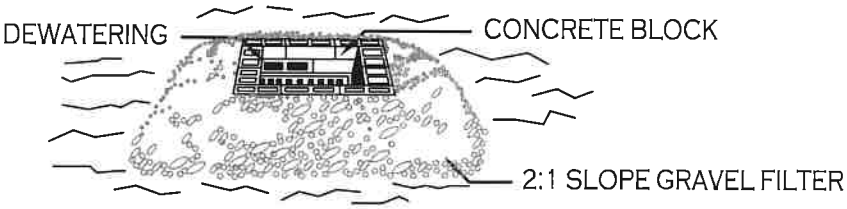
6. A 2" x 4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.

MAXIMUN DRAINAGE AREA 1 ACRE

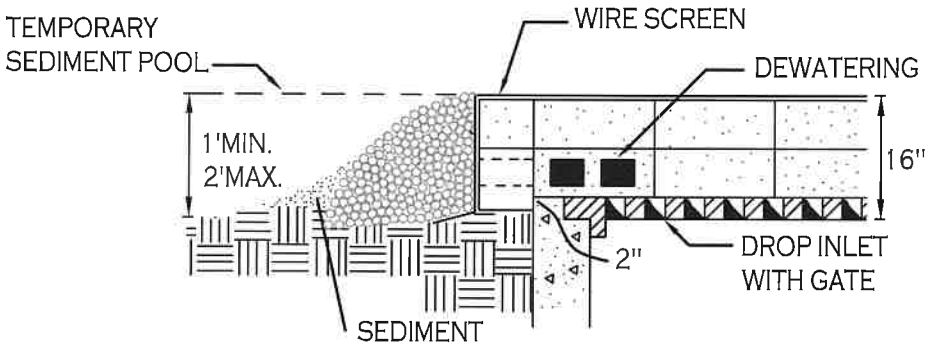
INLET PROTECTION DETAIL 2

NOT TO SCALE

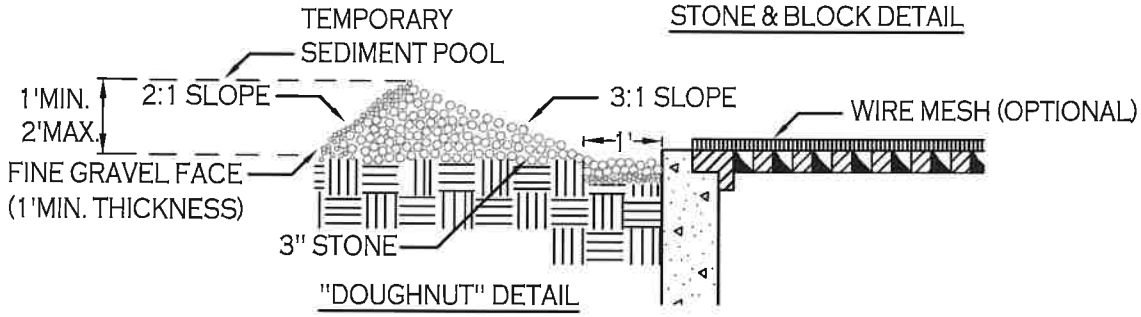
Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)



STONE & BLOCK PLAN VIEW



STONE & BLOCK DETAIL



"DOUGHNUT" DETAIL

CONSTRUCTION SPECIFICATIONS

1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE FOR DEWATERING. FOUNDATION SHALL BE 2 INCHES MINIMUM BELOW REST OF INLET AND BLOCKS SHALL BE PLACED AGAINST INLET FOR SUPPORT.

2. HARDWARE CLOTH OR 1/2" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.

3. USE CLEAN STONE OR GRAVEL 1/2-3/4 INCH IN DIAMETER PLACED 2 INCHES BELOW TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER.

4. FOR STONE STRUCTURES ONLY, A 1 FOOT THICK LAYER OF THE FILTER STONE WILL BE PLACED AGAINST THE 3 INCH STONE AS SHOWN ON THE DRAWINGS.

MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 3

NOT TO SCALE

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Appendix K

Wetland Permits

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 9
270 Michigan Avenue, Buffalo, NY 14203-2915
P: (716) 851-7165 I F: (716) 851-7168
www.dec.ny.gov

December 24, 2020

Mr. Adam Faeth
Ciminelli Real Estate Corporation
50 Fountain Plaza, Suite 500
Buffalo, New York 14202

Muir Woods Development – "Site A"
Permit Transmittal Letter
Permit No. 9-1422-00398/00001

Dear Mr. Faeth:

Enclosed is your permit which was issued in accordance with applicable provisions of the Environmental Conservation Law. The permit is valid for only that project, activity or operation expressly authorized. If modifications are desired after permit issuance, you must submit the proposed revisions and receive written approval from the Permit Administrator prior to initiating any change. If the Department determines that the modification represents a material change in the scope of the authorized project, activity, operation or permit conditions, you will be required to submit a new application for permit.

Please review all permit conditions carefully. In particular, identify your initial responsibilities under this permit in order to assure timely action if required. Since failure to comply precisely with permit conditions may be treated as a violation of the environmental conservation law, you are requested to provide a copy of the permit to the project contractor, facility operator, and other persons directly responsible for permit implementation (if any).

If you have any questions, please contact this office at the above address.

Respectfully,
David S. Denk
Regional Permit Administrator

Enclosure
ecc: NYSDEC Law Enforcement
Maureen Brady, NYSDEC Office of General Counsel
Mr. Chuck Rosenburg, NYSDEC Division of Fish and Wildlife
Mr. Martin Crossen, USACOE
Sean Hopkins, Esq., Hopkins Sorgi & McCarthy PLLC

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)



NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

PERMIT
Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
Ciminelli Muir Woods LLC
50 Fountain Plaza, Suite 500
Buffalo, NY 14202
(716) 631-8000

Facility:
MUIR WOODS DEVELOPMENT
1121 N French Rd
Amherst, NY 14228

Facility Location: in AMHERST in ERIE COUNTY
Facility Principal Reference Point: NYTM-E: 191.586 NYTM-N: 4770.823
Latitude: 43°01'38.9" Longitude: 78°47'07.2"

Authorized Activity: Construction of a mixed-use project named "Muir Woods" consisting of approximately two 4-story mixed-use buildings consisting of commercial space and residential units, 90 two-family townhouses and 2 six-unit apartment buildings, approximately 133 detached single-family residential units and 515 cottage-style and apartment-style housing units with various amenities; and gas, electric, sanitary, potable water and storm water (the necessary infrastructure), while maintaining open space on approximately 224 acres in the Audubon New Community District. The Muir Woods project property is a 326 acre site bounded by the Lockport Expressway (Interstate Route 990) and Dodge Road on the south, Sweet Home Road on the west, North French Road on the north and Campbell Boulevard on the east. The project will result in permanent impacts to approximately 2.39 acres of State regulated wetlands (TE-22, TE-23 and TE-34), and 11.38 acres of State regulated 100 foot wide wetland adjacent area. As mitigation for those impacts the project includes creation of 19.58 acres of in-kind and out-of-kind wetlands on-site, in six areas, to replace the functions and benefits of the impacted wetlands. There will be 4.3 acres of stream channel enhancement on-site as mitigation for State wetland regulated adjacent area impacts. The project also includes construction at 520 Campbell Road property as detailed on plan sheets referenced in Natural Resource Condition No. 4.

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Permit Authorizations

Freshwater Wetlands - Under Article 24
Permit ID 9-1422-00398/00001

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

Water Quality Certification - Under Section 401 - Clean Water Act
Permit ID 9-1422-00398/00002

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: DAVID S DENK, Regional Permit Administrator
Address: NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY 14203 -2915

Authorized Signature: David S. Denk Digitally signed by David S. Denk DN: cn=David S. Denk, o=NYS DEC, ou=Div. of Env. Permits, email=david.denk@dec.ny.gov, c=US Date: 2020.12.24 10:29:47 -05'00' Date ___/___/___

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: FRESHWATER WETLANDS; WATER QUALITY CERTIFICATION

1. **No Work Prior to Approval of Legal Instrument for Preservation of Undeveloped Areas of Site** No work authorized by this permit may begin until the Department approves a legal instrument, such as a deed restriction and/or conservation easement, that will preserve in perpetuity the natural resource values of the undeveloped areas of the site. This condition does not apply to the 520 Campbell Boulevard property.

2. **Declaration of Restrictions 520 Campbell Boulevard Property** A Declaration of Restrictions permanently prohibiting any future development of the 6.88 acres of jurisdictional federal wetlands and portion of the upland area on 520 Campbell Boulevard as depicted on the Wetland Restriction Exhibit Map must be incorporated into the deeds for lots 1 – 12 and 21. By 60 days after Water Quality Certification issuance, the permittee shall file with the real property records of the Erie County Clerk`s Office, the deed for each applicable lot containing this notice. The permittee shall within two weeks following the filing of the deed(s) submit proof of filing from the County Clerk's Office

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

showing the Liber and page number at which the deed notice was filed and the date of filing for one of the affected lots to: Regional Permit Administrator, NYSDEC Region 9 Headquarters, 270 Michigan Ave, Buffalo, NY 14203-2915.

3. **Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by Ciminelli Development Company, Inc. and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009.

4. **Conformance with Plans Site B** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include the "Concept Plan - Muir Woods" dated 08 November 2019 amended to show Conifer Planting Area (attached).

5. **Conformance with Plans - 520 Campbell Boulevard** All activities authorized by this permit for the 520 Campbell Boulevard property must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans include those sheets entitled: The Preserve at Muir Woods (DEC Planting Exhibit, DEC Earthwork Exhibit and the Wetland Restriction Exhibit) by Greenman-Pedersen, Inc. dated May 2018.

6. **Conformance with Plans Site A** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include Drawing C-100 dated July 20, 2020 and received by this Department on August 10, 2020.

7. **Future Phases** Prior to development of Muir Woods Sites A and B, the permittee must obtain specific approval of engineered plans for Sites A and B to ensure compliance with the terms and condition of this permit, the approved wetland mitigation plans and the most current Findings Statement for the overall Muir Woods Project issued pursuant to the State Environmental Quality Review Act. The permittee shall submit the engineered plans for the development of Sites A and B for review by the Department simultaneous with submission of such engineered plans to the Town of Amherst. If required by the Department, the permittee shall make any necessary modifications to the engineered plans to ensure compliance with the terms and conditions of this permit, the approved wetland mitigation plans and the most current Findings Statement.

8. **Permit Conditions Prevail over Plans** If any condition of this permit conflicts with the approved plans noted in Condition Number 1, the permit conditions shall prevail over the plans unless specific written approval for such a change is obtained from this Department prior to implementation.

9. **Pre-construction Meeting to Review Permit** Prior to commencing work at the project site, the permittee shall schedule a pre-construction meeting with Department staff (Contact: Mr. David Denk, Regional Permit Administrator, NYSDEC, Division of Environmental Permits, Telephone : 716/851- 7165 and/or Mr. Charles P. Rosenburg, NYSDEC, Division of Fish and Wildlife, Telephone: 716/851-7010) and selected contractors to review the conditions contained in this permit.

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10. Mark Areas of No Disturbance on the Muir Woods Site Grade stakes and/or other appropriate measures (substantial contractor fencing, perhaps in combination with necessary silt fencing) shall be used to ensure that no equipment enters identified areas of no disturbance within the immediate area under construction (i.e.- Site A, Site B, Site C or Site D) on the Muir Woods project site. Boundaries of the on-site mitigation areas shall likewise be marked to define the limits of that work.

11. Install Controls Along Limits of Disturbance Before any soil is disturbed within a specific Site Development Area, as detailed in Condition #6 above, the permittee shall install securely anchored silt fencing and/or continuous staked hay bales along the limits-of-disturbance as shown on the plans or drawings referenced in this permit. Such erosion and sedimentation controls shall be maintained until unpaved portions of the subject site are stabilized by a self-sustaining cover of vegetation that is adequate to prevent erosion and sedimentation on and off the site. Sediment which has accumulated at the controls shall be removed periodically as necessary during the construction period. Before the controls are removed, the permittee shall remove all sediment that has accumulated at the controls.

12. Work Within Ares Depicted on Plans All construction activity, including operation of machinery, excavation, filling, grading, clearing of vegetation, disposal of waste, street paving and stockpiling of material must take place within the Site Development Areas or mitigation areas as depicted on the project plans referenced by this permit. Construction activity is prohibited within areas to be left in a natural condition or locations on the property not within the Site Development Areas or mitigation areas designated by this permit. Disturbance to the wetlands and their regulated 100 foot wide adjacent areas shall be strictly limited to the work areas identified in the plans, and specifically the MAP SHOWING WETLAND IMPACT AREAS - NEW YORK STATE WETLANDS, and APPENDIX M - PROPOSED ON-SITE MITIGATION PLAN.

13. Invasive Species (Non-Native Vegetation) To prevent the unintentional introduction or spread of invasive species, the permittee must ensure that all construction equipment is cleaned of mud, seeds, vegetation and other debris before entering any approved Site Development Areas within State regulated wetlands or their 100 foot wide adjacent areas, as well as all on-site wetland mitigation areas.

14. Prevention of Invasive Species The permittee shall prevent the establishment of invasive species (purple loosestrife, Phragmites, reed canary-grass, Japanese knotweed, glossy buckthorn and common buckthorn) across all disturbed areas within the wetland mitigation area for five growing seasons. If any of these invasive species become established, monitoring and treatment may be extended for an additional 5 years at the Department's discretion.

15. Wetland Mitigation is Mandatory Completion of all freshwater wetland mitigation is mandatory regardless of whether or not construction proceeds to completion. The required mitigation must be completed by the expiration date of this permit. Mitigation will be subject to remediation, if necessary, pursuant to Condition #16 below. All mitigation areas shall be monitored for a period of ten (10) years or until the mitigation is deemed successful by this Department. Monitoring reports shall be prepared for the first four (4) years after construction of the mitigation areas and every other year (years 6, 8 and 10) thereafter. This Department may, at its discretion, modify the 10-year monitoring period and/or monitoring report requirement at any time. Monitoring reports shall be submitted to Mr. Charles P. Rosenburg, Habitat Manager, NYSDEC, Bureau of Ecosystem Health, 270 Michigan Avenue, Buffalo, NY 14203-2915 Telephone: 716/851-7024.

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16. **On-Site Mitigation to be in Accordance with Mitigation Plan** The on-site mitigation shall be in accordance with Appendix M - Proposed On-Site Wetland Mitigation for Muir Woods prepared by Earth Dimensions, Inc. revised May 25, 2009 and with the modifications shown in Exhibit 22 of the July 20, 2020 application binder.

17. **Planting Row of Native Conifers** The permittee shall plant a row of native conifer trees in the location shown on the attached plan. The tree plantings must be a minimum of 6 feet tall, spaced 15 feet apart, and must be planted no later than October 15th following the completion of construction of the adjacent apartment units.

18. **Survival Rate for Mitigation Plantings** The permittee shall prepare a care, maintenance, inspection, and replacement schedule for the tree and shrub plantings described in the mitigation plan to ensure an 85% survival rate for five growing seasons. This condition includes all on-site landscape "buffer" plantings.

19. **Herbicides, Pesticides in Wetland or Adjacent Area** The use of herbicides and other pesticides in State regulated wetlands or their 100 foot wide adjacent areas is a regulated activity and may only be conducted pursuant to a valid Article 33 Pesticides Permit.

20. **Requirement for SPDES General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities** Since development of the Muir Woods site in the Town of Amherst will involve land disturbance of one (1) or more acres, the permittee is required to obtain coverage under State Pollutant Discharge Elimination System (SPDES) General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities. A Notice of Intent (NOI) is required to be sent to NYSDEC, Division of Water, 625 Broadway, 4th Floor, Albany, New York 12233-3505, Telephone: 518/402-8111 and approved before construction commences. Alternatively, an eNOI may be filed electronically as described on the Department's website. The General Permit GP-0-15-002 and NOI form are available on the Department's website at www.dec.state.ny.us.

21. **Visibly Turbid Discharges Prohibited** Visibly turbid discharges from project dewatering operations, excavation and grading activities are strictly prohibited to any "water body" (pond, wetland, stream or water course). Any such discharges shall be (1) retained in an appropriately maintained upland settling basin, filtered through crushed stone, sand, filter fabric fences, hay bales etc., or (2) directed to a grassy area sufficiently distant from any water body to preclude such entry.

22. **Stockpiling of Soil** Stockpiling of excavated soil is prohibited at locations within any portion of the TE-22, TE-23 and TE-34 Wetlands or their regulated 100 foot wide adjacent areas, or within any mapped 100-year floodplain beyond the Site Development Areas or mitigation areas identified in the plans.

23. **Stabilize Disturbed Areas** All areas of soil disturbance resulting from this project shall be seeded with an appropriate perennial grass seed and mulched with straw, or hydro-seeded. Mulch shall be maintained until suitable vegetative cover is established.

24. **Temporary Mulch, Final Seeding** If seeding is impracticable due to the time of year, a temporary mulch shall be applied and final seeding shall be performed at the earliest opportunity when weather conditions favor germination and growth.

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25. **Disposal of Material** Any non-merchantable tree and brush debris, demolition debris, excess construction materials, and/or excess excavated materials shall be immediately and completely disposed of on an approved upland site more than 100 feet from any regulated freshwater wetland. These materials shall be suitably stabilized so as not to re-enter any water body, wetland, or wetland adjacent area; and must be disposed of in accordance with all local, state, and federal statutes, regulations, or ordinances.

26. **Placement of Interpretive Signs Required** Permanent interpretive signs shall be placed at various wetland boundary locations throughout the Muir Woods project site . The permittee shall submit a proposal for the signs to the Department for approval. The interpretive signs shall be a minimum of 12 inches by 12 inches and shall be placed on permanent posts.

27. **Annual Project Inspection / Meeting** The permittee shall schedule an annual inspection/meeting to update Department staff on project progress and compliance with conditions of this permit for the on-site wetland mitigation area.

28. **Wetland Monuments** Monuments shall be placed every 200 feet along the outer edge of the wetland preservation areas. The monuments shall be 30" long, 5/8" rebar and cap embedded flush and in the center of the top exposed surface of concrete in a minimum 4 inch diameter, 4.5 foot long section of PVC Schedule 40 drain pipe filled with concrete, extending vertically1.5 to 2 feet above existing grade at each location. The caps shall say "Conservation Area Marker, Do Not Disturb". These monuments are to be permanently maintained.

29. **Wetland Boundaries** The boundaries of the TE-22, TE-23 and TE-34 Wetlands shall be fixed for the period of this permit (expires November 30, 2024). At that time, new boundary delineations for those wetlands will be required by this Department (to be performed or confirmed by a Department Biologist). Since project activities will be subject to the updated wetland boundary delineations and pertinent regulations at that time, any future permit modification (if necessary) would be reviewed based on the updated delineations and pertinent regulations. As such, modifications to the current project plan may be necessary depending upon the updated wetland delineations and permit regulations in effect at that time.

30. **State Not Liable for Damage** The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

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31. **State May Order Removal or Alteration of Work** If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

32. **State May Require Site Restoration** If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may lawfully require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.

33. **Precautions Against Contamination of Waters** All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. **Water Quality Certification** The authorized project, as conditioned pursuant to the Certificate, complies with Section 301, 302, 303, 306, and 307 of the Federal Water Pollution Control Act, as amended and as implemented by the limitations, standards, and criteria of state statutory and regulatory requirements set forth in 6 NYCRR Section 608.9(a). The authorized project, as conditioned, will also comply with applicable New York State water quality standards, including but not limited to effluent limitations, best usages and thermal discharge criteria, as applicable, as set forth in 6 NYCRR Parts 701, 702, 703, and 704.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. **Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

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The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. **Relationship of this Permit to Other Department Orders and Determinations** Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. **Applications For Permit Renewals, Modifications or Transfers** The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY14203 -2915

4. **Submission of Renewal Application** The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Freshwater Wetlands, Water Quality Certification.

5. **Permit Modifications, Suspensions and Revocations by the Department** The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

a. materially false or inaccurate statements in the permit application or supporting papers;

b. failure by the permittee to comply with any terms or conditions of the permit;

c. exceeding the scope of the project as described in the permit application;

d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;

e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. **Permit Transfer** Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

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NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification
The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit
The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits
The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights
This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

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DEPARTMENT OF THE ARMY
BUFFALO DISTRICT, CORPS OF ENGINEERS
1776 NIAGARA STREET
BUFFALO, NEW YORK 14207-3199

February 25, 2021

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

Mr. Adam Faeth
Development Manager
Ciminelli Muir Woods LLC
350 Essjay Road Suite 101
Williamsville, NY 14221

Dear Mr. Faeth:

This is in reply to your submittal dated July 20, 2020 in which you requested a modification of Department of the Army Permit No. LRB-2001-00067. The project is located on a 326-acre parcel in the Town of Amherst, Erie County, New York. Specifically, you seek authorization to change the proposed use of an area identified as Site A from research and development and flex office space to a mixed-use commercial and residential development. This includes two 4-story mixed-use buildings, two-family townhouses, 6-unit apartment buildings, and a recreational trail to connect Site A with Site B. Wetland impacts have been reduced from 13.01 acres to 6.089 acres in Site A. A reduction of 6.921 acres. In addition, because of the reconfigured project including the significant reduction of wetland impacts, you have requested that the requirement of off-site compensatory mitigation be removed. Lastly, you have requested that 134 acres of the overall Muir Woods site located northeast of Site B, is donated to the Town of Amherst. This area will remain as open space in perpetuity. Permit compliance with mitigation requirements will remain as it currently is on the 134-acre site as a responsibility of Ciminelli Muir Woods LLC.

A Public Notice was published and coordinated with agencies and adjacent property owners using standard procedures. No comments were received as a result of the Public Notice. Based upon our evaluation, I concluded your request will not result in any unacceptable environmental or navigational impacts. Therefore, I am modifying Department of the Army permit No. LRB-2001-00067 to reflect the changes outlined in your request and identified on the attached drawings. All other terms and conditions of Permit No. LRB-2001-00067 remain in full force and effect.

Sheets 1, 2, and 3 of 3 are hereby made part of Permit No. LRB-2001-00067. Sheet 1 of 3 of this modification is an update to Sheets 2, 3, and 5 of 6 of the original permit. Sheet 2 and 3 of 3 of this modification are updates to Sheet 5 of 6 of the original permit. In addition, the following Special Conditions No. 6 and 8 of Permit No. LRB-2001-00067 are modified so that they no

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Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

longer include the requirement of off-site compensatory mitigation, as indicated below with the original and the following modified condition:

1. Special Condition Number 6: As mitigation to compensate for unavoidable and permanent impacts to 17.83 acres of Federal wetlands and 1.29 acres of Federal tributaries (approximately 5227 linear feet), the permittee shall create, at a minimum; 26.91 acres of wetland on-site, and 27.37 acres of wetland off-site. In addition, the permittee shall enhance 4.3 acres of tributary (approximately 2630 linear feet) on-site, all in accordance with the approved on-site and off-site mitigation plan that is made part of this permit. The mitigation area must be constructed in accordance with the approved plan as well as all permit conditions.

   Modified Special Condition Number 6: As mitigation to compensate for unavoidable and permanent impacts to 10.91 acres of Federal wetlands and 1.29 acres of Federal tributaries (approximately 5227 linear feet), the permittee shall create, at a minimum; 26.91 acres of wetland on-site. In addition, the permittee shall enhance 4.3 acres of tributary (approximately 2630 linear feet) on-site, all in accordance with the approved on-site mitigation plan that is made part of this permit. The mitigation area must be constructed in accordance with the approved plan as well as all permit conditions.

2. Special Condition Number 8: The approved compensatory mitigation must be in strict conformance with the plans approved by the Corps of Engineers. Such approved plans were prepared by Ciminelli Development Company, Incorporated and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009, including the Proposed On-Site Wetland Mitigation Plan, and the Proposed Off-Site Wetland Mitigation Plan dated November 16, 2009. The stated mitigation plans are hereby incorporated into and made part of the permit as Attachments 1 and 2. The permittee shall implement the mitigation in accordance with the plans and all permit conditions. Where permit conditions differ from the mitigation plan, the permit conditions shall be the ruling condition.

   Modified Special Condition Number 8: The approved compensatory mitigation must be in strict conformance with the plans approved by the Corps of Engineers. Such approved plans were prepared by Ciminelli Development Company, Incorporated and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009, including the Proposed On-Site Wetland Mitigation Plan dated November 16, 2009. The stated on-site mitigation plan is hereby incorporated into and made part of the permit as Attachments 1. The permittee shall implement the mitigation in accordance with the plans and all permit conditions. Where permit conditions differ from the mitigation plan, the permit conditions shall be the ruling condition.

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Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

Questions pertaining to this matter should be directed to Martin Crosson at 716-879-4346, by writing to the following address: U.S. Army Corps of Engineers, 1776 Niagara Street, Buffalo, New York 14207 or by E-mail at: martin.h.crosson@usace.army.mil

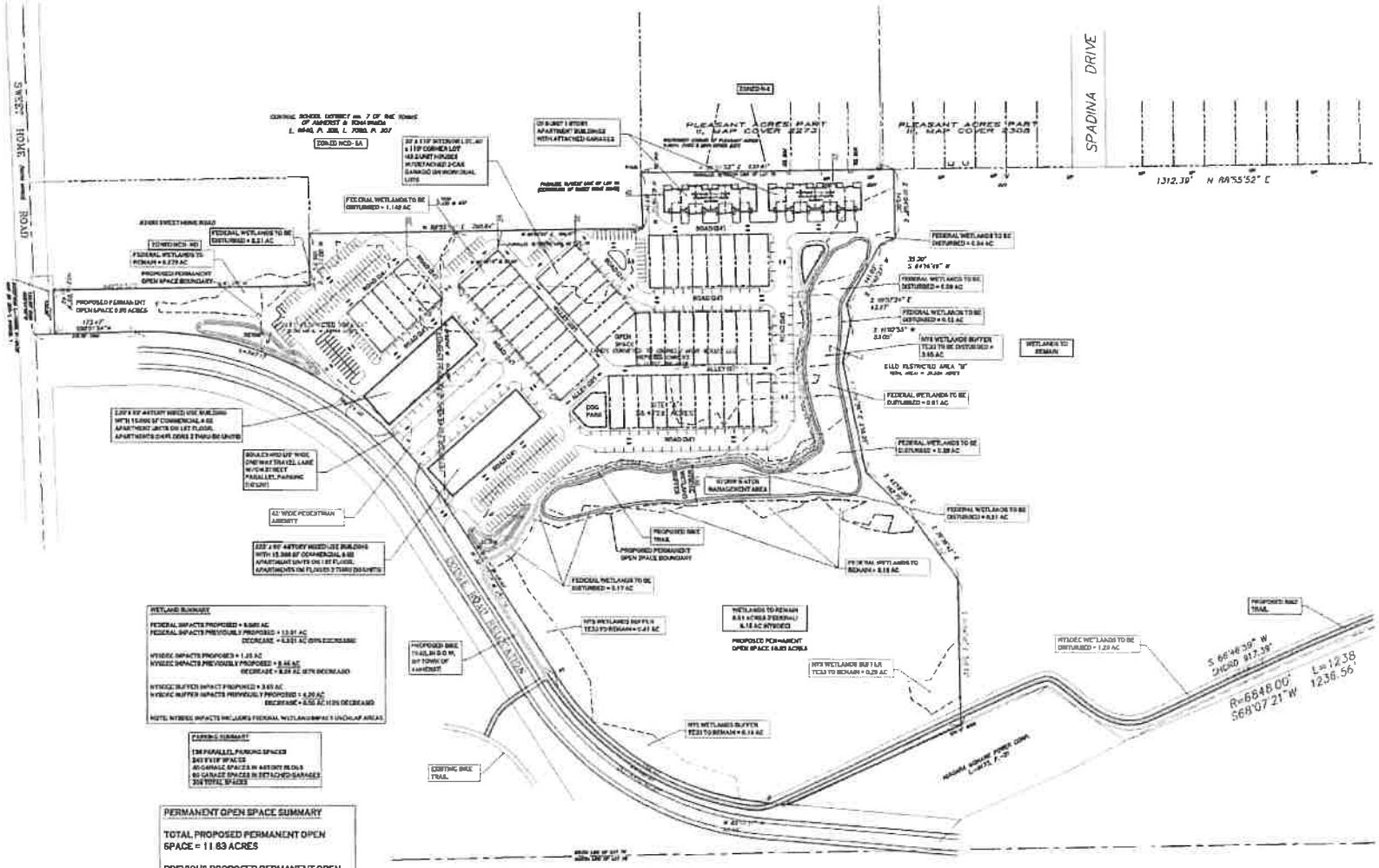
BY AUTHORITY OF THE SECRETARY OF THE ARMY

Steven V. Metivier

For: Mark Scalabrino
Acting Chief, Regulatory Branch

Enclosures

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)



N SITE PLAN
SCALE: 1"=100'

Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 1 of 3

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS. CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

Carmina Wood Morris

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Muir Woods Site "A"
Sweet Home & Dodge Road
Amherst, New York

Date: 7/17/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Concept Site Plan

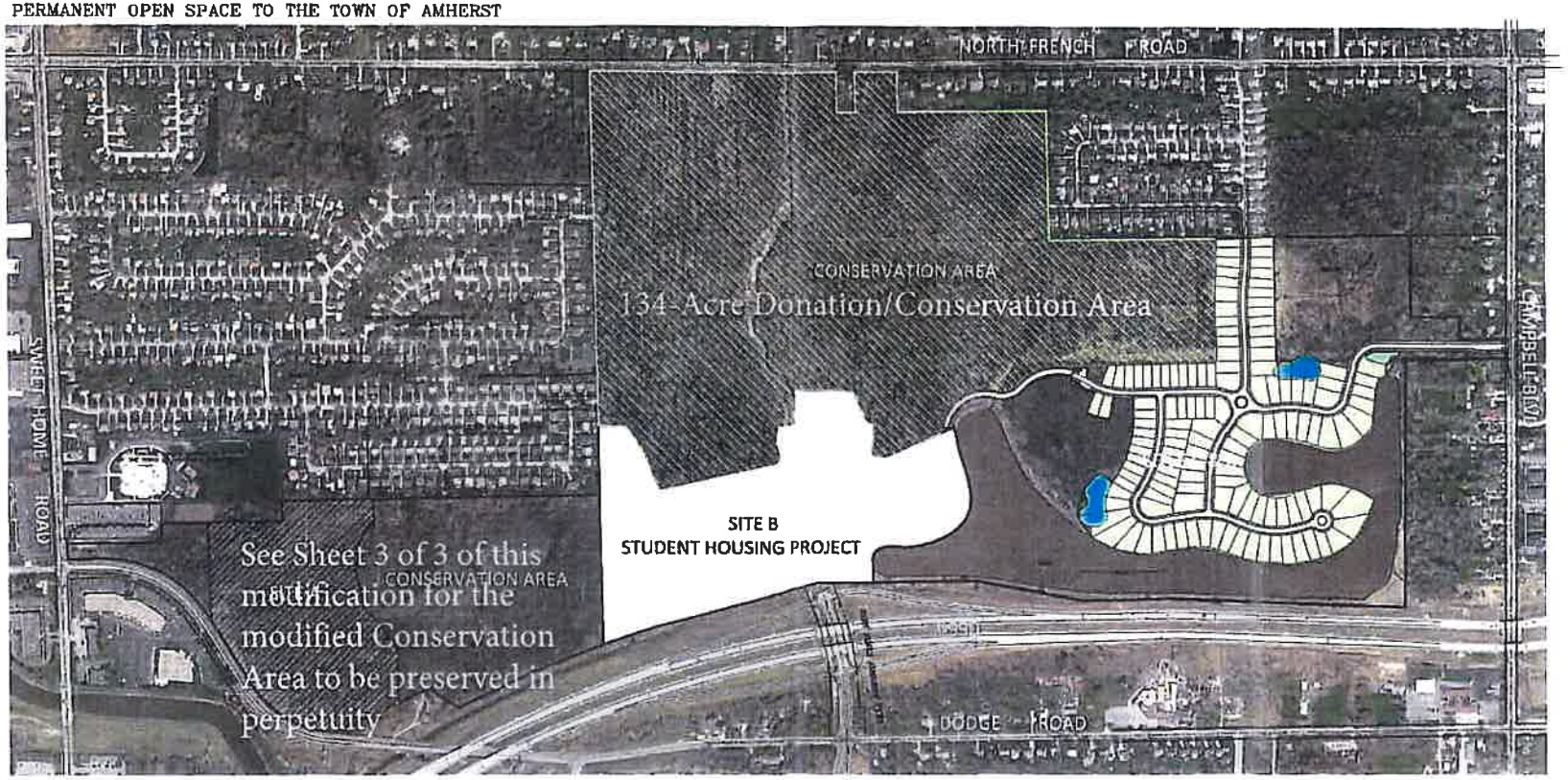
DRAWING NO.
C-100
Project no.: 19.192

© Carmina Wood Morris D.P.C.

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

MUIR WOODS OVERALL PROJECT AREA

PROPOSED DONATION OF APPROXIMATELY 134 ACRES OF PERMANENT OPEN SPACE TO THE TOWN OF AMHERST

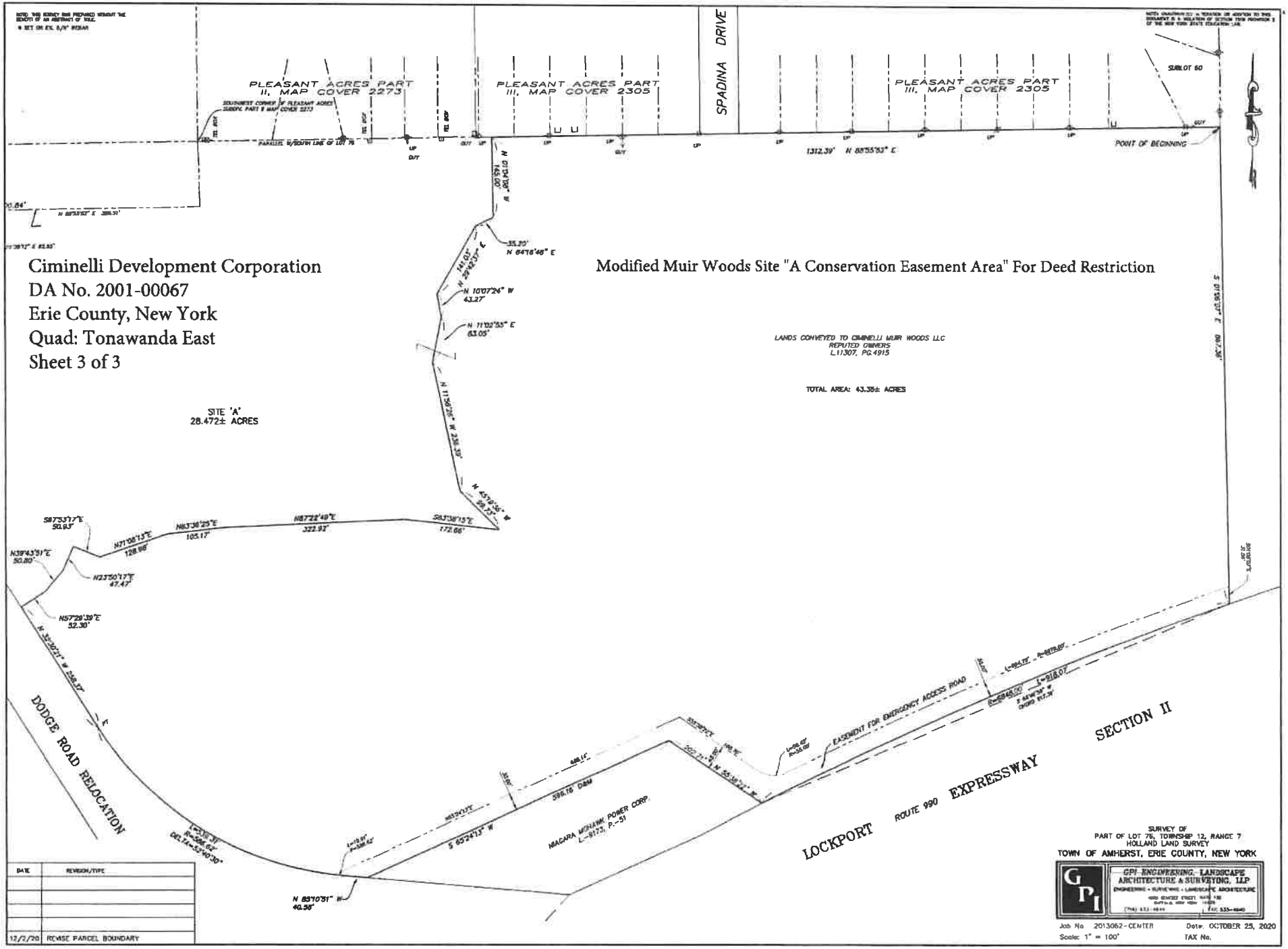


CONSERVATION AREA TO BE DONATED

Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 2 of 3

GPI GREENMAN-PEDERSEN, INC. CONSULTING ENGINEERS

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)



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Appendix L

NYSDEC Letter of Acknowledgement

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Appendix M

5 Acre Disturbance Letter

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Carmina · Wood · Morris DPC

487 Main Street Suite 600 Buffalo, New York 14203 P: 716.842.3165 F: 716.842.0263 W: cwm-ae.com

March 4, 2021

Vaishali Reberholt, PE, CPESC
Town of Amherst Engineering Department
1100 North Forest Road
Amherst, NY 14221

Re: **Sawyer's Landing**
Amherst, NY

Dear Vaishali:

This letter shall serve as our request to have a total of 5 acres disturbed at one time at the above site. Per the NYSDEC General Permit, our site inspections will increase to 2 times per week when 5 acres is reached and will continue until the time the total disturbance is under 5 acres.

If you have any questions regarding the above, please feel free to contact me at 842-3165 [Ext 103] or via e-mail at cwood@cwm-ae.com.

Sincerely,
Carmina Wood Morris, D.P.C.

Christopher Wood, PE

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Appendix N

Engineer's Report

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Carmina · Wood · Morris DPC

487 Main Street Suite 600 Buffalo, New York 14203 P: 716.842.3165 F: 716.842.0263 W: cwm-ae.com

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

ENGINEER'S REPORT

for

Sawyer's Landing

Dodge & Sweet Home Road
Town of Amherst, Erie County, New York

Prepared for

Sawyer's Landing LLC

c/o Severyn Development
43 Central Ave Suite #300
Lancaster, NY 14086

Prepared by

Carmina Wood Morris, D.P.C.

487 Main Street, Suite 500
Buffalo, NY 14203

Telephone: (716) 842-3165
Fax: (716) 842-0263

February 2021



Table of Contents

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Section 2 - Water Service
Section 3 - Sanitary Sewer Service
Section 4 - Storm Sewer Service

Appendices

Appendix A Sanitary Sewer and Water Demand Calculations

Appendix B Storm Sewer System Drainage Calculations

- Existing Runoff
- Proposed Runoff – East
- Proposed Runoff - West
- Green Infrastructure & Water Quality Calculations

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Section 1 - Location & Description

This project is a development of a 17.4 acre site located on the north side of Dodge Road, west of Sweet Home Road in the Town of Amherst. Both Dodge Road and Sweet Home Road are Erie County roads. Proposed is the construction of a mixed use development to include (2) 4-story buildings with a total of 30,000 sf of commercial and 100 apartments, (47) duplex lots and (2) 1-story apartment buildings with a total of 12 units. A bike trail will be constructed on site, this trail will connect to the existing Town of Amherst bike trail on the south side of Dodge Road. The approximately 1 acre westerly portion will remain undisturbed and be deed restricted as permanent open space. The site is currently undeveloped consisting of woods and overgrown brush/grass. NYSDEC and Federal wetlands were delineated on site by Earth Dimensions, Inc. Approximately 6.1 acres of Federal and 1.2 acres of NYSDEC wetlands have been permitted to be impacted. The proposed site development area to be disturbed for this project is approximately 16.4 acres.

Section 2 - Water Service

A new 8" D.I. combined service will be tapped off the existing 24" D.I.P. ECWA water main along the north side of Dodge Road. Following the tap, the 8" D.I. service will continue north into the site where it will enter into a Hot-Box enclosure. Within the Hot-Box enclosure an 8" meter (by ECWA) and an 8" Watts 957 RPZ will be installed. The service will exit the Hot-Box enclosure and then transition into 8" AWWA C-900 PVC. The service will run throughout the site to provide both domestic and fire service to the proposed buildings. Heat & light for testing will be provided in the area of the meter & RPZ to prevent freezing. Drainage due to testing or failure will be to the exterior through a drain, drainage will be away from the enclosure. The owner will be responsible for keeping the drainage ports clear of snow and debris. A total of 4 (four) proposed fire hydrants shall be installed around the site to provide fire protection coverage. There are no existing water services to this site, and therefor none to be killed/abandoned per ECWA requirements.

Domestic Summary:

Peak Operating Demand:	140.6 gpm
Water Main:	24" on Dodge Road
Static Pressure:	105 psi (per ECWA, 98 psi residual)
Friction Loss:	0.0 psi
Loss through meter/RPZ:	13.0 psi
Elevation Loss:	0.0 psi
Pressure after RPZ & Meter:	92 psi
Pressure at 4th floor:	77 psi

Repairs to all devices will be made during off hours, dual backflow preventers are not required. The site is not located in a 100-year flood plain. Disinfection of the

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water service following installation will be continuous feed, according to AWWA C-651, latest revision.

Section 3 - Sanitary Sewer Service

The proposed sanitary sewer service will connect to the existing 60" sanitary sewer (peanut line) located on the south side of Dodge Road. In order to connect to this sewer, a public sewer extension along the south side of Dodge Road will be required. This public extension will consist of a total of 643 LF of 8" SDR-35 PVC at a minimum slope of 0.4%.

The proposed private on site sewer mains will consist of 8" SDR-35 PVC at a minimum slope of 0.4%. Each of the proposed commercial buildings and apartment buildings will have a 6" SDR-35 PVC sanitary sewer lateral at a minimum slope of 1.0% tied into the private main. The duplex units will have a 4" SDR-35 PVC sanitary sewer lateral at a minimum slope of 1.0% tied into the private main. The 8" private main will tie into the proposed public extension on the south side of Dodge Road across from the SE portion of the project site.

A downstream sanitary sewer capacity analysis (DSCA) is required to be prepared for the site given the flows will exceed 2,500 gpd. This report is included in Appendix A.

Design Parameters

Housing: use 110/gpd/bedroom
Q = 412 bedrooms x 110 gpd/bed = 45,320 gpd

Commercial: use 0.1 gpd/sf
Q = 20,000 sf x 0.1 gpd/sf = 2,000 gpd

use 15 gpd/employee
Q = 20 employees x 15 gpd/emp = 300 gpd

Restaurant: use 35 gpd/seat
Q = 100 seats x 35 gpd/seat = 3,500 gpd

Total = 51,120 gpd (average)

using a 3.97 PF (see appendix A for calc)

Total = 51,120 x 3.97 = 202,908 gpd = 140.91 gpm = 0.314 cfs

The hydraulic loading rates per "Design Standard for Wastewater Treatment Works" 2014, NYSDEC. See attached Sanitary Sewer & Water Calculations for additional information.

I/I Mitigation:

Peak Flow = 140.91 gpm

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4:1 offset = 140.91 x 4 = 563.63 gpm
Mitigation Credit = $250/gpm
I/I Mitigation = 563.63 gpm x $250/gpm = $140,908.66
Refer to Appendix A for additional information.

Section 4 - Storm Sewer Service

The existing site is generally flat and slopes west with portions sloping east. The portion that slopes west settles in a low area and once the capacity of that area is exceeded, sheet flow continues towards Sweet Home Road and is collected by an existing 12" pipe on the north side of Dodge Road. This pipe flows to the Erie County system on Sweet Home Road. The portion that flows east flows to the offsite wetlands.

Currently Dodge Road does not have a drainage system. A series of catch basins and pipes will be installed in the green area on the north side of Dodge Road to collect the road drainage. The west portion of this system will connect to the existing closed drainage system on Sweet Home Road. The east portion will discharge to the Ellicott Creek diversion channel using and existing discharge point. This new system will also convey the proposed discharge from the site as described below.

The proposed onsite storm sewer system consists of smooth interior and perforated HDPE pipes connected by a series of catch basins, manholes and yard drains. The site is split into a storm water management area on the east and west sides.

West Side

The west side of the site has (2) bioretention areas which portions of the westerly area will discharge to. These bioretention areas along with the remainder of the west portion of the site will discharge to the underground detention area. Note that the yard drains installed along the north property line discharge to the underground detention area. An outlet structure in the SW portion of this area will control runoff to at or below existing runoff flow rates. The discharge from the outlet control structure will discharge to the new system on Dodge Road which flows to the Sweet Home Road system.

Underground Detention Summary

(286) ADS Stormtech SC-740 chambers
Top of stone elev. = 573.00
Top of chamber elev. = 572.50
Bottom of chamber elev. = 570.00
Bottom of stone elev. = 569.50
Total storage = 18,574 CF

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Sawyer's Landing
3/4/2021
4 of 5

Event	Ex. Discharge	Pro. Discharge	Elev.
1 yr	0.87 cfs	0.33 cfs	570.29
2 yr	1.34 cfs	0.68 cfs	570.46
5 yr	2.14 cfs	1.05 cfs	570.79
10 yr	2.94 cfs	1.28 cfs	571.13
25 yr	4.34 cfs	1.61 cfs	571.73
50 yr	5.69 cfs	3.61 cfs	572.23
100 yr	7.33 cfs	4.83 cfs	572.92

East Side

The east side of the site has a bioretention area and wet detention pond which this portion of the site discharges to. The NE portion of the site discharges to a forebay which spills into the main micropool portion of the wet detention basin. The SE portion of the site discharges to the bioretention area which also spills into the main micropool portion of the site. An outlet control structure is located in the SE portion of the micropool and controls the discharge from this storm water management area. Spillways are also located on the east portion of the micropool which will discharge to the existing wetlands to the east in order to not cut off all flow from this site into this area. The discharge from the outlet control structure will discharge to the new system on Dodge Road which flows to the Ellicott Creek diversion channel.

The bioretention areas and wet detention pond for the project area are sized to provide 100% of the required Runoff Reduction Volume (RRv) and Water Quality Volume (WQv) treatment for the overall site in accordance with Chapter 4 of the NYSDEC Stormwater design manual. The soils in the vicinity of the bioretention areas are mainly USDA hydrologic group 'D' and therefore the system will be installed with underdrains per NYSDEC requirements. The bioretention areas will consist of 6" and 8" perforated HDPE underdrains in 12" of drainage gravel, followed by filter fabric and 18" minimum of planting soil. Overflow yard drains will be installed to allow 6" maximum temporary ponding for RRv treatment. The east bioretention area (area #3) spills into the wet detention pond and the underdrain pipe ties together with the pond discharge and flows to Dodge Road. The east bioretention areas (areas #1 & #2) have a catch basin to act as the spillway and this catch basin and the underdrain pipes discharge to the underground detention area.

Storm Water Management Area Summary

Forebay
Top of basin elev. = 576.80
Permanent water elev. = 575.00
Aquatic bench elev. = 574.50
Bottom of basin elev. = 569.00

Micropool
Top of basin elev. = 576.80
Permanent water elev. = 575.00
Aquatic bench elev. = 574.50
Bottom of basin elev. = 563.00

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Sawyer's Landing
3/4/2021
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Overall Storm Water Summary

WQv Provided = 152,678 cf (pond)
WQv Provided = 6,948 cf (bioretention)
WQv Provided = 159,626 cf (total)

Bioretention Area Summary:

Area	Rim Elev.	Bottom Elev.	Area
1	574.50	574.00	2,300 sf
2	574.50	574.00	2,600 sf
3	575.50	575.00	11,000 sf
		Total Provided =	15,900 sf

Water Quality Summary:
WQv req'd = 28,804 cf (0.661 ac-ft)
RRv min. req'd = 5,518 cf (0.127 ac-ft)
RRv provided = 8,662 cf (0.199 ac-ft)
WQv provided = 159,626 cf (3.665 ac-ft)
Total RRv + WQv provided = 8,662 cf + 159,626 cf = 168,287 cf (3.868 ac-ft)

Detention: Comparison of the existing 1-year vs. the proposed 1-year runoff
Comparison of the existing 10-year vs. the proposed 10-year runoff
Comparison of the existing 100-year vs. the proposed 100-year runoff

Storm pipes: 10-year storm

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Appendix A

Sanitary Sewer and Water Demand Calculations

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

CARMINA WOOD MORRIS, D.P.C.
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 21.011 Date: 2/19/2021
Project Name: Sawyer's Landing
Project Address: Sweet Home Road and Dodge Road - Amherst, NY
Subject: Sanitary Sewer Demand Calcs
Sheet: 1 of 1

1.d

Sanitary Sewage Demand Calculations:

West - Mixed Use Buildings							
0.1	gal/d/sf	x 20,000	sf	=	2,000	gpd	*use 0.1 gallons per day per square foot
35.0	gal/d/seat	x 100	seats	=	3,500	gpd	*use 35 gallons per day per seat (fast food)
15	gal/d/employee	x 20	employees	=	300	gpd	*use 15 gallons per day per employee
West - Apartments							
220	gal/d/unit	x 100	units	=	22,000	gpd	*use 220 gallons per day per 2-bedroom unit
North - Apartments and Duplex Buildings							
220	gal/d/unit	x 94	units	=	20,680	gpd	*use 220 gallons per day per 2-bedroom unit
220	gal/d/unit	x 12	units	=	2,640	gpd	*use 220 gallons per day per 2-bedroom unit

Total Site Sanitary Demand: = 51,120 gpd
= 0.051 MGD
Find Peak Sanitary Demand: = 0.079 cfs

Peaking Factor based on Population:
Total demand: 51,120 gpd / 100 gpcd = 511 per capita

Population (P) = 511 people

Peaking Factor : $(18 + \sqrt{P}) / (4 + \sqrt{P})$ where P is in thousands

Peaking Factor = 3.97

Peak Sanitary Demand = 51,120 x 3.97 = 202,908 gpd
= 0.203 MGD
= 0.314 cfs

Required Infiltration and Inflow Mitigation:

Peak Sanitary Flow	=	202,908 gpd	=	140.91 gpm	
4:1 offset flow per NYSDEC requirements	=	140.9 x 4	=	563.63 gpm req'd	
Mitigation Credit	=	$250 / gpm			
Mitigation Agreement Amount	=	**$140,908.66**			

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

CARMINA WOOD MORRIS, D.P.C.
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 21.011 Date: 2/19/2021
Project Name: Sawyer's Landing
Project Address: Sweet Home Road and Dodge Road - Amherst, NY
Subject: Sanitary Sewer & Water Demand Calcs
Sheet: 2 of 2

Water Demand Calculations (domestic):

Site

51,120 gpd x 1.1 = 56,232 gpd *use 110% of sewage demand

*use 1.8 peaking factor and assume a 12 hour day

56,232 gpm x 1day/12hr x 1hr/60min = 78.10 gpm

78.10 gpm x 1.8 = 140.58 gpm Q_{peak}

Headlosses:

Q_{peak} = 140.58 gpm
Pipe = 8 inch Ductile Iron C = 140
Length = 20 LF (approx. distance from tap to RPZ)

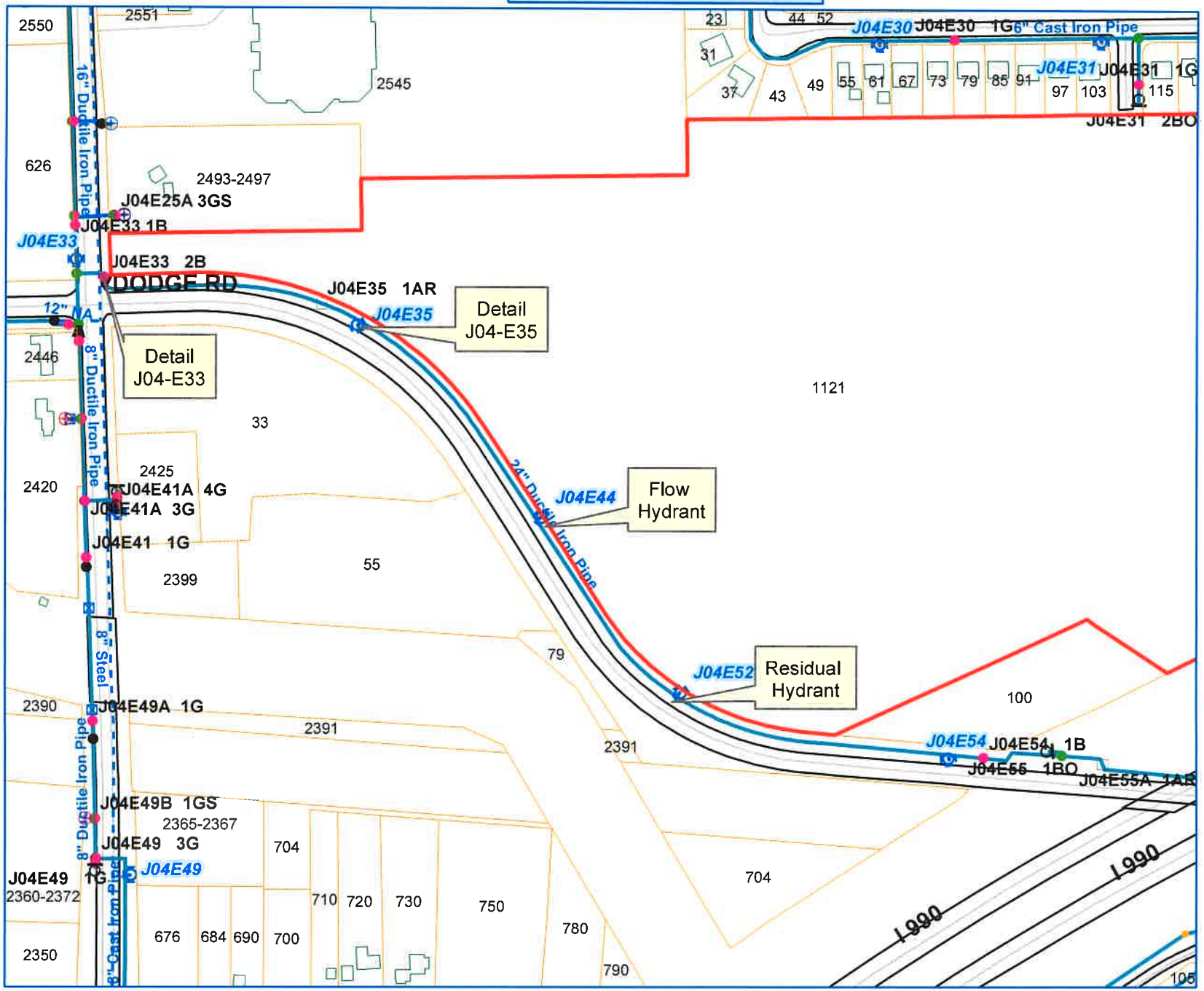
$$H_L = \frac{10.44\, L\, Q^{1.85}}{C^{1.85}\, D^{4.866}} = \frac{10.44(20)(21.51)^{1.85}}{(140)^{1.85}\,(6)^{4.866}} = 0.01 \text{ ft} = 0.00 \text{ psi}$$

Δ elev = 0 ft = 0.00 psi
Loss through meter = 1 psi
Loss through RPZ = 12 psi
Total Losses = 13.0 psi
Static Pressure = 105 psi (per ECWA - residual pressure 98 psi)
Residual Pressure Following RPZ = 105 - 13.0 = 92.0 psi (available after rpz & meter)

Residual Pressure 30" above 4th Floor
Δ elev = 35 ft = 15.16 psi
Residual Pressure 30" above 4th Floor = 76.8 psi

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

1121 Dodge Rd., AMTN



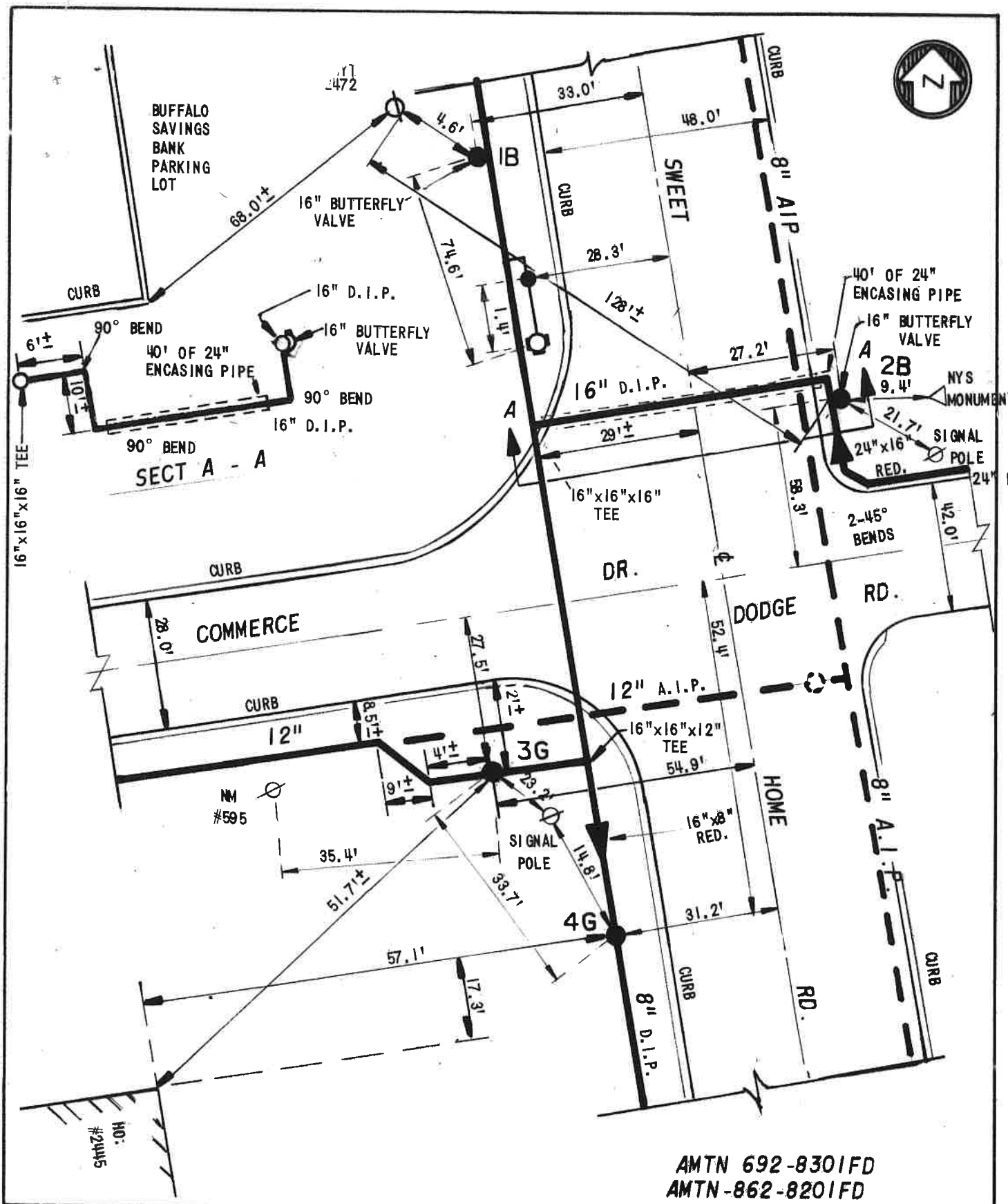
N

1 inch = 300 feet

Legend:

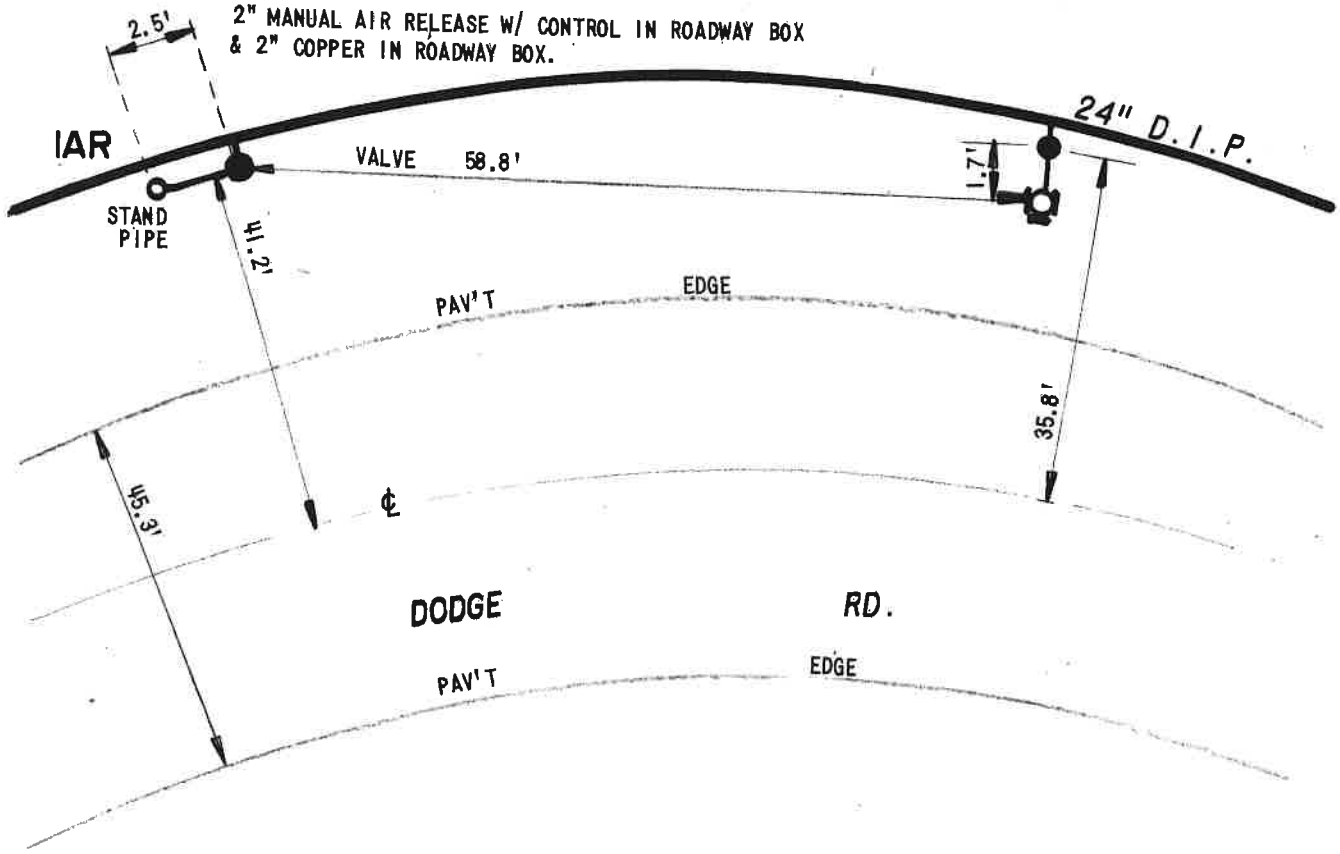
Parcels





ERIE COUNTY WATER AUTHORITY, BUFFALO, NEW YORK	REVISED DR. BY: RLS DATE: 6-30-06 NOT TO SCALE	TOWN OF AMHERST W.D 15C	J04-E33 DETAIL SHEET NO.

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)



AMTN-692-8301-FD

SHEET 1

ERIE COUNTY WATER AUTHORITY, BUFFALO, NEW YORK	REVISED DR. BY: RLS DATE: 6-30-06 NOT TO SCALE	TOWN OF AMHERST W.D. 15C	J04-E35 DETAIL SHEET NO.

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

AMHERST
Size of Main/Branch: 24"/6" Fire District: 22028 GETZVILLE FD 11 Water District: 315 AMHERST DISTRICT 15C

Performed By: JRS & DPZ

Comments: HYDRANT FLOW TEST REQUESTED BY BILL GROFF
PRATT & HUTH, PHONE: 633-4844, FAX: 633-4940

Dischrge Coef: .90 Elvtn Usgs(ft): Static(psi): 105 Residual(psi): 98 Required Residual Pressure(psi): 20
Gallons Used..: 7,680 Total Flow(gpm): 2,558 Flow at Reqd Resid Pressure: 9,850

Flow Hydrants:

C	Flow Hyd	Flow Hydrant Address	Main/Brnch	Nzle	Size	Pitot	Flow	Comments
_	J04 E44	DODGE RD	24"/6"	1:	2.50	58.0	1,279	
		2ND HYD E/O SWEET HOME RD		2:	2.50	58.0	1,279	
				3:			Tot Flow:	2,558

Bottom

I=Flow Hydrant Inquiry
ENTER=Continue F3=Exit F6=Maintain Test F7=Test Hydrant Inquiry F15=Print Test Information

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Downstream Sewer Capacity Analysis

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Muir Woods Site

Sweet Home & Dodge Road, Amherst New York

Downstream Sewer Capacity Analysis Report

Project Description

This new site development project will consist of the construction of apartment buildings, duplexes, office, restaurant, and retail space. Construction will also include on-site utility, landscaping improvements, and associated roads and parking. The overall acreage of the site is 28.47 acres. The site is located at Sweet Home Road and Dodge Road on a western portion of parcel 40.08-3-13.1 in the Town of Amherst.

The proposed sewer for this project will tie into the existing 60" RCP Peanut line along Dodge Road. Sewage will then be conveyed west and then eventually north through the 84" West Side Interceptor to the Town of Amherst Wastewater Treatment Facility #16.

Node 1 – Dodge Road (60"):

Existing Peak Flow measured (wet weather event)	=	40.602 cfs (21.851 mgd)*
Proposed Muir Woods Peak Flow	=	0.337 cfs **
Proposed Peak Flow	=	40.939 cfs

Theoretical capacity of existing 60" RCP pipe @ 0.07% = 81.366 cfs

Conclusion: The proposed peak flow is less than the capacity of the 60" pipe, therefore there is sufficient capacity. At no time during the monitoring did the flow depth exceed the pipe diameter at Node 1 of the downstream monitoring points during the rain events monitored.

Node 2 – North Ellicott Creek Rd (60")

Existing Peak Flow measured (wet weather event)	=	99.524 cfs (53.561 mgd)*
Proposed Muir Woods Peak Flow	=	0.337 cfs **
Proposed Peak Flow	=	99.861 cfs

Theoretical capacity of existing 60" pipe = 82.873 cfs (44.60 mgd)

Conclusion: Current flows the day following the 1.21" rainfall event exceeded the capacity of the existing 60" sewer pipe, but at no time during the monitoring period did the flow at any point slow or stall which would have caused a backup or flooding at the manhole. In addition, Sanitary Sewer Overflow (SSD) did not occur. I/I mitigation shall be required for the contribution proposed for this project.

Notes:

Pipe slopes, sizes and materials provided by Town of Amherst Engineering Department Sewer Maintenance Division

* Converted from measurements in TECSmith report dated 8/12/20

** See Sanitary Sewage Demand Calculations

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Node 3 – Sweet Home (66")

Existing Peak Flow measured (overall)	=	69.058 cfs (39.601 mgd)*
Proposed Muir Woods Peak Flow	=	0.337 cfs **
Proposed Peak Flow	=	69.395 cfs

Capacity of existing 66" pipe = 106.657 cfs (57.40 mgd)

Conclusion: The proposed peak flow is less than the capacity of the 66" pipe, therefore there is sufficient capacity. At no time during the monitoring did the flow depth exceed the pipe diameter at Node 3 of the downstream monitoring points during the rain events monitored.

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Notes:

Pipe slopes, sizes and materials provided by Town of Amherst Engineering Department Sewer Maintenance Division

* Converted from measurements in TECSmith report dated 8/12/20

** See Sanitary Sewage Demand Calculations

Location Map

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Muir Woods Site - Sweet Home and Dodge Rd



8/18/2020, 8:51:26 AM

Parcels

Municipal Boundaries

1:9,028

0 300 600 1,200 ft

0 90 180 360 m

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, :GIS .gov

Sanitary Demand Calculations

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

CARMINA WOOD MORRIS, D.P.C.
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 19.192 Date: 8/24/2020
Project Name: Muir Woods
Project Address: Sweet Home Road and Dodge Road - Amherst, NY
Subject: Sanitary Sewer Demand Calcs
Sheet: 1 of 1

1.d

Sanitary Sewage Demand Calculations:

West - Mixed Use Buildings							
0.1 gal/d/sf	x	15,000	sf	=	1,500	gpd	*use 0.1 gallons per day per square foot
35.0 gal/d/seat	x	200	seats	=	7,000	gpd	*use 35 gallons per day per seat (fast food)
15 gal/d/employee	x	20	employees	=	300	gpd	*use 15 gallons per day per employee
West - Apartments							
220 gal/d/unit	x	110	units	=	24,200	gpd	*use 220 gallons per day per 2-bedroom unit
North - Apartments and Duplex Buildings							
220 gal/d/unit	x	90	units	=	19,800	gpd	*use 220 gallons per day per 2-bedroom unit
220 gal/d/unit	x	12	units	=	2,640	gpd	*use 220 gallons per day per 2-bedroom unit

Total Site Sanitary Demand: = 55,440 gpd
= 0.055 MGD
Find Peak Sanitary Demand: = 0.086 cfs

Peaking Factor based on Population:
Total demand: 55,440 gpd / 100 gpcd = 554 per capita

Population (P) = 554 people

Peaking Factor : $(18 + \sqrt{P}) / (4 + \sqrt{P})$ where P is in thousands

Peaking Factor = 3.95

Peak Sanitary Demand = 55,440 x 3.95 = 219,029 gpd
= 0.219 MGD
= 0.339 cfs

Required Infiltration and Inflow Mitigation:

Peak Sanitary Flow = 219,029 gpd = 152.10 gpm

4:1 offset flow per NYSDEC requirements = 152.1 x 4 = 608.41 gpm req'd

Mitigation Credit = $250 / gpm

Mitigation Agreement Amount = $152,103.30

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

TECSmith Monitoring Report

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Date	Node 1			Node 2			Node 3			Rain:
	Dodge Rd 60" (60")			North Ellicott Creek Rd. (60")			Sweethome 66 (66")			
	FLOW (GAL x 1,000)	PEAK FLOW (MGD)	PEAK LEVEL (IN)	FLOW (GAL x 1,000)	PEAK FLOW (MDG)	PEAK LEVEL (IN)	FLOW (GAL x 1	PEAK FLOW (MDG)	PEAK LEVEL (IN)	(inches)
7/8/2020	4186.283	8.161	14.473	7265.409	8.598	16.319	4800986323.2	8.025	19.770	0
7/9/2020	6195.964	8.253	14.556	7387.504	8.661	16.273	6645115872.8	8.044	19.590	0
7/10/2020	6231.790	8.143	14.521	7625.321	9.362	16.873	6667623530.3	8.079	19.790	0
7/11/2020	10033.769	21.851	39.526	20780.607	53.561	76.701	10540796680.3	28.096	66.000	1.21
7/12/2020	9184.078	14.374	22.474	11292.759	17.205	23.420	9306202243.7	13.750	25.810	0
7/13/2020	7070.585	9.115	15.714	11243.925	29.525	33.420	7609650153.8	9.108	20.730	0.47
7/14/2020	6974.494	9.101	15.869	9685.896	13.288	20.168	7274548275.2	9.280	20.720	0
7/15/2020	6591.385	8.845	15.512	8174.879	9.503	17.013	6975378581.5	8.831	20.460	0
7/16/2020	9916.241	20.532	27.213	18886.012	44.070	43.892	12067803314.2	39.601	32.990	0.86
7/17/2020	10096.644	16.639	23.493	12451.728	18.137	24.043	10307997546.4	14.224	26.250	0.03
7/18/2020	8256.593	10.757	17.307	9766.538	11.556	18.960	8664937727.1	10.772	22.350	0
7/19/2020	7589.558	11.382	18.060	10166.964	17.245	24.128	8331695207.5	24.048	23.030	0.21
7/20/2020	7269.757	9.235	16.144	8853.911	10.160	18.118	7730113857.4	9.669	20.890	0
7/21/2020	6681.658	8.895	15.365	8179.097	9.991	17.880	1603593925.8	9.197	20.330	0
7/22/2020	8633.887	15.390	22.402	15950.443	42.105	43.300	16326027301.0	29.736	27.790	0.42
7/23/2020	7327.211	9.216	16.027	9664.310	11.130	18.508	6916249204.1	19.172	20.800	0
7/24/2020	6764.464	8.779	15.317	8434.117	9.760	17.405	8296938032.2	15.723	20.360	0
7/25/2020	6426.122	8.861	15.407	8159.333	9.969	17.608	6871634377.4	12.359	20.320	0
7/26/2020	6409.255	8.667	15.297	8027.060	9.774	17.372	6816880470.0	9.106	20.360	0
7/27/2020	6487.339	8.269	15.107	7871.954	9.244	16.902	6854655651.9	8.336	20.100	0.03
7/28/2020	6298.427	8.016	14.780	7696.223	9.134	16.757	6692447010.5	8.080	19.740	0.01
7/29/2020	8340.302	16.584	23.592	12134.192	36.728	39.530	9170179156.5	20.222	29.310	0.18
7/30/2020	6969.955	8.785	15.769	8383.294	9.650	17.268	7523641190.2	9.272	20.460	0
7/31/2020	6450.443	8.415	15.050	7762.583	9.287	16.964	7145517425.5	9.079	20.020	0
8/1/2020	6190.340	8.162	14.979	7900.808	9.762	17.305	6954528215.3	13.188	20.010	0
8/2/2020	7093.727	10.270	17.033	9801.968	15.922	22.240	7827565960.7	17.585	22.270	0.29
8/3/2020	6767.967	8.538	15.346	8117.853	9.663	17.172	7374180322.3	9.104	20.460	0
8/4/2020	6796.062	10.365	17.180	8920.731	24.649	28.896	7717920498.0	19.489	24.920	0.9
8/5/2020	4464.403	13.072	20.203	5583.196	26.407	31.097	3896577334.0	14.011	25.600	0
---	---	---	---	---	---	---	---	---	---	4.61

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

Date: August 12, 2020

SANITARY SEWER FLOW CAPACITY STUDY – Summary Review

Prepared For: Muir Woods Capacity Analysis

Christopher Wood
487 Main Street, Suite 600
Buffalo, New York 14203
P: (716) 842-3165
F: (716) 842-0263

Project Name: Muir Woods Capacity Analysis

Flow Monitoring Period: July 8, 2020 to August 5, 2020

Rain Events (> 0.5-inches) Monitored: July 11 (1.21"), July 16 (0.86"), and August (0.90")

Number of Monitoring Nodes: Three (3) downstream manholes

Node Locations and Descriptions:

- Node 1 Dodge Rd 60" (60")
- Node 2 North Ellicott Creek Rd. (60")
- Node 3 Sweethome 66 (66")

Summary Conclusion:

Based on the data presented in this report, specifically the flow depth measurements recorded (see graphs below)

- At no time did the flow depth exceed pipe diameter at Node 1 and Node3 of the downstream monitoring points during the rain events monitored.
- One time the flow depth exceed pipe diameter at Node 2 of the downstream monitoring points during the rain events monitored.
- At no time during the monitoring period did the flow at any point slow or stall which would have caused a backup or flooding at the manhole.

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

TECsmith

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PO Box 383
Elma, New York 14059-0383
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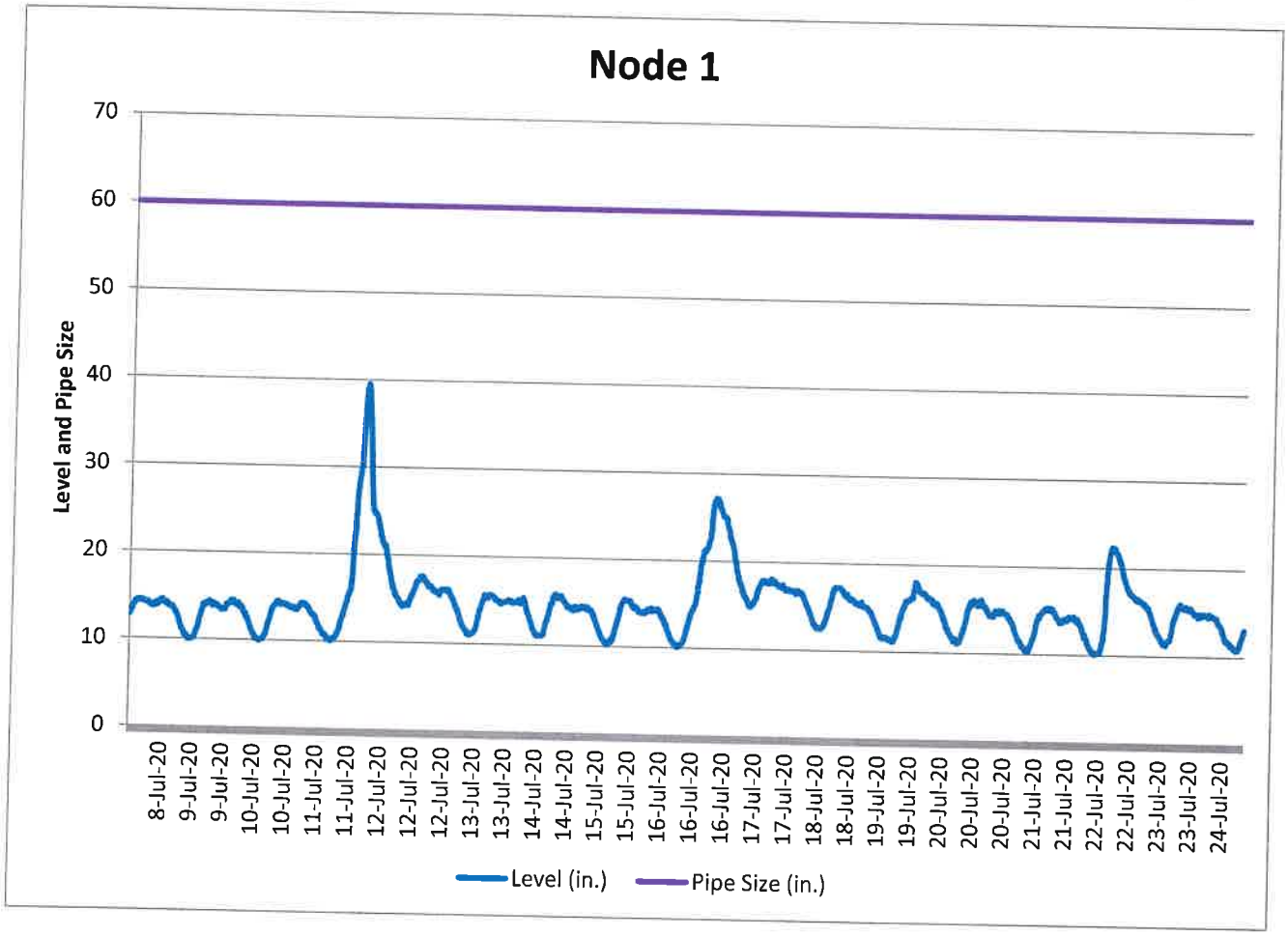
Fax: 716-687-1418

Depth of Flow Capacity Summary:

Depth of flow capacity is based on diameter of pipe. See graphs below.

- At no time during the monitoring period did depth of flow exceed pipe diameter at Node 1.

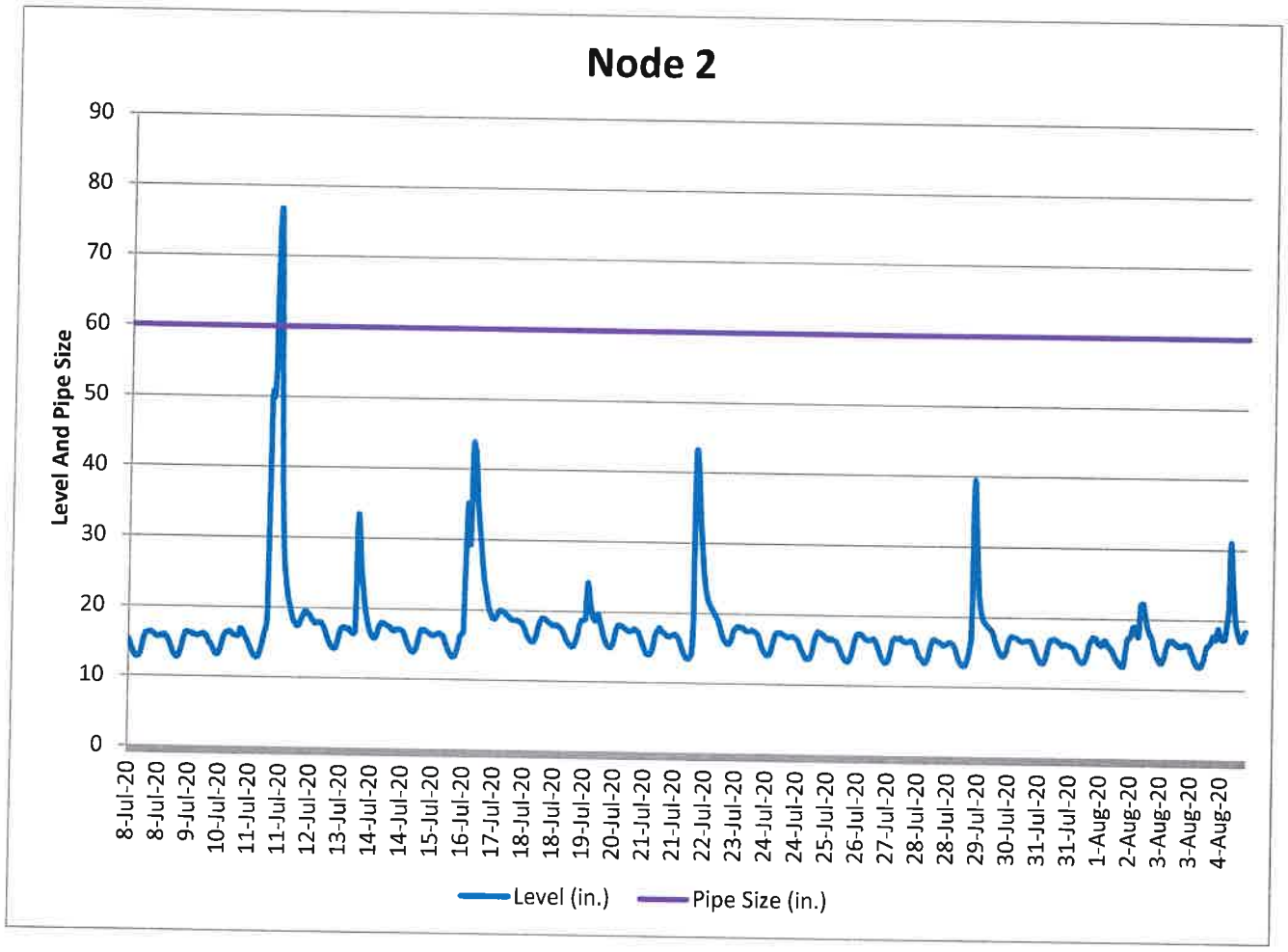


Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

- One time during the monitoring period did depth of flow exceed pipe diameter at Node 2.

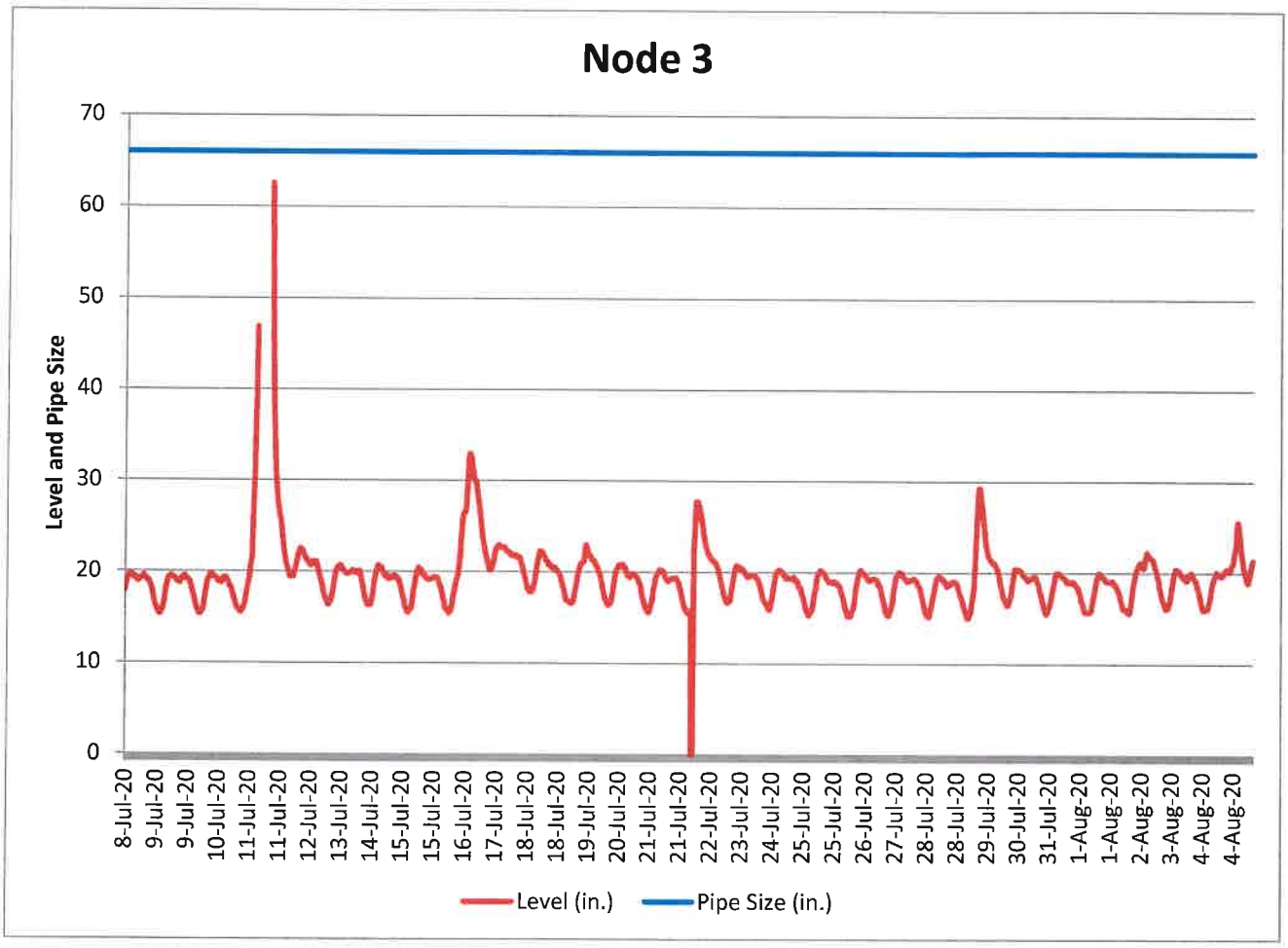


Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

- At no time during the monitoring period did depth of flow exceed pipe diameter at Node 3.



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

(T) Amherst Engineering Department Sewer Maintenance Division Downstream Routing Map

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Town of Amherst Engineering Department
Sewer Maintenance Division

Main Sanitary Sewer Interceptors

DOWNSTREAM SEWER

AMHERST PEANUT LINE & WEST SIDE INTERCEPTOR

460 Dodge Road - Proposed 26 Unit Apartment Building - Amherst Consolidated Sewer District

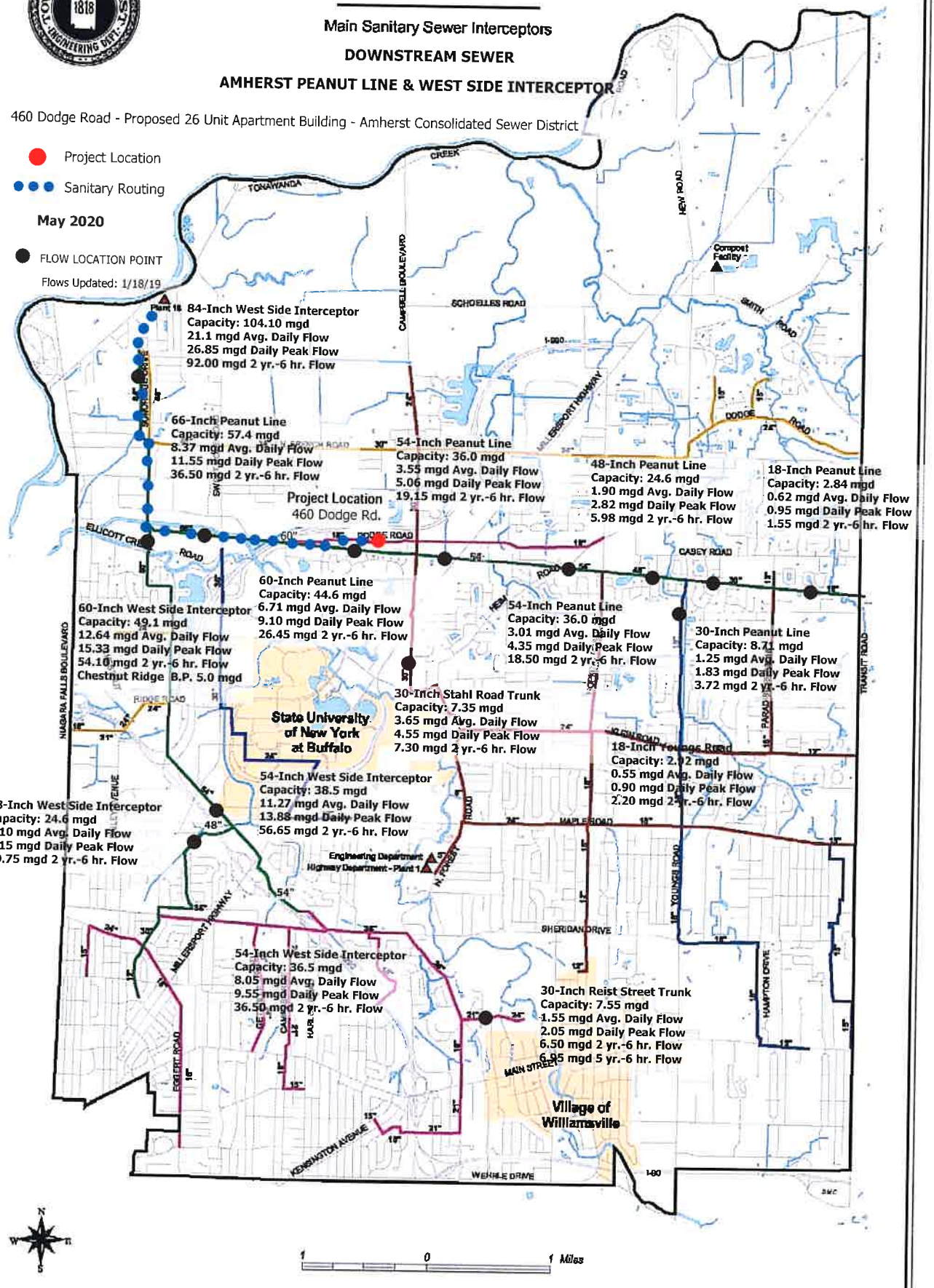
Project Location

Sanitary Routing

May 2020

FLOW LOCATION POINT

Flows Updated: 1/18/19



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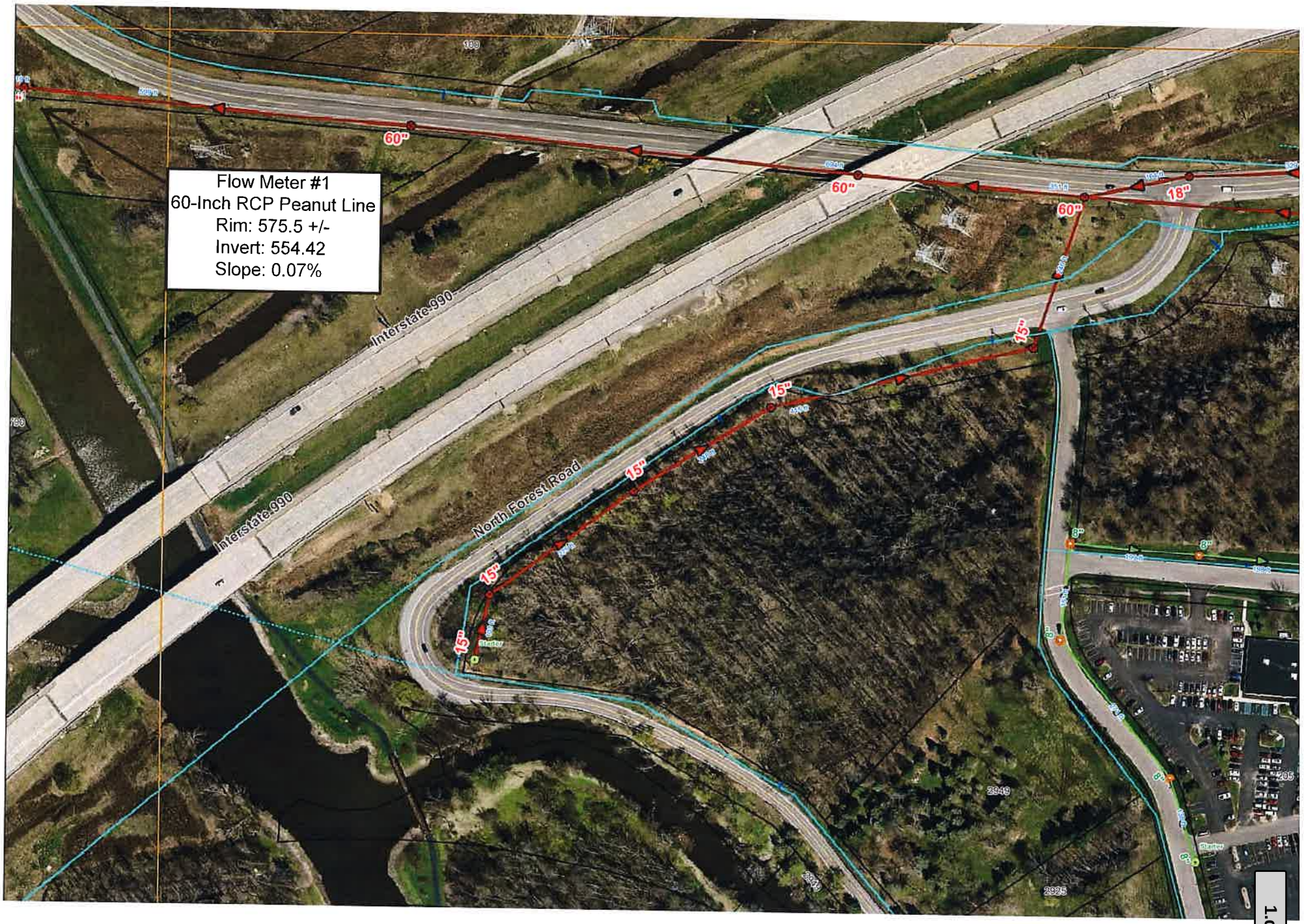

Flow Meter #1
60-Inch RCP Peanut Line
Rim: 575.5 +/-
Invert: 554.42
Slope: 0.07%
Interstate 990
Interstate 990
North Forest Road
60"
60"
60"
18"
15"
15"
15"
15"
15"



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Flow Meter #3


Sweet Home Rd
Reznicki & Company, LLP
Timothy M Brown CPA PLLC
Buffalo Vet Center
Dr. Ronald A. Cooke, MD
Ashley's Garden

Appendix B

Storm Sewer System Drainage Calculations

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Existing Runoff

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

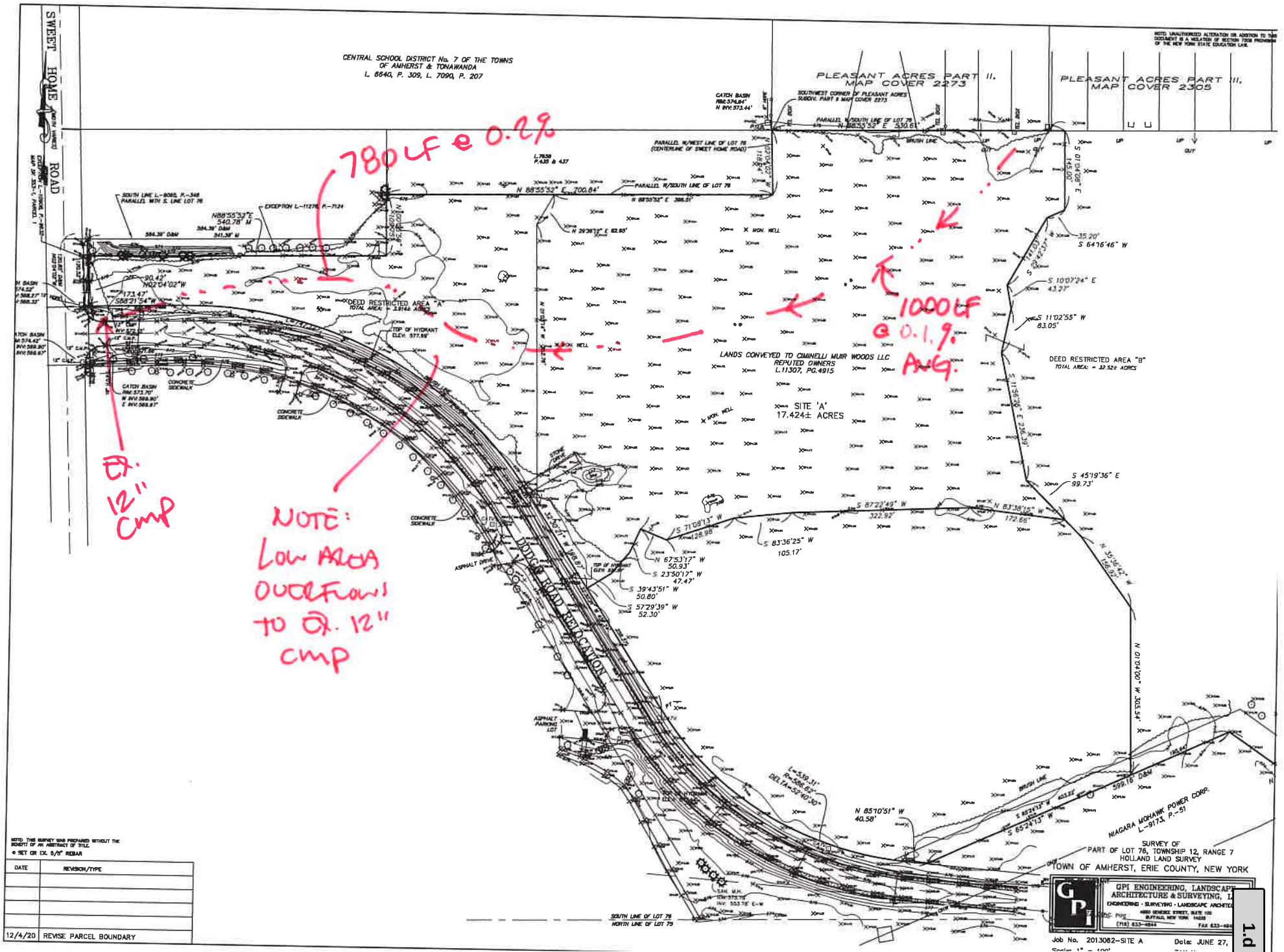


Existing

Subcat Reach Pond Link

Routing Diagram for 21.011 Existing
Prepared by Hewlett-Packard Company, Printed 3/1/2021
HydroCAD® 10.00-18 s/n 05019 © 2016 HydroCAD Software Solutions LLC

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)


780 LF @ 0.2%
1000 LF @ 0.1% AVG.
EX. 12" CMP
NOTE: LOW AREA OVERFLOWS TO EX. 12" CMP
SWEET HOME ROAD
CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA
L. 8640, P. 309, L. 7090, P. 207
PLEASANT ACRES PART II. MAP COVER 2273
PLEASANT ACRES PART III. MAP COVER 2305
LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC REPUTED OWNERS L.11307, PG.4915
SITE 'A' 17.424± ACRES
DEED RESTRICTED AREA "A" TOTAL AREA = 3.8144 ACRES
DEED RESTRICTED AREA "B" TOTAL AREA = 12.52± ACRES
DODGE ROAD RELOCATION
NIAGARA MOHAWK POWER CORP. L.-9173, P.-51
SURVEY OF PART OF LOT 78, TOWNSHIP 12, RANGE 7 HOLLAND LAND SURVEY TOWN OF AMHERST, ERIE COUNTY, NEW YORK
GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, L
Job No. 2013082-SITE A
Date: JUNE 27,
DATE | REVISION/TYPE
12/4/20 | REVISE PARCEL BOUNDARY

Events for Subcatchment 1S: Existing

Event	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-Year	0.87	0.578	0.41
2-Year	1.34	0.851	0.60
5-Year	2.14	1.304	0.92
10-Year	2.94	1.752	1.24
25-Year	4.34	2.527	1.78
50-Year	5.69	3.272	2.31
100-Year	**7.33**	**4.181**	**2.95**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.830	77	Brush, Fair, HSG D (1S)
12.170	79	Woods, Fair, HSG D (1S)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
17.000	HSG D	1S
0.000	Other	

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	4.830	0.000	4.830	Brush, Fair	1S
0.000	0.000	0.000	12.170	0.000	12.170	Woods, Fair	1S

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

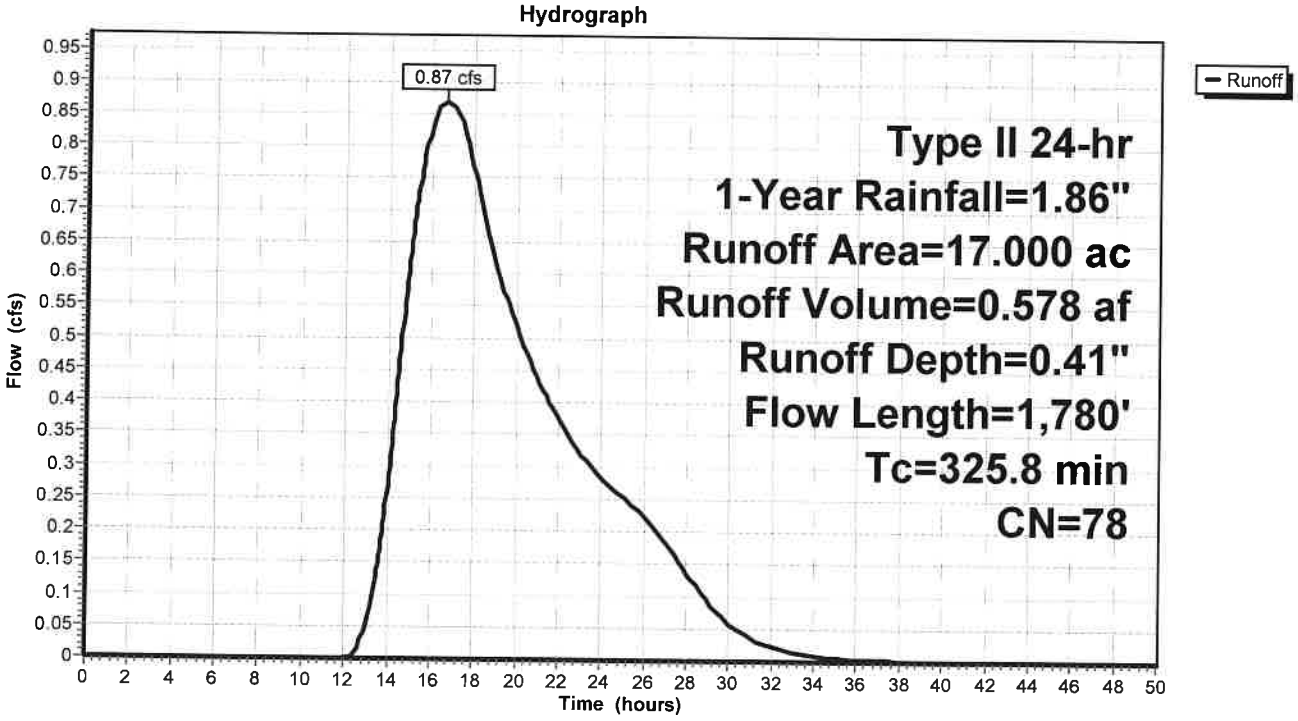
Runoff = 0.87 cfs @ 16.65 hrs, Volume= 0.578 af, Depth= 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

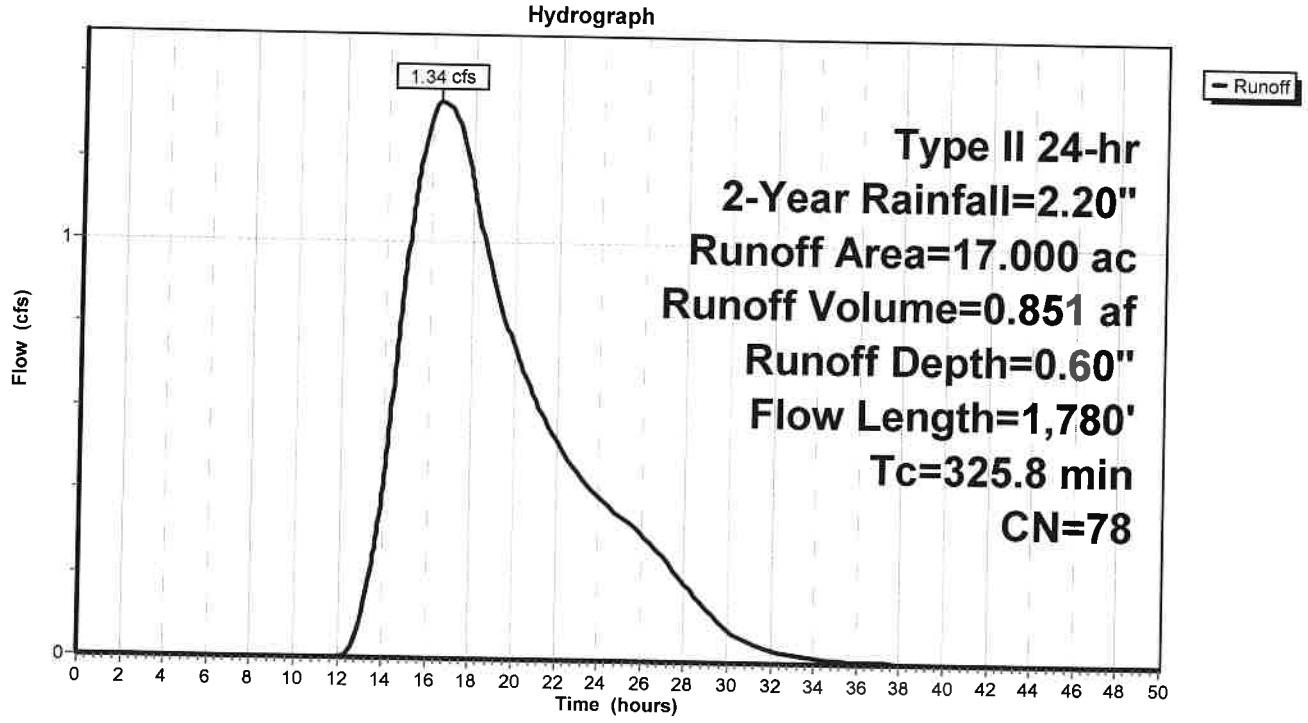
Runoff = 1.34 cfs @ 16.35 hrs, Volume= 0.851 af, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

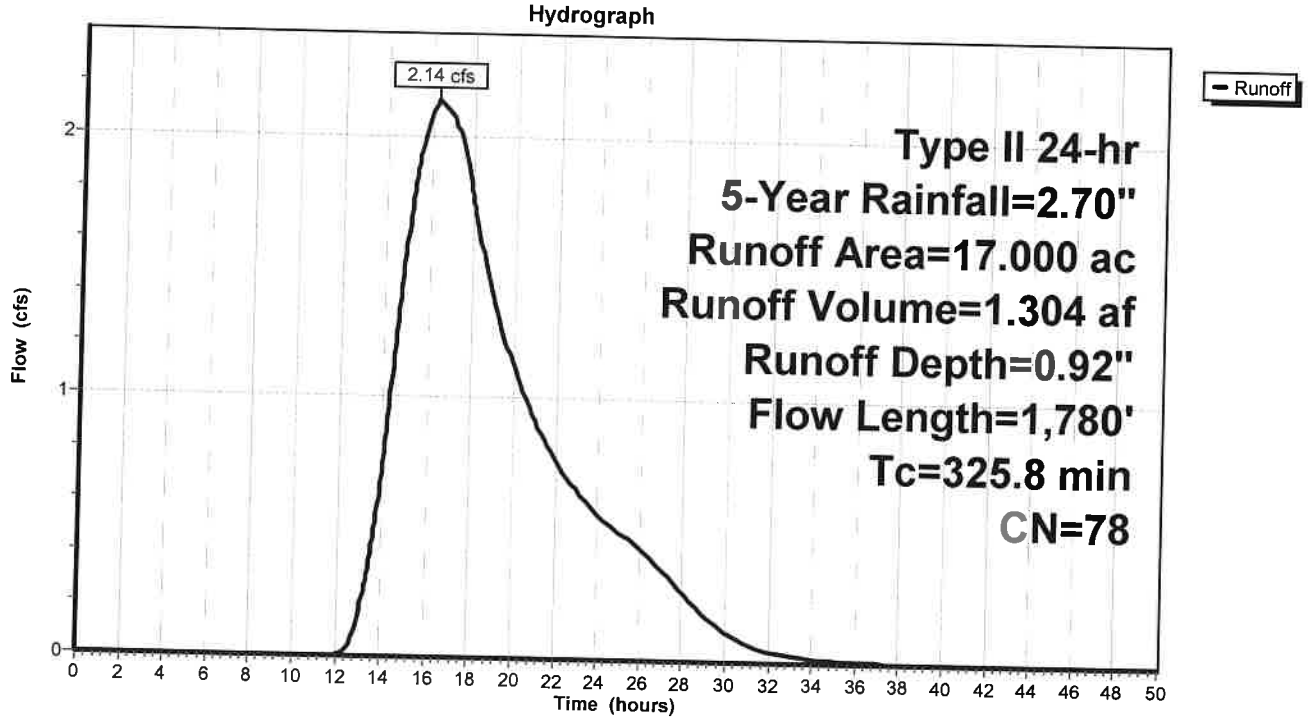
Runoff = 2.14 cfs @ 16.31 hrs, Volume= 1.304 af, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

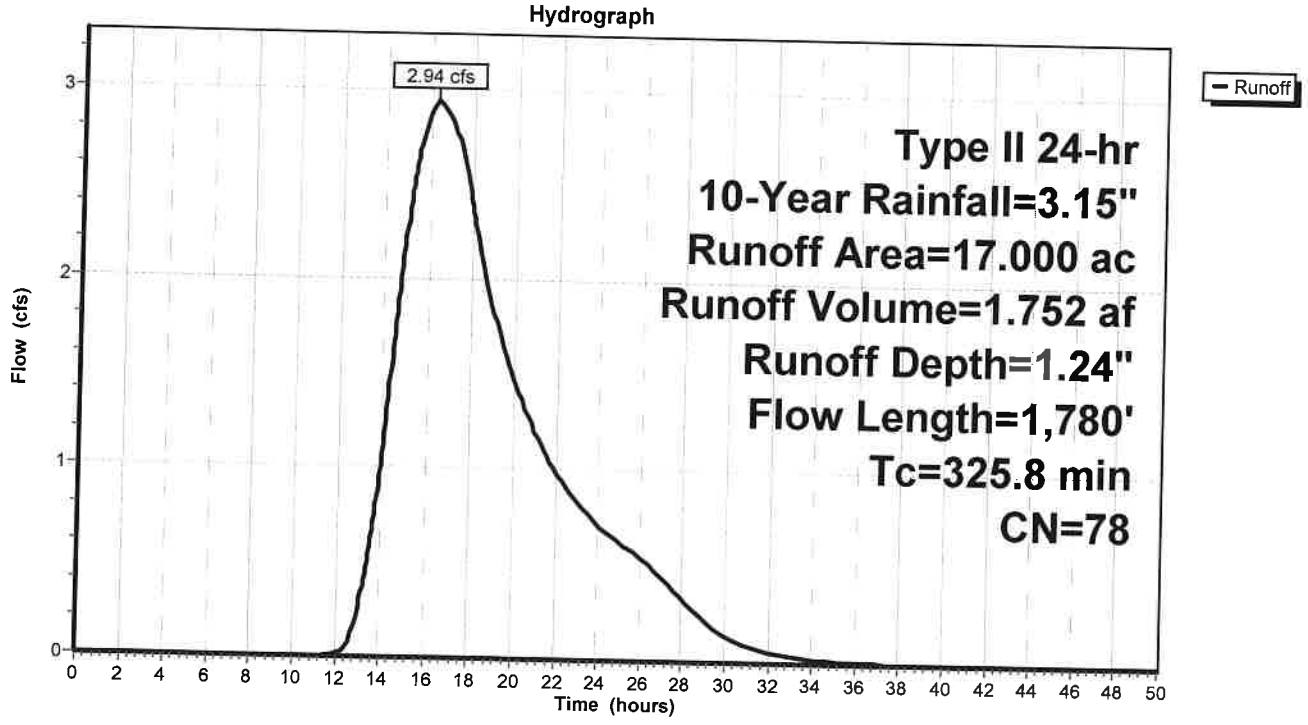
Runoff = 2.94 cfs @ 16.31 hrs, Volume= 1.752 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

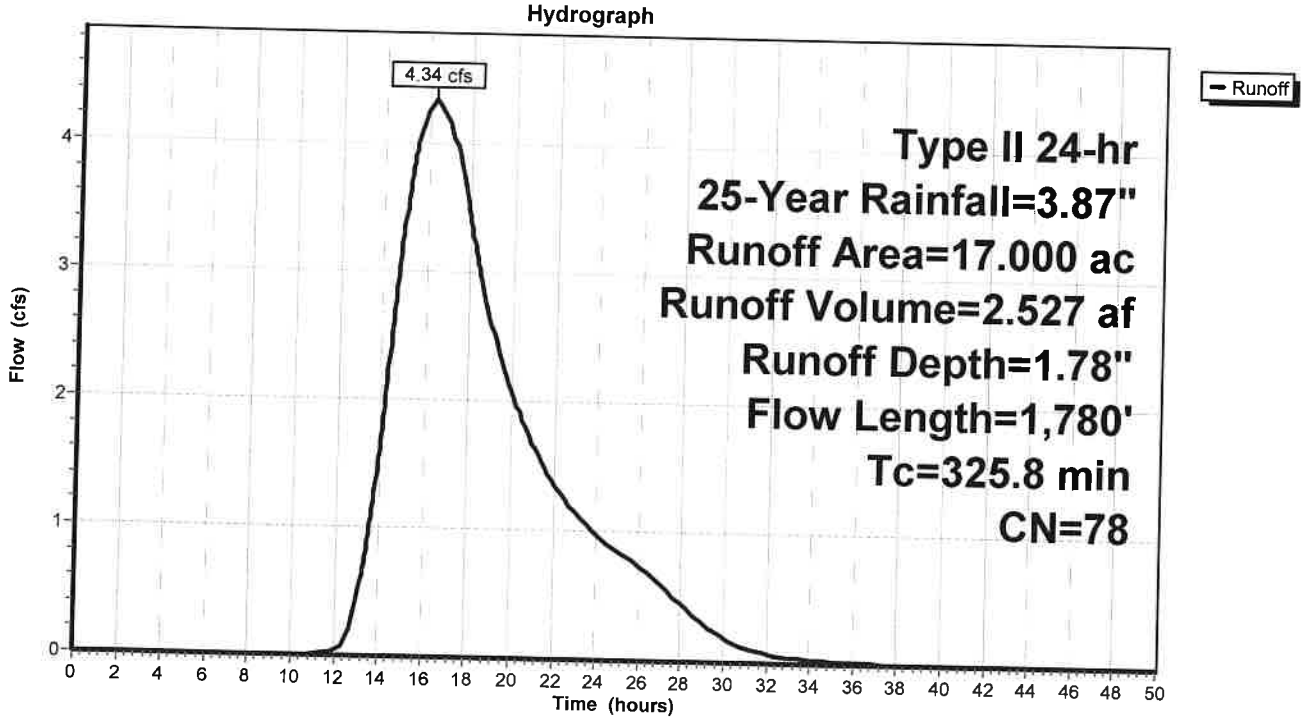
Runoff = 4.34 cfs @ 16.30 hrs, Volume= 2.527 af, Depth= 1.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

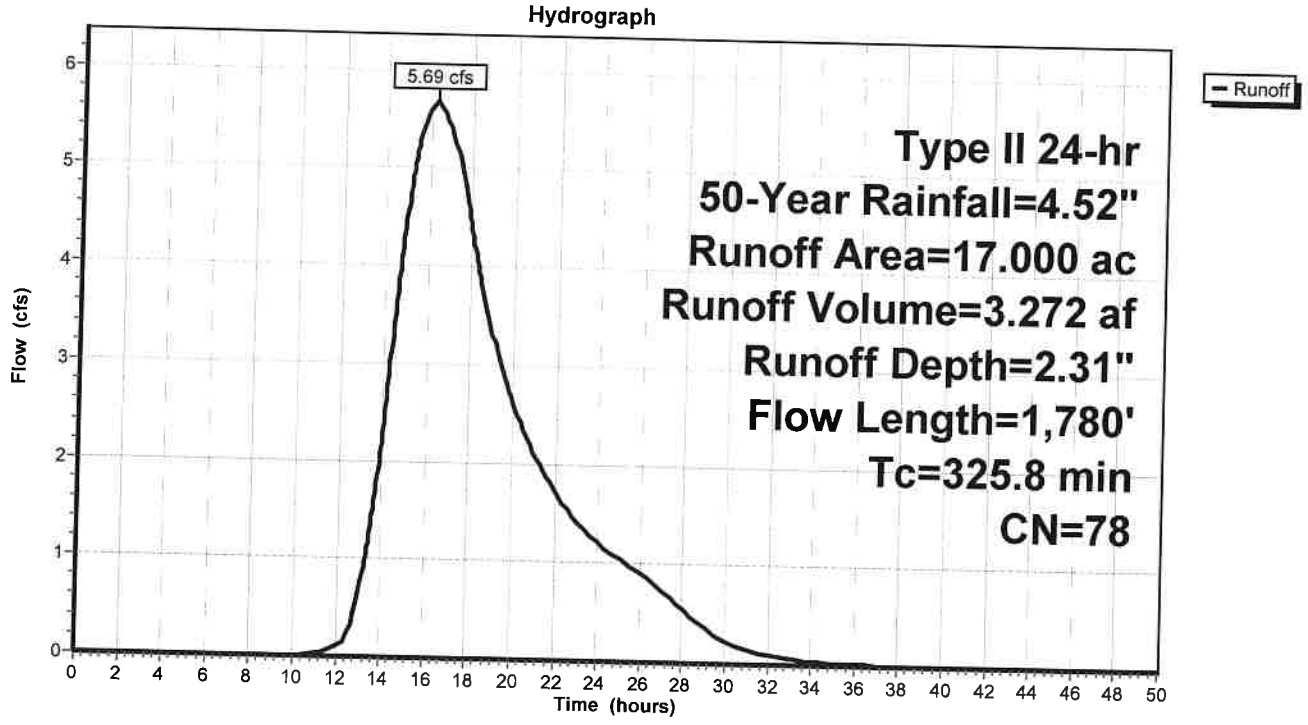
Runoff = 5.69 cfs @ 16.29 hrs, Volume= 3.272 af, Depth= 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

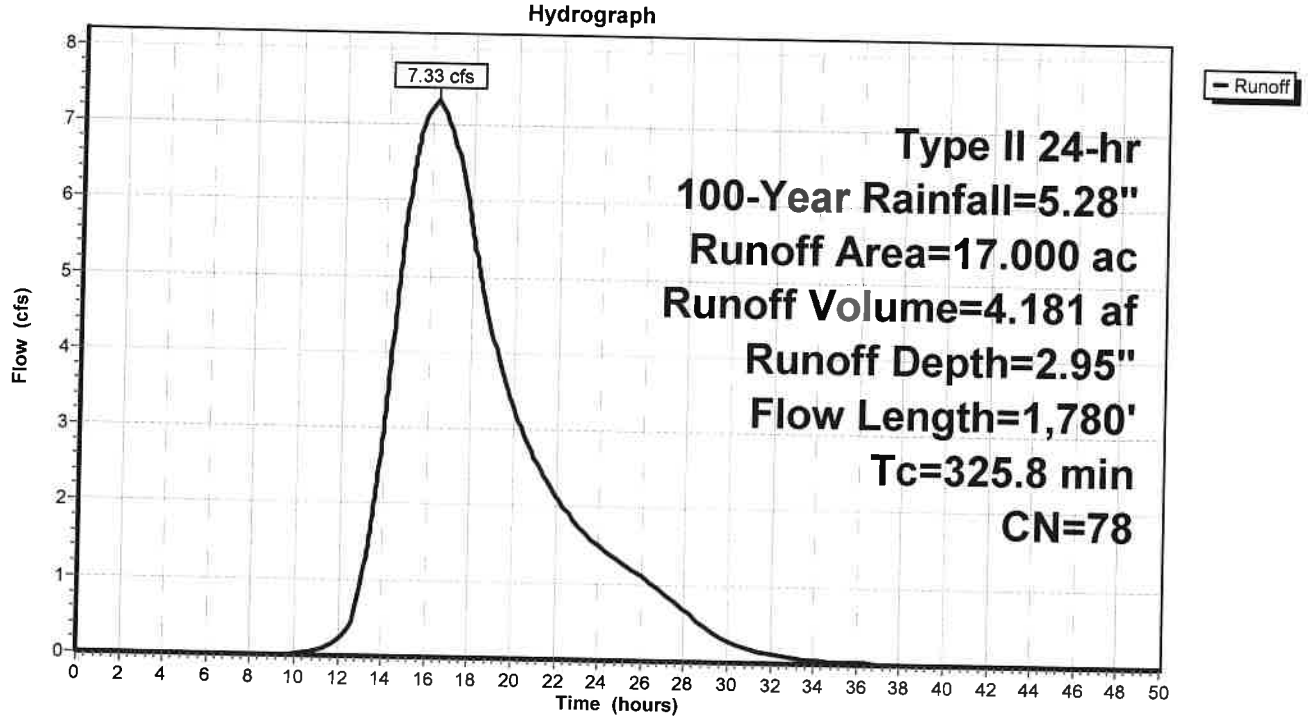
Runoff = 7.33 cfs @ 16.29 hrs, Volume= 4.181 af, Depth= 2.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



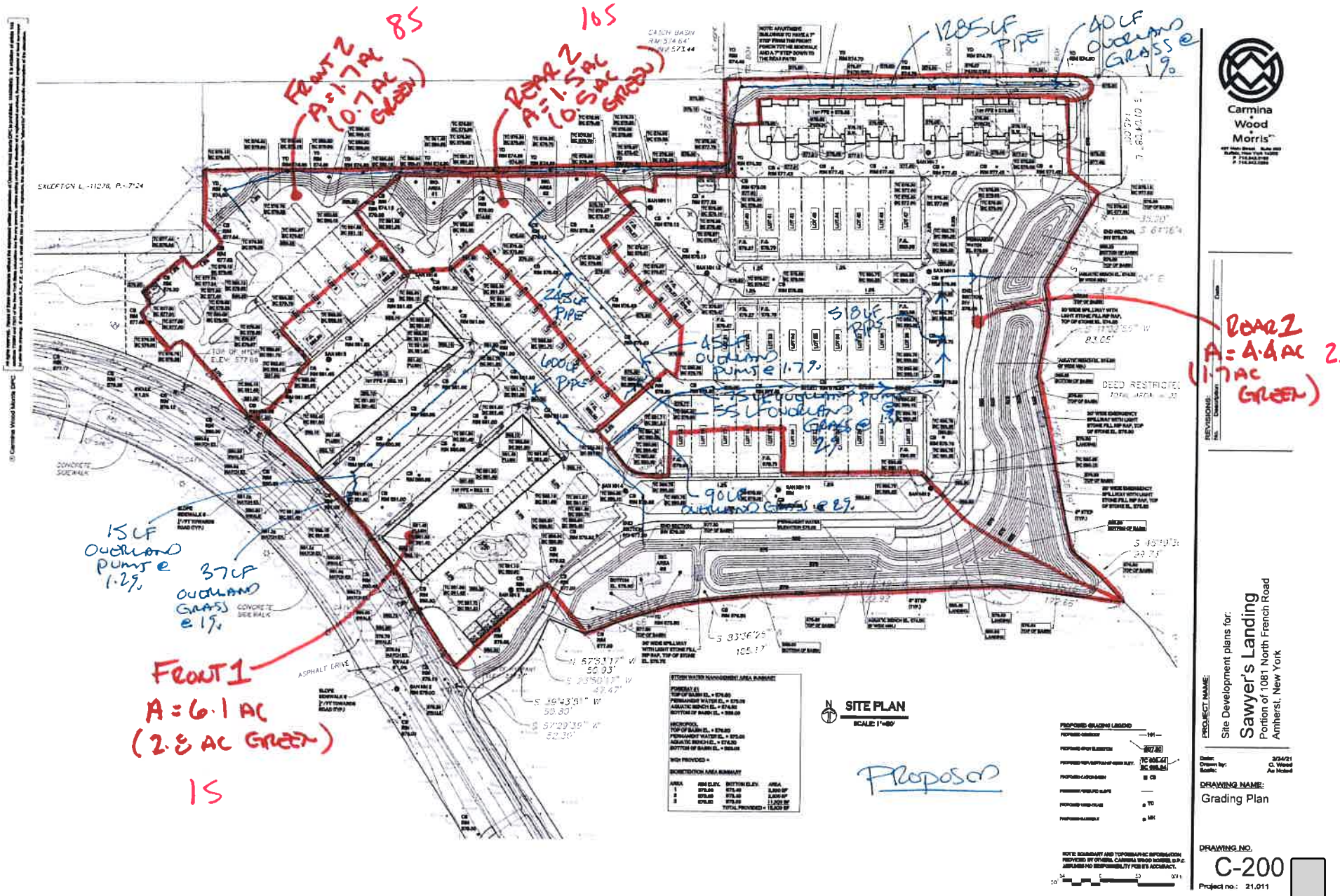
Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

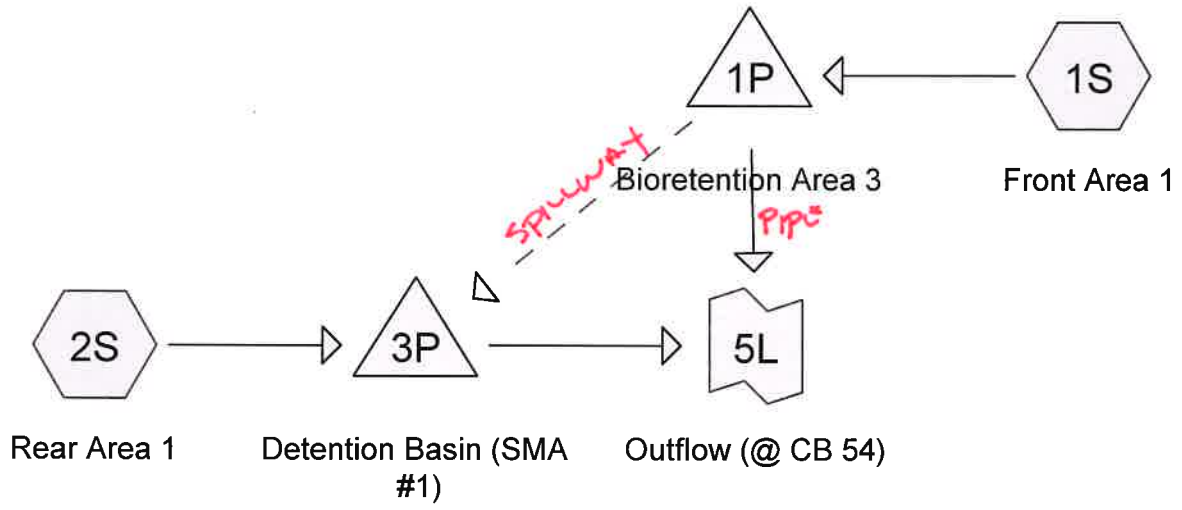
Proposed Runoff

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Proposed Runoff - East

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)


FRONT 2
A = 1.7 AC
(0.7 AC GREEN)
85
REAR 2
A = 1.5 AC
(0.5 AC GREEN)
105
120 LF PIPE
40 LF OVERLAND GRASS e 9%
REAR 2
A = 4.4 AC
(1.7 AC GREEN)
245 LF PIPE
45 LF OVERLAND PUMP e 1.7%
60 LF PIPE
55 LF PIPE
55 LF OVERLAND PUMP e 2%
90 LF OVERLAND GRASS e 2%
15 LF OVERLAND PUMP e 1.2%
37 LF OVERLAND GRASS e 1%
FRONT 1
A = 6.1 AC
(2.5 AC GREEN)
15
SITE PLAN
SCALE: 1"=80'
Proposed
Carmina Wood Morris
REVISIONS:
No. Description Date
PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York
Date: 3/24/21
Drawn by: C. Wood
Scale: As Noted
DRAWING NAME:
Grading Plan
DRAWING NO.
C-200
Project no.: 21.011



Subcat Reach Pond Link

Routing Diagram for 21.011 Proposed
Prepared by Hewlett-Packard Company, Printed 3/4/2021
HydroCAD® 10.00-18 s/n 05019 © 2016 HydroCAD Software Solutions LLC

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Events for Link 5L: Outflow (@ CB 54)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
1-Year	2.78	2.78	**0.00**
2-Year	2.86	2.86	0.00
5-Year	3.01	3.01	0.00
10-Year	3.16	3.16	0.00
25-Year	3.36	3.36	0.00
50-Year	3.48	3.48	0.00
100-Year	**3.60**	**3.60**	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Events for Pond 3P: Detention Basin (SMA #1)

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	6.05	0.10	0.10	0.00	575.23	13,685
2-Year	12.29	0.18	0.18	0.00	575.32	19,129
5-Year	20.08	0.33	0.33	0.00	575.46	28,218
10-Year	26.01	0.47	0.47	0.00	575.60	37,117
25-Year	34.94	0.64	0.64	0.00	575.83	51,964
50-Year	42.93	1.97	0.72	1.25	576.00	62,935
100-Year	**52.24**	**8.57**	**0.78**	**7.80**	**576.11**	**70,722**

TO DUDLEE RD

TO WETLANDS

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Events for Pond 1P: Bioretention Area 3

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	8.17	4.38	2.74	1.63	575.82	7,520
2-Year	10.57	8.19	2.79	5.41	575.91	8,359
5-Year	14.18	12.91	2.83	10.09	575.99	9,153
10-Year	17.46	16.45	2.85	13.60	576.04	9,672
25-Year	22.74	21.73	2.89	18.84	576.11	10,375
50-Year	27.50	26.43	2.91	23.52	576.17	10,954
100-Year	**33.05**	**31.92**	**2.94**	**28.98**	**576.23**	**11,585**

↑ TO DOUGE RD

↑ TO BASIN

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.500	80	>75% Grass cover, Good, HSG D (1S, 2S)
3.200	98	Paved parking, HSG D (1S, 2S)
2.800	98	Roofs, HSG D (1S, 2S)
10.500	**90**	**TOTAL AREA**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
10.500	HSG D	1S, 2S
0.000	Other	
10.500		**TOTAL AREA**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	4.500	0.000	4.500	>75% Grass cover, Good	1S, 2S
0.000	0.000	0.000	3.200	0.000	3.200	Paved parking	1S, 2S
0.000	0.000	0.000	2.800	0.000	2.800	Roofs	1S, 2S
0.000	**0.000**	**0.000**	**10.500**	**0.000**	**10.500**	**TOTAL AREA**	

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=0.98"
Flow Length=652' Tc=13.3 min CN=90 Runoff=8.17 cfs 0.496 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=1.04"
Flow Length=683' Tc=14.4 min CN=91 Runoff=6.05 cfs 0.382 af

Pond 1P: Bioretention Area 3 Peak Elev=575.82' Storage=7,520 cf Inflow=8.17 cfs 0.496 af
Primary=2.74 cfs 0.475 af Secondary=1.63 cfs 0.021 af Outflow=4.38 cfs 0.496 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.23' Storage=13,685 cf Inflow=6.05 cfs 0.403 af
Primary=0.10 cfs 0.249 af Secondary=0.00 cfs 0.000 af Outflow=0.10 cfs 0.249 af

Link 5L: Outflow (@ CB 54) Inflow=2.78 cfs 0.724 af
Primary=2.78 cfs 0.724 af

Total Runoff Area = 10.500 ac Runoff Volume = 0.878 af Average Runoff Depth = 1.00"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

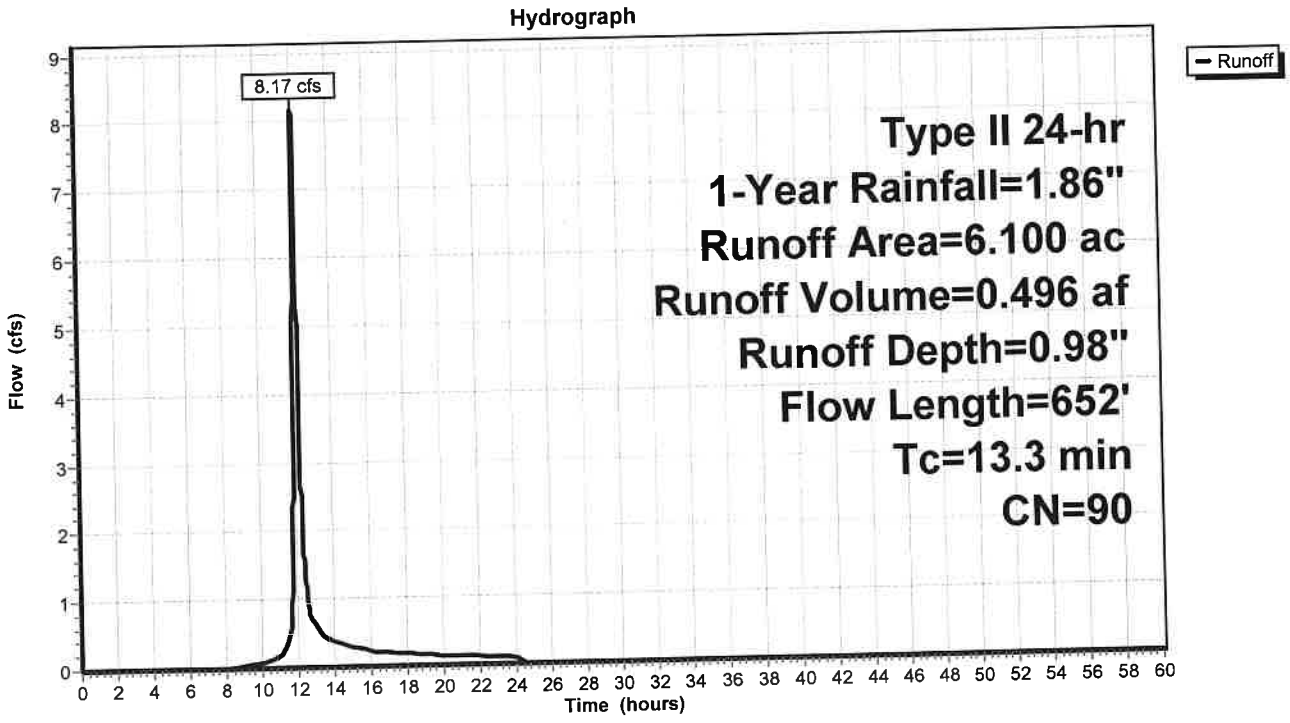
Runoff = 8.17 cfs @ 12.05 hrs, Volume= 0.496 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.00
9.00	0.27	0.00	0.02
10.00	0.34	0.01	0.07
11.00	0.44	0.03	0.20
12.00	1.23	0.48	**7.23**
13.00	1.44	0.63	**0.63**
14.00	1.53	0.70	0.37
15.00	1.59	0.75	0.29
16.00	1.64	0.79	0.23
17.00	1.68	0.83	0.20
18.00	1.71	0.85	0.17
19.00	1.74	0.88	0.15
20.00	1.77	0.90	0.13
21.00	1.79	0.92	0.12
22.00	1.82	0.94	0.12
23.00	1.84	0.96	0.11
24.00	**1.86**	**0.98**	0.11
25.00	1.86	0.98	0.00
26.00	1.86	0.98	0.00
27.00	1.86	0.98	0.00
28.00	1.86	0.98	0.00
29.00	1.86	0.98	0.00
30.00	1.86	0.98	0.00
31.00	1.86	0.98	0.00
32.00	1.86	0.98	0.00
33.00	1.86	0.98	0.00
34.00	1.86	0.98	0.00
35.00	1.86	0.98	0.00
36.00	1.86	0.98	0.00
37.00	1.86	0.98	0.00
38.00	1.86	0.98	0.00
39.00	1.86	0.98	0.00
40.00	1.86	0.98	0.00
41.00	1.86	0.98	0.00
42.00	1.86	0.98	0.00
43.00	1.86	0.98	0.00
44.00	1.86	0.98	0.00
45.00	1.86	0.98	0.00
46.00	1.86	0.98	0.00
47.00	1.86	0.98	0.00
48.00	1.86	0.98	0.00
49.00	1.86	0.98	0.00
50.00	1.86	0.98	0.00
51.00	1.86	0.98	0.00
52.00	1.86	0.98	0.00
53.00	1.86	0.98	0.00
54.00	1.86	0.98	0.00
55.00	1.86	0.98	0.00
56.00	1.86	0.98	0.00
57.00	1.86	0.98	0.00
58.00	1.86	0.98	0.00
59.00	1.86	0.98	0.00
60.00	1.86	0.98	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

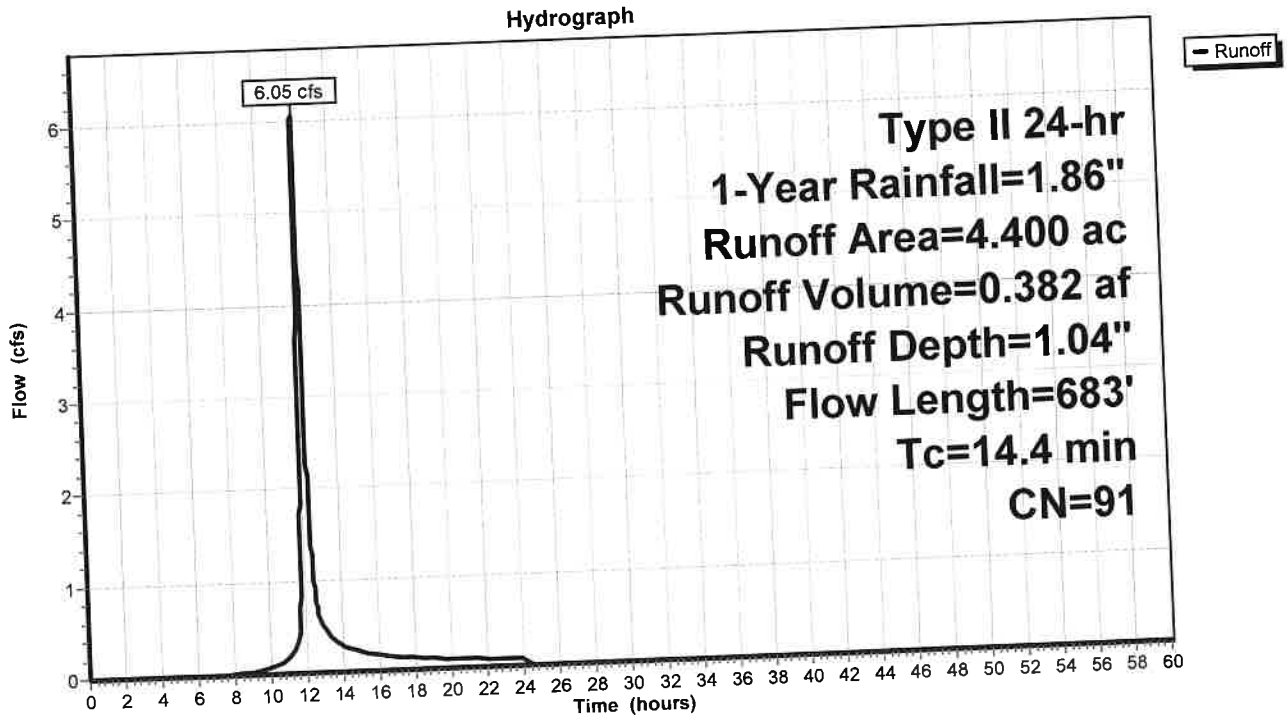
Runoff = 6.05 cfs @ 12.06 hrs, Volume= 0.382 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.01
9.00	0.27	0.01	0.03
10.00	0.34	0.02	0.06
11.00	0.44	0.05	0.17
12.00	1.23	0.53	**5.18**
13.00	1.44	0.69	**0.48**
14.00	1.53	0.76	0.28
15.00	1.59	0.81	0.21
16.00	1.64	0.85	0.17
17.00	1.68	0.89	0.15
18.00	1.71	0.92	0.13
19.00	1.74	0.94	0.11
20.00	1.77	0.97	0.10
21.00	1.79	0.99	0.09
22.00	1.82	1.01	0.09
23.00	1.84	1.02	0.08
24.00	**1.86**	**1.04**	0.08
25.00	1.86	1.04	0.00
26.00	1.86	1.04	0.00
27.00	1.86	1.04	0.00
28.00	1.86	1.04	0.00
29.00	1.86	1.04	0.00
30.00	1.86	1.04	0.00
31.00	1.86	1.04	0.00
32.00	1.86	1.04	0.00
33.00	1.86	1.04	0.00
34.00	1.86	1.04	0.00
35.00	1.86	1.04	0.00
36.00	1.86	1.04	0.00
37.00	1.86	1.04	0.00
38.00	1.86	1.04	0.00
39.00	1.86	1.04	0.00
40.00	1.86	1.04	0.00
41.00	1.86	1.04	0.00
42.00	1.86	1.04	0.00
43.00	1.86	1.04	0.00
44.00	1.86	1.04	0.00
45.00	1.86	1.04	0.00
46.00	1.86	1.04	0.00
47.00	1.86	1.04	0.00
48.00	1.86	1.04	0.00
49.00	1.86	1.04	0.00
50.00	1.86	1.04	0.00
51.00	1.86	1.04	0.00
52.00	1.86	1.04	0.00
53.00	1.86	1.04	0.00
54.00	1.86	1.04	0.00
55.00	1.86	1.04	0.00
56.00	1.86	1.04	0.00
57.00	1.86	1.04	0.00
58.00	1.86	1.04	0.00
59.00	1.86	1.04	0.00
60.00	1.86	1.04	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area =	6.100 ac,	54.10% Impervious,	Inflow Depth =	0.98"	for 1-Year event
Inflow =	8.17 cfs @	12.05 hrs,	Volume=	0.496 af	
Outflow =	4.38 cfs @	12.19 hrs,	Volume=	0.496 af,	Atten= 46%, Lag= 8.2 min
Primary =	2.74 cfs @	12.19 hrs,	Volume=	0.475 af	
Secondary =	1.63 cfs @	12.19 hrs,	Volume=	0.021 af	

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.82' @ 12.19 hrs Surf.Area= 9,695 sf Storage= 7,520 cf

Plug-Flow detention time= 319.4 min calculated for 0.496 af (100% of inflow)
Center-of-Mass det. time= 319.4 min (1,152.7 - 833.3)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

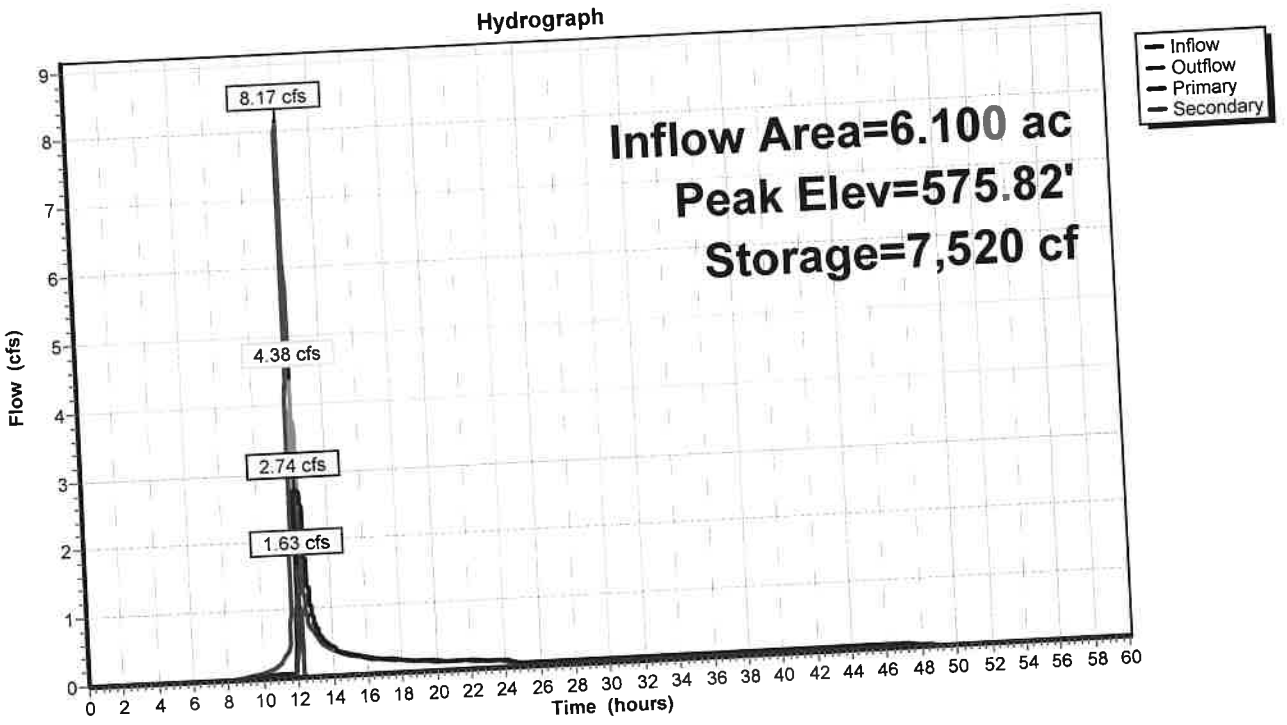
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.74 cfs @ 12.19 hrs HW=575.82' (Free Discharge)
↑—**1=8" pipe** (Barrel Controls 2.74 cfs @ 7.86 fps)
↑—**2=Grate** (Passes < 3.80 cfs potential flow)
└—**3=Exfiltration** (Passes < 0.06 cfs potential flow)

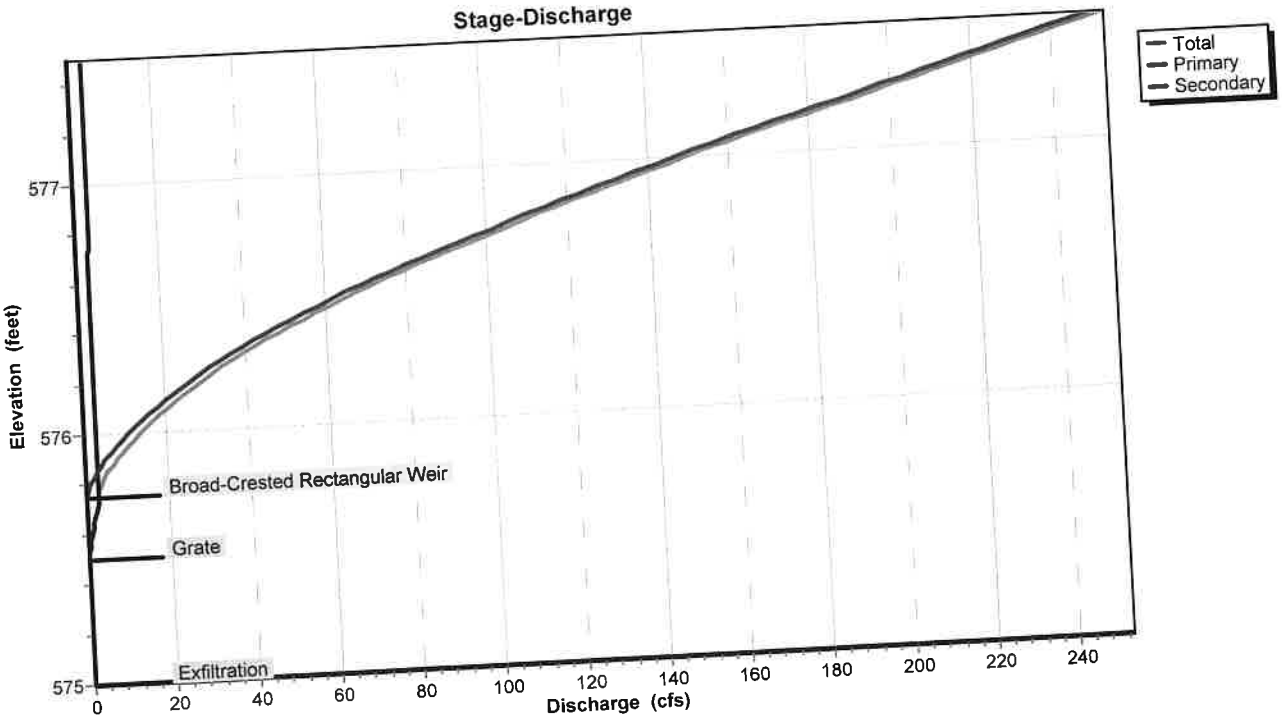
Secondary OutFlow Max=1.62 cfs @ 12.19 hrs HW=575.82' (Free Discharge)
↑—**4=Broad-Crested Rectangular Weir** (Weir Controls 1.62 cfs @ 0.77 fps)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

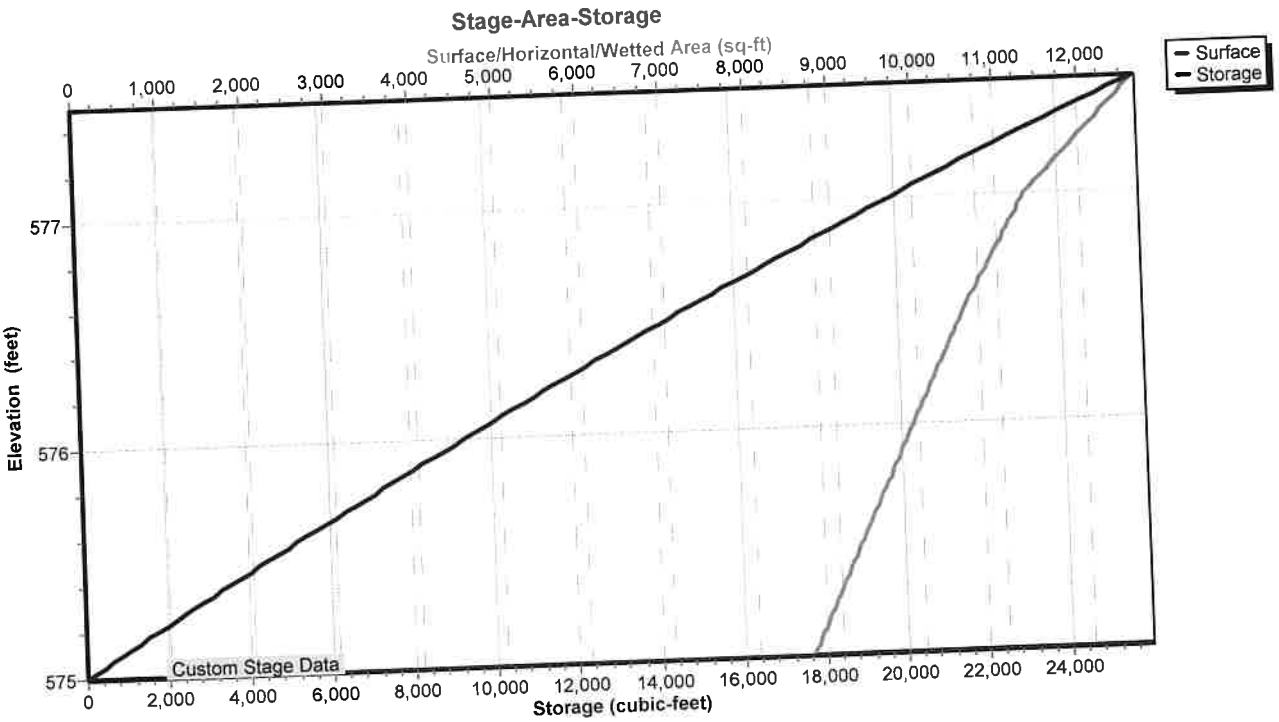


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.00	0	575.00	0.00	0.00	0.00
10.00	0.07	121	575.01	0.03	0.03	0.00
12.00	**7.23**	**4,533**	**575.51**	**0.08**	**0.08**	**0.00**
14.00	**0.37**	**5,004**	**575.56**	**0.42**	**0.42**	**0.00**
16.00	0.23	4,812	575.54	0.25	0.25	0.00
18.00	0.17	4,735	575.53	0.18	0.18	0.00
20.00	0.13	4,666	575.52	0.14	0.14	0.00
22.00	0.12	4,618	575.51	0.12	0.12	0.00
24.00	0.11	4,598	575.51	0.11	0.11	0.00
26.00	0.00	4,207	575.47	0.06	0.06	0.00
28.00	0.00	3,812	575.43	0.05	0.05	0.00
30.00	0.00	3,420	575.38	0.05	0.05	0.00
32.00	0.00	3,031	575.34	0.05	0.05	0.00
34.00	0.00	2,646	575.30	0.05	0.05	0.00
36.00	0.00	2,264	575.26	0.05	0.05	0.00
38.00	0.00	1,885	575.21	0.05	0.05	0.00
40.00	0.00	1,510	575.17	0.05	0.05	0.00
42.00	0.00	1,138	575.13	0.05	0.05	0.00
44.00	0.00	769	575.09	0.05	0.05	0.00
46.00	0.00	404	575.05	0.05	0.05	0.00
48.00	0.00	96	575.01	0.02	0.02	0.00
50.00	0.00	18	575.00	0.00	0.00	0.00
52.00	0.00	3	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 1.10" for 1-Year event
Inflow = 6.05 cfs @ 12.06 hrs, Volume= 0.403 af
Outflow = 0.10 cfs @ 19.66 hrs, Volume= 0.249 af, Atten= 98%, Lag= 455.7 min
Primary = 0.10 cfs @ 19.66 hrs, Volume= 0.249 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.23' @ 19.66 hrs Surf.Area= 60,952 sf Storage= 13,685 cf

Plug-Flow detention time= 1,134.7 min calculated for 0.249 af (62% of inflow)
Center-of-Mass det. time= 1,028.3 min (1,852.6 - 824.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

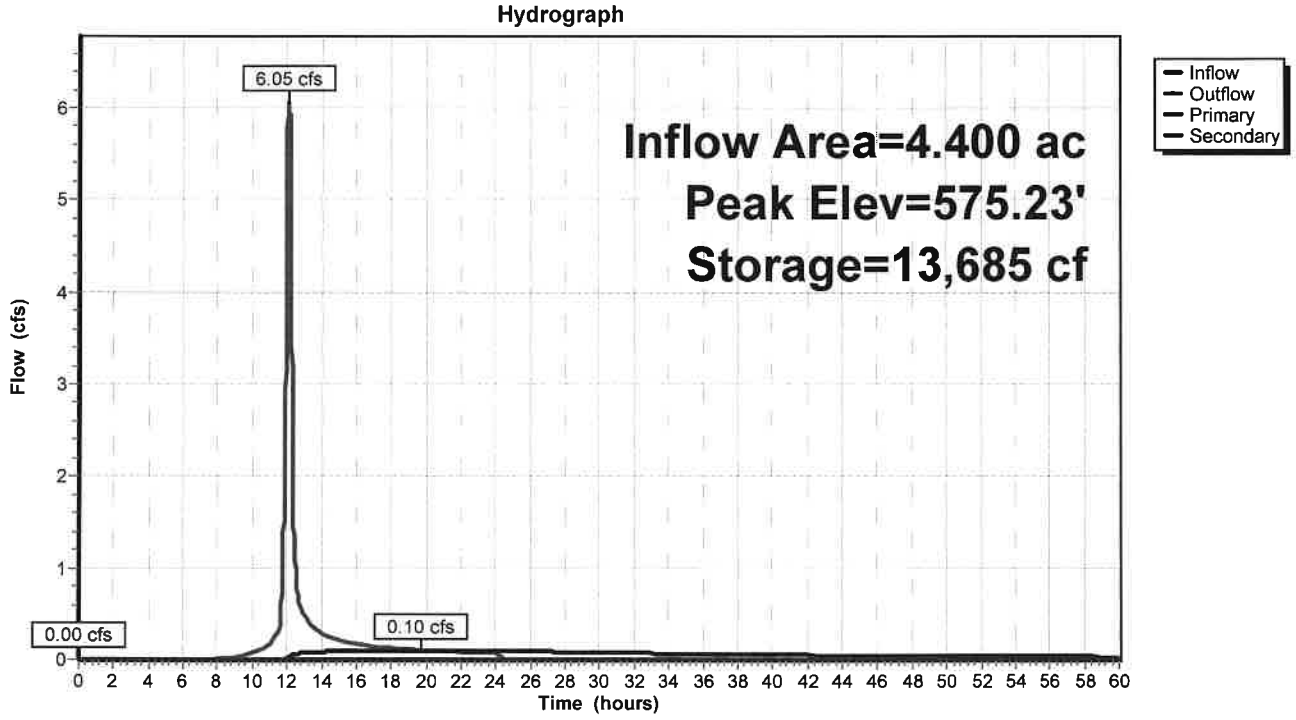
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.10 cfs @ 19.66 hrs HW=575.23' (Free Discharge)
└**1=12" outlet pipe** (Passes 0.10 cfs of 1.85 cfs potential flow)
  ├**2=low flow outlet pipe** (Barrel Controls 0.10 cfs @ 1.70 fps)
  └**3=Grate** (Controls 0.00 cfs)

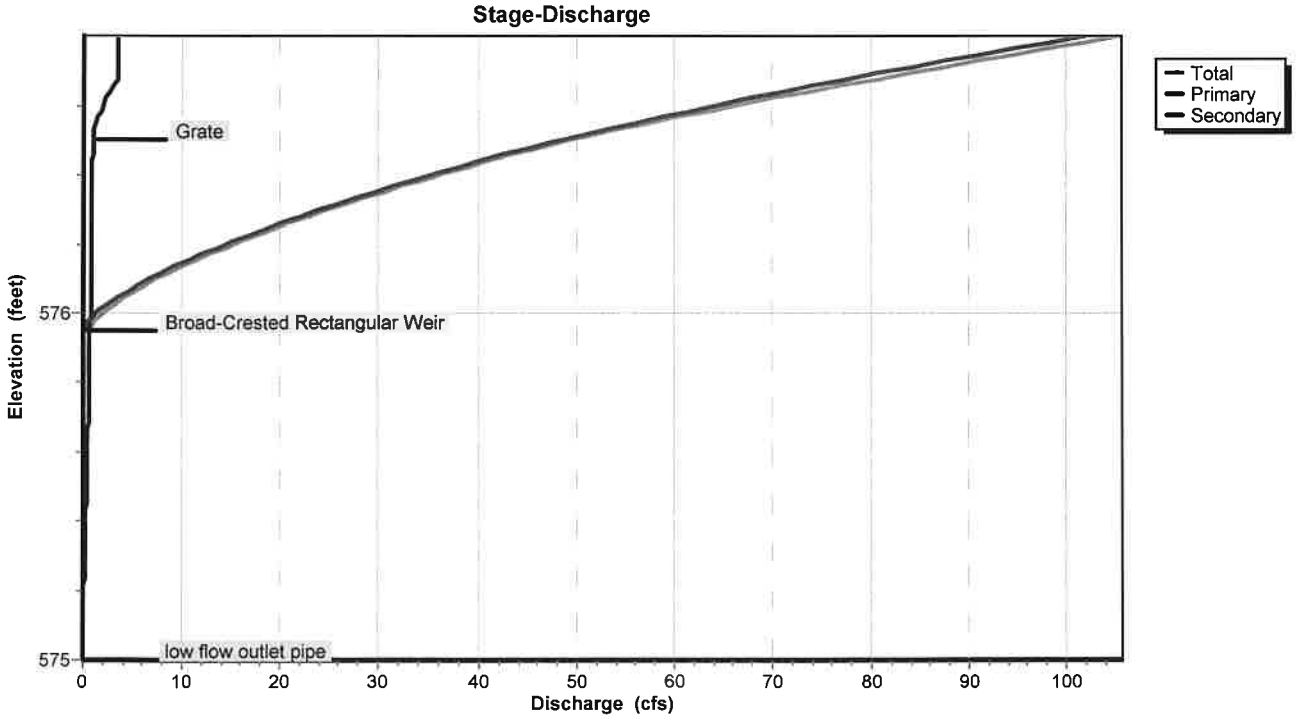
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

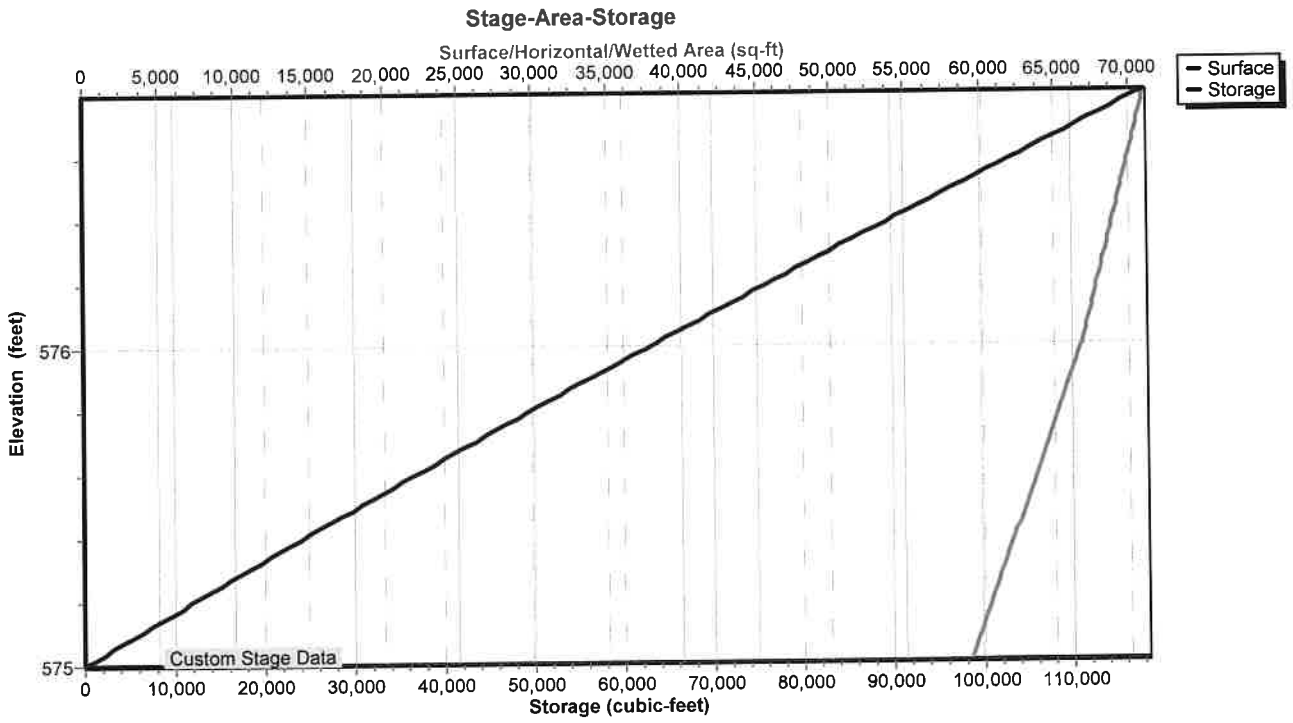


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.01	5	575.00	0.00	0.00	0.00
10.00	0.06	218	575.00	0.00	0.00	0.00
12.00	**5.18**	3,798	575.06	0.01	0.01	0.00
14.00	**0.28**	12,350	575.21	0.08	0.08	0.00
16.00	0.17	13,252	575.22	0.10	0.10	0.00
18.00	0.13	**13,599**	**575.23**	**0.10**	**0.10**	0.00
20.00	0.10	**13,682**	**575.23**	**0.10**	**0.10**	0.00
22.00	0.09	13,599	575.23	0.10	0.10	0.00
24.00	0.08	13,477	575.22	0.10	0.10	0.00
26.00	0.00	12,859	575.21	0.09	0.09	0.00
28.00	0.00	12,236	575.20	0.08	0.08	0.00
30.00	0.00	11,664	575.19	0.08	0.08	0.00
32.00	0.00	11,139	575.19	0.07	0.07	0.00
34.00	0.00	10,655	575.18	0.06	0.06	0.00
36.00	0.00	10,207	575.17	0.06	0.06	0.00
38.00	0.00	9,792	575.16	0.06	0.06	0.00
40.00	0.00	9,408	575.16	0.05	0.05	0.00
42.00	0.00	9,050	575.15	0.05	0.05	0.00
44.00	0.00	8,716	575.15	0.04	0.04	0.00
46.00	0.00	8,404	575.14	0.04	0.04	0.00
48.00	0.00	8,113	575.14	0.04	0.04	0.00
50.00	0.00	7,839	575.13	0.04	0.04	0.00
52.00	0.00	7,582	575.13	0.03	0.03	0.00
54.00	0.00	7,341	575.12	0.03	0.03	0.00
56.00	0.00	7,114	575.12	0.03	0.03	0.00
58.00	0.00	6,899	575.12	0.03	0.03	0.00
60.00	0.00	6,696	575.11	0.03	0.03	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

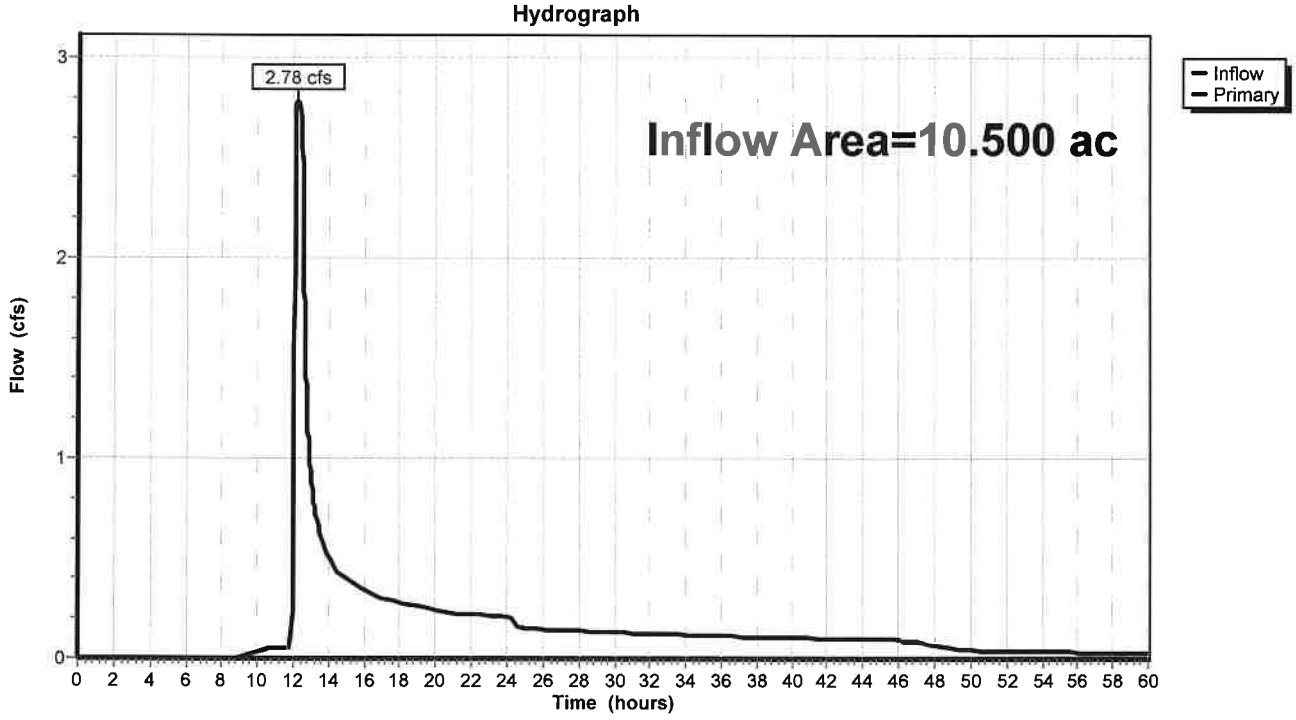
Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 0.83" for 1-Year event
Inflow = 2.78 cfs @ 12.22 hrs, Volume= 0.724 af
Primary = 2.78 cfs @ 12.22 hrs, Volume= 0.724 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.04	0.00	0.04
1.00	0.00	0.00	0.00	53.00	0.03	0.00	0.03
2.00	0.00	0.00	0.00	54.00	0.03	0.00	0.03
3.00	0.00	0.00	0.00	55.00	0.03	0.00	0.03
4.00	0.00	0.00	0.00	56.00	0.03	0.00	0.03
5.00	0.00	0.00	0.00	57.00	0.03	0.00	0.03
6.00	0.00	0.00	0.00	58.00	0.03	0.00	0.03
7.00	0.00	0.00	0.00	59.00	0.03	0.00	0.03
8.00	0.00	0.00	0.00	60.00	0.03	0.00	0.03
9.00	0.01	0.00	0.01				
10.00	0.03	0.00	0.03				
11.00	0.05	0.00	0.05				
12.00	**0.09**	0.00	**0.09**				
13.00	**0.91**	0.00	**0.91**				
14.00	0.51	0.00	0.51				
15.00	0.40	0.00	0.40				
16.00	0.34	0.00	0.34				
17.00	0.30	0.00	0.30				
18.00	0.28	0.00	0.28				
19.00	0.26	0.00	0.26				
20.00	0.24	0.00	0.24				
21.00	0.23	0.00	0.23				
22.00	0.22	0.00	0.22				
23.00	0.21	0.00	0.21				
24.00	0.21	0.00	0.21				
25.00	0.15	0.00	0.15				
26.00	0.15	0.00	0.15				
27.00	0.14	0.00	0.14				
28.00	0.14	0.00	0.14				
29.00	0.13	0.00	0.13				
30.00	0.13	0.00	0.13				
31.00	0.13	0.00	0.13				
32.00	0.12	0.00	0.12				
33.00	0.12	0.00	0.12				
34.00	0.12	0.00	0.12				
35.00	0.12	0.00	0.12				
36.00	0.11	0.00	0.11				
37.00	0.11	0.00	0.11				
38.00	0.11	0.00	0.11				
39.00	0.11	0.00	0.11				
40.00	0.10	0.00	0.10				
41.00	0.10	0.00	0.10				
42.00	0.10	0.00	0.10				
43.00	0.10	0.00	0.10				
44.00	0.10	0.00	0.10				
45.00	0.09	0.00	0.09				
46.00	0.09	0.00	0.09				
47.00	0.09	0.00	0.09				
48.00	0.06	0.00	0.06				
49.00	0.05	0.00	0.05				
50.00	0.04	0.00	0.04				
51.00	0.04	0.00	0.04				

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=1.27"
Flow Length=652' Tc=13.3 min CN=90 Runoff=10.57 cfs 0.644 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=1.34"
Flow Length=683' Tc=14.4 min CN=91 Runoff=7.75 cfs 0.491 af

Pond 1P: Bioretention Area 3 Peak Elev=575.91' Storage=8,359 cf Inflow=10.57 cfs 0.644 af
Primary=2.79 cfs 0.556 af Secondary=5.41 cfs 0.088 af Outflow=8.19 cfs 0.644 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.32' Storage=19,128 cf Inflow=12.29 cfs 0.579 af
Primary=0.18 cfs 0.400 af Secondary=0.00 cfs 0.000 af Outflow=0.18 cfs 0.400 af

Link 5L: Outflow (@ CB 54) Inflow=2.86 cfs 0.956 af
Primary=2.86 cfs 0.956 af

Total Runoff Area = 10.500 ac Runoff Volume = 1.135 af Average Runoff Depth = 1.30"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

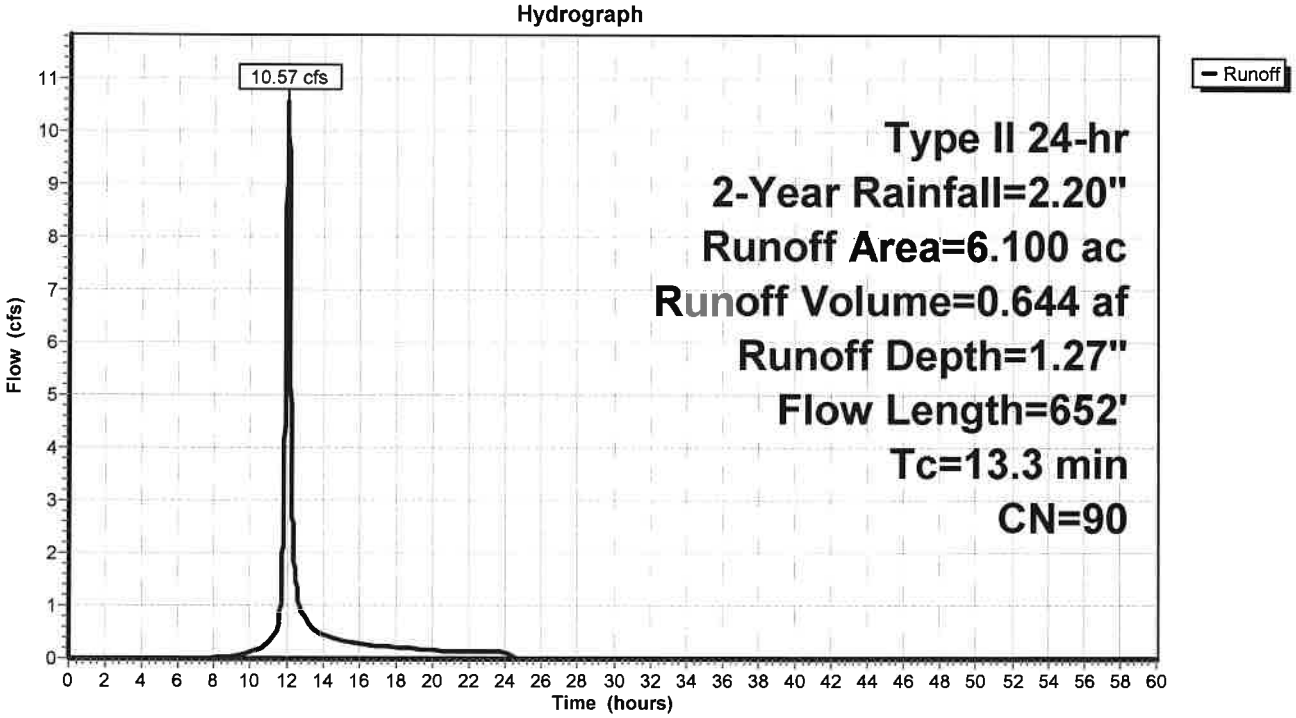
Runoff = 10.57 cfs @ 12.05 hrs, Volume= 0.644 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.05	0.00	0.00
3.00	0.08	0.00	0.00
4.00	0.11	0.00	0.00
5.00	0.14	0.00	0.00
6.00	0.18	0.00	0.00
7.00	0.22	0.00	0.00
8.00	0.26	0.00	0.02
9.00	0.32	0.01	0.06
10.00	0.40	0.02	0.12
11.00	0.52	0.06	0.30
12.00	1.46	0.65	**9.45**
13.00	1.70	0.84	**0.79**
14.00	1.80	0.93	0.46
15.00	1.88	0.99	0.36
16.00	1.94	1.04	0.28
17.00	1.98	1.08	0.24
18.00	2.03	1.12	0.21
19.00	2.06	1.15	0.19
20.00	2.09	1.17	0.16
21.00	2.12	1.20	0.15
22.00	2.15	1.22	0.14
23.00	2.18	1.24	0.14
24.00	**2.20**	**1.27**	0.13
25.00	2.20	1.27	0.00
26.00	2.20	1.27	0.00
27.00	2.20	1.27	0.00
28.00	2.20	1.27	0.00
29.00	2.20	1.27	0.00
30.00	2.20	1.27	0.00
31.00	2.20	1.27	0.00
32.00	2.20	1.27	0.00
33.00	2.20	1.27	0.00
34.00	2.20	1.27	0.00
35.00	2.20	1.27	0.00
36.00	2.20	1.27	0.00
37.00	2.20	1.27	0.00
38.00	2.20	1.27	0.00
39.00	2.20	1.27	0.00
40.00	2.20	1.27	0.00
41.00	2.20	1.27	0.00
42.00	2.20	1.27	0.00
43.00	2.20	1.27	0.00
44.00	2.20	1.27	0.00
45.00	2.20	1.27	0.00
46.00	2.20	1.27	0.00
47.00	2.20	1.27	0.00
48.00	2.20	1.27	0.00
49.00	2.20	1.27	0.00
50.00	2.20	1.27	0.00
51.00	2.20	1.27	0.00
52.00	2.20	1.27	0.00
53.00	2.20	1.27	0.00
54.00	2.20	1.27	0.00
55.00	2.20	1.27	0.00
56.00	2.20	1.27	0.00
57.00	2.20	1.27	0.00
58.00	2.20	1.27	0.00
59.00	2.20	1.27	0.00
60.00	2.20	1.27	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

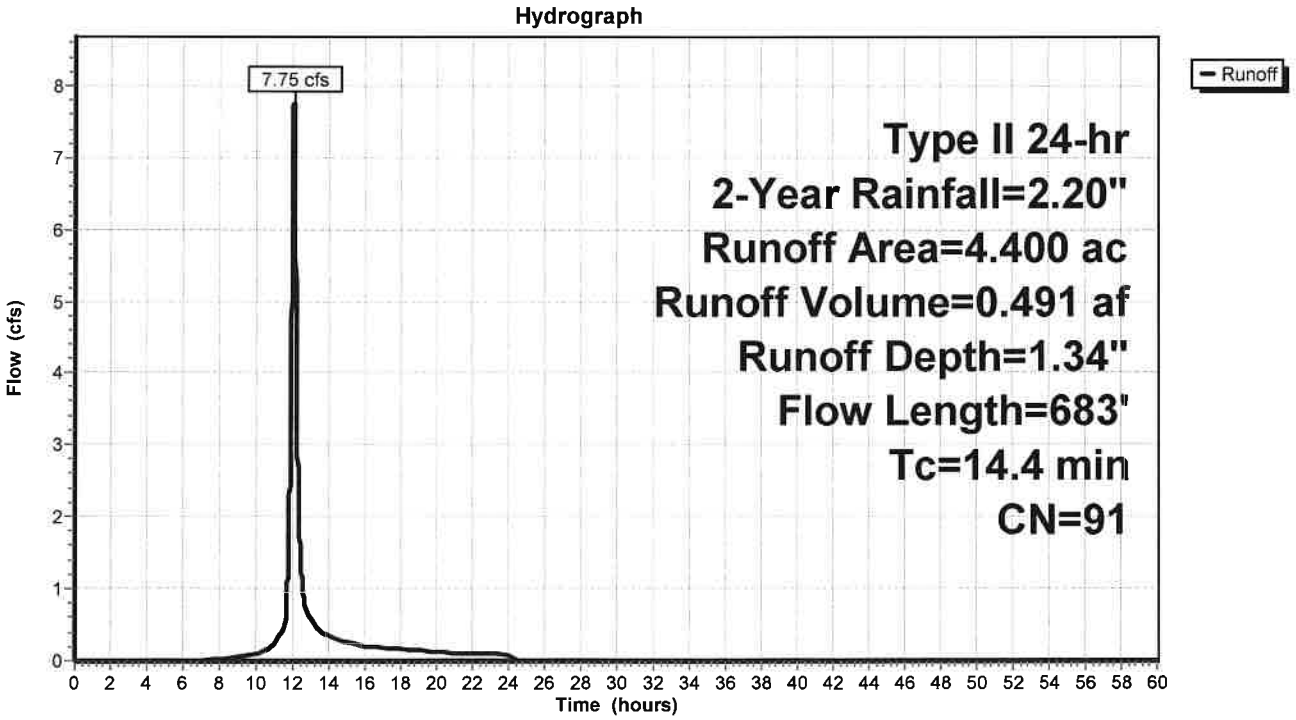
Runoff = 7.75 cfs @ 12.06 hrs, Volume= 0.491 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.05	0.00	0.00
3.00	0.08	0.00	0.00
4.00	0.11	0.00	0.00
5.00	0.14	0.00	0.00
6.00	0.18	0.00	0.00
7.00	0.22	0.00	0.00
8.00	0.26	0.00	0.02
9.00	0.32	0.01	0.06
10.00	0.40	0.03	0.10
11.00	0.52	0.08	0.25
12.00	1.46	0.71	**6.69**
13.00	1.70	0.90	**0.60**
14.00	1.80	0.99	0.35
15.00	1.88	1.06	0.27
16.00	1.94	1.11	0.21
17.00	1.98	1.15	0.18
18.00	2.03	1.19	0.16
19.00	2.06	1.22	0.14
20.00	2.09	1.25	0.12
21.00	2.12	1.27	0.11
22.00	2.15	1.30	0.10
23.00	2.18	1.32	0.10
24.00	**2.20**	**1.34**	0.10
25.00	2.20	1.34	0.00
26.00	2.20	1.34	0.00
27.00	2.20	1.34	0.00
28.00	2.20	1.34	0.00
29.00	2.20	1.34	0.00
30.00	2.20	1.34	0.00
31.00	2.20	1.34	0.00
32.00	2.20	1.34	0.00
33.00	2.20	1.34	0.00
34.00	2.20	1.34	0.00
35.00	2.20	1.34	0.00
36.00	2.20	1.34	0.00
37.00	2.20	1.34	0.00
38.00	2.20	1.34	0.00
39.00	2.20	1.34	0.00
40.00	2.20	1.34	0.00
41.00	2.20	1.34	0.00
42.00	2.20	1.34	0.00
43.00	2.20	1.34	0.00
44.00	2.20	1.34	0.00
45.00	2.20	1.34	0.00
46.00	2.20	1.34	0.00
47.00	2.20	1.34	0.00
48.00	2.20	1.34	0.00
49.00	2.20	1.34	0.00
50.00	2.20	1.34	0.00
51.00	2.20	1.34	0.00
52.00	2.20	1.34	0.00
53.00	2.20	1.34	0.00
54.00	2.20	1.34	0.00
55.00	2.20	1.34	0.00
56.00	2.20	1.34	0.00
57.00	2.20	1.34	0.00
58.00	2.20	1.34	0.00
59.00	2.20	1.34	0.00
60.00	2.20	1.34	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 1.27" for 2-Year event
Inflow = 10.57 cfs @ 12.05 hrs, Volume= 0.644 af
Outflow = 8.19 cfs @ 12.13 hrs, Volume= 0.644 af, Atten= 22%, Lag= 4.9 min
Primary = 2.79 cfs @ 12.13 hrs, Volume= 0.556 af
Secondary = 5.41 cfs @ 12.13 hrs, Volume= 0.088 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.91' @ 12.13 hrs Surf.Area= 9,805 sf Storage= 8,359 cf

Plug-Flow detention time= 252.3 min calculated for 0.644 af (100% of inflow)
Center-of-Mass det. time= 252.2 min (1,078.1 - 825.9)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

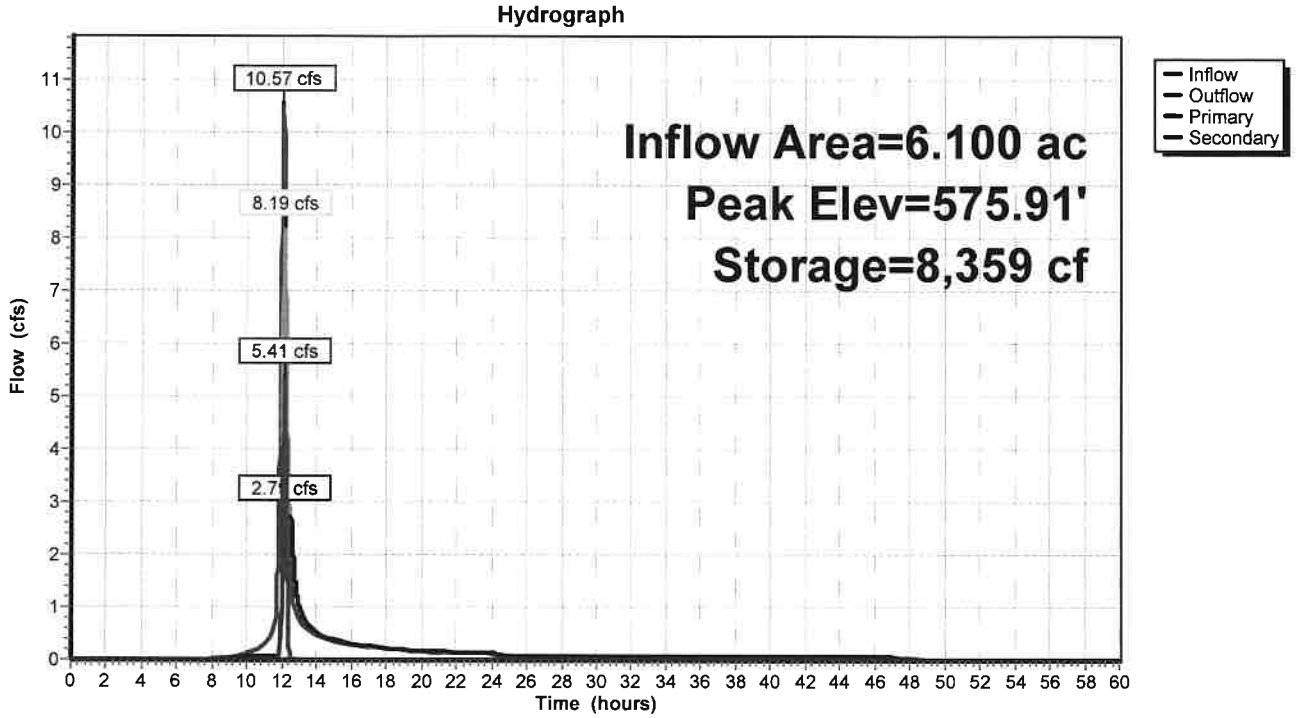
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.79 cfs @ 12.13 hrs HW=575.91' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.79 cfs @ 7.98 fps)
  ├**2=Grate** (Passes < 4.28 cfs potential flow)
  └**3=Exfiltration** (Passes < 0.06 cfs potential flow)

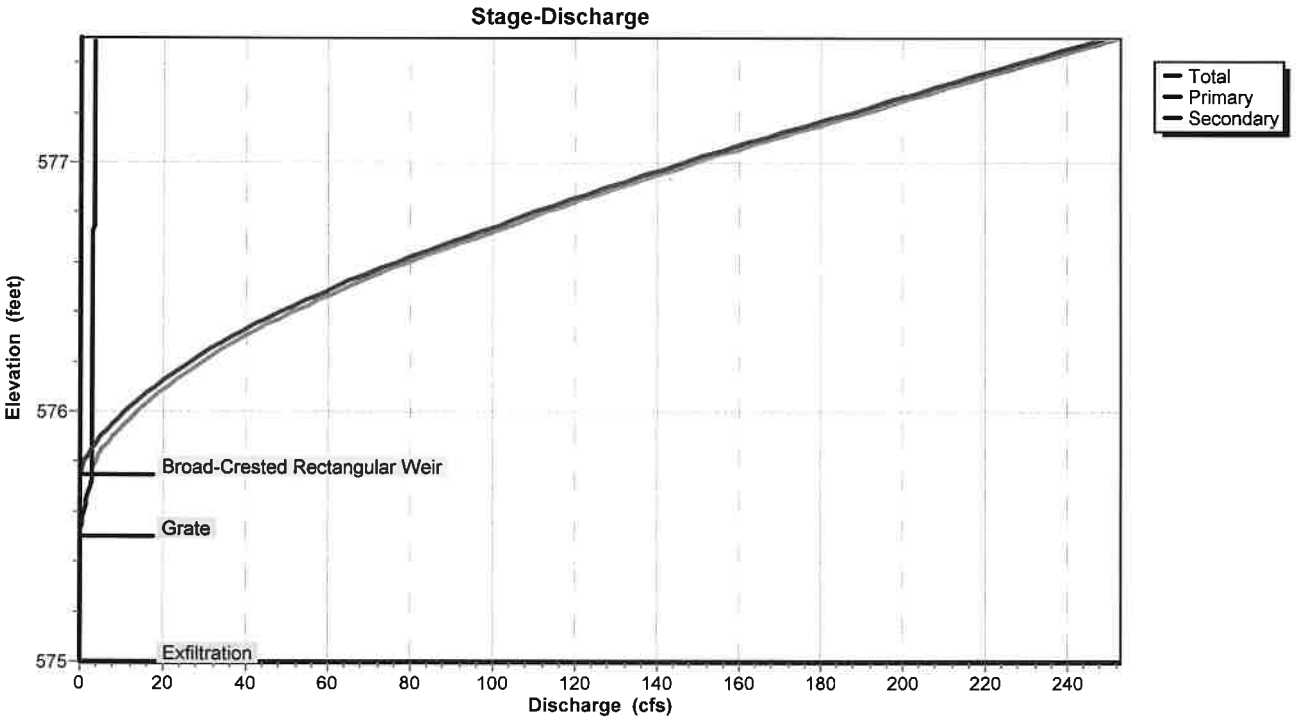
Secondary OutFlow Max=5.39 cfs @ 12.13 hrs HW=575.91' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 5.39 cfs @ 1.15 fps)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

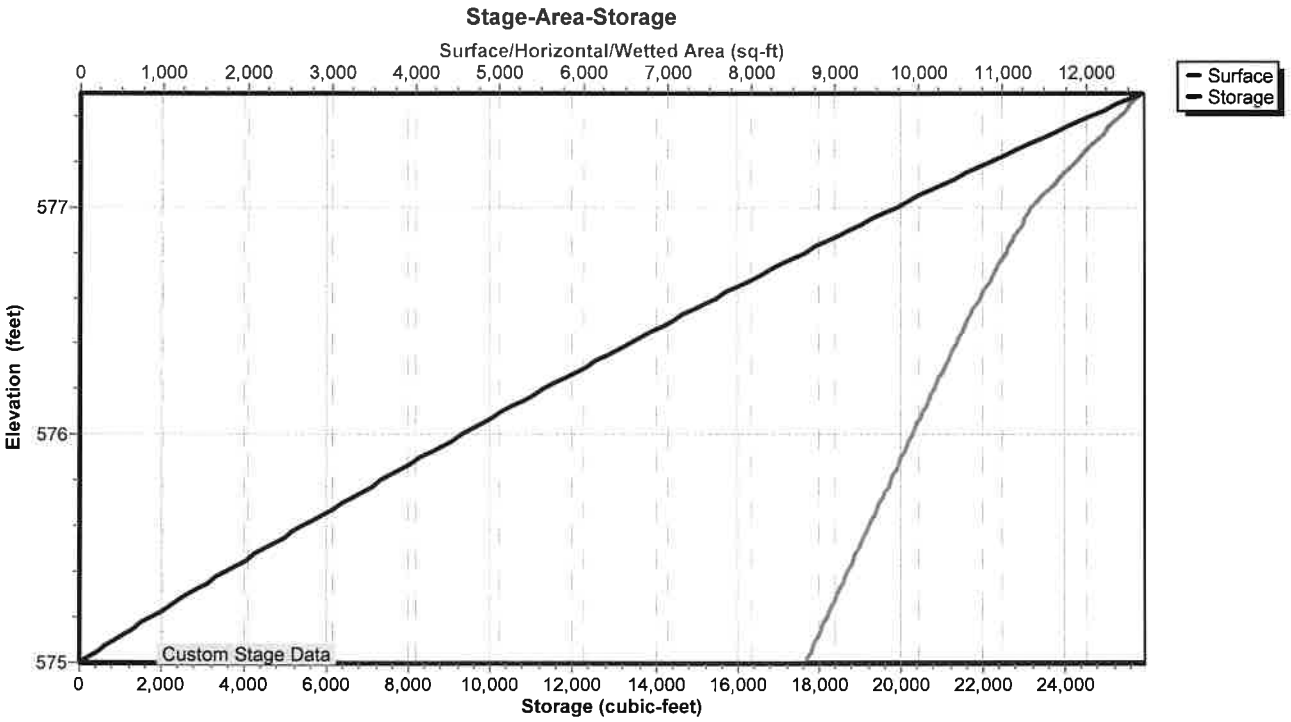


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.02	17	575.00	0.00	0.00	0.00
10.00	0.12	257	575.03	0.05	0.05	0.00
12.00	**9.45**	**6,253**	**575.69**	**2.30**	**2.30**	**0.00**
14.00	**0.46**	**5,096**	**575.57**	**0.52**	**0.52**	**0.00**
16.00	0.28	4,881	575.54	0.30	0.30	0.00
18.00	0.21	4,786	575.53	0.22	0.22	0.00
20.00	0.16	4,719	575.53	0.17	0.17	0.00
22.00	0.14	4,676	575.52	0.15	0.15	0.00
24.00	0.13	4,652	575.52	0.13	0.13	0.00
26.00	0.00	4,232	575.47	0.06	0.06	0.00
28.00	0.00	3,836	575.43	0.05	0.05	0.00
30.00	0.00	3,444	575.39	0.05	0.05	0.00
32.00	0.00	3,055	575.34	0.05	0.05	0.00
34.00	0.00	2,670	575.30	0.05	0.05	0.00
36.00	0.00	2,287	575.26	0.05	0.05	0.00
38.00	0.00	1,909	575.22	0.05	0.05	0.00
40.00	0.00	1,533	575.18	0.05	0.05	0.00
42.00	0.00	1,161	575.13	0.05	0.05	0.00
44.00	0.00	792	575.09	0.05	0.05	0.00
46.00	0.00	426	575.05	0.05	0.05	0.00
48.00	0.00	107	575.01	0.02	0.02	0.00
50.00	0.00	20	575.00	0.00	0.00	0.00
52.00	0.00	4	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 1.58" for 2-Year event
Inflow = 12.29 cfs @ 12.11 hrs, Volume= 0.579 af
Outflow = 0.18 cfs @ 17.01 hrs, Volume= 0.400 af, Atten= 99%, Lag= 293.7 min
Primary = 0.18 cfs @ 17.01 hrs, Volume= 0.400 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.32' @ 17.01 hrs Surf.Area= 61,630 sf Storage= 19,128 cf

Plug-Flow detention time= 1,051.7 min calculated for 0.400 af (69% of inflow)
Center-of-Mass det. time= 962.0 min (1,770.2 - 808.1)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

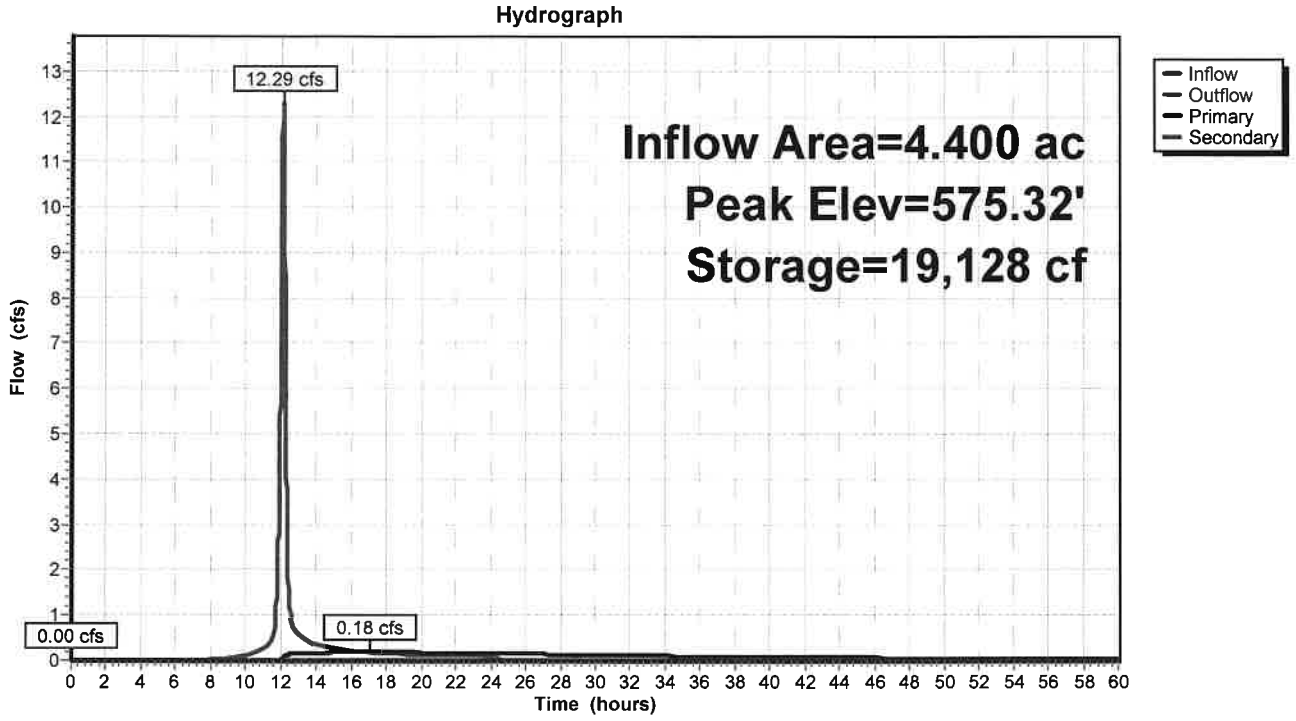
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.18 cfs @ 17.01 hrs HW=575.32' (Free Discharge)
└─**1=12" outlet pipe** (Passes 0.18 cfs of 1.87 cfs potential flow)
  ├─**2=low flow outlet pipe** (Barrel Controls 0.18 cfs @ 1.95 fps)
  └─**3=Grate** (Controls 0.00 cfs)

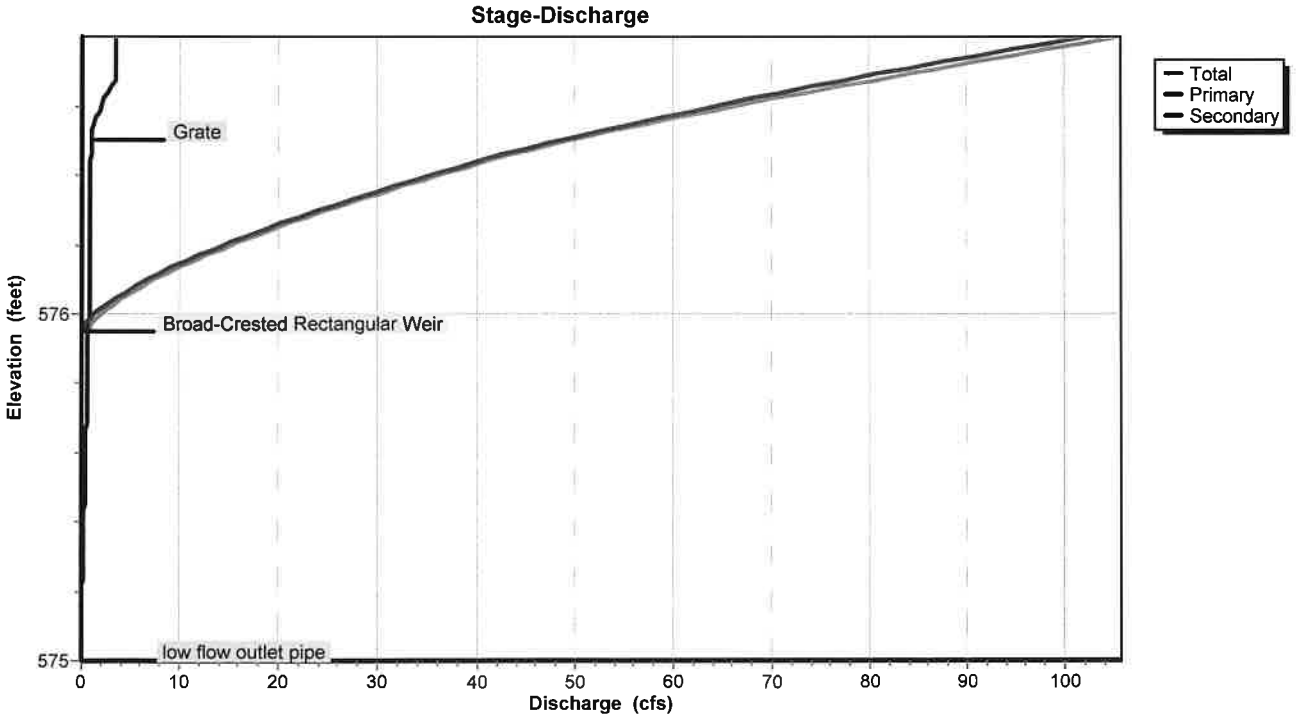
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

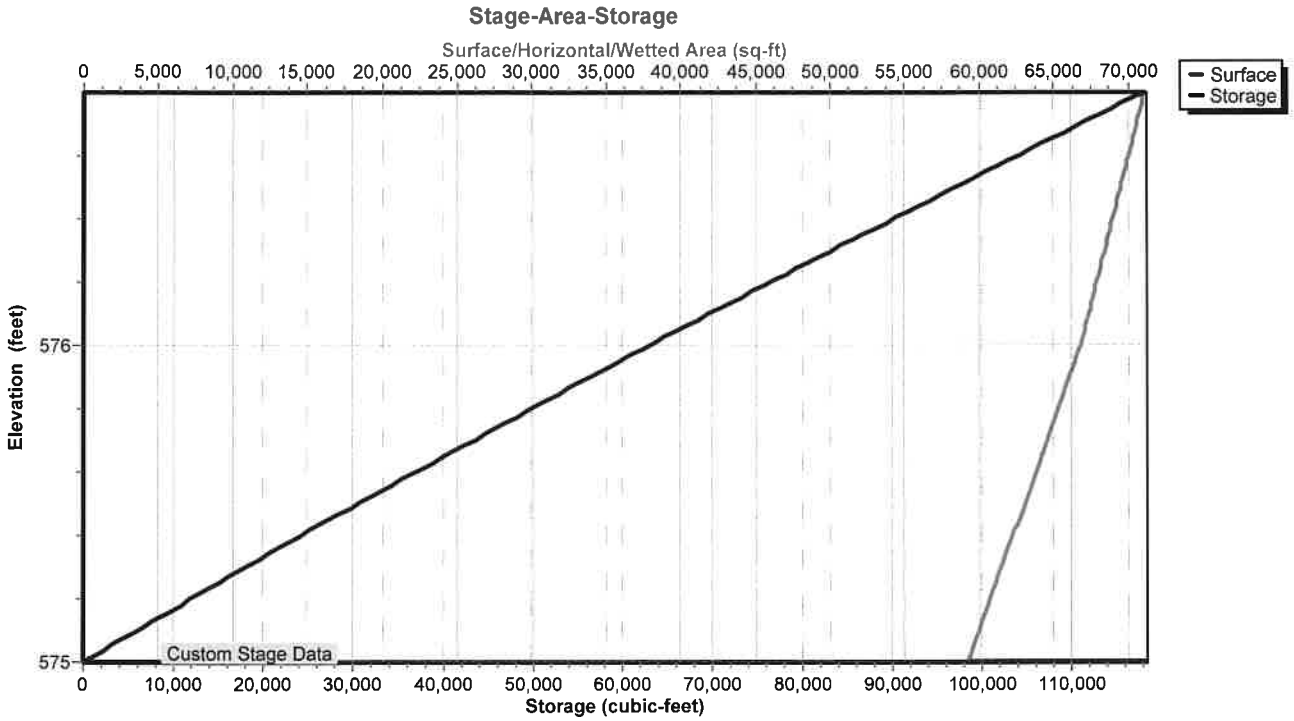


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.02	48	575.00	0.00	0.00	0.00
10.00	0.10	451	575.01	0.00	0.00	0.00
12.00	**6.69**	5,327	575.09	0.02	0.02	0.00
14.00	**0.35**	18,425	575.31	0.17	0.17	0.00
16.00	0.21	**19,087**	**575.32**	**0.18**	**0.18**	0.00
18.00	0.16	**19,093**	**575.32**	**0.18**	**0.18**	0.00
20.00	0.12	18,812	575.31	0.17	0.17	0.00
22.00	0.10	18,367	575.30	0.17	0.17	0.00
24.00	0.10	17,912	575.30	0.16	0.16	0.00
26.00	0.00	16,886	575.28	0.15	0.15	0.00
28.00	0.00	15,893	575.26	0.13	0.13	0.00
30.00	0.00	14,996	575.25	0.12	0.12	0.00
32.00	0.00	14,184	575.24	0.11	0.11	0.00
34.00	0.00	13,445	575.22	0.10	0.10	0.00
36.00	0.00	12,772	575.21	0.09	0.09	0.00
38.00	0.00	12,156	575.20	0.08	0.08	0.00
40.00	0.00	11,591	575.19	0.08	0.08	0.00
42.00	0.00	11,071	575.18	0.07	0.07	0.00
44.00	0.00	10,592	575.18	0.06	0.06	0.00
46.00	0.00	10,149	575.17	0.06	0.06	0.00
48.00	0.00	9,739	575.16	0.05	0.05	0.00
50.00	0.00	9,358	575.16	0.05	0.05	0.00
52.00	0.00	9,003	575.15	0.05	0.05	0.00
54.00	0.00	8,673	575.15	0.04	0.04	0.00
56.00	0.00	8,364	575.14	0.04	0.04	0.00
58.00	0.00	8,075	575.14	0.04	0.04	0.00
60.00	0.00	7,803	575.13	0.04	0.04	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

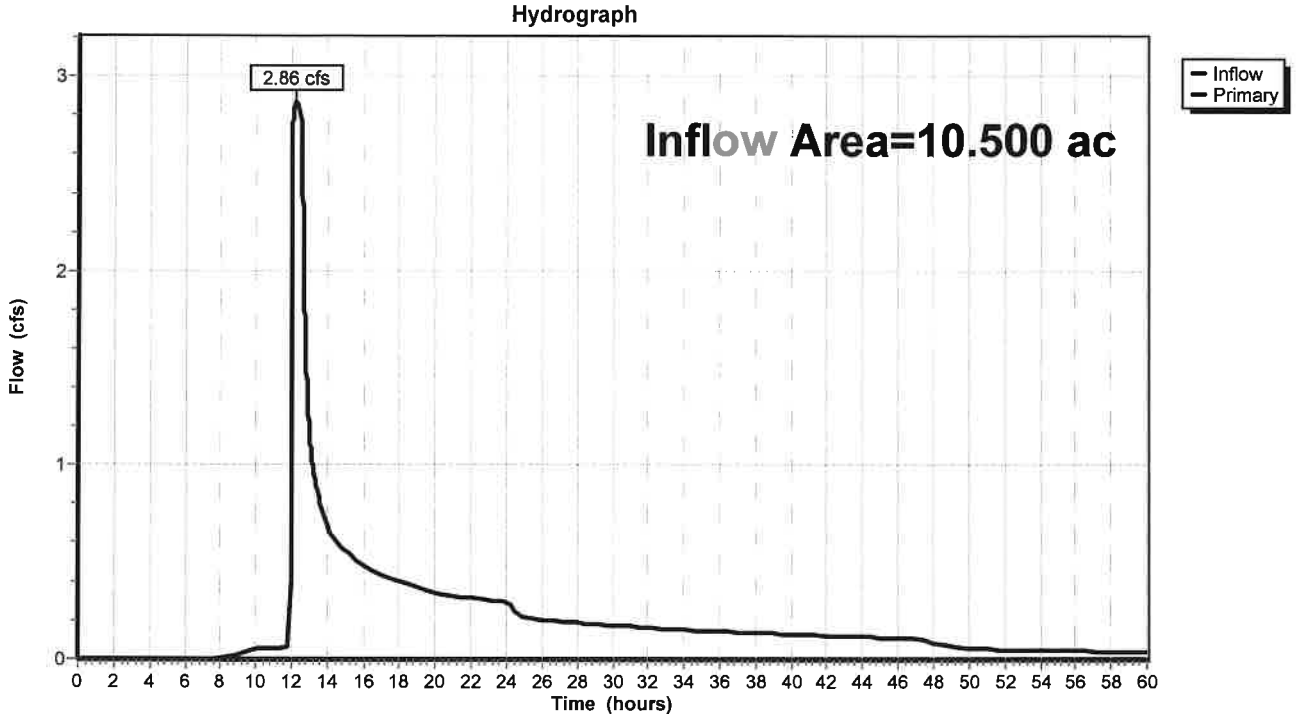
Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 1.09" for 2-Year event
Inflow = 2.86 cfs @ 12.23 hrs, Volume= 0.956 af
Primary = 2.86 cfs @ 12.23 hrs, Volume= 0.956 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.05	0.00	0.05
1.00	0.00	0.00	0.00	53.00	0.05	0.00	0.05
2.00	0.00	0.00	0.00	54.00	0.04	0.00	0.04
3.00	0.00	0.00	0.00	55.00	0.04	0.00	0.04
4.00	0.00	0.00	0.00	56.00	0.04	0.00	0.04
5.00	0.00	0.00	0.00	57.00	0.04	0.00	0.04
6.00	0.00	0.00	0.00	58.00	0.04	0.00	0.04
7.00	0.00	0.00	0.00	59.00	0.04	0.00	0.04
8.00	0.00	0.00	0.00	60.00	0.04	0.00	0.04
9.00	0.02	0.00	0.02				
10.00	0.05	0.00	0.05				
11.00	0.05	0.00	0.05				
12.00	**2.31**	0.00	**2.31**				
13.00	**1.18**	0.00	**1.18**				
14.00	0.69	0.00	0.69				
15.00	0.55	0.00	0.55				
16.00	0.48	0.00	0.48				
17.00	0.43	0.00	0.43				
18.00	0.40	0.00	0.40				
19.00	0.37	0.00	0.37				
20.00	0.34	0.00	0.34				
21.00	0.32	0.00	0.32				
22.00	0.31	0.00	0.31				
23.00	0.30	0.00	0.30				
24.00	0.29	0.00	0.29				
25.00	0.21	0.00	0.21				
26.00	0.20	0.00	0.20				
27.00	0.19	0.00	0.19				
28.00	0.19	0.00	0.19				
29.00	0.18	0.00	0.18				
30.00	0.17	0.00	0.17				
31.00	0.17	0.00	0.17				
32.00	0.16	0.00	0.16				
33.00	0.16	0.00	0.16				
34.00	0.15	0.00	0.15				
35.00	0.15	0.00	0.15				
36.00	0.14	0.00	0.14				
37.00	0.14	0.00	0.14				
38.00	0.13	0.00	0.13				
39.00	0.13	0.00	0.13				
40.00	0.13	0.00	0.13				
41.00	0.12	0.00	0.12				
42.00	0.12	0.00	0.12				
43.00	0.12	0.00	0.12				
44.00	0.11	0.00	0.11				
45.00	0.11	0.00	0.11				
46.00	0.11	0.00	0.11				
47.00	0.11	0.00	0.11				
48.00	0.08	0.00	0.08				
49.00	0.06	0.00	0.06				
50.00	0.06	0.00	0.06				
51.00	0.05	0.00	0.05				

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=1.71"
Flow Length=652' Tc=13.3 min CN=90 Runoff=14.18 cfs 0.870 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=1.79"
Flow Length=683' Tc=14.4 min CN=91 Runoff=10.29 cfs 0.658 af

Pond 1P: Bioretention Area 3 Peak Elev=575.99' Storage=9,153 cf Inflow=14.18 cfs 0.870 af
Primary=2.83 cfs 0.666 af Secondary=10.09 cfs 0.203 af Outflow=12.91 cfs 0.870 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.46' Storage=28,218 cf Inflow=20.08 cfs 0.861 af
Primary=0.33 cfs 0.652 af Secondary=0.00 cfs 0.000 af Outflow=0.33 cfs 0.652 af

Link 5L: Outflow (@ CB 54) Inflow=3.01 cfs 1.318 af
Primary=3.01 cfs 1.318 af

Total Runoff Area = 10.500 ac Runoff Volume = 1.527 af Average Runoff Depth = 1.75"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

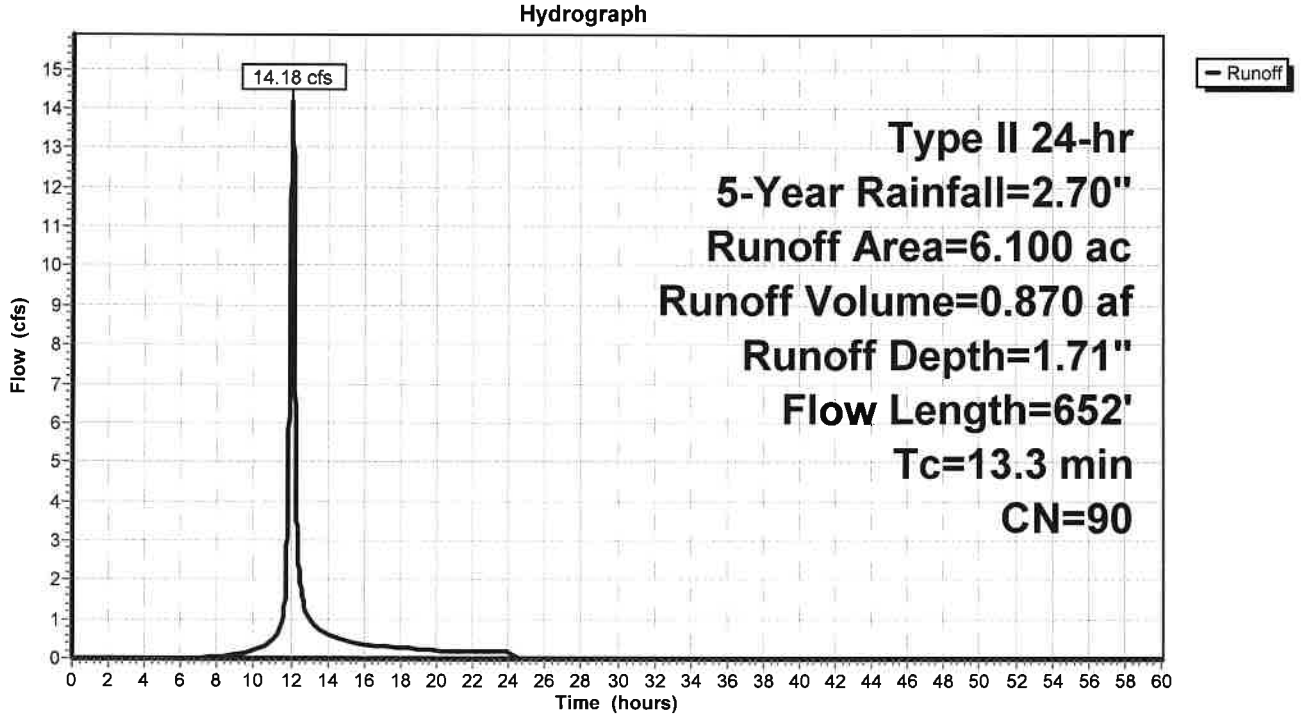
Runoff = 14.18 cfs @ 12.05 hrs, Volume= 0.870 af, Depth= 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.00
7.00	0.27	0.00	0.02
8.00	0.32	0.01	0.05
9.00	0.40	0.02	0.12
10.00	0.49	0.05	0.20
11.00	0.63	0.11	0.47
12.00	1.79	0.92	**12.79**
13.00	2.08	1.17	**1.02**
14.00	2.21	1.28	0.59
15.00	2.30	1.36	0.46
16.00	2.38	1.42	0.36
17.00	2.43	1.47	0.31
18.00	2.49	1.52	0.27
19.00	2.53	1.56	0.24
20.00	2.57	1.59	0.20
21.00	2.60	1.62	0.19
22.00	2.64	1.65	0.18
23.00	2.67	1.68	0.17
24.00	**2.70**	**1.71**	0.17
25.00	2.70	1.71	0.00
26.00	2.70	1.71	0.00
27.00	2.70	1.71	0.00
28.00	2.70	1.71	0.00
29.00	2.70	1.71	0.00
30.00	2.70	1.71	0.00
31.00	2.70	1.71	0.00
32.00	2.70	1.71	0.00
33.00	2.70	1.71	0.00
34.00	2.70	1.71	0.00
35.00	2.70	1.71	0.00
36.00	2.70	1.71	0.00
37.00	2.70	1.71	0.00
38.00	2.70	1.71	0.00
39.00	2.70	1.71	0.00
40.00	2.70	1.71	0.00
41.00	2.70	1.71	0.00
42.00	2.70	1.71	0.00
43.00	2.70	1.71	0.00
44.00	2.70	1.71	0.00
45.00	2.70	1.71	0.00
46.00	2.70	1.71	0.00
47.00	2.70	1.71	0.00
48.00	2.70	1.71	0.00
49.00	2.70	1.71	0.00
50.00	2.70	1.71	0.00
51.00	2.70	1.71	0.00
52.00	2.70	1.71	0.00
53.00	2.70	1.71	0.00
54.00	2.70	1.71	0.00
55.00	2.70	1.71	0.00
56.00	2.70	1.71	0.00
57.00	2.70	1.71	0.00
58.00	2.70	1.71	0.00
59.00	2.70	1.71	0.00
60.00	2.70	1.71	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

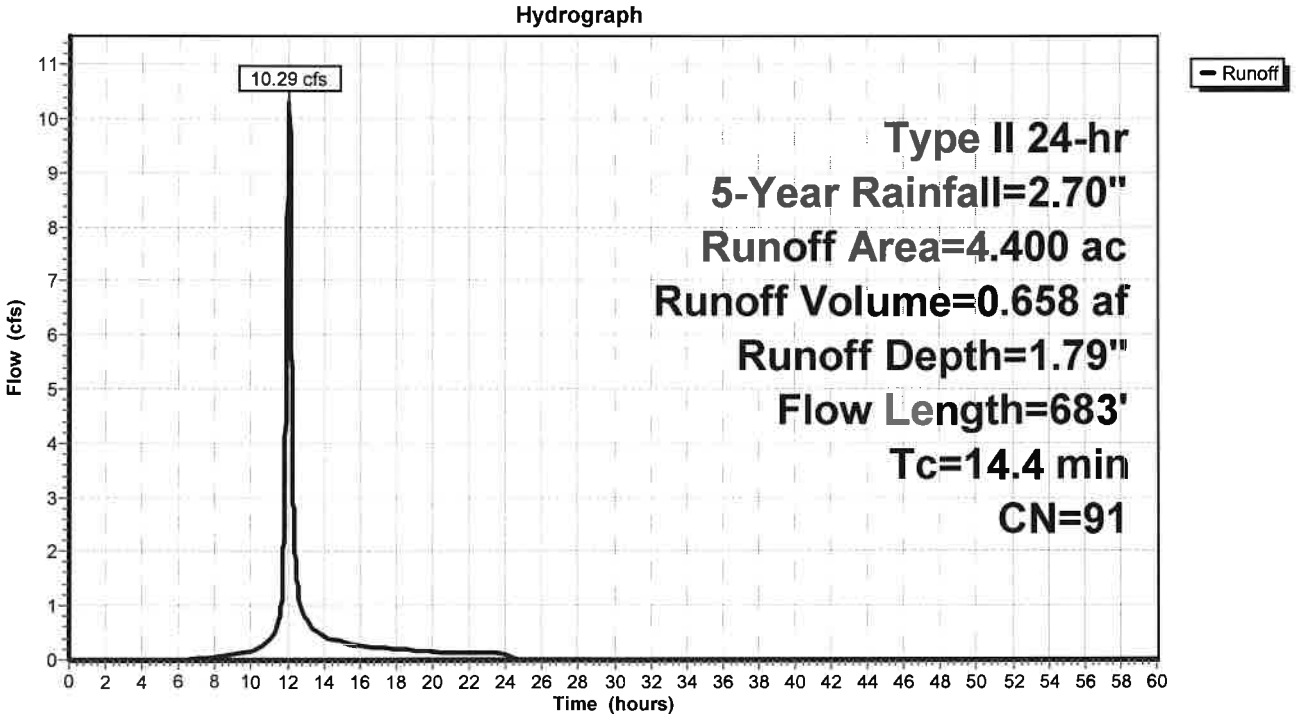
Runoff = 10.29 cfs @ 12.06 hrs, Volume= 0.658 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.00
7.00	0.27	0.00	0.03
8.00	0.32	0.01	0.05
9.00	0.40	0.03	0.10
10.00	0.49	0.07	0.17
11.00	0.63	0.13	0.37
12.00	1.79	0.98	**8.97**
13.00	2.08	1.24	**0.77**
14.00	2.21	1.35	0.44
15.00	2.30	1.43	0.34
16.00	2.38	1.50	0.27
17.00	2.43	1.55	0.23
18.00	2.49	1.60	0.20
19.00	2.53	1.64	0.18
20.00	2.57	1.67	0.15
21.00	2.60	1.71	0.14
22.00	2.64	1.74	0.13
23.00	2.67	1.77	0.13
24.00	**2.70**	**1.79**	0.12
25.00	2.70	1.79	0.00
26.00	2.70	1.79	0.00
27.00	2.70	1.79	0.00
28.00	2.70	1.79	0.00
29.00	2.70	1.79	0.00
30.00	2.70	1.79	0.00
31.00	2.70	1.79	0.00
32.00	2.70	1.79	0.00
33.00	2.70	1.79	0.00
34.00	2.70	1.79	0.00
35.00	2.70	1.79	0.00
36.00	2.70	1.79	0.00
37.00	2.70	1.79	0.00
38.00	2.70	1.79	0.00
39.00	2.70	1.79	0.00
40.00	2.70	1.79	0.00
41.00	2.70	1.79	0.00
42.00	2.70	1.79	0.00
43.00	2.70	1.79	0.00
44.00	2.70	1.79	0.00
45.00	2.70	1.79	0.00
46.00	2.70	1.79	0.00
47.00	2.70	1.79	0.00
48.00	2.70	1.79	0.00
49.00	2.70	1.79	0.00
50.00	2.70	1.79	0.00
51.00	2.70	1.79	0.00
52.00	2.70	1.79	0.00
53.00	2.70	1.79	0.00
54.00	2.70	1.79	0.00
55.00	2.70	1.79	0.00
56.00	2.70	1.79	0.00
57.00	2.70	1.79	0.00
58.00	2.70	1.79	0.00
59.00	2.70	1.79	0.00
60.00	2.70	1.79	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 1.71" for 5-Year event
Inflow = 14.18 cfs @ 12.05 hrs, Volume= 0.870 af
Outflow = 12.91 cfs @ 12.10 hrs, Volume= 0.870 af, Atten= 9%, Lag= 2.9 min
Primary = 2.83 cfs @ 12.10 hrs, Volume= 0.666 af
Secondary = 10.09 cfs @ 12.10 hrs, Volume= 0.203 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.99' @ 12.10 hrs Surf.Area= 9,908 sf Storage= 9,153 cf

Plug-Flow detention time= 193.1 min calculated for 0.869 af (100% of inflow)
Center-of-Mass det. time= 193.4 min (1,010.7 - 817.3)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

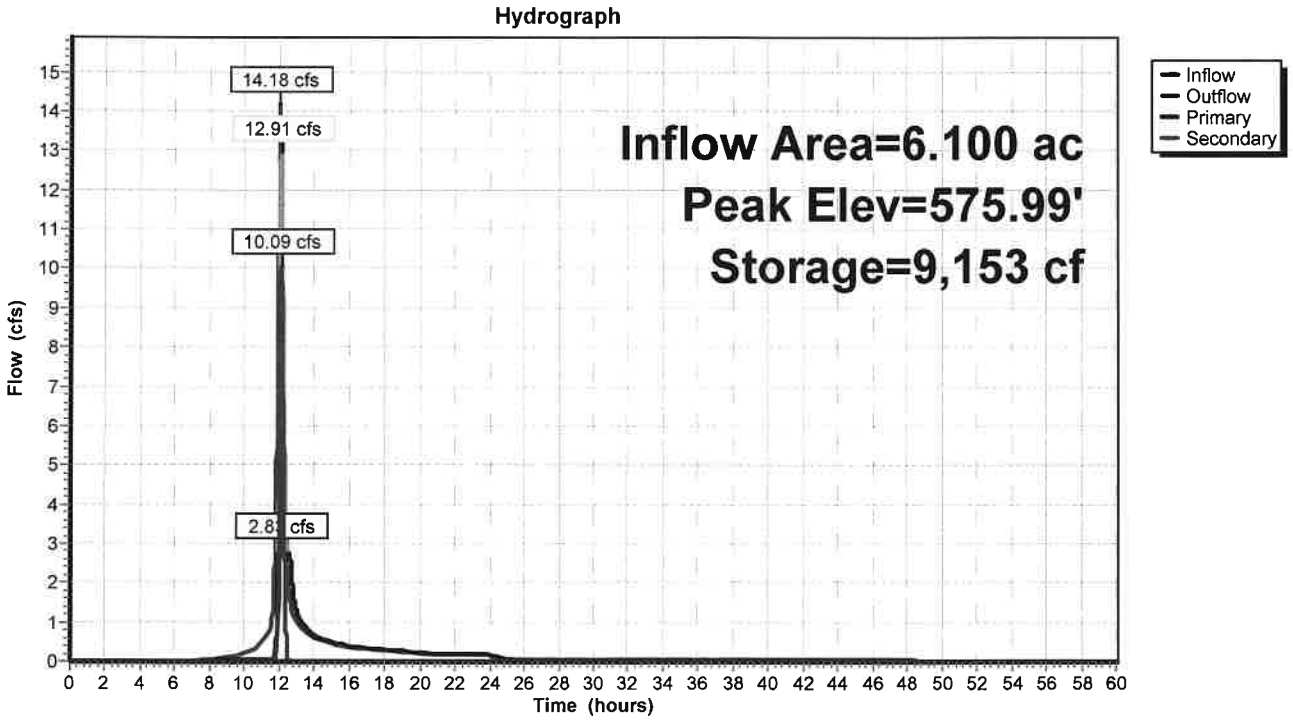
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.83 cfs @ 12.10 hrs HW=575.99' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.83 cfs @ 8.10 fps)
  ├**2=Grate** (Passes < 4.69 cfs potential flow)
  └**3=Exfiltration** (Passes < 0.06 cfs potential flow)

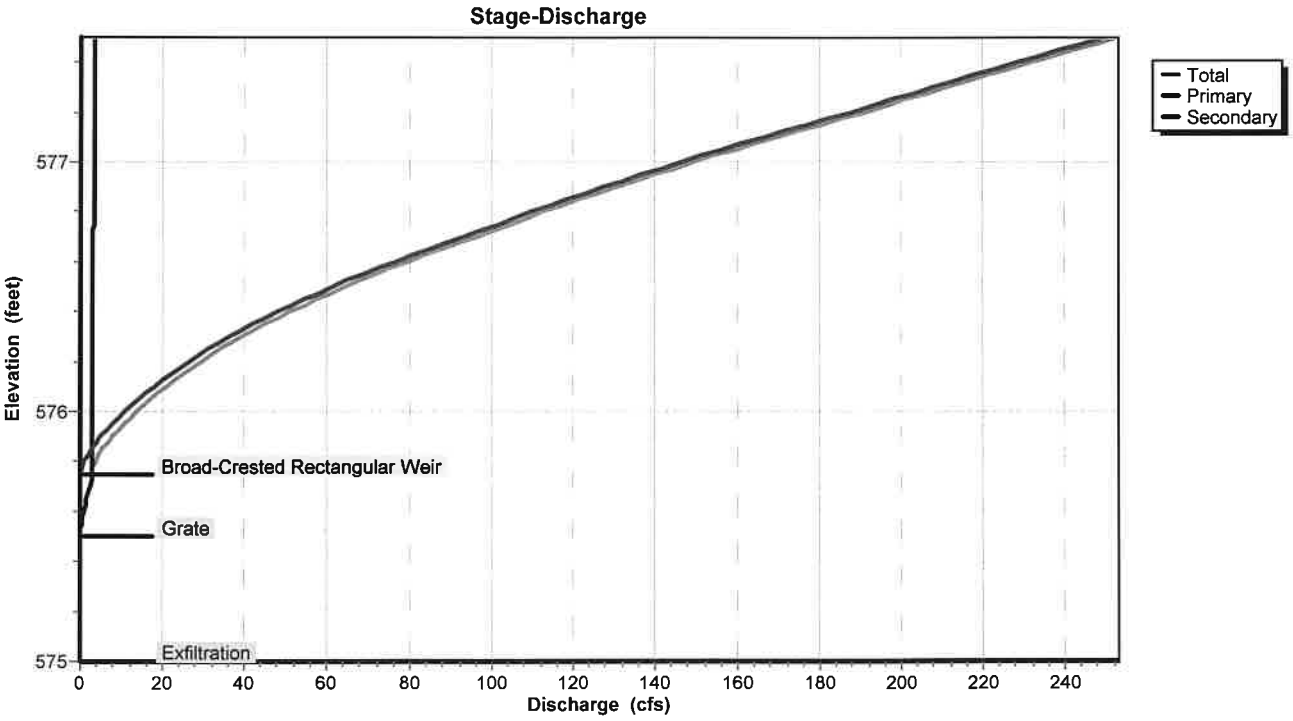
Secondary OutFlow Max=10.07 cfs @ 12.10 hrs HW=575.99' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 10.07 cfs @ 1.42 fps)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

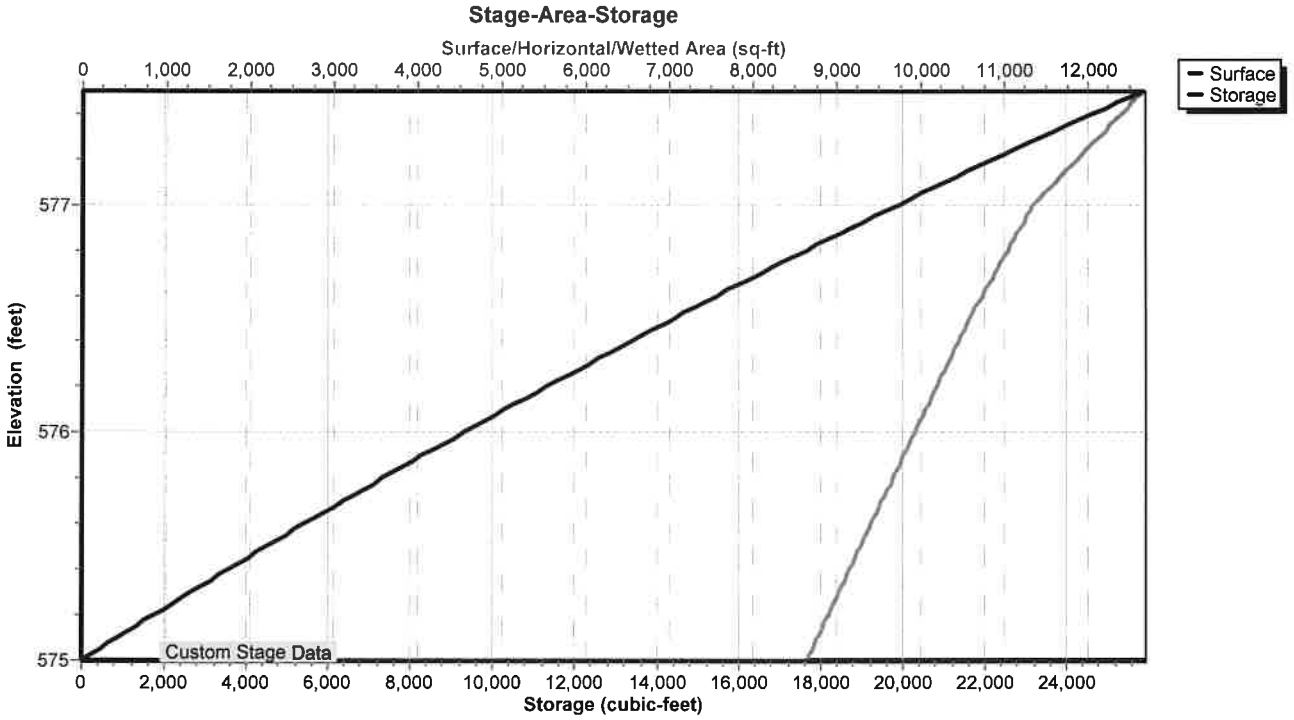


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.05	99	575.01	0.02	0.02	0.00
10.00	0.20	617	575.07	0.05	0.05	0.00
12.00	**12.79**	**8,183**	**575.89**	**7.28**	**2.78**	**4.50**
14.00	**0.59**	**5,218**	**575.58**	**0.66**	**0.66**	**0.00**
16.00	0.36	4,969	575.55	0.38	0.38	0.00
18.00	0.27	4,859	575.54	0.29	0.29	0.00
20.00	0.20	4,774	575.53	0.21	0.21	0.00
22.00	0.18	4,739	575.53	0.18	0.18	0.00
24.00	0.17	4,722	575.53	0.17	0.17	0.00
26.00	0.00	4,258	575.48	0.06	0.06	0.00
28.00	0.00	3,862	575.43	0.05	0.05	0.00
30.00	0.00	3,470	575.39	0.05	0.05	0.00
32.00	0.00	3,081	575.35	0.05	0.05	0.00
34.00	0.00	2,695	575.30	0.05	0.05	0.00
36.00	0.00	2,313	575.26	0.05	0.05	0.00
38.00	0.00	1,934	575.22	0.05	0.05	0.00
40.00	0.00	1,558	575.18	0.05	0.05	0.00
42.00	0.00	1,186	575.14	0.05	0.05	0.00
44.00	0.00	816	575.09	0.05	0.05	0.00
46.00	0.00	450	575.05	0.05	0.05	0.00
48.00	0.00	119	575.01	0.03	0.03	0.00
50.00	0.00	22	575.00	0.01	0.01	0.00
52.00	0.00	4	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 2.35" for 5-Year event
Inflow = 20.08 cfs @ 12.08 hrs, Volume= 0.861 af
Outflow = 0.33 cfs @ 15.13 hrs, Volume= 0.652 af, Atten= 98%, Lag= 182.5 min
Primary = 0.33 cfs @ 15.13 hrs, Volume= 0.652 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.46' @ 15.13 hrs Surf.Area= 62,747 sf Storage= 28,218 cf

Plug-Flow detention time= 974.3 min calculated for 0.652 af (76% of inflow)
Center-of-Mass det. time= 898.6 min (1,692.2 - 793.6)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

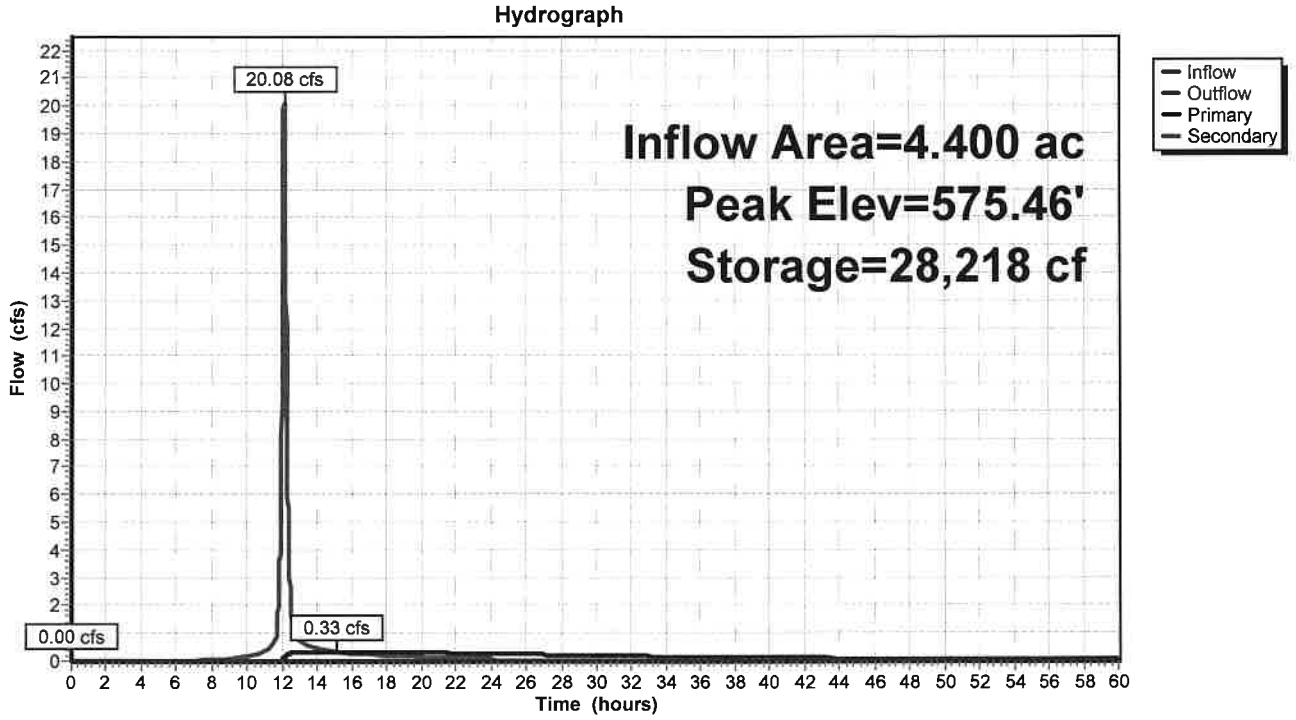
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.33 cfs @ 15.13 hrs HW=575.46' (Free Discharge)
↑└─**1=12" outlet pipe** (Passes 0.33 cfs of 2.02 cfs potential flow)
  ↑└─**2=low flow outlet pipe** (Barrel Controls 0.33 cfs @ 2.27 fps)
  └─**3=Grate** (Controls 0.00 cfs)

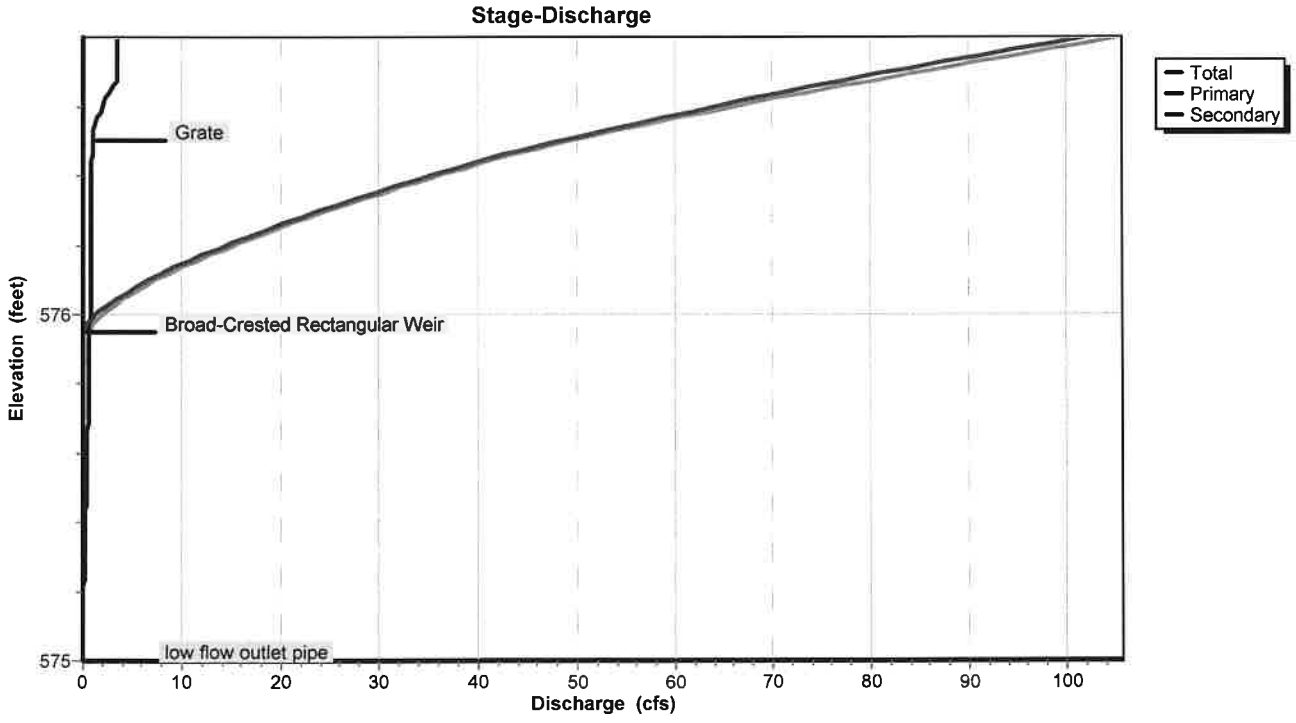
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
↑└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

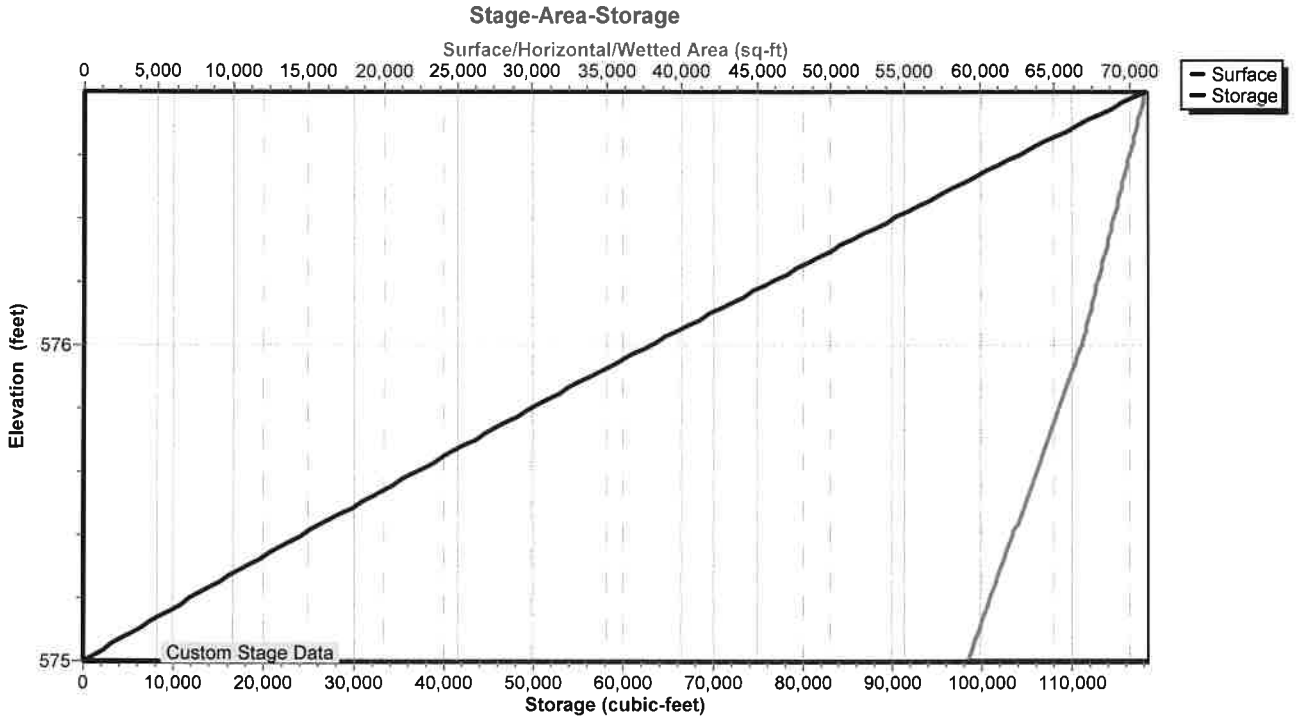


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	1	575.00	0.00	0.00	0.00
8.00	0.05	186	575.00	0.00	0.00	0.00
10.00	0.17	912	575.02	0.00	0.00	0.00
12.00	**13.47**	8,186	575.14	0.04	0.04	0.00
14.00	**0.44**	**28,034**	**575.46**	**0.33**	**0.33**	0.00
16.00	0.27	**28,118**	**575.46**	**0.33**	**0.33**	0.00
18.00	0.20	27,442	575.45	0.32	0.32	0.00
20.00	0.15	26,479	575.43	0.30	0.30	0.00
22.00	0.13	25,382	575.42	0.28	0.28	0.00
24.00	0.12	24,337	575.40	0.26	0.26	0.00
26.00	0.00	22,633	575.37	0.24	0.24	0.00
28.00	0.00	21,033	575.35	0.21	0.21	0.00
30.00	0.00	19,609	575.32	0.19	0.19	0.00
32.00	0.00	18,338	575.30	0.17	0.17	0.00
34.00	0.00	17,199	575.29	0.15	0.15	0.00
36.00	0.00	16,175	575.27	0.13	0.13	0.00
38.00	0.00	15,251	575.25	0.12	0.12	0.00
40.00	0.00	14,415	575.24	0.11	0.11	0.00
42.00	0.00	13,655	575.23	0.10	0.10	0.00
44.00	0.00	12,964	575.22	0.09	0.09	0.00
46.00	0.00	12,331	575.21	0.08	0.08	0.00
48.00	0.00	11,752	575.20	0.08	0.08	0.00
50.00	0.00	11,220	575.19	0.07	0.07	0.00
52.00	0.00	10,729	575.18	0.07	0.07	0.00
54.00	0.00	10,276	575.17	0.06	0.06	0.00
56.00	0.00	9,856	575.16	0.06	0.06	0.00
58.00	0.00	9,467	575.16	0.05	0.05	0.00
60.00	0.00	9,105	575.15	0.05	0.05	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

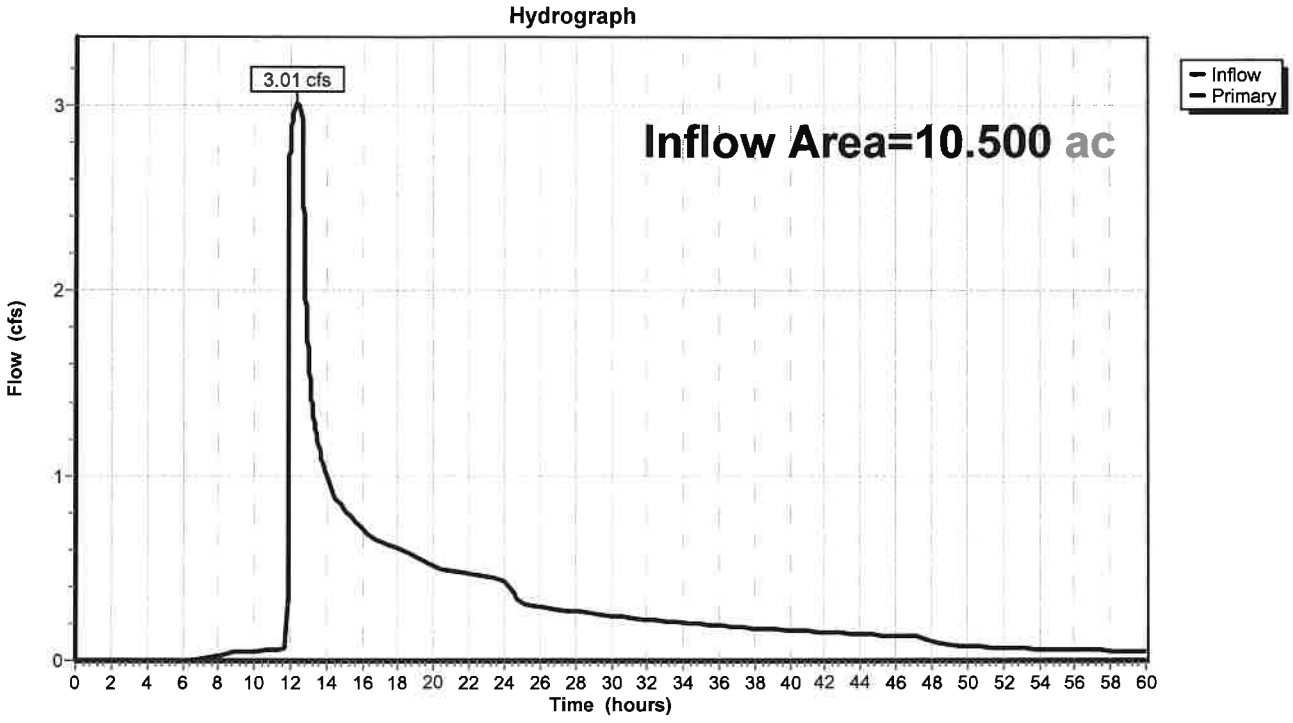
Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 1.51" for 5-Year event
Inflow = 3.01 cfs @ 12.34 hrs, Volume= 1.318 af
Primary = 3.01 cfs @ 12.34 hrs, Volume= 1.318 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.07	0.00	0.07
1.00	0.00	0.00	0.00	53.00	0.06	0.00	0.06
2.00	0.00	0.00	0.00	54.00	0.06	0.00	0.06
3.00	0.00	0.00	0.00	55.00	0.06	0.00	0.06
4.00	0.00	0.00	0.00	56.00	0.06	0.00	0.06
5.00	0.00	0.00	0.00	57.00	0.05	0.00	0.05
6.00	0.00	0.00	0.00	58.00	0.05	0.00	0.05
7.00	0.00	0.00	0.00	59.00	0.05	0.00	0.05
8.00	0.02	0.00	0.02	60.00	0.05	0.00	0.05
9.00	0.05	0.00	0.05				
10.00	0.05	0.00	0.05				
11.00	0.05	0.00	0.05				
12.00	**2.82**	0.00	**2.82**				
13.00	**1.62**	0.00	**1.62**				
14.00	0.99	0.00	0.99				
15.00	0.81	0.00	0.81				
16.00	0.71	0.00	0.71				
17.00	0.65	0.00	0.65				
18.00	0.60	0.00	0.60				
19.00	0.56	0.00	0.56				
20.00	0.51	0.00	0.51				
21.00	0.48	0.00	0.48				
22.00	0.47	0.00	0.47				
23.00	0.45	0.00	0.45				
24.00	0.43	0.00	0.43				
25.00	0.31	0.00	0.31				
26.00	0.29	0.00	0.29				
27.00	0.28	0.00	0.28				
28.00	0.26	0.00	0.26				
29.00	0.25	0.00	0.25				
30.00	0.24	0.00	0.24				
31.00	0.23	0.00	0.23				
32.00	0.22	0.00	0.22				
33.00	0.21	0.00	0.21				
34.00	0.20	0.00	0.20				
35.00	0.20	0.00	0.20				
36.00	0.19	0.00	0.19				
37.00	0.18	0.00	0.18				
38.00	0.17	0.00	0.17				
39.00	0.17	0.00	0.17				
40.00	0.16	0.00	0.16				
41.00	0.16	0.00	0.16				
42.00	0.15	0.00	0.15				
43.00	0.15	0.00	0.15				
44.00	0.14	0.00	0.14				
45.00	0.14	0.00	0.14				
46.00	0.13	0.00	0.13				
47.00	0.13	0.00	0.13				
48.00	0.10	0.00	0.10				
49.00	0.09	0.00	0.09				
50.00	0.08	0.00	0.08				
51.00	0.07	0.00	0.07				

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=2.12"
Flow Length=652' Tc=13.3 min CN=90 Runoff=17.46 cfs 1.079 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=2.21"
Flow Length=683' Tc=14.4 min CN=91 Runoff=12.59 cfs 0.811 af

Pond 1P: Bioretention Area 3 Peak Elev=576.04' Storage=9,672 cf Inflow=17.46 cfs 1.079 af
Primary=2.85 cfs 0.765 af Secondary=13.60 cfs 0.314 af Outflow=16.45 cfs 1.079 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.60' Storage=37,117 cf Inflow=26.01 cfs 1.125 af
Primary=0.47 cfs 0.892 af Secondary=0.00 cfs 0.000 af Outflow=0.47 cfs 0.892 af

Link 5L: Outflow (@ CB 54) Inflow=3.16 cfs 1.657 af
Primary=3.16 cfs 1.657 af

Total Runoff Area = 10.500 ac Runoff Volume = 1.890 af Average Runoff Depth = 2.16"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

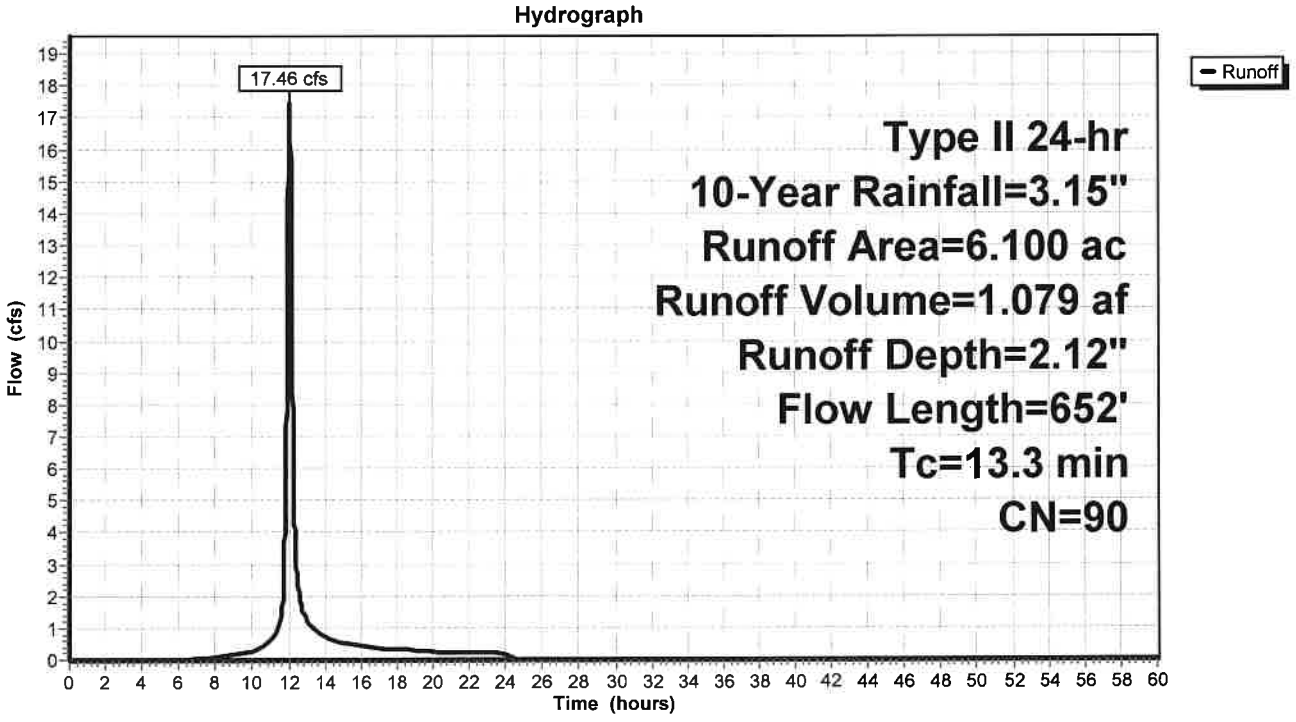
Runoff = 17.46 cfs @ 12.05 hrs, Volume= 1.079 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.07	0.00	0.00
3.00	0.11	0.00	0.00
4.00	0.15	0.00	0.00
5.00	0.20	0.00	0.00
6.00	0.25	0.00	0.01
7.00	0.31	0.01	0.05
8.00	0.38	0.02	0.09
9.00	0.46	0.04	0.18
10.00	0.57	0.08	0.28
11.00	0.74	0.16	0.63
12.00	2.09	1.17	**15.84**
13.00	2.43	1.47	**1.23**
14.00	2.58	1.61	0.71
15.00	2.69	1.70	0.55
16.00	2.77	1.78	0.43
17.00	2.84	1.84	0.37
18.00	2.90	1.89	0.33
19.00	2.95	1.94	0.28
20.00	3.00	1.98	0.24
21.00	3.04	2.02	0.22
22.00	3.08	2.06	0.22
23.00	3.11	2.09	0.21
24.00	**3.15**	**2.12**	0.20
25.00	3.15	2.12	0.00
26.00	3.15	2.12	0.00
27.00	3.15	2.12	0.00
28.00	3.15	2.12	0.00
29.00	3.15	2.12	0.00
30.00	3.15	2.12	0.00
31.00	3.15	2.12	0.00
32.00	3.15	2.12	0.00
33.00	3.15	2.12	0.00
34.00	3.15	2.12	0.00
35.00	3.15	2.12	0.00
36.00	3.15	2.12	0.00
37.00	3.15	2.12	0.00
38.00	3.15	2.12	0.00
39.00	3.15	2.12	0.00
40.00	3.15	2.12	0.00
41.00	3.15	2.12	0.00
42.00	3.15	2.12	0.00
43.00	3.15	2.12	0.00
44.00	3.15	2.12	0.00
45.00	3.15	2.12	0.00
46.00	3.15	2.12	0.00
47.00	3.15	2.12	0.00
48.00	3.15	2.12	0.00
49.00	3.15	2.12	0.00
50.00	3.15	2.12	0.00
51.00	3.15	2.12	0.00
52.00	3.15	2.12	0.00
53.00	3.15	2.12	0.00
54.00	3.15	2.12	0.00
55.00	3.15	2.12	0.00
56.00	3.15	2.12	0.00
57.00	3.15	2.12	0.00
58.00	3.15	2.12	0.00
59.00	3.15	2.12	0.00
60.00	3.15	2.12	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

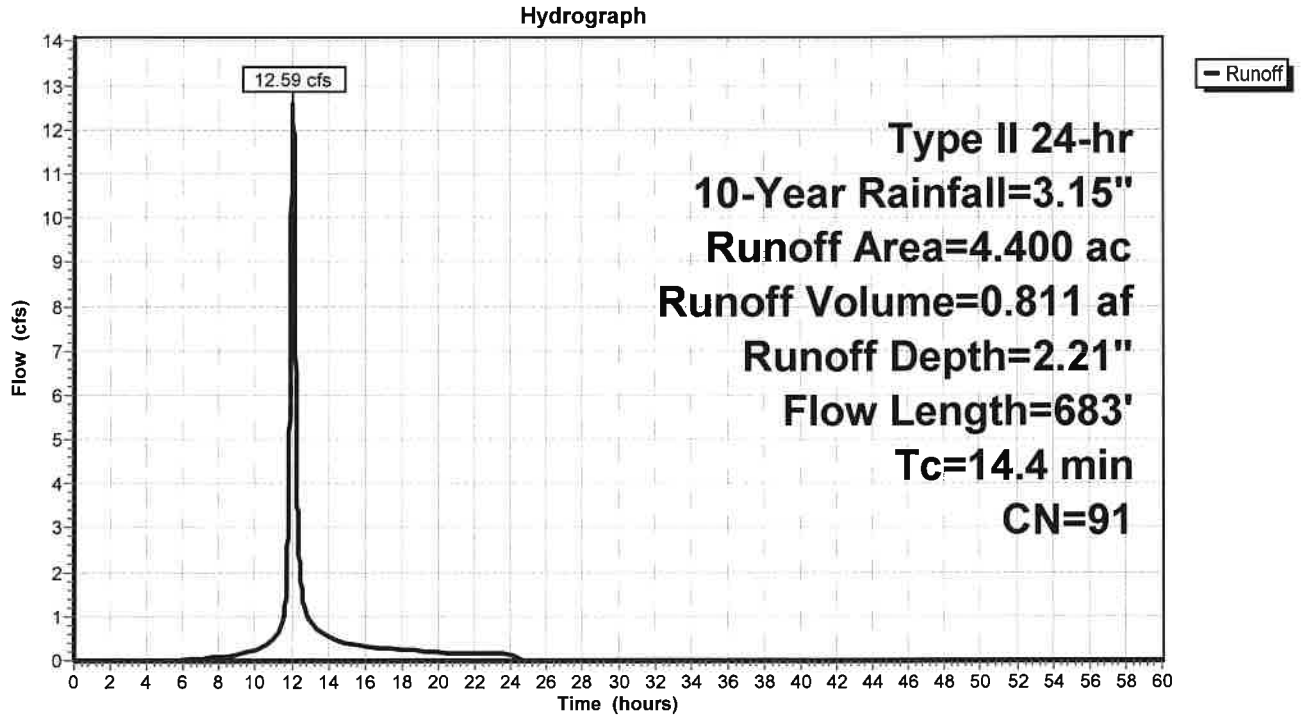
Runoff = 12.59 cfs @ 12.06 hrs, Volume= 0.811 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.07	0.00	0.00
3.00	0.11	0.00	0.00
4.00	0.15	0.00	0.00
5.00	0.20	0.00	0.00
6.00	0.25	0.00	0.02
7.00	0.31	0.01	0.05
8.00	0.38	0.03	0.08
9.00	0.46	0.06	0.15
10.00	0.57	0.10	0.23
11.00	0.74	0.19	0.49
12.00	2.09	1.24	**11.04**
13.00	2.43	1.55	**0.92**
14.00	2.58	1.69	0.53
15.00	2.69	1.78	0.40
16.00	2.77	1.86	0.32
17.00	2.84	1.92	0.27
18.00	2.90	1.98	0.24
19.00	2.95	2.03	0.21
20.00	3.00	2.07	0.18
21.00	3.04	2.11	0.16
22.00	3.08	2.14	0.16
23.00	3.11	2.18	0.15
24.00	**3.15**	**2.21**	0.15
25.00	3.15	2.21	0.00
26.00	3.15	2.21	0.00
27.00	3.15	2.21	0.00
28.00	3.15	2.21	0.00
29.00	3.15	2.21	0.00
30.00	3.15	2.21	0.00
31.00	3.15	2.21	0.00
32.00	3.15	2.21	0.00
33.00	3.15	2.21	0.00
34.00	3.15	2.21	0.00
35.00	3.15	2.21	0.00
36.00	3.15	2.21	0.00
37.00	3.15	2.21	0.00
38.00	3.15	2.21	0.00
39.00	3.15	2.21	0.00
40.00	3.15	2.21	0.00
41.00	3.15	2.21	0.00
42.00	3.15	2.21	0.00
43.00	3.15	2.21	0.00
44.00	3.15	2.21	0.00
45.00	3.15	2.21	0.00
46.00	3.15	2.21	0.00
47.00	3.15	2.21	0.00
48.00	3.15	2.21	0.00
49.00	3.15	2.21	0.00
50.00	3.15	2.21	0.00
51.00	3.15	2.21	0.00
52.00	3.15	2.21	0.00
53.00	3.15	2.21	0.00
54.00	3.15	2.21	0.00
55.00	3.15	2.21	0.00
56.00	3.15	2.21	0.00
57.00	3.15	2.21	0.00
58.00	3.15	2.21	0.00
59.00	3.15	2.21	0.00
60.00	3.15	2.21	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 2.12" for 10-Year event
Inflow = 17.46 cfs @ 12.05 hrs, Volume= 1.079 af
Outflow = 16.45 cfs @ 12.09 hrs, Volume= 1.079 af, Atten= 6%, Lag= 2.3 min
Primary = 2.85 cfs @ 12.09 hrs, Volume= 0.765 af
Secondary = 13.60 cfs @ 12.09 hrs, Volume= 0.314 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.04' @ 12.09 hrs Surf.Area= 9,976 sf Storage= 9,672 cf

Plug-Flow detention time= 160.8 min calculated for 1.079 af (100% of inflow)
Center-of-Mass det. time= 160.7 min (971.9 - 811.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

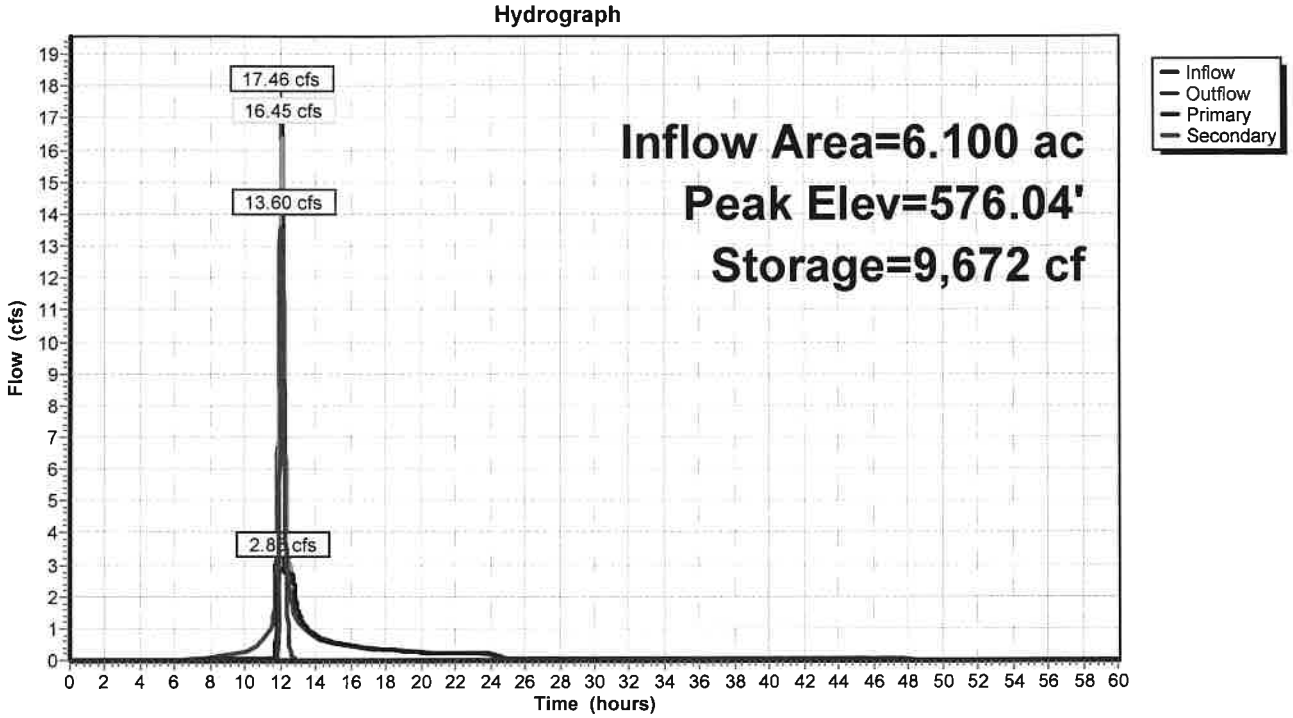
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.85 cfs @ 12.09 hrs HW=576.04' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.85 cfs @ 8.17 fps)
  ├**2=Grate** (Passes < 4.93 cfs potential flow)
  └**3=Exfiltration** (Passes < 0.06 cfs potential flow)

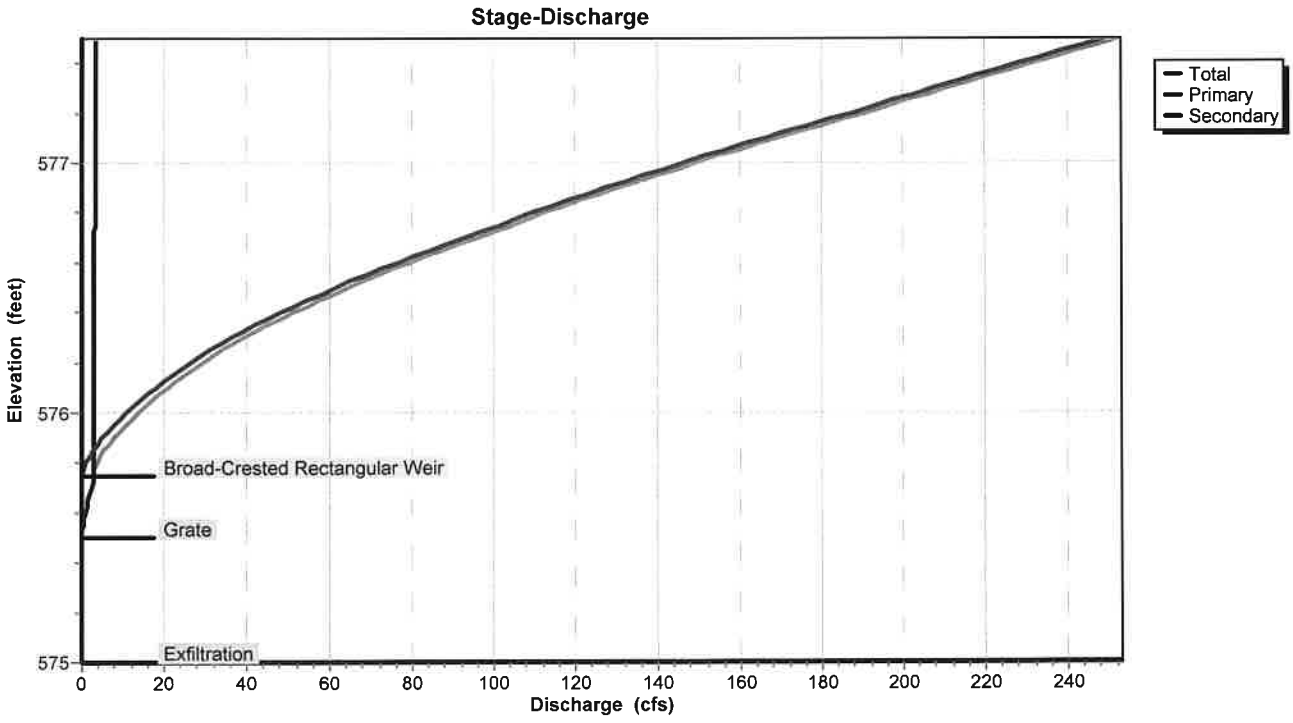
Secondary OutFlow Max=13.58 cfs @ 12.09 hrs HW=576.04' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 13.58 cfs @ 1.57 fps)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

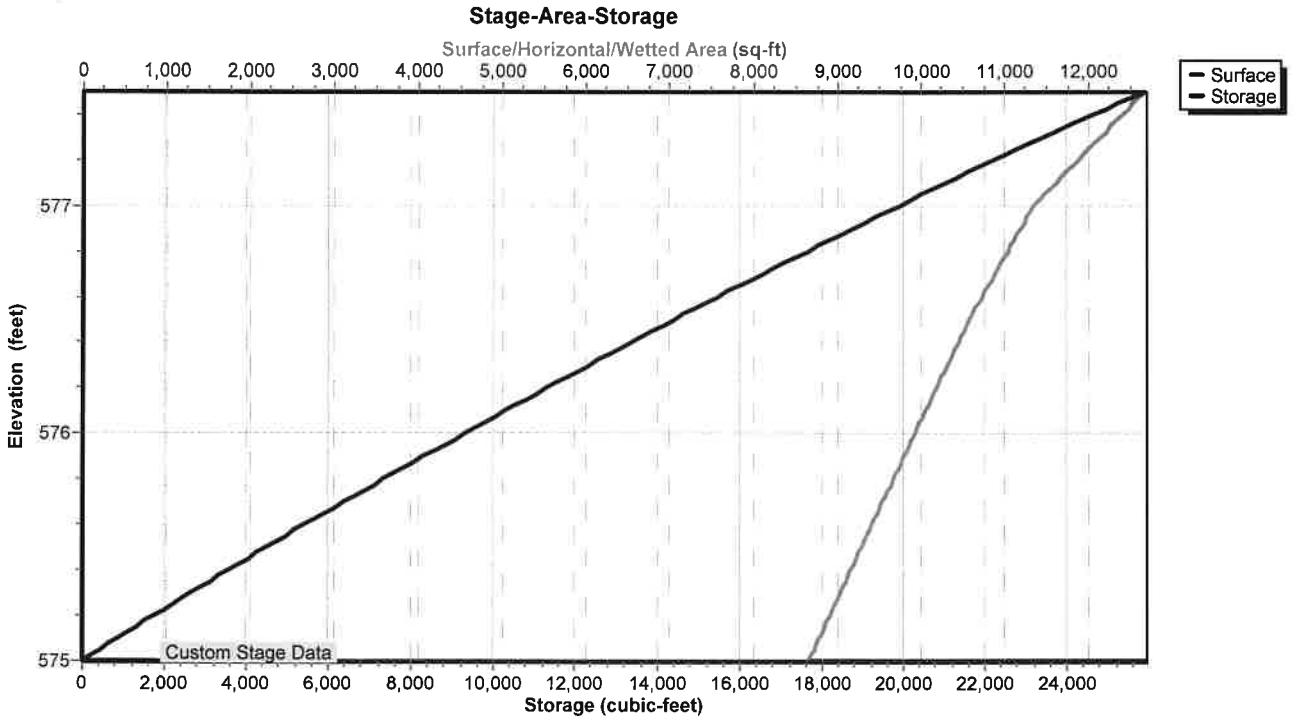


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.01	6	575.00	0.00	0.00	0.00
8.00	0.09	207	575.02	0.05	0.05	0.00
10.00	0.28	1,102	575.13	0.05	0.05	0.00
12.00	**15.84**	**9,006**	**575.97**	**11.97**	**2.82**	**9.15**
14.00	**0.71**	**5,320**	**575.59**	**0.79**	**0.79**	**0.00**
16.00	0.43	5,039	575.56	0.46	0.46	0.00
18.00	0.33	4,925	575.55	0.34	0.34	0.00
20.00	0.24	4,823	575.54	0.25	0.25	0.00
22.00	0.22	4,781	575.53	0.22	0.22	0.00
24.00	0.20	4,760	575.53	0.20	0.20	0.00
26.00	0.00	4,270	575.48	0.06	0.06	0.00
28.00	0.00	3,874	575.43	0.05	0.05	0.00
30.00	0.00	3,482	575.39	0.05	0.05	0.00
32.00	0.00	3,093	575.35	0.05	0.05	0.00
34.00	0.00	2,707	575.31	0.05	0.05	0.00
36.00	0.00	2,324	575.26	0.05	0.05	0.00
38.00	0.00	1,945	575.22	0.05	0.05	0.00
40.00	0.00	1,569	575.18	0.05	0.05	0.00
42.00	0.00	1,197	575.14	0.05	0.05	0.00
44.00	0.00	828	575.10	0.05	0.05	0.00
46.00	0.00	461	575.05	0.05	0.05	0.00
48.00	0.00	126	575.01	0.03	0.03	0.00
50.00	0.00	24	575.00	0.01	0.01	0.00
52.00	0.00	4	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 3.07" for 10-Year event
Inflow = 26.01 cfs @ 12.08 hrs, Volume= 1.125 af
Outflow = 0.47 cfs @ 14.32 hrs, Volume= 0.892 af, Atten= 98%, Lag= 134.6 min
Primary = 0.47 cfs @ 14.32 hrs, Volume= 0.892 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.60' @ 14.32 hrs Surf.Area= 63,820 sf Storage= 37,117 cf

Plug-Flow detention time= 942.6 min calculated for 0.892 af (79% of inflow)
Center-of-Mass det. time= 874.9 min (1,660.4 - 785.4)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

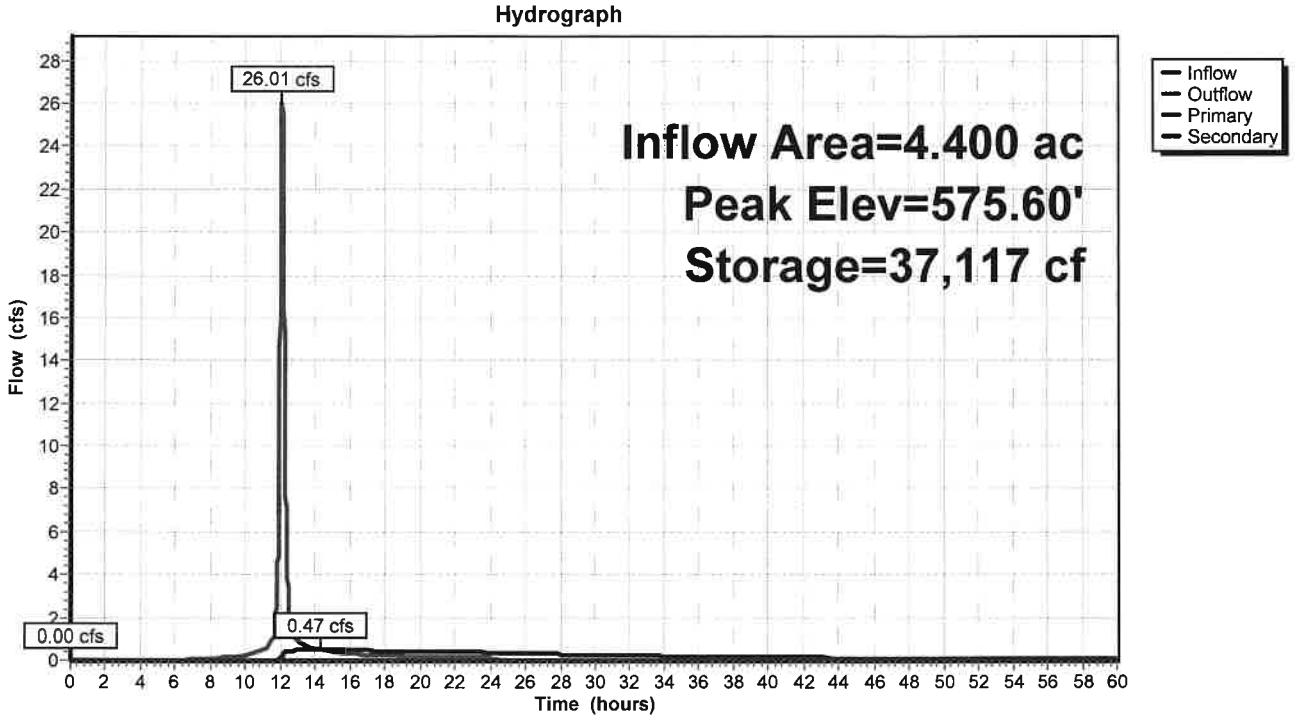
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.47 cfs @ 14.32 hrs HW=575.60' (Free Discharge)
└**1=12" outlet pipe** (Passes 0.47 cfs of 2.23 cfs potential flow)
  ├**2=low flow outlet pipe** (Barrel Controls 0.47 cfs @ 2.50 fps)
  └**3=Grate** (Controls 0.00 cfs)

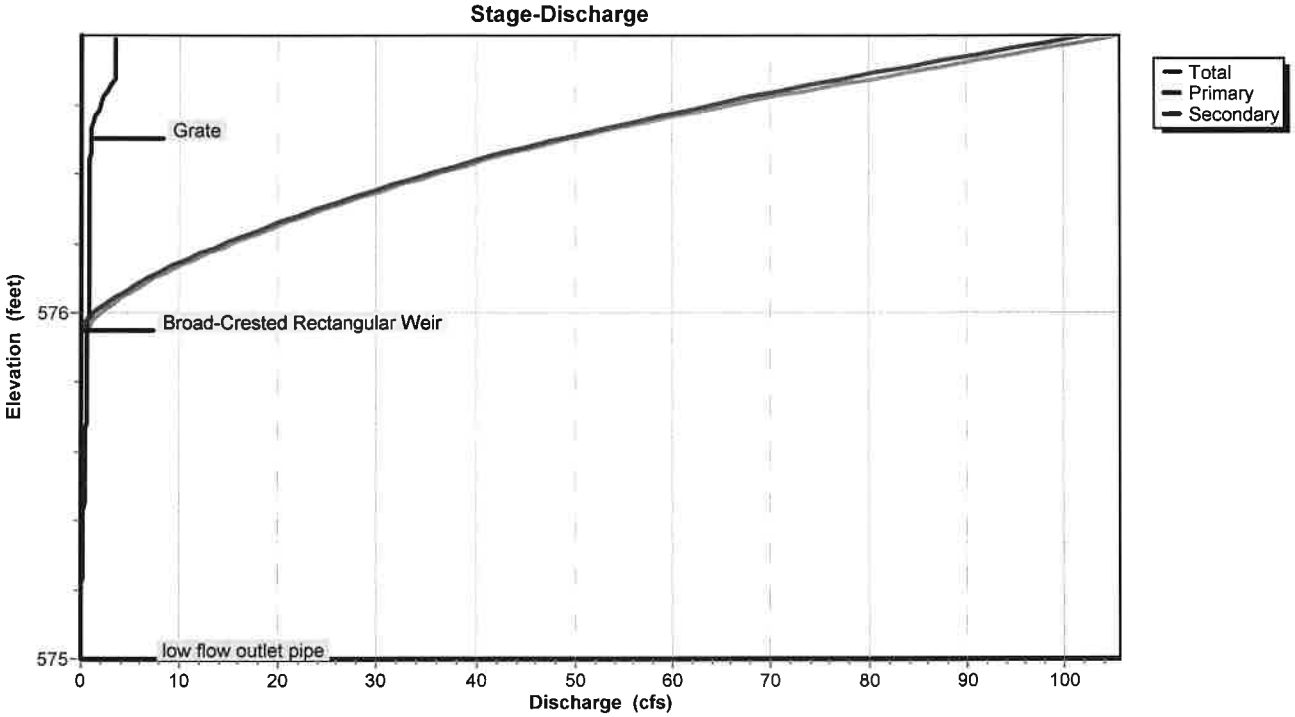
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

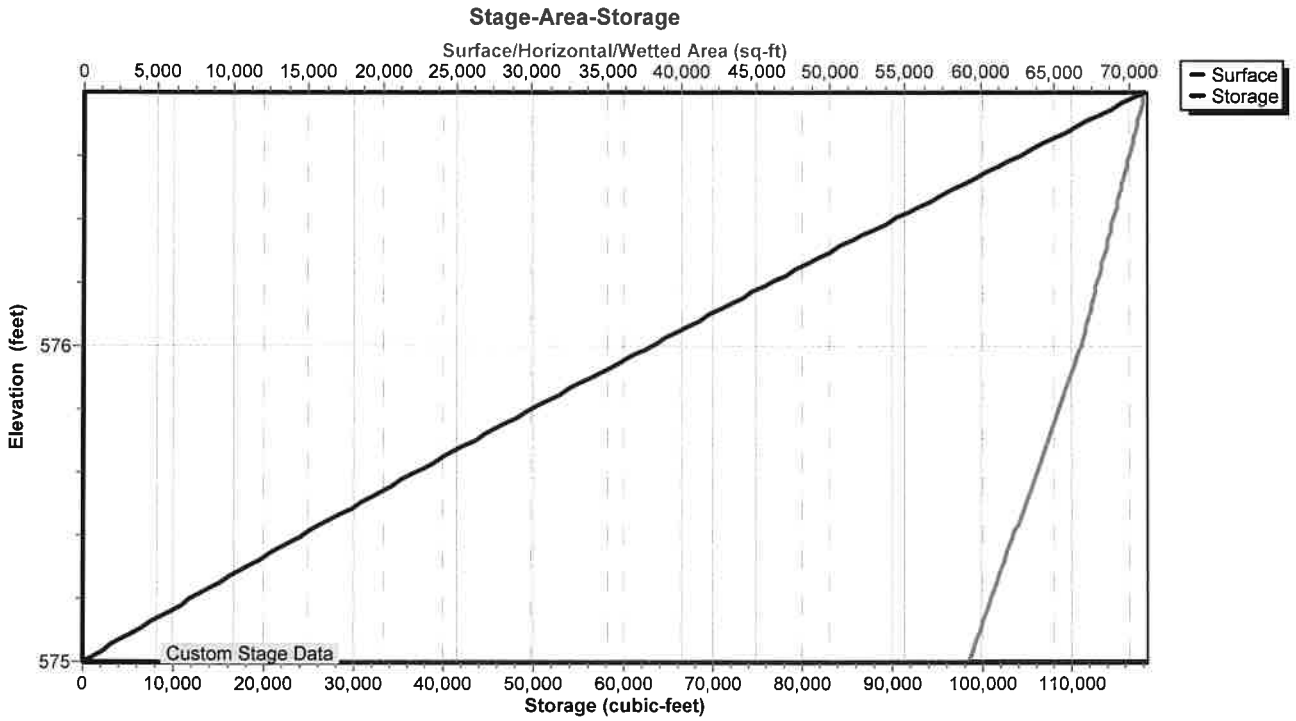


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.02	28	575.00	0.00	0.00	0.00
8.00	0.08	376	575.01	0.00	0.00	0.00
10.00	0.23	1,427	575.02	0.00	0.00	0.00
12.00	**20.19**	11,922	575.20	0.08	0.08	0.00
14.00	**0.53**	**37,087**	**575.60**	**0.47**	**0.47**	0.00
16.00	0.32	**36,669**	**575.60**	**0.46**	**0.46**	0.00
18.00	0.24	35,374	575.58	0.44	0.44	0.00
20.00	0.18	33,764	575.55	0.42	0.42	0.00
22.00	0.16	32,024	575.52	0.39	0.39	0.00
24.00	0.15	30,385	575.50	0.37	0.37	0.00
26.00	0.00	28,005	575.46	0.33	0.33	0.00
28.00	0.00	25,794	575.42	0.29	0.29	0.00
30.00	0.00	23,836	575.39	0.26	0.26	0.00
32.00	0.00	22,102	575.36	0.23	0.23	0.00
34.00	0.00	20,561	575.34	0.20	0.20	0.00
36.00	0.00	19,188	575.32	0.18	0.18	0.00
38.00	0.00	17,961	575.30	0.16	0.16	0.00
40.00	0.00	16,860	575.28	0.14	0.14	0.00
42.00	0.00	15,870	575.26	0.13	0.13	0.00
44.00	0.00	14,975	575.25	0.12	0.12	0.00
46.00	0.00	14,165	575.24	0.11	0.11	0.00
48.00	0.00	13,428	575.22	0.10	0.10	0.00
50.00	0.00	12,756	575.21	0.09	0.09	0.00
52.00	0.00	12,141	575.20	0.08	0.08	0.00
54.00	0.00	11,578	575.19	0.08	0.08	0.00
56.00	0.00	11,059	575.18	0.07	0.07	0.00
58.00	0.00	10,581	575.18	0.06	0.06	0.00
60.00	0.00	10,139	575.17	0.06	0.06	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

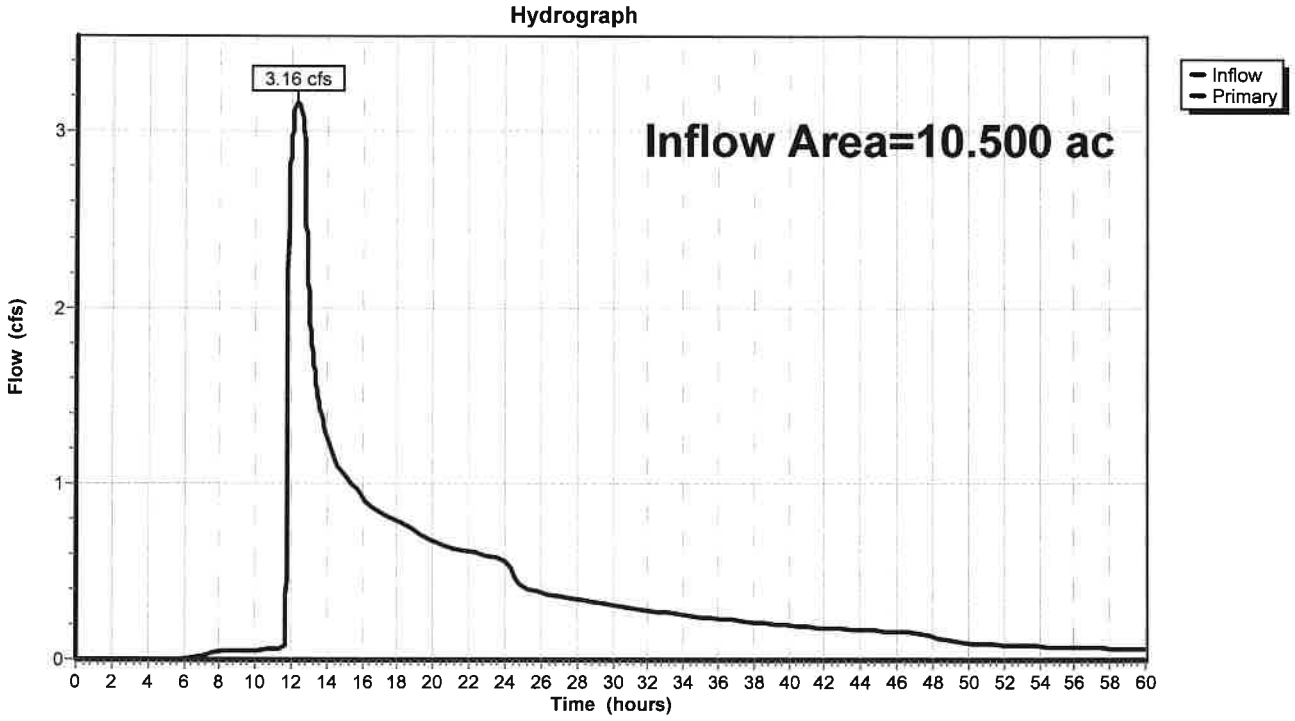
Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 1.89" for 10-Year event
Inflow = 3.16 cfs @ 12.39 hrs, Volume= 1.657 af
Primary = 3.16 cfs @ 12.39 hrs, Volume= 1.657 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.08	0.00	0.08
1.00	0.00	0.00	0.00	53.00	0.08	0.00	0.08
2.00	0.00	0.00	0.00	54.00	0.08	0.00	0.08
3.00	0.00	0.00	0.00	55.00	0.07	0.00	0.07
4.00	0.00	0.00	0.00	56.00	0.07	0.00	0.07
5.00	0.00	0.00	0.00	57.00	0.07	0.00	0.07
6.00	0.00	0.00	0.00	58.00	0.06	0.00	0.06
7.00	0.02	0.00	0.02	59.00	0.06	0.00	0.06
8.00	0.05	0.00	0.05	60.00	0.06	0.00	0.06
9.00	0.05	0.00	0.05				
10.00	0.05	0.00	0.05				
11.00	0.06	0.00	0.06				
12.00	**2.90**	0.00	**2.90**				
13.00	**2.02**	0.00	**2.02**				
14.00	1.26	0.00	1.26				
15.00	1.05	0.00	1.05				
16.00	0.92	0.00	0.92				
17.00	0.84	0.00	0.84				
18.00	0.78	0.00	0.78				
19.00	0.73	0.00	0.73				
20.00	0.67	0.00	0.67				
21.00	0.63	0.00	0.63				
22.00	0.61	0.00	0.61				
23.00	0.59	0.00	0.59				
24.00	0.57	0.00	0.57				
25.00	0.40	0.00	0.40				
26.00	0.38	0.00	0.38				
27.00	0.36	0.00	0.36				
28.00	0.34	0.00	0.34				
29.00	0.33	0.00	0.33				
30.00	0.31	0.00	0.31				
31.00	0.29	0.00	0.29				
32.00	0.28	0.00	0.28				
33.00	0.27	0.00	0.27				
34.00	0.26	0.00	0.26				
35.00	0.24	0.00	0.24				
36.00	0.23	0.00	0.23				
37.00	0.22	0.00	0.22				
38.00	0.21	0.00	0.21				
39.00	0.20	0.00	0.20				
40.00	0.20	0.00	0.20				
41.00	0.19	0.00	0.19				
42.00	0.18	0.00	0.18				
43.00	0.18	0.00	0.18				
44.00	0.17	0.00	0.17				
45.00	0.16	0.00	0.16				
46.00	0.16	0.00	0.16				
47.00	0.15	0.00	0.15				
48.00	0.13	0.00	0.13				
49.00	0.11	0.00	0.11				
50.00	0.09	0.00	0.09				
51.00	0.09	0.00	0.09				

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=2.80"
Flow Length=652' Tc=13.3 min CN=90 Runoff=22.74 cfs 1.421 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=2.89"
Flow Length=683' Tc=14.4 min CN=91 Runoff=16.27 cfs 1.061 af

Pond 1P: Bioretention Area 3 Peak Elev=576.11' Storage=10,375 cf Inflow=22.74 cfs 1.421 af
Primary=2.89 cfs 0.934 af Secondary=18.84 cfs 0.487 af Outflow=21.73 cfs 1.421 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.83' Storage=51,963 cf Inflow=34.94 cfs 1.548 af
Primary=0.64 cfs 1.276 af Secondary=0.00 cfs 0.000 af Outflow=0.64 cfs 1.276 af

Link 5L: Outflow (@ CB 54) Inflow=3.36 cfs 2.210 af
Primary=3.36 cfs 2.210 af

Total Runoff Area = 10.500 ac Runoff Volume = 2.482 af Average Runoff Depth = 2.84"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

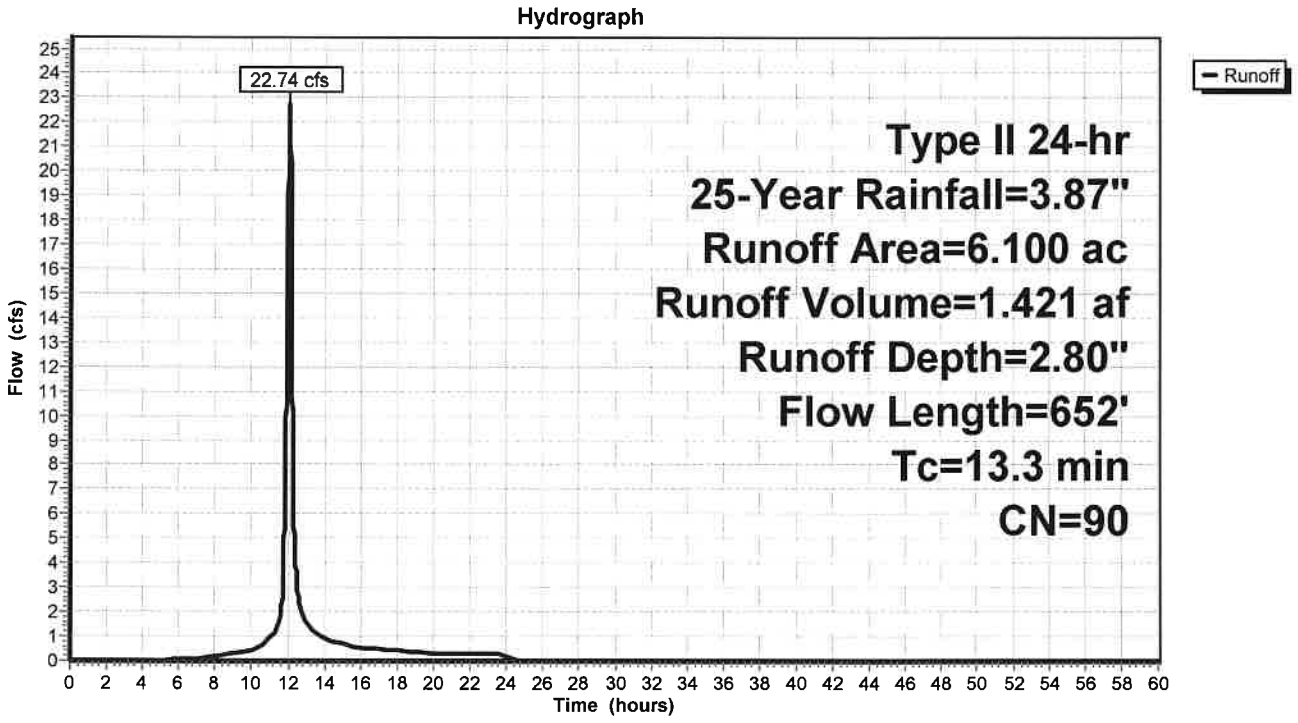
Runoff = 22.74 cfs @ 12.05 hrs, Volume= 1.421 af, Depth= 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.04	0.00	0.00
2.00	0.09	0.00	0.00
3.00	0.13	0.00	0.00
4.00	0.19	0.00	0.00
5.00	0.24	0.00	0.01
6.00	0.31	0.01	0.05
7.00	0.38	0.02	0.10
8.00	0.46	0.04	0.16
9.00	0.57	0.08	0.28
10.00	0.70	0.14	0.43
11.00	0.91	0.26	0.90
12.00	2.57	1.59	**20.75**
13.00	2.99	1.97	**1.57**
14.00	3.17	2.14	0.90
15.00	3.30	2.26	0.70
16.00	3.41	2.36	0.54
17.00	3.49	2.44	0.47
18.00	3.56	2.51	0.41
19.00	3.63	2.57	0.36
20.00	3.68	2.62	0.30
21.00	3.73	2.67	0.28
22.00	3.78	2.71	0.27
23.00	3.83	2.75	0.26
24.00	**3.87**	**2.80**	0.25
25.00	3.87	2.80	0.00
26.00	3.87	2.80	0.00
27.00	3.87	2.80	0.00
28.00	3.87	2.80	0.00
29.00	3.87	2.80	0.00
30.00	3.87	2.80	0.00
31.00	3.87	2.80	0.00
32.00	3.87	2.80	0.00
33.00	3.87	2.80	0.00
34.00	3.87	2.80	0.00
35.00	3.87	2.80	0.00
36.00	3.87	2.80	0.00
37.00	3.87	2.80	0.00
38.00	3.87	2.80	0.00
39.00	3.87	2.80	0.00
40.00	3.87	2.80	0.00
41.00	3.87	2.80	0.00
42.00	3.87	2.80	0.00
43.00	3.87	2.80	0.00
44.00	3.87	2.80	0.00
45.00	3.87	2.80	0.00
46.00	3.87	2.80	0.00
47.00	3.87	2.80	0.00
48.00	3.87	2.80	0.00
49.00	3.87	2.80	0.00
50.00	3.87	2.80	0.00
51.00	3.87	2.80	0.00
52.00	3.87	2.80	0.00
53.00	3.87	2.80	0.00
54.00	3.87	2.80	0.00
55.00	3.87	2.80	0.00
56.00	3.87	2.80	0.00
57.00	3.87	2.80	0.00
58.00	3.87	2.80	0.00
59.00	3.87	2.80	0.00
60.00	3.87	2.80	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

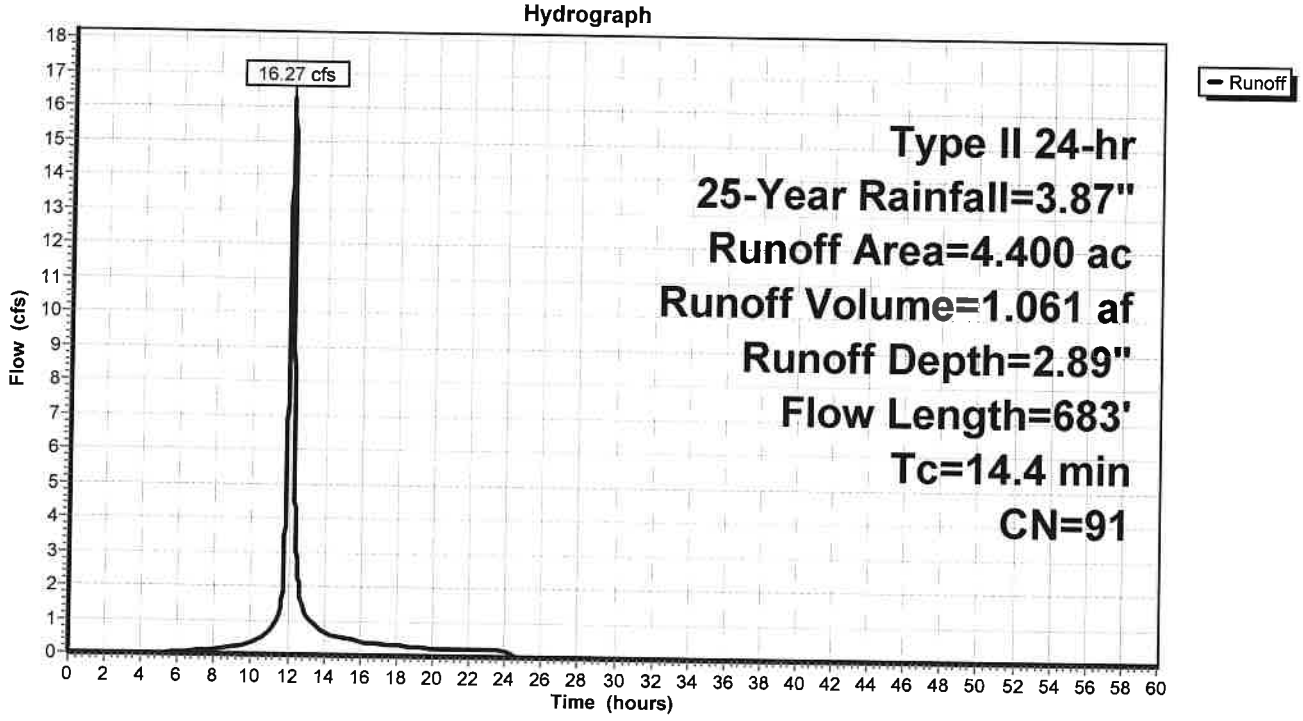
Runoff = 16.27 cfs @ 12.06 hrs, Volume= 1.061 af, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.04	0.00	0.00
2.00	0.09	0.00	0.00
3.00	0.13	0.00	0.00
4.00	0.19	0.00	0.00
5.00	0.24	0.00	0.02
6.00	0.31	0.01	0.05
7.00	0.38	0.03	0.09
8.00	0.46	0.06	0.13
9.00	0.57	0.10	0.23
10.00	0.70	0.17	0.34
11.00	0.91	0.30	0.69
12.00	2.57	1.67	**14.36**
13.00	2.99	2.06	**1.16**
14.00	3.17	2.23	0.67
15.00	3.30	2.36	0.51
16.00	3.41	2.45	0.40
17.00	3.49	2.53	0.34
18.00	3.56	2.60	0.30
19.00	3.63	2.66	0.26
20.00	3.68	2.72	0.22
21.00	3.73	2.76	0.21
22.00	3.78	2.81	0.20
23.00	3.83	2.85	0.19
24.00	**3.87**	**2.89**	0.18
25.00	3.87	2.89	0.00
26.00	3.87	2.89	0.00
27.00	3.87	2.89	0.00
28.00	3.87	2.89	0.00
29.00	3.87	2.89	0.00
30.00	3.87	2.89	0.00
31.00	3.87	2.89	0.00
32.00	3.87	2.89	0.00
33.00	3.87	2.89	0.00
34.00	3.87	2.89	0.00
35.00	3.87	2.89	0.00
36.00	3.87	2.89	0.00
37.00	3.87	2.89	0.00
38.00	3.87	2.89	0.00
39.00	3.87	2.89	0.00
40.00	3.87	2.89	0.00
41.00	3.87	2.89	0.00
42.00	3.87	2.89	0.00
43.00	3.87	2.89	0.00
44.00	3.87	2.89	0.00
45.00	3.87	2.89	0.00
46.00	3.87	2.89	0.00
47.00	3.87	2.89	0.00
48.00	3.87	2.89	0.00
49.00	3.87	2.89	0.00
50.00	3.87	2.89	0.00
51.00	3.87	2.89	0.00
52.00	3.87	2.89	0.00
53.00	3.87	2.89	0.00
54.00	3.87	2.89	0.00
55.00	3.87	2.89	0.00
56.00	3.87	2.89	0.00
57.00	3.87	2.89	0.00
58.00	3.87	2.89	0.00
59.00	3.87	2.89	0.00
60.00	3.87	2.89	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 2.80" for 25-Year event
Inflow = 22.74 cfs @ 12.05 hrs, Volume= 1.421 af
Outflow = 21.73 cfs @ 12.08 hrs, Volume= 1.421 af, Atten= 4%, Lag= 2.0 min
Primary = 2.89 cfs @ 12.08 hrs, Volume= 0.934 af
Secondary = 18.84 cfs @ 12.08 hrs, Volume= 0.487 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.11' @ 12.08 hrs Surf.Area= 10,069 sf Storage= 10,375 cf

Plug-Flow detention time= 127.9 min calculated for 1.421 af (100% of inflow)
Center-of-Mass det. time= 128.1 min (931.5 - 803.4)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

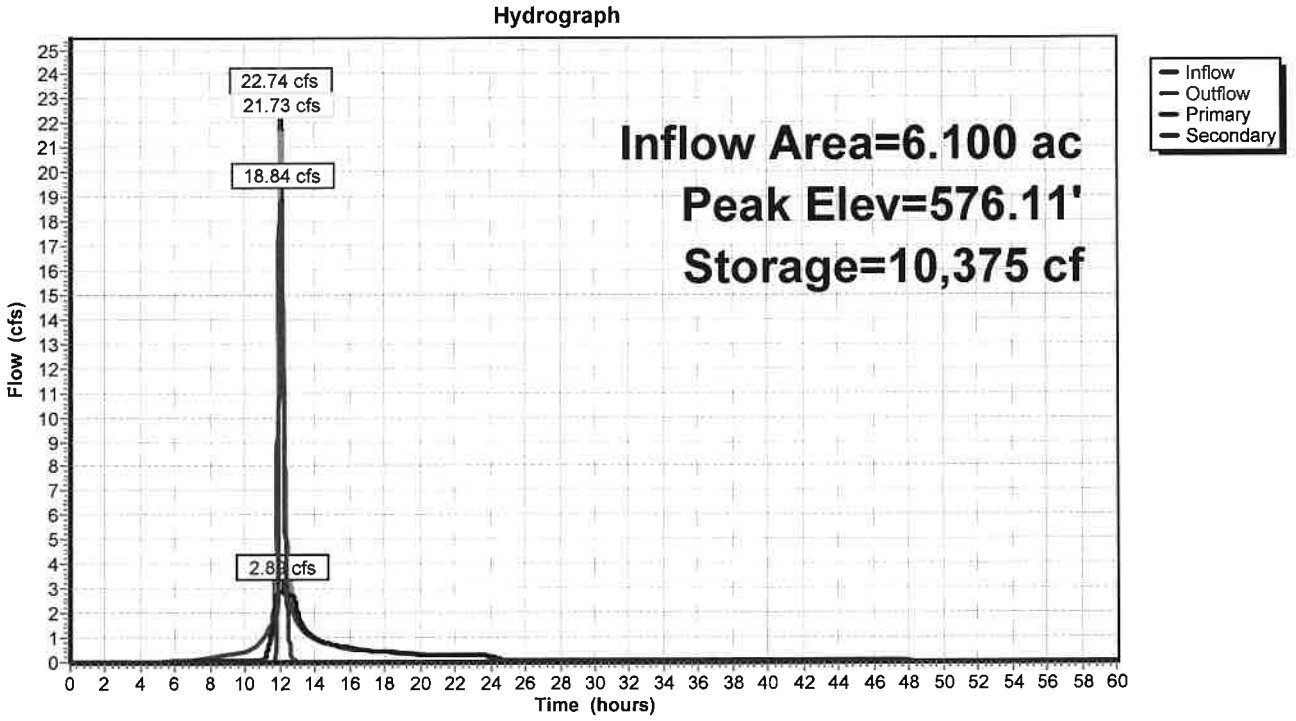
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.89 cfs @ 12.08 hrs HW=576.11' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.89 cfs @ 8.27 fps)
  └**2=Grate** (Passes < 5.25 cfs potential flow)
  └**3=Exfiltration** (Passes < 0.06 cfs potential flow)

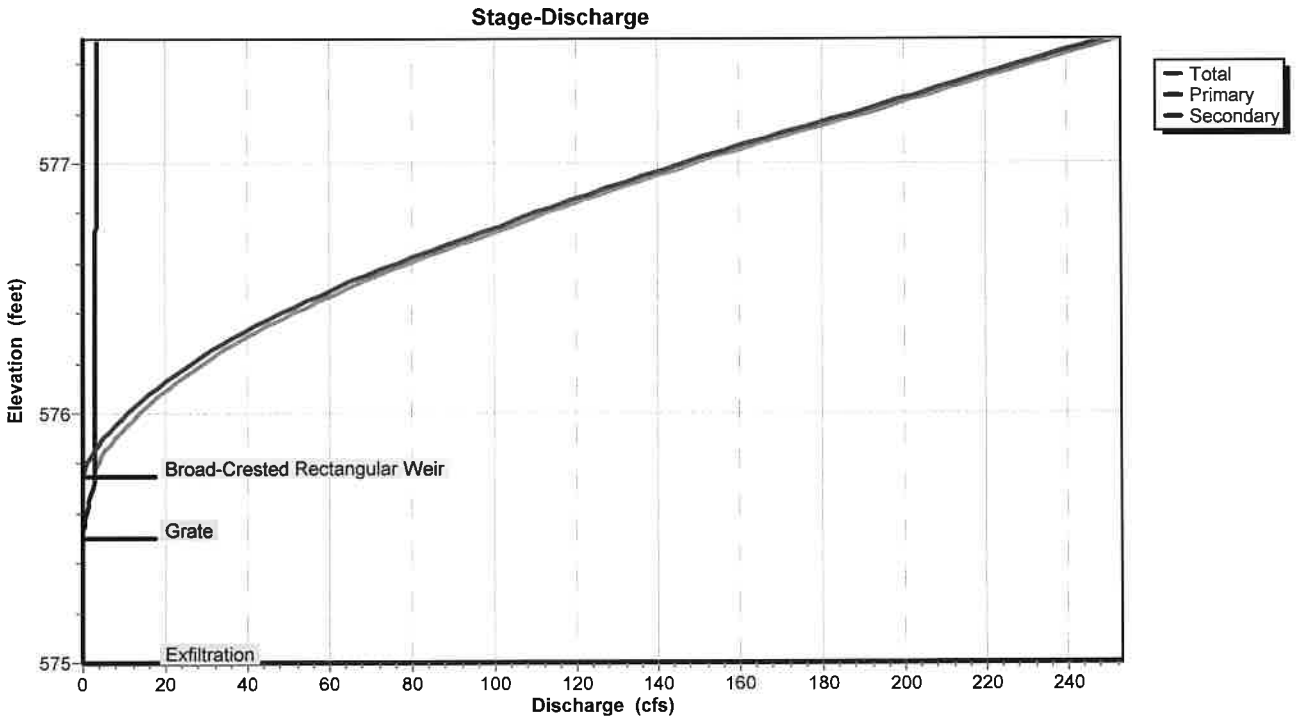
Secondary OutFlow Max=18.83 cfs @ 12.08 hrs HW=576.11' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 18.83 cfs @ 1.75 fps)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

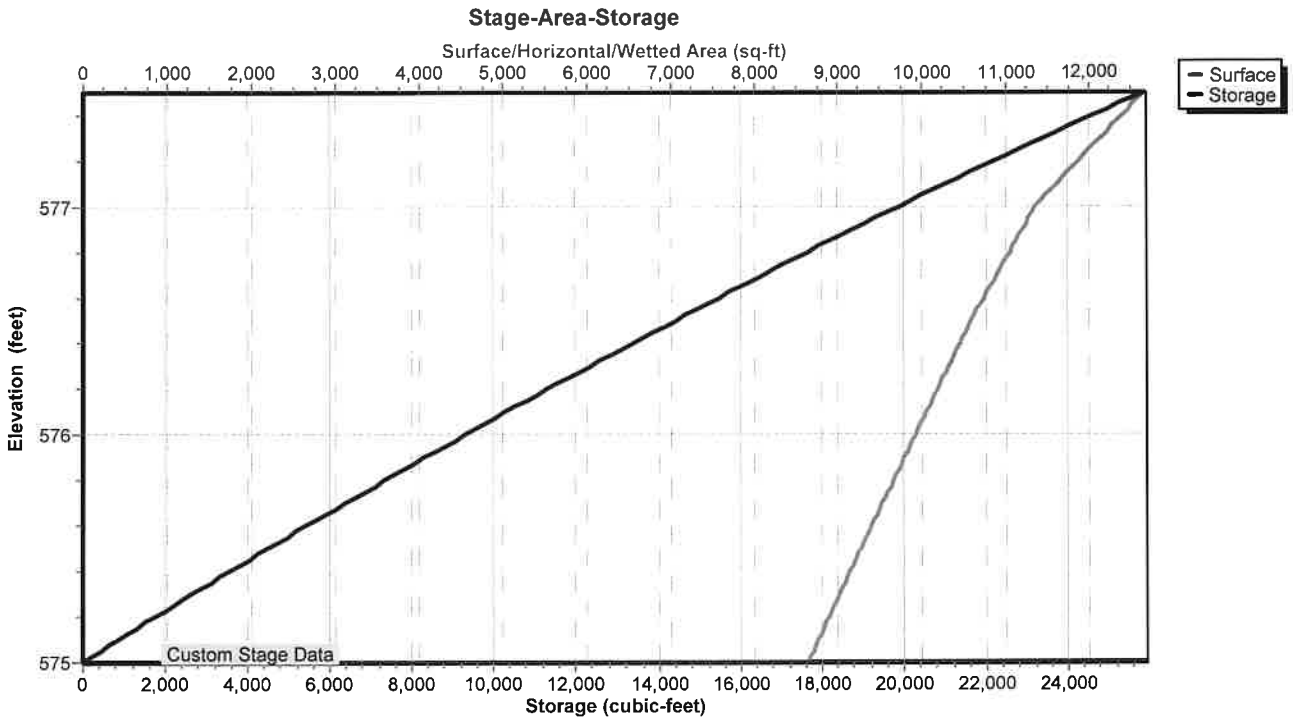


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.05	75	575.01	0.02	0.02	0.00
8.00	0.16	510	575.06	0.05	0.05	0.00
10.00	0.43	2,153	575.24	0.05	0.05	0.00
12.00	**20.75**	**9,748**	**576.05**	**16.99**	**2.86**	**14.14**
14.00	**0.90**	**5,469**	**575.61**	**1.00**	**1.00**	**0.00**
16.00	0.54	5,148	575.57	0.58	0.58	0.00
18.00	0.41	5,009	575.56	0.43	0.43	0.00
20.00	0.30	4,900	575.54	0.32	0.32	0.00
22.00	0.27	4,847	575.54	0.28	0.28	0.00
24.00	0.25	4,821	575.54	0.25	0.25	0.00
26.00	0.00	4,285	575.48	0.06	0.06	0.00
28.00	0.00	3,889	575.44	0.05	0.05	0.00
30.00	0.00	3,497	575.39	0.05	0.05	0.00
32.00	0.00	3,108	575.35	0.05	0.05	0.00
34.00	0.00	2,722	575.31	0.05	0.05	0.00
36.00	0.00	2,339	575.27	0.05	0.05	0.00
38.00	0.00	1,960	575.22	0.05	0.05	0.00
40.00	0.00	1,584	575.18	0.05	0.05	0.00
42.00	0.00	1,211	575.14	0.05	0.05	0.00
44.00	0.00	842	575.10	0.05	0.05	0.00
46.00	0.00	475	575.05	0.05	0.05	0.00
48.00	0.00	134	575.02	0.03	0.03	0.00
50.00	0.00	25	575.00	0.01	0.01	0.00
52.00	0.00	5	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 4.22" for 25-Year event
Inflow = 34.94 cfs @ 12.07 hrs, Volume= 1.548 af
Outflow = 0.64 cfs @ 14.10 hrs, Volume= 1.276 af, Atten= 98%, Lag= 121.4 min
Primary = 0.64 cfs @ 14.10 hrs, Volume= 1.276 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.83' @ 14.10 hrs Surf.Area= 65,573 sf Storage= 51,963 cf

Plug-Flow detention time= 951.6 min calculated for 1.276 af (82% of inflow)
Center-of-Mass det. time= 890.6 min (1,667.8 - 777.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

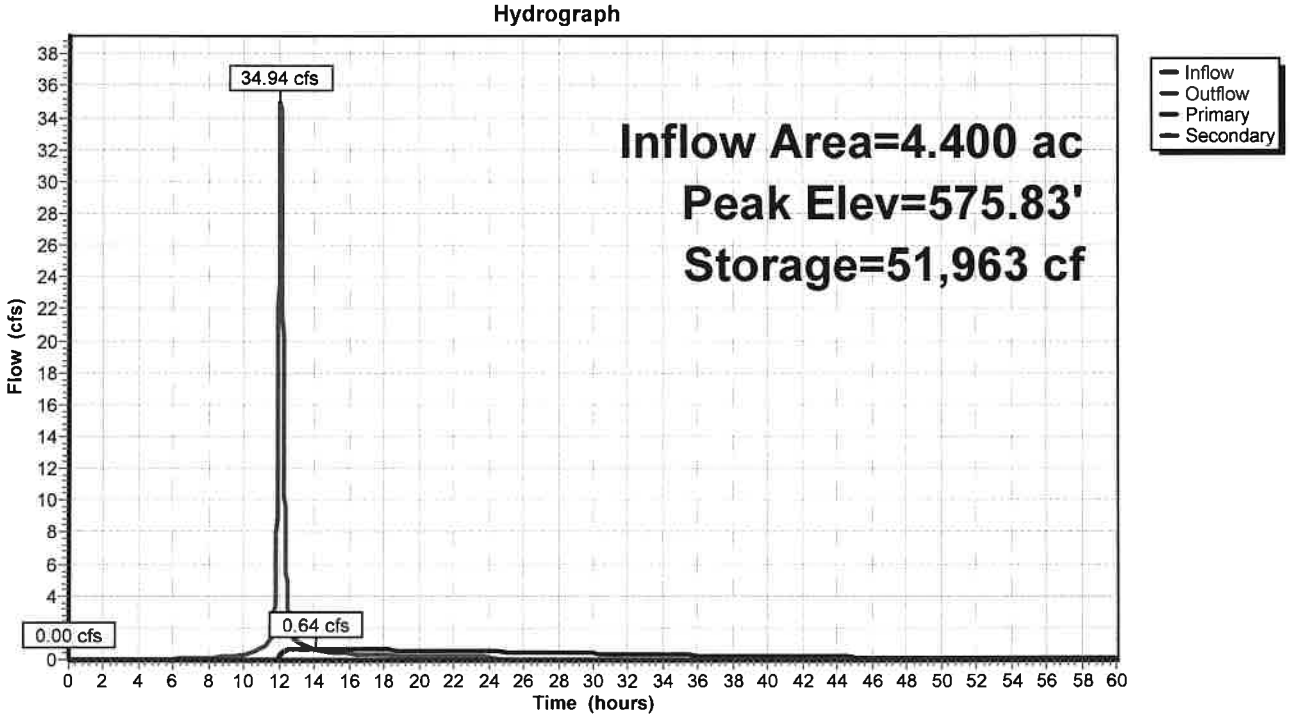
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.64 cfs @ 14.10 hrs HW=575.83' (Free Discharge)
↑—**1=12" outlet pipe** (Passes 0.64 cfs of 2.52 cfs potential flow)
↑—**2=low flow outlet pipe** (Inlet Controls 0.64 cfs @ 3.24 fps)
—**3=Grate** (Controls 0.00 cfs)

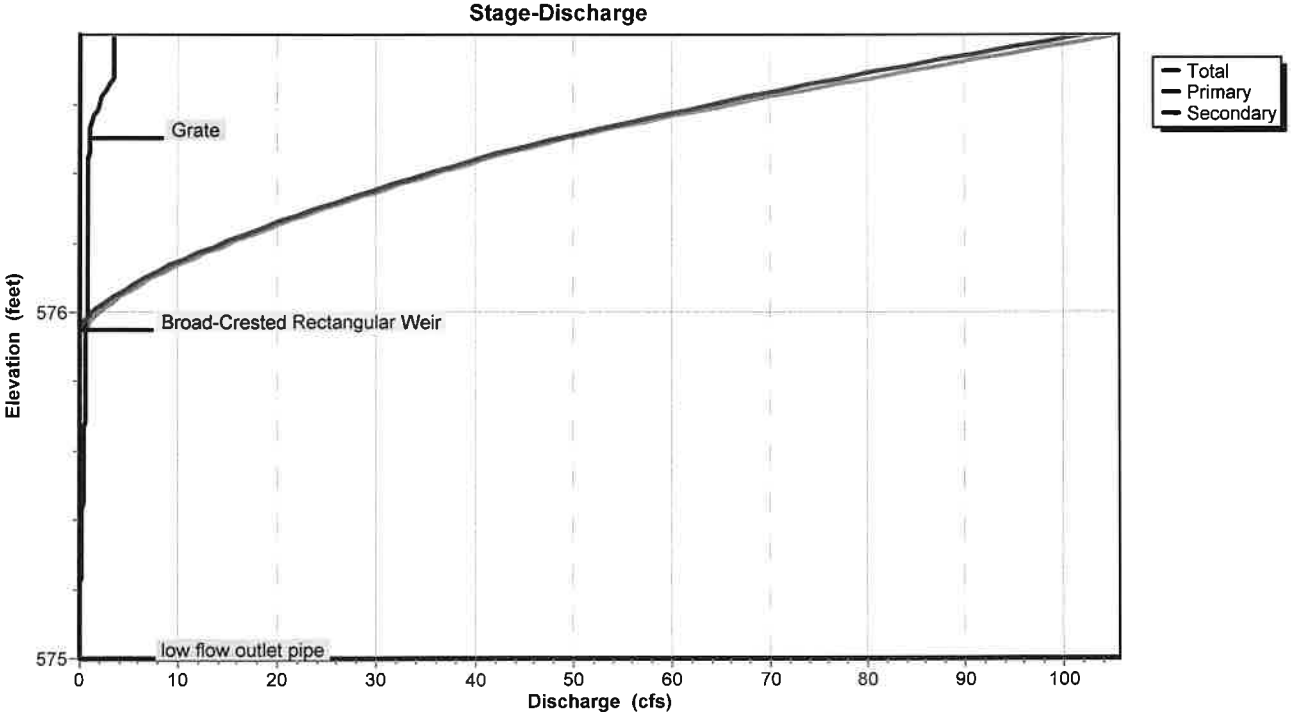
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
↑—**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

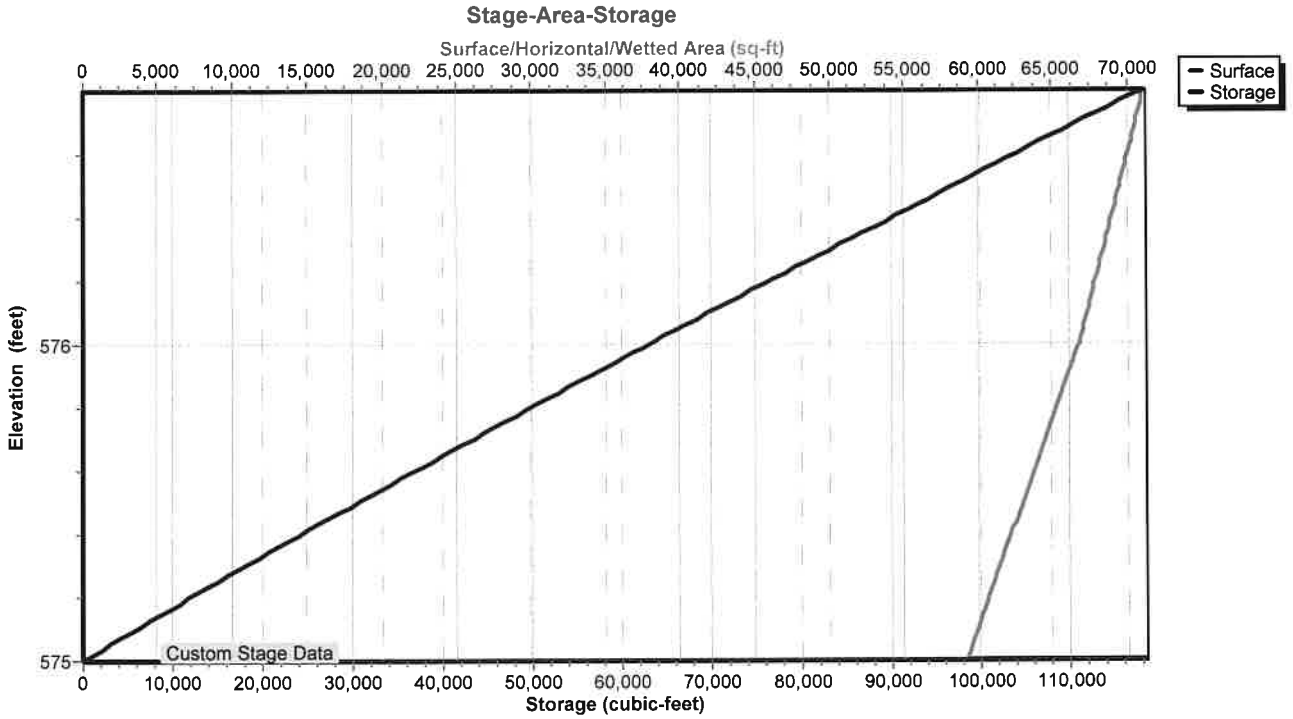


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.05	138	575.00	0.00	0.00	0.00
8.00	0.13	792	575.01	0.00	0.00	0.00
10.00	0.34	2,407	575.04	0.00	0.00	0.00
12.00	**28.50**	18,305	575.30	0.17	0.17	0.00
14.00	**0.67**	**51,959**	**575.83**	**0.64**	**0.64**	0.00
16.00	0.40	**51,083**	**575.82**	**0.63**	**0.63**	0.00
18.00	0.30	49,081	575.79	0.61	0.61	0.00
20.00	0.22	46,637	575.75	0.59	0.59	0.00
22.00	0.20	44,041	575.71	0.55	0.55	0.00
24.00	0.18	41,619	575.67	0.51	0.51	0.00
26.00	0.00	38,209	575.62	0.48	0.48	0.00
28.00	0.00	34,905	575.57	0.44	0.44	0.00
30.00	0.00	31,923	575.52	0.39	0.39	0.00
32.00	0.00	29,266	575.48	0.35	0.35	0.00
34.00	0.00	26,910	575.44	0.31	0.31	0.00
36.00	0.00	24,824	575.41	0.27	0.27	0.00
38.00	0.00	22,978	575.38	0.24	0.24	0.00
40.00	0.00	21,340	575.35	0.21	0.21	0.00
42.00	0.00	19,882	575.33	0.19	0.19	0.00
44.00	0.00	18,582	575.31	0.17	0.17	0.00
46.00	0.00	17,418	575.29	0.15	0.15	0.00
48.00	0.00	16,372	575.27	0.14	0.14	0.00
50.00	0.00	15,429	575.26	0.12	0.12	0.00
52.00	0.00	14,576	575.24	0.11	0.11	0.00
54.00	0.00	13,802	575.23	0.10	0.10	0.00
56.00	0.00	13,098	575.22	0.09	0.09	0.00
58.00	0.00	12,454	575.21	0.09	0.09	0.00
60.00	0.00	11,865	575.20	0.08	0.08	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

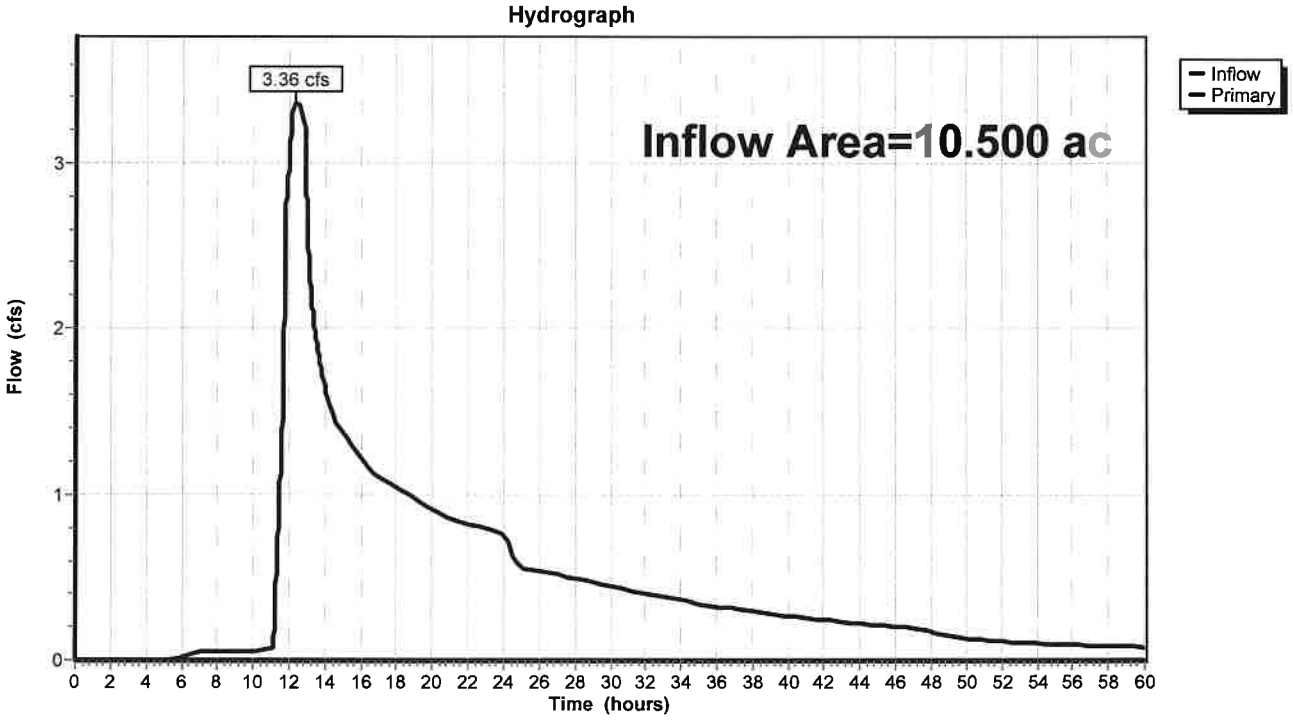
Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 2.53" for 25-Year event
Inflow = 3.36 cfs @ 12.37 hrs, Volume= 2.210 af
Primary = 3.36 cfs @ 12.37 hrs, Volume= 2.210 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.11	0.00	0.11
1.00	0.00	0.00	0.00	53.00	0.11	0.00	0.11
2.00	0.00	0.00	0.00	54.00	0.10	0.00	0.10
3.00	0.00	0.00	0.00	55.00	0.10	0.00	0.10
4.00	0.00	0.00	0.00	56.00	0.09	0.00	0.09
5.00	0.00	0.00	0.00	57.00	0.09	0.00	0.09
6.00	0.02	0.00	0.02	58.00	0.09	0.00	0.09
7.00	0.05	0.00	0.05	59.00	0.08	0.00	0.08
8.00	0.05	0.00	0.05	60.00	0.08	0.00	0.08
9.00	0.05	0.00	0.05				
10.00	0.06	0.00	0.06				
11.00	0.07	0.00	0.07				
12.00	**3.02**	0.00	**3.02**				
13.00	**2.64**	0.00	**2.64**				
14.00	1.63	0.00	1.63				
15.00	1.36	0.00	1.36				
16.00	1.21	0.00	1.21				
17.00	1.10	0.00	1.10				
18.00	1.04	0.00	1.04				
19.00	0.97	0.00	0.97				
20.00	0.91	0.00	0.91				
21.00	0.85	0.00	0.85				
22.00	0.82	0.00	0.82				
23.00	0.79	0.00	0.79				
24.00	0.76	0.00	0.76				
25.00	0.55	0.00	0.55				
26.00	0.53	0.00	0.53				
27.00	0.51	0.00	0.51				
28.00	0.49	0.00	0.49				
29.00	0.47	0.00	0.47				
30.00	0.45	0.00	0.45				
31.00	0.42	0.00	0.42				
32.00	0.40	0.00	0.40				
33.00	0.38	0.00	0.38				
34.00	0.36	0.00	0.36				
35.00	0.34	0.00	0.34				
36.00	0.33	0.00	0.33				
37.00	0.31	0.00	0.31				
38.00	0.29	0.00	0.29				
39.00	0.28	0.00	0.28				
40.00	0.27	0.00	0.27				
41.00	0.25	0.00	0.25				
42.00	0.24	0.00	0.24				
43.00	0.23	0.00	0.23				
44.00	0.22	0.00	0.22				
45.00	0.21	0.00	0.21				
46.00	0.20	0.00	0.20				
47.00	0.20	0.00	0.20				
48.00	0.17	0.00	0.17				
49.00	0.14	0.00	0.14				
50.00	0.13	0.00	0.13				
51.00	0.12	0.00	0.12				

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=3.41"
Flow Length=652' Tc=13.3 min CN=90 Runoff=27.50 cfs 1.736 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=3.52"
Flow Length=683' Tc=14.4 min CN=91 Runoff=19.58 cfs 1.290 af

Pond 1P: Bioretention Area 3 Peak Elev=576.17' Storage=10,953 cf Inflow=27.50 cfs 1.736 af
Primary=2.91 cfs 1.092 af Secondary=23.52 cfs 0.644 af Outflow=26.43 cfs 1.736 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=576.00' Storage=62,935 cf Inflow=42.93 cfs 1.933 af
Primary=0.72 cfs 1.504 af Secondary=1.25 cfs 0.131 af Outflow=1.97 cfs 1.635 af

Link 5L: Outflow (@ CB 54) Inflow=3.48 cfs 2.596 af
Primary=3.48 cfs 2.596 af

Total Runoff Area = 10.500 ac Runoff Volume = 3.026 af Average Runoff Depth = 3.46"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

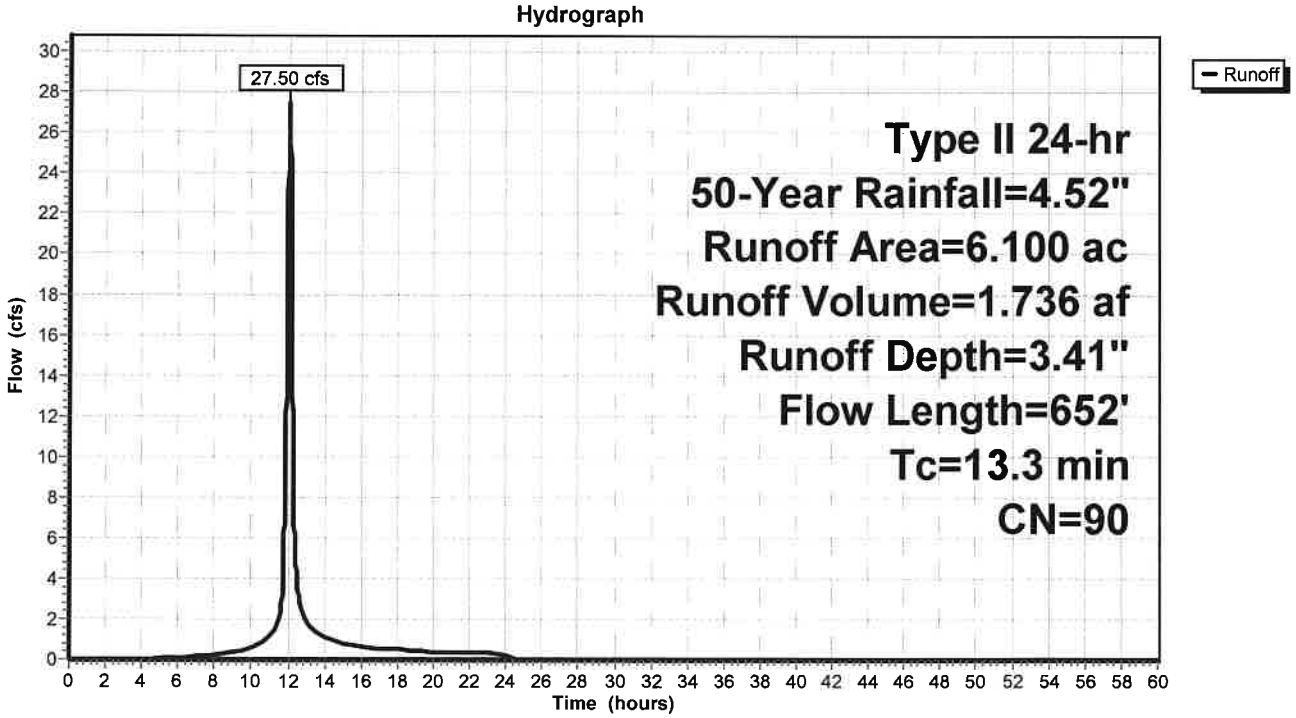
Runoff = 27.50 cfs @ 12.05 hrs, Volume= 1.736 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	4.52	3.41	0.00
1.00	0.05	0.00	0.00	53.00	4.52	3.41	0.00
2.00	0.10	0.00	0.00	54.00	4.52	3.41	0.00
3.00	0.16	0.00	0.00	55.00	4.52	3.41	0.00
4.00	0.22	0.00	0.00	56.00	4.52	3.41	0.00
5.00	0.28	0.00	0.04	57.00	4.52	3.41	0.00
6.00	0.36	0.02	0.09	58.00	4.52	3.41	0.00
7.00	0.45	0.04	0.16	59.00	4.52	3.41	0.00
8.00	0.54	0.07	0.23	60.00	4.52	3.41	0.00
9.00	0.66	0.13	0.39				
10.00	0.82	0.21	0.57				
11.00	1.06	0.36	1.16				
12.00	3.00	1.98	**25.18**				
13.00	3.49	2.44	**1.87**				
14.00	3.71	2.64	1.08				
15.00	3.86	2.78	0.83				
16.00	3.98	2.90	0.64				
17.00	4.08	2.99	0.55				
18.00	4.16	3.07	0.49				
19.00	4.24	3.15	0.42				
20.00	4.30	3.21	0.36				
21.00	4.36	3.26	0.33				
22.00	4.42	3.32	0.32				
23.00	4.47	3.37	0.31				
24.00	**4.52**	**3.41**	0.30				
25.00	4.52	3.41	0.00				
26.00	4.52	3.41	0.00				
27.00	4.52	3.41	0.00				
28.00	4.52	3.41	0.00				
29.00	4.52	3.41	0.00				
30.00	4.52	3.41	0.00				
31.00	4.52	3.41	0.00				
32.00	4.52	3.41	0.00				
33.00	4.52	3.41	0.00				
34.00	4.52	3.41	0.00				
35.00	4.52	3.41	0.00				
36.00	4.52	3.41	0.00				
37.00	4.52	3.41	0.00				
38.00	4.52	3.41	0.00				
39.00	4.52	3.41	0.00				
40.00	4.52	3.41	0.00				
41.00	4.52	3.41	0.00				
42.00	4.52	3.41	0.00				
43.00	4.52	3.41	0.00				
44.00	4.52	3.41	0.00				
45.00	4.52	3.41	0.00				
46.00	4.52	3.41	0.00				
47.00	4.52	3.41	0.00				
48.00	4.52	3.41	0.00				
49.00	4.52	3.41	0.00				
50.00	4.52	3.41	0.00				
51.00	4.52	3.41	0.00				

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

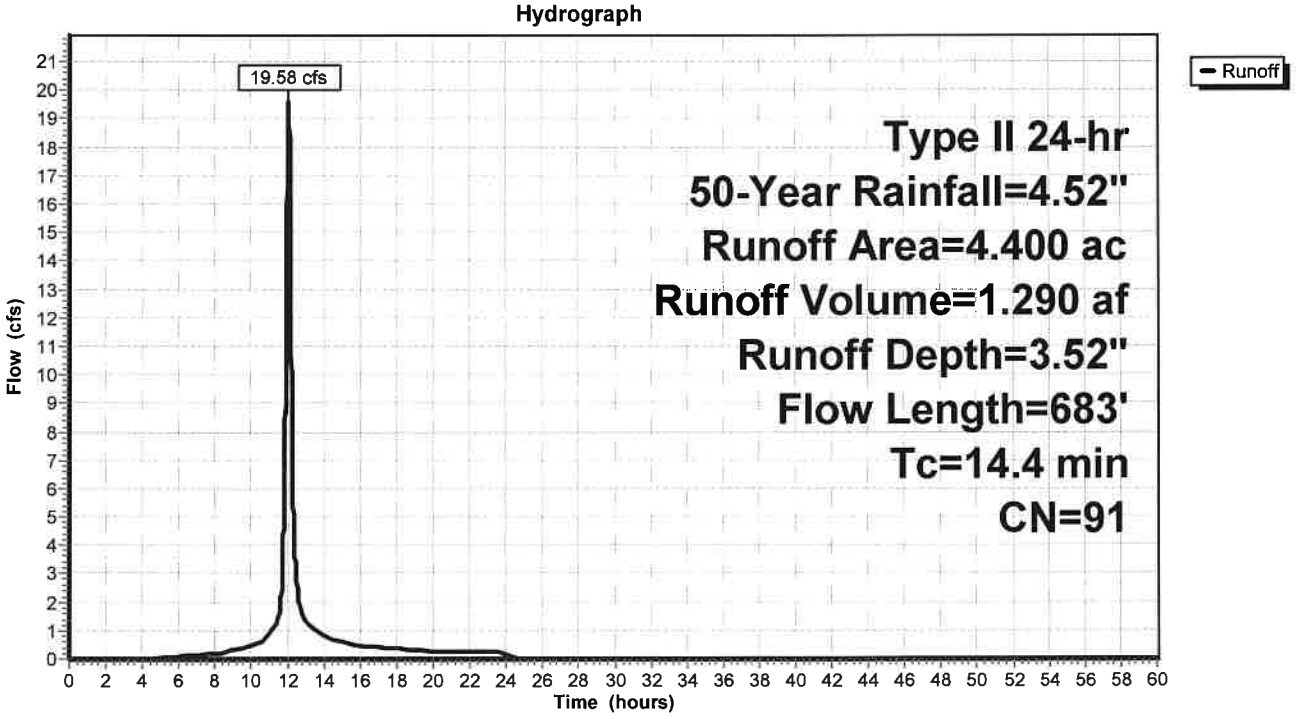
Runoff = 19.58 cfs @ 12.06 hrs, Volume= 1.290 af, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.10	0.00	0.00
3.00	0.16	0.00	0.00
4.00	0.22	0.00	0.00
5.00	0.28	0.01	0.04
6.00	0.36	0.02	0.08
7.00	0.45	0.05	0.13
8.00	0.54	0.09	0.19
9.00	0.66	0.15	0.31
10.00	0.82	0.24	0.44
11.00	1.06	0.40	0.88
12.00	3.00	2.07	**17.36**
13.00	3.49	2.53	**1.38**
14.00	3.71	2.74	0.79
15.00	3.86	2.88	0.60
16.00	3.98	3.00	0.47
17.00	4.08	3.09	0.40
18.00	4.16	3.17	0.36
19.00	4.24	3.25	0.31
20.00	4.30	3.31	0.26
21.00	4.36	3.36	0.24
22.00	4.42	3.42	0.23
23.00	4.47	3.47	0.22
24.00	**4.52**	**3.52**	0.21
25.00	4.52	3.52	0.00
26.00	4.52	3.52	0.00
27.00	4.52	3.52	0.00
28.00	4.52	3.52	0.00
29.00	4.52	3.52	0.00
30.00	4.52	3.52	0.00
31.00	4.52	3.52	0.00
32.00	4.52	3.52	0.00
33.00	4.52	3.52	0.00
34.00	4.52	3.52	0.00
35.00	4.52	3.52	0.00
36.00	4.52	3.52	0.00
37.00	4.52	3.52	0.00
38.00	4.52	3.52	0.00
39.00	4.52	3.52	0.00
40.00	4.52	3.52	0.00
41.00	4.52	3.52	0.00
42.00	4.52	3.52	0.00
43.00	4.52	3.52	0.00
44.00	4.52	3.52	0.00
45.00	4.52	3.52	0.00
46.00	4.52	3.52	0.00
47.00	4.52	3.52	0.00
48.00	4.52	3.52	0.00
49.00	4.52	3.52	0.00
50.00	4.52	3.52	0.00
51.00	4.52	3.52	0.00
52.00	4.52	3.52	0.00
53.00	4.52	3.52	0.00
54.00	4.52	3.52	0.00
55.00	4.52	3.52	0.00
56.00	4.52	3.52	0.00
57.00	4.52	3.52	0.00
58.00	4.52	3.52	0.00
59.00	4.52	3.52	0.00
60.00	4.52	3.52	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 3.41" for 50-Year event
Inflow = 27.50 cfs @ 12.05 hrs, Volume= 1.736 af
Outflow = 26.43 cfs @ 12.08 hrs, Volume= 1.736 af, Atten= 4%, Lag= 1.9 min
Primary = 2.91 cfs @ 12.08 hrs, Volume= 1.092 af
Secondary = 23.52 cfs @ 12.08 hrs, Volume= 0.644 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.17' @ 12.08 hrs Surf.Area= 10,144 sf Storage= 10,953 cf

Plug-Flow detention time= 109.3 min calculated for 1.736 af (100% of inflow)
Center-of-Mass det. time= 109.3 min (907.1 - 797.8)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

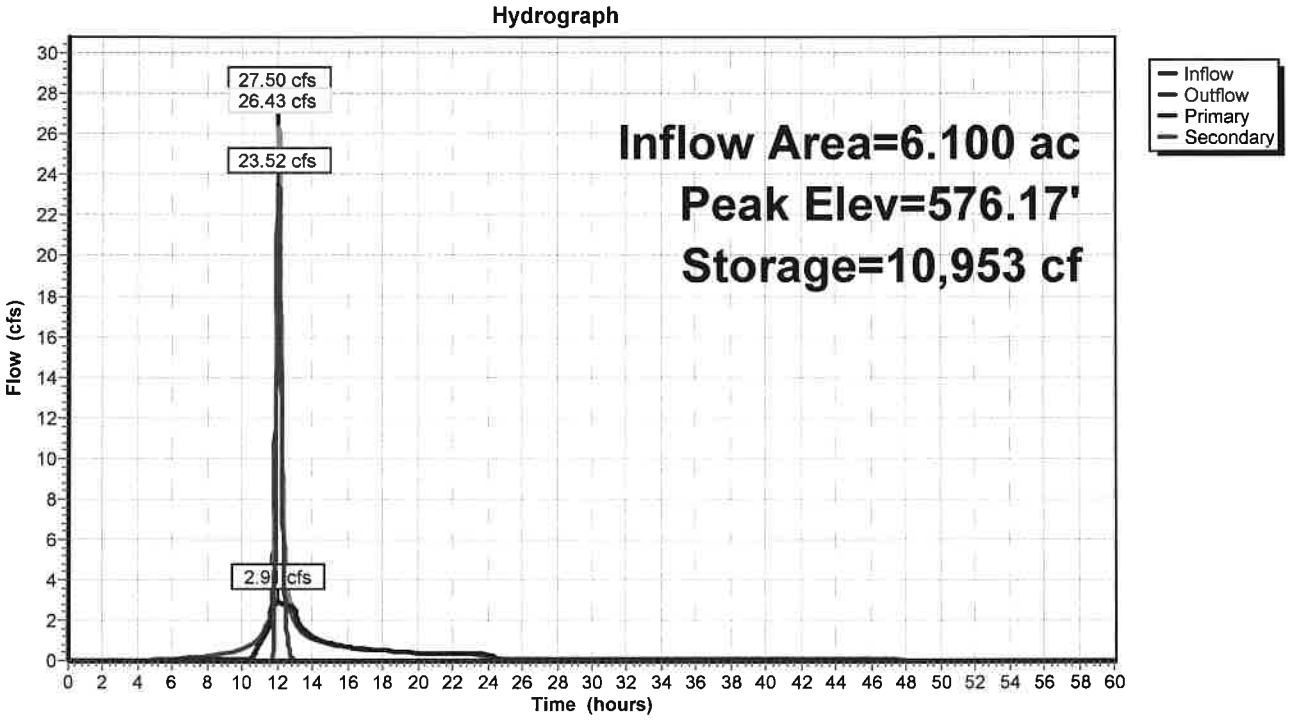
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.91 cfs @ 12.08 hrs HW=576.17' (Free Discharge)
└─**1=8" pipe** (Barrel Controls 2.91 cfs @ 8.34 fps)
  ├─**2=Grate** (Passes < 5.49 cfs potential flow)
  └─**3=Exfiltration** (Passes < 0.06 cfs potential flow)

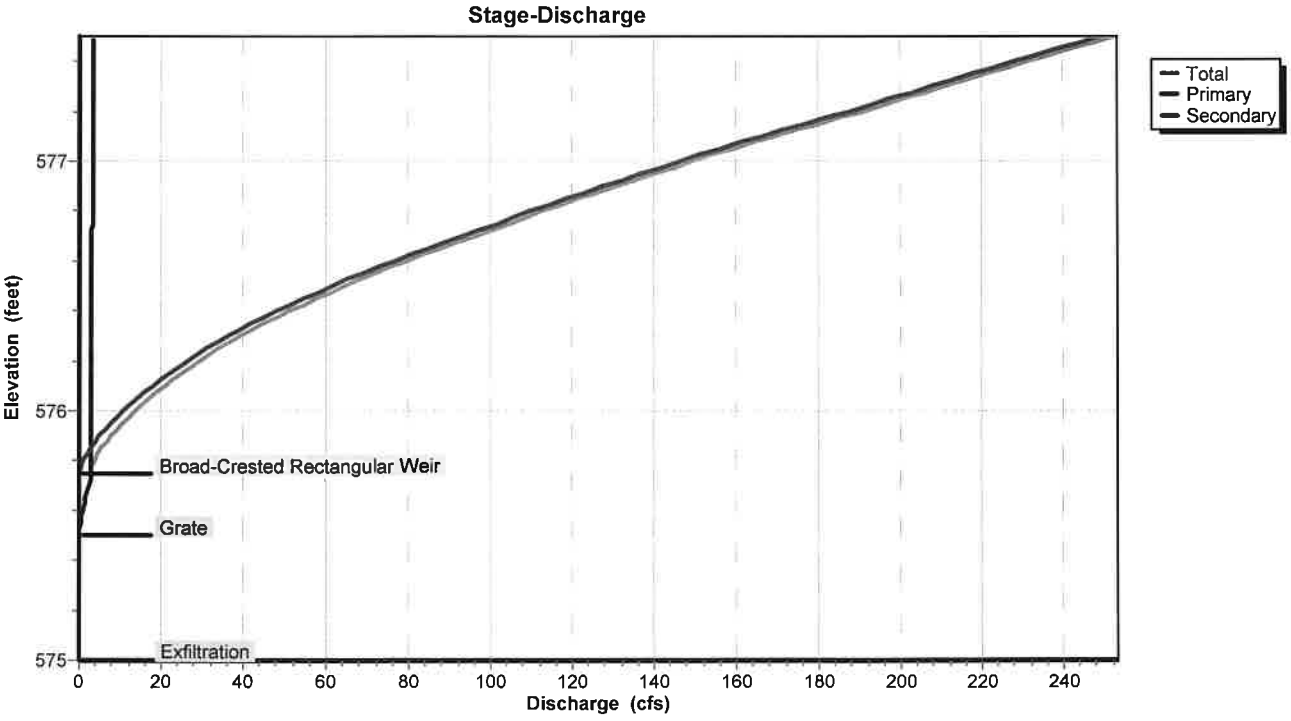
Secondary OutFlow Max=23.50 cfs @ 12.08 hrs HW=576.17' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 23.50 cfs @ 1.88 fps)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

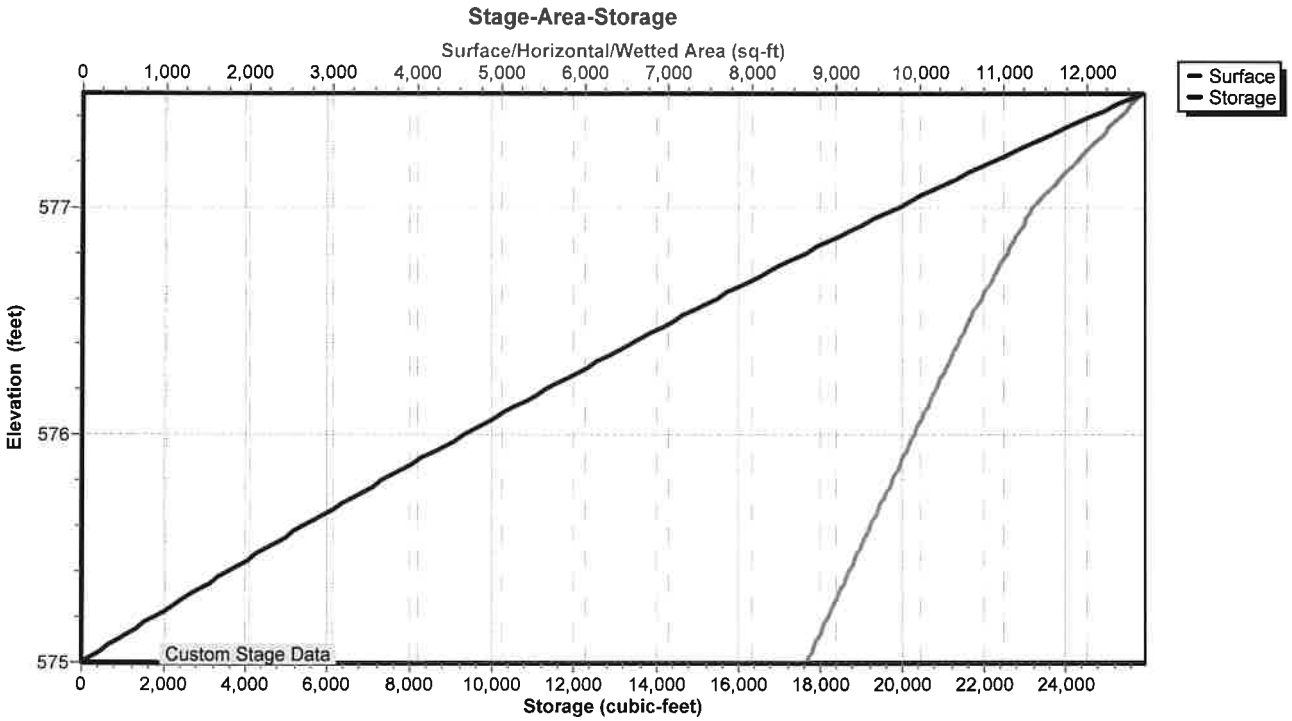


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.09	180	575.02	0.04	0.04	0.00
8.00	0.23	959	575.11	0.05	0.05	0.00
10.00	0.57	3,333	575.38	0.05	0.05	0.00
12.00	**25.18**	**10,302**	**576.10**	**21.15**	**2.88**	**18.27**
14.00	**1.08**	**5,594**	**575.62**	**1.18**	**1.18**	**0.00**
16.00	0.64	5,233	575.58	0.68	0.68	0.00
18.00	0.49	5,081	575.56	0.51	0.51	0.00
20.00	0.36	4,961	575.55	0.38	0.38	0.00
22.00	0.32	4,907	575.55	0.33	0.33	0.00
24.00	0.30	4,876	575.54	0.30	0.30	0.00
26.00	0.00	4,297	575.48	0.06	0.06	0.00
28.00	0.00	3,900	575.44	0.05	0.05	0.00
30.00	0.00	3,508	575.39	0.05	0.05	0.00
32.00	0.00	3,118	575.35	0.05	0.05	0.00
34.00	0.00	2,732	575.31	0.05	0.05	0.00
36.00	0.00	2,350	575.27	0.05	0.05	0.00
38.00	0.00	1,970	575.22	0.05	0.05	0.00
40.00	0.00	1,594	575.18	0.05	0.05	0.00
42.00	0.00	1,221	575.14	0.05	0.05	0.00
44.00	0.00	852	575.10	0.05	0.05	0.00
46.00	0.00	486	575.06	0.05	0.05	0.00
48.00	0.00	140	575.02	0.03	0.03	0.00
50.00	0.00	26	575.00	0.01	0.01	0.00
52.00	0.00	5	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 5.27" for 50-Year event
Inflow = 42.93 cfs @ 12.07 hrs, Volume= 1.933 af
Outflow = 1.97 cfs @ 12.73 hrs, Volume= 1.635 af, Atten= 95%, Lag= 39.8 min
Primary = 0.72 cfs @ 12.73 hrs, Volume= 1.504 af
Secondary = 1.25 cfs @ 12.73 hrs, Volume= 0.131 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.00' @ 12.73 hrs Surf.Area= 66,838 sf Storage= 62,935 cf

Plug-Flow detention time= 900.4 min calculated for 1.635 af (85% of inflow)
Center-of-Mass det. time= 844.0 min (1,616.3 - 772.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

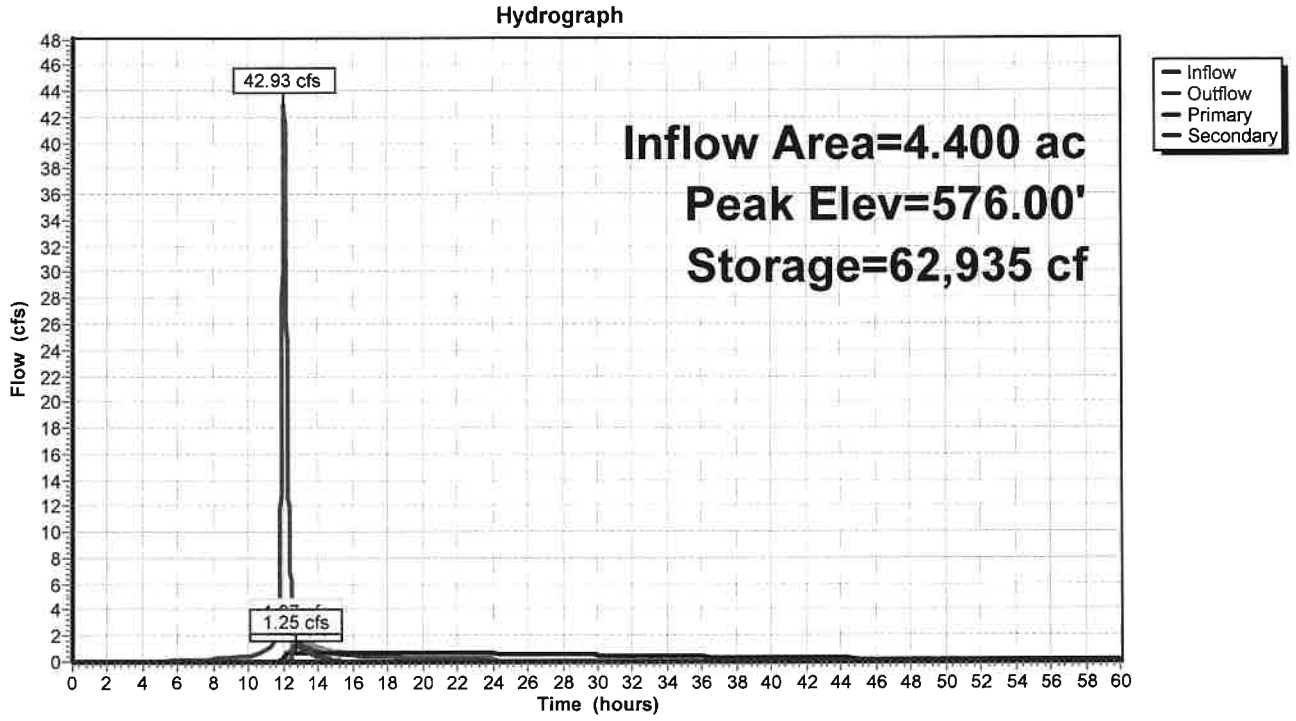
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.72 cfs @ 12.73 hrs HW=576.00' (Free Discharge)
└**1=12" outlet pipe** (Passes 0.72 cfs of 2.71 cfs potential flow)
  ├**2=low flow outlet pipe** (Inlet Controls 0.72 cfs @ 3.68 fps)
  └**3=Grate** (Controls 0.00 cfs)

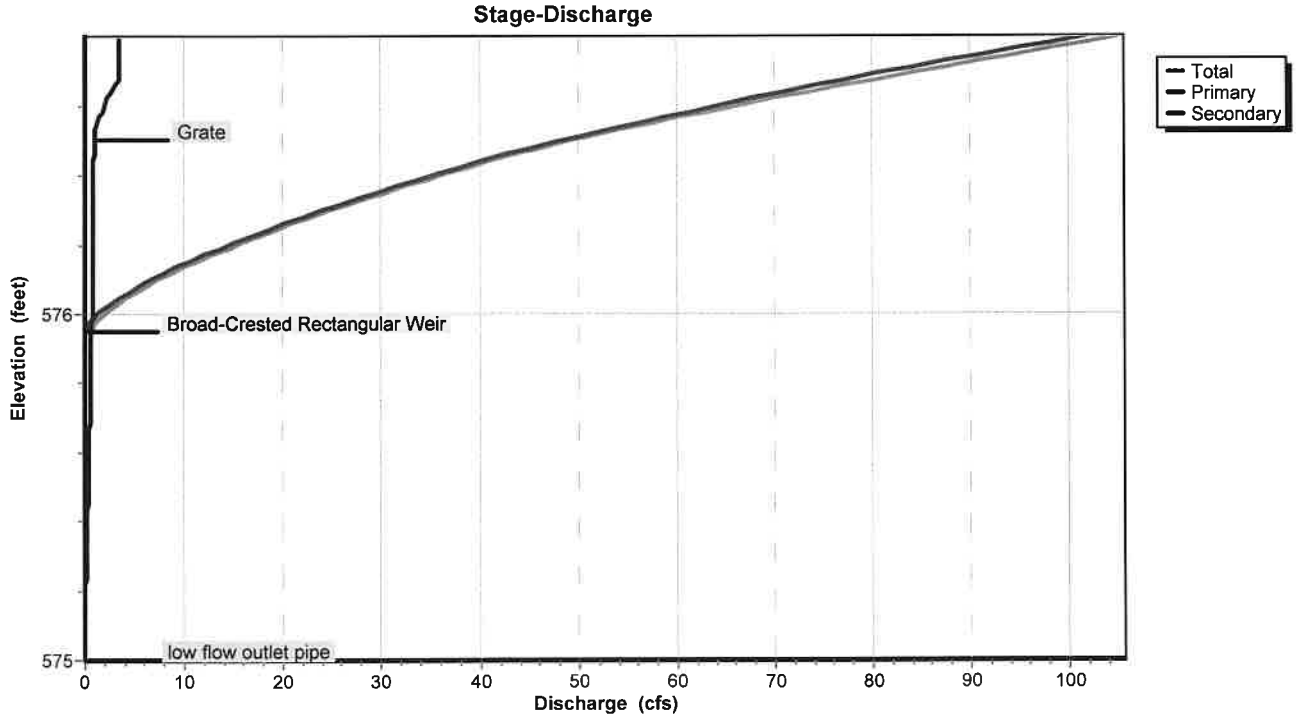
Secondary OutFlow Max=1.25 cfs @ 12.73 hrs HW=576.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 1.25 cfs @ 0.64 fps)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

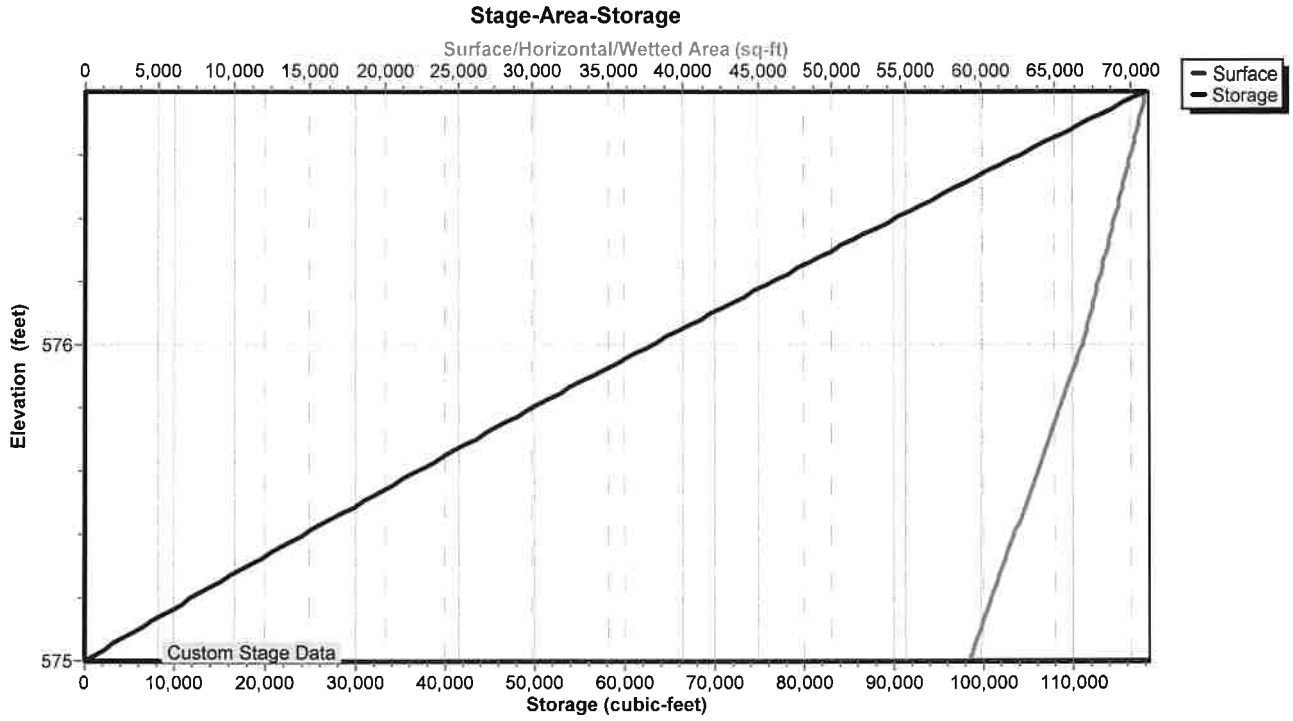


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	1	575.00	0.00	0.00	0.00
6.00	0.08	300	575.01	0.00	0.00	0.00
8.00	0.19	1,265	575.02	0.00	0.00	0.00
10.00	0.44	3,420	575.06	0.01	0.01	0.00
12.00	**35.63**	**24,163**	**575.40**	**0.26**	**0.26**	**0.00**
14.00	**0.79**	**61,204**	**575.97**	**1.11**	**0.71**	**0.40**
16.00	0.47	59,536	575.95	0.70	0.70	0.00
18.00	0.36	57,495	575.92	0.68	0.68	0.00
20.00	0.26	54,889	575.88	0.66	0.66	0.00
22.00	0.23	51,975	575.83	0.64	0.64	0.00
24.00	0.21	49,094	575.79	0.61	0.61	0.00
26.00	0.00	45,010	575.73	0.56	0.56	0.00
28.00	0.00	41,189	575.67	0.50	0.50	0.00
30.00	0.00	37,665	575.61	0.47	0.47	0.00
32.00	0.00	34,410	575.56	0.43	0.43	0.00
34.00	0.00	31,481	575.51	0.38	0.38	0.00
36.00	0.00	28,873	575.47	0.34	0.34	0.00
38.00	0.00	26,562	575.44	0.30	0.30	0.00
40.00	0.00	24,517	575.40	0.27	0.27	0.00
42.00	0.00	22,705	575.37	0.24	0.24	0.00
44.00	0.00	21,097	575.35	0.21	0.21	0.00
46.00	0.00	19,666	575.33	0.19	0.19	0.00
48.00	0.00	18,389	575.30	0.17	0.17	0.00
50.00	0.00	17,245	575.29	0.15	0.15	0.00
52.00	0.00	16,216	575.27	0.14	0.14	0.00
54.00	0.00	15,288	575.25	0.12	0.12	0.00
56.00	0.00	14,449	575.24	0.11	0.11	0.00
58.00	0.00	13,686	575.23	0.10	0.10	0.00
60.00	0.00	12,992	575.22	0.09	0.09	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

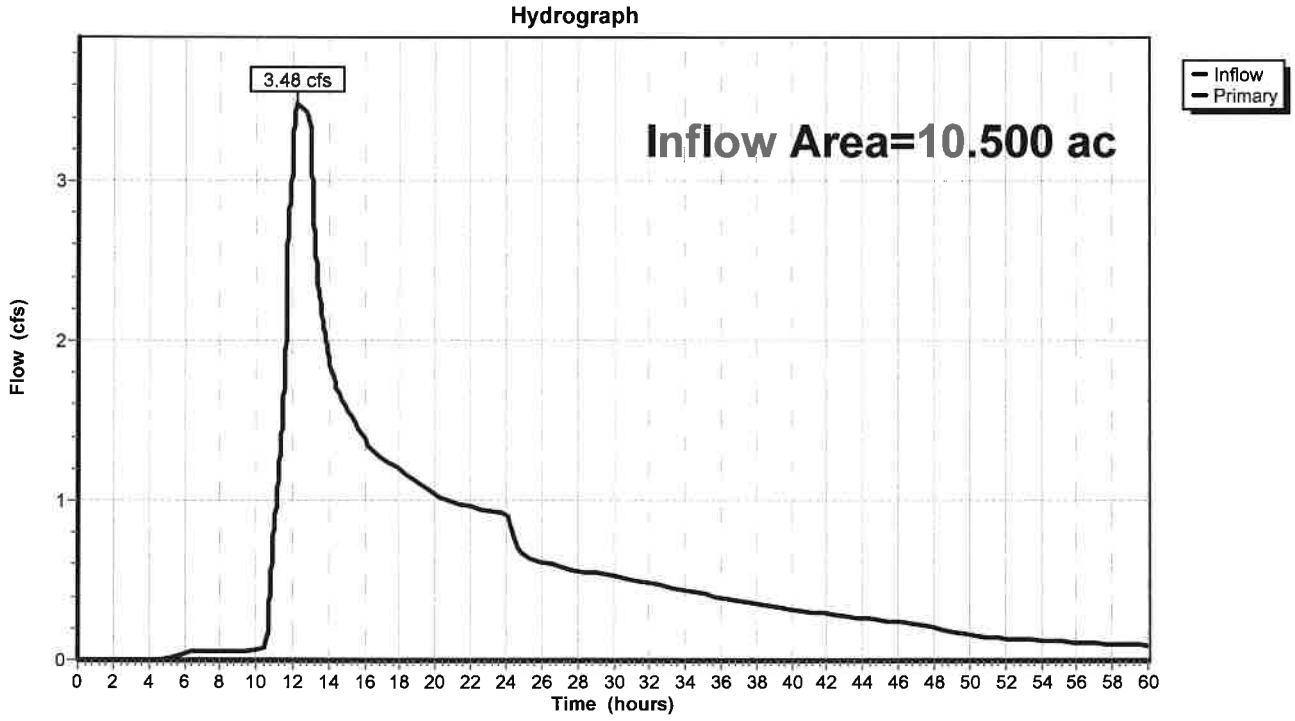
Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 2.97" for 50-Year event
Inflow = 3.48 cfs @ 12.21 hrs, Volume= 2.596 af
Primary = 3.48 cfs @ 12.21 hrs, Volume= 2.596 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.14	0.00	0.14
1.00	0.00	0.00	0.00	53.00	0.13	0.00	0.13
2.00	0.00	0.00	0.00	54.00	0.12	0.00	0.12
3.00	0.00	0.00	0.00	55.00	0.12	0.00	0.12
4.00	0.00	0.00	0.00	56.00	0.11	0.00	0.11
5.00	0.01	0.00	0.01	57.00	0.11	0.00	0.11
6.00	0.04	0.00	0.04	58.00	0.10	0.00	0.10
7.00	0.05	0.00	0.05	59.00	0.10	0.00	0.10
8.00	0.05	0.00	0.05	60.00	0.09	0.00	0.09
9.00	0.06	0.00	0.06				
10.00	0.06	0.00	0.06				
11.00	0.88	0.00	0.88				
12.00	**3.14**	0.00	**3.14**				
13.00	**3.25**	0.00	**3.25**				
14.00	1.89	0.00	1.89				
15.00	1.57	0.00	1.57				
16.00	1.38	0.00	1.38				
17.00	1.26	0.00	1.26				
18.00	1.19	0.00	1.19				
19.00	1.11	0.00	1.11				
20.00	1.04	0.00	1.04				
21.00	0.99	0.00	0.99				
22.00	0.96	0.00	0.96				
23.00	0.94	0.00	0.94				
24.00	0.91	0.00	0.91				
25.00	0.65	0.00	0.65				
26.00	0.62	0.00	0.62				
27.00	0.59	0.00	0.59				
28.00	0.56	0.00	0.56				
29.00	0.55	0.00	0.55				
30.00	0.53	0.00	0.53				
31.00	0.51	0.00	0.51				
32.00	0.48	0.00	0.48				
33.00	0.46	0.00	0.46				
34.00	0.44	0.00	0.44				
35.00	0.42	0.00	0.42				
36.00	0.39	0.00	0.39				
37.00	0.37	0.00	0.37				
38.00	0.35	0.00	0.35				
39.00	0.34	0.00	0.34				
40.00	0.32	0.00	0.32				
41.00	0.30	0.00	0.30				
42.00	0.29	0.00	0.29				
43.00	0.27	0.00	0.27				
44.00	0.26	0.00	0.26				
45.00	0.25	0.00	0.25				
46.00	0.24	0.00	0.24				
47.00	0.23	0.00	0.23				
48.00	0.20	0.00	0.20				
49.00	0.17	0.00	0.17				
50.00	0.16	0.00	0.16				
51.00	0.15	0.00	0.15				

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=4.15"
Flow Length=652' Tc=13.3 min CN=90 Runoff=33.05 cfs 2.108 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=4.25"
Flow Length=683' Tc=14.4 min CN=91 Runoff=23.44 cfs 1.560 af

Pond 1P: Bioretention Area 3 Peak Elev=576.23' Storage=11,585 cf Inflow=33.05 cfs 2.108 af
Primary=2.94 cfs 1.275 af Secondary=28.98 cfs 0.833 af Outflow=31.92 cfs 2.108 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=576.11' Storage=70,722 cf Inflow=52.24 cfs 2.392 af
Primary=0.78 cfs 1.554 af Secondary=7.80 cfs 0.534 af Outflow=8.57 cfs 2.088 af

Link 5L: Outflow (@ CB 54) Inflow=3.60 cfs 2.829 af
Primary=3.60 cfs 2.829 af

Total Runoff Area = 10.500 ac Runoff Volume = 3.668 af Average Runoff Depth = 4.19"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

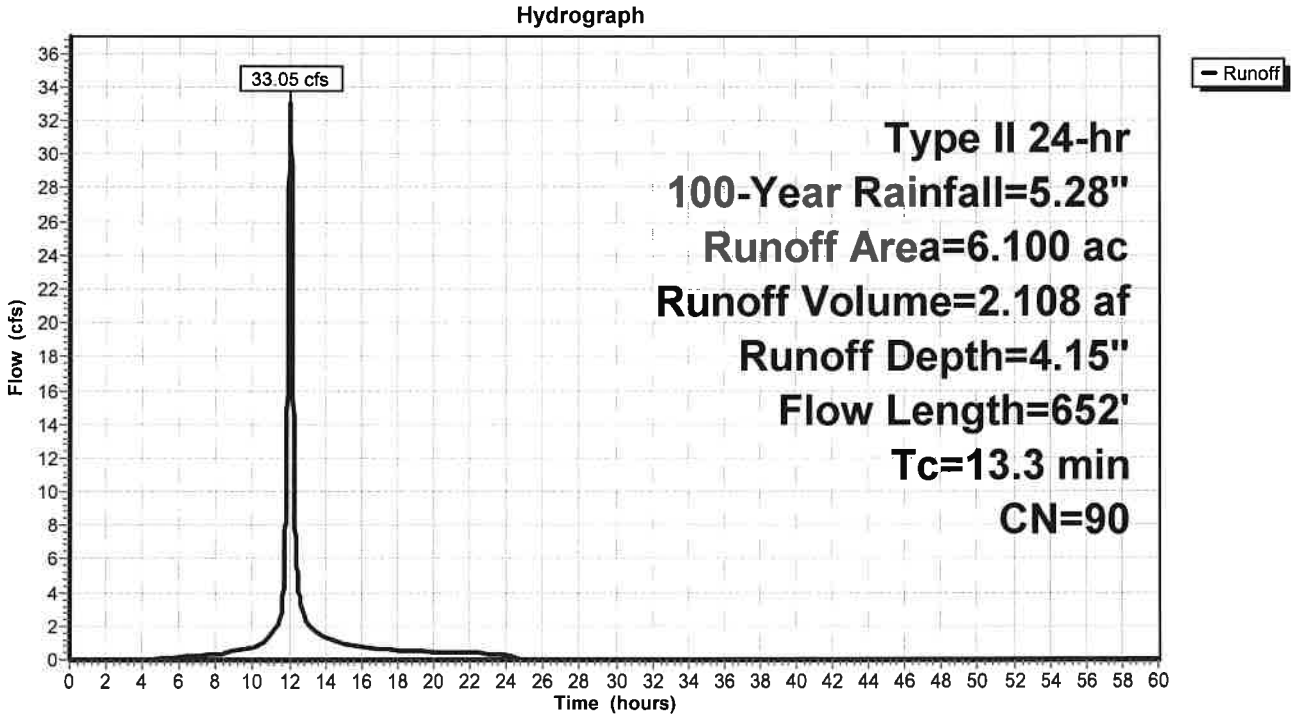
Runoff = 33.05 cfs @ 12.05 hrs, Volume= 2.108 af, Depth= 4.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.28	4.15	0.00
1.00	0.06	0.00	0.00	53.00	5.28	4.15	0.00
2.00	0.12	0.00	0.00	54.00	5.28	4.15	0.00
3.00	0.18	0.00	0.00	55.00	5.28	4.15	0.00
4.00	0.25	0.00	0.01	56.00	5.28	4.15	0.00
5.00	0.33	0.01	0.08	57.00	5.28	4.15	0.00
6.00	0.42	0.03	0.15	58.00	5.28	4.15	0.00
7.00	0.52	0.06	0.23	59.00	5.28	4.15	0.00
8.00	0.63	0.11	0.32	60.00	5.28	4.15	0.00
9.00	0.78	0.18	0.52				
10.00	0.96	0.29	0.74				
11.00	1.24	0.49	1.47				
12.00	3.50	2.45	**30.36**				
13.00	4.08	2.99	**2.21**				
14.00	4.33	3.23	1.27				
15.00	4.51	3.40	0.98				
16.00	4.65	3.54	0.76				
17.00	4.76	3.65	0.66				
18.00	4.86	3.74	0.58				
19.00	4.95	3.83	0.50				
20.00	5.03	3.90	0.42				
21.00	5.09	3.97	0.40				
22.00	5.16	4.03	0.38				
23.00	5.22	4.09	0.36				
24.00	**5.28**	**4.15**	0.35				
25.00	5.28	4.15	0.00				
26.00	5.28	4.15	0.00				
27.00	5.28	4.15	0.00				
28.00	5.28	4.15	0.00				
29.00	5.28	4.15	0.00				
30.00	5.28	4.15	0.00				
31.00	5.28	4.15	0.00				
32.00	5.28	4.15	0.00				
33.00	5.28	4.15	0.00				
34.00	5.28	4.15	0.00				
35.00	5.28	4.15	0.00				
36.00	5.28	4.15	0.00				
37.00	5.28	4.15	0.00				
38.00	5.28	4.15	0.00				
39.00	5.28	4.15	0.00				
40.00	5.28	4.15	0.00				
41.00	5.28	4.15	0.00				
42.00	5.28	4.15	0.00				
43.00	5.28	4.15	0.00				
44.00	5.28	4.15	0.00				
45.00	5.28	4.15	0.00				
46.00	5.28	4.15	0.00				
47.00	5.28	4.15	0.00				
48.00	5.28	4.15	0.00				
49.00	5.28	4.15	0.00				
50.00	5.28	4.15	0.00				
51.00	5.28	4.15	0.00				

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

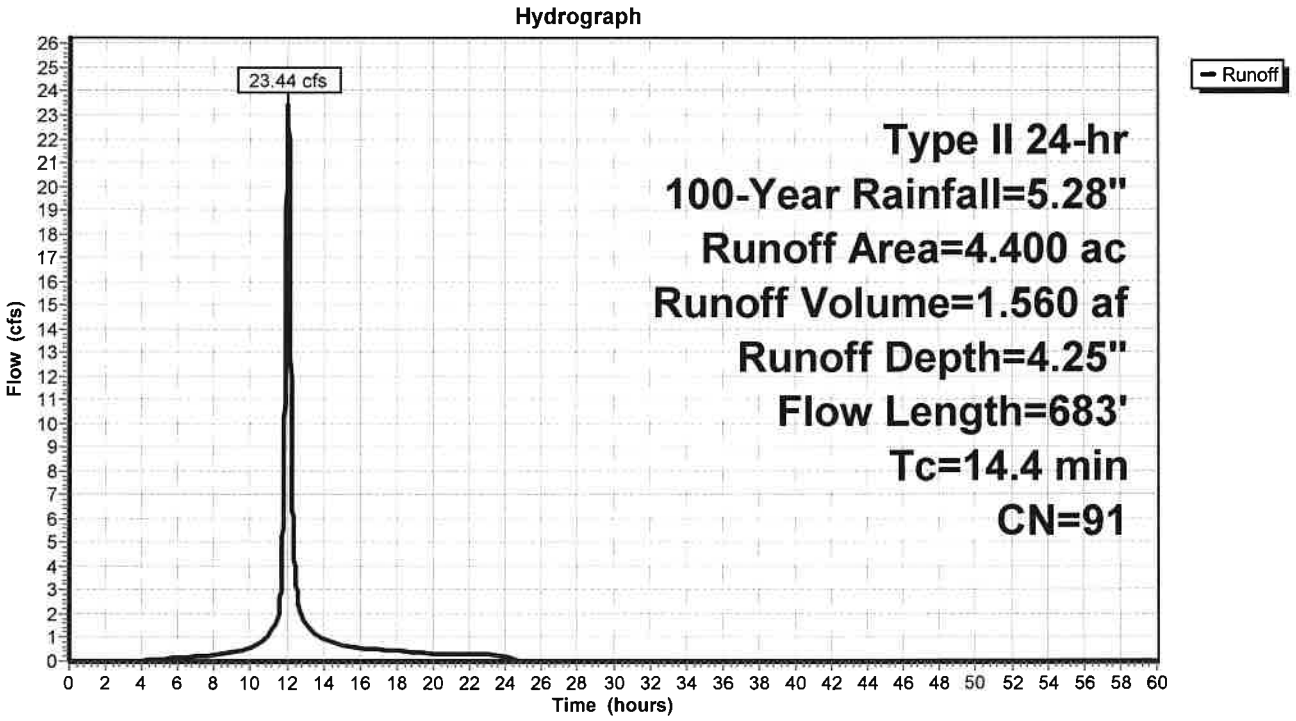
Runoff = 23.44 cfs @ 12.06 hrs, Volume= 1.560 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.18	0.00	0.00
4.00	0.25	0.00	0.02
5.00	0.33	0.02	0.07
6.00	0.42	0.04	0.13
7.00	0.52	0.08	0.19
8.00	0.63	0.13	0.25
9.00	0.78	0.21	0.41
10.00	0.96	0.33	0.57
11.00	1.24	0.54	1.10
12.00	3.50	2.54	**20.85**
13.00	4.08	3.09	**1.64**
14.00	4.33	3.33	0.94
15.00	4.51	3.50	0.71
16.00	4.65	3.64	0.56
17.00	4.76	3.75	0.48
18.00	4.86	3.85	0.42
19.00	4.95	3.93	0.36
20.00	5.03	4.01	0.31
21.00	5.09	4.07	0.29
22.00	5.16	4.14	0.28
23.00	5.22	4.20	0.26
24.00	**5.28**	**4.25**	0.25
25.00	5.28	4.25	0.00
26.00	5.28	4.25	0.00
27.00	5.28	4.25	0.00
28.00	5.28	4.25	0.00
29.00	5.28	4.25	0.00
30.00	5.28	4.25	0.00
31.00	5.28	4.25	0.00
32.00	5.28	4.25	0.00
33.00	5.28	4.25	0.00
34.00	5.28	4.25	0.00
35.00	5.28	4.25	0.00
36.00	5.28	4.25	0.00
37.00	5.28	4.25	0.00
38.00	5.28	4.25	0.00
39.00	5.28	4.25	0.00
40.00	5.28	4.25	0.00
41.00	5.28	4.25	0.00
42.00	5.28	4.25	0.00
43.00	5.28	4.25	0.00
44.00	5.28	4.25	0.00
45.00	5.28	4.25	0.00
46.00	5.28	4.25	0.00
47.00	5.28	4.25	0.00
48.00	5.28	4.25	0.00
49.00	5.28	4.25	0.00
50.00	5.28	4.25	0.00
51.00	5.28	4.25	0.00
52.00	5.28	4.25	0.00
53.00	5.28	4.25	0.00
54.00	5.28	4.25	0.00
55.00	5.28	4.25	0.00
56.00	5.28	4.25	0.00
57.00	5.28	4.25	0.00
58.00	5.28	4.25	0.00
59.00	5.28	4.25	0.00
60.00	5.28	4.25	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 4.15" for 100-Year event
Inflow = 33.05 cfs @ 12.05 hrs, Volume= 2.108 af
Outflow = 31.92 cfs @ 12.08 hrs, Volume= 2.108 af, Atten= 3%, Lag= 1.8 min
Primary = 2.94 cfs @ 12.08 hrs, Volume= 1.275 af
Secondary = 28.98 cfs @ 12.08 hrs, Volume= 0.833 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.23' @ 12.08 hrs Surf.Area= 10,226 sf Storage= 11,585 cf

Plug-Flow detention time= 93.7 min calculated for 2.108 af (100% of inflow)
Center-of-Mass det. time= 93.9 min (886.3 - 792.4)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

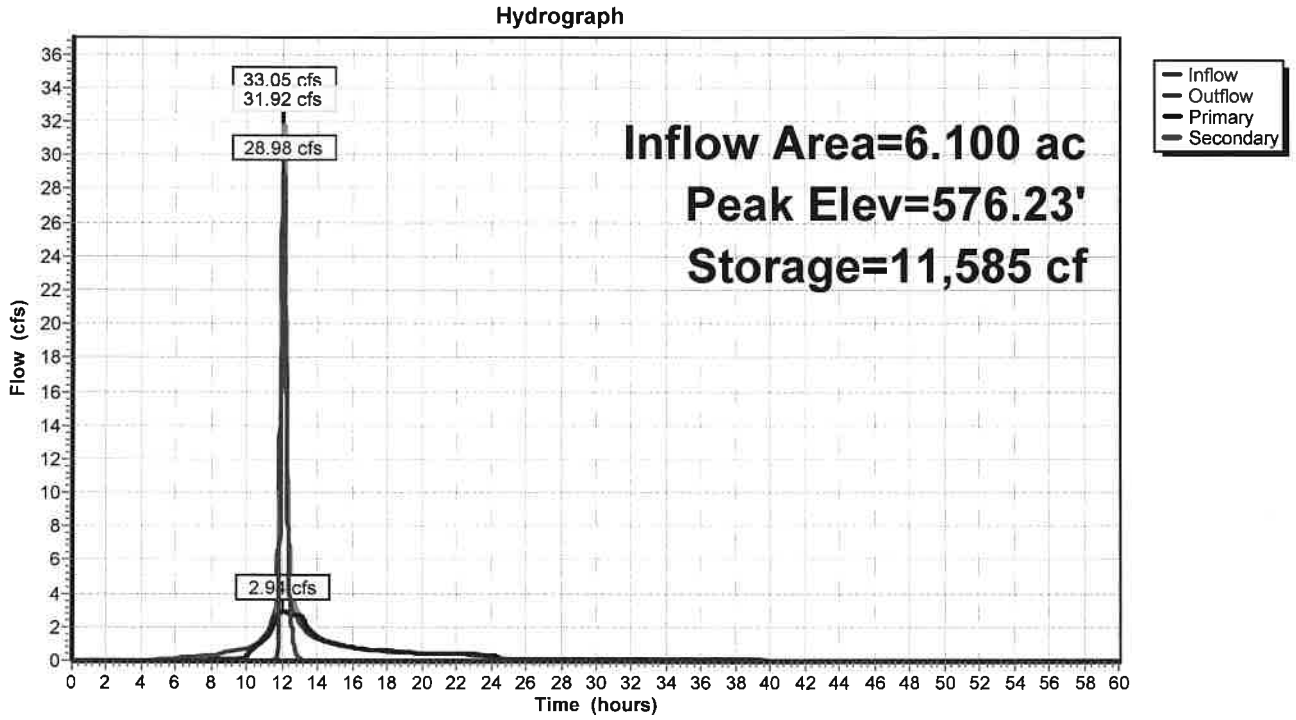
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.94 cfs @ 12.08 hrs HW=576.23' (Free Discharge)
└─**1=8" pipe** (Barrel Controls 2.94 cfs @ 8.43 fps)
  ├─**2=Grate** (Passes < 5.74 cfs potential flow)
  └─**3=Exfiltration** (Passes < 0.06 cfs potential flow)

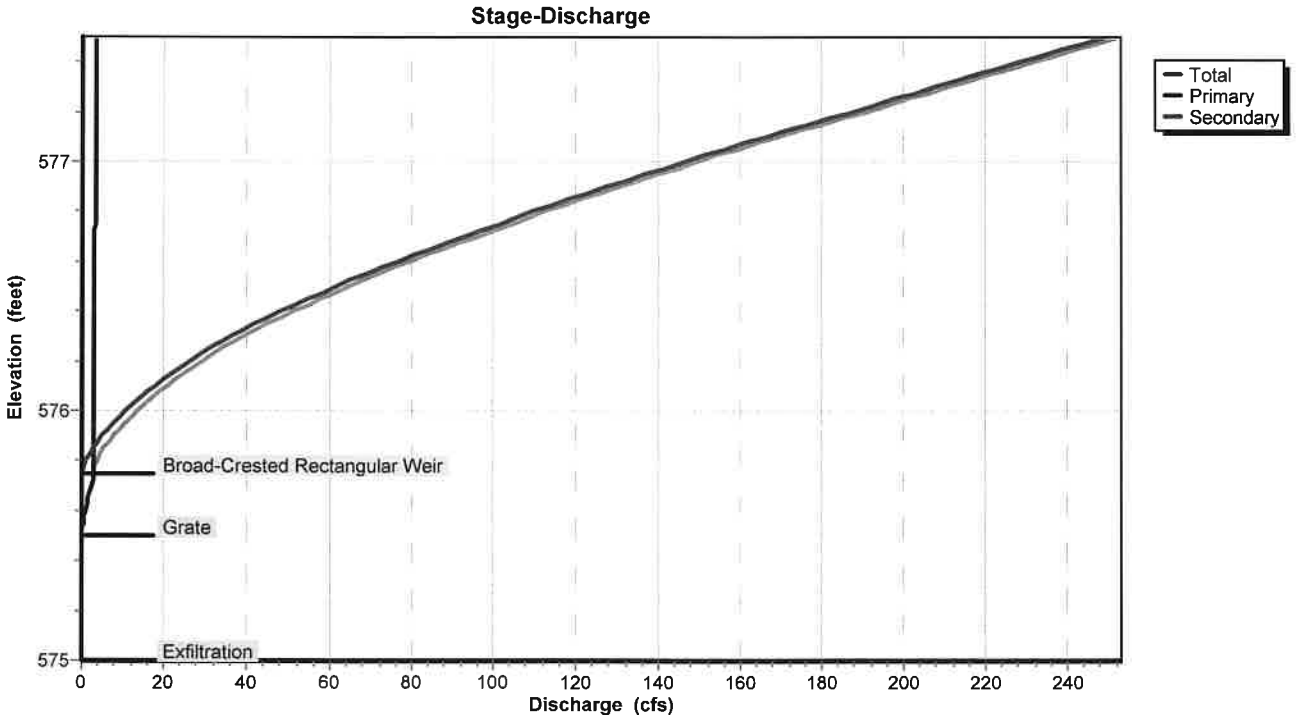
Secondary OutFlow Max=28.93 cfs @ 12.08 hrs HW=576.23' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 28.93 cfs @ 2.02 fps)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

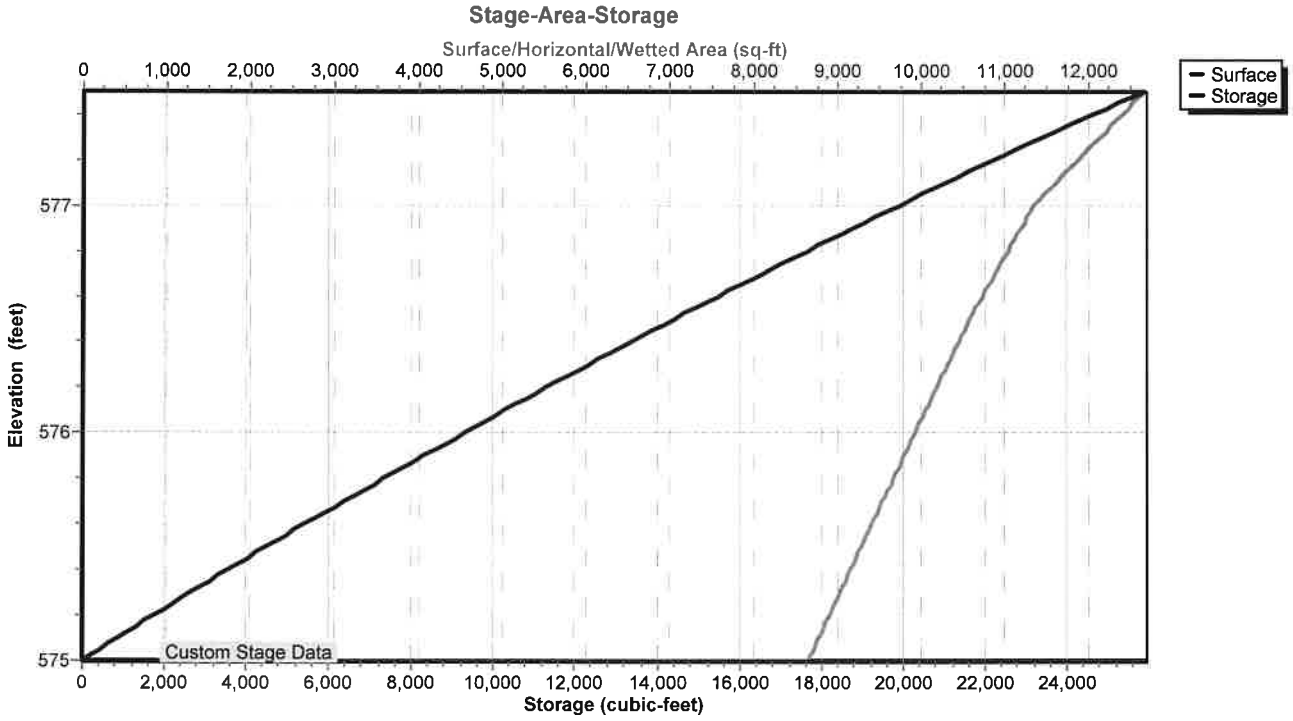


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.01	6	575.00	0.00	0.00	0.00
6.00	0.15	359	575.04	0.05	0.05	0.00
8.00	0.32	1,651	575.19	0.05	0.05	0.00
10.00	0.74	4,857	575.54	0.28	0.28	0.00
12.00	**30.36**	**10,896**	**576.16**	**25.95**	**2.91**	**23.04**
14.00	**1.27**	**5,731**	**575.63**	**1.39**	**1.39**	**0.00**
16.00	0.76	5,329	575.59	0.81	0.81	0.00
18.00	0.58	5,164	575.57	0.60	0.60	0.00
20.00	0.42	5,023	575.56	0.44	0.44	0.00
22.00	0.38	4,969	575.55	0.38	0.38	0.00
24.00	0.35	4,939	575.55	0.35	0.35	0.00
26.00	0.00	4,307	575.48	0.06	0.06	0.00
28.00	0.00	3,911	575.44	0.05	0.05	0.00
30.00	0.00	3,518	575.40	0.05	0.05	0.00
32.00	0.00	3,129	575.35	0.05	0.05	0.00
34.00	0.00	2,743	575.31	0.05	0.05	0.00
36.00	0.00	2,360	575.27	0.05	0.05	0.00
38.00	0.00	1,981	575.23	0.05	0.05	0.00
40.00	0.00	1,604	575.18	0.05	0.05	0.00
42.00	0.00	1,232	575.14	0.05	0.05	0.00
44.00	0.00	862	575.10	0.05	0.05	0.00
46.00	0.00	496	575.06	0.05	0.05	0.00
48.00	0.00	147	575.02	0.03	0.03	0.00
50.00	0.00	28	575.00	0.01	0.01	0.00
52.00	0.00	5	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 6.52" for 100-Year event
Inflow = 52.24 cfs @ 12.07 hrs, Volume= 2.392 af
Outflow = 8.57 cfs @ 12.41 hrs, Volume= 2.088 af, Atten= 84%, Lag= 20.7 min
Primary = 0.78 cfs @ 12.41 hrs, Volume= 1.554 af
Secondary = 7.80 cfs @ 12.41 hrs, Volume= 0.534 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.11' @ 12.41 hrs Surf.Area= 67,462 sf Storage= 70,722 cf

Plug-Flow detention time= 739.0 min calculated for 2.088 af (87% of inflow)
Center-of-Mass det. time= 688.7 min (1,456.5 - 767.8)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

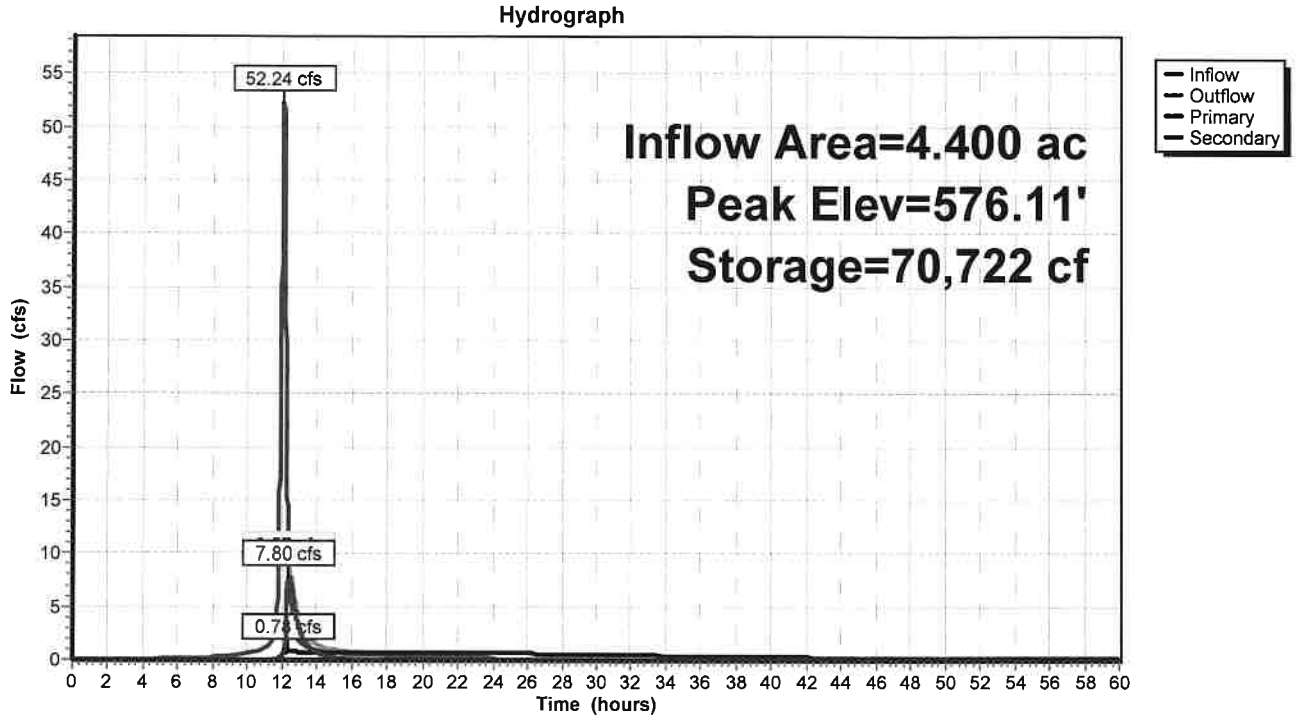
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.78 cfs @ 12.41 hrs HW=576.11' (Free Discharge)
└─**1=12" outlet pipe** (Passes 0.78 cfs of 2.84 cfs potential flow)
  ├─**2=low flow outlet pipe** (Inlet Controls 0.78 cfs @ 3.95 fps)
  └─**3=Grate** (Controls 0.00 cfs)

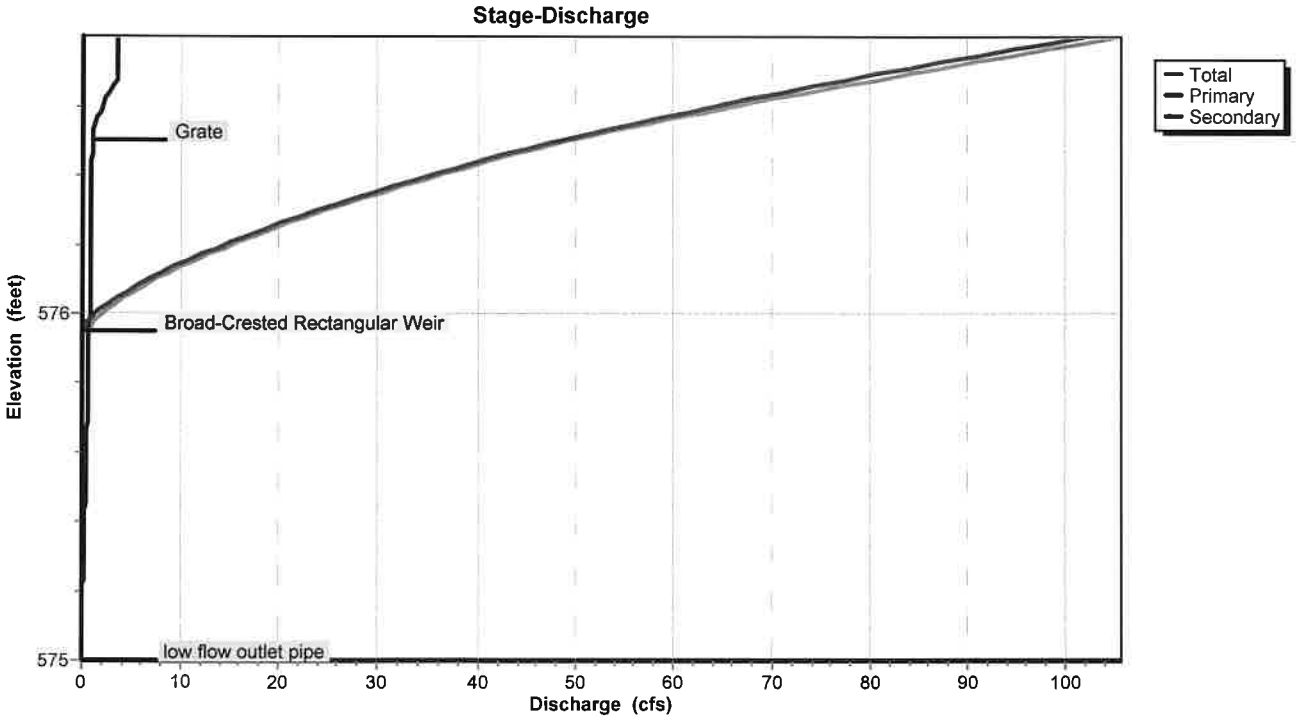
Secondary OutFlow Max=7.79 cfs @ 12.41 hrs HW=576.11' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 7.79 cfs @ 1.18 fps)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

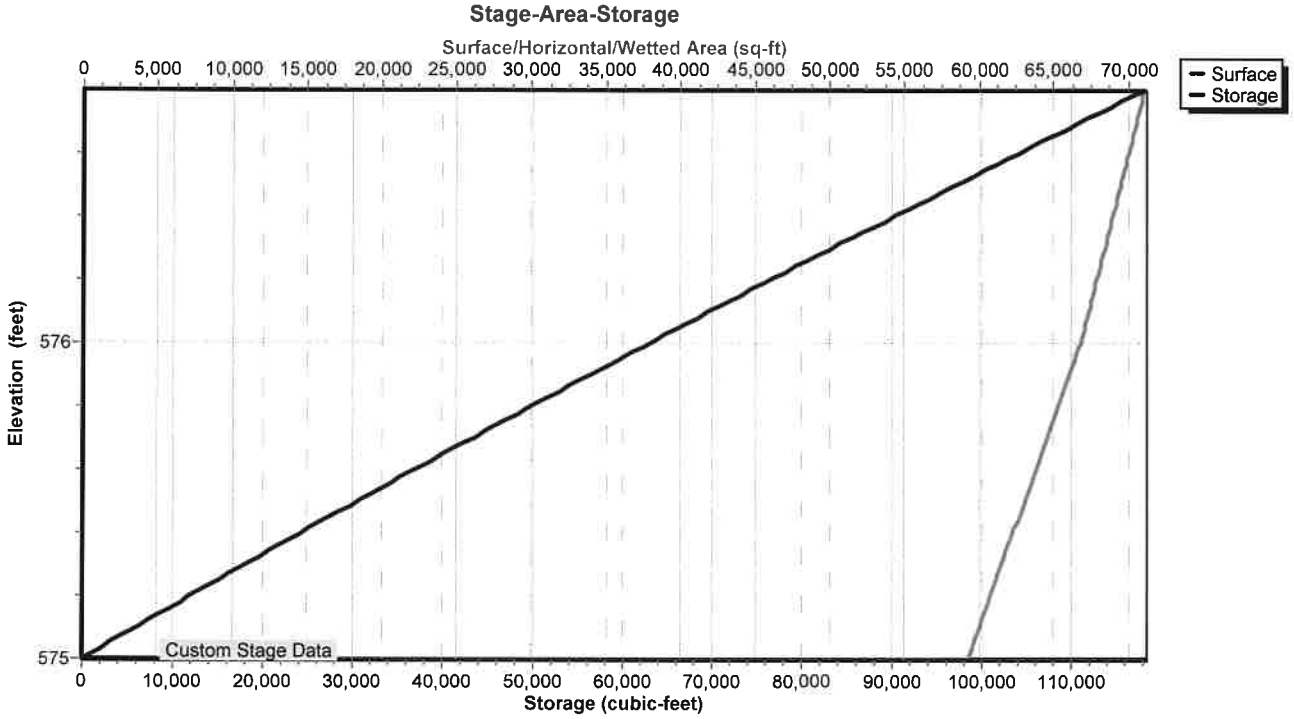


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.02	25	575.00	0.00	0.00	0.00
6.00	0.13	556	575.01	0.00	0.00	0.00
8.00	0.25	1,914	575.03	0.00	0.00	0.00
10.00	0.57	4,720	575.08	0.01	0.01	0.00
12.00	**43.89**	**31,253**	**575.51**	**0.38**	**0.38**	**0.00**
14.00	**0.94**	**61,894**	**575.98**	**1.43**	**0.71**	**0.72**
16.00	0.56	59,972	575.95	0.73	0.70	0.03
18.00	0.42	58,398	575.93	0.69	0.69	0.00
20.00	0.31	56,130	575.90	0.67	0.67	0.00
22.00	0.28	53,450	575.86	0.65	0.65	0.00
24.00	0.25	50,762	575.81	0.63	0.63	0.00
26.00	0.00	46,581	575.75	0.59	0.59	0.00
28.00	0.00	42,588	575.69	0.52	0.52	0.00
30.00	0.00	38,979	575.63	0.49	0.49	0.00
32.00	0.00	35,609	575.58	0.45	0.45	0.00
34.00	0.00	32,555	575.53	0.40	0.40	0.00
36.00	0.00	29,827	575.49	0.36	0.36	0.00
38.00	0.00	27,407	575.45	0.32	0.32	0.00
40.00	0.00	25,264	575.42	0.28	0.28	0.00
42.00	0.00	23,368	575.39	0.25	0.25	0.00
44.00	0.00	21,686	575.36	0.22	0.22	0.00
46.00	0.00	20,191	575.33	0.20	0.20	0.00
48.00	0.00	18,858	575.31	0.17	0.17	0.00
50.00	0.00	17,665	575.29	0.16	0.16	0.00
52.00	0.00	16,594	575.28	0.14	0.14	0.00
54.00	0.00	15,630	575.26	0.13	0.13	0.00
56.00	0.00	14,758	575.25	0.12	0.12	0.00
58.00	0.00	13,967	575.23	0.10	0.10	0.00
60.00	0.00	13,248	575.22	0.10	0.10	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

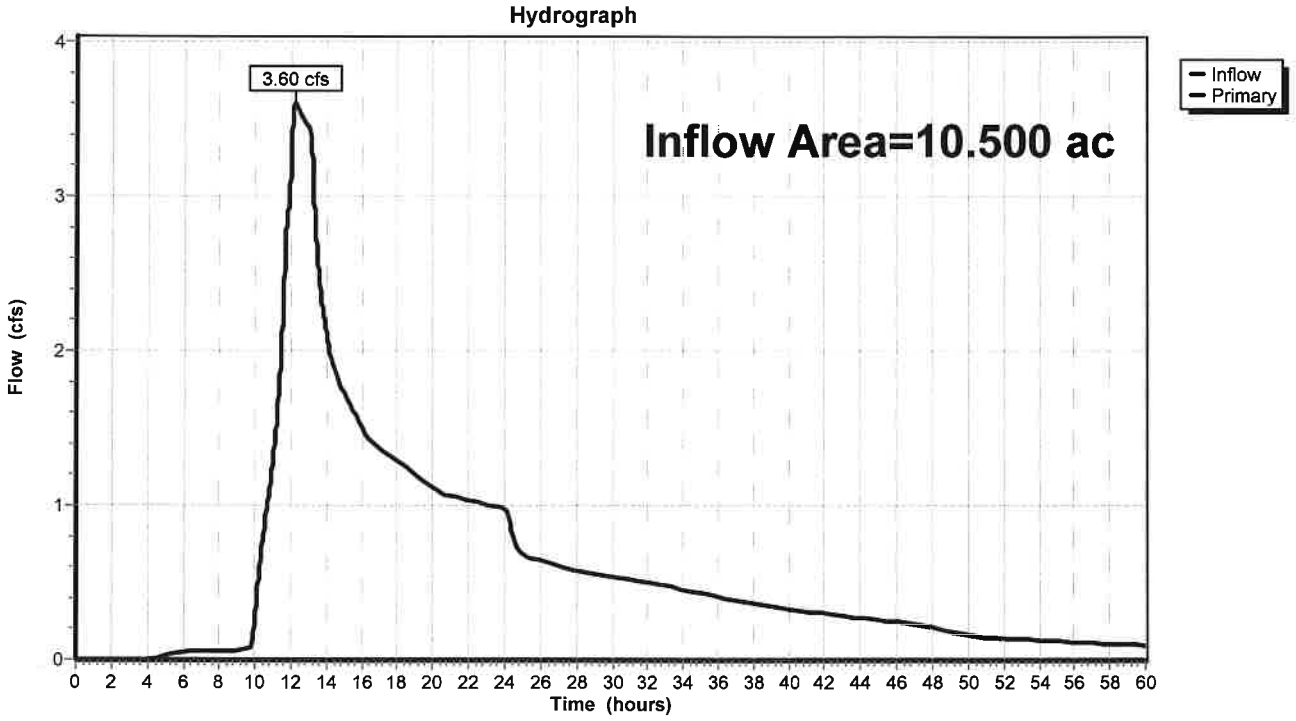
Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 3.23" for 100-Year event
Inflow = 3.60 cfs @ 12.19 hrs, Volume= 2.829 af
Primary = 3.60 cfs @ 12.19 hrs, Volume= 2.829 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

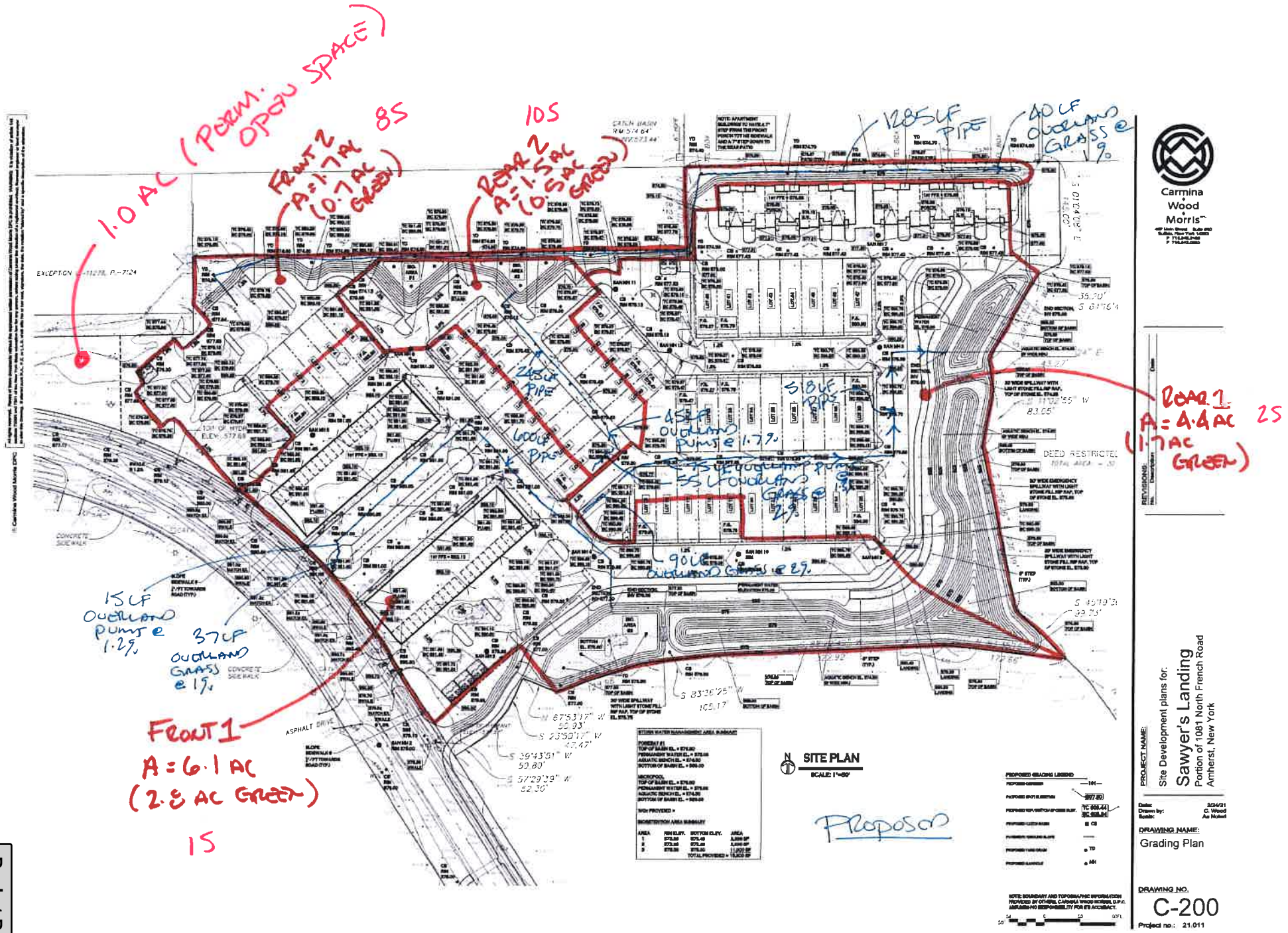
Hydrograph for Link 5L: Outflow (@ CB 54)

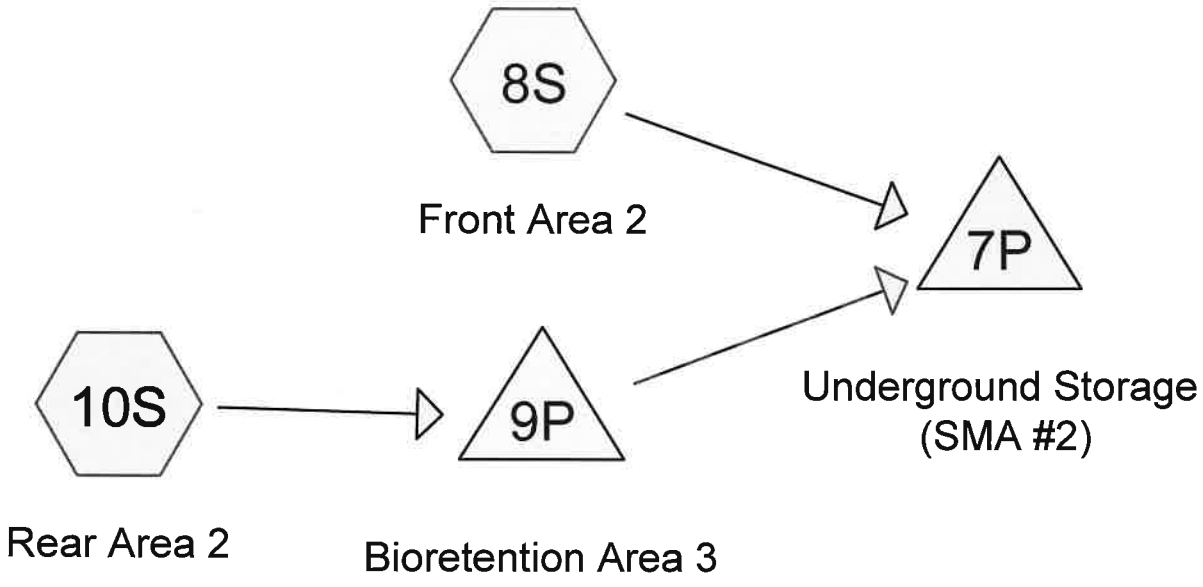
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.14	0.00	0.14
1.00	0.00	0.00	0.00	53.00	0.13	0.00	0.13
2.00	0.00	0.00	0.00	54.00	0.13	0.00	0.13
3.00	0.00	0.00	0.00	55.00	0.12	0.00	0.12
4.00	0.00	0.00	0.00	56.00	0.12	0.00	0.12
5.00	0.03	0.00	0.03	57.00	0.11	0.00	0.11
6.00	0.05	0.00	0.05	58.00	0.10	0.00	0.10
7.00	0.05	0.00	0.05	59.00	0.10	0.00	0.10
8.00	0.05	0.00	0.05	60.00	0.10	0.00	0.10
9.00	0.06	0.00	0.06				
10.00	0.30	0.00	0.30				
11.00	1.31	0.00	1.31				
12.00	**3.29**	0.00	**3.29**				
13.00	**3.44**	0.00	**3.44**				
14.00	2.10	0.00	2.10				
15.00	1.72	0.00	1.72				
16.00	1.51	0.00	1.51				
17.00	1.37	0.00	1.37				
18.00	1.29	0.00	1.29				
19.00	1.20	0.00	1.20				
20.00	1.11	0.00	1.11				
21.00	1.06	0.00	1.06				
22.00	1.03	0.00	1.03				
23.00	1.01	0.00	1.01				
24.00	0.98	0.00	0.98				
25.00	0.68	0.00	0.68				
26.00	0.64	0.00	0.64				
27.00	0.61	0.00	0.61				
28.00	0.58	0.00	0.58				
29.00	0.55	0.00	0.55				
30.00	0.54	0.00	0.54				
31.00	0.52	0.00	0.52				
32.00	0.50	0.00	0.50				
33.00	0.48	0.00	0.48				
34.00	0.45	0.00	0.45				
35.00	0.43	0.00	0.43				
36.00	0.41	0.00	0.41				
37.00	0.39	0.00	0.39				
38.00	0.37	0.00	0.37				
39.00	0.35	0.00	0.35				
40.00	0.33	0.00	0.33				
41.00	0.32	0.00	0.32				
42.00	0.30	0.00	0.30				
43.00	0.28	0.00	0.28				
44.00	0.27	0.00	0.27				
45.00	0.26	0.00	0.26				
46.00	0.25	0.00	0.25				
47.00	0.24	0.00	0.24				
48.00	0.21	0.00	0.21				
49.00	0.18	0.00	0.18				
50.00	0.16	0.00	0.16				
51.00	0.15	0.00	0.15				

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Proposed Runoff - West

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)


1.0 AC (PERM. OPEN SPACE)
FRONT 2
A=1.7AC
(0.7AC GREEN)
85
REAR 2
A=1.5AC
(0.5AC GREEN)
105
1285LF PIPE
40LF OVERLAND GRASS @ 1%
245LF PIPE
600LF PIPE
45LF OVERLAND PUMP @ 1.7%
518LF PIPE
35LF OVERLAND PUMP
35LF OVERLAND GRASS @ 1.5%
90LF OVERLAND GRASS @ 2%
REAR 1
A=4.4AC
(1.7AC GREEN)
25
15LF OVERLAND PUMP @ 1.2%
37LF OVERLAND GRASS @ 1%
FRONT 1
A=6.1AC
(2.8AC GREEN)
15
SITE PLAN
SCALE: 1"=80'
PROPOSED
Carmina Wood Morris
PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York
DRAWING NAME:
Grading Plan
DRAWING NO.
C-200
Project no.: 21.011



Subcat Reach Pond Link

Routing Diagram for 21.011 Proposed
Prepared by Hewlett-Packard Company, Printed 3/4/2021
HydroCAD® 10.00-18 s/n 05019 © 2016 HydroCAD Software Solutions LLC

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Events for Pond 7P: Underground Storage

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	2.40	0.33	570.29	4,537
2-Year	4.15	0.68	570.46	5,990
5-Year	7.03	1.05	570.79	8,639
10-Year	9.17	1.28	571.13	11,342
25-Year	11.11	1.61	571.73	15,804
50-Year	12.80	3.61	572.23	18,836
100-Year	**14.92**	**4.83**	**572.92**	**21,772**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.200	80	>75% Grass cover, Good, HSG D (8S, 10S)
1.200	98	Paved parking, HSG D (8S, 10S)
0.800	98	Roofs, HSG D (8S, 10S)
3.200	**91**	**TOTAL AREA**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
3.200	HSG D	8S, 10S
0.000	Other	
3.200		**TOTAL AREA**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchmer Numbers
0.000	0.000	0.000	1.200	0.000	1.200	>75% Grass cover, Good	8S, 10S
0.000	0.000	0.000	1.200	0.000	1.200	Paved parking	8S, 10S
0.000	0.000	0.000	0.800	0.000	0.800	Roofs	8S, 10S
0.000	**0.000**	**0.000**	**3.200**	**0.000**	**3.200**	**TOTAL AREA**	

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=1.04"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=2.36 cfs 0.148 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=1.11"
Flow Length=345' Tc=9.1 min CN=92 Runoff=2.63 cfs 0.139 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=570.29' Storage=4,537 cf Inflow=2.40 cfs 0.287 af
Outflow=0.33 cfs 0.243 af

Pond 9P: Bioretention Area 3 Peak Elev=574.54' Storage=2,922 cf Inflow=2.63 cfs 0.139 af
Outflow=0.43 cfs 0.139 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.287 af Average Runoff Depth = 1.08"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

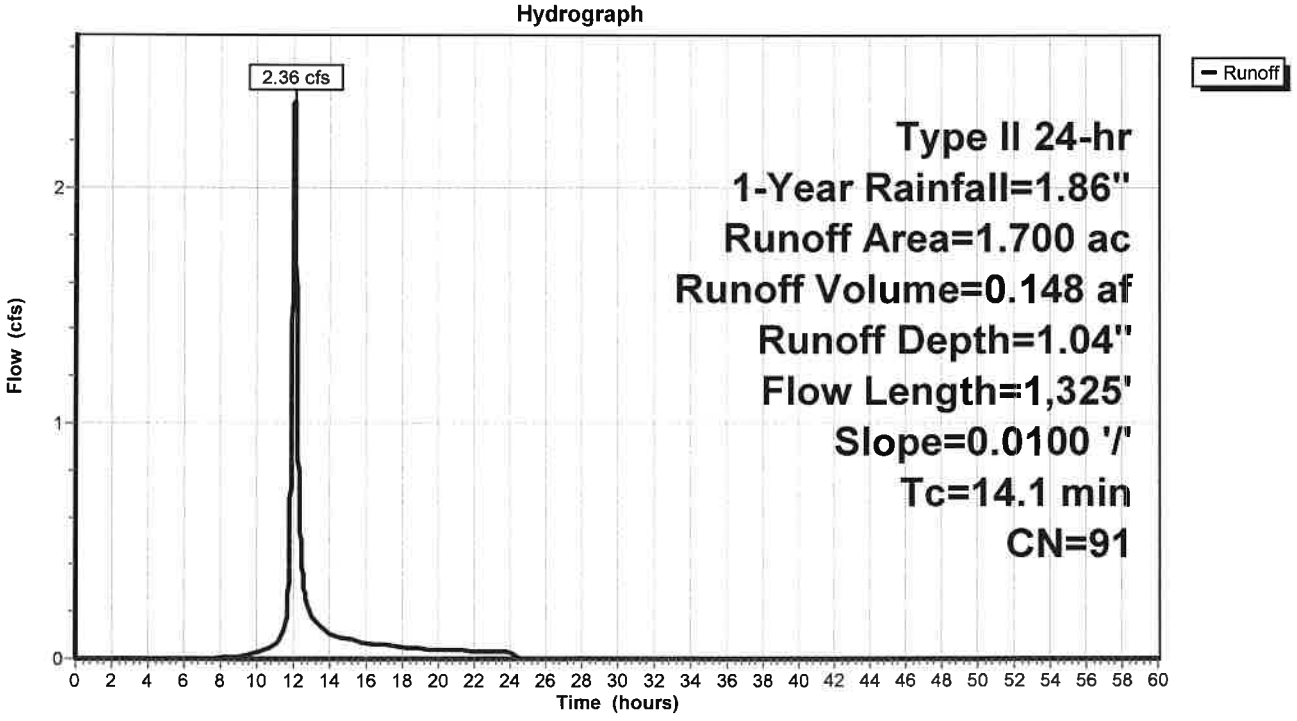
Runoff = 2.36 cfs @ 12.06 hrs, Volume= 0.148 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.00
9.00	0.27	0.01	0.01
10.00	0.34	0.02	0.02
11.00	0.44	0.05	0.07
12.00	1.23	0.53	**2.04**
13.00	1.44	0.69	**0.18**
14.00	1.53	0.76	0.11
15.00	1.59	0.81	0.08
16.00	1.64	0.85	0.07
17.00	1.68	0.89	0.06
18.00	1.71	0.92	0.05
19.00	1.74	0.94	0.04
20.00	1.77	0.97	0.04
21.00	1.79	0.99	0.03
22.00	1.82	1.01	0.03
23.00	1.84	1.02	0.03
24.00	**1.86**	**1.04**	0.03
25.00	1.86	1.04	0.00
26.00	1.86	1.04	0.00
27.00	1.86	1.04	0.00
28.00	1.86	1.04	0.00
29.00	1.86	1.04	0.00
30.00	1.86	1.04	0.00
31.00	1.86	1.04	0.00
32.00	1.86	1.04	0.00
33.00	1.86	1.04	0.00
34.00	1.86	1.04	0.00
35.00	1.86	1.04	0.00
36.00	1.86	1.04	0.00
37.00	1.86	1.04	0.00
38.00	1.86	1.04	0.00
39.00	1.86	1.04	0.00
40.00	1.86	1.04	0.00
41.00	1.86	1.04	0.00
42.00	1.86	1.04	0.00
43.00	1.86	1.04	0.00
44.00	1.86	1.04	0.00
45.00	1.86	1.04	0.00
46.00	1.86	1.04	0.00
47.00	1.86	1.04	0.00
48.00	1.86	1.04	0.00
49.00	1.86	1.04	0.00
50.00	1.86	1.04	0.00
51.00	1.86	1.04	0.00
52.00	1.86	1.04	0.00
53.00	1.86	1.04	0.00
54.00	1.86	1.04	0.00
55.00	1.86	1.04	0.00
56.00	1.86	1.04	0.00
57.00	1.86	1.04	0.00
58.00	1.86	1.04	0.00
59.00	1.86	1.04	0.00
60.00	1.86	1.04	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

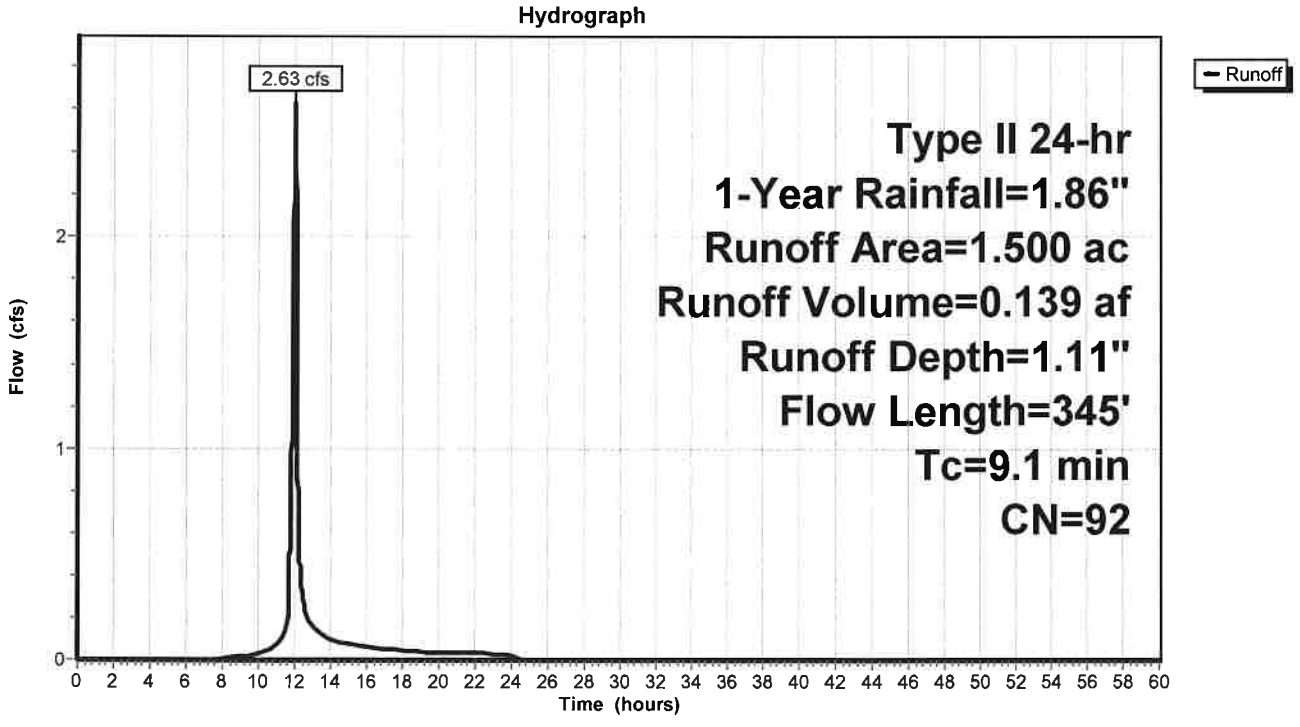
Runoff = 2.63 cfs @ 12.01 hrs, Volume= 0.139 af, Depth= 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.01
9.00	0.27	0.01	0.02
10.00	0.34	0.03	0.03
11.00	0.44	0.06	0.07
12.00	1.23	0.58	**2.63**
13.00	1.44	0.75	**0.16**
14.00	1.53	0.82	0.09
15.00	1.59	0.88	0.07
16.00	1.64	0.92	0.06
17.00	1.68	0.95	0.05
18.00	1.71	0.98	0.04
19.00	1.74	1.01	0.04
20.00	1.77	1.03	0.03
21.00	1.79	1.05	0.03
22.00	1.82	1.07	0.03
23.00	1.84	1.09	0.03
24.00	**1.86**	**1.11**	0.03
25.00	1.86	1.11	0.00
26.00	1.86	1.11	0.00
27.00	1.86	1.11	0.00
28.00	1.86	1.11	0.00
29.00	1.86	1.11	0.00
30.00	1.86	1.11	0.00
31.00	1.86	1.11	0.00
32.00	1.86	1.11	0.00
33.00	1.86	1.11	0.00
34.00	1.86	1.11	0.00
35.00	1.86	1.11	0.00
36.00	1.86	1.11	0.00
37.00	1.86	1.11	0.00
38.00	1.86	1.11	0.00
39.00	1.86	1.11	0.00
40.00	1.86	1.11	0.00
41.00	1.86	1.11	0.00
42.00	1.86	1.11	0.00
43.00	1.86	1.11	0.00
44.00	1.86	1.11	0.00
45.00	1.86	1.11	0.00
46.00	1.86	1.11	0.00
47.00	1.86	1.11	0.00
48.00	1.86	1.11	0.00
49.00	1.86	1.11	0.00
50.00	1.86	1.11	0.00
51.00	1.86	1.11	0.00
52.00	1.86	1.11	0.00
53.00	1.86	1.11	0.00
54.00	1.86	1.11	0.00
55.00	1.86	1.11	0.00
56.00	1.86	1.11	0.00
57.00	1.86	1.11	0.00
58.00	1.86	1.11	0.00
59.00	1.86	1.11	0.00
60.00	1.86	1.11	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 1.08" for 1-Year event
Inflow = 2.40 cfs @ 12.06 hrs, Volume= 0.287 af
Outflow = 0.33 cfs @ 13.18 hrs, Volume= 0.243 af, Atten= 86%, Lag= 67.2 min
Primary = 0.33 cfs @ 13.18 hrs, Volume= 0.243 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 570.29' @ 13.18 hrs Surf.Area= 10,145 sf Storage= 4,537 cf

Plug-Flow detention time= 493.3 min calculated for 0.243 af (85% of inflow)
Center-of-Mass det. time= 283.3 min (1,405.6 - 1,122.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

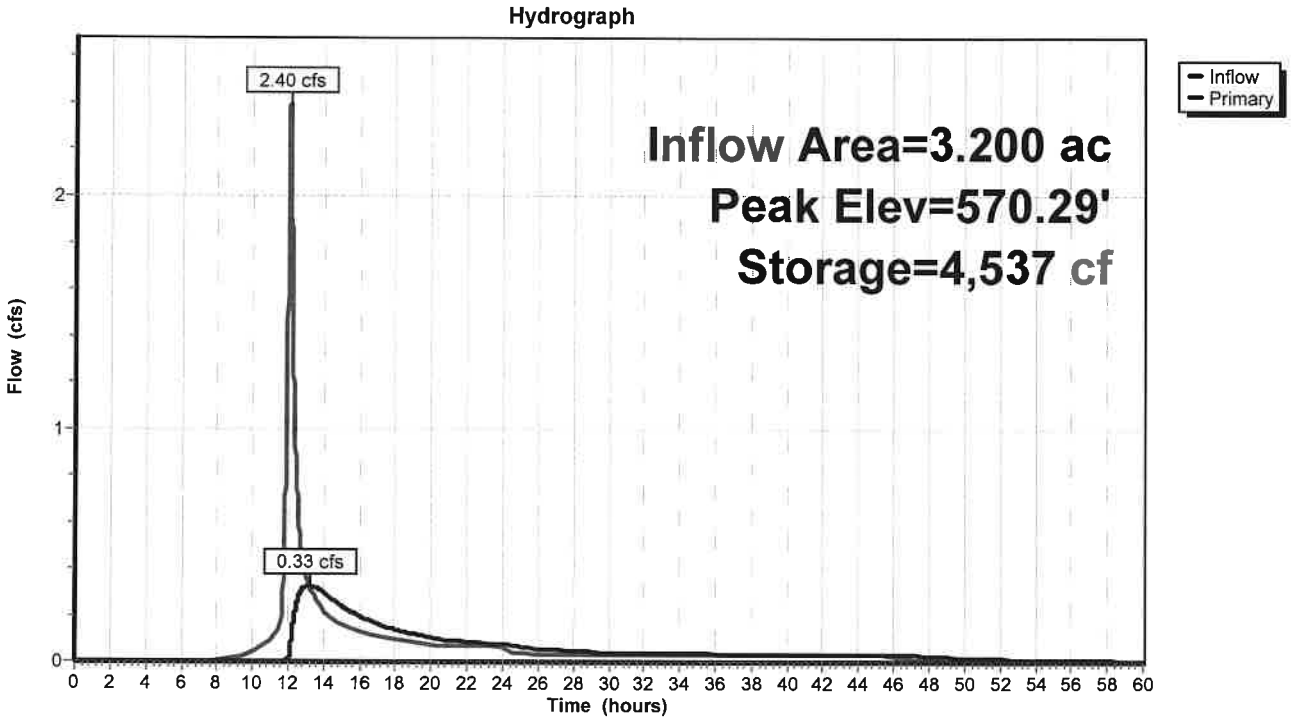
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

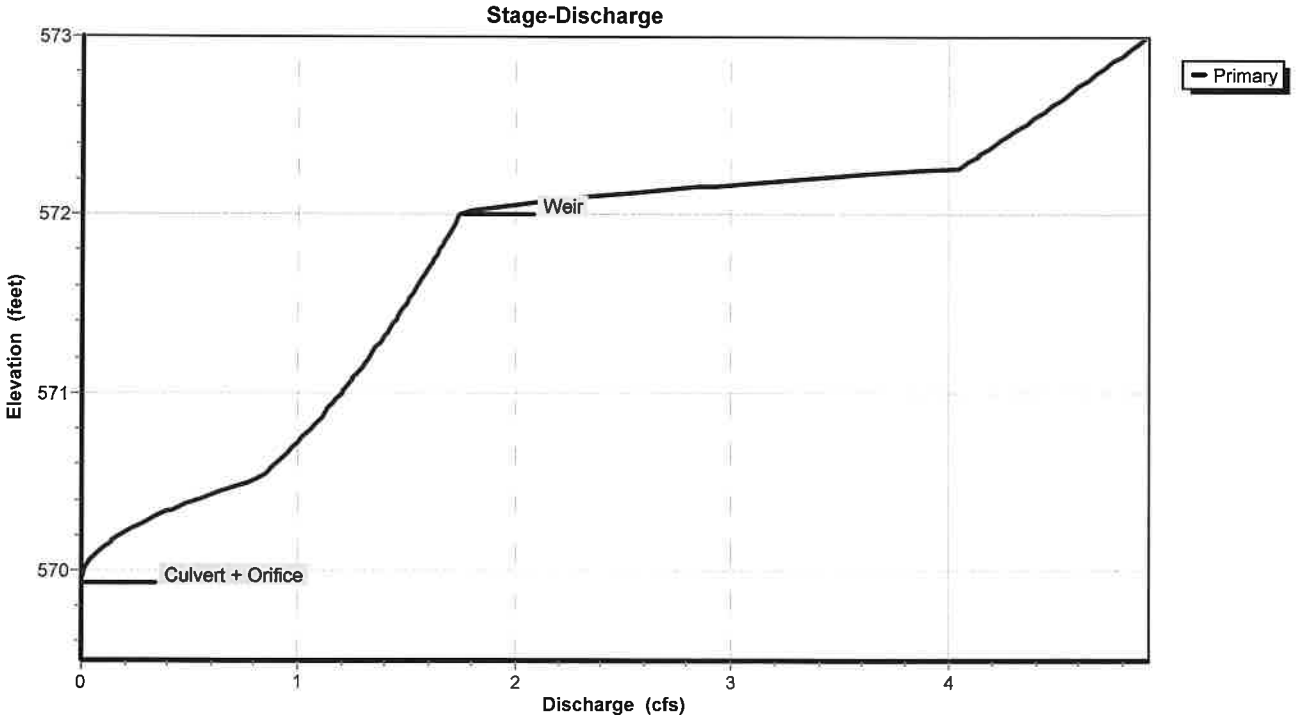
Primary OutFlow Max=0.32 cfs @ 13.18 hrs HW=570.29' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.32 cfs @ 1.88 fps)
  ├**2=Orifice** (Passes 0.32 cfs of 0.56 cfs potential flow)
  └**3=Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

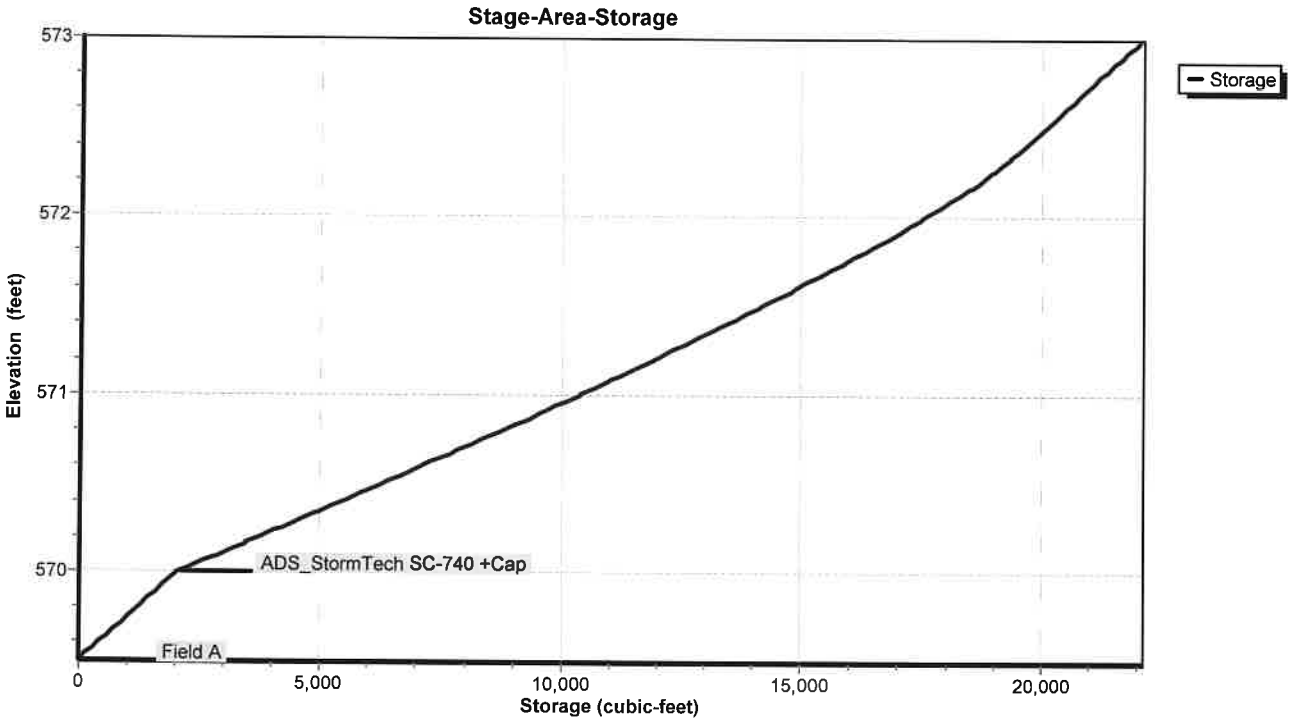


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.00	0	569.50	0.00
8.00	0.00	4	569.50	0.00
10.00	0.04	139	569.53	0.00
12.00	**2.08**	**1,735**	**569.93**	**0.00**
14.00	**0.22**	**4,393**	**570.28**	**0.30**
16.00	0.13	3,835	570.21	0.20
18.00	0.10	3,452	570.17	0.14
20.00	0.07	3,194	570.14	0.10
22.00	0.07	3,023	570.12	0.08
24.00	0.06	2,931	570.10	0.07
26.00	0.03	2,737	570.08	0.06
28.00	0.03	2,618	570.07	0.05
30.00	0.03	2,550	570.06	0.04
32.00	0.03	2,506	570.06	0.04
34.00	0.03	2,476	570.05	0.04
36.00	0.03	2,453	570.05	0.03
38.00	0.03	2,436	570.05	0.03
40.00	0.03	2,422	570.05	0.03
42.00	0.03	2,410	570.04	0.03
44.00	0.03	2,399	570.04	0.03
46.00	0.03	2,388	570.04	0.03
48.00	0.01	2,288	570.03	0.02
50.00	0.00	2,166	570.02	0.02
52.00	0.00	2,066	570.00	0.01
54.00	0.00	1,993	569.99	0.01
56.00	0.00	1,945	569.98	0.01
58.00	0.00	1,910	569.97	0.00
60.00	0.00	1,885	569.96	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)
569.50	0
569.55	203
569.60	406
569.65	609
569.70	812
569.75	1,014
569.80	1,217
569.85	1,420
569.90	1,623
569.95	1,826
570.00	2,029
570.05	2,459
570.10	2,889
570.15	3,318
570.20	3,746
570.25	4,173
570.30	4,598
570.35	5,022
570.40	5,444
570.45	5,865
570.50	6,284
570.55	6,701
570.60	7,116
570.65	7,529
570.70	7,940
570.75	8,349
570.80	8,756
570.85	9,160
570.90	9,562
570.95	9,962
571.00	10,359
571.05	10,754
571.10	11,145
571.15	11,534
571.20	11,919
571.25	12,301
571.30	12,680
571.35	13,056
571.40	13,428
571.45	13,797
571.50	14,161
571.55	14,522
571.60	14,879
571.65	15,230
571.70	15,577
571.75	15,917
571.80	16,252
571.85	16,582
571.90	16,906
571.95	17,224
572.00	17,535
572.05	17,838
572.10	18,133
572.15	18,417
572.20	18,690
572.25	18,946
572.30	19,188
572.35	19,417
572.40	19,637
572.45	19,850
572.50	20,057
572.55	20,260
572.60	20,463
572.65	20,665
572.70	20,868
572.75	21,071
572.80	21,274
572.85	21,477
572.90	21,680
572.95	21,883
573.00	**22,086**

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 1.11" for 1-Year event
Inflow = 2.63 cfs @ 12.01 hrs, Volume= 0.139 af
Outflow = 0.43 cfs @ 12.29 hrs, Volume= 0.139 af, Atten= 84%, Lag= 17.0 min
Primary = 0.43 cfs @ 12.29 hrs, Volume= 0.139 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.54' @ 12.29 hrs Surf.Area= 5,881 sf Storage= 2,922 cf

Plug-Flow detention time= 615.0 min calculated for 0.139 af (100% of inflow)
Center-of-Mass det. time= 615.0 min (1,433.7 - 818.7)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

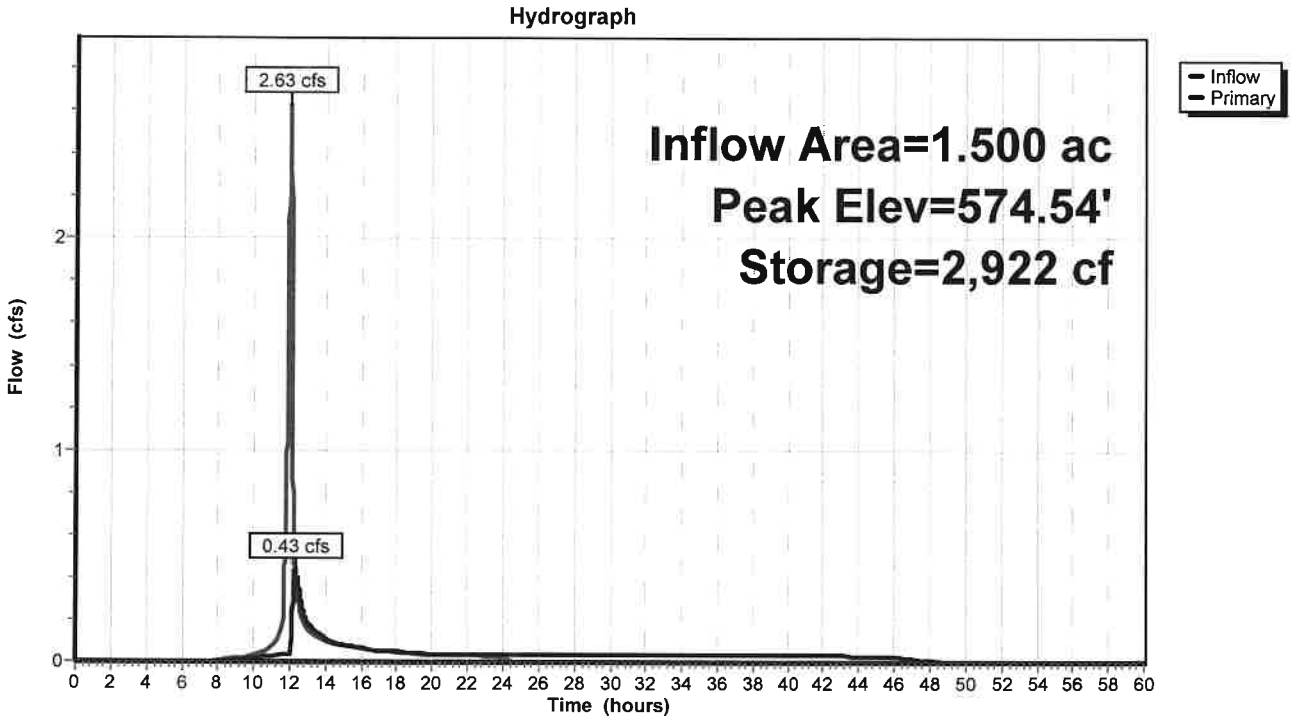
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

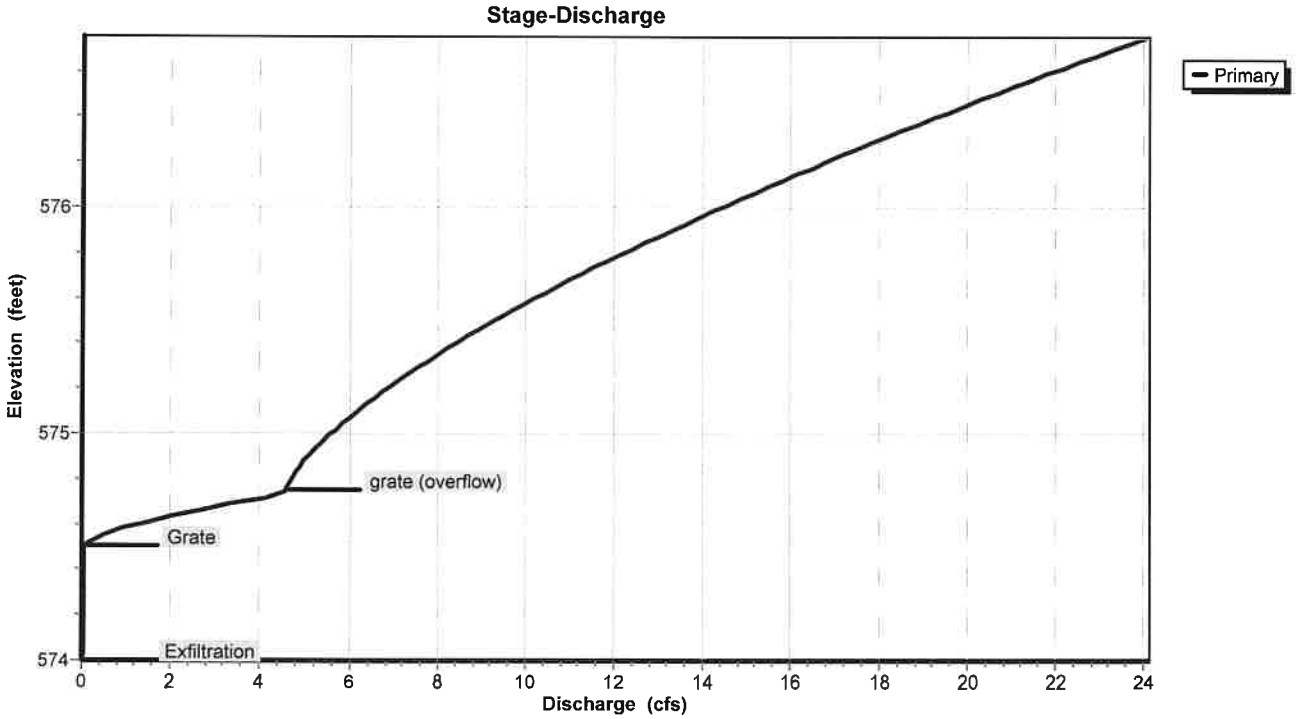
Primary OutFlow Max=0.42 cfs @ 12.29 hrs HW=574.54' (Free Discharge)
- **1=8" pipe** (Passes 0.42 cfs of 4.43 cfs potential flow)
  - **2=Grate** (Weir Controls 0.39 cfs @ 0.69 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

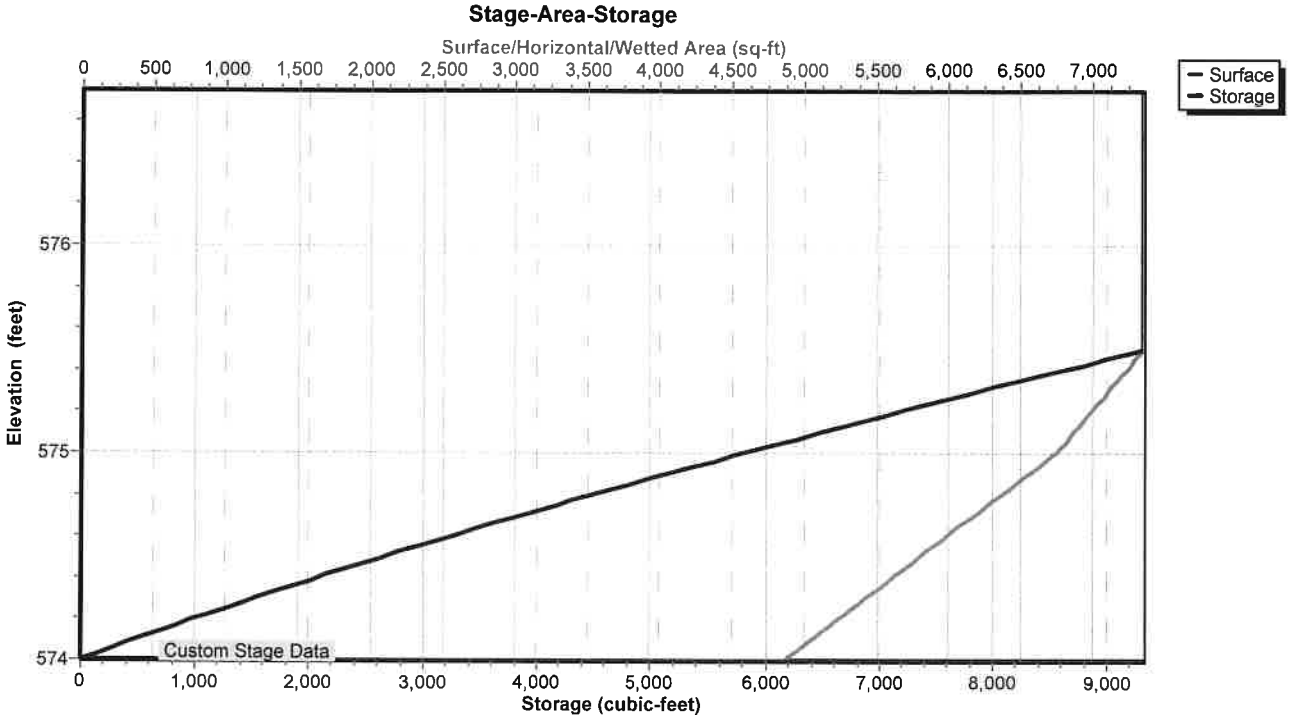


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.00	0	574.00	0.00
8.00	0.01	9	574.00	0.00
10.00	0.03	70	574.01	0.01
12.00	**2.63**	**1,806**	**574.35**	**0.03**
14.00	**0.09**	**2,731**	**574.51**	**0.11**
16.00	0.06	2,688	574.50	0.06
18.00	0.04	2,673	574.50	0.05
20.00	0.03	2,662	574.50	0.03
22.00	0.03	2,636	574.50	0.03
24.00	0.03	2,594	574.49	0.03
26.00	0.00	2,362	574.45	0.03
28.00	0.00	2,119	574.40	0.03
30.00	0.00	1,881	574.36	0.03
32.00	0.00	1,647	574.32	0.03
34.00	0.00	1,417	574.28	0.03
36.00	0.00	1,190	574.23	0.03
38.00	0.00	968	574.19	0.03
40.00	0.00	750	574.15	0.03
42.00	0.00	536	574.11	0.03
44.00	0.00	326	574.07	0.03
46.00	0.00	120	574.02	0.03
48.00	0.00	26	574.01	0.01
50.00	0.00	6	574.00	0.00
52.00	0.00	1	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=1.34"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=3.03 cfs 0.190 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=1.42"
Flow Length=345' Tc=9.1 min CN=92 Runoff=3.32 cfs 0.177 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=570.46' Storage=5,990 cf Inflow=4.15 cfs 0.367 af
Outflow=0.68 cfs 0.324 af

Pond 9P: Bioretention Area 3 Peak Elev=574.60' Storage=3,274 cf Inflow=3.32 cfs 0.177 af
Outflow=1.41 cfs 0.177 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.367 af Average Runoff Depth = 1.38"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

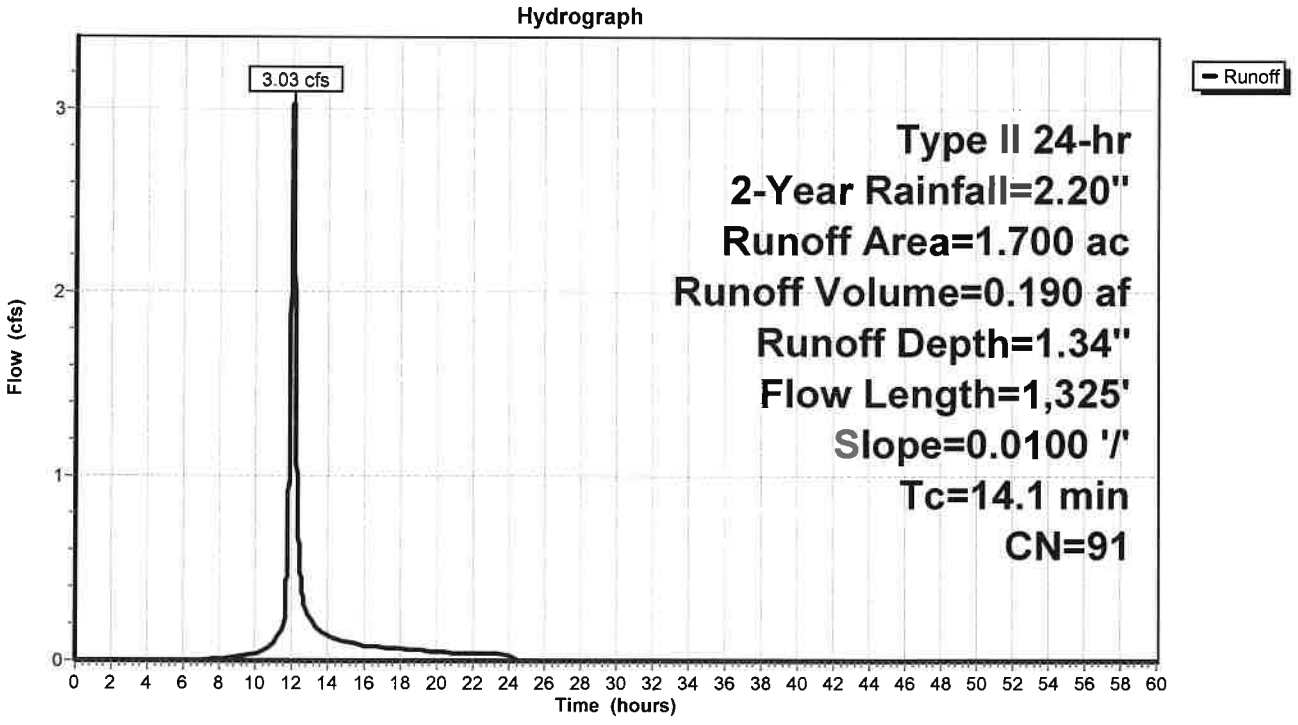
Runoff = 3.03 cfs @ 12.06 hrs, Volume= 0.190 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass**
					Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.05	0.00	0.00
3.00	0.08	0.00	0.00
4.00	0.11	0.00	0.00
5.00	0.14	0.00	0.00
6.00	0.18	0.00	0.00
7.00	0.22	0.00	0.00
8.00	0.26	0.00	0.01
9.00	0.32	0.01	0.02
10.00	0.40	0.03	0.04
11.00	0.52	0.08	0.10
12.00	1.46	0.71	**2.64**
13.00	1.70	0.90	**0.23**
14.00	1.80	0.99	0.13
15.00	1.88	1.06	0.10
16.00	1.94	1.11	0.08
17.00	1.98	1.15	0.07
18.00	2.03	1.19	0.06
19.00	2.06	1.22	0.05
20.00	2.09	1.25	0.05
21.00	2.12	1.27	0.04
22.00	2.15	1.30	0.04
23.00	2.18	1.32	0.04
24.00	**2.20**	**1.34**	0.04
25.00	2.20	1.34	0.00
26.00	2.20	1.34	0.00
27.00	2.20	1.34	0.00
28.00	2.20	1.34	0.00
29.00	2.20	1.34	0.00
30.00	2.20	1.34	0.00
31.00	2.20	1.34	0.00
32.00	2.20	1.34	0.00
33.00	2.20	1.34	0.00
34.00	2.20	1.34	0.00
35.00	2.20	1.34	0.00
36.00	2.20	1.34	0.00
37.00	2.20	1.34	0.00
38.00	2.20	1.34	0.00
39.00	2.20	1.34	0.00
40.00	2.20	1.34	0.00
41.00	2.20	1.34	0.00
42.00	2.20	1.34	0.00
43.00	2.20	1.34	0.00
44.00	2.20	1.34	0.00
45.00	2.20	1.34	0.00
46.00	2.20	1.34	0.00
47.00	2.20	1.34	0.00
48.00	2.20	1.34	0.00
49.00	2.20	1.34	0.00
50.00	2.20	1.34	0.00
51.00	2.20	1.34	0.00
52.00	2.20	1.34	0.00
53.00	2.20	1.34	0.00
54.00	2.20	1.34	0.00
55.00	2.20	1.34	0.00
56.00	2.20	1.34	0.00
57.00	2.20	1.34	0.00
58.00	2.20	1.34	0.00
59.00	2.20	1.34	0.00
60.00	2.20	1.34	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

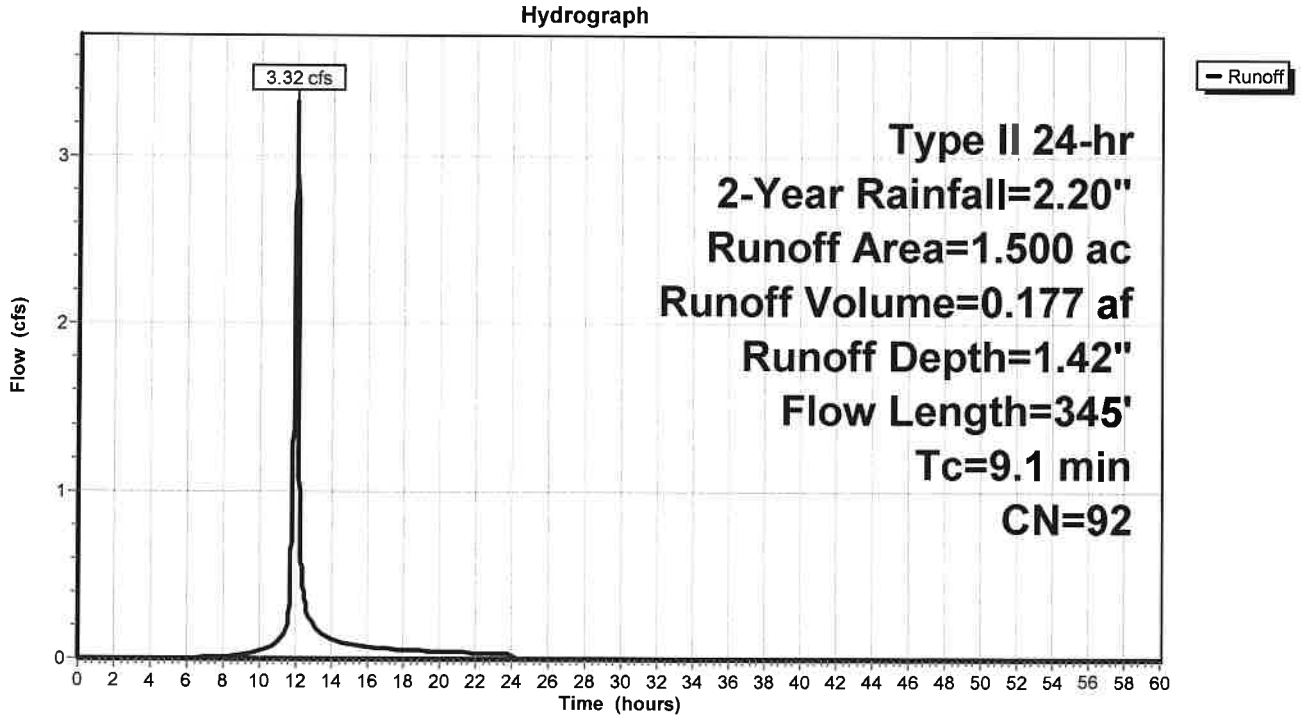
Runoff = 3.32 cfs @ 12.00 hrs, Volume= 0.177 af, Depth= 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	2.20	1.42	0.00
1.00	0.02	0.00	0.00	53.00	2.20	1.42	0.00
2.00	0.05	0.00	0.00	54.00	2.20	1.42	0.00
3.00	0.08	0.00	0.00	55.00	2.20	1.42	0.00
4.00	0.11	0.00	0.00	56.00	2.20	1.42	0.00
5.00	0.14	0.00	0.00	57.00	2.20	1.42	0.00
6.00	0.18	0.00	0.00	58.00	2.20	1.42	0.00
7.00	0.22	0.00	0.01	59.00	2.20	1.42	0.00
8.00	0.26	0.01	0.01	60.00	2.20	1.42	0.00
9.00	0.32	0.02	0.03				
10.00	0.40	0.05	0.04				
11.00	0.52	0.10	0.10				
12.00	1.46	0.77	**3.32**				
13.00	1.70	0.97	0.20				
14.00	1.80	1.06	0.12				
15.00	1.88	1.13	0.09				
16.00	1.94	1.18	0.07				
17.00	1.98	1.22	0.06				
18.00	2.03	1.26	0.05				
19.00	2.06	1.29	0.05				
20.00	2.09	1.32	0.04				
21.00	2.12	1.35	0.04				
22.00	2.15	1.37	0.04				
23.00	2.18	1.40	0.03				
24.00	**2.20**	**1.42**	0.03				
25.00	2.20	1.42	0.00				
26.00	2.20	1.42	0.00				
27.00	2.20	1.42	0.00				
28.00	2.20	1.42	0.00				
29.00	2.20	1.42	0.00				
30.00	2.20	1.42	0.00				
31.00	2.20	1.42	0.00				
32.00	2.20	1.42	0.00				
33.00	2.20	1.42	0.00				
34.00	2.20	1.42	0.00				
35.00	2.20	1.42	0.00				
36.00	2.20	1.42	0.00				
37.00	2.20	1.42	0.00				
38.00	2.20	1.42	0.00				
39.00	2.20	1.42	0.00				
40.00	2.20	1.42	0.00				
41.00	2.20	1.42	0.00				
42.00	2.20	1.42	0.00				
43.00	2.20	1.42	0.00				
44.00	2.20	1.42	0.00				
45.00	2.20	1.42	0.00				
46.00	2.20	1.42	0.00				
47.00	2.20	1.42	0.00				
48.00	2.20	1.42	0.00				
49.00	2.20	1.42	0.00				
50.00	2.20	1.42	0.00				
51.00	2.20	1.42	0.00				

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 1.38" for 2-Year event
Inflow = 4.15 cfs @ 12.10 hrs, Volume= 0.367 af
Outflow = 0.68 cfs @ 12.65 hrs, Volume= 0.324 af, Atten= 84%, Lag= 33.2 min
Primary = 0.68 cfs @ 12.65 hrs, Volume= 0.324 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 570.46' @ 12.65 hrs Surf.Area= 10,145 sf Storage= 5,990 cf

Plug-Flow detention time= 401.0 min calculated for 0.324 af (88% of inflow)
Center-of-Mass det. time= 229.7 min (1,287.9 - 1,058.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

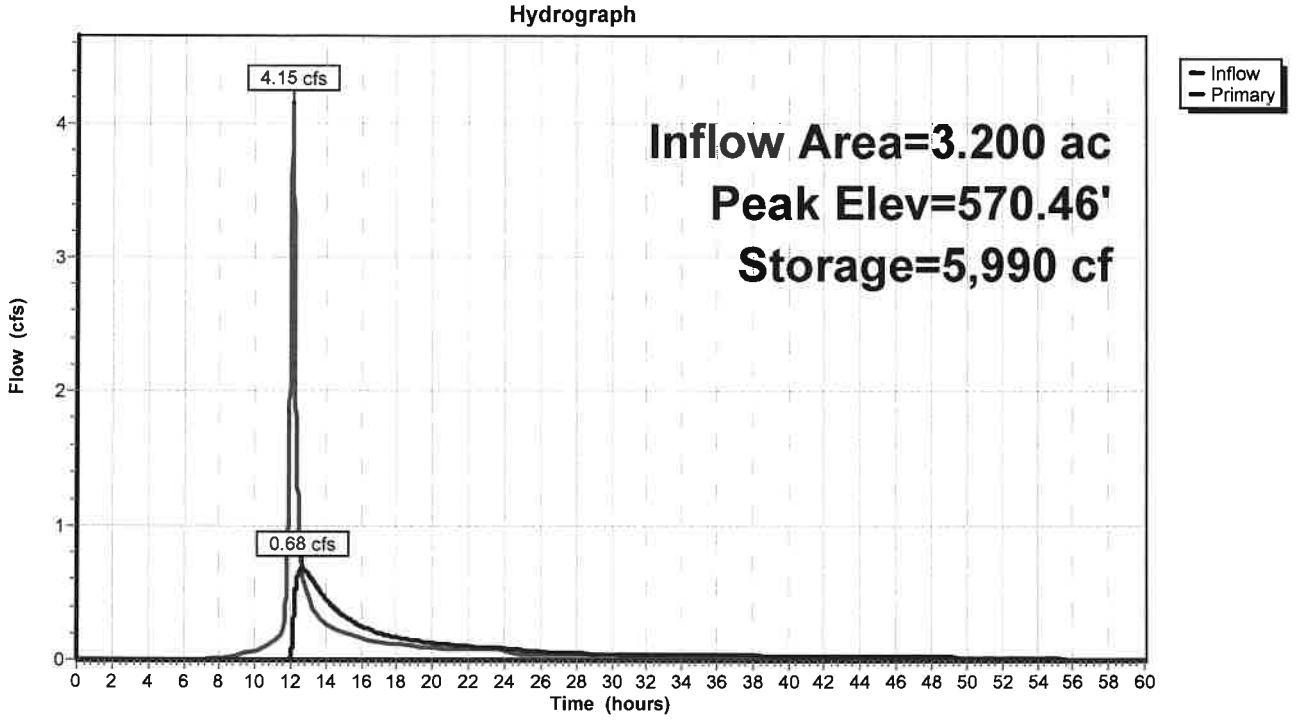
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

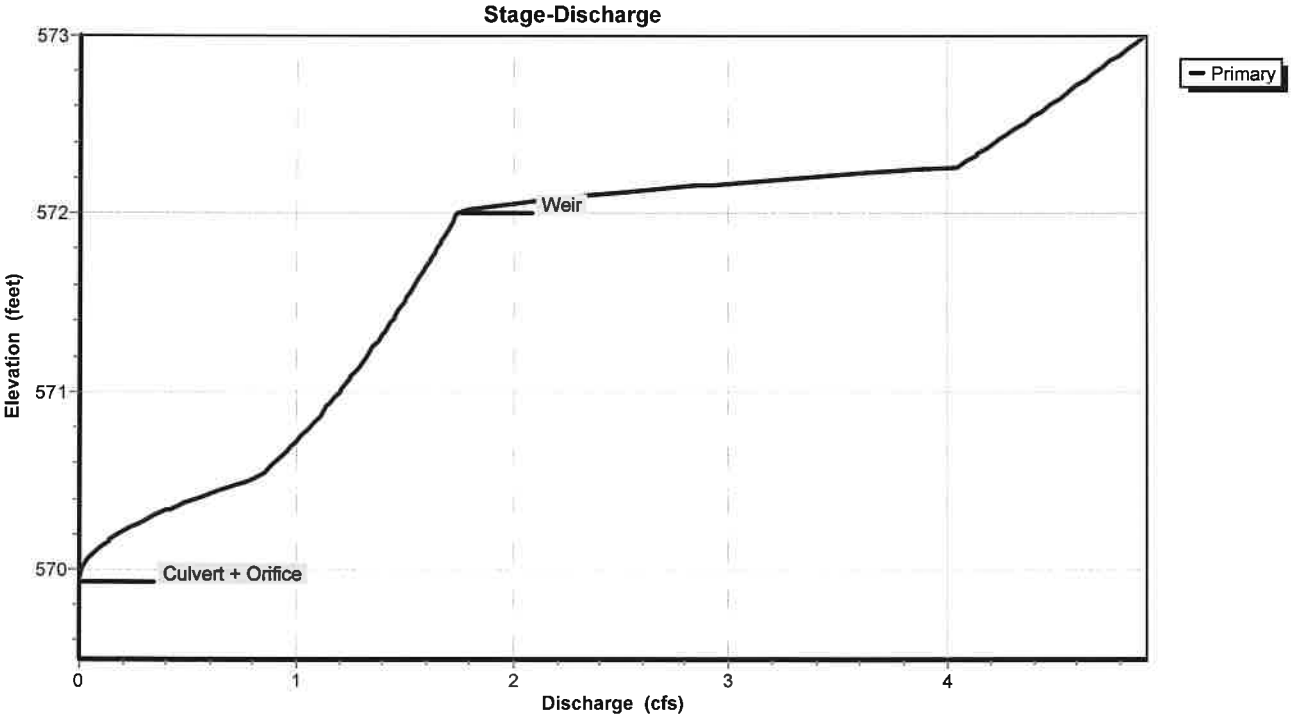
Primary OutFlow Max=0.68 cfs @ 12.65 hrs HW=570.46' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.68 cfs @ 2.31 fps)
↑—**2=Orifice** (Passes 0.68 cfs of 0.76 cfs potential flow)
—**3=Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

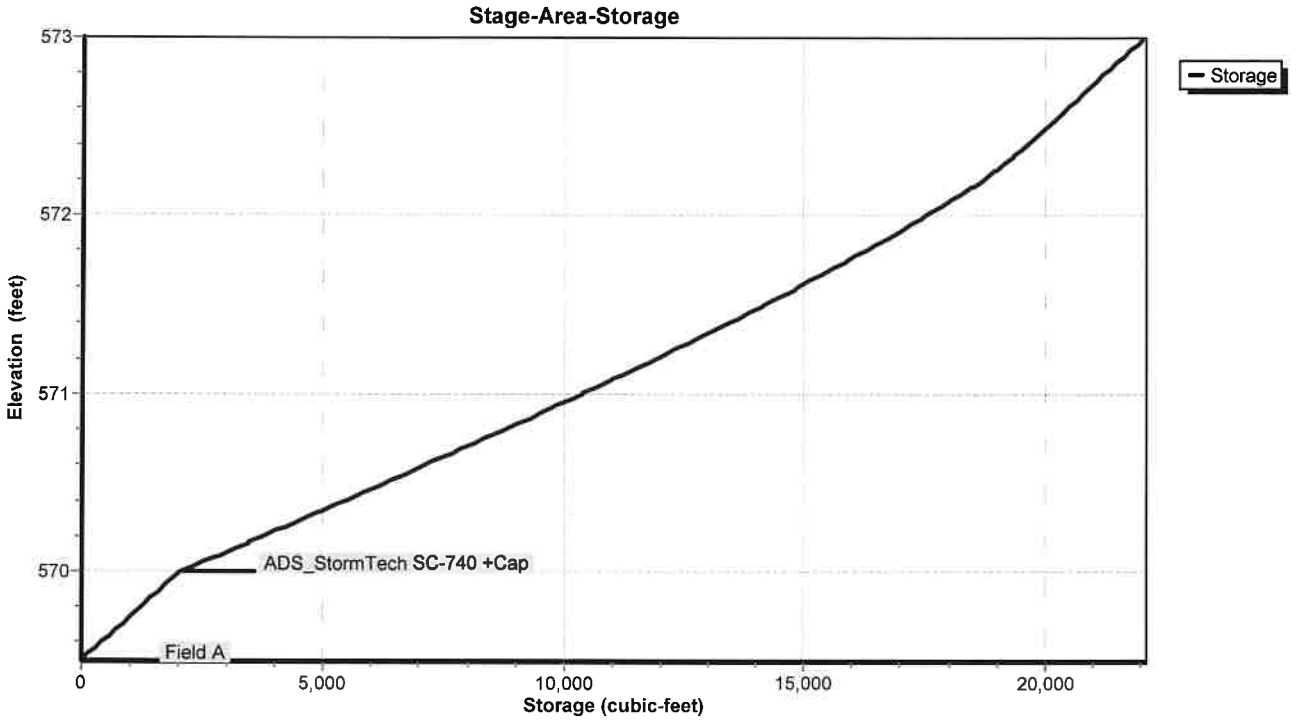


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.00	0	569.50	0.00
8.00	0.01	32	569.51	0.00
10.00	0.06	286	569.57	0.00
12.00	**2.68**	**2,414**	**570.04**	**0.03**
14.00	**0.27**	**5,111**	**570.36**	**0.45**
16.00	0.16	4,155	570.25	0.25
18.00	0.12	3,660	570.19	0.17
20.00	0.09	3,359	570.15	0.12
22.00	0.08	3,149	570.13	0.10
24.00	0.07	3,029	570.12	0.09
26.00	0.03	2,788	570.09	0.06
28.00	0.03	2,647	570.07	0.05
30.00	0.03	2,566	570.06	0.04
32.00	0.03	2,517	570.06	0.04
34.00	0.03	2,484	570.05	0.04
36.00	0.03	2,459	570.05	0.03
38.00	0.03	2,441	570.05	0.03
40.00	0.03	2,426	570.05	0.03
42.00	0.03	2,413	570.04	0.03
44.00	0.03	2,402	570.04	0.03
46.00	0.03	2,392	570.04	0.03
48.00	0.01	2,323	570.03	0.03
50.00	0.00	2,199	570.02	0.02
52.00	0.00	2,091	570.01	0.01
54.00	0.00	2,010	570.00	0.01
56.00	0.00	1,957	569.98	0.01
58.00	0.00	1,919	569.97	0.00
60.00	0.00	1,891	569.97	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 1.42" for 2-Year event
Inflow = 3.32 cfs @ 12.00 hrs, Volume= 0.177 af
Outflow = 1.41 cfs @ 12.13 hrs, Volume= 0.177 af, Atten= 58%, Lag= 7.6 min
Primary = 1.41 cfs @ 12.13 hrs, Volume= 0.177 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.60' @ 12.13 hrs Surf.Area= 5,993 sf Storage= 3,274 cf

Plug-Flow detention time= 499.6 min calculated for 0.177 af (100% of inflow)
Center-of-Mass det. time= 499.8 min (1,311.6 - 811.8)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

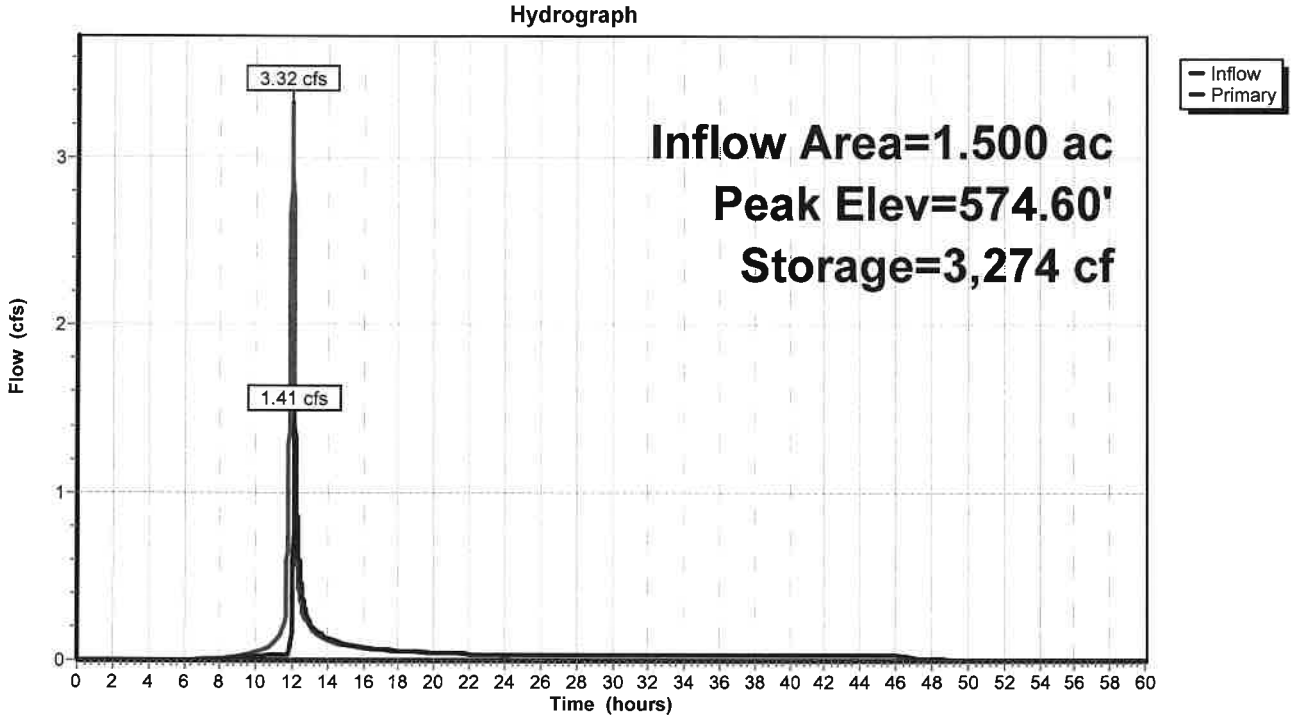
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

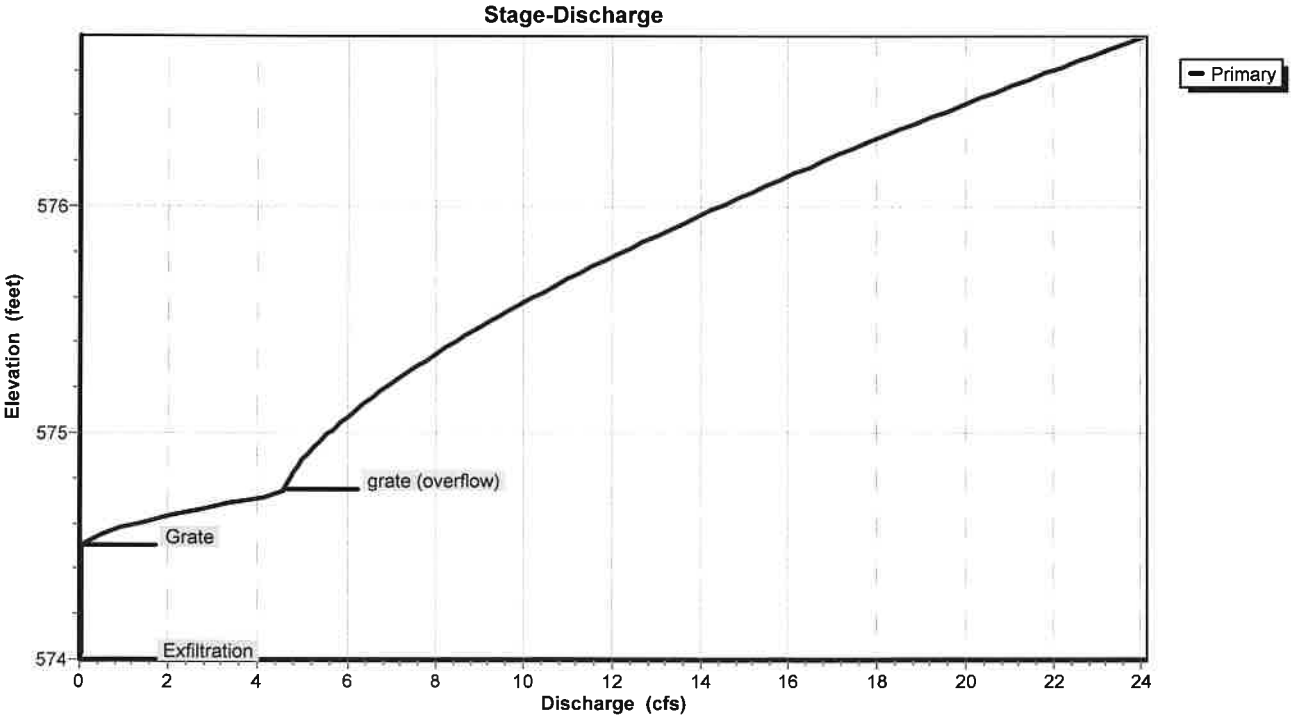
Primary OutFlow Max=1.41 cfs @ 12.13 hrs HW=574.60' (Free Discharge)
- **1=8" pipe** (Passes 1.41 cfs of 4.48 cfs potential flow)
  - **2=Grate** (Weir Controls 1.37 cfs @ 1.05 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

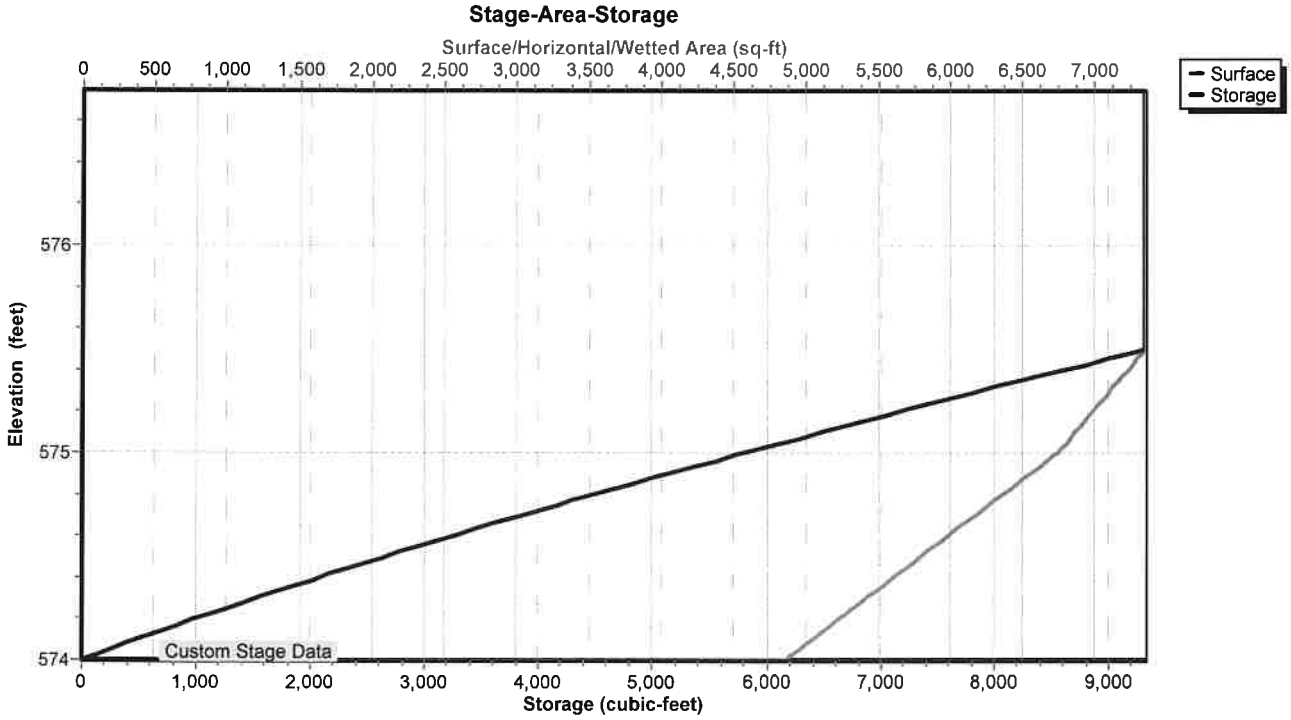


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.00	0	574.00	0.00
8.00	0.01	26	574.01	0.01
10.00	0.04	116	574.02	0.02
12.00	**3.32**	**2,442**	**574.46**	**0.03**
14.00	0.12	**2,754**	**574.52**	**0.13**
16.00	0.07	2,701	574.51	0.08
18.00	0.05	2,683	574.50	0.06
20.00	0.04	2,669	574.50	0.04
22.00	0.04	2,664	574.50	0.04
24.00	0.03	2,661	574.50	0.03
26.00	0.00	2,430	574.46	0.03
28.00	0.00	2,186	574.42	0.03
30.00	0.00	1,947	574.37	0.03
32.00	0.00	1,712	574.33	0.03
34.00	0.00	1,480	574.29	0.03
36.00	0.00	1,253	574.25	0.03
38.00	0.00	1,030	574.20	0.03
40.00	0.00	810	574.16	0.03
42.00	0.00	595	574.12	0.03
44.00	0.00	384	574.08	0.03
46.00	0.00	176	574.04	0.03
48.00	0.00	40	574.01	0.01
50.00	0.00	9	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=1.79"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=4.02 cfs 0.254 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=1.88"
Flow Length=345' Tc=9.1 min CN=92 Runoff=4.35 cfs 0.235 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=570.79' Storage=8,639 cf Inflow=7.03 cfs 0.489 af
Outflow=1.05 cfs 0.446 af

Pond 9P: Bioretention Area 3 Peak Elev=574.68' Storage=3,708 cf Inflow=4.35 cfs 0.235 af
Outflow=3.06 cfs 0.235 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.489 af Average Runoff Depth = 1.83"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

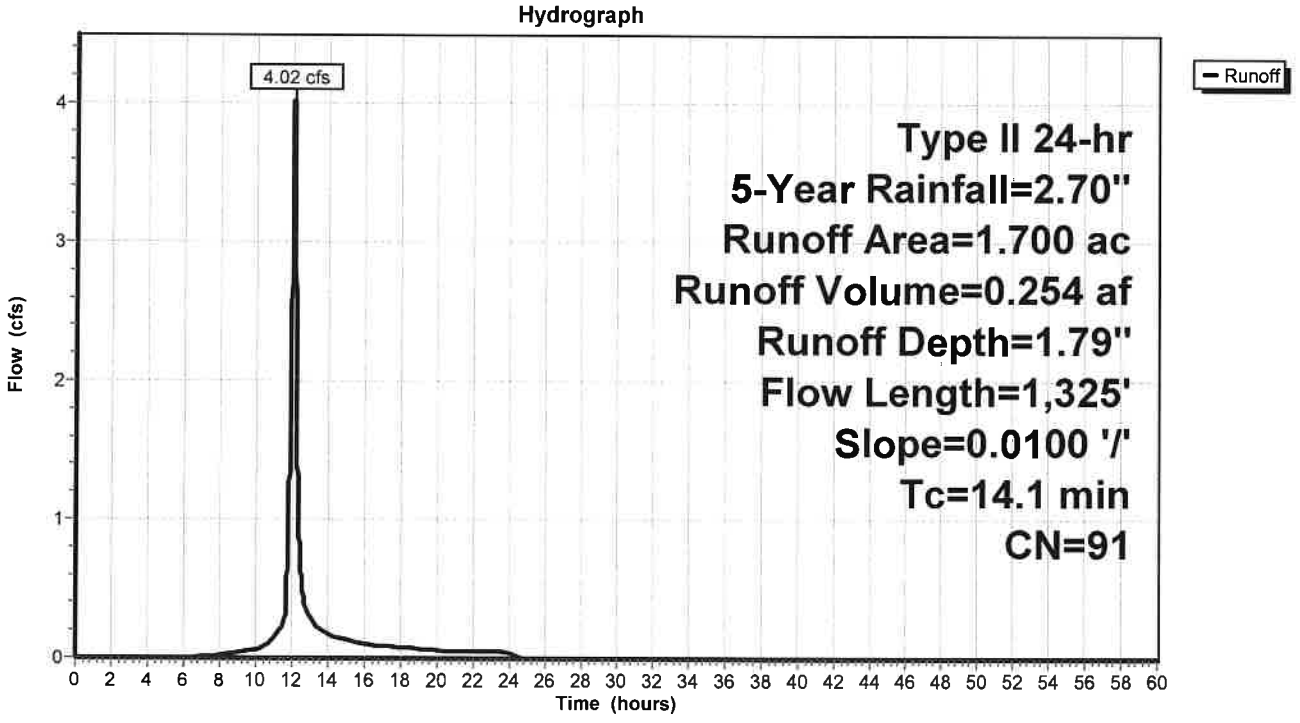
Runoff = 4.02 cfs @ 12.06 hrs, Volume= 0.254 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass**
					Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.00
7.00	0.27	0.00	0.01
8.00	0.32	0.01	0.02
9.00	0.40	0.03	0.04
10.00	0.49	0.07	0.06
11.00	0.63	0.13	0.14
12.00	1.79	0.98	**3.54**
13.00	2.08	1.24	**0.30**
14.00	2.21	1.35	0.17
15.00	2.30	1.43	0.13
16.00	2.38	1.50	0.10
17.00	2.43	1.55	0.09
18.00	2.49	1.60	0.08
19.00	2.53	1.64	0.07
20.00	2.57	1.67	0.06
21.00	2.60	1.71	0.05
22.00	2.64	1.74	0.05
23.00	2.67	1.77	0.05
24.00	**2.70**	**1.79**	0.05
25.00	2.70	1.79	0.00
26.00	2.70	1.79	0.00
27.00	2.70	1.79	0.00
28.00	2.70	1.79	0.00
29.00	2.70	1.79	0.00
30.00	2.70	1.79	0.00
31.00	2.70	1.79	0.00
32.00	2.70	1.79	0.00
33.00	2.70	1.79	0.00
34.00	2.70	1.79	0.00
35.00	2.70	1.79	0.00
36.00	2.70	1.79	0.00
37.00	2.70	1.79	0.00
38.00	2.70	1.79	0.00
39.00	2.70	1.79	0.00
40.00	2.70	1.79	0.00
41.00	2.70	1.79	0.00
42.00	2.70	1.79	0.00
43.00	2.70	1.79	0.00
44.00	2.70	1.79	0.00
45.00	2.70	1.79	0.00
46.00	2.70	1.79	0.00
47.00	2.70	1.79	0.00
48.00	2.70	1.79	0.00
49.00	2.70	1.79	0.00
50.00	2.70	1.79	0.00
51.00	2.70	1.79	0.00
52.00	2.70	1.79	0.00
53.00	2.70	1.79	0.00
54.00	2.70	1.79	0.00
55.00	2.70	1.79	0.00
56.00	2.70	1.79	0.00
57.00	2.70	1.79	0.00
58.00	2.70	1.79	0.00
59.00	2.70	1.79	0.00
60.00	2.70	1.79	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

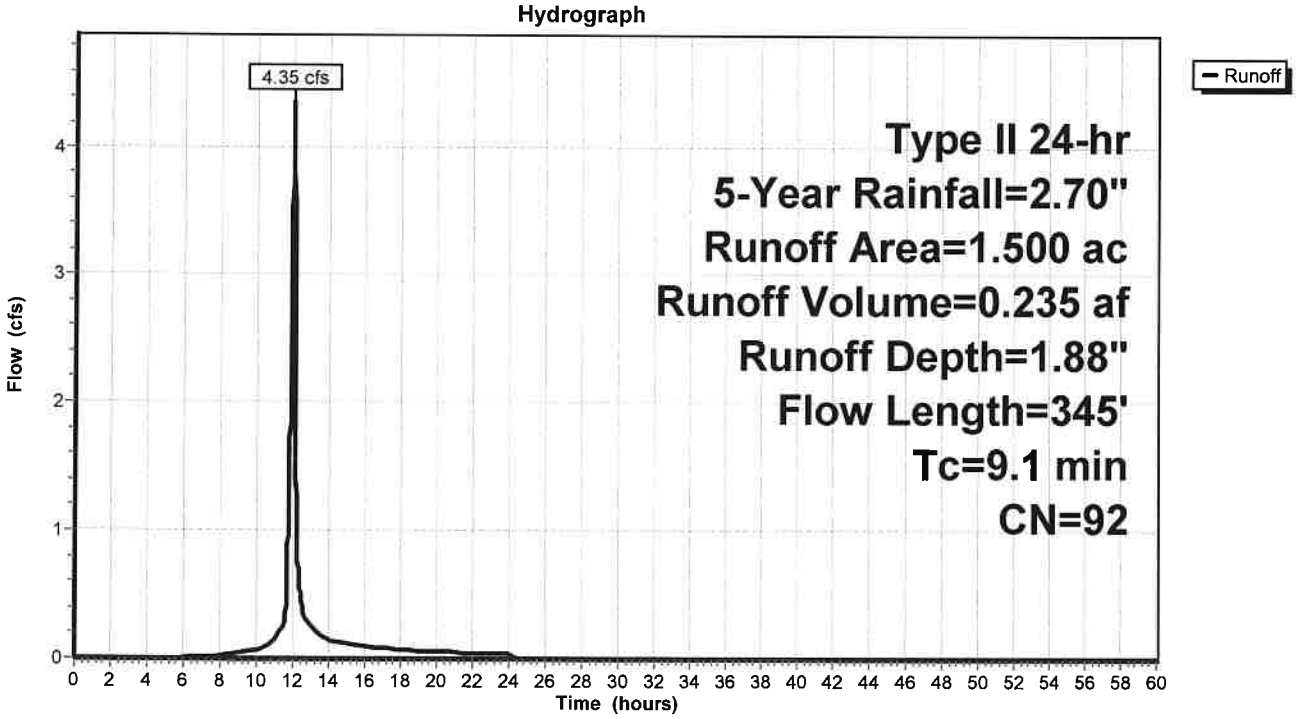
Runoff = 4.35 cfs @ 12.00 hrs, Volume= 0.235 af, Depth= 1.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.01
7.00	0.27	0.01	0.01
8.00	0.32	0.02	0.02
9.00	0.40	0.05	0.04
10.00	0.49	0.08	0.07
11.00	0.63	0.16	0.15
12.00	1.79	1.05	**4.35**
13.00	2.08	1.31	0.25
14.00	2.21	1.43	0.15
15.00	2.30	1.51	0.12
16.00	2.38	1.58	0.09
17.00	2.43	1.63	0.08
18.00	2.49	1.68	0.07
19.00	2.53	1.72	0.06
20.00	2.57	1.76	0.05
21.00	2.60	1.79	0.05
22.00	2.64	1.82	0.05
23.00	2.67	1.85	0.04
24.00	**2.70**	**1.88**	0.04
25.00	2.70	1.88	0.00
26.00	2.70	1.88	0.00
27.00	2.70	1.88	0.00
28.00	2.70	1.88	0.00
29.00	2.70	1.88	0.00
30.00	2.70	1.88	0.00
31.00	2.70	1.88	0.00
32.00	2.70	1.88	0.00
33.00	2.70	1.88	0.00
34.00	2.70	1.88	0.00
35.00	2.70	1.88	0.00
36.00	2.70	1.88	0.00
37.00	2.70	1.88	0.00
38.00	2.70	1.88	0.00
39.00	2.70	1.88	0.00
40.00	2.70	1.88	0.00
41.00	2.70	1.88	0.00
42.00	2.70	1.88	0.00
43.00	2.70	1.88	0.00
44.00	2.70	1.88	0.00
45.00	2.70	1.88	0.00
46.00	2.70	1.88	0.00
47.00	2.70	1.88	0.00
48.00	2.70	1.88	0.00
49.00	2.70	1.88	0.00
50.00	2.70	1.88	0.00
51.00	2.70	1.88	0.00
52.00	2.70	1.88	0.00
53.00	2.70	1.88	0.00
54.00	2.70	1.88	0.00
55.00	2.70	1.88	0.00
56.00	2.70	1.88	0.00
57.00	2.70	1.88	0.00
58.00	2.70	1.88	0.00
59.00	2.70	1.88	0.00
60.00	2.70	1.88	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 1.83" for 5-Year event
Inflow = 7.03 cfs @ 12.07 hrs, Volume= 0.489 af
Outflow = 1.05 cfs @ 12.55 hrs, Volume= 0.446 af, Atten= 85%, Lag= 29.0 min
Primary = 1.05 cfs @ 12.55 hrs, Volume= 0.446 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 570.79' @ 12.55 hrs Surf.Area= 10,145 sf Storage= 8,639 cf

Plug-Flow detention time= 321.6 min calculated for 0.446 af (91% of inflow)
Center-of-Mass det. time= 190.4 min (1,183.7 - 993.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

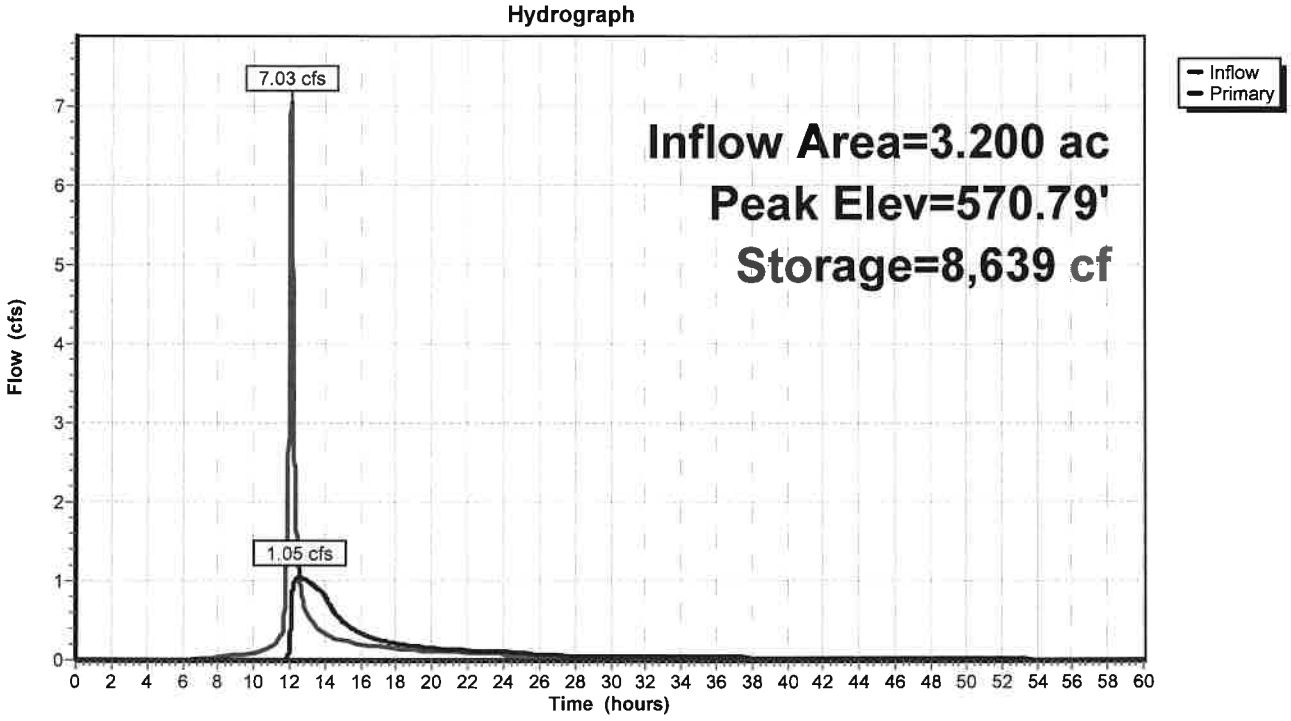
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

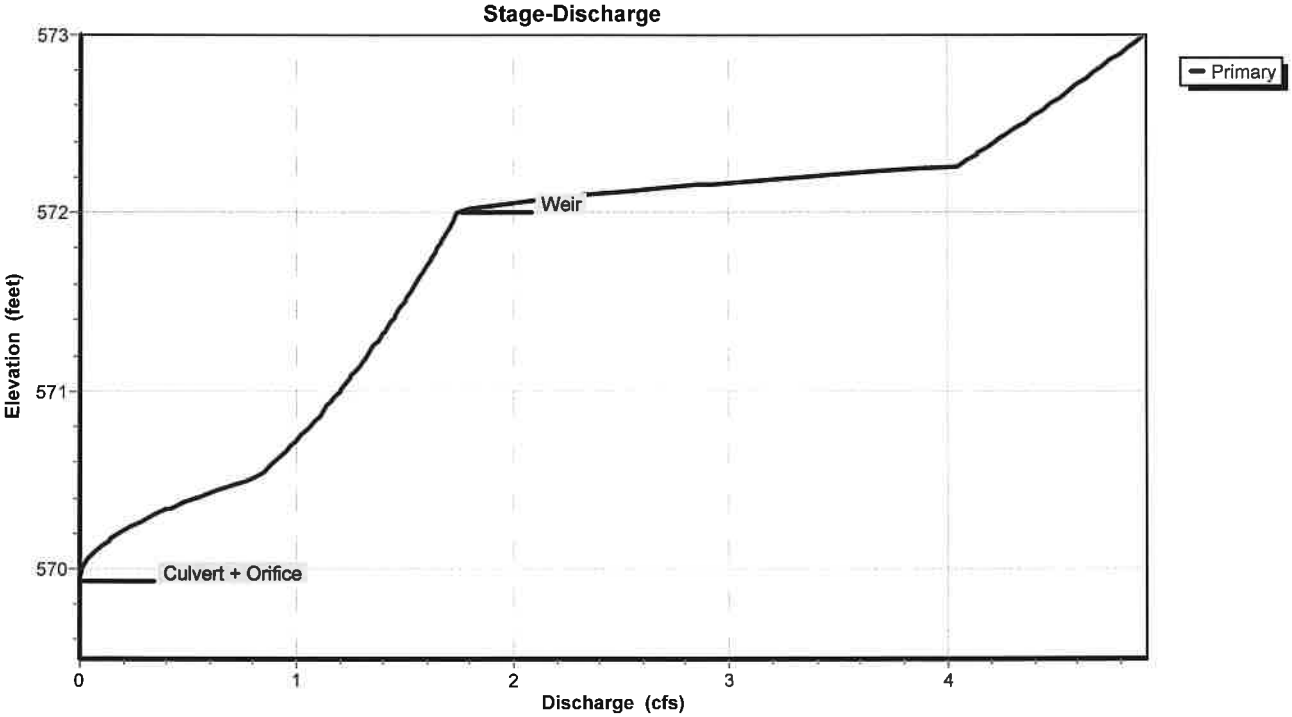
Primary OutFlow Max=1.05 cfs @ 12.55 hrs HW=570.79' (Free Discharge)
↑**1=Culvert** (Passes 1.05 cfs of 1.53 cfs potential flow)
↑**2=Orifice** (Orifice Controls 1.05 cfs @ 4.00 fps)
3=Weir (Controls 0.00 cfs)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

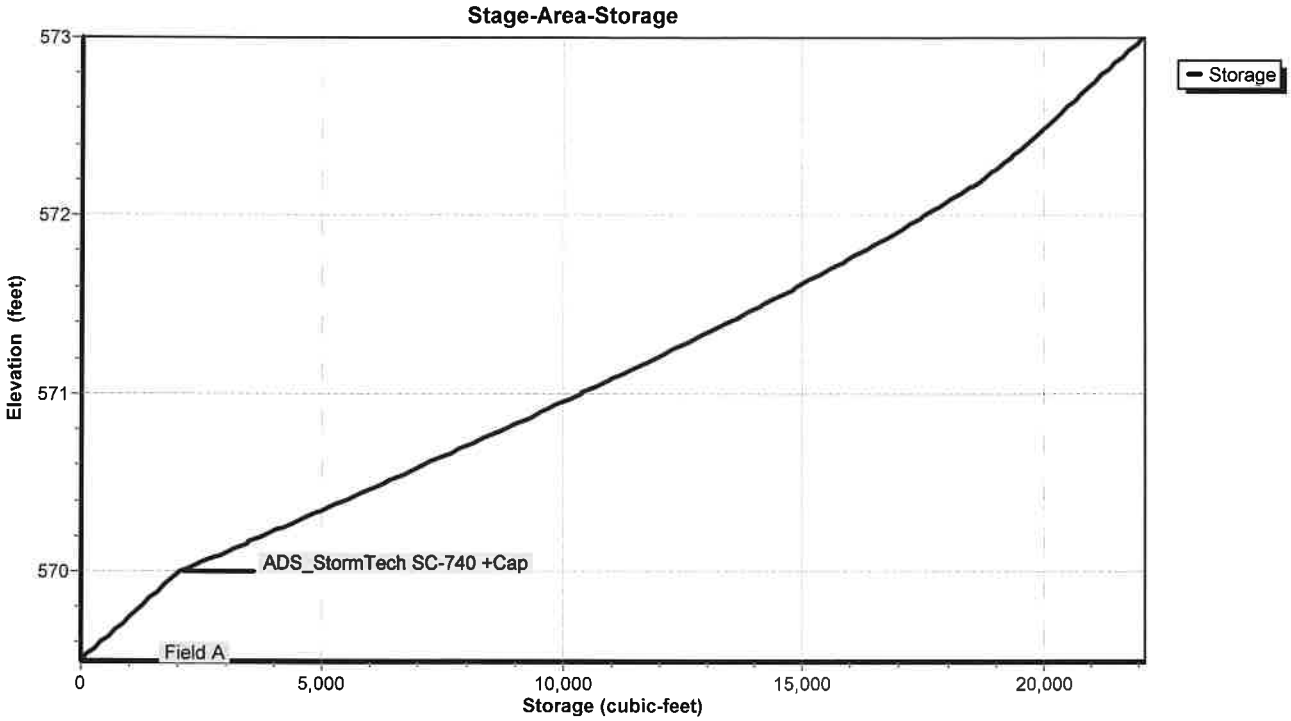


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.00	2	569.50	0.00
8.00	0.03	119	569.53	0.00
10.00	0.09	566	569.64	0.00
12.00	**5.13**	**3,593**	**570.18**	**0.16**
14.00	**0.33**	**6,444**	**570.52**	**0.81**
16.00	0.20	4,602	570.30	0.34
18.00	0.15	3,932	570.22	0.21
20.00	0.11	3,570	570.18	0.15
22.00	0.10	3,332	570.15	0.12
24.00	0.09	3,200	570.14	0.10
26.00	0.03	2,873	570.10	0.07
28.00	0.03	2,693	570.08	0.05
30.00	0.03	2,592	570.07	0.04
32.00	0.03	2,532	570.06	0.04
34.00	0.03	2,493	570.05	0.04
36.00	0.03	2,465	570.05	0.03
38.00	0.03	2,445	570.05	0.03
40.00	0.03	2,428	570.05	0.03
42.00	0.03	2,415	570.04	0.03
44.00	0.03	2,403	570.04	0.03
46.00	0.03	2,393	570.04	0.03
48.00	0.01	2,328	570.03	0.03
50.00	0.00	2,203	570.02	0.02
52.00	0.00	2,095	570.01	0.01
54.00	0.00	2,013	570.00	0.01
56.00	0.00	1,959	569.98	0.01
58.00	0.00	1,920	569.97	0.00
60.00	0.00	1,892	569.97	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 1.88" for 5-Year event
Inflow = 4.35 cfs @ 12.00 hrs, Volume= 0.235 af
Outflow = 3.06 cfs @ 12.08 hrs, Volume= 0.235 af, Atten= 30%, Lag= 4.6 min
Primary = 3.06 cfs @ 12.08 hrs, Volume= 0.235 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.68' @ 12.08 hrs Surf.Area= 6,129 sf Storage= 3,708 cf

Plug-Flow detention time= 384.2 min calculated for 0.235 af (100% of inflow)
Center-of-Mass det. time= 384.1 min (1,187.9 - 803.8)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

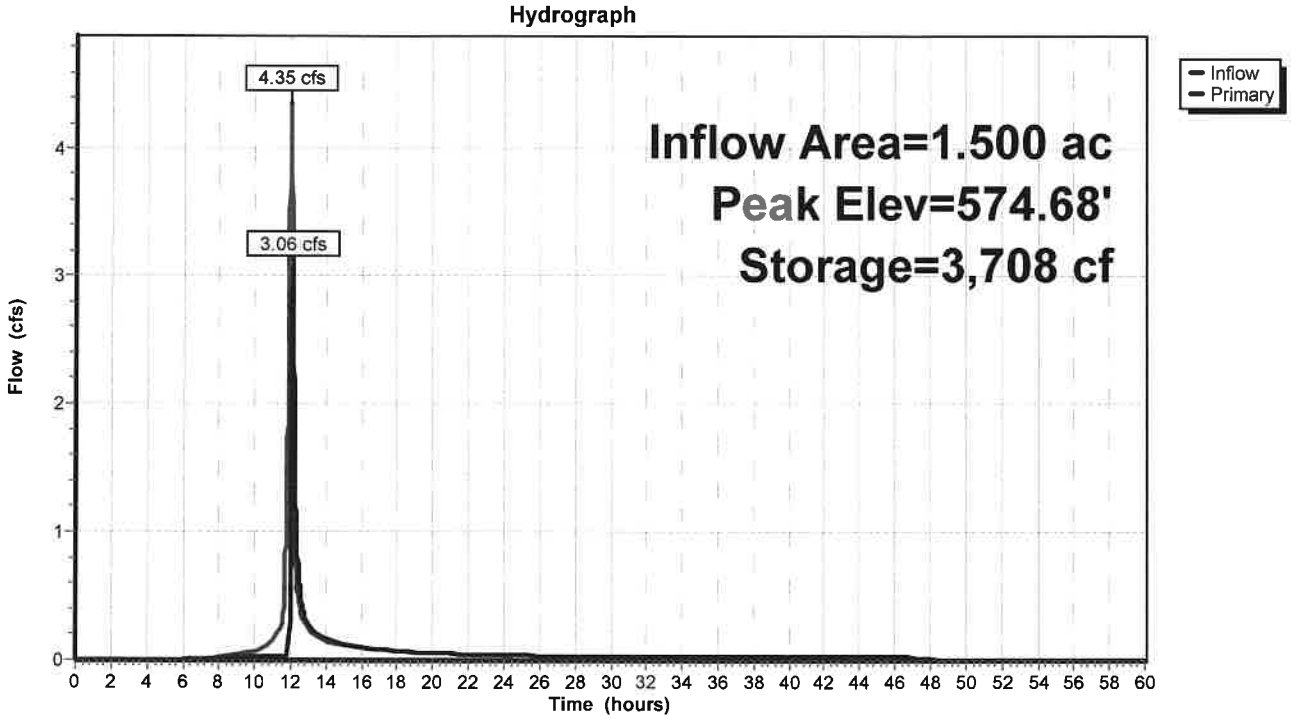
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

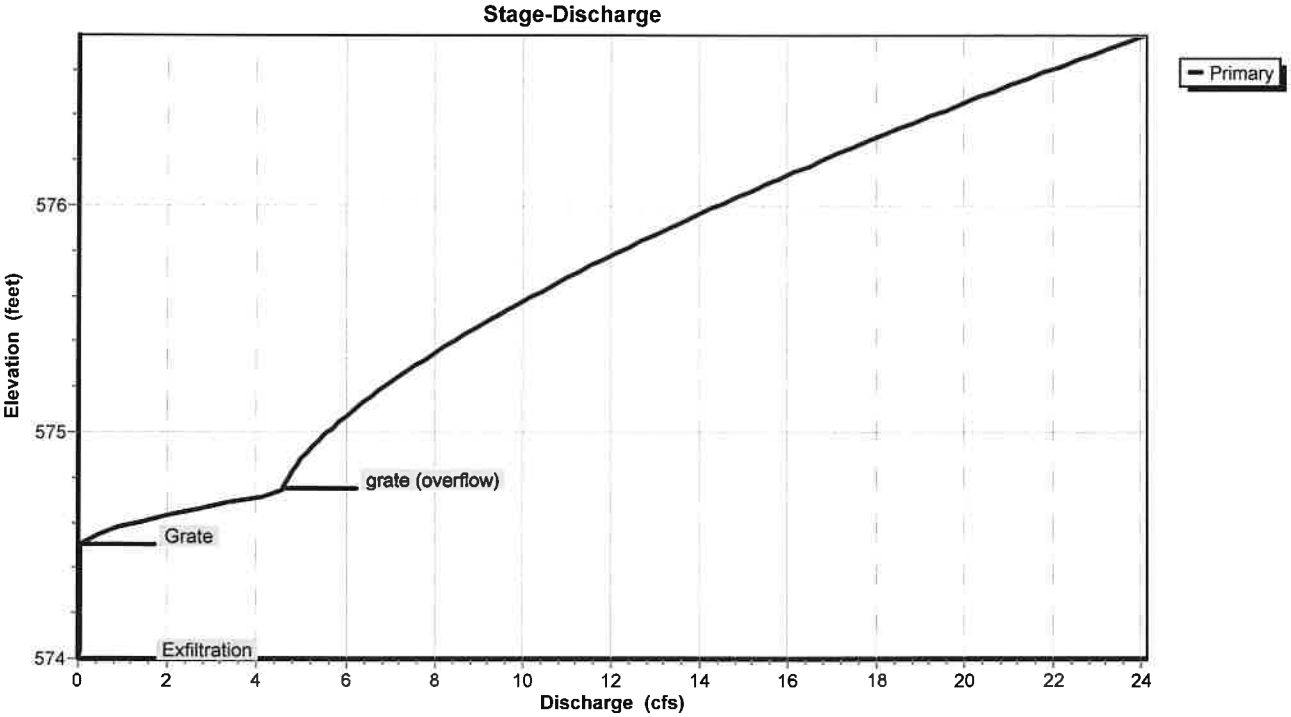
Primary OutFlow Max=3.05 cfs @ 12.08 hrs HW=574.68' (Free Discharge)
- **1=8" pipe** (Passes 3.05 cfs of 4.54 cfs potential flow)
  - **2=Grate** (Weir Controls 3.02 cfs @ 1.37 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

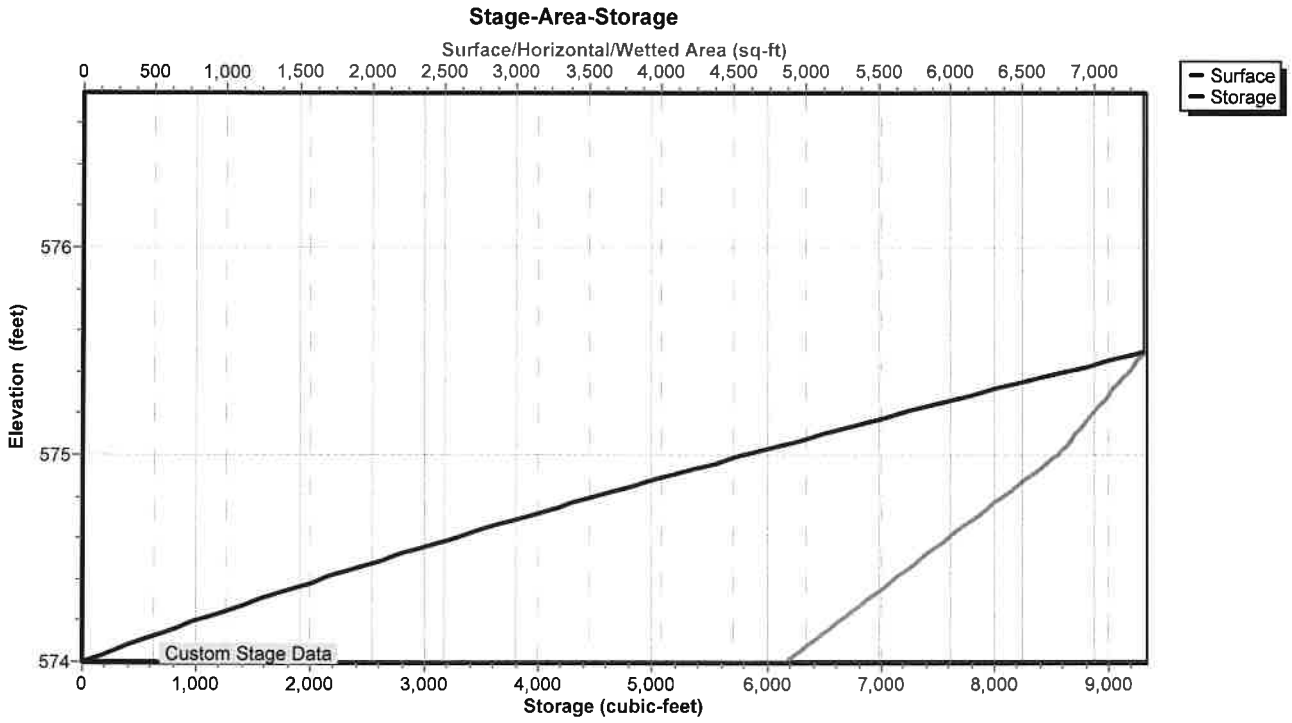


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.01	6	574.00	0.00
8.00	0.02	61	574.01	0.01
10.00	0.07	208	574.04	0.03
12.00	**4.35**	**3,326**	**574.61**	**1.59**
14.00	0.15	**2,783**	**574.52**	**0.16**
16.00	0.09	2,721	574.51	0.10
18.00	0.07	2,697	574.51	0.07
20.00	0.05	2,679	574.50	0.05
22.00	0.05	2,673	574.50	0.05
24.00	0.04	2,670	574.50	0.04
26.00	0.00	2,439	574.46	0.03
28.00	0.00	2,196	574.42	0.03
30.00	0.00	1,956	574.38	0.03
32.00	0.00	1,720	574.33	0.03
34.00	0.00	1,489	574.29	0.03
36.00	0.00	1,262	574.25	0.03
38.00	0.00	1,038	574.21	0.03
40.00	0.00	819	574.16	0.03
42.00	0.00	603	574.12	0.03
44.00	0.00	392	574.08	0.03
46.00	0.00	184	574.04	0.03
48.00	0.00	42	574.01	0.01
50.00	0.00	9	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=2.21"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=4.91 cfs 0.313 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=2.30"
Flow Length=345' Tc=9.1 min CN=92 Runoff=5.28 cfs 0.288 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=571.13' Storage=11,342 cf Inflow=9.17 cfs 0.601 af
Outflow=1.28 cfs 0.558 af

Pond 9P: Bioretention Area 3 Peak Elev=574.72' Storage=4,001 cf Inflow=5.28 cfs 0.288 af
Outflow=4.27 cfs 0.288 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.601 af Average Runoff Depth = 2.25"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

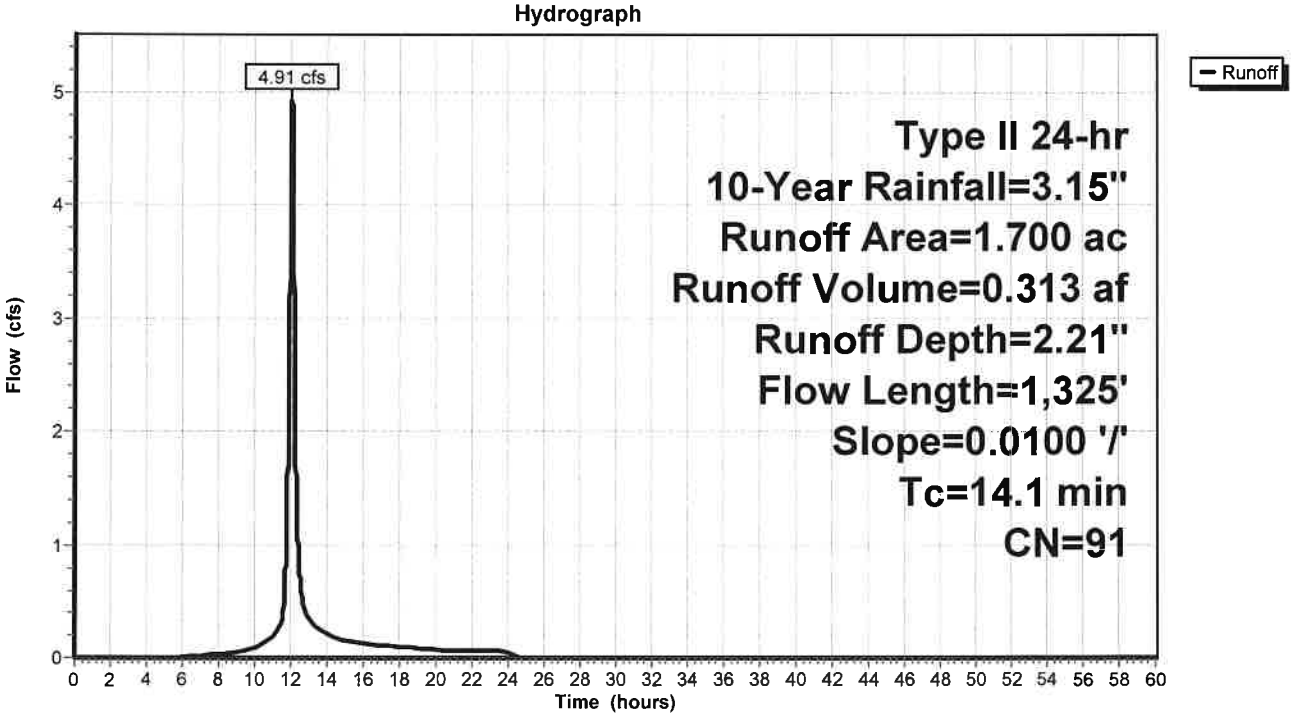
Runoff = 4.91 cfs @ 12.05 hrs, Volume= 0.313 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.07	0.00	0.00
3.00	0.11	0.00	0.00
4.00	0.15	0.00	0.00
5.00	0.20	0.00	0.00
6.00	0.25	0.00	0.01
7.00	0.31	0.01	0.02
8.00	0.38	0.03	0.03
9.00	0.46	0.06	0.06
10.00	0.57	0.10	0.09
11.00	0.74	0.19	0.19
12.00	2.09	1.24	**4.35**
13.00	2.43	1.55	**0.35**
14.00	2.58	1.69	0.20
15.00	2.69	1.78	0.16
16.00	2.77	1.86	0.12
17.00	2.84	1.92	0.11
18.00	2.90	1.98	0.09
19.00	2.95	2.03	0.08
20.00	3.00	2.07	0.07
21.00	3.04	2.11	0.06
22.00	3.08	2.14	0.06
23.00	3.11	2.18	0.06
24.00	**3.15**	**2.21**	0.06
25.00	3.15	2.21	0.00
26.00	3.15	2.21	0.00
27.00	3.15	2.21	0.00
28.00	3.15	2.21	0.00
29.00	3.15	2.21	0.00
30.00	3.15	2.21	0.00
31.00	3.15	2.21	0.00
32.00	3.15	2.21	0.00
33.00	3.15	2.21	0.00
34.00	3.15	2.21	0.00
35.00	3.15	2.21	0.00
36.00	3.15	2.21	0.00
37.00	3.15	2.21	0.00
38.00	3.15	2.21	0.00
39.00	3.15	2.21	0.00
40.00	3.15	2.21	0.00
41.00	3.15	2.21	0.00
42.00	3.15	2.21	0.00
43.00	3.15	2.21	0.00
44.00	3.15	2.21	0.00
45.00	3.15	2.21	0.00
46.00	3.15	2.21	0.00
47.00	3.15	2.21	0.00
48.00	3.15	2.21	0.00
49.00	3.15	2.21	0.00
50.00	3.15	2.21	0.00
51.00	3.15	2.21	0.00
52.00	3.15	2.21	0.00
53.00	3.15	2.21	0.00
54.00	3.15	2.21	0.00
55.00	3.15	2.21	0.00
56.00	3.15	2.21	0.00
57.00	3.15	2.21	0.00
58.00	3.15	2.21	0.00
59.00	3.15	2.21	0.00
60.00	3.15	2.21	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

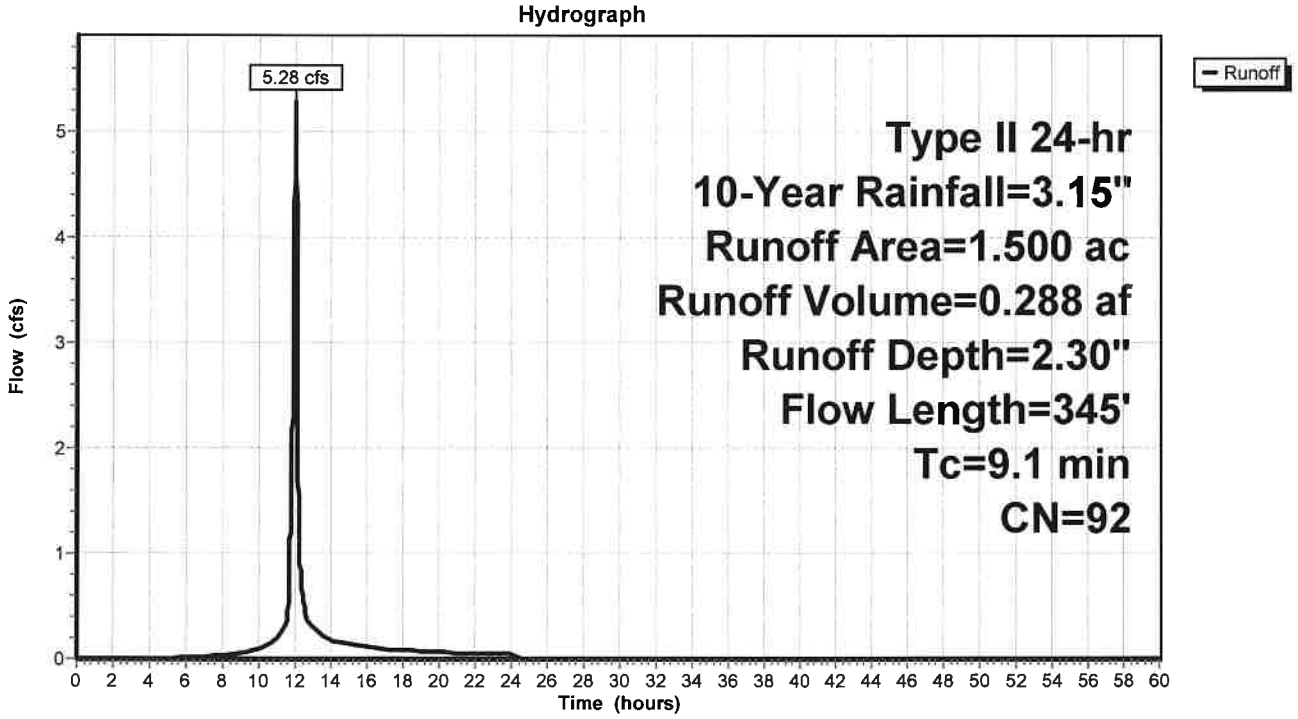
Runoff = 5.28 cfs @ 12.00 hrs, Volume= 0.288 af, Depth= 2.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.15	2.30	0.00
1.00	0.03	0.00	0.00	53.00	3.15	2.30	0.00
2.00	0.07	0.00	0.00	54.00	3.15	2.30	0.00
3.00	0.11	0.00	0.00	55.00	3.15	2.30	0.00
4.00	0.15	0.00	0.00	56.00	3.15	2.30	0.00
5.00	0.20	0.00	0.00	57.00	3.15	2.30	0.00
6.00	0.25	0.01	0.01	58.00	3.15	2.30	0.00
7.00	0.31	0.02	0.02	59.00	3.15	2.30	0.00
8.00	0.38	0.04	0.03	60.00	3.15	2.30	0.00
9.00	0.46	0.07	0.06				
10.00	0.57	0.12	0.09				
11.00	0.74	0.22	0.20				
12.00	2.09	1.32	**5.27**				
13.00	2.43	1.63	0.30				
14.00	2.58	1.77	0.18				
15.00	2.69	1.87	0.14				
16.00	2.77	1.95	0.11				
17.00	2.84	2.01	0.09				
18.00	2.90	2.07	0.08				
19.00	2.95	2.12	0.07				
20.00	3.00	2.16	0.06				
21.00	3.04	2.20	0.06				
22.00	3.08	2.23	0.05				
23.00	3.11	2.27	0.05				
24.00	**3.15**	**2.30**	0.05				
25.00	3.15	2.30	0.00				
26.00	3.15	2.30	0.00				
27.00	3.15	2.30	0.00				
28.00	3.15	2.30	0.00				
29.00	3.15	2.30	0.00				
30.00	3.15	2.30	0.00				
31.00	3.15	2.30	0.00				
32.00	3.15	2.30	0.00				
33.00	3.15	2.30	0.00				
34.00	3.15	2.30	0.00				
35.00	3.15	2.30	0.00				
36.00	3.15	2.30	0.00				
37.00	3.15	2.30	0.00				
38.00	3.15	2.30	0.00				
39.00	3.15	2.30	0.00				
40.00	3.15	2.30	0.00				
41.00	3.15	2.30	0.00				
42.00	3.15	2.30	0.00				
43.00	3.15	2.30	0.00				
44.00	3.15	2.30	0.00				
45.00	3.15	2.30	0.00				
46.00	3.15	2.30	0.00				
47.00	3.15	2.30	0.00				
48.00	3.15	2.30	0.00				
49.00	3.15	2.30	0.00				
50.00	3.15	2.30	0.00				
51.00	3.15	2.30	0.00				

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 2.25" for 10-Year event
Inflow = 9.17 cfs @ 12.06 hrs, Volume= 0.601 af
Outflow = 1.28 cfs @ 12.54 hrs, Volume= 0.558 af, Atten= 86%, Lag= 29.2 min
Primary = 1.28 cfs @ 12.54 hrs, Volume= 0.558 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 571.13' @ 12.54 hrs Surf.Area= 10,145 sf Storage= 11,342 cf

Plug-Flow detention time= 284.1 min calculated for 0.558 af (93% of inflow)
Center-of-Mass det. time= 176.3 min (1,132.0 - 955.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

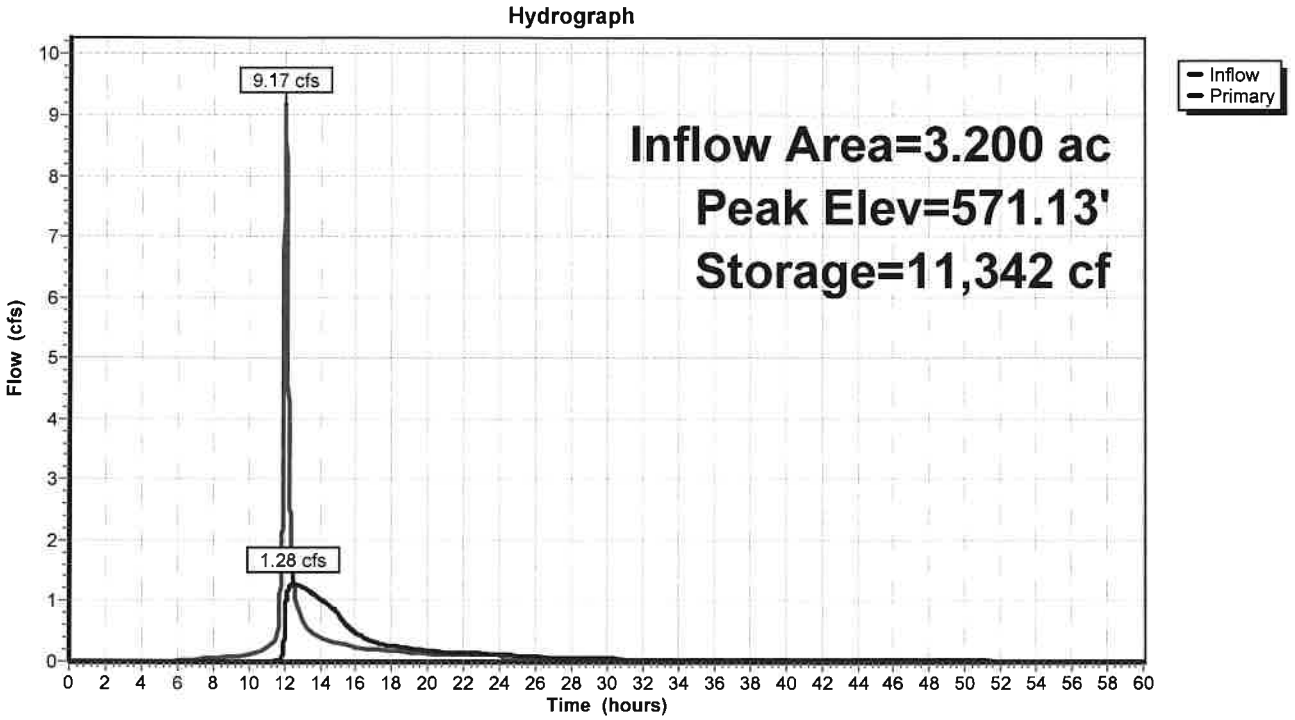
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

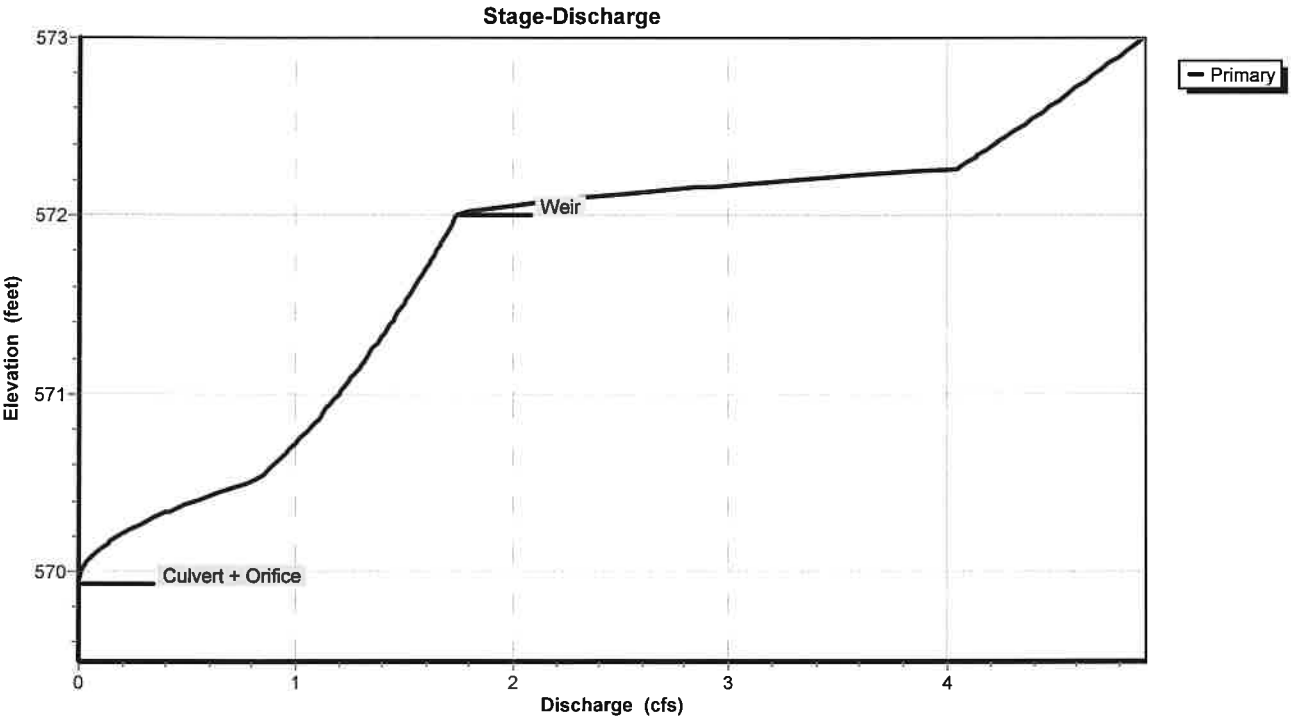
Primary OutFlow Max=1.28 cfs @ 12.54 hrs HW=571.13' (Free Discharge)
└**1=Culvert** (Passes 1.28 cfs of 2.37 cfs potential flow)
├**2=Orifice** (Orifice Controls 1.28 cfs @ 4.88 fps)
└**3=Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

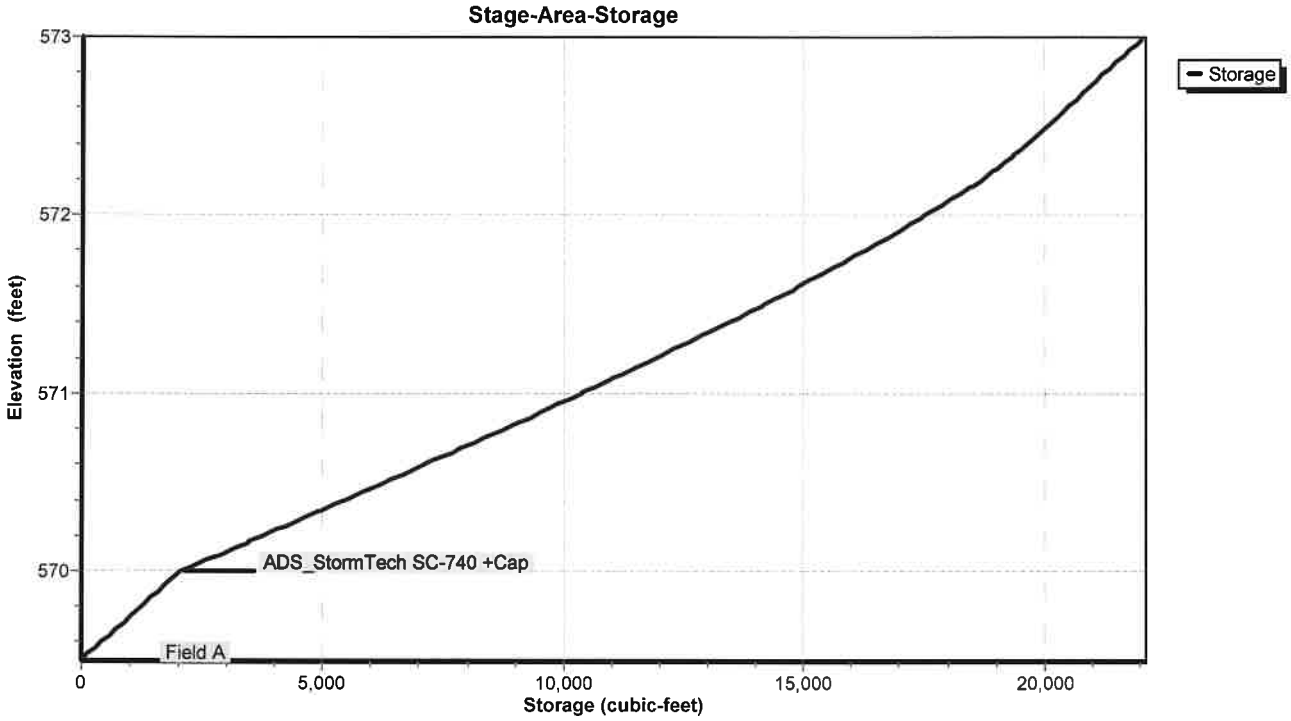


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.01	18	569.50	0.00
8.00	0.05	241	569.56	0.00
10.00	0.12	846	569.71	0.00
12.00	**7.80**	**5,030**	**570.35**	**0.43**
14.00	**0.39**	**8,504**	**570.77**	**1.03**
16.00	0.24	5,183	570.37	0.47
18.00	0.18	4,195	570.25	0.26
20.00	0.13	3,754	570.20	0.18
22.00	0.12	3,484	570.17	0.14
24.00	0.11	3,343	570.15	0.12
26.00	0.03	2,942	570.11	0.08
28.00	0.03	2,728	570.08	0.05
30.00	0.03	2,611	570.07	0.05
32.00	0.03	2,544	570.06	0.04
34.00	0.03	2,500	570.05	0.04
36.00	0.03	2,470	570.05	0.03
38.00	0.03	2,448	570.05	0.03
40.00	0.03	2,430	570.05	0.03
42.00	0.03	2,416	570.05	0.03
44.00	0.03	2,404	570.04	0.03
46.00	0.03	2,393	570.04	0.03
48.00	0.01	2,331	570.04	0.03
50.00	0.00	2,206	570.02	0.02
52.00	0.00	2,098	570.01	0.01
54.00	0.00	2,015	570.00	0.01
56.00	0.00	1,960	569.98	0.01
58.00	0.00	1,921	569.97	0.00
60.00	0.00	1,893	569.97	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 2.30" for 10-Year event
Inflow = 5.28 cfs @ 12.00 hrs, Volume= 0.288 af
Outflow = 4.27 cfs @ 12.06 hrs, Volume= 0.288 af, Atten= 19%, Lag= 3.5 min
Primary = 4.27 cfs @ 12.06 hrs, Volume= 0.288 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.72' @ 12.06 hrs Surf.Area= 6,219 sf Storage= 4,001 cf

Plug-Flow detention time= 318.6 min calculated for 0.288 af (100% of inflow)
Center-of-Mass det. time= 318.8 min (1,116.8 - 798.1)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

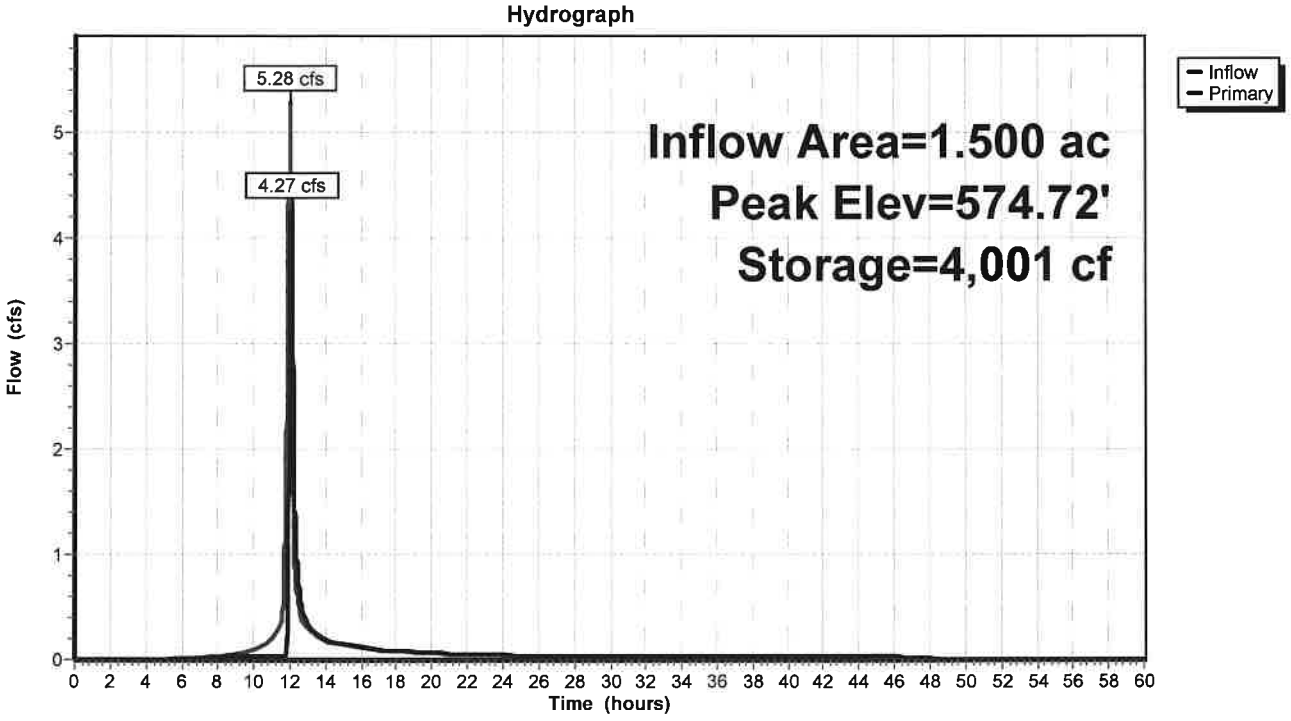
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

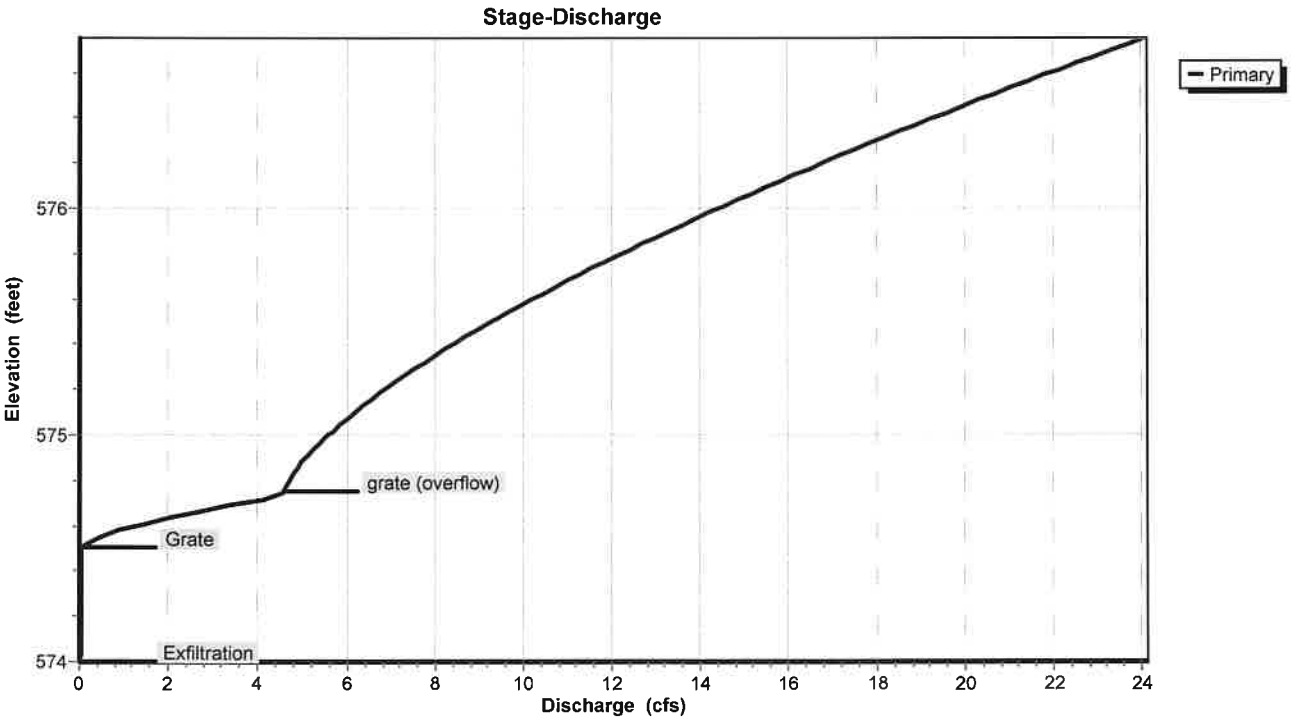
Primary OutFlow Max=4.36 cfs @ 12.06 hrs HW=574.72' (Free Discharge)
- **1=8" pipe** (Passes 4.36 cfs of 4.57 cfs potential flow)
  - **2=Grate** (Weir Controls 4.32 cfs @ 1.54 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

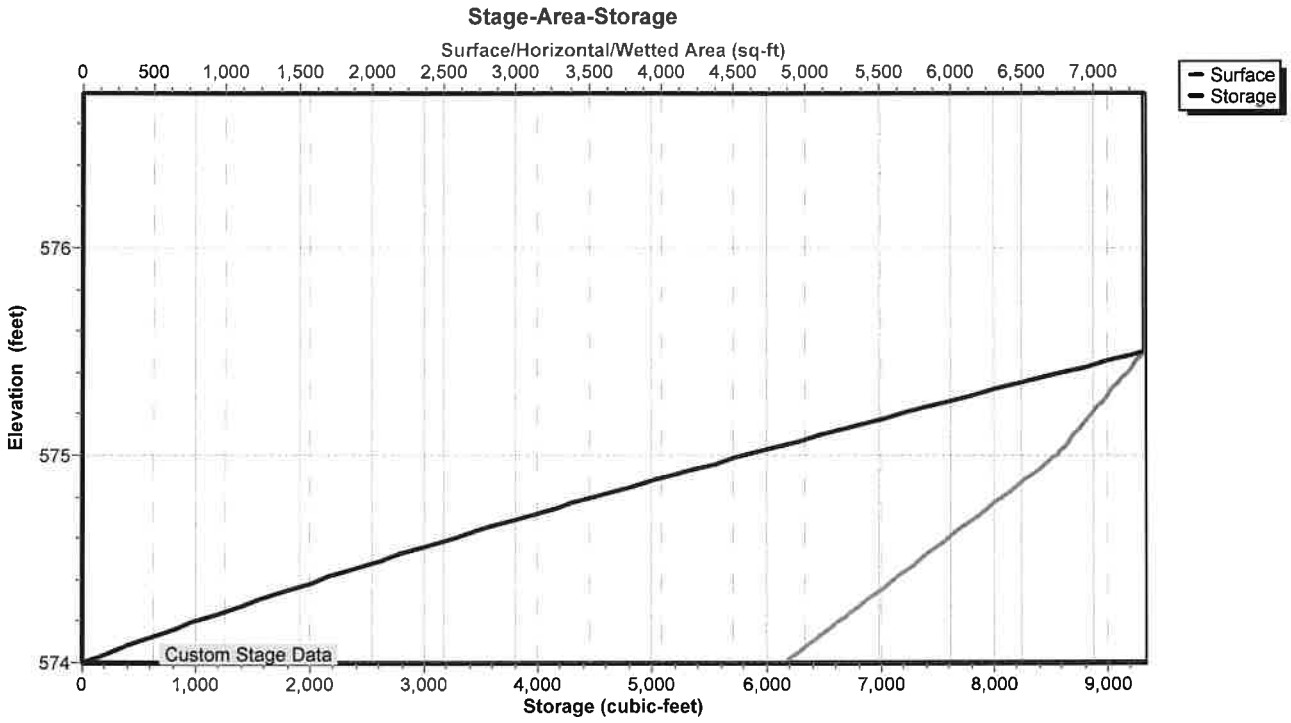


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.01	21	574.00	0.00
8.00	0.03	99	574.02	0.02
10.00	0.09	335	574.07	0.03
12.00	**5.27**	**3,799**	**574.69**	**3.45**
14.00	0.18	**2,801**	**574.52**	**0.19**
16.00	0.11	2,738	574.51	0.12
18.00	0.08	2,710	574.51	0.09
20.00	0.06	2,689	574.50	0.06
22.00	0.05	2,681	574.50	0.06
24.00	0.05	2,677	574.50	0.05
26.00	0.00	2,445	574.46	0.03
28.00	0.00	2,201	574.42	0.03
30.00	0.00	1,961	574.38	0.03
32.00	0.00	1,726	574.33	0.03
34.00	0.00	1,494	574.29	0.03
36.00	0.00	1,267	574.25	0.03
38.00	0.00	1,043	574.21	0.03
40.00	0.00	824	574.16	0.03
42.00	0.00	608	574.12	0.03
44.00	0.00	397	574.08	0.03
46.00	0.00	189	574.04	0.03
48.00	0.00	44	574.01	0.01
50.00	0.00	10	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=2.89"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=6.35 cfs 0.410 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=2.99"
Flow Length=345' Tc=9.1 min CN=92 Runoff=6.75 cfs 0.374 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=571.73' Storage=15,804 cf Inflow=11.11 cfs 0.784 af
Outflow=1.61 cfs 0.740 af

Pond 9P: Bioretention Area 3 Peak Elev=574.82' Storage=4,638 cf Inflow=6.75 cfs 0.374 af
Outflow=4.78 cfs 0.374 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.784 af Average Runoff Depth = 2.94"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

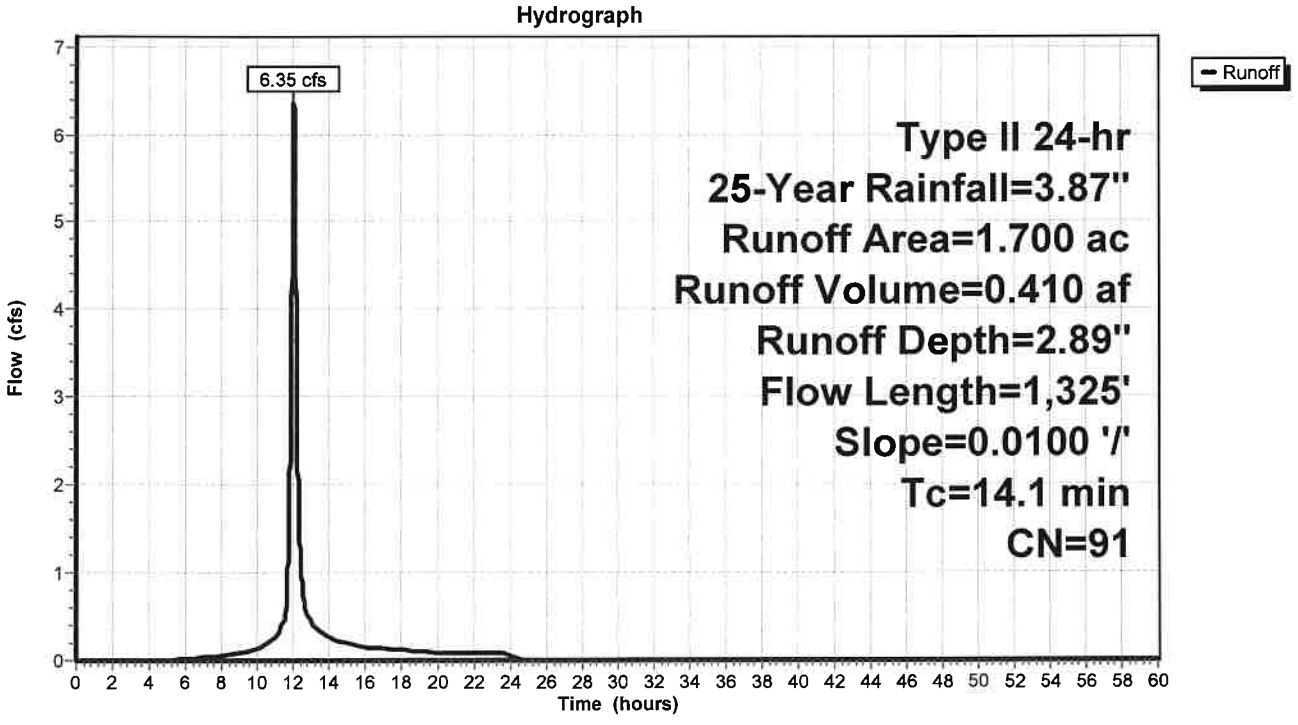
Runoff = 6.35 cfs @ 12.05 hrs, Volume= 0.410 af, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.04	0.00	0.00
2.00	0.09	0.00	0.00
3.00	0.13	0.00	0.00
4.00	0.19	0.00	0.00
5.00	0.24	0.00	0.01
6.00	0.31	0.01	0.02
7.00	0.38	0.03	0.04
8.00	0.46	0.06	0.05
9.00	0.57	0.10	0.09
10.00	0.70	0.17	0.13
11.00	0.91	0.30	0.27
12.00	2.57	1.67	**5.66**
13.00	2.99	2.06	**0.45**
14.00	3.17	2.23	0.26
15.00	3.30	2.36	0.20
16.00	3.41	2.45	0.15
17.00	3.49	2.53	0.13
18.00	3.56	2.60	0.12
19.00	3.63	2.66	0.10
20.00	3.68	2.72	0.09
21.00	3.73	2.76	0.08
22.00	3.78	2.81	0.08
23.00	3.83	2.85	0.07
24.00	**3.87**	**2.89**	0.07
25.00	3.87	2.89	0.00
26.00	3.87	2.89	0.00
27.00	3.87	2.89	0.00
28.00	3.87	2.89	0.00
29.00	3.87	2.89	0.00
30.00	3.87	2.89	0.00
31.00	3.87	2.89	0.00
32.00	3.87	2.89	0.00
33.00	3.87	2.89	0.00
34.00	3.87	2.89	0.00
35.00	3.87	2.89	0.00
36.00	3.87	2.89	0.00
37.00	3.87	2.89	0.00
38.00	3.87	2.89	0.00
39.00	3.87	2.89	0.00
40.00	3.87	2.89	0.00
41.00	3.87	2.89	0.00
42.00	3.87	2.89	0.00
43.00	3.87	2.89	0.00
44.00	3.87	2.89	0.00
45.00	3.87	2.89	0.00
46.00	3.87	2.89	0.00
47.00	3.87	2.89	0.00
48.00	3.87	2.89	0.00
49.00	3.87	2.89	0.00
50.00	3.87	2.89	0.00
51.00	3.87	2.89	0.00
52.00	3.87	2.89	0.00
53.00	3.87	2.89	0.00
54.00	3.87	2.89	0.00
55.00	3.87	2.89	0.00
56.00	3.87	2.89	0.00
57.00	3.87	2.89	0.00
58.00	3.87	2.89	0.00
59.00	3.87	2.89	0.00
60.00	3.87	2.89	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

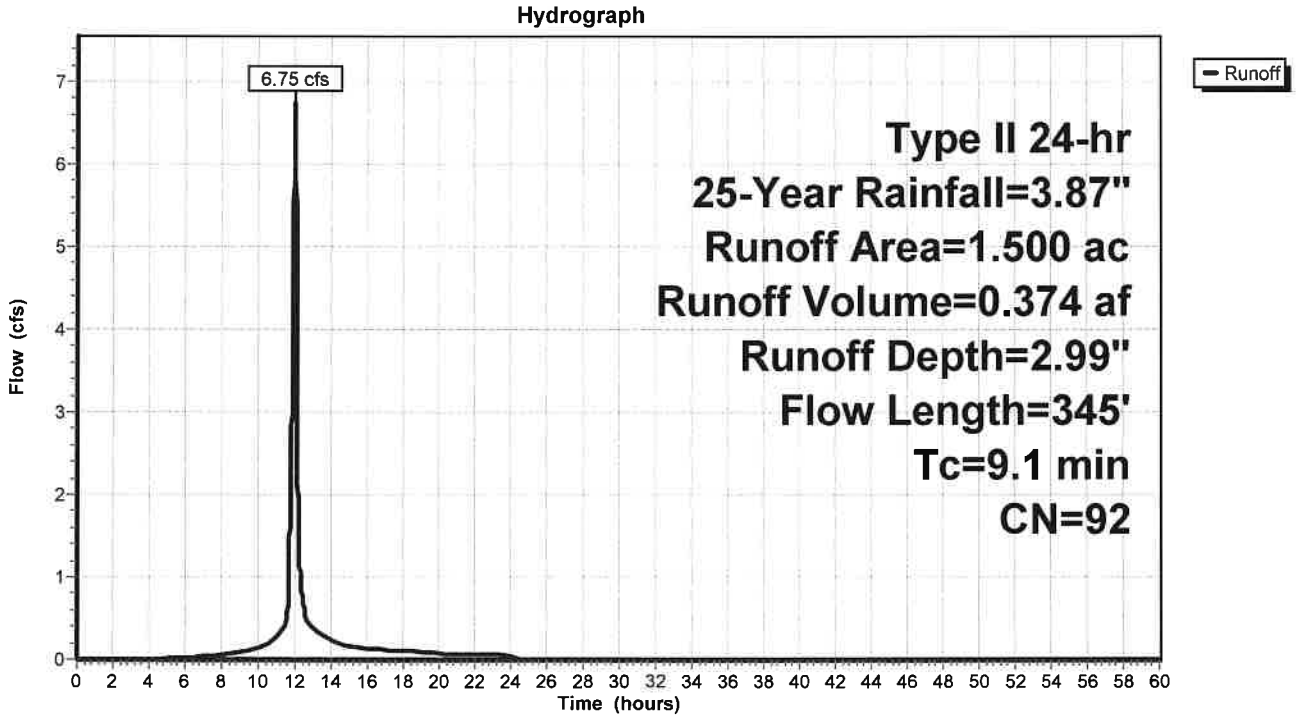
Runoff = 6.75 cfs @ 12.00 hrs, Volume= 0.374 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.87	2.99	0.00
1.00	0.04	0.00	0.00	53.00	3.87	2.99	0.00
2.00	0.09	0.00	0.00	54.00	3.87	2.99	0.00
3.00	0.13	0.00	0.00	55.00	3.87	2.99	0.00
4.00	0.19	0.00	0.00	56.00	3.87	2.99	0.00
5.00	0.24	0.01	0.01	57.00	3.87	2.99	0.00
6.00	0.31	0.02	0.02	58.00	3.87	2.99	0.00
7.00	0.38	0.04	0.04	59.00	3.87	2.99	0.00
8.00	0.46	0.07	0.05	60.00	3.87	2.99	0.00
9.00	0.57	0.12	0.09				
10.00	0.70	0.20	0.13				
11.00	0.91	0.34	0.27				
12.00	2.57	1.75	**6.75**				
13.00	2.99	2.15	0.38				
14.00	3.17	2.33	0.22				
15.00	3.30	2.45	0.17				
16.00	3.41	2.55	0.13				
17.00	3.49	2.63	0.12				
18.00	3.56	2.70	0.10				
19.00	3.63	2.76	0.09				
20.00	3.68	2.81	0.08				
21.00	3.73	2.86	0.07				
22.00	3.78	2.91	0.07				
23.00	3.83	2.95	0.07				
24.00	**3.87**	**2.99**	0.06				
25.00	3.87	2.99	0.00				
26.00	3.87	2.99	0.00				
27.00	3.87	2.99	0.00				
28.00	3.87	2.99	0.00				
29.00	3.87	2.99	0.00				
30.00	3.87	2.99	0.00				
31.00	3.87	2.99	0.00				
32.00	3.87	2.99	0.00				
33.00	3.87	2.99	0.00				
34.00	3.87	2.99	0.00				
35.00	3.87	2.99	0.00				
36.00	3.87	2.99	0.00				
37.00	3.87	2.99	0.00				
38.00	3.87	2.99	0.00				
39.00	3.87	2.99	0.00				
40.00	3.87	2.99	0.00				
41.00	3.87	2.99	0.00				
42.00	3.87	2.99	0.00				
43.00	3.87	2.99	0.00				
44.00	3.87	2.99	0.00				
45.00	3.87	2.99	0.00				
46.00	3.87	2.99	0.00				
47.00	3.87	2.99	0.00				
48.00	3.87	2.99	0.00				
49.00	3.87	2.99	0.00				
50.00	3.87	2.99	0.00				
51.00	3.87	2.99	0.00				

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 2.94" for 25-Year event
Inflow = 11.11 cfs @ 12.06 hrs, Volume= 0.784 af
Outflow = 1.61 cfs @ 12.54 hrs, Volume= 0.740 af, Atten= 85%, Lag= 29.2 min
Primary = 1.61 cfs @ 12.54 hrs, Volume= 0.740 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 571.73' @ 12.54 hrs Surf.Area= 10,145 sf Storage= 15,804 cf

Plug-Flow detention time= 252.2 min calculated for 0.740 af (94% of inflow)
Center-of-Mass det. time= 168.6 min (1,084.7 - 916.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

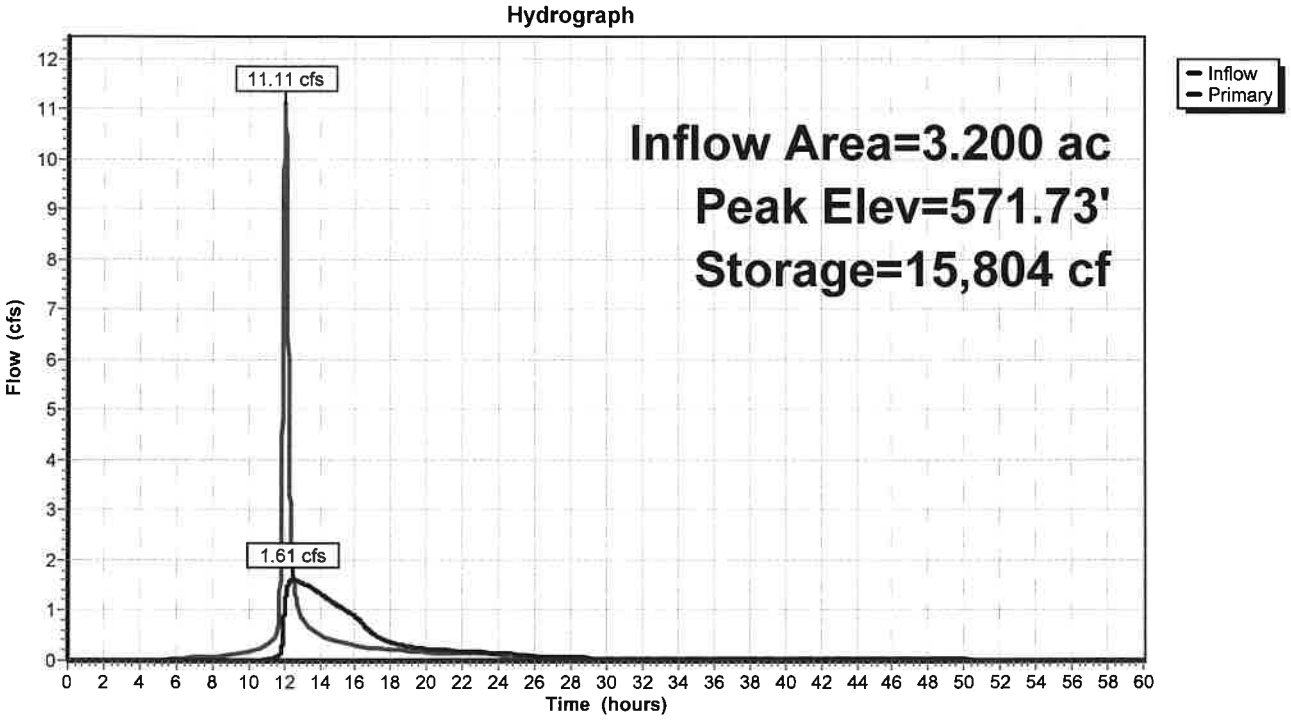
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

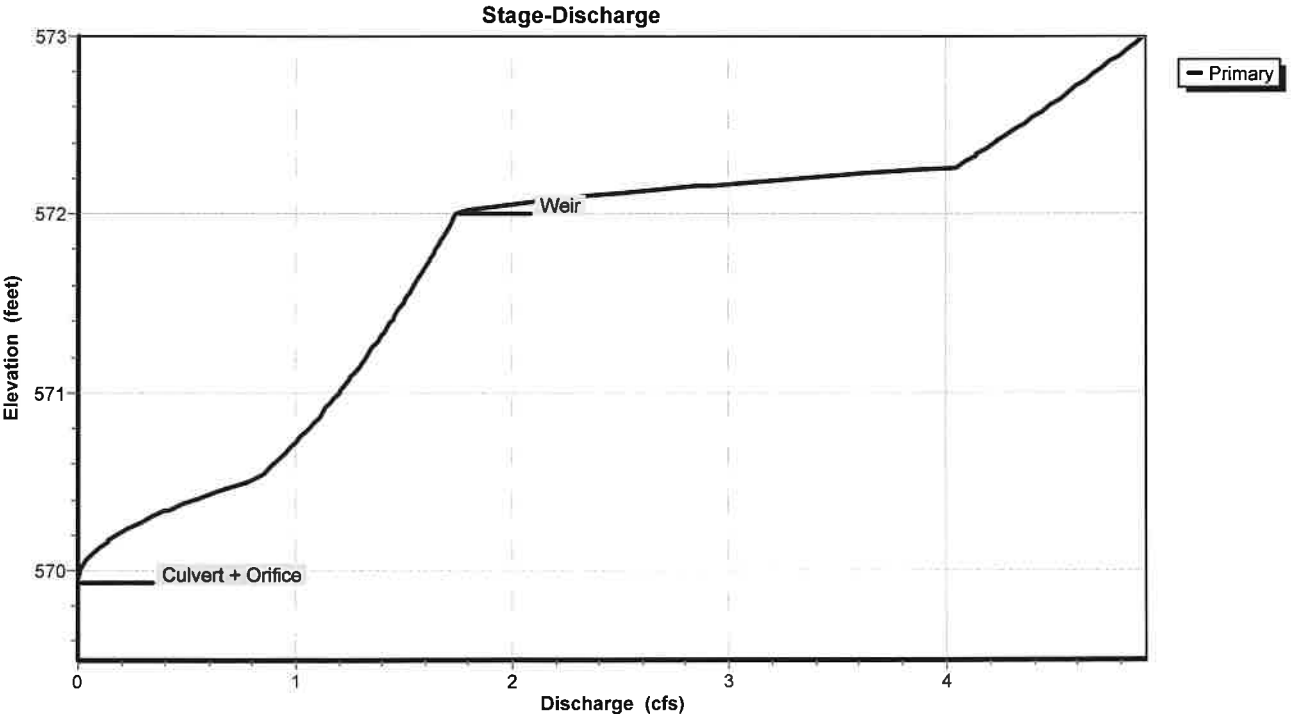
Primary OutFlow Max=1.61 cfs @ 12.54 hrs HW=571.73' (Free Discharge)
└**1=Culvert** (Passes 1.61 cfs of 3.29 cfs potential flow)
  ├**2=Orifice** (Orifice Controls 1.61 cfs @ 6.16 fps)
  └**3=Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

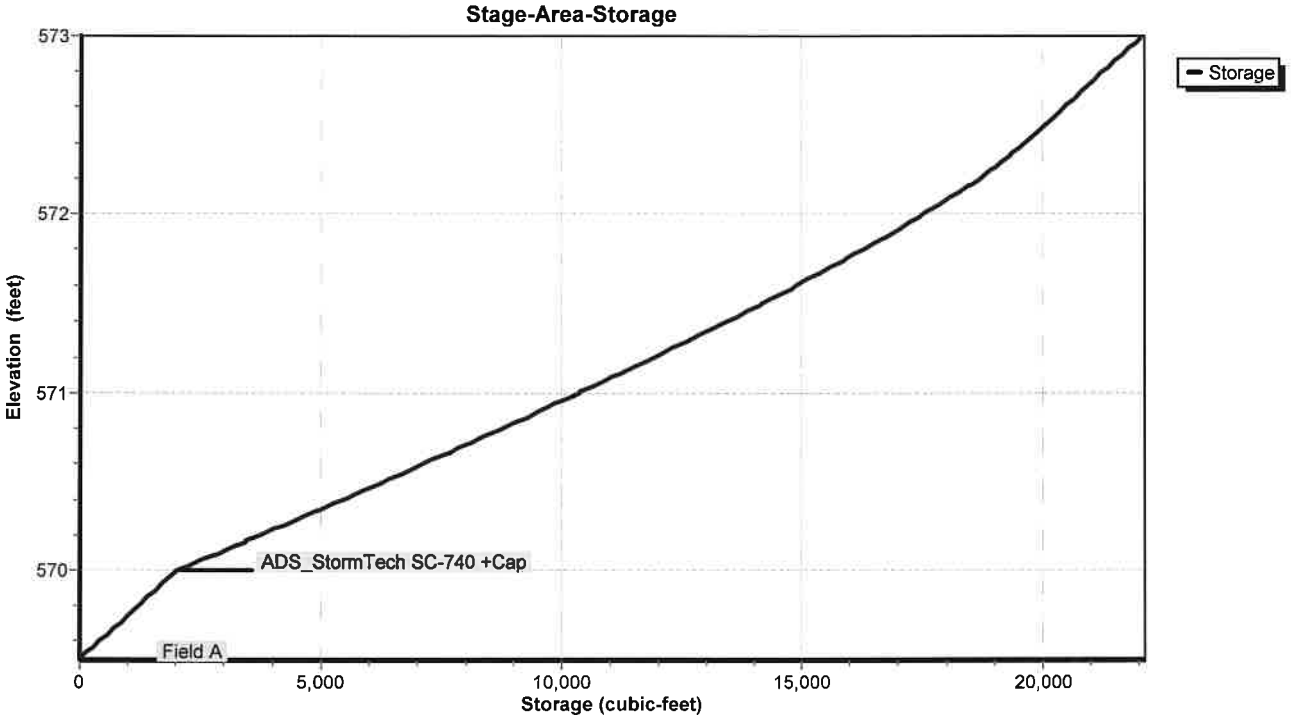


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.03	85	569.52	0.00
8.00	0.08	499	569.62	0.00
10.00	0.16	1,337	569.83	0.00
12.00	**10.28**	**7,562**	**570.65**	**0.94**
14.00	**0.49**	**12,132**	**571.23**	**1.34**
16.00	0.30	6,914	570.58	0.87
18.00	0.22	4,703	570.31	0.36
20.00	0.16	4,045	570.24	0.23
22.00	0.15	3,711	570.20	0.17
24.00	0.13	3,549	570.18	0.15
26.00	0.03	3,038	570.12	0.09
28.00	0.03	2,775	570.09	0.06
30.00	0.03	2,637	570.07	0.05
32.00	0.03	2,558	570.06	0.04
34.00	0.03	2,510	570.06	0.04
36.00	0.03	2,476	570.05	0.04
38.00	0.03	2,451	570.05	0.03
40.00	0.03	2,433	570.05	0.03
42.00	0.03	2,418	570.05	0.03
44.00	0.03	2,405	570.04	0.03
46.00	0.03	2,394	570.04	0.03
48.00	0.01	2,335	570.04	0.03
50.00	0.00	2,210	570.02	0.02
52.00	0.00	2,101	570.01	0.01
54.00	0.00	2,017	570.00	0.01
56.00	0.00	1,961	569.98	0.01
58.00	0.00	1,922	569.97	0.00
60.00	0.00	1,894	569.97	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 2.99" for 25-Year event
Inflow = 6.75 cfs @ 12.00 hrs, Volume= 0.374 af
Outflow = 4.78 cfs @ 12.08 hrs, Volume= 0.374 af, Atten= 29%, Lag= 4.5 min
Primary = 4.78 cfs @ 12.08 hrs, Volume= 0.374 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.82' @ 12.08 hrs Surf.Area= 6,409 sf Storage= 4,638 cf

Plug-Flow detention time= 252.6 min calculated for 0.374 af (100% of inflow)
Center-of-Mass det. time= 252.8 min (1,043.6 - 790.7)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

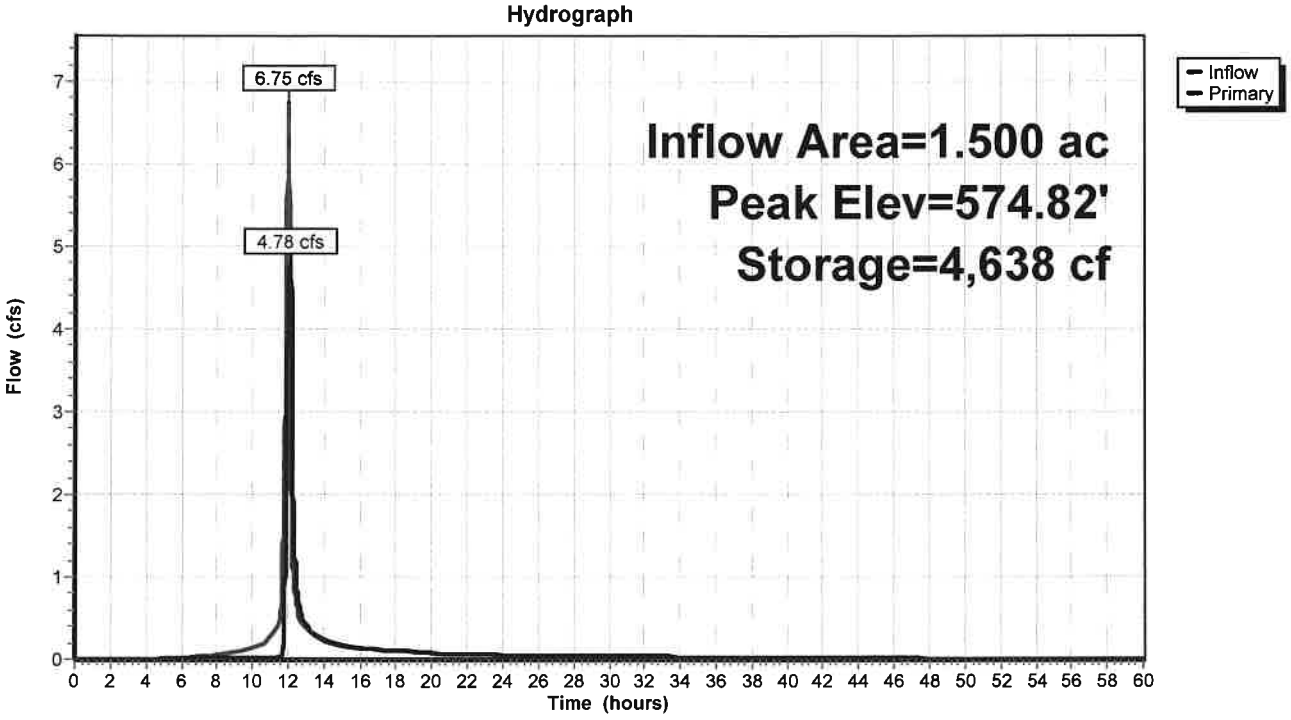
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

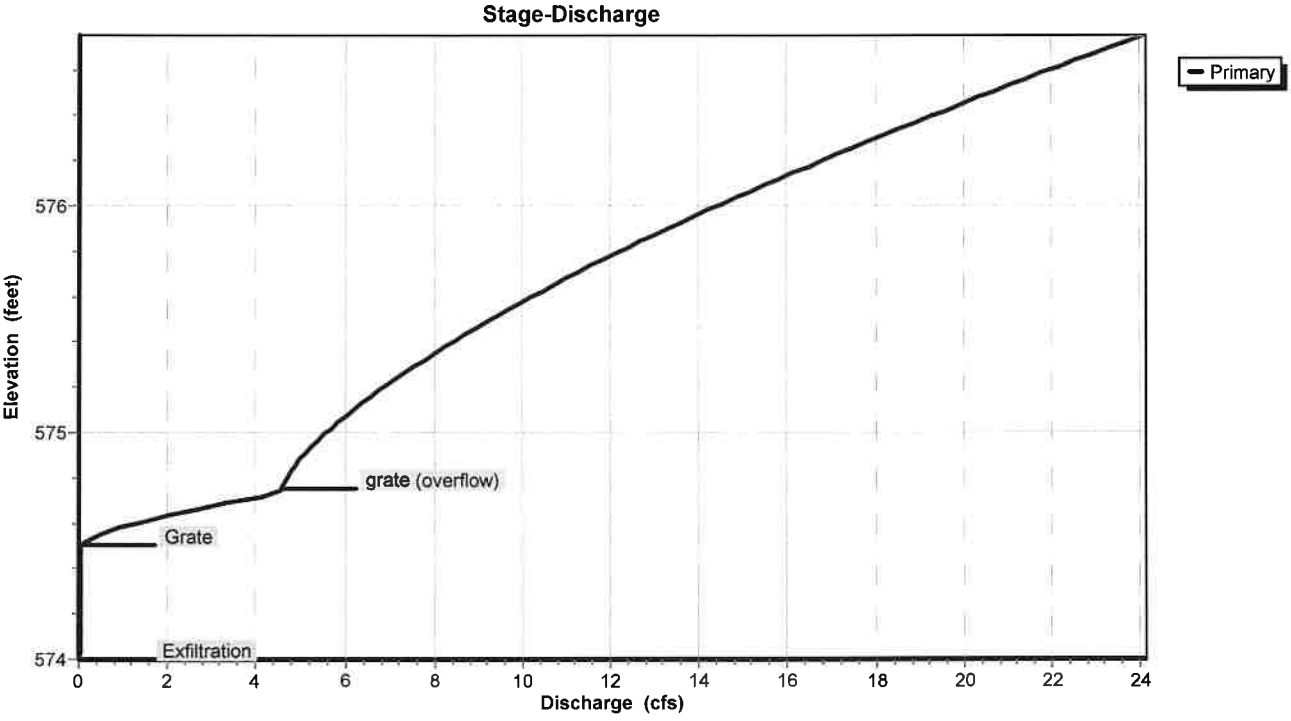
Primary OutFlow Max=4.78 cfs @ 12.08 hrs HW=574.82' (Free Discharge)
- **1=8" pipe** (Barrel Controls 4.65 cfs @ 5.92 fps)
  - **2=Grate** (Passes < 5.74 cfs potential flow)
  - **3=Exfiltration** (Passes < 0.04 cfs potential flow)
- **4=grate (overflow)** (Orifice Controls 0.13 cfs @ 0.87 fps)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

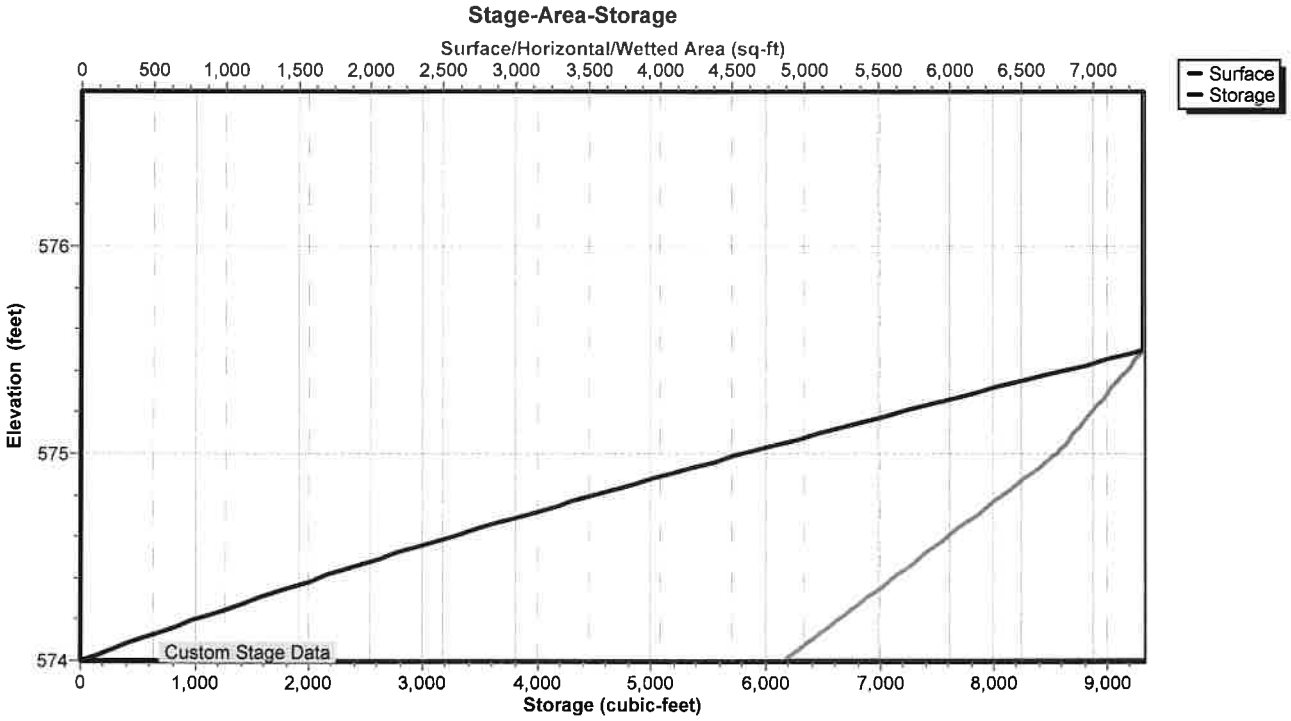


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.02	55	574.01	0.01
8.00	0.05	177	574.04	0.03
10.00	0.13	612	574.12	0.03
12.00	**6.75**	**4,265**	**574.77**	**4.62**
14.00	0.22	**2,825**	**574.53**	**0.24**
16.00	0.13	2,765	574.52	0.14
18.00	0.10	2,730	574.51	0.11
20.00	0.08	2,704	574.51	0.08
22.00	0.07	2,694	574.51	0.07
24.00	0.06	2,689	574.50	0.06
26.00	0.00	2,452	574.46	0.03
28.00	0.00	2,208	574.42	0.03
30.00	0.00	1,968	574.38	0.03
32.00	0.00	1,733	574.34	0.03
34.00	0.00	1,501	574.29	0.03
36.00	0.00	1,273	574.25	0.03
38.00	0.00	1,050	574.21	0.03
40.00	0.00	830	574.17	0.03
42.00	0.00	614	574.12	0.03
44.00	0.00	403	574.08	0.03
46.00	0.00	195	574.04	0.03
48.00	0.00	46	574.01	0.01
50.00	0.00	10	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=3.52"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=7.64 cfs 0.498 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=3.62"
Flow Length=345' Tc=9.1 min CN=92 Runoff=8.07 cfs 0.453 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=572.23' Storage=18,837 cf Inflow=12.80 cfs 0.951 af
Outflow=3.61 cfs 0.907 af

Pond 9P: Bioretention Area 3 Peak Elev=574.93' Storage=5,333 cf Inflow=8.07 cfs 0.453 af
Outflow=5.22 cfs 0.453 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.951 af Average Runoff Depth = 3.57"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

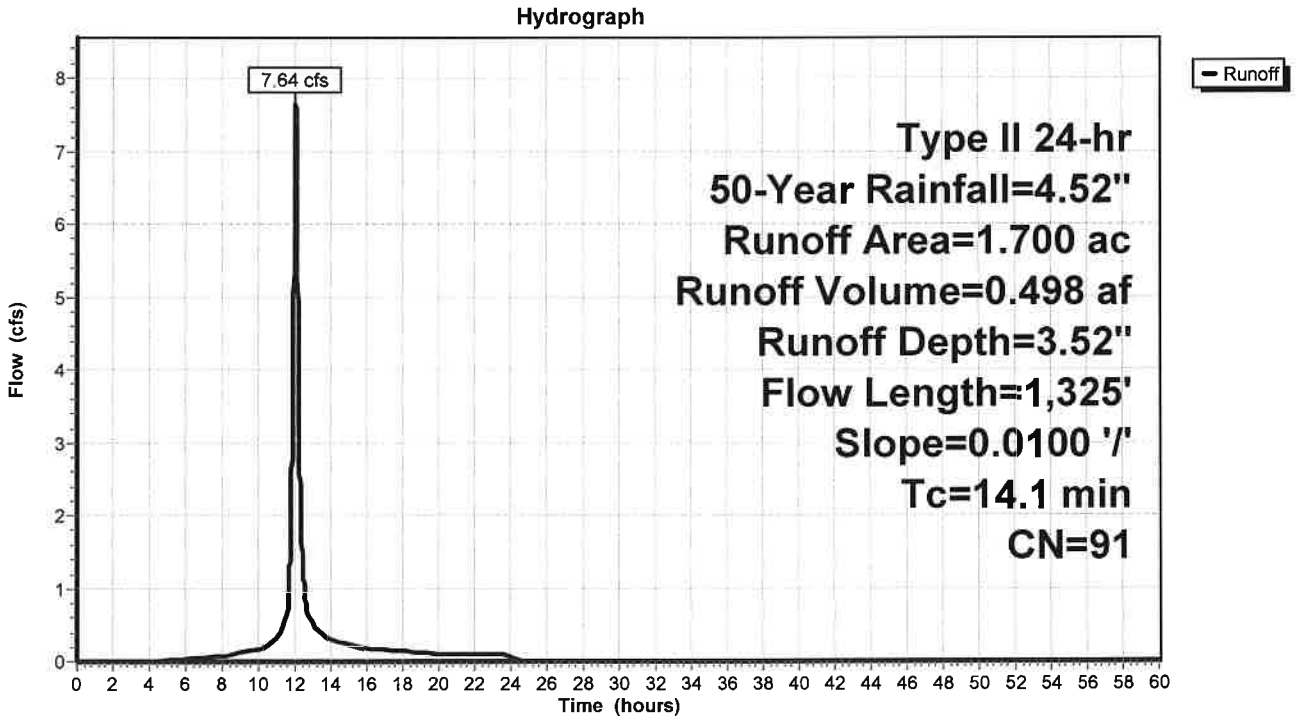
Runoff = 7.64 cfs @ 12.05 hrs, Volume= 0.498 af, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.10	0.00	0.00
3.00	0.16	0.00	0.00
4.00	0.22	0.00	0.00
5.00	0.28	0.01	0.02
6.00	0.36	0.02	0.03
7.00	0.45	0.05	0.05
8.00	0.54	0.09	0.07
9.00	0.66	0.15	0.12
10.00	0.82	0.24	0.17
11.00	1.06	0.40	0.34
12.00	3.00	2.07	**6.84**
13.00	3.49	2.53	**0.53**
14.00	3.71	2.74	0.30
15.00	3.86	2.88	0.23
16.00	3.98	3.00	0.18
17.00	4.08	3.09	0.16
18.00	4.16	3.17	0.14
19.00	4.24	3.25	0.12
20.00	4.30	3.31	0.10
21.00	4.36	3.36	0.09
22.00	4.42	3.42	0.09
23.00	4.47	3.47	0.09
24.00	**4.52**	**3.52**	0.08
25.00	4.52	3.52	0.00
26.00	4.52	3.52	0.00
27.00	4.52	3.52	0.00
28.00	4.52	3.52	0.00
29.00	4.52	3.52	0.00
30.00	4.52	3.52	0.00
31.00	4.52	3.52	0.00
32.00	4.52	3.52	0.00
33.00	4.52	3.52	0.00
34.00	4.52	3.52	0.00
35.00	4.52	3.52	0.00
36.00	4.52	3.52	0.00
37.00	4.52	3.52	0.00
38.00	4.52	3.52	0.00
39.00	4.52	3.52	0.00
40.00	4.52	3.52	0.00
41.00	4.52	3.52	0.00
42.00	4.52	3.52	0.00
43.00	4.52	3.52	0.00
44.00	4.52	3.52	0.00
45.00	4.52	3.52	0.00
46.00	4.52	3.52	0.00
47.00	4.52	3.52	0.00
48.00	4.52	3.52	0.00
49.00	4.52	3.52	0.00
50.00	4.52	3.52	0.00
51.00	4.52	3.52	0.00
52.00	4.52	3.52	0.00
53.00	4.52	3.52	0.00
54.00	4.52	3.52	0.00
55.00	4.52	3.52	0.00
56.00	4.52	3.52	0.00
57.00	4.52	3.52	0.00
58.00	4.52	3.52	0.00
59.00	4.52	3.52	0.00
60.00	4.52	3.52	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

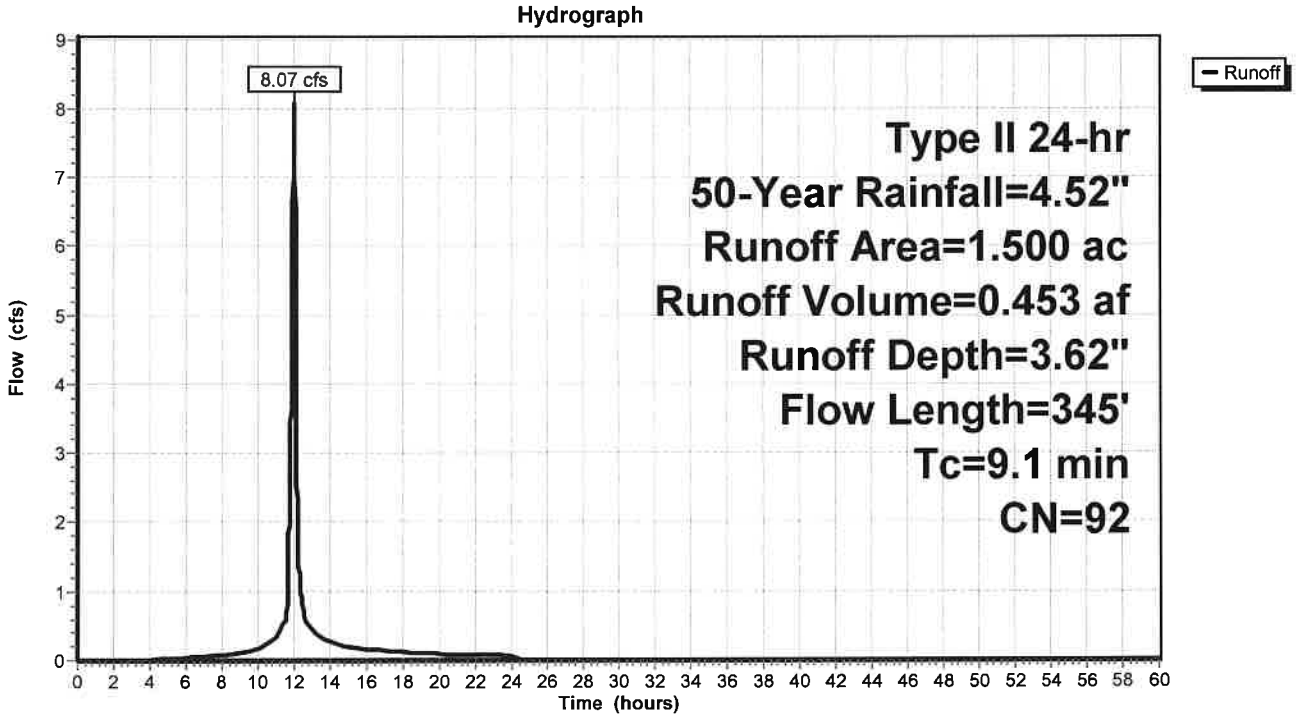
Runoff = 8.07 cfs @ 12.00 hrs, Volume= 0.453 af, Depth= 3.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	4.52	3.62	0.00
1.00	0.05	0.00	0.00	53.00	4.52	3.62	0.00
2.00	0.10	0.00	0.00	54.00	4.52	3.62	0.00
3.00	0.16	0.00	0.00	55.00	4.52	3.62	0.00
4.00	0.22	0.00	0.01	56.00	4.52	3.62	0.00
5.00	0.28	0.01	0.02	57.00	4.52	3.62	0.00
6.00	0.36	0.03	0.04	58.00	4.52	3.62	0.00
7.00	0.45	0.07	0.06	59.00	4.52	3.62	0.00
8.00	0.54	0.11	0.07	60.00	4.52	3.62	0.00
9.00	0.66	0.18	0.12				
10.00	0.82	0.27	0.17				
11.00	1.06	0.45	0.34				
12.00	3.00	2.16	**8.07**				
13.00	3.49	2.63	0.45				
14.00	3.71	2.83	0.26				
15.00	3.86	2.98	0.20				
16.00	3.98	3.10	0.16				
17.00	4.08	3.19	0.14				
18.00	4.16	3.28	0.12				
19.00	4.24	3.35	0.11				
20.00	4.30	3.41	0.09				
21.00	4.36	3.47	0.08				
22.00	4.42	3.52	0.08				
23.00	4.47	3.57	0.08				
24.00	**4.52**	**3.62**	0.07				
25.00	4.52	3.62	0.00				
26.00	4.52	3.62	0.00				
27.00	4.52	3.62	0.00				
28.00	4.52	3.62	0.00				
29.00	4.52	3.62	0.00				
30.00	4.52	3.62	0.00				
31.00	4.52	3.62	0.00				
32.00	4.52	3.62	0.00				
33.00	4.52	3.62	0.00				
34.00	4.52	3.62	0.00				
35.00	4.52	3.62	0.00				
36.00	4.52	3.62	0.00				
37.00	4.52	3.62	0.00				
38.00	4.52	3.62	0.00				
39.00	4.52	3.62	0.00				
40.00	4.52	3.62	0.00				
41.00	4.52	3.62	0.00				
42.00	4.52	3.62	0.00				
43.00	4.52	3.62	0.00				
44.00	4.52	3.62	0.00				
45.00	4.52	3.62	0.00				
46.00	4.52	3.62	0.00				
47.00	4.52	3.62	0.00				
48.00	4.52	3.62	0.00				
49.00	4.52	3.62	0.00				
50.00	4.52	3.62	0.00				
51.00	4.52	3.62	0.00				

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 3.57" for 50-Year event
Inflow = 12.80 cfs @ 12.06 hrs, Volume= 0.951 af
Outflow = 3.61 cfs @ 12.36 hrs, Volume= 0.907 af, Atten= 72%, Lag= 17.7 min
Primary = 3.61 cfs @ 12.36 hrs, Volume= 0.907 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 572.23' @ 12.36 hrs Surf.Area= 10,145 sf Storage= 18,837 cf

Plug-Flow detention time= 228.3 min calculated for 0.907 af (95% of inflow)
Center-of-Mass det. time= 158.8 min (1,051.4 - 892.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

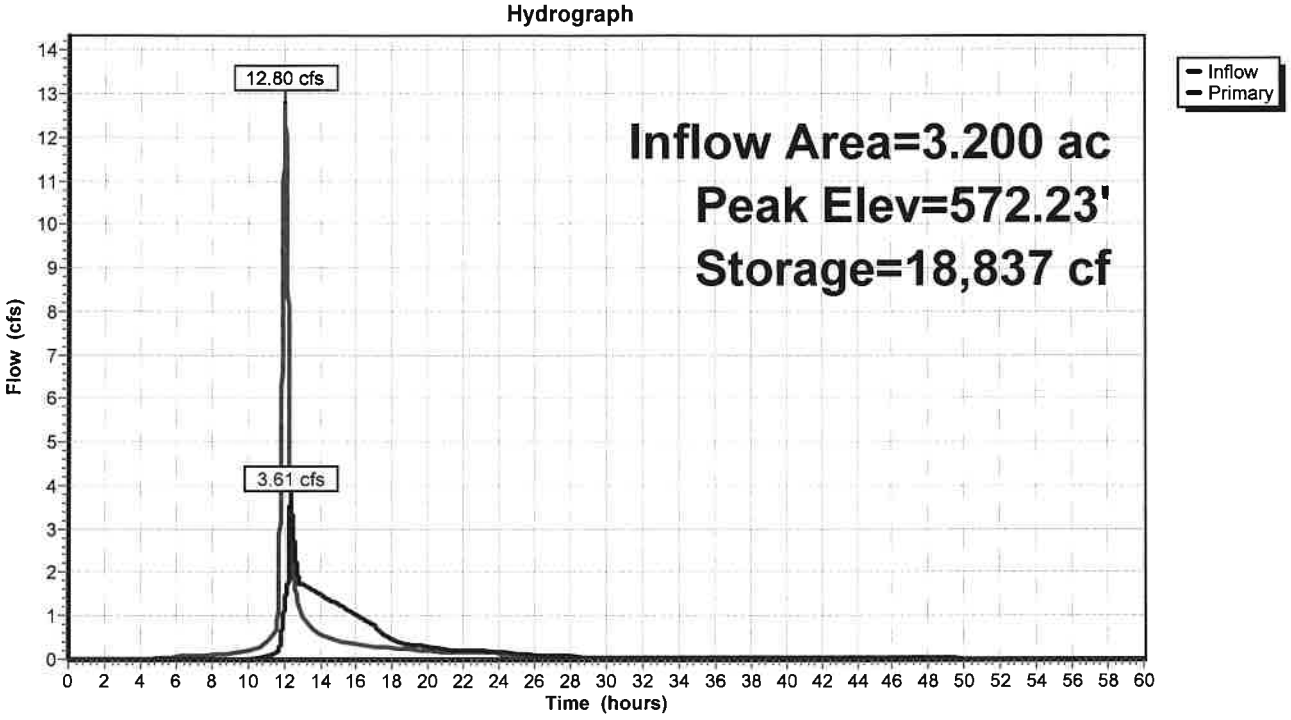
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

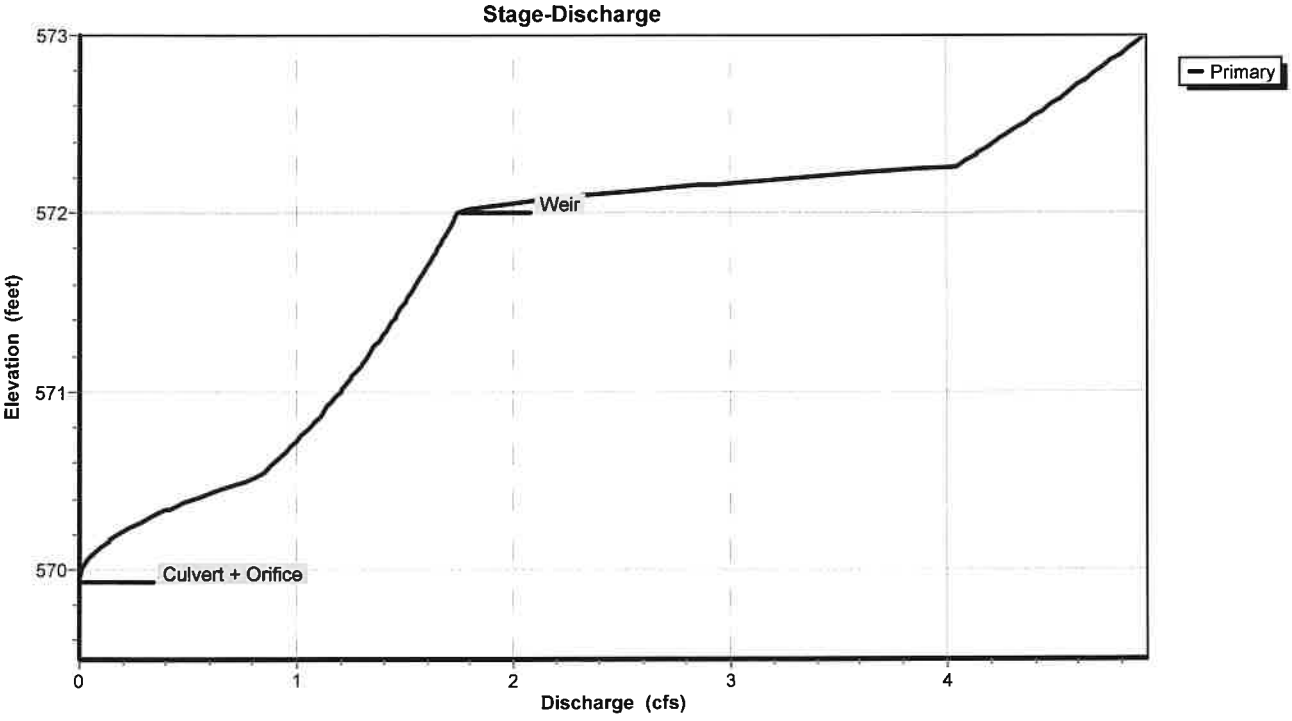
Primary OutFlow Max=3.60 cfs @ 12.36 hrs HW=572.23' (Free Discharge)
└**1=Culvert** (Passes 3.60 cfs of 4.00 cfs potential flow)
  ├**2=Orifice** (Orifice Controls 1.84 cfs @ 7.03 fps)
  └**3=Weir** (Weir Controls 1.76 cfs @ 1.56 fps)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

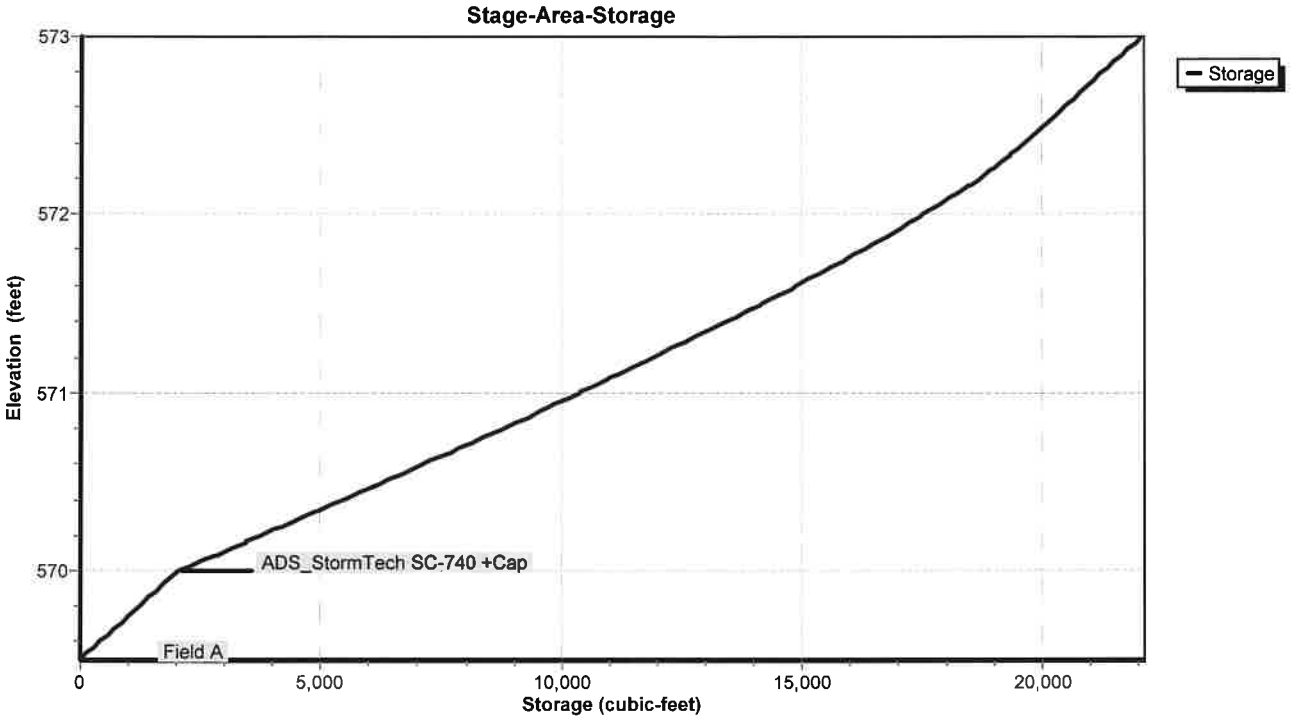


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	1	569.50	0.00
6.00	0.05	184	569.55	0.00
8.00	0.10	755	569.69	0.00
10.00	0.20	1,811	569.95	0.00
12.00	**11.66**	**9,752**	**570.92**	**1.15**
14.00	**0.59**	**14,219**	**571.51**	**1.50**
16.00	0.35	8,385	570.75	1.02
18.00	0.26	5,166	570.37	0.47
20.00	0.19	4,282	570.26	0.27
22.00	0.17	3,893	570.22	0.20
24.00	0.16	3,718	570.20	0.18
26.00	0.03	3,113	570.13	0.09
28.00	0.03	2,810	570.09	0.06
30.00	0.03	2,657	570.07	0.05
32.00	0.03	2,569	570.06	0.04
34.00	0.03	2,516	570.06	0.04
36.00	0.03	2,480	570.05	0.04
38.00	0.03	2,454	570.05	0.03
40.00	0.03	2,435	570.05	0.03
42.00	0.03	2,419	570.05	0.03
44.00	0.03	2,406	570.04	0.03
46.00	0.03	2,395	570.04	0.03
48.00	0.01	2,338	570.04	0.03
50.00	0.00	2,213	570.02	0.02
52.00	0.00	2,103	570.01	0.01
54.00	0.00	2,018	570.00	0.01
56.00	0.00	1,962	569.98	0.01
58.00	0.00	1,923	569.97	0.00
60.00	0.00	1,894	569.97	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 3.62" for 50-Year event
Inflow = 8.07 cfs @ 12.00 hrs, Volume= 0.453 af
Outflow = 5.22 cfs @ 12.09 hrs, Volume= 0.453 af, Atten= 35%, Lag= 5.1 min
Primary = 5.22 cfs @ 12.09 hrs, Volume= 0.453 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.93' @ 12.09 hrs Surf.Area= 6,611 sf Storage= 5,333 cf

Plug-Flow detention time= 214.9 min calculated for 0.453 af (100% of inflow)
Center-of-Mass det. time= 215.2 min (1,000.7 - 785.5)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

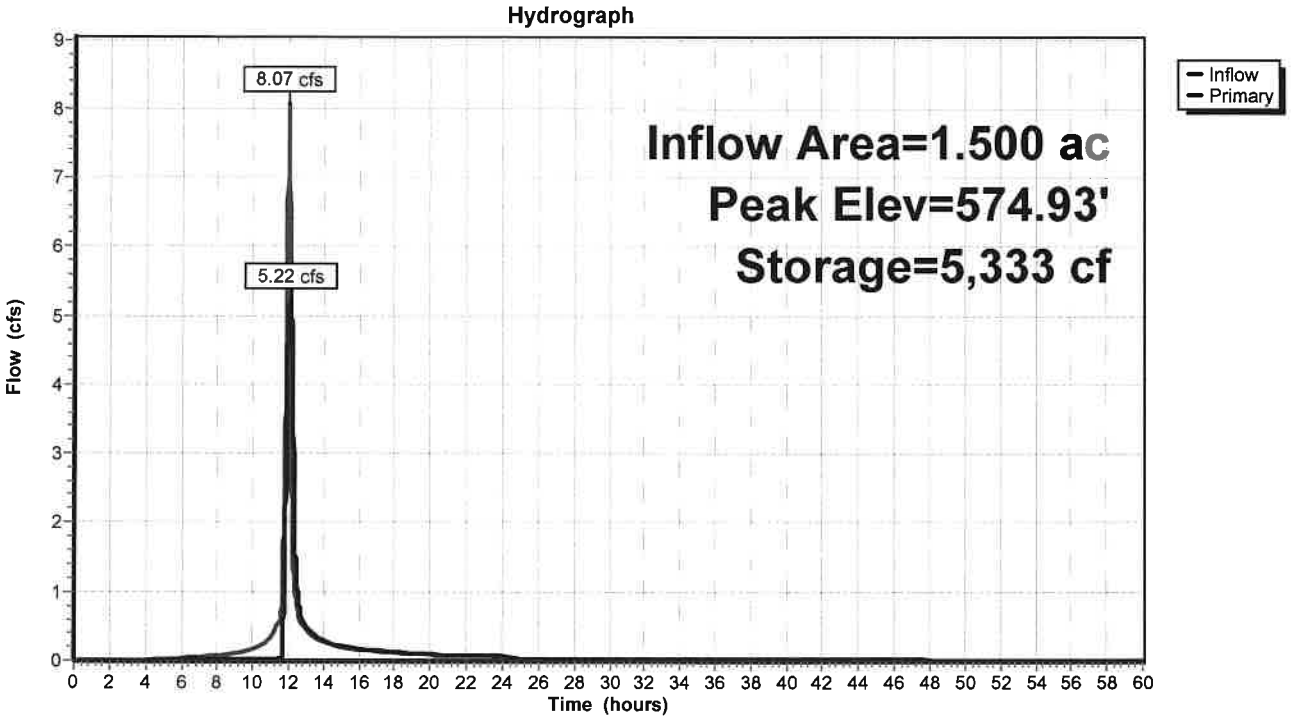
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

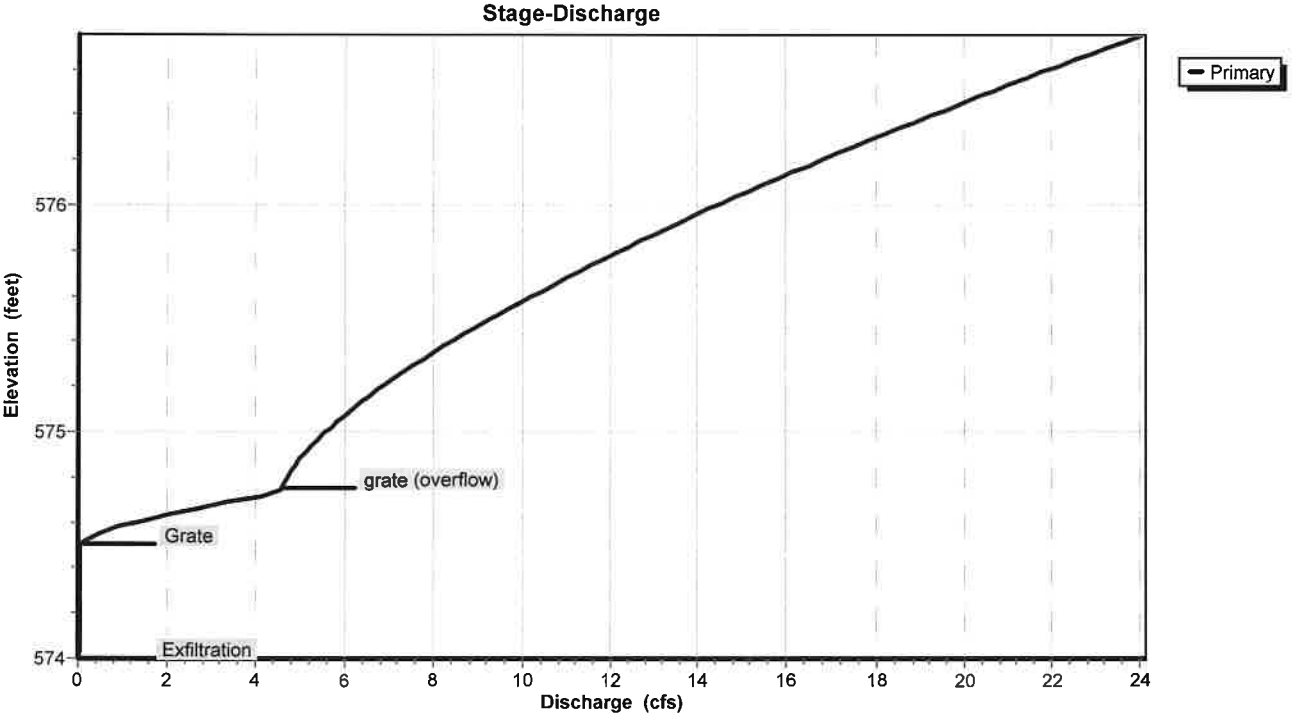
Primary OutFlow Max=5.22 cfs @ 12.09 hrs HW=574.93' (Free Discharge)
- **1=8" pipe** (Barrel Controls 4.73 cfs @ 6.02 fps)
  - **2=Grate** (Passes < 6.61 cfs potential flow)
  - **3=Exfiltration** (Passes < 0.04 cfs potential flow)
- **4=grate (overflow)** (Orifice Controls 0.49 cfs @ 1.36 fps)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

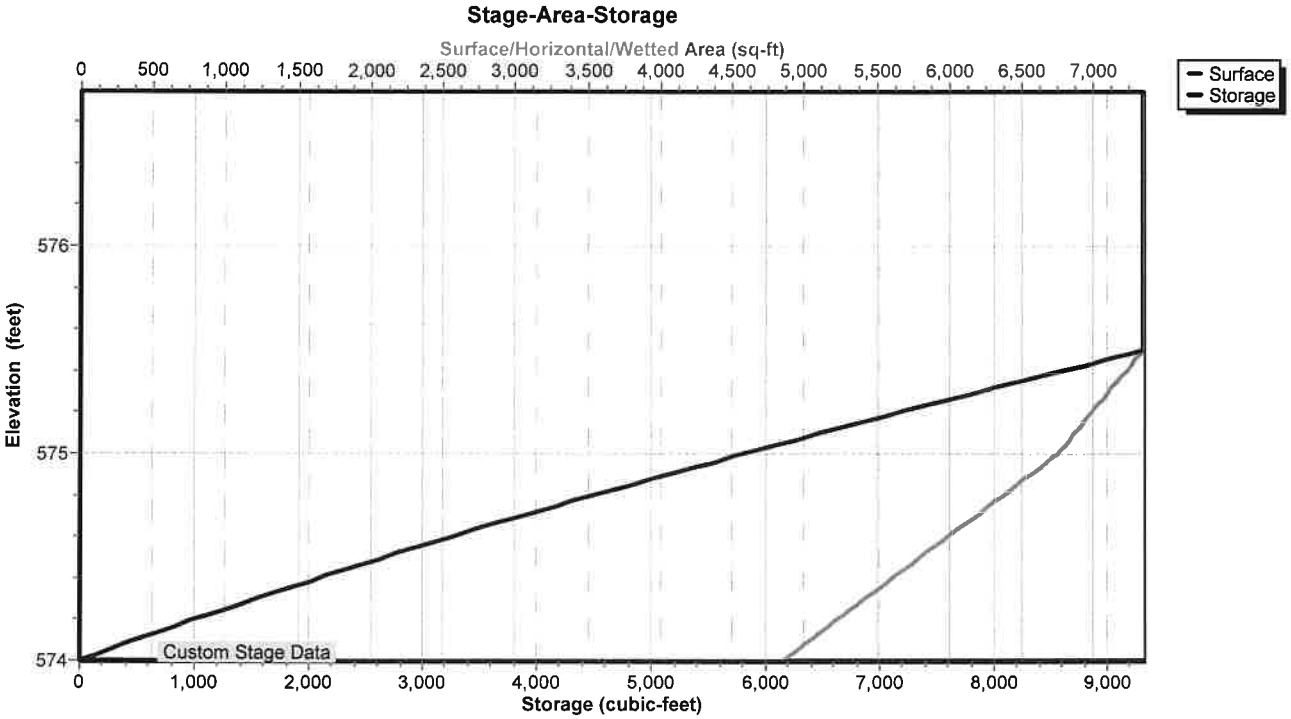


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.01	6	574.00	0.00
6.00	0.04	95	574.02	0.02
8.00	0.07	296	574.06	0.03
10.00	0.17	928	574.18	0.03
12.00	**8.07**	**4,720**	**574.84**	**4.83**
14.00	0.26	**2,846**	**574.53**	**0.28**
16.00	0.16	2,787	574.52	0.17
18.00	0.12	2,748	574.51	0.13
20.00	0.09	2,717	574.51	0.09
22.00	0.08	2,706	574.51	0.08
24.00	0.07	2,699	574.51	0.07
26.00	0.00	2,457	574.46	0.03
28.00	0.00	2,213	574.42	0.03
30.00	0.00	1,974	574.38	0.03
32.00	0.00	1,738	574.34	0.03
34.00	0.00	1,506	574.29	0.03
36.00	0.00	1,278	574.25	0.03
38.00	0.00	1,055	574.21	0.03
40.00	0.00	835	574.17	0.03
42.00	0.00	619	574.12	0.03
44.00	0.00	407	574.08	0.03
46.00	0.00	199	574.04	0.03
48.00	0.00	47	574.01	0.01
50.00	0.00	10	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=4.25"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=9.15 cfs 0.603 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=4.36"
Flow Length=345' Tc=9.1 min CN=92 Runoff=9.61 cfs 0.545 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=572.92' Storage=21,772 cf Inflow=14.92 cfs 1.148 af
Outflow=4.83 cfs 1.105 af

Pond 9P: Bioretention Area 3 Peak Elev=575.05' Storage=6,150 cf Inflow=9.61 cfs 0.545 af
Outflow=5.89 cfs 0.545 af

Total Runoff Area = 3.200 ac Runoff Volume = 1.148 af Average Runoff Depth = 4.31"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

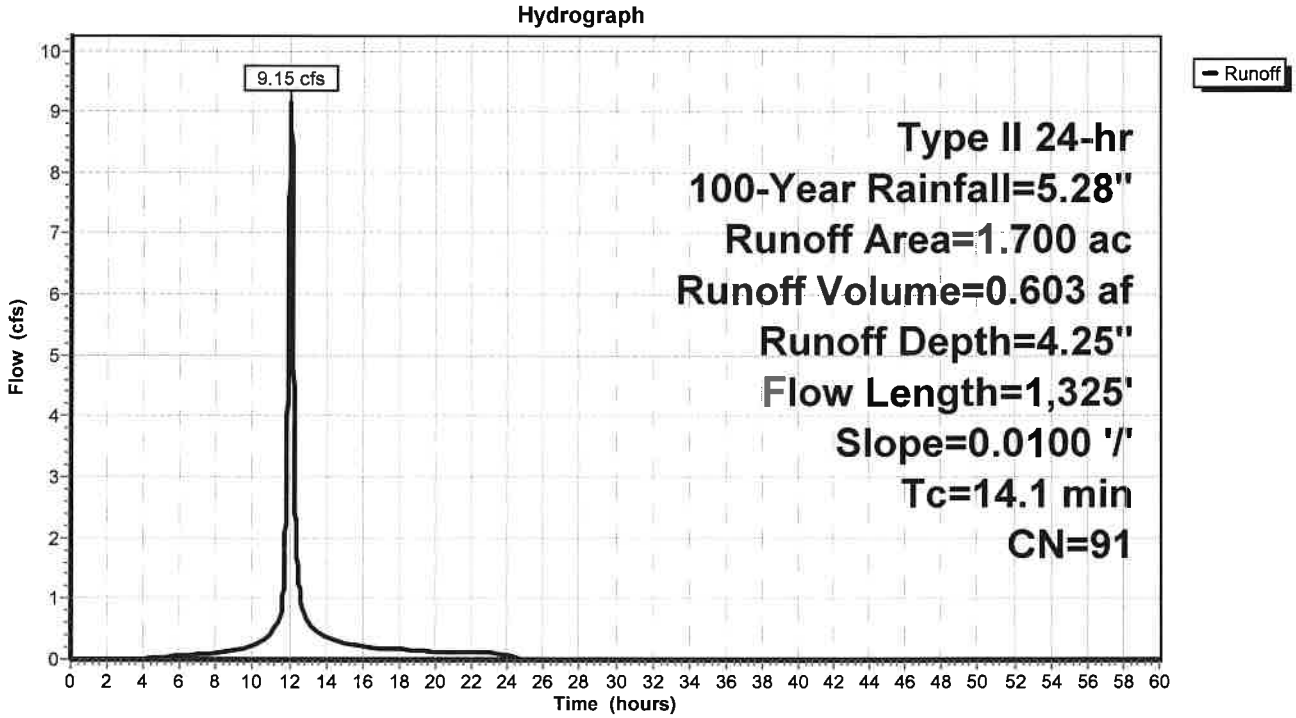
Runoff = 9.15 cfs @ 12.05 hrs, Volume= 0.603 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.28	4.25	0.00
1.00	0.06	0.00	0.00	53.00	5.28	4.25	0.00
2.00	0.12	0.00	0.00	54.00	5.28	4.25	0.00
3.00	0.18	0.00	0.00	55.00	5.28	4.25	0.00
4.00	0.25	0.00	0.01	56.00	5.28	4.25	0.00
5.00	0.33	0.02	0.03	57.00	5.28	4.25	0.00
6.00	0.42	0.04	0.05	58.00	5.28	4.25	0.00
7.00	0.52	0.08	0.07	59.00	5.28	4.25	0.00
8.00	0.63	0.13	0.10	60.00	5.28	4.25	0.00
9.00	0.78	0.21	0.16				
10.00	0.96	0.33	0.22				
11.00	1.24	0.54	0.43				
12.00	3.50	2.54	**8.21**				
13.00	4.08	3.09	**0.63**				
14.00	4.33	3.33	0.36				
15.00	4.51	3.50	0.28				
16.00	4.65	3.64	0.21				
17.00	4.76	3.75	0.18				
18.00	4.86	3.85	0.16				
19.00	4.95	3.93	0.14				
20.00	5.03	4.01	0.12				
21.00	5.09	4.07	0.11				
22.00	5.16	4.14	0.11				
23.00	5.22	4.20	0.10				
24.00	**5.28**	**4.25**	0.10				
25.00	5.28	4.25	0.00				
26.00	5.28	4.25	0.00				
27.00	5.28	4.25	0.00				
28.00	5.28	4.25	0.00				
29.00	5.28	4.25	0.00				
30.00	5.28	4.25	0.00				
31.00	5.28	4.25	0.00				
32.00	5.28	4.25	0.00				
33.00	5.28	4.25	0.00				
34.00	5.28	4.25	0.00				
35.00	5.28	4.25	0.00				
36.00	5.28	4.25	0.00				
37.00	5.28	4.25	0.00				
38.00	5.28	4.25	0.00				
39.00	5.28	4.25	0.00				
40.00	5.28	4.25	0.00				
41.00	5.28	4.25	0.00				
42.00	5.28	4.25	0.00				
43.00	5.28	4.25	0.00				
44.00	5.28	4.25	0.00				
45.00	5.28	4.25	0.00				
46.00	5.28	4.25	0.00				
47.00	5.28	4.25	0.00				
48.00	5.28	4.25	0.00				
49.00	5.28	4.25	0.00				
50.00	5.28	4.25	0.00				
51.00	5.28	4.25	0.00				

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

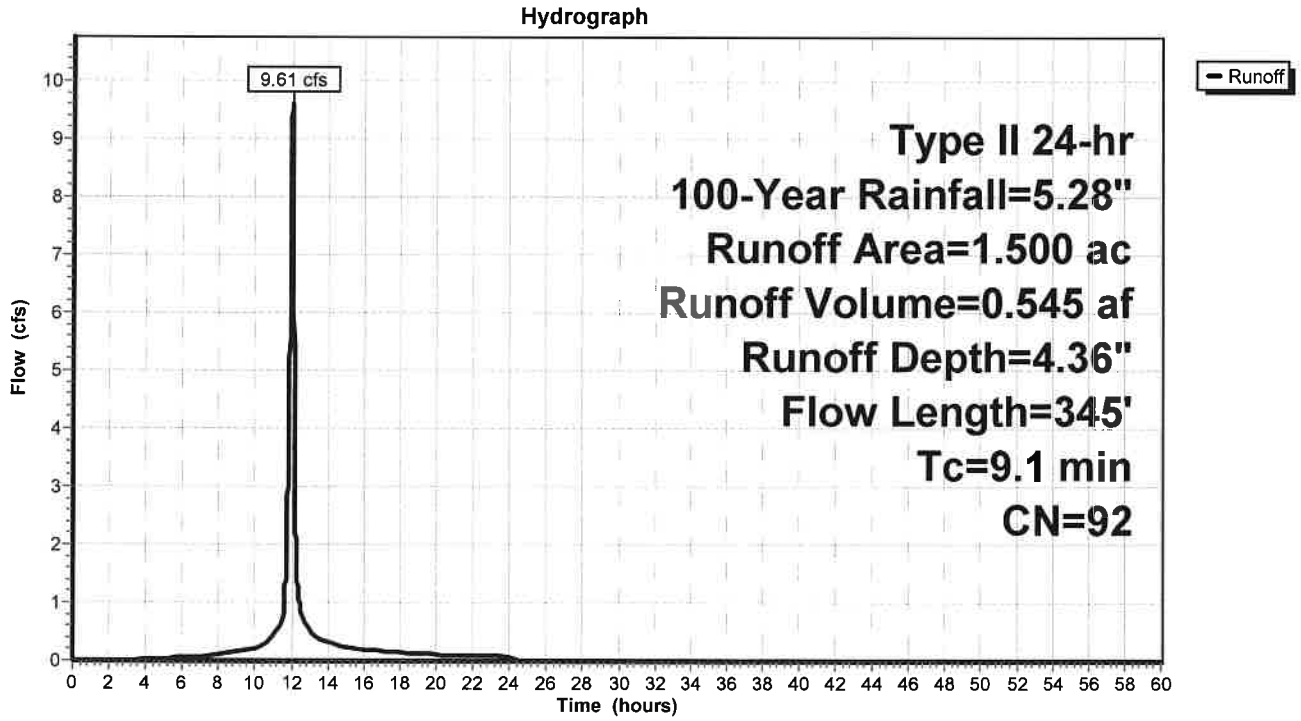
Runoff = 9.61 cfs @ 12.00 hrs, Volume= 0.545 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.18	0.00	0.00
4.00	0.25	0.01	0.02
5.00	0.33	0.02	0.03
6.00	0.42	0.06	0.05
7.00	0.52	0.10	0.08
8.00	0.63	0.16	0.10
9.00	0.78	0.25	0.16
10.00	0.96	0.37	0.22
11.00	1.24	0.59	0.42
12.00	3.50	2.64	**9.61**
13.00	4.08	3.19	0.53
14.00	4.33	3.44	0.31
15.00	4.51	3.61	0.24
16.00	4.65	3.74	0.19
17.00	4.76	3.86	0.16
18.00	4.86	3.96	0.14
19.00	4.95	4.04	0.12
20.00	5.03	4.12	0.10
21.00	5.09	4.18	0.10
22.00	5.16	4.24	0.09
23.00	5.22	4.30	0.09
24.00	**5.28**	**4.36**	0.09
25.00	5.28	4.36	0.00
26.00	5.28	4.36	0.00
27.00	5.28	4.36	0.00
28.00	5.28	4.36	0.00
29.00	5.28	4.36	0.00
30.00	5.28	4.36	0.00
31.00	5.28	4.36	0.00
32.00	5.28	4.36	0.00
33.00	5.28	4.36	0.00
34.00	5.28	4.36	0.00
35.00	5.28	4.36	0.00
36.00	5.28	4.36	0.00
37.00	5.28	4.36	0.00
38.00	5.28	4.36	0.00
39.00	5.28	4.36	0.00
40.00	5.28	4.36	0.00
41.00	5.28	4.36	0.00
42.00	5.28	4.36	0.00
43.00	5.28	4.36	0.00
44.00	5.28	4.36	0.00
45.00	5.28	4.36	0.00
46.00	5.28	4.36	0.00
47.00	5.28	4.36	0.00
48.00	5.28	4.36	0.00
49.00	5.28	4.36	0.00
50.00	5.28	4.36	0.00
51.00	5.28	4.36	0.00
52.00	5.28	4.36	0.00
53.00	5.28	4.36	0.00
54.00	5.28	4.36	0.00
55.00	5.28	4.36	0.00
56.00	5.28	4.36	0.00
57.00	5.28	4.36	0.00
58.00	5.28	4.36	0.00
59.00	5.28	4.36	0.00
60.00	5.28	4.36	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 4.31" for 100-Year event
Inflow = 14.92 cfs @ 12.06 hrs, Volume= 1.148 af
Outflow = 4.83 cfs @ 12.36 hrs, Volume= 1.105 af, Atten= 68%, Lag= 18.1 min
Primary = 4.83 cfs @ 12.36 hrs, Volume= 1.105 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 572.92' @ 12.36 hrs Surf.Area= 10,145 sf Storage= 21,772 cf

Plug-Flow detention time= 201.7 min calculated for 1.105 af (96% of inflow)
Center-of-Mass det. time= 143.6 min (1,016.5 - 873.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

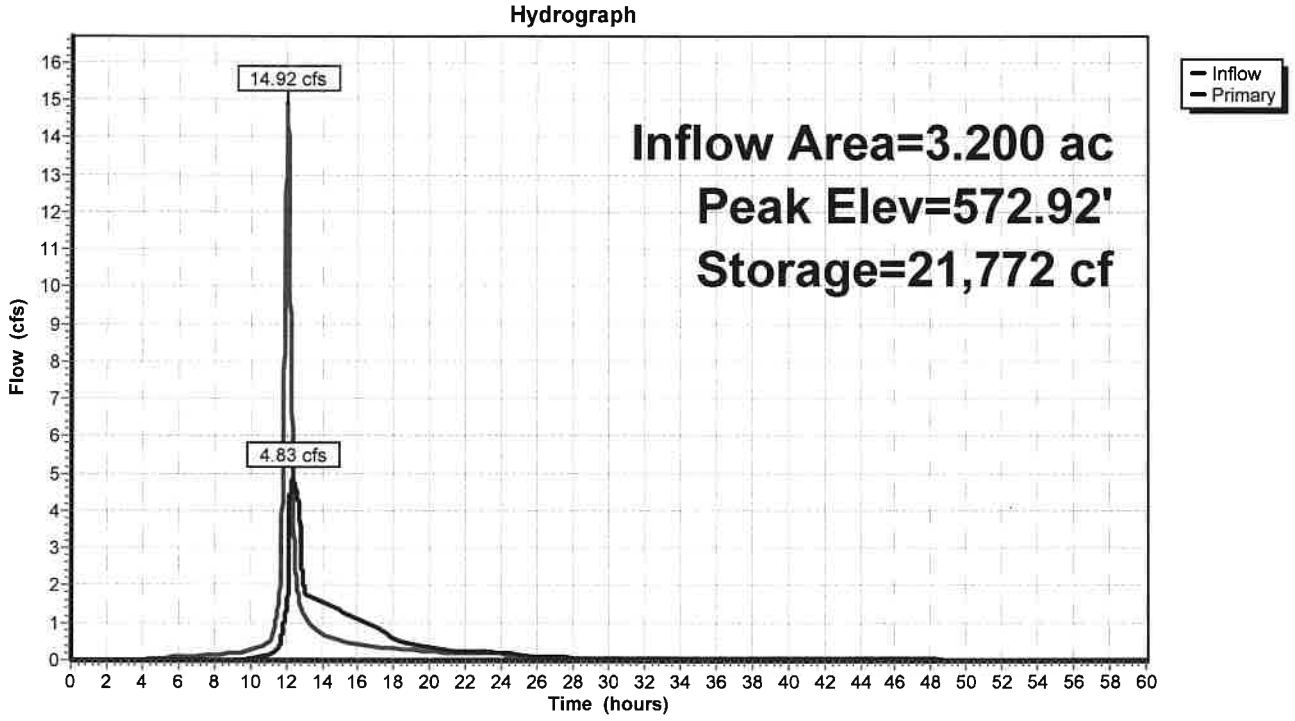
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

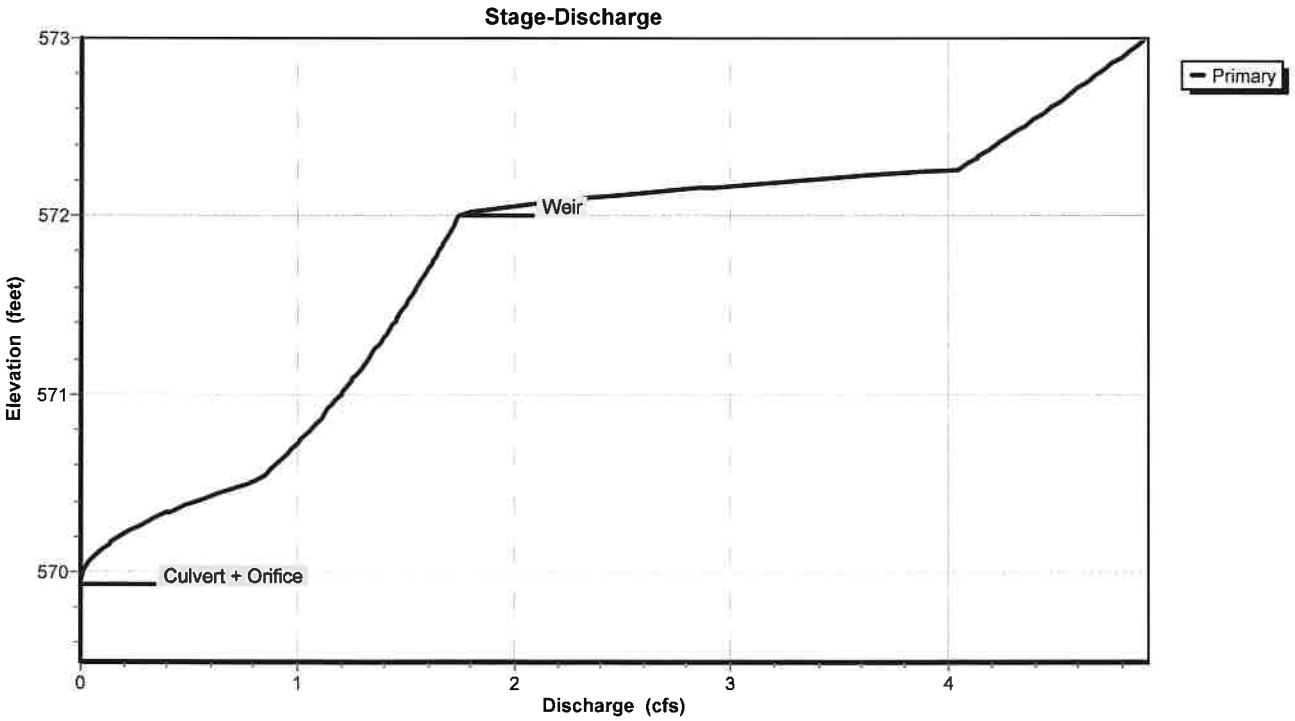
Primary OutFlow Max=4.83 cfs @ 12.36 hrs HW=572.92' (Free Discharge)
↑**1=Culvert** (Barrel Controls 4.83 cfs @ 6.16 fps)
↑**2=Orifice** (Passes < 2.12 cfs potential flow)
3=Weir (Passes < 13.95 cfs potential flow)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

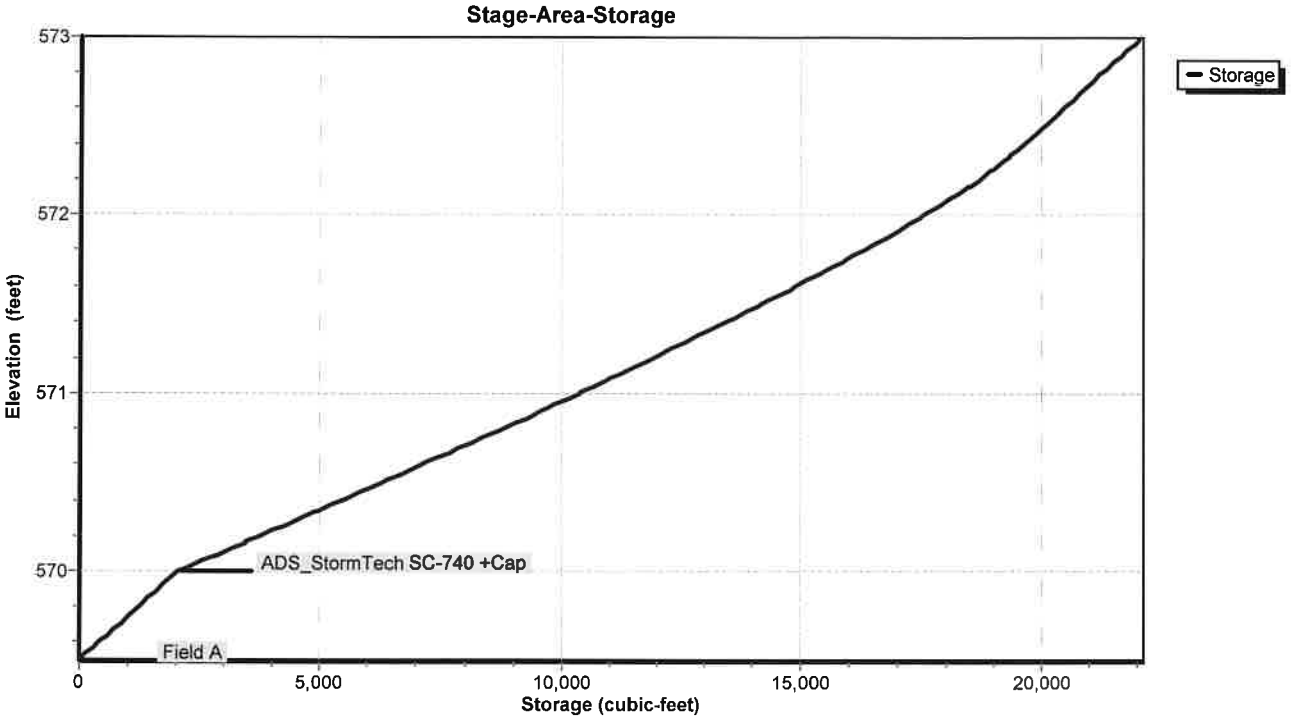


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.01	16	569.50	0.00
6.00	0.08	340	569.58	0.00
8.00	0.13	1,076	569.77	0.00
10.00	0.25	2,364	570.04	0.03
12.00	**13.40**	**12,150**	**571.23**	**1.34**
14.00	**0.69**	**15,059**	**571.63**	**1.56**
16.00	0.41	9,280	570.86	1.10
18.00	0.31	5,592	570.42	0.57
20.00	0.23	4,514	570.29	0.32
22.00	0.20	4,084	570.24	0.24
24.00	0.19	3,896	570.22	0.21
26.00	0.03	3,188	570.13	0.10
28.00	0.03	2,846	570.09	0.07
30.00	0.03	2,675	570.08	0.05
32.00	0.03	2,579	570.06	0.04
34.00	0.03	2,522	570.06	0.04
36.00	0.03	2,484	570.05	0.04
38.00	0.03	2,457	570.05	0.03
40.00	0.03	2,436	570.05	0.03
42.00	0.03	2,420	570.05	0.03
44.00	0.03	2,407	570.04	0.03
46.00	0.03	2,395	570.04	0.03
48.00	0.01	2,341	570.04	0.03
50.00	0.00	2,216	570.02	0.02
52.00	0.00	2,105	570.01	0.01
54.00	0.00	2,020	570.00	0.01
56.00	0.00	1,963	569.98	0.01
58.00	0.00	1,923	569.97	0.00
60.00	0.00	1,895	569.97	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 4.36" for 100-Year event
Inflow = 9.61 cfs @ 12.00 hrs, Volume= 0.545 af
Outflow = 5.89 cfs @ 12.09 hrs, Volume= 0.545 af, Atten= 39%, Lag= 5.5 min
Primary = 5.89 cfs @ 12.09 hrs, Volume= 0.545 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.05' @ 12.09 hrs Surf.Area= 6,805 sf Storage= 6,150 cf

Plug-Flow detention time= 184.7 min calculated for 0.545 af (100% of inflow)
Center-of-Mass det. time= 185.0 min (965.5 - 780.5)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

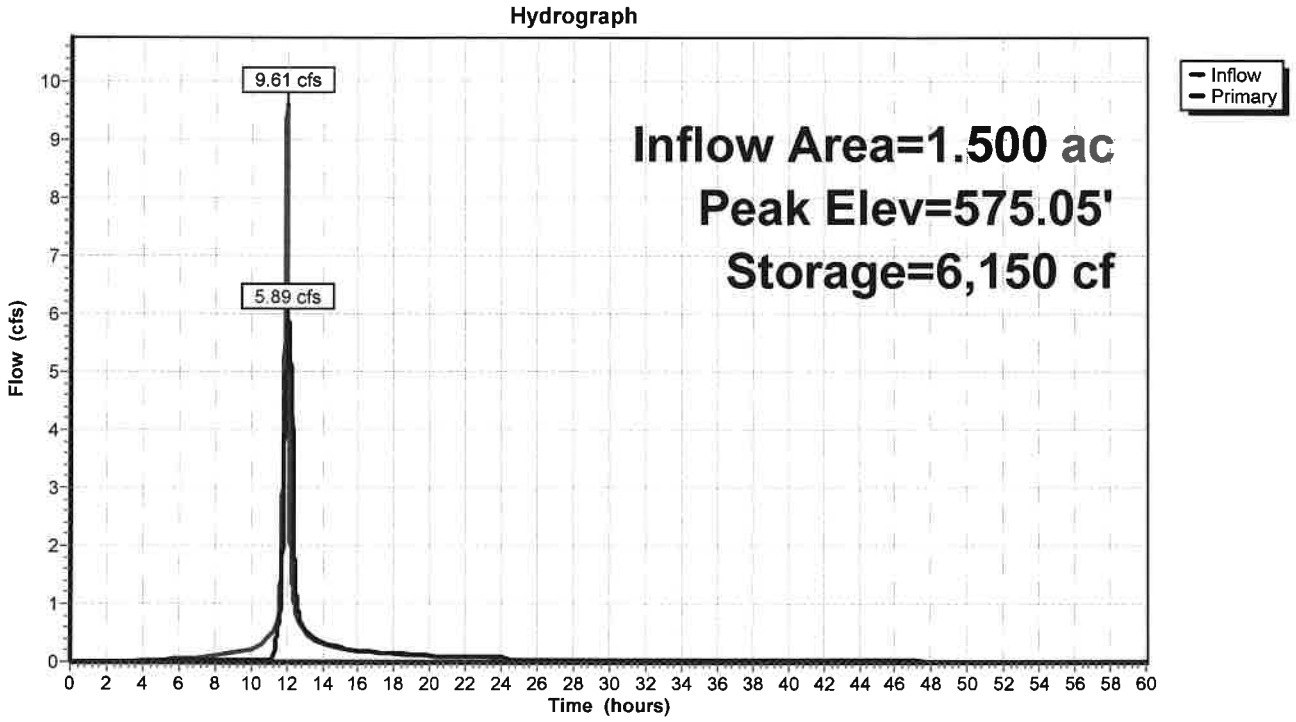
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

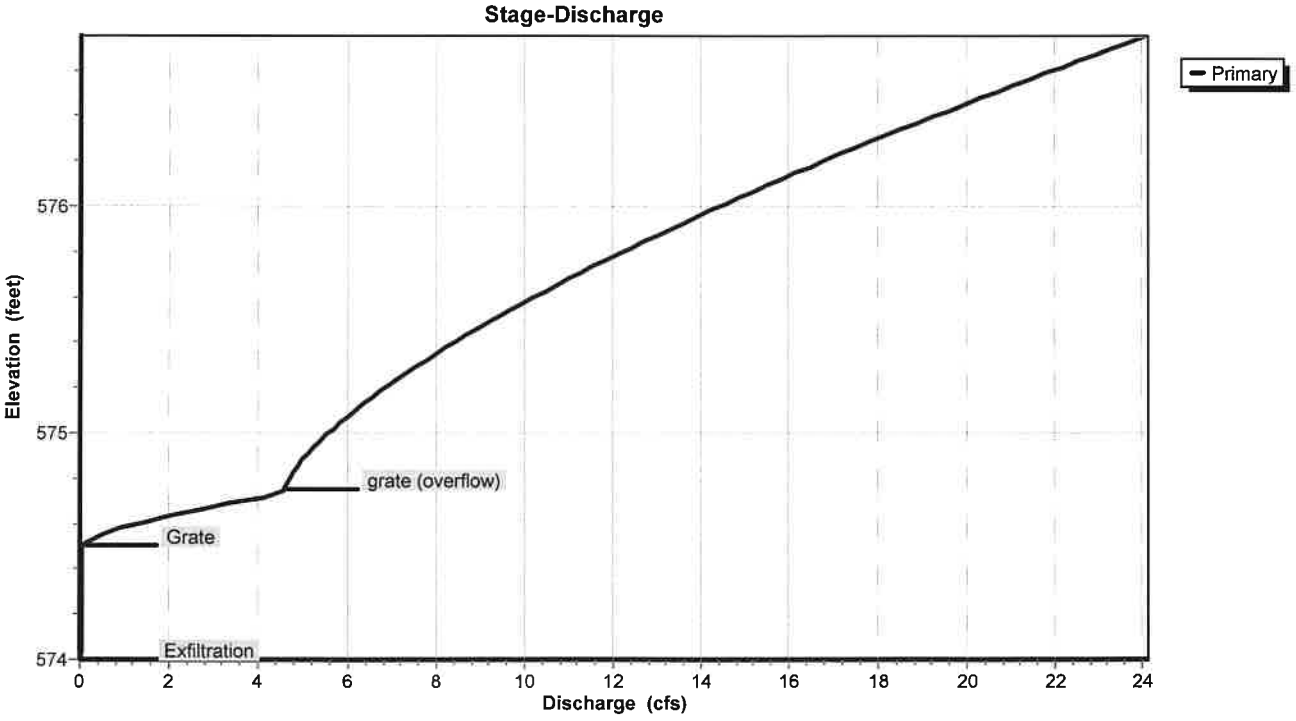
Primary OutFlow Max=5.88 cfs @ 12.09 hrs HW=575.05' (Free Discharge)
- **1=8" pipe** (Barrel Controls 4.82 cfs @ 6.14 fps)
  - **2=Grate** (Passes < 7.49 cfs potential flow)
  - **3=Exfiltration** (Passes < 0.04 cfs potential flow)
- **4=grate (overflow)** (Orifice Controls 1.06 cfs @ 1.76 fps)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

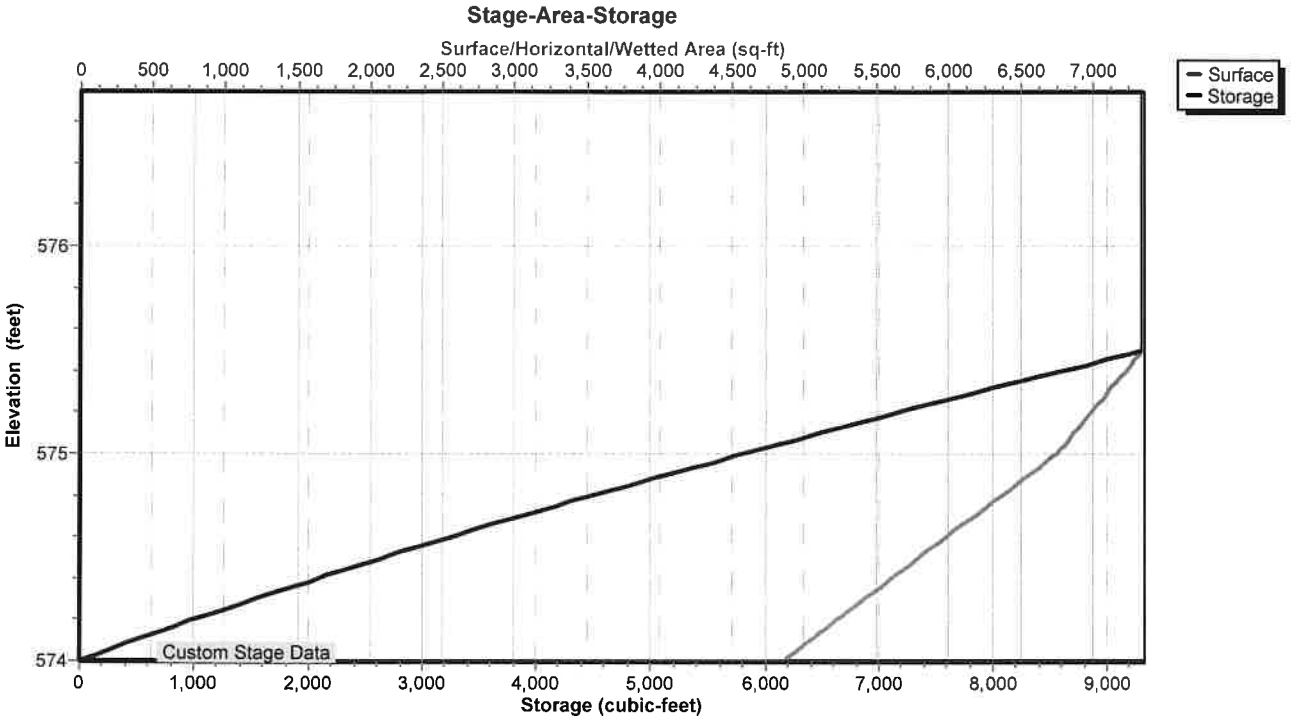


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.02	22	574.00	0.00
6.00	0.05	149	574.03	0.03
8.00	0.10	484	574.10	0.03
10.00	0.22	1,353	574.27	0.03
12.00	**9.61**	**5,288**	**574.92**	**5.19**
14.00	0.31	**2,872**	**574.54**	**0.33**
16.00	0.19	2,803	574.52	0.19
18.00	0.14	2,769	574.52	0.15
20.00	0.10	2,732	574.51	0.11
22.00	0.09	2,719	574.51	0.10
24.00	0.09	2,712	574.51	0.09
26.00	0.00	2,463	574.47	0.03
28.00	0.00	2,219	574.42	0.03
30.00	0.00	1,979	574.38	0.03
32.00	0.00	1,743	574.34	0.03
34.00	0.00	1,511	574.29	0.03
36.00	0.00	1,283	574.25	0.03
38.00	0.00	1,059	574.21	0.03
40.00	0.00	839	574.17	0.03
42.00	0.00	624	574.13	0.03
44.00	0.00	412	574.08	0.03
46.00	0.00	204	574.04	0.03
48.00	0.00	49	574.01	0.01
50.00	0.00	11	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	1	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Green Infrastructure & Water Quality Calculations

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Version 1.7
Last Updated: 2/22/21

Total Water Quality Volume Calculation
WQv(acre-feet) = [(P)(Rv)(A)] /12

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?.....	

Design Point:	1	
P=	1.00	*inch*

Breakdown of Subcatchments

Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Rv	WQv *(ft^3)*	Description
1	6.10	3.30	54%	0.54	11,888	
2	1.00	0.00	0%	0.05	182	
3	4.40	2.70	61%	0.60	9,620	
4	1.70	1.00	59%	0.58	3,576	
5	1.50	1.00	67%	0.65	3,539	
6						
7						
8						
9						
10						
Subtotal (1-30)	14.70	8.00	54%	0.54	**28,804**	**Subtotal 1**
Total	14.70	8.00	54%	0.54	**28,804**	**Initial WQv**

Identify Runoff Reduction Techniques By Area

Technique	Total Contributing Area *(Acre)*	Contributing Impervious Area *(Acre)*	Notes
Conservation of Natural Areas	1.00	0.00	*minimum 10,000 sf*
Riparian Buffers	0.00	0.00	*maximum contributing length 75 feet to 150 feet*
Filter Strips	0.00	0.00	
Tree Planting	0.00	0.00	*Up to 100 sf directly connected impervious area may be subtracted per tree*
Total	**1.00**	**0.00**	

Recalculate WQv after application of Area Reduction Techniques

	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Runoff Coefficient Rv	WQv *(ft^3)*
"<<Initial WQv"	14.70	8.00	54%	0.54	28,804
Subtract Area	-1.00	0.00			
WQv adjusted after Area Reductions	**13.70**	**8.00**	58%	0.58	28,623
Disconnection of Rooftops		0.00			
Adjusted WQv after Area Reduction and Rooftop Disconnect	13.70	8.00	58%	0.58	**28,623**
WQv reduced by Area Reduction techniques					182

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Total Water Quality Volume Calculation

WQv(acre-feet) = [(P)(Rv)(A)] /12

All Subcatchments						
Catchment	**Total Area** *(Acres)*	**Impervious Cover** *(Acres)*	**Percent Impervious** *%*	**Runoff Coefficient** *Rv*	**WQv** *(ft^3)*	**Description**
1	6.10	3.30	0.54	0.54	11888.25	
2	1.00	0.00	0.00	0.05	182	
3	4.40	2.70	0.61	0.60	9619.50	
4	1.70	1.00	0.59	0.58	3575.55	
5	1.50	1.00	0.67	0.65	3539.25	
6						
7						
8						
9						
10						
11						
12						
13						
14						
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25						
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28						
29						
30						

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor &

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
1	6.10	3.30	0.54	0.54	11888.25	1.00	
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	54%	0.54	11,888	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information			
Soil Group	D		
Soil Infiltration Rate	0.00	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		11,888	*ft^3*	
Enter Depth of Soil Media	*df*	1.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**8916**	***ft^2***	

Determine Actual Bio-Retention Area			
Filter Width	100	*ft*	
Filter Length	110	*ft*	
Filter Area	11000	*ft^2*	
Actual Volume Provided	14667	*ft^3*	

Determine Runoff Reduction				
Is the Bioretention contributing flow to another practice?			Select Practice	
RRv	5,867			
RRv applied	**5,867**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	6,022	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	
Volume Directed	0	*ft^3*	This volume is directed another practice	
Sizing √	OK		*Check to be sure Area provided ≥ Af*	

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Bioretention Worksheet

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor & Schueler, 1996)

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice

Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (ft^3)	Precipitation (in)	Description
5	1.50	1.00	0.67	0.65	3539.25	1.00	
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	67%	0.65	3,539	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						ft^3	

Soil Information

Soil Group	D		
Soil Infiltration Rate	0.00	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area

		Value	Units	Notes
WQv		3,539	ft^3	
Enter Depth of Soil Media	*df*	1.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**2654**	ft^2	

Determine Actual Bio-Retention Area

Filter Width	49	*ft*
Filter Length	100	*ft*
Filter Area	4900	ft^2
Actual Volume Provided	6533	ft^3

Determine Runoff Reduction

Is the Bioretention contributing flow to another practice?	No	Select Practice	
RRv	2,613		
RRv applied	**2,613**	ft^3	***This is 40% of the storage provided or WQv whichever is less.***
Volume Treated	926	ft^3	*This is the portion of the WQv that is not reduced in the practice.*
Volume Directed	0	ft^3	This volume is directed another practice
Sizing √	OK		*Check to be sure Area provided ≥ Af*

(For use on HSG C or D Soils with underdrains)

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Conservation of Natural Areas

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (ft^3)	Precipitation (in)	Description
2	1.00	0.00	0.00	0.05	181.50	1.00	

Design Elements	
Is Contiguous Area ≥ 10,000 ft2?	*Yes*
Will limits of disturbance be clearly shown on all construction drawings and marked in field/project development site with structural barriers?	*Yes*
Is the Conservation area located in an acceptable conservation easement instrument that ensures perpetual protection of proposed area?	*Yes*
Does the easement specify how the natural area vegetation will be managed and boundaries will be marked?	*Yes*
Does the conservation area receive runoff from other contributing areas?	*No*
Does Conservation Area drain to a Design Point?	*No*
Is Sheet Flow to Riparian Buffer or another area based practice already being Used for this area?	*No*

Are All Criteria in Section 5.3.1 Met?	*Yes*

Area Reduction Adjustments		
Subtract	*1.00*	*Acres from Total Area*
Subtract	*0.00*	*Acres from Total Impervious Area*

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Minimum RRv

Enter the Soils Data for the site		
Soil Group	Acres	S
A		55%
B		40%
C		30%
D	**17.40**	20%
Total Area	17.4	
Calculate the Minimum RRv		
S =	**0.20**	
Impervious =	8.00	*acre*
Precipitation	1	*in*
Rv	0.95	
Minimum RRv	**5,518**	***ft3***
	0.13	af

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

NOI QUESTIONS

#	NOI Question	Reported Value	
		cf	af
28	Total Water Quality Volume (WQv) Required	28804	*0.661*
30	Total RRV Provided	8662	*0.199*
31	Is RRv Provided ≥WQv Required?	No	
32	Minimum RRv	5518	*0.127*
32a	Is RRv Provided ≥ Minimum RRv Required?	Yes	
33a	Total WQv Treated	159626	*3.664*
34	Sum of Volume Reduced & Treated	168287	*3.863*
34	Sum of Volume Reduced and Treated	168287	*3.863*
35	Is Sum RRv Provided and WQv Provided ≥WQv Required?	Yes	

Apply Peak Flow Attenuation			
36	Channel Protection	*Cpv*	
37	Overbank	*Qp*	
37	Extreme Flood Control	*Qf*	
	Are Quantity Control requirements met?		

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Runoff Reduction Volume and Treated volumes						
	Runoff Reduction Techiques/Standard SMPs		Total Contributing Area	Total Contributing Impervious Area	WQv Reduced (RRv)	WQv Treated
			(acres)	(acres)	cf	cf
Area/Volume Reduction	Conservation of Natural Areas	RR-1	1.00	0.00		
	Sheetflow to Riparian Buffers/Filter Strips	RR-2	0.00	0.00		
	Tree Planting/Tree Pit	RR-3	0.00	0.00		
	Disconnection of Rooftop Runoff	RR-4		0.00		
	Vegetated Swale	RR-5	0.00	0.00	0	
	Rain Garden	RR-6	0.00	0.00	0	
	Stormwater Planter	RR-7	0.00	0.00	0	
	Rain Barrel/Cistern	RR-8	0.00	0.00	0	
	Porous Pavement	RR-9	0.00	0.00	0	
	Green Roof (Intensive & Extensive)	RR-10	0.00	0.00	0	
Standard SMPs w/RRv Capacity	Infiltration Trench	I-1	0.00	0.00	0	0
	Infiltration Basin	I-2	0.00	0.00	0	0
	Dry Well	I-3	0.00	0.00	0	0
	Underground Infiltration System	I-4	0.00			
	Bioretention & Infiltration Bioretention	F-5	7.60	4.30	8480	6948
	Dry swale	O-1	0.00	0.00	0	0
Standard SMPs	Micropool Extended Detention (P-1)	P-1				
	Wet Pond (P-2)	P-2				
	Wet Extended Detention (P-3)	P-3				
	Multiple Pond system (P-4)	P-4				
	Pocket Pond (p-5)	P-5	9.8	3.40		152678.000
	Surface Sand filter (F-1)	F-1				
	Underground Sand filter (F-2)	F-2				
	Perimeter Sand Filter (F-3)	F-3				
	Organic Filter (F-4	F-4				
	Shallow Wetland (W-1)	W-1				
	Extended Detention Wetland (W-2	W-2				
	Pond/Wetland System (W-3)	W-3				
	Pocket Wetland (W-4)	W-4				
	Wet Swale (O-2)	O-2				
Totals by Area Reduction →			1.00	0.00	182	
Totals by Volume Reduction →			0.00	0.00	0	
Totals by Standard SMP w/RRV →			7.60	4.30	8480	6948
Totals by Standard SMP →			9.80	3.40		152678
Totals (Area + Volume + all SMPs) →			18.40	7.70	8,662	159,626
	Impervious Cover √	error				

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 6P: WQv

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
563.00	710	0
563.15	776	111
563.30	843	233
563.45	909	364
563.60	975	506
563.75	1,042	657
563.90	1,108	818
564.05	1,181	989
564.20	1,267	1,173
564.35	1,353	1,369
564.50	1,439	1,579
564.65	1,524	1,801
564.80	1,610	2,036
564.95	1,696	2,284
565.10	1,796	2,546
565.25	1,901	2,823
565.40	2,007	3,116
565.55	2,113	3,425
565.70	2,219	3,750
565.85	2,324	4,090
566.00	2,430	4,447
566.15	2,561	4,821
566.30	2,692	5,215
566.45	2,822	5,629
566.60	2,953	6,062
566.75	3,084	6,515
566.90	3,215	6,987
567.05	3,356	7,479
567.20	3,519	7,995
567.35	3,681	8,535
567.50	3,844	9,100
567.65	4,007	9,688
567.80	4,169	10,301
567.95	4,332	10,939
568.10	4,731	11,613
568.25	5,249	12,361
568.40	5,767	13,188
568.55	6,285	14,091
568.70	6,802	15,073
568.85	7,320	16,132
569.00	7,838	17,269
569.15	8,402	18,487
569.30	8,965	19,790
569.45	9,529	21,177
569.60	10,093	22,648
569.75	10,657	24,204
569.90	11,220	25,845
570.05	11,796	27,571
570.20	12,398	29,385
570.35	13,000	31,290
570.50	13,601	33,285
570.65	14,202	35,371
570.80	14,804	37,546
570.95	15,406	39,812
571.10	16,056	42,170
571.25	16,731	44,629
571.40	17,406	47,189
571.55	18,081	49,851
571.70	18,756	52,614
571.85	19,431	55,478
572.00	20,106	58,443
572.15	20,820	61,512
572.30	21,534	64,689
572.45	22,248	67,973
572.60	22,961	71,363
572.75	23,675	74,861
572.90	24,389	78,466
573.05	25,107	82,178
573.20	25,834	85,998
573.35	26,561	89,928
573.50	27,288	93,967
573.65	28,014	98,114
573.80	28,741	102,371
573.95	29,468	106,737
574.10	32,660	111,335
574.25	37,086	116,565
574.40	41,511	122,460
574.55	45,937	129,019
574.70	50,362	136,241
574.85	54,788	144,127
575.00	**59,213**	**152,678**

WQv

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Appendix O

NYSDEC Stormwater Management Inspection Lists

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Bioretetion Areas (F-5)



Description: Shallow stormwater basin or landscaped area which utilizes engineered soils and vegetation to capture and treat runoff. The practice is often located in parking lot islands, and can also be used to treat residential areas.

KEY CONSIDERATIONS

CONVEYANCE

- Provide overflow for the 10-year storm to the conveyance system.
- Conveyance to the system is typically overland flow delivered to the surface of the system, typically through curb cuts or over a concrete lip.

PRETREATMENT

- Pretreatment consists of a grass channel or grass filter strip, a gravel diaphragm, and a mulch layer, sized based on the methodologies described in Section 6.4.2.

TREATMENT

- Treatment area should have a four foot deep planting soil bed, a surface mulch layer, and a 6" ponding layer.
- Size the treatment area using equations provided in Chapter 6.

LANDSCAPING

- Detailed landscaping plan required.

MAINTENANCE

- Inspect and repair/replace treatment area components
- Stone drop (at least 6") provided at the inlet
- Remulch annually

STORMWATER MANAGEMENT SUITABILITY

- [X] Water Quality
- [ ] Channel Protection
- [ ] Overbank Flood Protection
- [ ] Extreme Flood Protection

Accepts Hotspot Runoff: *Yes*
(requires impermeable liner)

IMPLEMENTATION CONSIDERATIONS

- [M] Capital Cost
- [M] Maintenance Burden

Residential
Subdivision Use: *Yes*

High Density/Ultra-Urban: *Yes*

Drainage Area: *5 acres max.*

Soils: *Planting soils must meet specified criteria; No restrictions on surrounding soils*

Other Considerations:

- *Use of native plants is recommended*

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

	Key: **L**=Low **M**=Medium **H**=High **POLLUTANT REMOVAL** G Phosphorus G Nitrogen G Metals - Cadmium, Copper, Lead, and Zinc removal F Pathogens – Coliform, Streptococci, E.Coli removal Key: **G**=Good **F**=Fair **P**=Poor

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Bioretention Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
1. Pre-Construction		
Pre-construction meeting		
Runoff diverted		
Facility area cleared		
If designed as exfilter, soil testing for permeability		
Facility location staked out		
2. Excavation		
Size and location		
Lateral slopes completely level		
If designed as exfilter, ensure that excavation does not compact susoils.		
Longitudinal slopes within design range		

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
3. Structural Components		
Stone diaphragm installed correctly		
Outlets installed correctly		
Underdrain		
Pretreatment devices installed		
Soil bed composition and texture		
4. Vegetation		
Complies with planting specs		
Topsoil adequate in composition and placement		
Adequate erosion control measures in place		
5. Final Inspection		
Dimensions		
Proper stone diaphragm		
Proper outlet		
Soil/ filter bed permeability testing		
Effective stand of vegetation and stabilization		
Construction generated sediments removed		
Contributing watershed stabilized before flow is diverted to the practice		

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Comments:

Actions to be Taken:

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Bioretention Operation, Maintenance and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Bioretention and contributing areas clean of debris		
No dumping of yard wastes into practice		
Litter (branches, etc.) have been removed		
2. Vegetation (Monthly)		
Plant height not less than design water depth		
Fertilized per specifications		
Plant composition according to approved plans		
No placement of inappropriate plants		
Grass height not greater than 6 inches		
No evidence of erosion		
3. Check Dams/Energy Dissipaters/Sumps (Annual, After Major Storms)		
No evidence of sediment buildup		

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
Sumps should not be more than 50% full of sediment		
No evidence of erosion at downstream toe of drop structure		
4. Dewatering (Monthly)		
Dewaters between storms		
No evidence of standing water		
5. Sediment Deposition (Annual)		
Swale clean of sediments		
Sediments should not be > 20% of swale design depth		
6. Outlet/Overflow Spillway (Annual, After Major Storms)		
Good condition, no need for repair		
No evidence of erosion		
No evidence of any blockages		
7. Integrity of Filter Bed (Annual)		
Filter bed has not been blocked or filled inappropriately		

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Comments:

Actions to be Taken:

Attachment: SP-2021-05_application_061721 (23057 : Sp-2021-05)

Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York
SITE DEVELOPMENT DRAWINGS

AGENCIES

ENGINEERING DEPARTMENT
NAME/TITLE: JEFFERY BURROUGHS, P.E. – TOWN ENGINEER
COMPANY/DEPT: TOWN OF AMHERST ENGINEERING DEPARTMENT
ADDRESS: 1100 NORTH FOREST ROAD
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716–631–7154

PLANNING & ZONING DEPARTMENT
NAME/TITLE: DANIEL HOWARD – PLANNING DIRECTOR
COMPANY/DEPT: TOWN OF AMHERST PLANNING DEPARTMENT
ADDRESS: 5583 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716–631–7051

LAND SURVEYOR
NAME/TITLE: GPI ENGINEERING, LANDSCAPE ARCHITECTURE SURVEYING, LLP
COMPANY/DEPT: 4950 GENESEE STREET, SUITE 100
ADDRESS: BUFFALO, NEW YORK 14225
TELEPHONE 716–633–4844

UTILITIES

NATURAL GAS
COMPANY/DEPT:. NATIONAL FUEL GAS CORP.
ADDRESS: 6363 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716–857–7000

TELEPHONE COMPANY
COMPANY/DEPT: VERIZON
ADDRESS: 65 FRANKLIN STREET
BUFFALO, NEW YORK 14203
TELEPHONE 716–840–8748

CABLE COMPANY
COMPANY/DEPT: TIME WARNER
ADDRESS: 789 CHURCH ROAD
WEST SENECA, NEW YORK
TELEPHONE 716–558–8615

ELECTRIC COMPANY
COMPANY/DEPT: NATIONAL GRID
ADDRESS: 144 KENSINGTON AVENUE
BUFFALO, NEW YORK 14214
TELEPHONE 716–236–2738

WATER
COMPANY/DEPT:. ERIE COUNTY WATER AUTHORITY
ADDRESS: 3030 UNION ROAD
CHEEKTOWAGA, NEW YORK 14227
TELEPHONE 716–684–1510

DIG SAFELY NEW YORK
TELEPHONE 1–800–962–7962

OWNER/DEVELOPER

NAME: Sawyer's Landing LLC
ADDRESS 43 Central Ave Suite #300
Lancaster, NY 14086
TELEPHONE 716 818-0207

ENGINEER

Carmina • Wood • Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

FEBRUARY 2021

DWG NO.	DRAWING TITLE
–	COVER SHEET
–	TOPOGRAPHIC MAP
–	BOUNDARY SURVEY
C–001	DEMOLITION & EROSION CONTROL PLAN
C–002	DEMOLITION & EROSION CONTROL DETAILS
C–100	OVERALL SITE PLAN
C–101	SITE PLAN
C–102	PARCEL MAP
C–103	SITE DETAILS
C–104	SITE DETAILS
C–200	GRADING PLAN
C–300	STORM DRAINAGE PLAN
C–301	STORM DRAINAGE DETAILS
C–302	STORM DRAINAGE DETAILS
C–303	STORM DRAINAGE DETAILS
C–400	UTILITY PLAN
C–401	SANITARY SEWER DETAILS
C–402	SANITARY SEWER DETAILS
C–403	SANITARY SEWER GENERAL NOTES
C–404	SANITARY SEWER TESTING NOTES
C–405	WATER DETAILS
C–406	WATER DETAILS
C–407	WATER DETAILS & NOTES
C–408	INSULATED ENCLOSURE DETAIL
L–100	LANDSCAPE PLAN

NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE.

● SET OR EX. 5/8" REBAR

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF SECTION 7209 PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

MAP COVER 2305

SWEET HOME ROAD (NORTH VARIES)

EXCEPTION L-10908, P-363
MAP 39.353-1 PARCEL 1

CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA
L. 6640, P. 309, L. 7090, P. 207

PLEASANT ACRES PART II, MAP COVER 2273

PLEASANT ACRES PART III, MAP COVER 2305

SPADINA DRIVE

PLEASANT ACRES PART III, MAP COVER 2305

SOUTHWEST CORNER OF PLEASANT ACRES SUBDIV. PART II MAP COVER 2273

CATCH BASIN RIM:574.64' N INV:573.44'

PARALLEL W/SOUTH LINE OF LOT 76

N 88°55'52" E 530.61'

1312.39' N 88°55'52" E

POINT OF BEGINNING AREA "B"
LAT: 43°01'40.40785"
LON: -78°47'14.98366"

PARALLEL W/WEST LINE OF LOT 76 (CENTERLINE OF SWEET HOME ROAD)

L.7659 P.435 & 437

N 88°55'52" E 700.84'

N 88°55'52" E 396.51'

N 20°40'24" W 118.24'

S 10°10'01" E 145.00'

S 64°16'46" W 35.20'

S 10°07'24" E 43.27'

S 11°02'55" W 83.05'

S 11°56'26" E 236.98'

S 45°19'36" E 99.73'

N 35°36'42" W 155.92'

N 10°10'01" W 305.54'

SOUTH LINE L.-9095, P.-348 PARALLEL WITH S. LINE LOT 76

EXCEPTION L.-11278, P.-7124

N88°55'52"E 540.78' M
584.39' D&M
541.38' M

N02°04'02"W 120.85' D&M
N02°04'02"W 90.42'

S88°21'54"W 173.47'
S88°21'54"W 225.48' D&M

CATCH BASIN RIM:574.52' W INV:568.27' E INV:568.32'

CATCH BASIN RIM:574.42' W INV:569.90' E INV:569.97'

CATCH BASIN RIM:573.70' W INV:569.90' E INV:569.97'

12" CMP

CONCRETE SIDEWALK

DEED RESTRICTED AREA "A"
TOTAL AREA: = 3.9146 ACRES

TOP OF HYDRANT ELEV: 577.69'

MON. WELL

LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC
REPUTED OWNERS
L.11307, PG.4915

SITE 'A'
17.424± ACRES

DEED RESTRICTED AREA "B"
TOTAL AREA: = 32.52± ACRES

N 67°53'17" W 50.93'

S 71°08'13" W 128.98'

S 87°22'49" W 322.92'

N 83°38'15" W 172.66'

S 83°36'25" W 105.17'

S 39°43'51" W 50.80'

S 23°50'17" W 47.47'

S 57°29'39" W 52.30'

N 85°10'51" W 40.58'

L=539.31'
R=598.60'
DELTA=52°00'30"

L=1272.57'
R=1382.67'
DELTA=52°46'30"

DOUGHTY ROAD RELOCATION

ASPHALT DRIVE

ASPHALT PARKING LOT

CONCRETE SIDEWALK

STONE DRIVE

TOP OF HYDRANT ELEV: 574.70'

SAN. M.H. RIM: 573.78' INV: 553.78' E-W

SAN. M.H. RIM:576.41' INV: 554.21' E-W

72" CONC. PIPE

SOUTH LINE OF LOT 76
NORTH LINE OF LOT 75

TRANSMISSION TOWER

NIAGARA MOHAWK POWER CORP. L.-9173, P.-51

599.16' D&M

N 85°24'13" E 403.22'

S 85°24'13" W 202.71'
N 85°38'39" W 201.93'

BRUSH LINE

R=6848.00' L=918.07'
S 65°48'39" W
CHORD 917.39

SECTION II

LOCKPORT (ROUTE 990) EXPRESSWAY

GUY

UP

E.O.P.

CATCH BASIN
CONIFEROUS TREE
DECIDUOUS SHRUB
DECIDUOUS TREE
GAS VALVE
GUY WIRE
WATER SERVICE VALVE
WATER VALVE
COMMUNICATIONS BOX
HYDRANT
LIGHT POLE
SANITARY SEWER MANHOLE
SIGN (SINGLE POLE)
SIGN (DOUBLE POLE)
UTILITY POLE

STATE OF NEW YORK
LICENSED LAND SURVEYOR

DATE	REVISION/TYPE

TOPOGRAPHIC SURVEY
PART OF LOT 76, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK

GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE
4950 GENESEE STREET, SUITE 100
BUFFALO, NEW YORK 14225
(716) 633-4844 FAX 633-4940

Job No. 2013062-SITE A Date: DECEMBER 22, 2020
Scale: 1" = 100' TAX No. 40.08-3-13.1 (PART OF)

Attachment: SP-2021-05_drawings_061721 (23057 : Sp-2021-05)

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF SECTION 7209 PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

SWEET HOME (WIDTH VARIES) ROAD

CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA
L. 6640, P. 309, L. 7090, P. 207

PLEASANT ACRES PART II, MAP COVER 2273

PLEASANT ACRES PART III, MAP COVER 2305

SOUTHWEST CORNER OF PLEASANT ACRES SUBDIV. PART II MAP COVER 2273

P.O.B.

TEL BOX

UP

GUY

N 88°55'52" E 530.61'
PARALLEL W/SOUTH LINE OF LOT 76

PARALLEL W/WEST LINE OF LOT 76
(CENTERLINE OF SWEET HOME ROAD)

N 02°04'02" W
118.24'

L.7659
P.435 & 437

N 88°55'52" E 700.84'

N 88°55'52" E 396.51'

PARALLEL W/SOUTH LINE OF LOT 76

N 29°36'12" E 62.65'

S 01°04'08" E
145.00'

35.20'
S 64°16'46" W

141.03'
S 29°42'37" W

S 10°07'24" E
43.27'

S 11°02'55" W
83.05'

S 11°56'26" E 236.39'

S 45°19'36" E
98.73'

SOUTH LINE L.-9095, P.-348
PARALLEL WITH S. LINE LOT 76

EXCEPTION L.-11278, P.-7124

584.39' D&M
541.38' M

N88°55'52"E
540.78' M

N 00°55'59" W
109.75'

EXCEPTION L.-10808, P.-9632
MAP SK 353-1, PARCEL 1

120.85' D&M
N02°04'02"W

120.52'

N02°04'02"W
90.42'

173.47'
S88°21'54"W
216.48' D&M

DEED RESTRICTED AREA "A"
TOTAL AREA: = 3.914± ACRES

N 01°03'14" W 512.26'

LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC
REPUTED OWNERS
L.11307, PG.4915

SITE 'A'
17.424± ACRES

DEED RESTRICTED AREA "B"
TOTAL AREA: = 32.52± ACRES

L=747.17
R=724.00

N 32°30'21" W 198.87'

N 67°53'17" W
50.93'

S 39°43'51" W
50.80'

S 71°08'13" W
128.98'

S 83°36'25" W
105.17'

S 87°22'49" W
322.92'

N 83°38'15" W
172.66'

S 23°50'17" W
47.47'

S 57°29'39" W
52.30'

N 32°30'21" W 457.24'

258.37'

DODGE ROAD RELOCATION

PT

L=539.31'
R=586.62'
DELTA=52°40'30"

PC

N 85°10'51" W
40.58'

N 35°36'42" W
136.92'

N 01°04'00" W 305.54'

S 65°24'13" W 403.22'

599.16' D&M

195.94'

NIAGARA MOHAWK POWER CORP.
L.-9173, P.-51

SOUTH LINE OF LOT 76
NORTH LINE OF LOT 75

STATE OF NEW YORK
MARK J. ANDREWS
050455
LICENSED LAND SURVEYOR

DATE	REVISION/TYPE
12/4/20	REVISE PARCEL BOUNDARY

NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE.
● SET OR EX. 5/8" REBAR

SURVEY OF
PART OF LOT 76, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK

GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE
4950 GENESEE STREET, SUITE 100
BUFFALO, NEW YORK 14225
(716) 633-4844 FAX 633-4940

Job No. 2013062-SITE A Date: JUNE 27, 2019
Scale: 1" = 100' TAX No.

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Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

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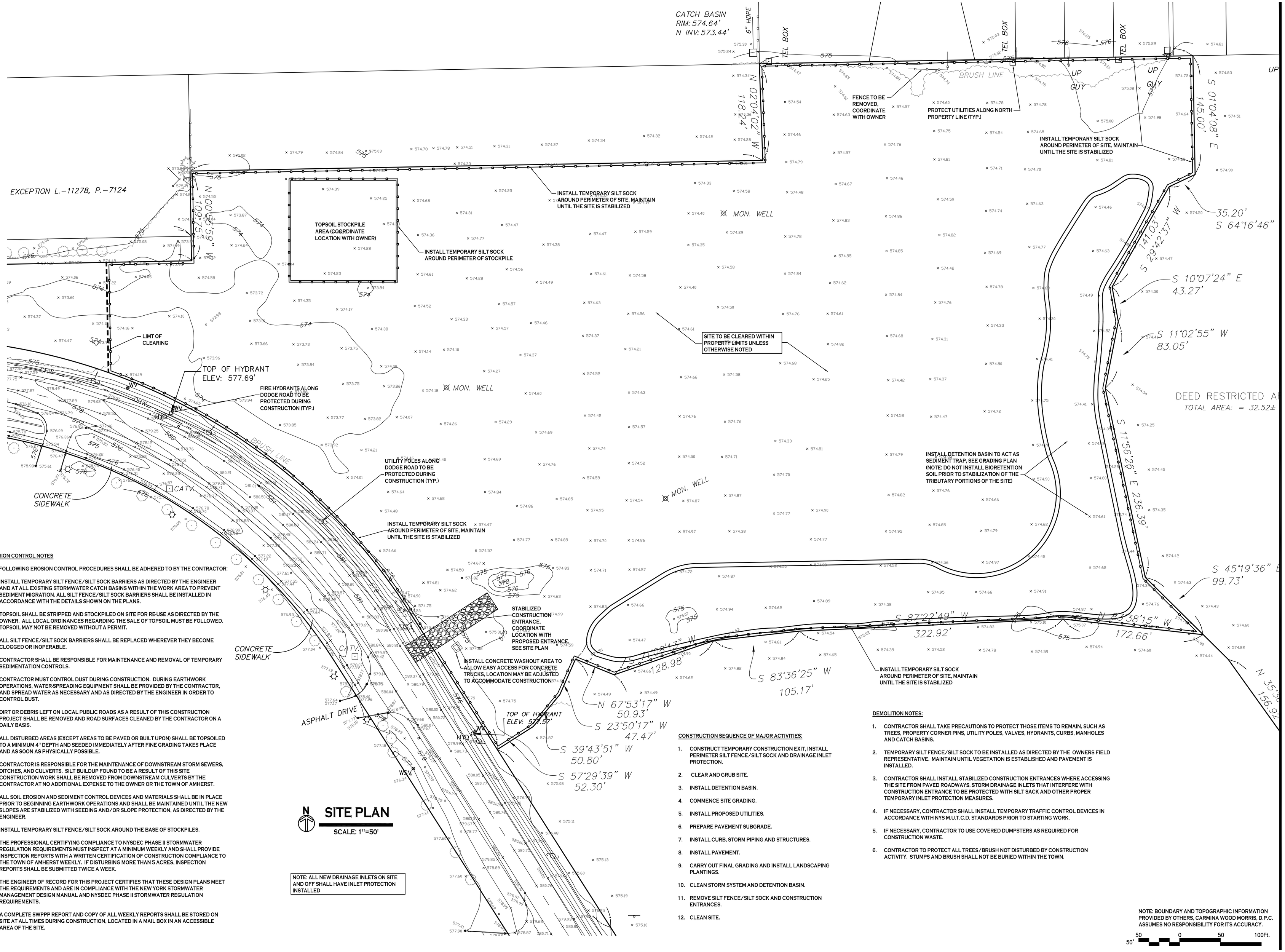

EROSION CONTROL NOTES

THE FOLLOWING EROSION CONTROL PROCEDURES SHALL BE ADHERED TO BY THE CONTRACTOR:

1. INSTALL TEMPORARY SILT FENCE/SILT SOCK BARRIERS AS DIRECTED BY THE ENGINEER AND AT ALL EXISTING STORMWATER CATCH BASINS WITHIN THE WORK AREA TO PREVENT SEDIMENT MIGRATION. ALL SILT FENCE/SILT SOCK BARRIERS SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS SHOWN ON THE PLANS.
2. TOPSOIL SHALL BE STRIPPED AND STOCKPILED ON SITE FOR RE-USE AS DIRECTED BY THE OWNER. ALL LOCAL ORDINANCES REGARDING THE SALE OF TOPSOIL MUST BE FOLLOWED. TOPSOIL MAY NOT BE REMOVED WITHOUT A PERMIT.
3. ALL SILT FENCE/SILT SOCK BARRIERS SHALL BE REPLACED WHEREVER THEY BECOME CLOGGED OR INOPERABLE.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE AND REMOVAL OF TEMPORARY SEDIMENTATION CONTROLS.
5. CONTRACTOR MUST CONTROL DUST DURING CONSTRUCTION. DURING EARTHWORK OPERATIONS, WATER-SPREADING EQUIPMENT SHALL BE PROVIDED BY THE CONTRACTOR, AND SPREAD WATER AS NECESSARY AND AS DIRECTED BY THE ENGINEER IN ORDER TO CONTROL DUST.
6. DIRT OR DEBRIS LEFT ON LOCAL PUBLIC ROADS AS A RESULT OF THIS CONSTRUCTION PROJECT SHALL BE REMOVED AND ROAD SURFACES CLEANED BY THE CONTRACTOR ON A DAILY BASIS.
7. ALL DISTURBED AREAS (EXCEPT AREAS TO BE PAVED OR BUILT UPON) SHALL BE TOPSOILED TO A MINIMUM 4" DEPTH AND SEEDED IMMEDIATELY AFTER FINE GRADING TAKES PLACE AND AS SOON AS PHYSICALLY POSSIBLE.
8. CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE OF DOWNSTREAM STORM SEWERS, DITCHES, AND CULVERTS. SILT BUILDUP FOUND TO BE A RESULT OF THIS SITE CONSTRUCTION WORK SHALL BE REMOVED FROM DOWNSTREAM CULVERTS BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER OR THE TOWN OF AMHERST.
9. ALL SOIL EROSION AND SEDIMENT CONTROL DEVICES AND MATERIALS SHALL BE IN PLACE PRIOR TO BEGINNING EARTHWORK OPERATIONS AND SHALL BE MAINTAINED UNTIL THE NEW SLOPES ARE STABILIZED WITH SEEDING AND/OR SLOPE PROTECTION, AS DIRECTED BY THE ENGINEER.
10. INSTALL TEMPORARY SILT FENCE/SILT SOCK AROUND THE BASE OF STOCKPILES.
11. THE PROFESSIONAL CERTIFYING COMPLIANCE TO NYSDEC PHASE II STORMWATER REGULATION REQUIREMENTS MUST INSPECT AT A MINIMUM WEEKLY AND SHALL PROVIDE INSPECTION REPORTS WITH A WRITTEN CERTIFICATION OF CONSTRUCTION COMPLIANCE TO THE TOWN OF AMHERST WEEKLY. IF DISTURBING MORE THAN 5 ACRES, INSPECTION REPORTS SHALL BE SUBMITTED TWICE A WEEK.
12. THE ENGINEER OF RECORD FOR THIS PROJECT CERTIFIES THAT THESE DESIGN PLANS MEET THE REQUIREMENTS AND ARE IN COMPLIANCE WITH THE NEW YORK STORMWATER MANAGEMENT DESIGN MANUAL AND NYSDEC PHASE II STORMWATER REGULATION REQUIREMENTS.
13. A COMPLETE SWPPP REPORT AND COPY OF ALL WEEKLY REPORTS SHALL BE STORED ON SITE AT ALL TIMES DURING CONSTRUCTION, LOCATED IN A MAIL BOX IN AN ACCESSIBLE AREA OF THE SITE.

CONSTRUCTION SEQUENCE OF MAJOR ACTIVITIES:

1. CONSTRUCT TEMPORARY CONSTRUCTION EXIT, INSTALL PERIMETER SILT FENCE/SILT SOCK AND DRAINAGE INLET PROTECTION.
2. CLEAR AND GRUB SITE.
3. INSTALL DETENTION BASIN.
4. COMMENCE SITE GRADING.
5. INSTALL PROPOSED UTILITIES.
6. PREPARE PAVEMENT SUBGRADE.
7. INSTALL CURB, STORM PIPING AND STRUCTURES.
8. INSTALL PAVEMENT.
9. CARRY OUT FINAL GRADING AND INSTALL LANDSCAPING PLANTINGS.
10. CLEAN STORM SYSTEM AND DETENTION BASIN.
11. REMOVE SILT FENCE/SILT SOCK AND CONSTRUCTION ENTRANCES.
12. CLEAN SITE.

DEMOLITION NOTES:

1. CONTRACTOR SHALL TAKE PRECAUTIONS TO PROTECT THOSE ITEMS TO REMAIN, SUCH AS TREES, PROPERTY CORNER PINS, UTILITY POLES, VALVES, HYDRANTS, CURBS, MANHOLES AND CATCH BASINS.
2. TEMPORARY SILT FENCE/SILT SOCK TO BE INSTALLED AS DIRECTED BY THE OWNERS FIELD REPRESENTATIVE. MAINTAIN UNTIL VEGETATION IS ESTABLISHED AND PAVEMENT IS INSTALLED.
3. CONTRACTOR SHALL INSTALL STABILIZED CONSTRUCTION ENTRANCES WHERE ACCESSING THE SITE FROM PAVED ROADWAYS. STORM DRAINAGE INLETS THAT INTERFERE WITH CONSTRUCTION ENTRANCE TO BE PROTECTED WITH SILT SACK AND OTHER PROPER TEMPORARY INLET PROTECTION MEASURES.
4. IF NECESSARY, CONTRACTOR SHALL INSTALL TEMPORARY TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH NYS M.U.T.C.D. STANDARDS PRIOR TO STARTING WORK.
5. IF NECESSARY, CONTRACTOR TO USE COVERED DUMPSTERS AS REQUIRED FOR CONSTRUCTION WASTE.
6. CONTRACTOR TO PROTECT ALL TREES/BRUSH NOT DISTURBED BY CONSTRUCTION ACTIVITY. STUMPS AND BRUSH SHALL NOT BE BURIED WITHIN THE TOWN.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Demolition & Erosion Control Plan

DRAWING NO.

C-001

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

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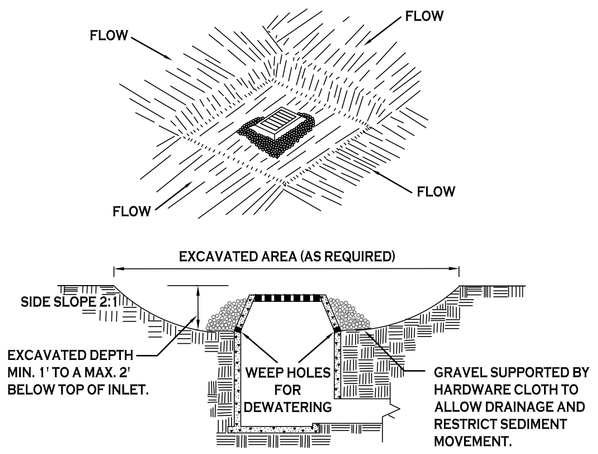
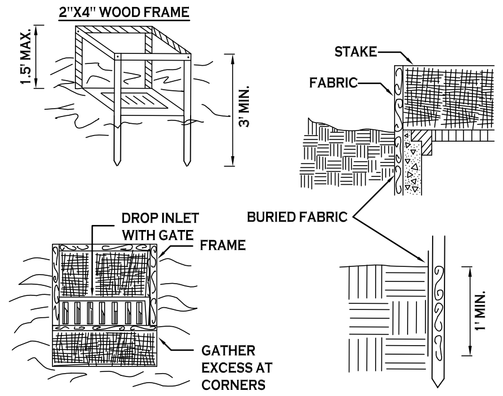


CONSTRUCTION SPECIFICATIONS

1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER EXCAVATION.
2. GRADE APPROACH TO THE INLET UNIFORMLY AROUND THE BASIN.
3. WEEP HOLES SHALL BE PROTECTED BY GRAVEL.
4. UPON STABILIZATION OF CONTRIBUTING DRAINAGE AREA, SEAL WEEP HOLES, FILL BASIN WITH STABLE SOIL TO FINAL GRADE, COMPACT IT PROPERLY AND STABILIZE WITH PERMANENT SEEDING.

MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 1
NOT TO SCALE

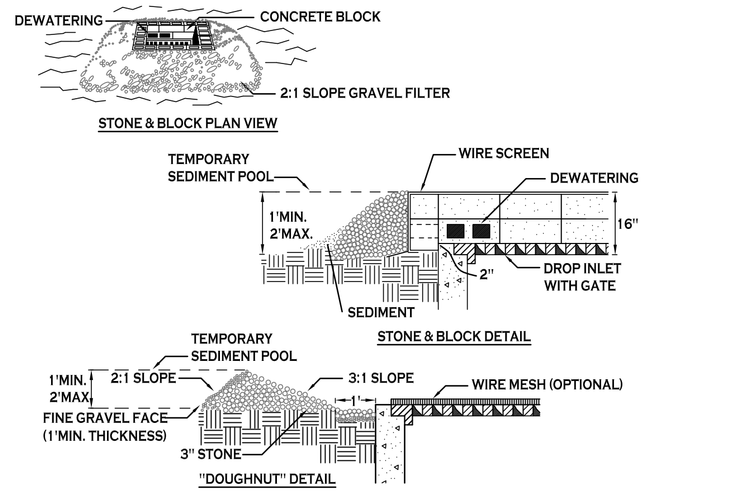


CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2" x 4" WOOD OR EQUIVALENT. METAL WITH A MINIMUM LENGTH OF 3 FEET.
4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2" x 4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.

MAXIMUN DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 2
NOT TO SCALE

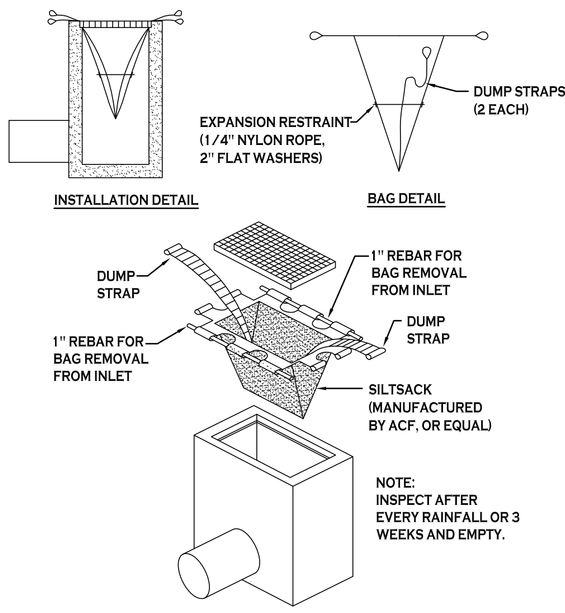


CONSTRUCTION SPECIFICATIONS

1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE FOR DEWATERING. FOUNDATION SHALL BE 2 INCHES MINIMUM BELOW REST OF INLET AND BLOCKS SHALL BE PLACED AGAINST INLET FOR SUPPORT.
2. HARDWARE CLOTH OR 1/2" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.
3. USE CLEAN STONE OR GRAVEL 1/2-3/4 INCH IN DIAMETER PLACED 2 INCHES BELOW TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER.
4. FOR STONE STRUCTURES ONLY, A 1 FOOT THICK LAYER OF THE FILTER STONE WILL BE PLACED AGAINST THE 3 INCH STONE AS SHOWN ON THE DRAWINGS.

MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 3
NOT TO SCALE



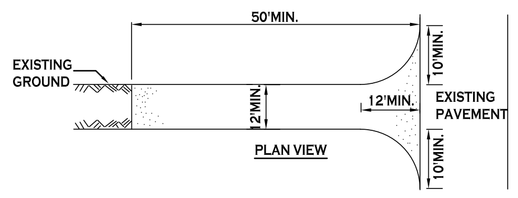
SILT SACK DETAIL
NOT TO SCALE

NOTE: INSTALL ONE OF THE INLET PROTECTION OPTIONS SHOWN PRIOR TO CONSTRUCTION

CONSTRUCTION SPECIFICATIONS

1. WOVEN FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
3. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

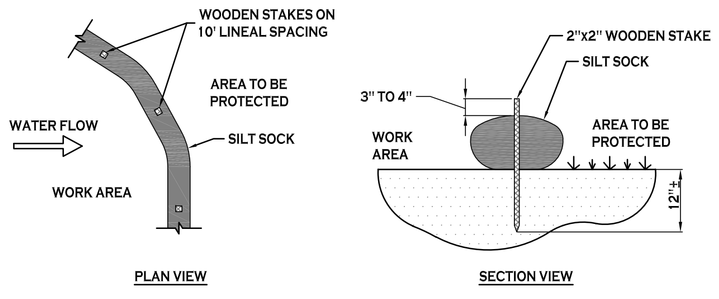
SILT FENCE DETAIL
NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

STABILIZED CONSTRUCTION ENTRANCE DETAIL
NOT TO SCALE

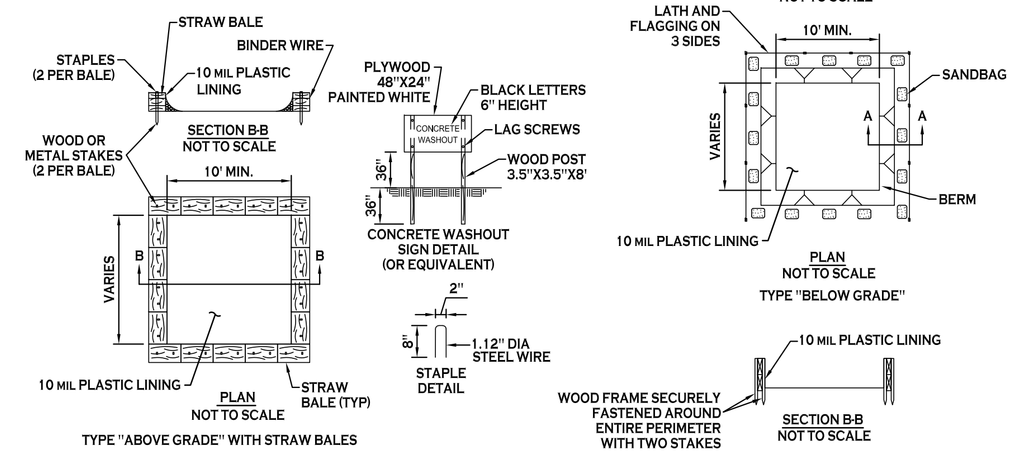


NOTES:

CONTRACTOR SHALL INSPECT AND MAINTAIN SILT SOCK AS NEEDED DURING THE DURATION OF CONSTRUCTION PROJECT.

CONTRACTOR SHALL REMOVE SEDIMENT COLLECTED AT THE BASE OF THE SILT SOCK WHEN IT HAS REACHED ½ OF THE EXPOSED HEIGHT OF THE SILT SOCK. ALTERNATIVELY, RATHER THAN CREATE A SOIL DISTURBING ACTIVITY, THE ENGINEER MAY CALL FOR ADDITIONAL SILT SOCK TO BE ADDED AT AREAS OF HIGH SEDIMENTATION, PLACED IMMEDIATELY ON TOP OF THE EXISTING SEDIMENT LADEN SILT SOCK.

SILT SOCK DETAIL
NOT TO SCALE



NOTES

1. ACTUAL LAYOUT TO BE DETERMINED IN THE FIELD.
2. A CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30' OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
3. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF OR RECYCLED.
4. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE BACKFILLED, REPAIRED, AND STABILIZED TO PREVENT EROSION.

CONCRETE WASHOUT DETAIL
NOT TO SCALE

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Demolition & Erosion Control Details

DRAWING NO.

C-002

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

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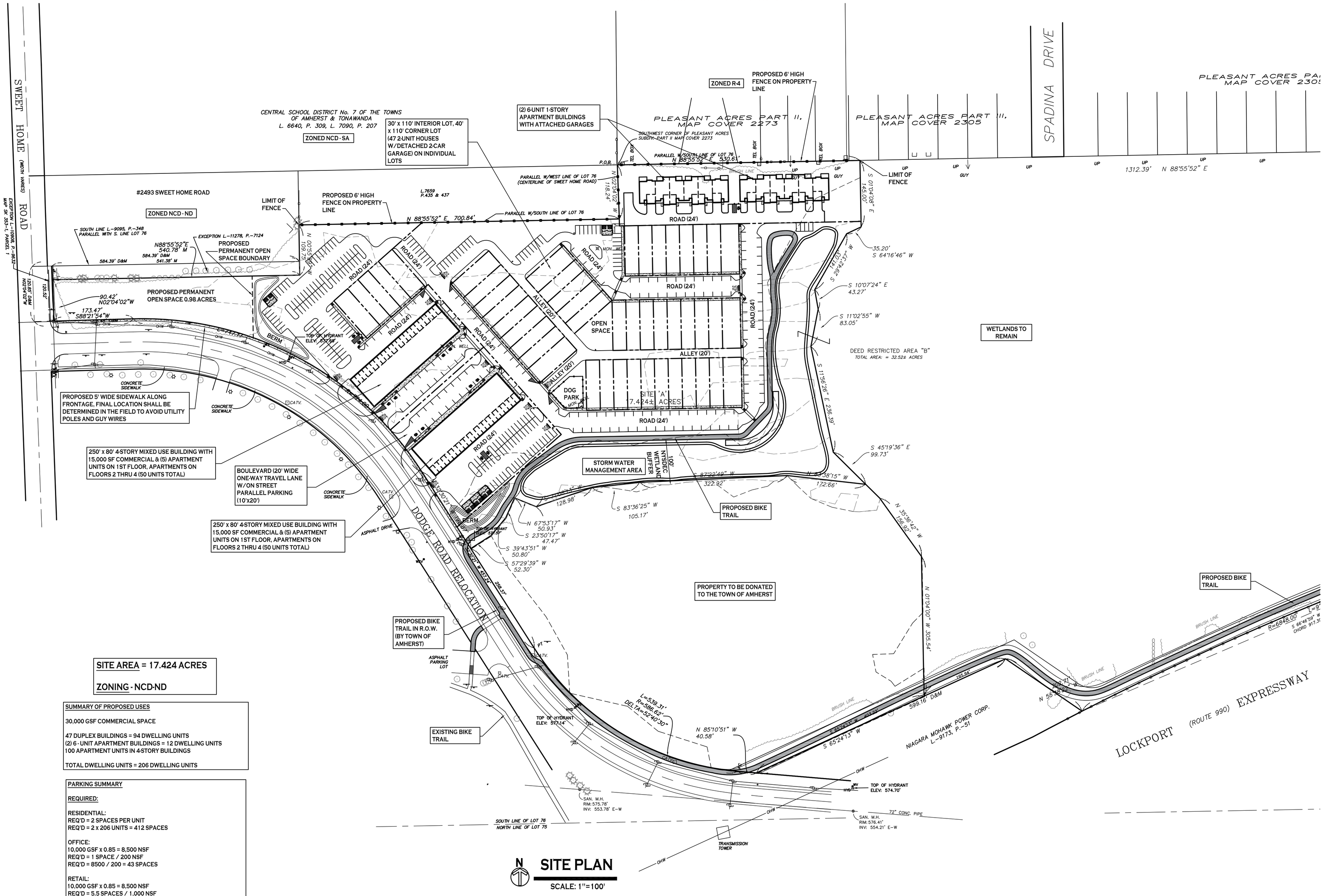

SITE PLAN

SCALE: 1"=100'

SITE AREA = 17.424 ACRES

ZONING - NCD-ND

SUMMARY OF PROPOSED USES

30,000 GSF COMMERCIAL SPACE

47 DUPLEX BUILDINGS = 94 DWELLING UNITS
(2) 6 - UNIT APARTMENT BUILDINGS = 12 DWELLING UNITS
100 APARTMENT UNITS IN 4-STORY BUILDINGS

TOTAL DWELLING UNITS = 206 DWELLING UNITS

PARKING SUMMARY

REQUIRED:

RESIDENTIAL:
REQ'D = 2 SPACES PER UNIT
REQ'D = 2 x 206 UNITS = 412 SPACES

OFFICE:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 1 SPACE / 200 NSF
REQ'D = 8500 / 200 = 43 SPACES

RETAIL:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 5.5 SPACES / 1,000 NSF
REQ'D = 8500 / 1000 x 5.5 = 47 SPACES

RESTAURANT:
REQ'D = 1 SPACE / 3 SEATS + 1 SPACE / 100 SF TAKE OUT AREA
REQ'D = 100 SEAT / 3 + 500 SF / 100 = 38 SPACES

TOTAL REQ'D = 540 SPACES

PROVIDED:

158 PARALLEL PARKING SPACES
213 9'x19' SPACES *
40 GARAGE SPACES IN 4-STORY BLDGS
94 GARAGE SPACES IN DETACHED GARAGES
505 TOTAL SPACES

* INCLUDES SPACES IN FRONT OF APARTMENT GARAGES

PERMANENT OPEN SPACE SUMMARY

TOTAL PROPOSED PERMANENT OPEN SPACE = 0.98 ACRES

WETLAND SUMMARY

FEDERAL IMPACTS PROPOSED = 6.089 AC
FEDERAL IMPACTS PREVIOUSLY PROPOSED = 13.01 AC
DECREASE = 6.921 AC (53% DECREASE)

NYSDEC IMPACTS PROPOSED = 1.20 AC
NYSDEC IMPACTS PREVIOUSLY PROPOSED = 9.46 AC
DECREASE = 8.26 AC (87% DECREASE)

NYSDEC BUFFER IMPACT PROPOSED = 3.65 AC
NYSDEC BUFFER IMPACTS PREVIOUSLY PROPOSED = 4.20 AC
DECREASE = 0.55 AC (13% DECREASE)

NOTE: NYSDEC IMPACTS INCLUDES FEDERAL WETLAND IMPACT OVERLAP AREAS

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

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Buffalo, New York 14203
P 716.842.3165
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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Overall Site Plan

DRAWING NO.

C-100

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (2305?: SP-2021-05)

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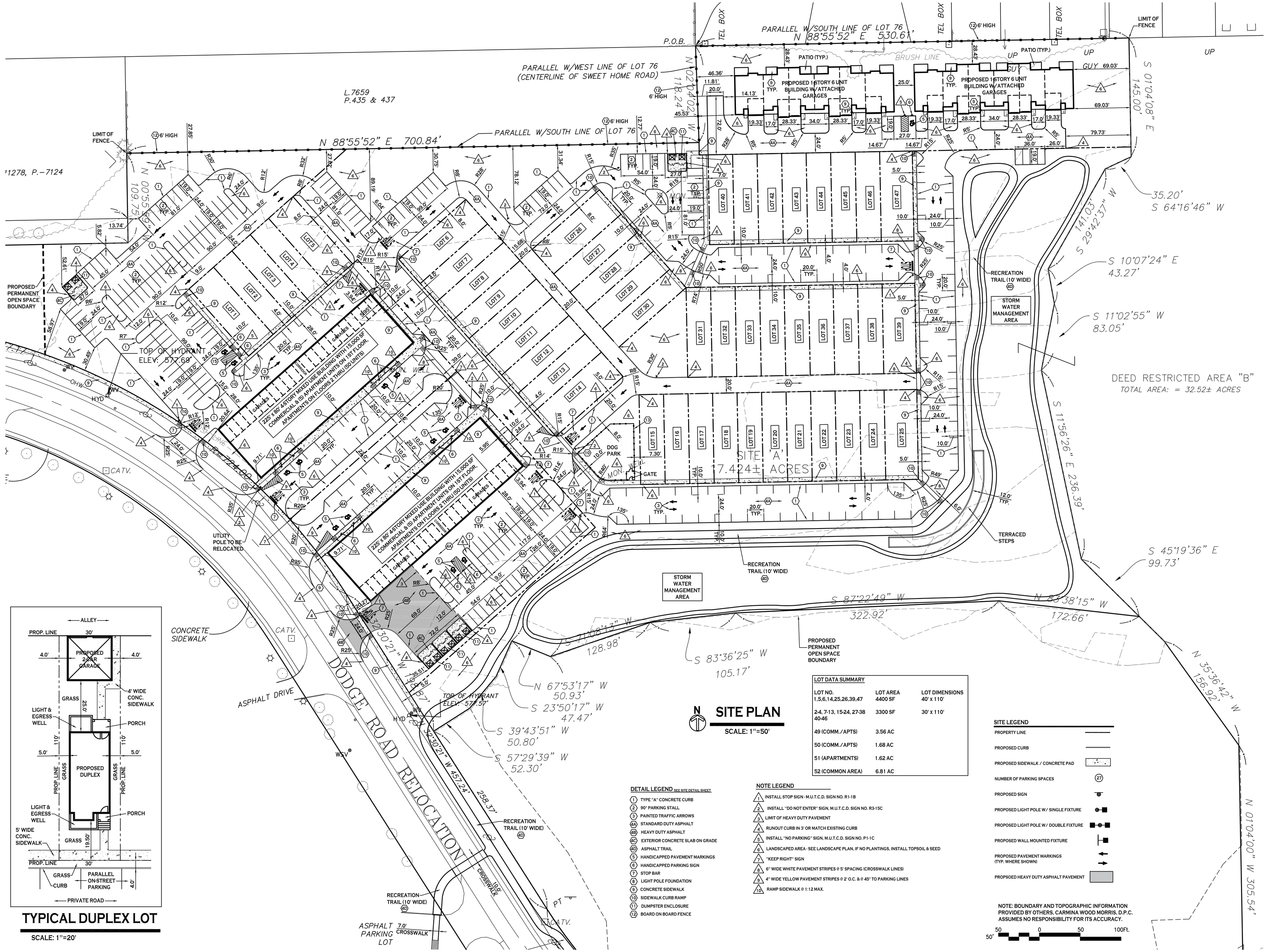

SITE PLAN

SCALE: 1"=50'

LOT DATA SUMMARY		
LOT NO.	LOT AREA	LOT DIMENSIONS
1,5,6,14,25,26,39,47	4400 SF	40' x 110'
2-4, 7-13, 15-24, 27-38 40-46	3300 SF	30' x 110'
49 (COMM./APTS)	3.56 AC	
50 (COMM./APTS)	1.68 AC	
51 (APARTMENTS)	1.62 AC	
52 (COMMON AREA)	6.81 AC	

DETAIL LEGEND SEE SITE DETAIL SHEET

1. TYPE "A" CONCRETE CURB
2. 90° PARKING STALL
3. PAINTED TRAFFIC ARROWS
4A. STANDARD DUTY ASPHALT
4B. HEAVY DUTY ASPHALT
4C. EXTERIOR CONCRETE SLAB ON GRADE
4D. ASPHALT TRAIL
5. HANDICAPPED PAVEMENT MARKINGS
6. HANDICAPPED PARKING SIGN
7. STOP BAR
8. LIGHT POLE FOUNDATION
9. CONCRETE SIDEWALK
10. SIDEWALK CURB RAMP
11. DUMPSTER ENCLOSURE
12. BOARD ON BOARD FENCE

NOTE LEGEND

1. INSTALL STOP SIGN - M.U.T.C.D. SIGN NO. R1-1 B
2. INSTALL "DO NOT ENTER" SIGN, M.U.T.C.D. SIGN NO. R3-15C
3. LIMIT OF HEAVY DUTY PAVEMENT
4. RUNOUT CURB IN 3' OR MATCH EXISTING CURB
5. INSTALL "NO PARKING" SIGN, M.U.T.C.D. SIGN NO. P1-1C
6. LANDSCAPED AREA - SEE LANDSCAPE PLAN, IF NO PLANTINGS, INSTALL TOPSOIL & SEED
7. "KEEP RIGHT" SIGN
8. 6" WIDE WHITE PAVEMENT STRIPES @ 5' SPACING (CROSSWALK LINES)
9. 4" WIDE YELLOW PAVEMENT STRIPES @ 2' O.C. & @ 45° TO PARKING LINES
10. RAMP SIDEWALK @ 1:12 MAX.

SITE LEGEND

- PROPERTY LINE
- PROPOSED CURB
- PROPOSED SIDEWALK / CONCRETE PAD
- NUMBER OF PARKING SPACES (27)
- PROPOSED SIGN
- PROPOSED LIGHT POLE W/ SINGLE FIXTURE
- PROPOSED LIGHT POLE W/ DOUBLE FIXTURE
- PROPOSED WALL MOUNTED FIXTURE
- PROPOSED PAVEMENT MARKINGS (TYP. WHERE SHOWN)
- PROPSOED HEAVY DUTY ASPHALT PAVEMENT

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

TYPICAL DUPLEX LOT

SCALE: 1"=20'

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Site Plan

DRAWING NO.

C-101

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

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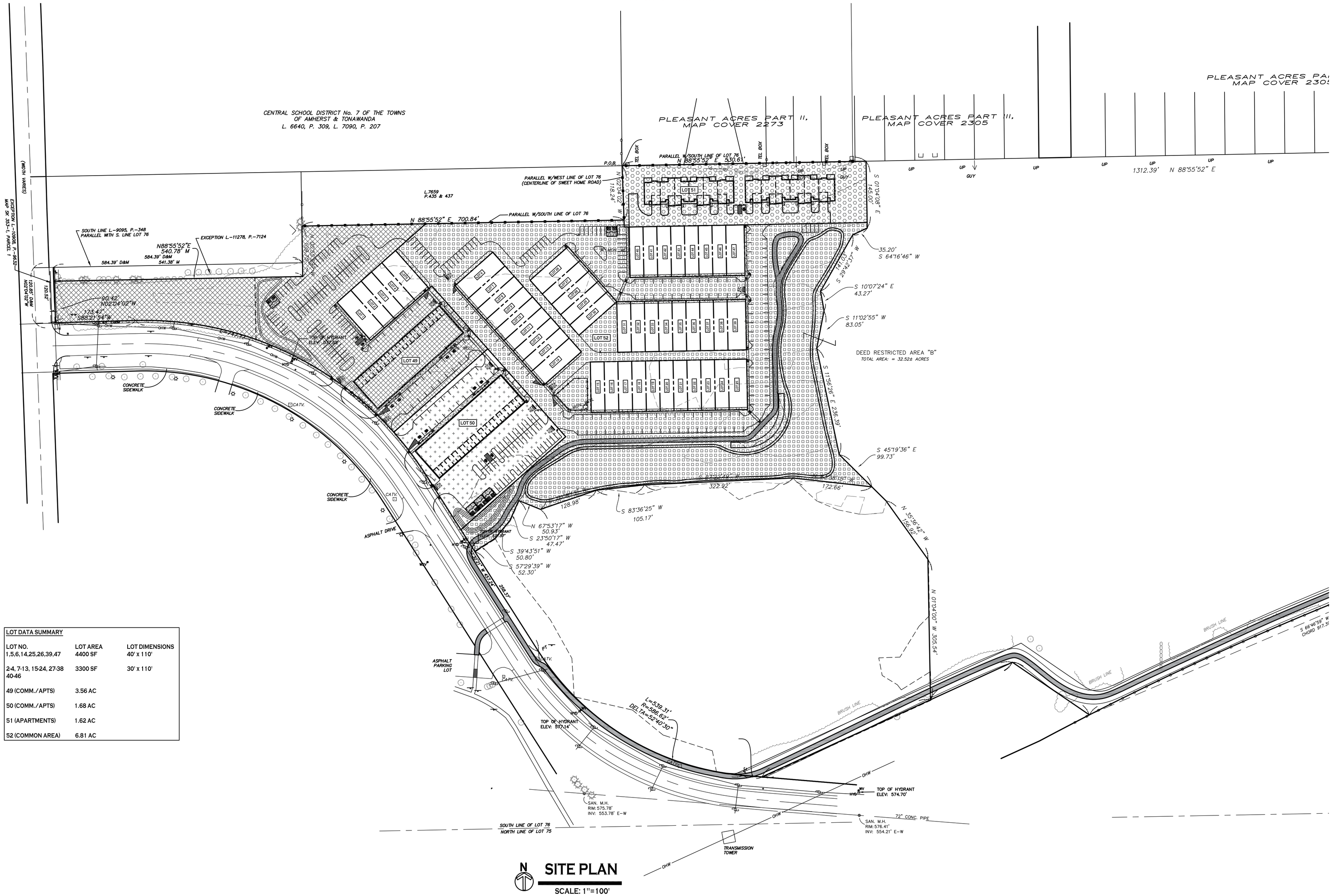

SITE PLAN

SCALE: 1"=100'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

LOT DATA SUMMARY		
LOT NO.	LOT AREA	LOT DIMENSIONS
1,5,6,14,25,26,39,47	4400 SF	40' x 110'
2-4, 7-13, 15-24, 27-38 40-46	3300 SF	30' x 110'
49 (COMM./APTS)	3.56 AC	
50 (COMM./APTS)	1.68 AC	
51 (APARTMENTS)	1.62 AC	
52 (COMMON AREA)	6.81 AC	

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Parcel Map

DRAWING NO.

C-102

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (2357 : SP-2021-05)

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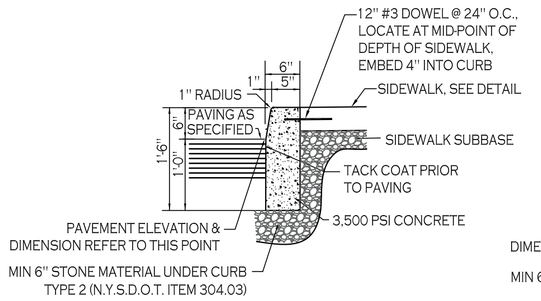
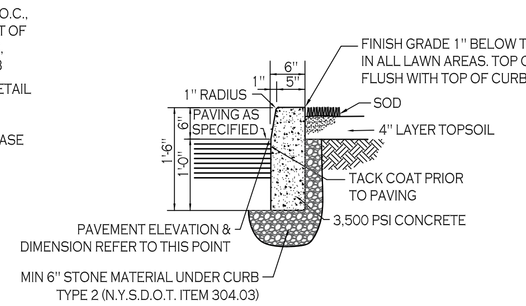


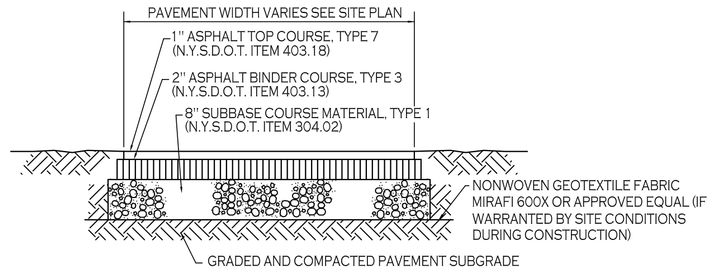
ABUTTING SIDEWALK



ABUTTING LANDSCAPE/GRASS

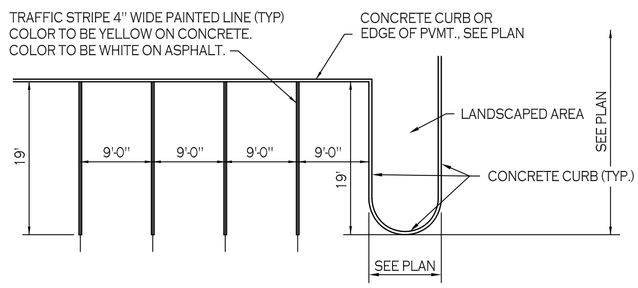
NOTES:
1. CONTROL JOINTS TO BE 2" DEEP AT 15'-0" O.C. - SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
2. WHERE THE CURB DROPS (IS FLUSH WITH ASPHALT) THE DEPTH OF CURB BELOW GRADE SHALL BE INCREASED TO 1'-6" AND OTHER DIMENSIONS ADJUSTED ACCORDINGLY.

TYPE "A" CONCRETE CURB - 1

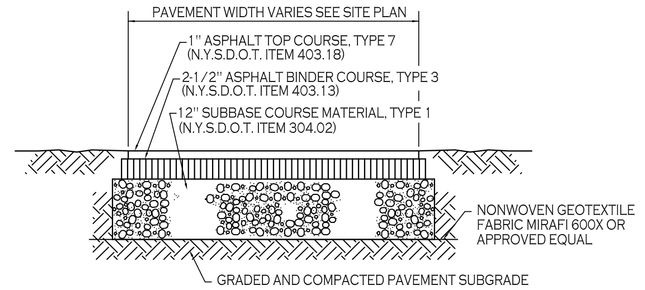


NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 401-3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304-3.

STANDARD DUTY ASPHALT SECTION - 4A

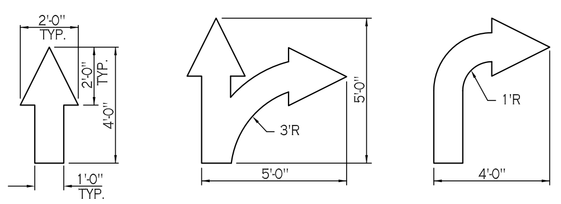


90° PARKING STALL LAYOUT - 2

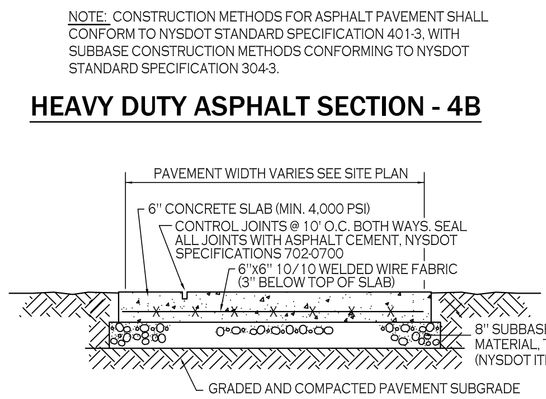


NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 401-3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304-3.

HEAVY DUTY ASPHALT SECTION - 4B

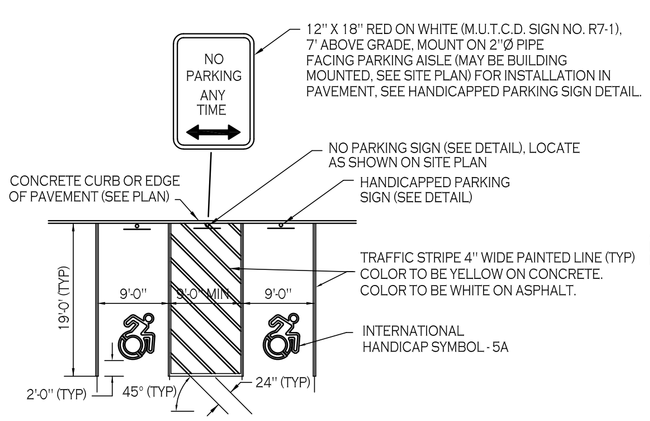


PAINTED TRAFFIC ARROWS - 3

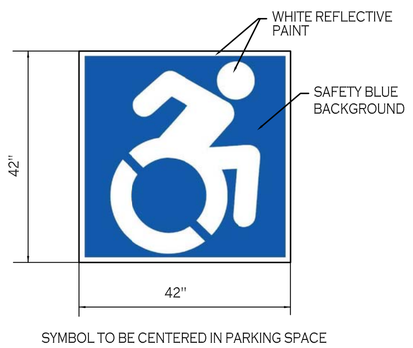


NOTE: CONCRETE PAVEMENT MATERIAL SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 501 AND CONSTRUCTION METHODS SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 502-3.

EXTERIOR CONCRETE SLAB-ON-GRADE SECTION - 4C

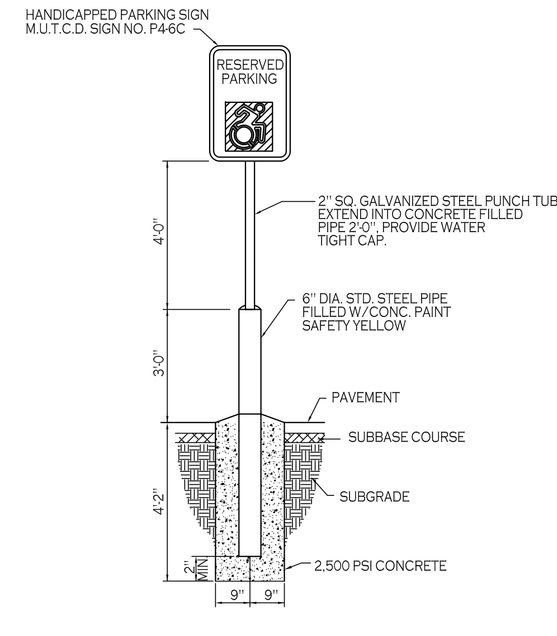


HANDICAPPED PAVEMENT MARKINGS & SIGNAGE - 5



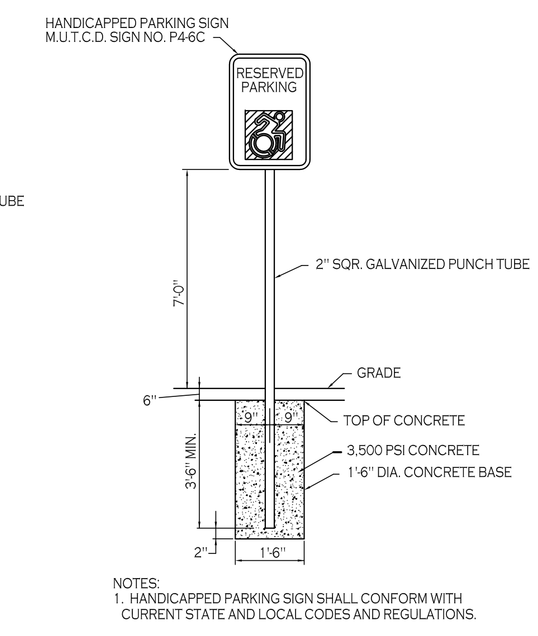
SYMBOL TO BE CENTERED IN PARKING SPACE

INTERNATIONAL HANDICAP SYMBOL - 5A



HANDICAPPED PARKING SIGN - 6

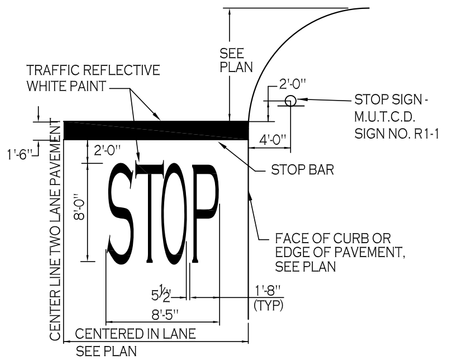
INSTALLED IN PAVEMENT



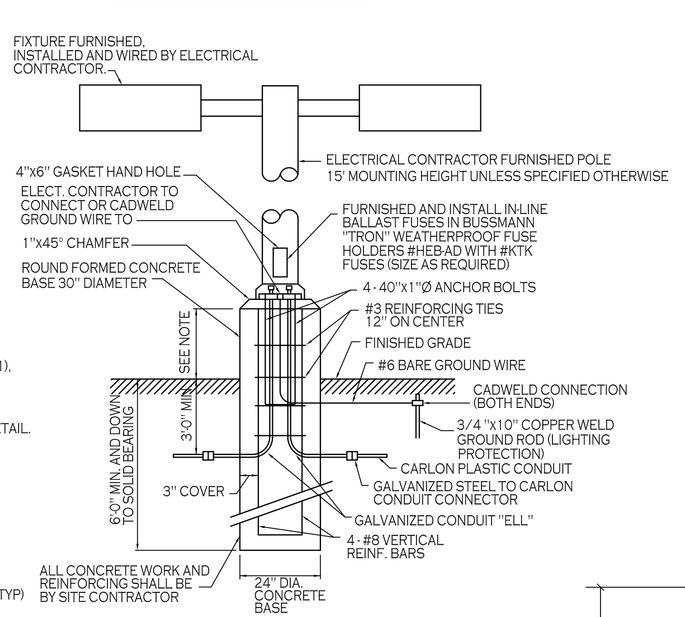
NOTES:
1. HANDICAPPED PARKING SIGN SHALL CONFORM WITH CURRENT STATE AND LOCAL CODES AND REGULATIONS.

HANDICAP PARKING SIGNS - 6

INSTALLED IN GRASS/LANDSCAPED AREA



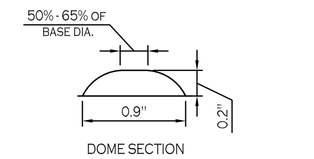
STOP BAR DETAIL - 7



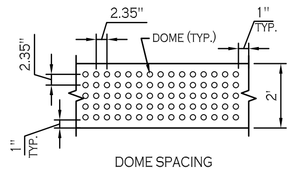
NOTES:
1. FOR LOCATIONS OF FOUNDATIONS SEE SITE PLAN
2. FOR LIGHT FIXTURE ORDERING INFORMATION SEE SITE LIGHTING PLAN
3. LIGHT POLE BASE EXPOSURE ABOVE GRADE SHALL BE:
   IN CURBED ISLANDS: 6" ABOVE TOP OF CURB ELEVATION
   IN PAVEMENT: 3" ABOVE GRADE
   IN NONCURBED GRASS AREAS: 6" ABOVE GRADE

LIGHT POLE FOUNDATION - 8

USE FOR 15' MOUNTING HEIGHT L.E.D. FIXTURES

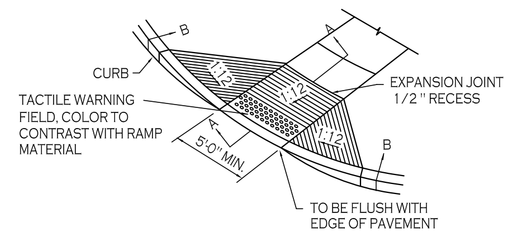


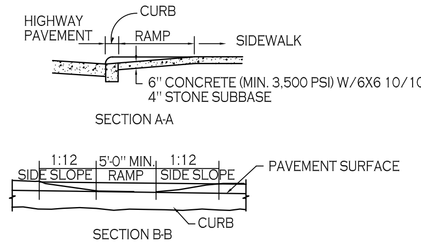
DOME SECTION



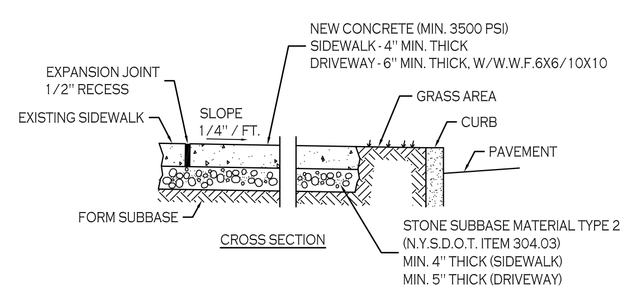
DOME SPACING

NOTE: TACTILE WARNING DEVICES SHALL BE PER ICC/ANSI A117.1-1998, SECTION 705.3.1.2 OR CURRENT UPDATE



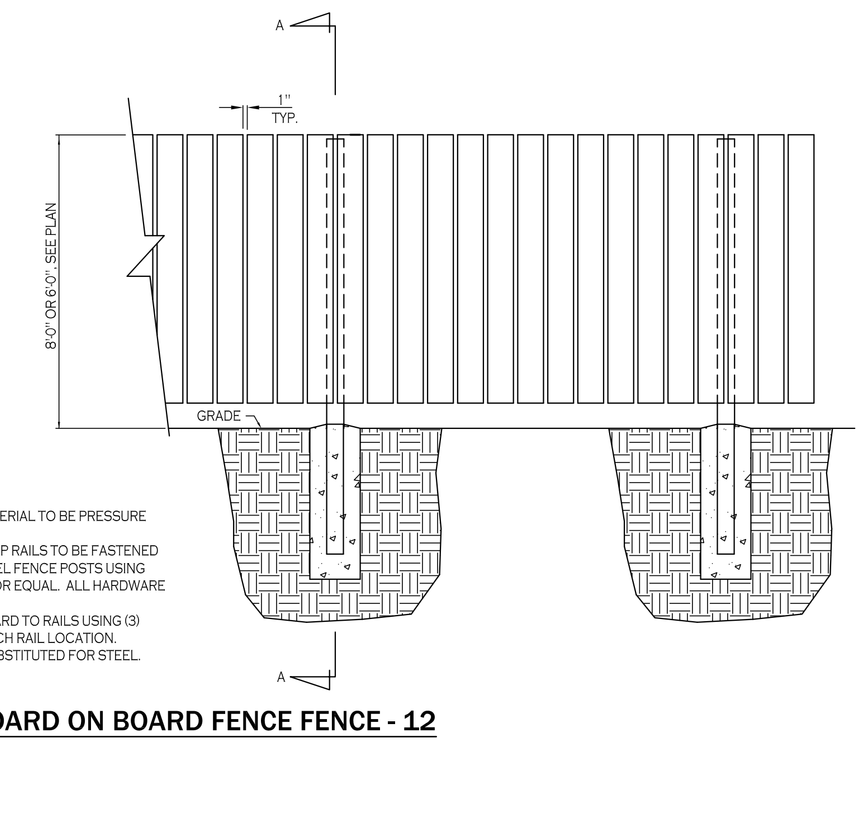


SIDEWALK CURB RAMP - 10



NOTES:
1. CONTROL JOINTS TO BE AT 5'-0" O.C., BOTH WAYS WHERE APPLICABLE. SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
2. CONCRETE SIDEWALK AND DRIVEWAY MATERIAL SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 501 AND CONSTRUCTION METHODS SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 608-3.
3. SUBBASE GRADE SHALL FOLLOW THE PROPOSED GRADE OF THE SIDEWALK AND SLOPE AWAY FROM BUILDING WHERE APPLICABLE, PROVIDE CONTINUOUS STONE PATH TO CURB UNDERDRAIN WHERE PROVIDED.
4. FULL DEPTH EXPANSION JOINTS SHALL BE INSTALLED EVERY 20' O.C., BOTHWAYS WHERE APPLICABLE. SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
5. SEE CURB DETAIL FOR DOWLING REQUIREMENTS WHERE ABUTTING CURB.
6. INSTALL 6" LONG #3 DOWELS @ 12" O.C. WHERE SIDEWALK ABUTS A BUILDING WALL AT AN ENTRANCE, THICKEN SIDEWALK TO 6" AT BUILDING WALL AND INSTALL DOWEL CENTERED IN THE 6" DEPTH. DOWELS AND THICKENING OF SIDEWALK SHALL EXTEND 18" EITHER SIDE OF ENTRANCE.
7. INSTALL 1/2" PREMOLDED EXPANSION JOINT WITH BACKER ROD & SEALANT WHERE SIDEWALK ABUTS BUILDING OR OTHER STRUCTURE.

CONCRETE SIDEWALK - 9



SECTION A-A

NOTES:
1. ALL WOODEN FENCE MATERIAL TO BE PRESSURE TREATED PINE.
2. CENTER, BOTTOM AND TOP RAILS TO BE FASTENED TO 3" Ø GALVANIZED STEEL FENCE POSTS USING SIMPSON PIPE GRIP TIES OR EQUAL. ALL HARDWARE TO BE GALVANIZED.
3. ATTACH EACH 1" X 6" BOARD TO RAILS USING (3) GALVANIZED NAILS AT EACH RAIL LOCATION.
4. WOOD POSTS CAN BE SUBSTITUTED FOR STEEL.

BOARD ON BOARD FENCE FENCE - 12

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REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Site Details

DRAWING NO.
C-103

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (2305?) : SP-2021-05)

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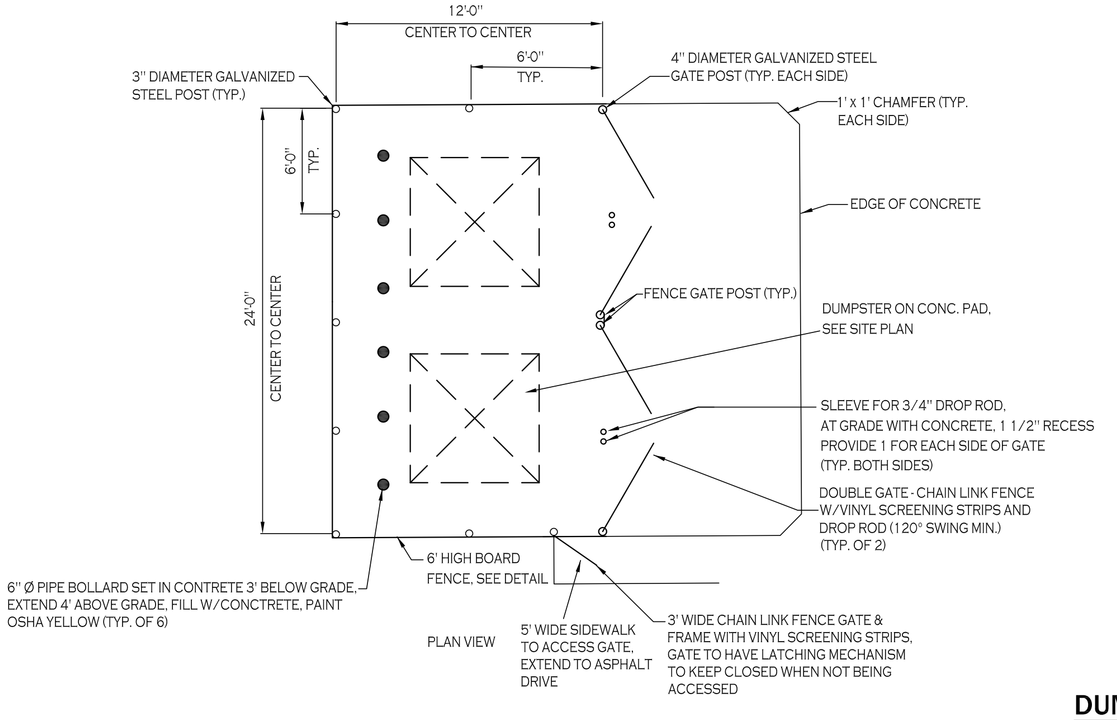
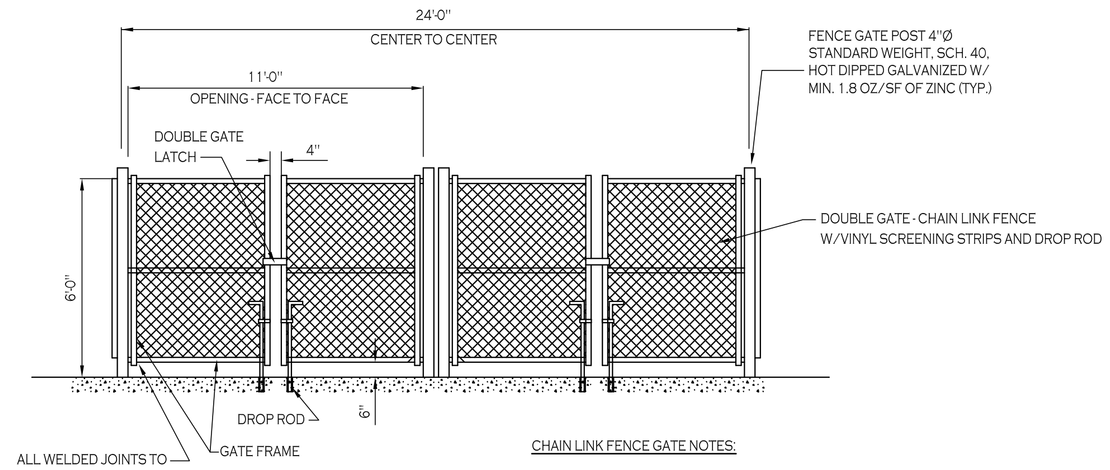
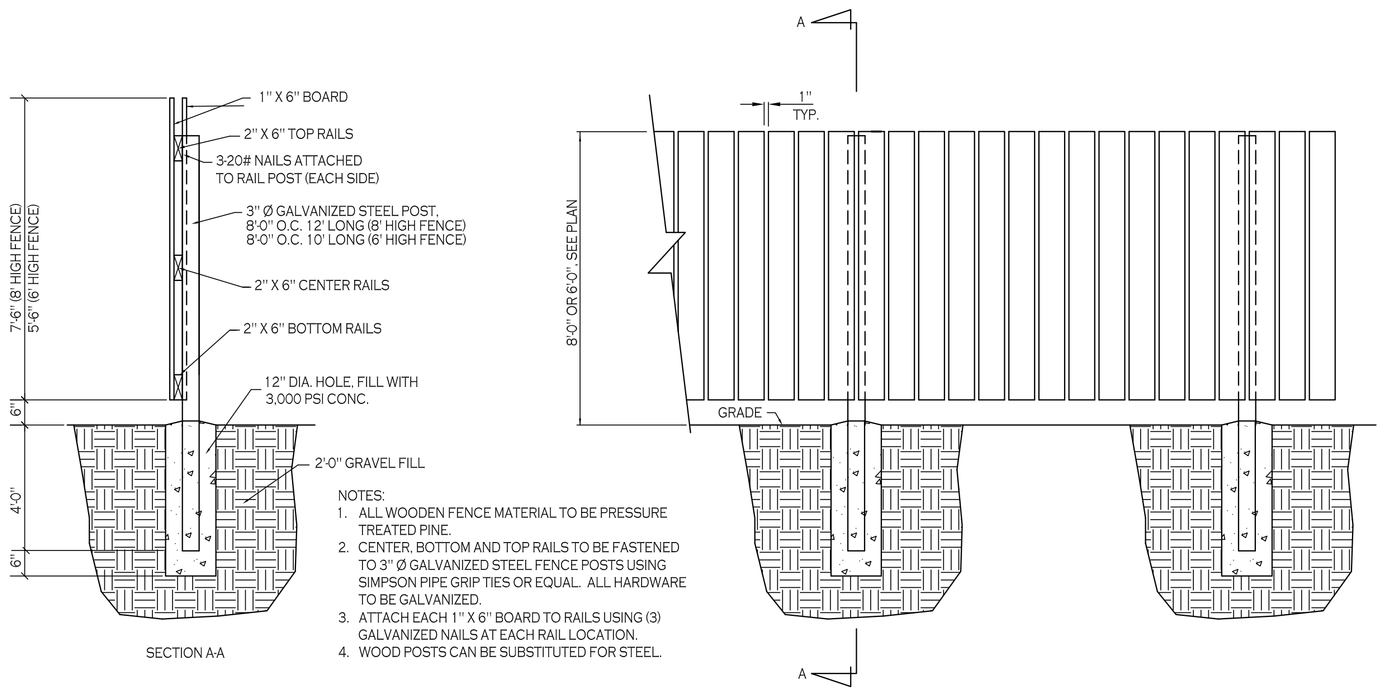




DUMPSTER ENCLOSURE - 11

CHAIN LINK FENCE GATE NOTES:

1. GATE POST FOOTINGS TO BE MIN. 36" DEEP x (4x) POST DIAMETER, EXTEND POST TO WITHIN 6" OF BOTTOM.
2. GATE FRAMES TO BE 2" SQ. GALVANIZED STEEL, WEIGHING 2.60 LB/FT IN ACCORDANCE WITH ASTM F 900.
3. CHAIN LINK FENCE FABRIC SHALL BE 2" MESH, 9 GAUGE, ZINC COATED STEEL CORE WIRE. INSTALL MESH WITH HOOK BOLTS AND TENSION BARS ON ALL 4 SIDES. ATTACH AT 15" MAX.
4. DOUBLE GATE LATCH TO BE FORKED TYPE CAPABLE OF RETAINING GATE IN CLOSED POSITION AND HAVE PROVISION FOR PAD LOCK. LATCH SHALL BE OPERABLE FROM EITHER SIDE OF GATE.
5. ALL HARDWARE TO BE HOT DIPPED GALVANIZED STEEL TO SUIT GATE SIZE.



NOTES:
1. ALL WOODEN FENCE MATERIAL TO BE PRESSURE TREATED PINE.
2. CENTER, BOTTOM AND TOP RAILS TO BE FASTENED TO 3" Ø GALVANIZED STEEL FENCE POSTS USING SIMPSON PIPE GRIP TIES OR EQUAL. ALL HARDWARE TO BE GALVANIZED.
3. ATTACH EACH 1" X 6" BOARD TO RAILS USING (3) GALVANIZED NAILS AT EACH RAIL LOCATION.
4. WOOD POSTS CAN BE SUBSTITUTED FOR STEEL.

BOARD ON BOARD FENCE FENCE - FOR DUMPSTER ENCLOSURE

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REVISIONS:

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PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Site
Details

DRAWING NO.
C-104
Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

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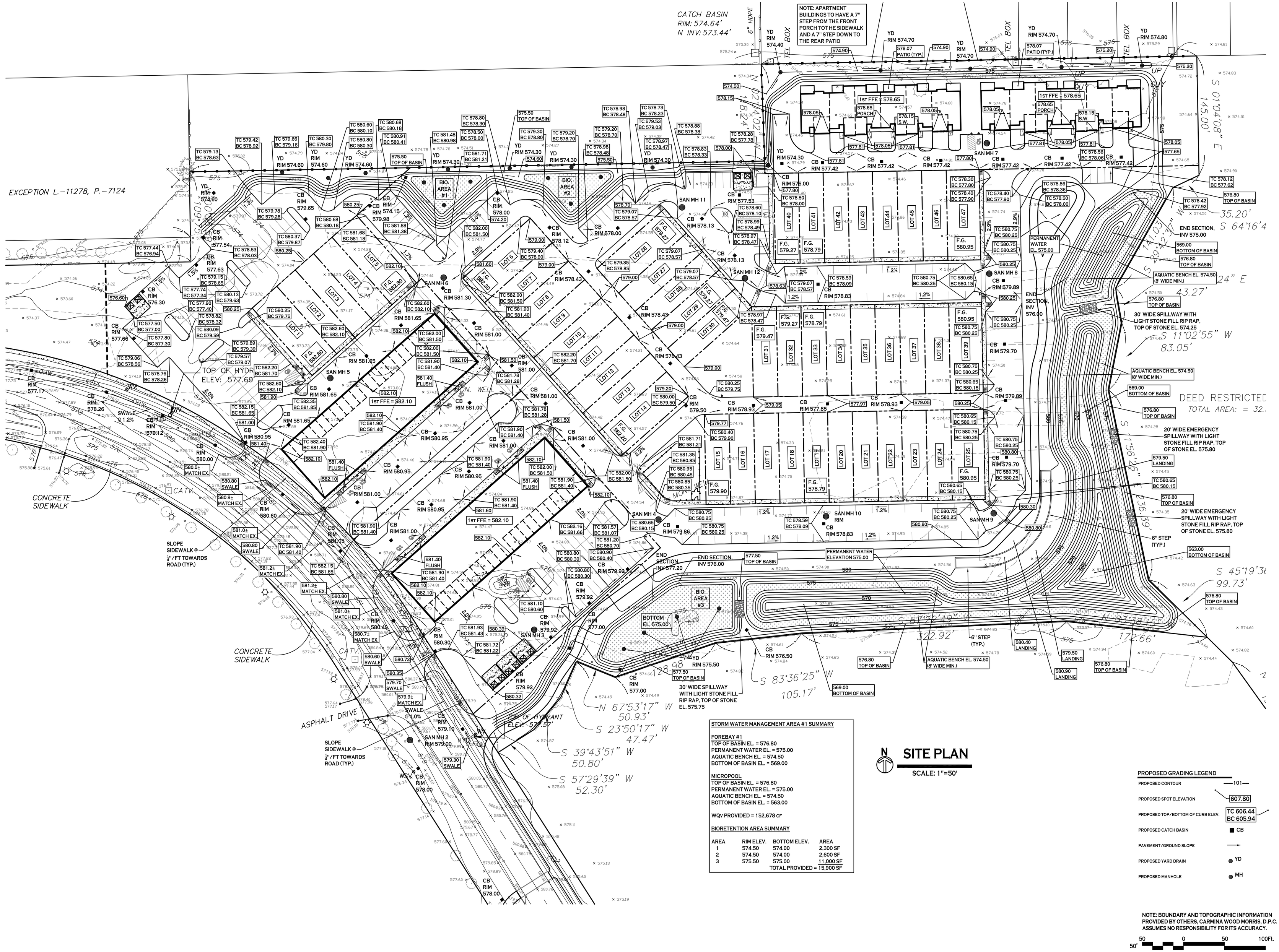

STORM WATER MANAGEMENT AREA #1 SUMMARY

FOREBAY #1
TOP OF BASIN EL. = 576.80
PERMANENT WATER EL. = 575.00
AQUATIC BENCH EL. = 574.50
BOTTOM OF BASIN EL. = 569.00

MICROPOOL
TOP OF BASIN EL. = 576.80
PERMANENT WATER EL. = 575.00
AQUATIC BENCH EL. = 574.50
BOTTOM OF BASIN EL. = 563.00

WQv PROVIDED = 152,678 CF

BIORETENTION AREA SUMMARY

AREA	RIM ELEV.	BOTTOM ELEV.	AREA
1	574.50	574.00	2,300 SF
2	574.50	574.00	2,600 SF
3	575.50	575.00	11,000 SF
		TOTAL PROVIDED =	15,900 SF

SITE PLAN

SCALE: 1"=50'

PROPOSED GRADING LEGEND

PROPOSED CONTOUR	101
PROPOSED SPOT ELEVATION	607.80
PROPOSED TOP/BOTTOM OF CURB ELEV.	TC 606.44 / BC 605.94
PROPOSED CATCH BASIN	CB
PAVEMENT/GROUND SLOPE	
PROPOSED YARD DRAIN	YD
PROPOSED MANHOLE	MH

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50 0 50 100Ft.

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
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REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Grading Plan

DRAWING NO.
C-200
Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

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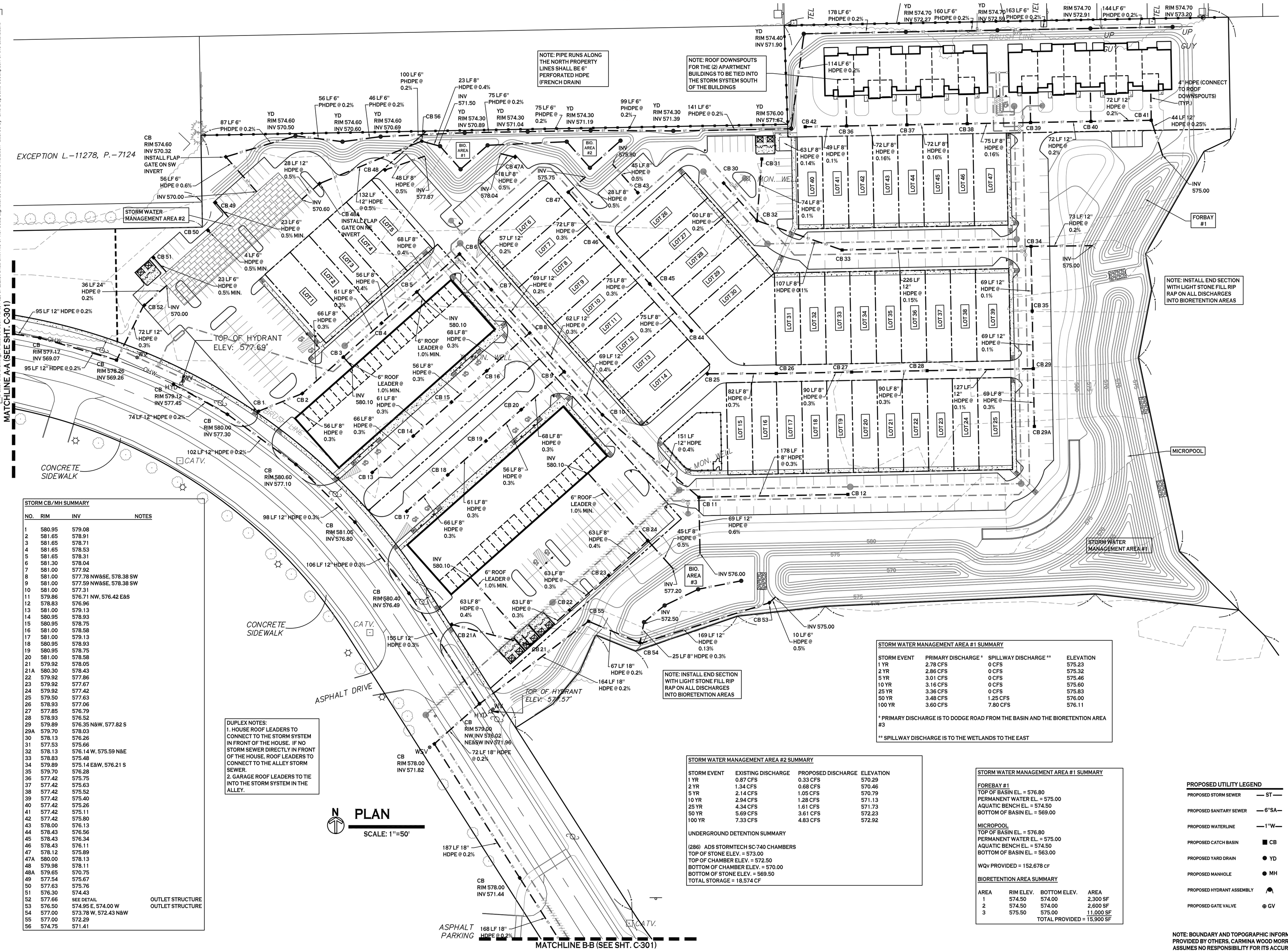

PLAN

SCALE: 1"=50'

STORM CB/MH SUMMARY			
NO.	RIM	INV	NOTES
1	580.95	579.08	
2	581.65	578.91	
3	581.65	578.71	
4	581.65	578.53	
5	581.65	578.31	
6	581.30	578.04	
7	581.00	577.92	
8	581.00	577.78 NW&SE, 578.38 SW	
9	581.00	577.59 NW&SE, 578.38 SW	
10	581.00	577.31	
11	579.86	576.71 NW, 576.42 E&S	
12	578.83	576.96	
13	581.00	579.13	
14	580.95	578.93	
15	580.95	578.75	
16	581.00	578.58	
17	581.00	579.13	
18	580.95	578.93	
19	580.95	578.75	
20	581.00	578.58	
21	579.92	578.05	
21A	580.30	578.43	
22	579.92	577.86	
23	579.92	577.67	
24	579.92	577.42	
25	579.50	577.63	
26	578.93	577.06	
27	577.85	576.79	
28	578.93	576.52	
29	579.89	576.35 N&W, 577.82 S	
29A	579.70	578.03	
30	578.13	576.26	
31	577.53	575.66	
32	578.13	576.14 W, 575.59 N&E	
33	578.83	575.48	
34	579.89	575.14 E&W, 576.21 S	
35	579.70	576.28	
36	577.42	575.75	
37	577.42	575.63	
38	577.42	575.52	
39	577.42	575.40	
40	577.42	575.26	
41	577.42	575.11	
42	577.42	575.80	
43	578.00	576.13	
44	578.43	576.56	
45	578.43	576.34	
46	578.43	576.11	
47	578.12	575.89	
47A	580.00	578.13	
48	579.98	578.11	
48A	579.65	570.75	
49	577.54	575.67	
50	577.63	575.76	
51	576.30	574.43	
52	577.66	SEE DETAIL	OUTLET STRUCTURE
53	576.50	574.95 E, 574.00 W	OUTLET STRUCTURE
54	577.00	573.78 W, 572.43 N&W	
55	577.00	572.29	
56	574.75	571.41	

DUPLEX NOTES:
1. HOUSE ROOF LEADERS TO CONNECT TO THE STORM SYSTEM IN FRONT OF THE HOUSE. IF NO STORM SEWER DIRECTLY IN FRONT OF THE HOUSE, ROOF LEADERS TO CONNECT TO THE ALLEY STORM SEWER.
2. GARAGE ROOF LEADERS TO TIE INTO THE STORM SYSTEM IN THE ALLEY.

STORM WATER MANAGEMENT AREA #1 SUMMARY			
STORM EVENT	PRIMARY DISCHARGE *	SPILLWAY DISCHARGE **	ELEVATION
1 YR	2.78 CFS	0 CFS	575.23
2 YR	2.86 CFS	0 CFS	575.32
5 YR	3.01 CFS	0 CFS	575.46
10 YR	3.16 CFS	0 CFS	575.60
25 YR	3.36 CFS	0 CFS	575.83
50 YR	3.48 CFS	1.25 CFS	576.00
100 YR	3.60 CFS	7.80 CFS	576.11

* PRIMARY DISCHARGE IS TO DODGE ROAD FROM THE BASIN AND THE BIORETENTION AREA #3

** SPILLWAY DISCHARGE IS TO THE WETLANDS TO THE EAST

STORM WATER MANAGEMENT AREA #2 SUMMARY			
STORM EVENT	EXISTING DISCHARGE	PROPOSED DISCHARGE	ELEVATION
1 YR	0.87 CFS	0.33 CFS	570.29
2 YR	1.34 CFS	0.68 CFS	570.46
5 YR	2.14 CFS	1.05 CFS	570.79
10 YR	2.94 CFS	1.28 CFS	571.13
25 YR	4.34 CFS	1.61 CFS	571.73
50 YR	5.69 CFS	3.61 CFS	572.23
100 YR	7.33 CFS	4.83 CFS	572.92

UNDERGROUND DETENTION SUMMARY

(286) ADS STORMTECH SC-740 CHAMBERS
TOP OF STONE ELEV. = 573.00
TOP OF CHAMBER ELEV. = 572.50
BOTTOM OF CHAMBER ELEV. = 570.00
BOTTOM OF STONE ELEV. = 569.50
TOTAL STORAGE = 18,574 CF

STORM WATER MANAGEMENT AREA #1 SUMMARY
FOREBAY #1
TOP OF BASIN EL. = 576.80
PERMANENT WATER EL. = 575.00
AQUATIC BENCH EL. = 574.50
BOTTOM OF BASIN EL. = 569.00
MICROPOOL
TOP OF BASIN EL. = 576.80
PERMANENT WATER EL. = 575.00
AQUATIC BENCH EL. = 574.50
BOTTOM OF BASIN EL. = 563.00
WQv PROVIDED = 152,678 CF

BIORETENTION AREA SUMMARY			
AREA	RIM ELEV.	BOTTOM ELEV.	AREA
1	574.50	574.00	2,300 SF
2	574.50	574.00	2,600 SF
3	575.50	575.00	11,000 SF
		TOTAL PROVIDED =	15,900 SF

PROPOSED UTILITY LEGEND

- PROPOSED STORM SEWER — ST —
- PROPOSED SANITARY SEWER — 6"SA —
- PROPOSED WATERLINE — 1"W —
- PROPOSED CATCH BASIN ■ CB
- PROPOSED YARD DRAIN ● YD
- PROPOSED MANHOLE ● MH
- PROPOSED HYDRANT ASSEMBLY
- PROPOSED GATE VALVE ⊕ GV

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 0 50 100FT.

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F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Storm Drainage Plan

DRAWING NO.

C-300

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

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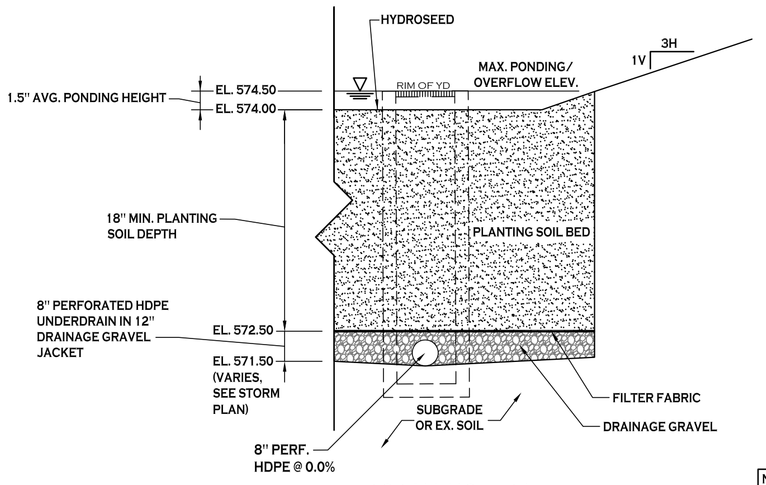
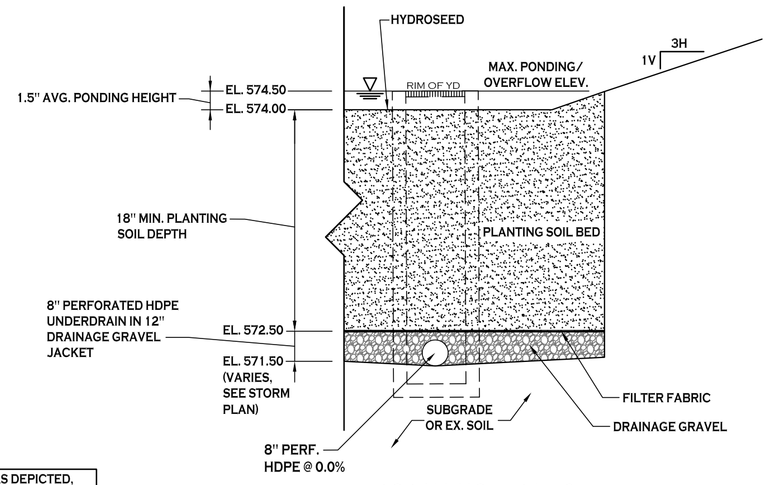
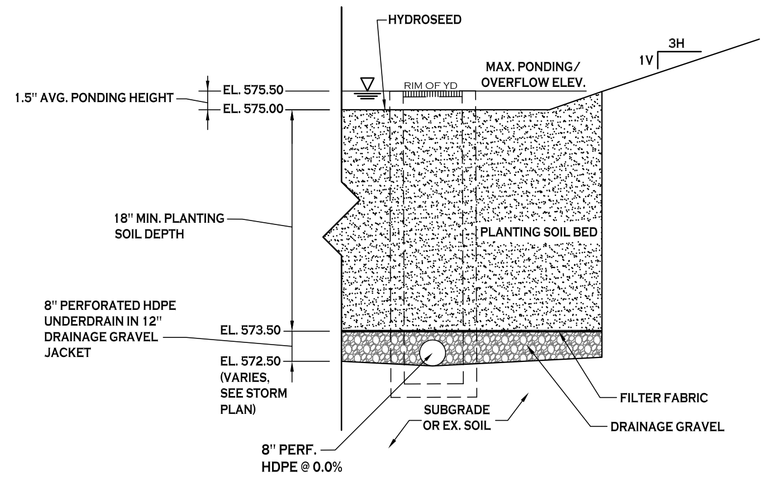


BIORETENTION AREA #1



BIORETENTION AREA #2

NOTE: AS DEPICTED, YARD DRAIN RIM ELEVATIONS ARE TO BE SET 6" ABOVE PROPOSED GRADE IN BIORETENTION AREAS.



BIORETENTION AREA #3

NOTES:
1. FILTER FABRIC TO BE NON-WOVEN CLASS 'C', MIRAFI 180-N OR APPROVED EQUIVALENT
2. MULCH TO BE SHREDDED HARDWOOD, AGED 12 MONTHS MIN.
3. DRAINAGE GRAVEL TO MEET AASHTO M-43. NO.67, SIZE 0.25" TO 0.75"
4. CONTRACTOR TO PROVIDE PLANTING SOIL SUBMITTAL SPECIFICATION FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.

NOTE: PLANTING SOIL SHALL BE LOAM/SAND MIX CONTAINING A MINIMUM OF 35 TO 60% SAND BY VOLUME AND LESS THAN 25% CLAY. SOIL SHOULD FALL WITHIN USCS TYPES SM OR ML WITH PERMEABILITY OF AT LEAST 0.5 FEET PER DAY. SOIL SHOULD BE FREE FROM STONES, STUMPS, ROOTS OR OTHER WOODY MATERIAL OVER 1" IN DIAMETER. PLACEMENT OF THE PLANTING SOIL SHOULD BE IN LIFTS OF 12" TO 18", LOOSELY COMPACTED.

CHARACTERISTICS SHALL BE:
PH RANGE: 5.2 - 7.00
ORGANIC MATTER: 1.5 - 4.0%
MAGNESIUM: 35 LBS PER ACRE MIN.
PHOSPHORUS: 75 LBS PER ACRE MIN.
POTASSIUM: 85 LBS PER ACRE MIN.
SOLUBLE SALTS: 500 PPM
CLAY: 10 TO 25%
SILT: 30 TO 55%
SAND: 35 TO 60%

BIO-RETENTION AREA SEEDING SPEC (NORTHEAST WETLAND GRASS SEED MIX):

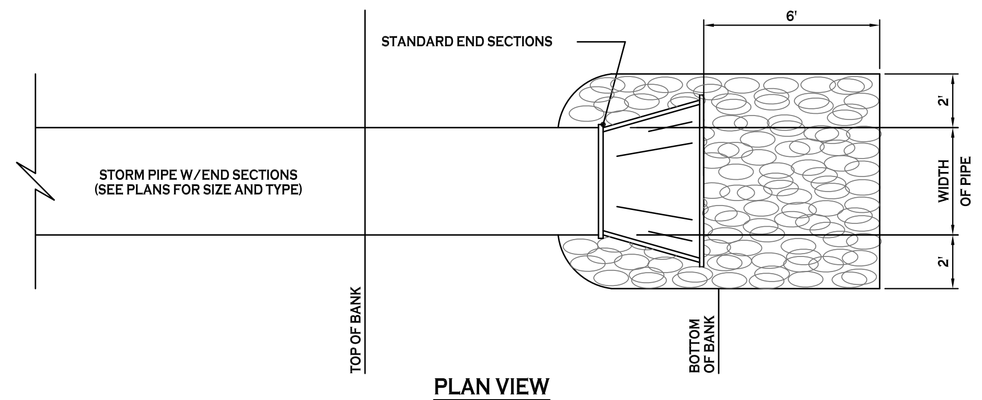
SEED MIXTURE	VARIETY	PERCENT BY NO. OF SEEDS
CREEPING BENTGRASS	AGROSTIS STOLONIFERA	63.0
ROUGH BLUEGRASS	POA TRIVIALIS	17.0
MEADOW FOXTAIL	ALOPECURUS ARUNDINACEUS	11.0
ANNUAL RYEGRASS	LOLIUM MULTIFLORUM	4.5
DEERTONGUE	PANICUM CLANDESTINUM	4.5

BIORETENTION AREA - TYPICAL SECTIONS

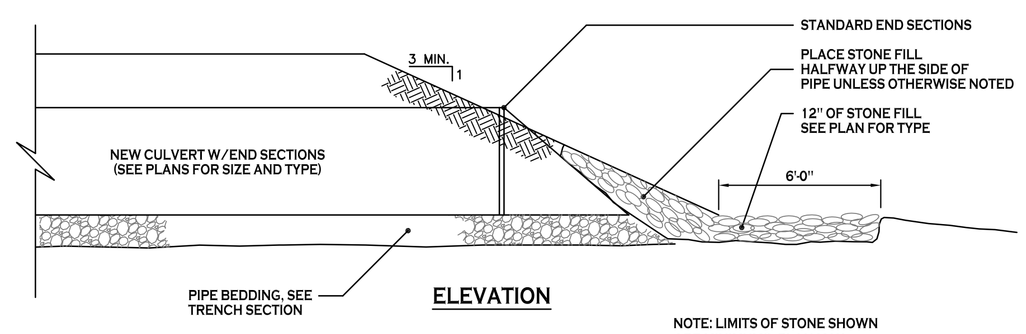
NOT TO SCALE

NOTE:
SEE TYPICAL TRENCH SECTION FOR BEDDING REQUIREMENTS

TYPICAL YARD DRAIN DETAIL



PLAN VIEW

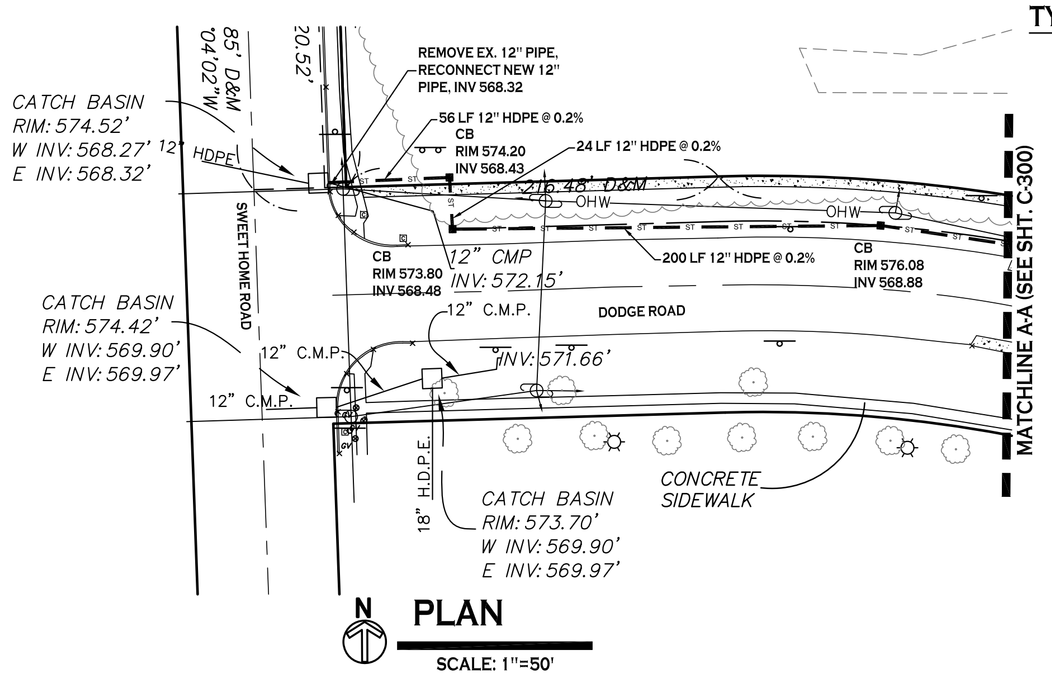


ELEVATION

NOTE: LIMITS OF STONE SHOWN ARE MINIMUMS, PLAN MAY INDICATE GREATER LIMITS

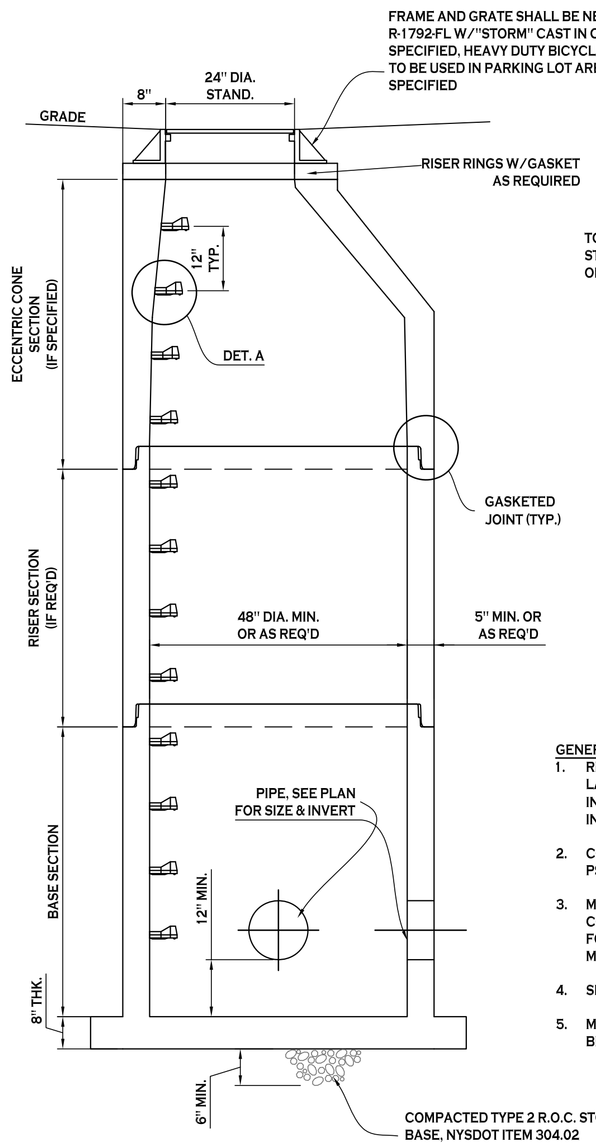
TYPICAL PIPE OUTLET W/ END SECTION & RIP RAP

NOT TO SCALE



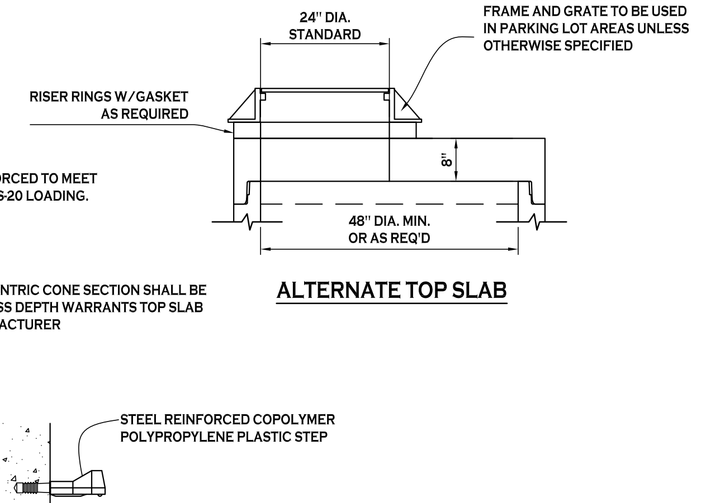
N PLAN

SCALE: 1"=50'



TYPICAL STORM MANHOLE DETAIL

NOT TO SCALE

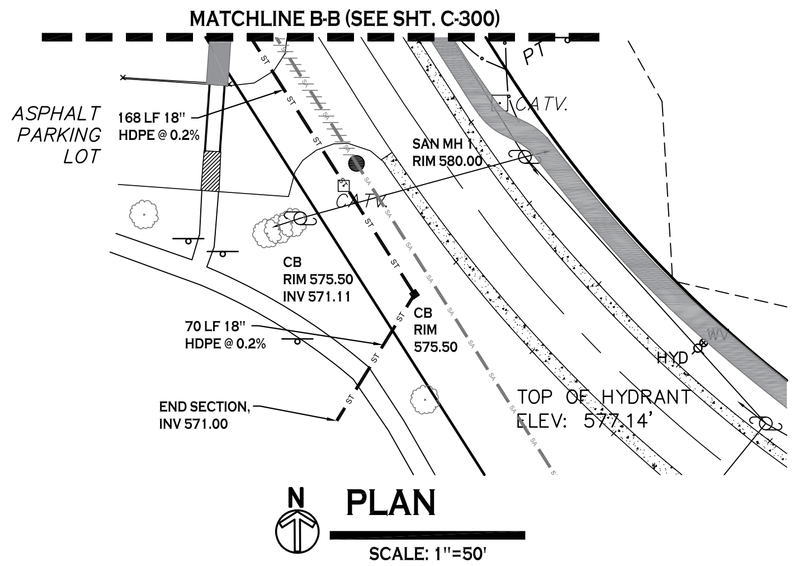


ALTERNATE TOP SLAB

NOTE: ECCENTRIC CONE SECTION SHALL BE USED UNLESS DEPTH WARRANTS TOP SLAB PER MANUFACTURER

DETAIL A

GENERAL NOTES:
1. REINFORCED STEEL TO CONFORM TO LATEST A.S.T.M. A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) IN BASE SLAB.
2. CONCRETE COMPRESSIVE STRENGTH - 4000 PSI MINIMUM.
3. MANHOLE DESIGN SPECIFICATIONS TO CONFORM TO LATEST A.S.T.M. C478 SPEC. FOR PRE-CAST REINFORCED CON-CRETE MANHOLE SECTIONS.
4. SINGLE POUR MONOLITHIC BASE SECTION.
5. MANHOLE TO BE COATED ON OUTSIDE WITH BITUMASTIC SEALER.



N PLAN

SCALE: 1"=50'

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Wood
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REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Storm Drainage Details

DRAWING NO.
C-301

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

1.e

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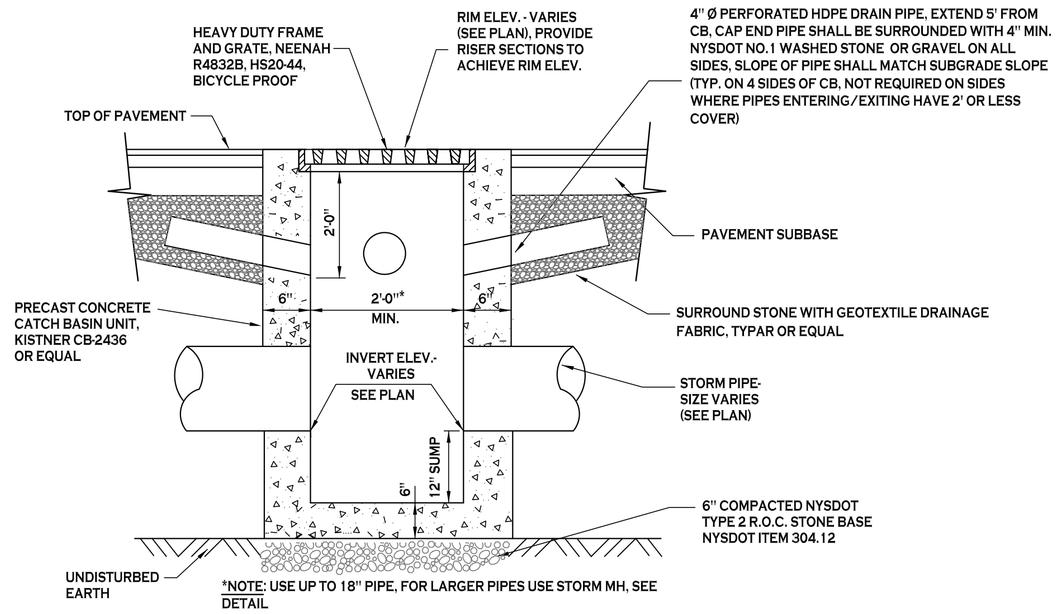
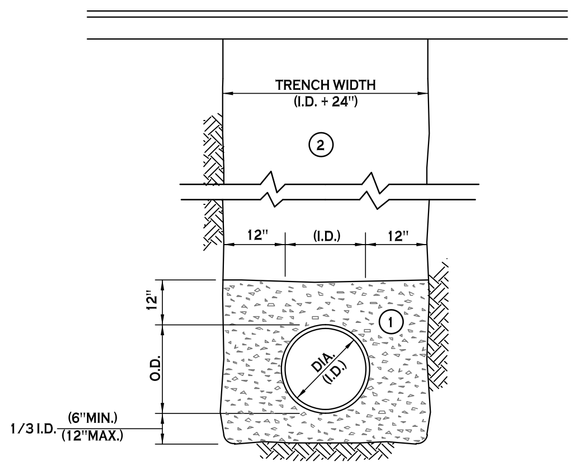


TYPICAL PRECAST CATCH BASIN

NOT TO SCALE



NOTES:

A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.

C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT 1985 EDITION)

(1) NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

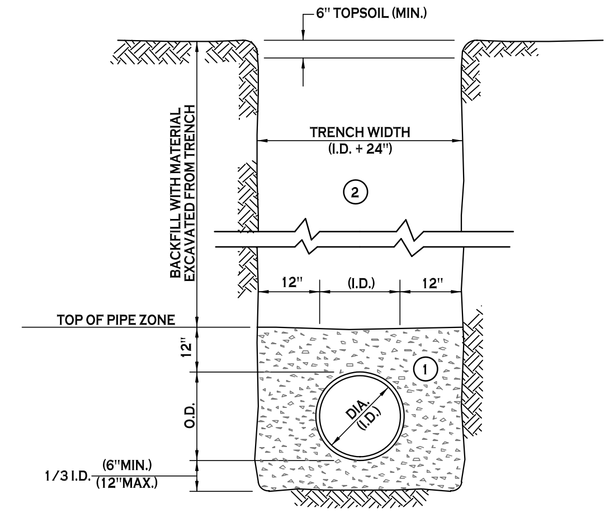
NO SLAG SHALL BE ALLOWED FOR MATERIAL (1)

(2) TYPE 2 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 304-2.02 TYPE 2. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN TWO INCHES AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL (2)

STORM SEWER TRENCH SECTION IN PAVED AREAS

NOT TO SCALE



NOTES:

A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.

C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT 1985 EDITION)

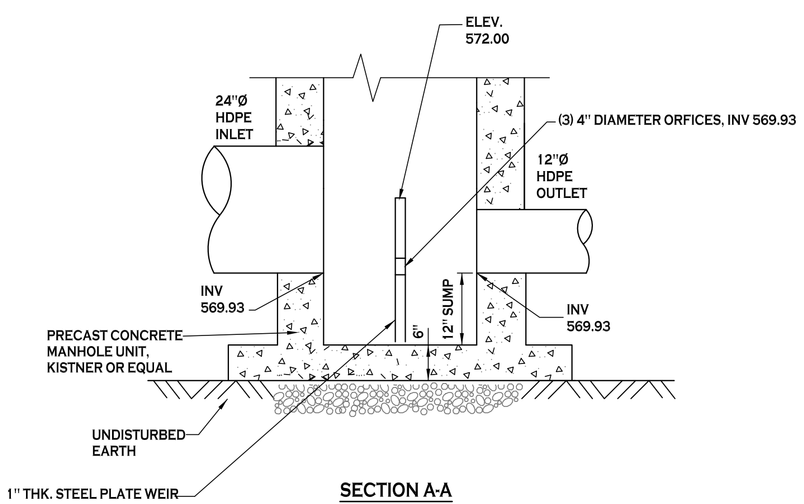
(1) NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL (1)

(2) BACKFILL MATERIAL SHALL BE NATIVE SOIL CONTAINING NO UNSUITABLE MATERIAL COMPACTED IN 6" LIFTS.

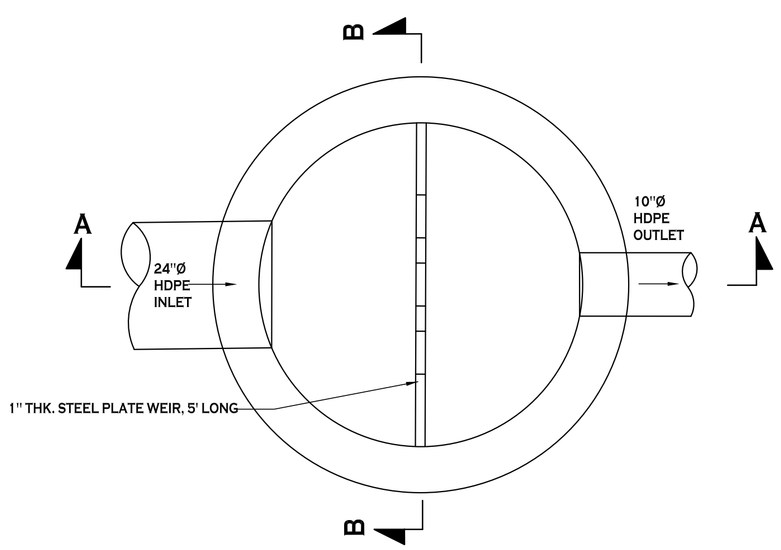
STORM SEWER TRENCH SECTION IN UNPAVED AREAS

NOT TO SCALE



SECTION A-A

NOTES:
1. FASTEN STEEL PLATE TO CB WALL WITH ANGLE CLIPS AND BOLTS
2. STEEL PLATE, ANGLE CLIPS, AND BOLTS TO BE HOT DIPPED GALVANIZED

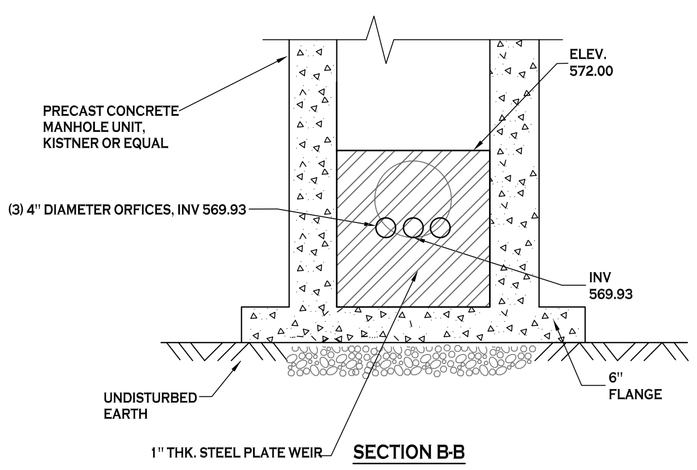


PLAN

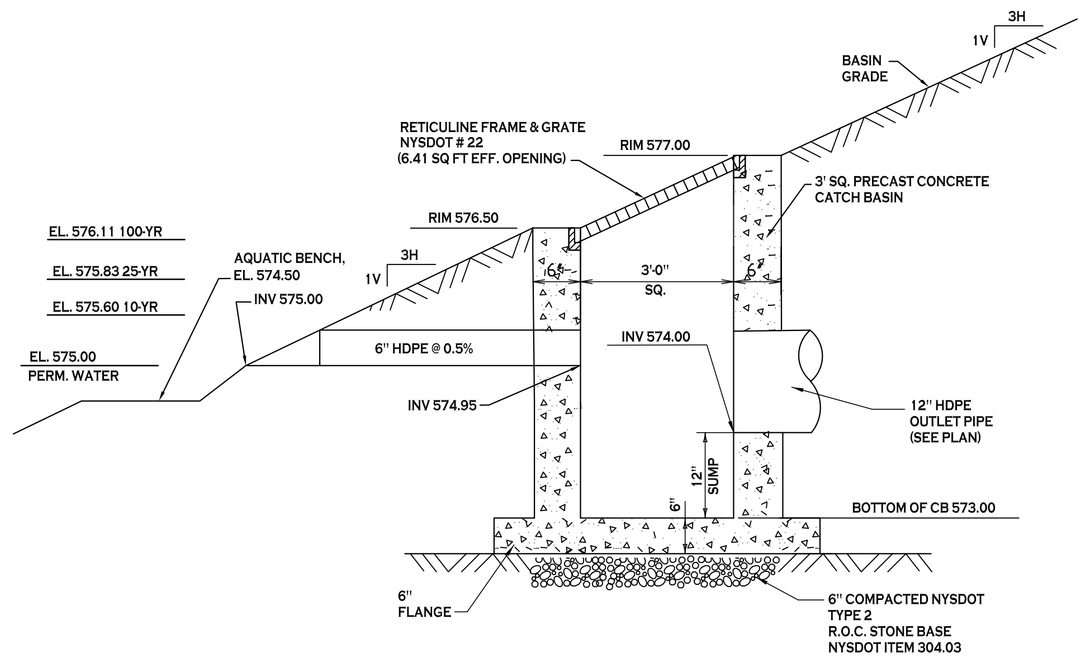
*NOTE: USE 5'-0" I.D. MANHOLE

OUTLET CONTROL STRUCTURE - CB 52

NOT TO SCALE



SECTION B-B



DETENTION BASIN OUTLET STRUCTURE - CB 53

N.T.S.

Carmina Wood Morris DPC
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F 716.842.0263

Packet Pg. 1458

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Storm Drainage Details

DRAWING NO.

C-302

Project no.: 21.011

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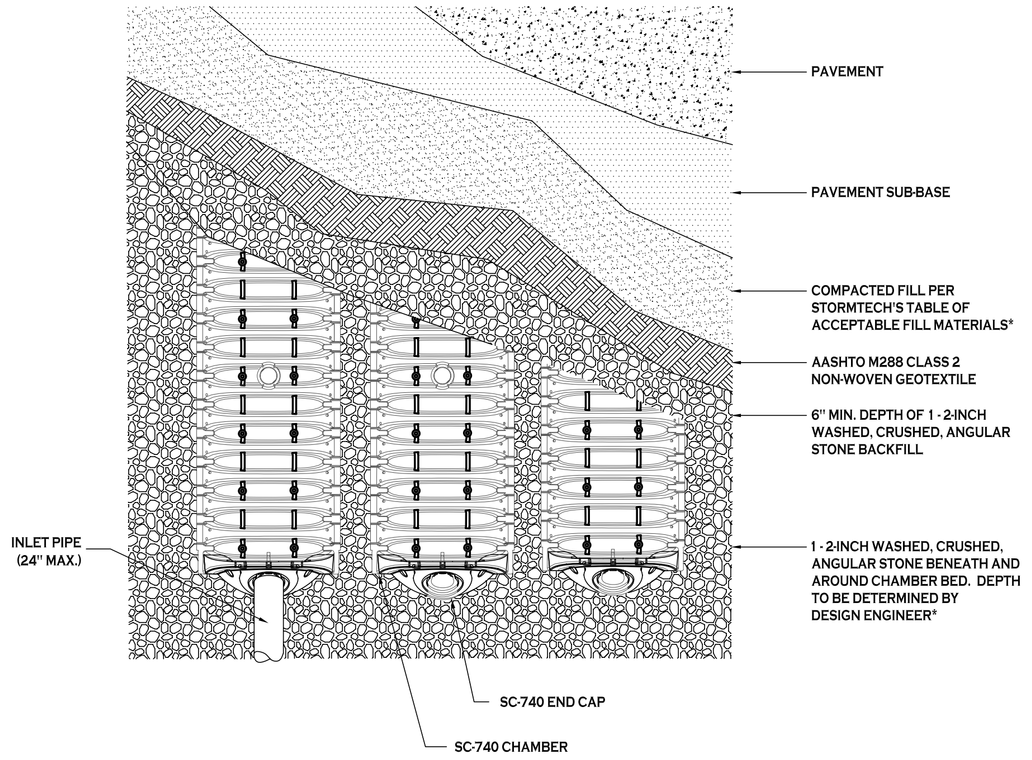
Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)



STORMTECH SC-740 CHAMBER SYSTEM
PLAN VIEW DETAIL

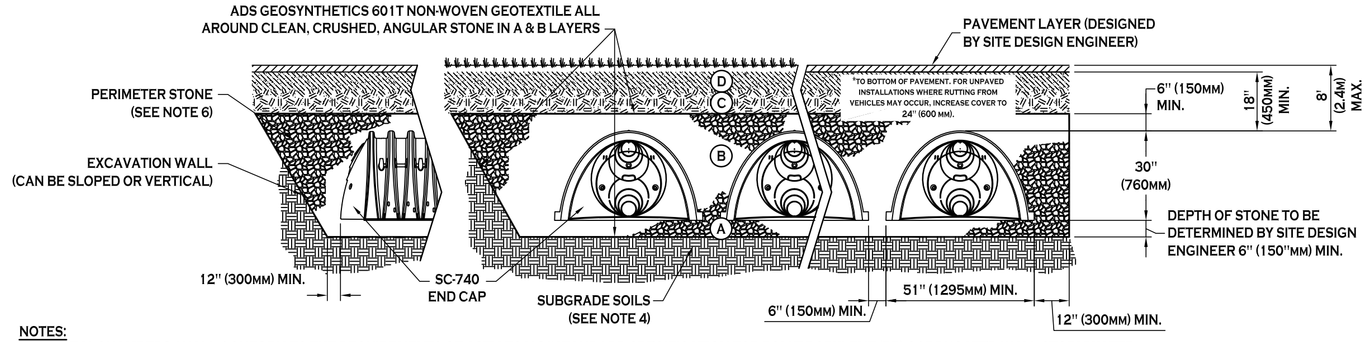
NOT TO SCALE

*SEE STORMTECH'S DESIGN MANUAL

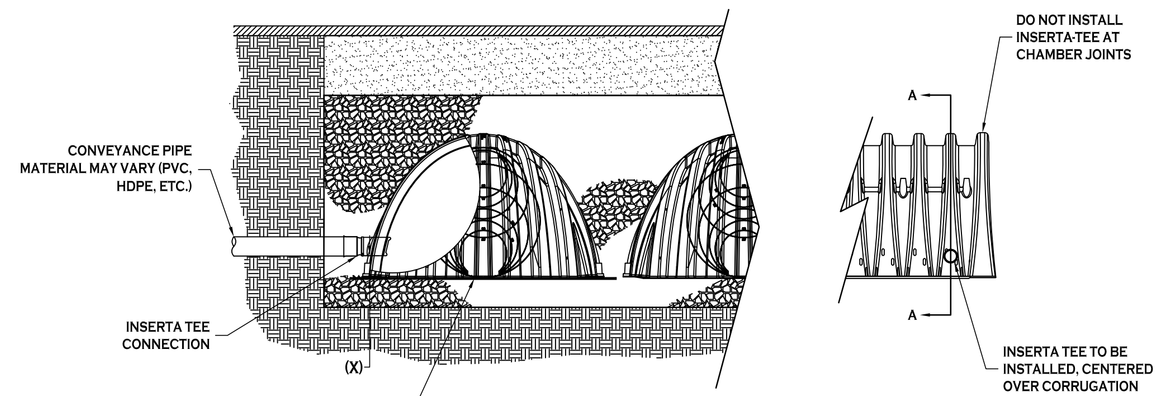
ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION/DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 MM) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LATER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 MM) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 MM) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 LBS (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 LBS (89 kN).
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 MM) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



NOTES:
1. SC-740 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
6. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTE:
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 MM)	4" (100 MM)
SC-740	10" (250 MM)	4" (100 MM)
DC-780	10" (250 MM)	4" (100 MM)
MC-3500	12" (300 MM)	6" (150 MM)
MC-4500	12" (300 MM)	8" (200 MM)
INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON		

INSERTA TEE DETAIL

NOT TO SCALE

INSPECTION AND MAINTENANCE

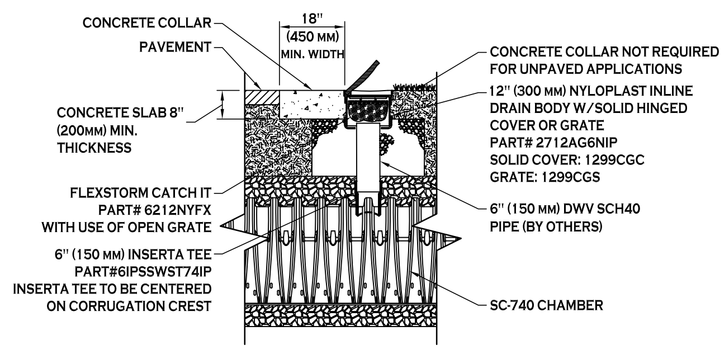
STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
- A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
- A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
- A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
- A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
- A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 MM) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
- B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
- B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
  - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
  - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
- B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 MM) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 M) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES:
1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



SC-740 6" INSPECTION PORT DETAIL

NOT TO SCALE

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REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/15/21
Drawn by: 2/24/21
Scale: As Noted

DRAWING NAME:
Storm Drainage Details

DRAWING NO.
C-303

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (23057 : Sp-2021-05)

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EXCEPTION L.–11278, P.–7124

TEL

BRUSH LINE

UP

GUY

F.F.E. = 578.65

INV 574.15

INSTALL C.O., TRAP & VENT

INV 574.15

6" SDR-35 PVC SANITARY LATERAL @ 1.0% MIN.

F.F.E. = 578.65

SAN MH 7

HYDRANT ASSEMBLY

2" TYPE "K" COPPER WATER SERVICE

2" TAP & CURB STOP/BOX

159 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

LOT 40 LOT 41 LOT 42 LOT 43 LOT 44 LOT 45 LOT 46 LOT 47

SAN MH 8

298 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

8" AWWA C-900 PVC PRIVATE WATER MAIN

8" G.V. (TYP. OF 3)

INSTALL FITTINGS AND BLOCKING (TYP.)

LOT 31 LOT 32 LOT 33 LOT 34 LOT 35 LOT 36 LOT 37 LOT 38 LOT 39

292 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

8" AWWA C-900 PRIVATE WATER MAIN

LOT 15 LOT 16 LOT 17 LOT 18 LOT 19 LOT 20 LOT 21 LOT 22 LOT 23 LOT 24 LOT 25

SAN MH 9

SAN MH 10

204 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

204 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

8" AWWA C-900 PVC PRIVATE WATER MAIN

SAN MH 4

8" G.V.

HYDRANT ASSEMBLY

202 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

SAN MH 3

202 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

SAN MH 2

INSTALL SELECT FILL ACROSS ROAD

INSTALL SELECT FILL ACROSS DRIVEWAY

328 LF 8" SDR-35 PVC PUBLIC SANITARY MAIN @ 0.4%

SAN MH 1

MATCHLINE A-A

HYDRANT ASSEMBLY

SAN MH 11

8" G.V.

MON. WELL

145 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

LOT 26 LOT 27 LOT 28 LOT 29 LOT 30

SAN MH 12

LOT 1 LOT 2 LOT 3 LOT 4 LOT 5

8" G.V. (TYP. OF 3)

SAN MH 6

LOT 6 LOT 7 LOT 8 LOT 9 LOT 10 LOT 11 LOT 12 LOT 13 LOT 14

394 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

SAN MH 5

184 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

8" AWWA C-900 PVC PRIVATE WATER MAIN

INSULATED METER AND RPZ ENCLOSURE

8" D.I. COMBINED WATER SERVICE FROM MAIN IN AND THROUGH ENCLOSURE

TOP OF HYDRANT ELEV: 577.69'

F.F.E. = 582.10

INSTALL FITTINGS AND BLOCKING (TYP.)

F.F.E. = 582.10

MON. WELL

8" G.V. (BY ECWA)

EX. 12" WATER MAIN

INSTALL 12"x12"x8" TEE (BY ECWA)

OHW

HYD

CONCRETE SIDEWALK

CATV.

ELEVATION OF EXISTING HYDRANTS ALONG DODGE ROAD TO BE ADJUSTED TO ACCOMMODATE FILLING OF THE SITE, COORDINATE WITH ECWA

UTILITY POLES AND GUY WIRES ALONG DODGE ROAD TO BE EVALUATED AND ADJUSTED TO ACCOMMODATE FILLING OF THE SITE, COORDINATE WITH UTILITY COMPANIES

UTILITY POLE TO BE RELOCATED, COORDINATE WITH UTILITY COMPANIES

CONCRETE SIDEWALK

CATV.

ASPHALT DRIVE

TOP OF HYDRANT ELEV: 577.57'

WSV

HYD

WV

ASPHALT PARKING LOT

CATV.

SAN MH 1

MATCHLINE A-A

PARKING LOT

MATCHLINE A-A

SAN MH 1

CATV.

315 LF 8" SDR-35 PVC PUBLIC SANITARY MAIN @ 0.4%

TOP OF HYDRANT ELEV: 577.14'

HYD

WV

CORE DRILL & CONNECT TO EX. MANHOLE, INSTALL INSIDE DROP

SAN. M.H. RIM: 575.78' INV: 553.78' E–W

N

PLAN

SCALE: 1"=50'

N

PLAN

SCALE: 1"=50'

SANITARY MANHOLE CHART

SAN MH	RIM	INV IN	INV OUT
1	580.00	563.29	563.19
2	579.00	564.70	564.60
3	580.40	565.61	565.51
4	580.20	566.52 (E)	566.42
		574.88 (W)	
5	581.80	-	576.50
6	581.45	576.56	576.46
7	577.90	-	571.00
8	580.15	569.63 (W)	569.53
		570.36 (N)	
9	580.25	568.36	568.26
10	577.95	567.44	567.34
11	578.45	-	571.38
12	578.45	570.92	570.82

DUPLEX NOTES:

1. ALL DUPLEXES TO HAVE A ¾" TYPE "K" COPPER WATER SERVICE, SEE DETAIL

2. ALL DUPLEXES TO HAVE A 4" SDR-35 PVC SANITARY SEWER LATERAL, SEE DETAIL

ALLEY

NOTE: COORDINATE UTILITY ENTRY POINTS WITH ARCHITECTURAL PLANS

1ST FFE = FINISHED GRADE + 4'

PROPOSED DUPLEX

INV = BASEMENT FFE - 2'

COORDINATE CONNECTION POINT WITH UTILITY CO.'S

¾" TYPE "K" COPPER WATER SERVICE

¾" CURB STOP & BOX

INSTALL C.O., TRAP & VENT

4" SDR-35 PVC SANITARY LATERAL @ 1.0% MIN.

WYE CONNECT

8" PRIVATE SEWER MAIN

TAP WATER MAIN

8" PRIVATE WATER MAIN

TYPICAL DUPLEX LOT

SCALE: 1"=20'

PROPOSED UTILITY LEGEND

PROPOSED STORM SEWER	ST
PROPOSED SANITARY SEWER	6"SA
PROPOSED WATERLINE	1"W
PROPOSED CATCH BASIN	CB
PROPOSED YARD DRAIN	YD
PROPOSED MANHOLE	MH
PROPOSED HYDRANT ASSEMBLY	
PROPOSED GATE VALVE	GV

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Utility Plan

DRAWING NO.

C-400

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (2305?) : SP-2021-05)

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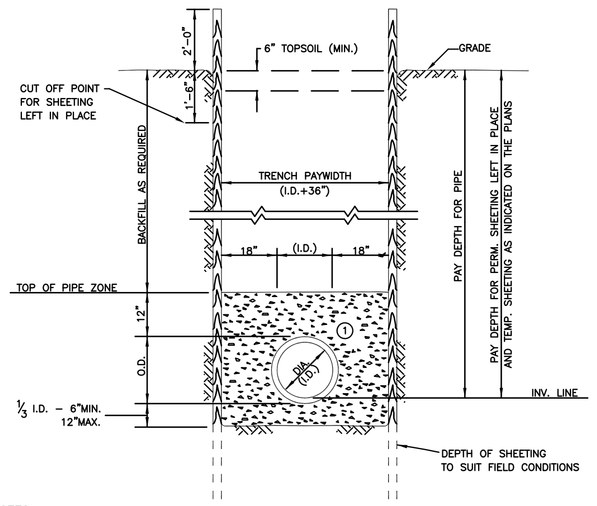
SHEETED TRENCH
(JANUARY 2012)



NOTES:

1. MAINTAIN 18" BETWEEN PIPE AND INSIDE FACE OF TEMPORARY SHEETING. IF SHEETING EXTENDS BELOW PIPE INVERT AS SHOWN, WHEN PVC PIPE MATERIAL IS USED, COMPACT MATERIAL ① BEFORE PULLING THE SHEETING.
2. SHEETED TRENCH OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING EQUIPMENT.
3. SHEETING DRIVEN BELOW THE INVERT OF THE PIPE FOR BEDDING MATERIAL AND TOE SUPPORT WILL NOT BE CONSIDERED IN THE FORMULA FOR PAYMENT BUT SHOULD BE FIGURED BY THE CONTRACTOR IN DETERMINING HIS UNIT BID PRICE PER SQUARE FOOT OF SHEETING.
4. WHERE INDICATED ON THE PLANS OR AS ORDERED BY THE ENGINEER, TEMPORARY SHEETING WILL BE PAID FOR UNDER THE APPLICABLE BID ITEM. OTHER AREAS WHERE THE CONTRACTOR ELECTS TO USE TEMPORARY SHEETING NOT PREVIOUSLY AUTHORIZED BY THE ENGINEER SHALL BE AT HIS OPTION AND EXPENSE.

MATERIALS

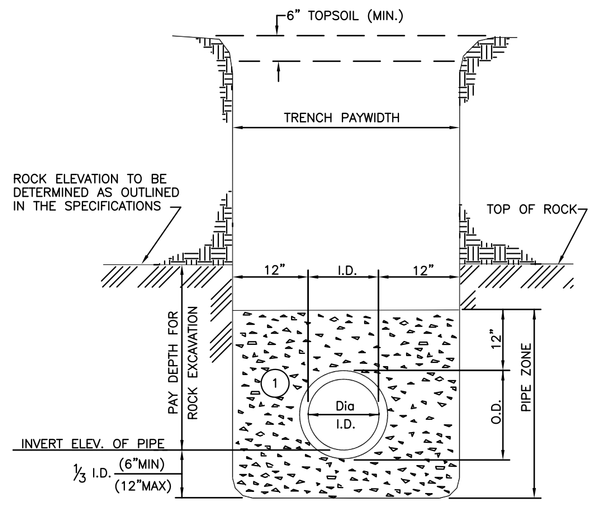
PIPE BEDDING MATERIAL (NYSDOT LATEST EDITION)

① NO.1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE CRUSHED STONE SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN 1" AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NOTE: SLAG SHALL NOT BE ALLOWED FOR MATERIALS ①

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1 12/01	REVISED TOPSOIL DIMENSION	STD.DETAIL 2
	Rev. 2 6/5/06	UPDATED MATERIALS TO NYSDOT LATEST EDITION	
	File: d-02	Date: 3/1/91	

ROCK TRENCH DETAIL
(JANUARY 2012)



NOTE:

A. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

B. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

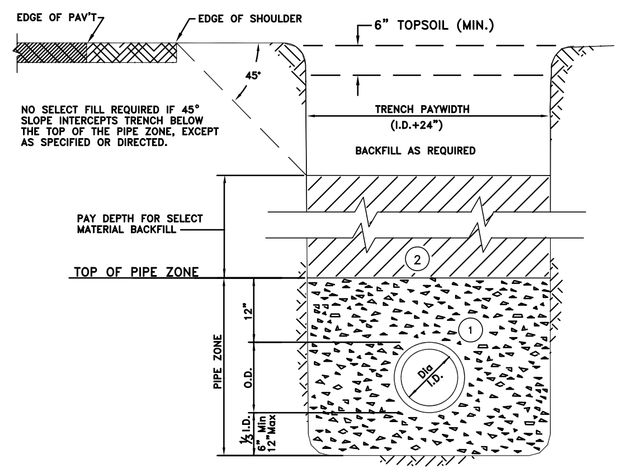
PIPE BEDDING MATERIAL (NYSDOT LATEST EDITION)

① NO.1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE CRUSHED STONE SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN 1" AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NOTE: SLAG SHALL NOT BE ALLOWED FOR MATERIALS ①

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1 1/6/94	ADDED 6" TOPSOIL (MIN.)	STD.DETAIL 3
	Rev. 2 2/7/94	ADDED NOTES A & B	
	File: d-03	Date: 3/1/91	

SELECT BACKFILL FOR TRENCH PARALLEL TO ROADWAYS
(JANUARY 2012)



NOTE:

A. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

B. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT LATEST EDITION)

① NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE CRUSHED STONE SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

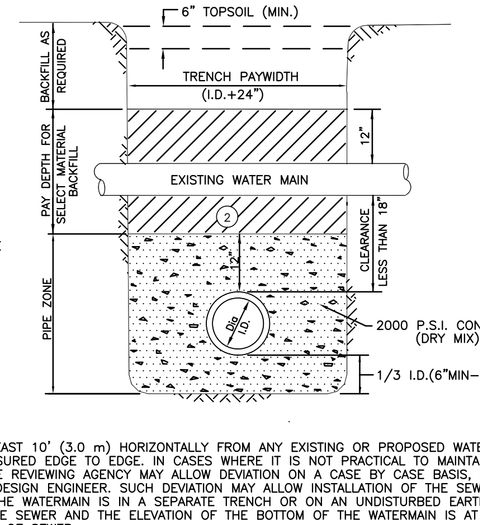
SELECT MATERIAL BACKFILL (NYSDOT LATEST EDITION)

② NO. 2 RUN OF CRUSHER STONE OR NO. 2 RUN OF CRUSHER GRAVEL WITH A GRADATION CONFORMING WITH NYSDOT SECTION 304-2.02 TYPE 4 AND NYSDOT SECTION 703-02. (COMPACTED IN 6" LIFTS TO 90% DENSITY)

NO SLAG SHALL BE ALLOWED FOR MATERIALS ① & ②

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 2 12/28/00	UPDATED MATERIALS TO NYSDOT LATEST EDITION	STD.DETAIL 4
	Rev. 3 12/01	Updated NYS DOT Editions	
	File: d-04	Date: 3/1/91	

WATERMAIN CROSSING DETAIL TYPICAL FOR ENCASEMENT
(JANUARY 2012)



NOTES:

A. IN ALL CASES WHERE THERE IS LESS THAN 18" CLEARANCE BETWEEN EXISTING WATER MAIN AND PROPOSED SEWER (INCLUDING HOUSE LATERALS) THE NEW WORK SHALL BE ENCASED IN CONCRETE AS SHOWN. WHEN A CASING PIPE IS SPECIFIED, NO CONCRETE ENCASEMENT IS REQUIRED.

B. THE CONCRETE ENCASEMENT SHALL EXTEND 3'-0" EACH SIDE OF THE WATER MAIN.

C. SEWERS SHALL BE LAID AT LEAST 10' (3.0 m) HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATERMAIN THE DISTANCE SHALL BE MEASURED EDGE TO EDGE. IN CASES WHERE IT IS NOT PRACTICAL TO MAINTAIN A 10' SEPARATION, THE APPROPRIATE REVIEWING AGENCY MAY ALLOW DEVIATION ON A CASE BY CASE BASIS, IF SUPPORTED BY DATA FROM THE DESIGN ENGINEER. SUCH DEVIATION MAY ALLOW INSTALLATION OF THE SEWER CLOSER TO A WATERMAIN, PROVIDED THE WATERMAIN IS IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF LOCATED ON ONE SIDE OF THE SEWER AND THE ELEVATION OF THE BOTTOM OF THE WATERMAIN IS AT LEAST 18" (46 cm) ABOVE THE TOP OF SEWER.

D. SEWERS CROSSING WATERMAINS SHALL BE LAID TO PROVIDE MINIMUM VERTICAL DISTANCE OF 18" (46 CM) BETWEEN THE OUTSIDE OF THE WATERMAIN AND THE OUTSIDE OF THE SEWER. THIS SHALL BE THE CASE WHEN THE WATERMAIN IS ABOVE OR BELOW THE SEWER. THE CROSSING SHALL BE ARRANGED SO THE JOINTS OF THE SEWER PIPE WILL BE EQUIDISTANT FROM AND AS FAR AWAY FROM THE WATERMAIN JOINTS AS POSSIBLE. WHERE THE WATERMAIN CROSSES UNDER A SEWER, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER TO PREVENT DAMAGE TO THE WATERMAIN.

E. WHEN IT IS IMPOSSIBLE TO OBTAIN THE PROPER HORIZONTAL AND VERTICAL SEPARATION AS STIPULATED ABOVE, THE SEWER SHALL BE EITHER ENCASED IN CONCRETE OR CONSTRUCTED OF PIPE MATERIAL EQUAL TO THE WATERMAIN AND PRESSURE TESTED AT 150 PSI TO ASSURE WATER TIGHTNESS.

F. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIALS PLACEMENT AND MAXIMUM PAY LIMITS.

G. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

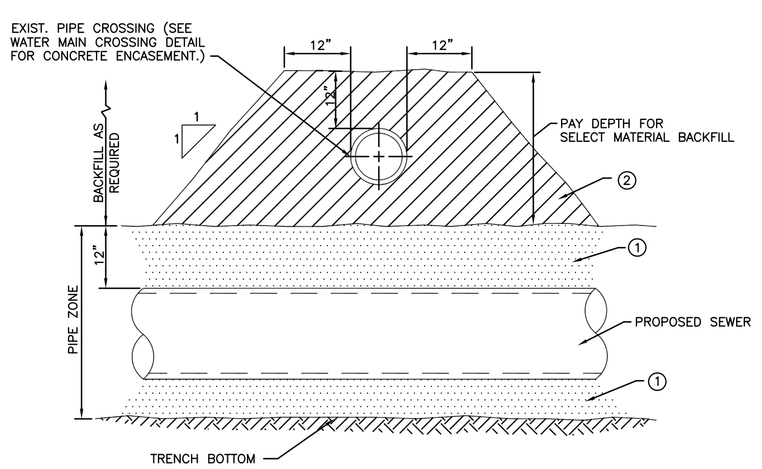
SELECT MATERIAL BACKFILL (NYSDOT LATEST EDITION)

② NO.2 RUN OF CRUSHER STONE OR NO.2 RUN OF CRUSHER GRAVEL WITH A GRADATION CONFORMING WITH NYSDOT SECTION 304-2.02 TYPE 4 AND NYSDOT SECTION 703-02. (COMPACTED IN 6"LIFTS TO 90% DENSITY)

NOTE: SLAG SHALL NOT BE ALLOWED FOR MATERIALS ②

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Revisions 2/7/94	ADDED 6" TOPSOIL(MIN.) & NOTE F&G	STD.DETAIL 5
	01/03/01	REVISED NOTE A	
	12/01	Revised Note "A"	
	File: d-05	Date: 3/1/91	

PIPE CROSSING SUPPORT DETAIL
(JANUARY 2012)



MATERIALS

PIPE BEDDING MATERIAL (NYSDOT LATEST EDITION)

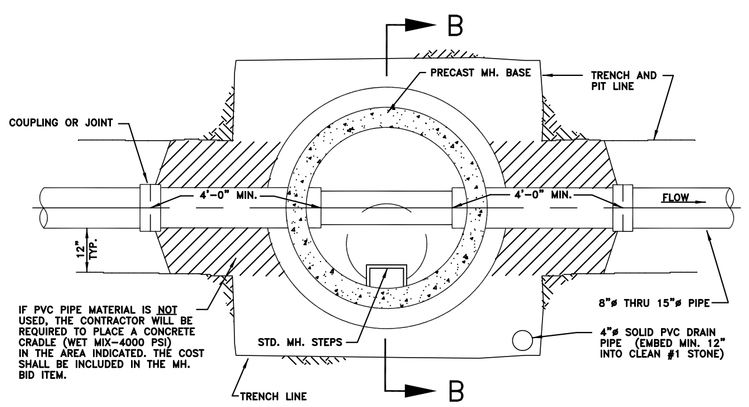
① NO.1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE CRUSHED STONE SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN 1" AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

SELECT MATERIAL BACKFILL (NYSDOT LATEST EDITION)

② NO.2 RUN OF CRUSHER STONE OR NO.2 RUN OF CRUSHER GRAVEL WITH A GRADATION CONFORMING WITH NYSDOT SECTION 304-2.02 TYPE 4 AND NYSDOT SECTION 703-02. (COMPACTED IN 6"LIFTS TO 90% DENSITY) NOTE: SLAG SHALL NOT BE ALLOWED FOR MATERIALS ① AND ②

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1 12/01	UPDATED MATERIALS TO NYSDOT LATEST EDITION	STD.DETAIL 9
	Rev. 2		
	File: d-09	Date: 3/1/91	

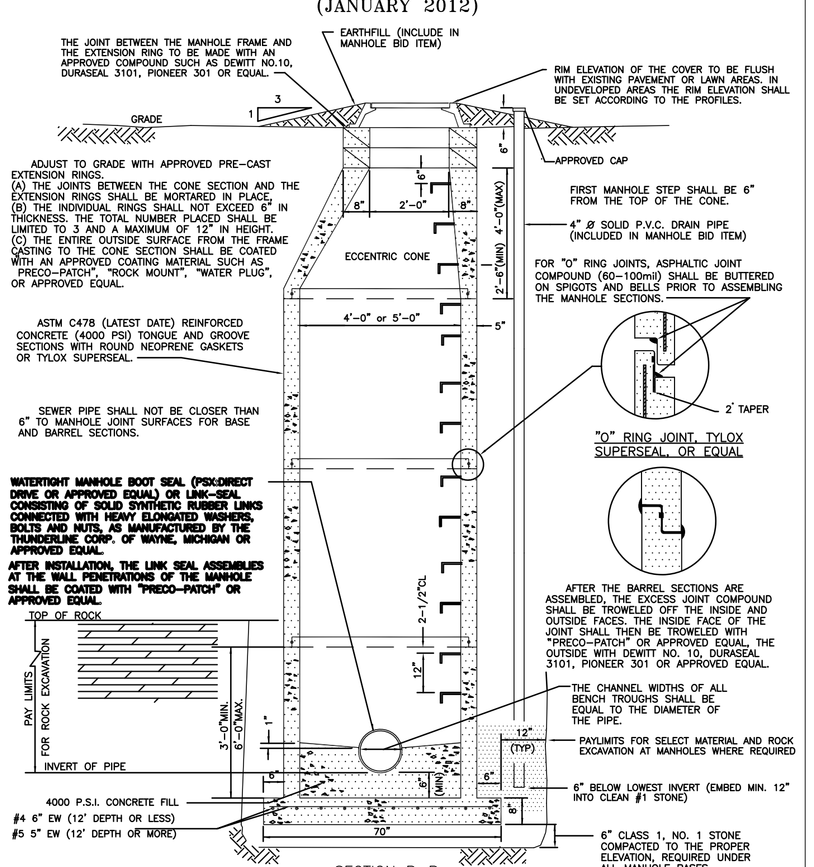
MONOLITHIC PRECAST BASE MANHOLES 4'-5' DIA. BASE FOR 15"ø SEWERS OR LESS
(JANUARY 2012)



PLAN

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1 12/01	REVISED 4" PVC TO SOLID PIPE IN #1 STONE BED	STD.DETAIL 10
	Rev. 2		
	File: d-10	Date: 3/1/91	

MONOLITHIC PRECAST BASE MANHOLES 4'-5' DIA. BASE FOR 15"ø SEWERS OR LESS (SECTION B-B)
(JANUARY 2012)



SECTION B-B

Revisions

07/15/98	ADD ROCK EXCAVATION PAYLIMITS
11/23/98	ADD 4"x4"x9" MARKER AND NOTES
12/01	REVISED 4" P.V.C. TO SOLID PIPE
03/04/03	ADDED WATER TIGHT BOOT SEAL NOTE
06/22/05	ADDED TYLOX SUPERSEAL NOTES
02/27/07	REMOVED WOOD POST AND NOTES
	CHANGED THE NUMBER OF EXTENSION RINGS FROM 2 TO 3

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	STD.DETAIL 11
File: d-11 Date: 3/1/91	

STANDARD FRAME AND COVER (PRIVATE SEWER)
(JANUARY 2012)

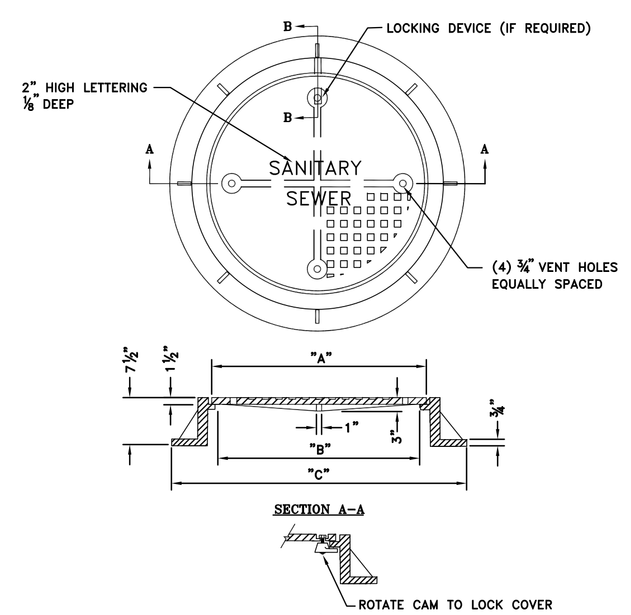


TABLE				
PIPE SIZE	DIMENSION "A"	DIMENSION "B"	DIMENSION "C"	WEIGHT OF COVER
8" THRU 18"	24"	22 1/4"	35"(MAX.)	150 LBS. ± 5%
OVER 18"	32"	30"	46"(MAX.)	200 LBS. ± 5%

STANDARD FRAME AND COVER NOTES

1. MATERIAL ASTM A48 CLASS 30B CAST IRON.
2. UNIT MUST WITHSTAND H-20 WHEEL LOADING.
3. ALL DIMENSIONS ARE TO BE CONSIDERED MINIMUM WITH THE EXCEPTION OF THE COVER, WHICH MUST CONFORM EXACTLY TO MAINTAIN INTERCHANGEABILITY WITHIN THE COUNTY.
4. COVER WEIGHT 210 LBS. (MAX)
5. COATING NOT REQUIRED.
6. FRAMES AND COVERS SHALL HAVE MACHINED BEARING SURFACES.
7. LOCKING DEVICE MUST BE SITUATED TO ALLOW EASY REMOVAL OF COVER.
8. NO COMMERCIAL "BRAND NAME" LETTERING WILL BE ALLOWED ON THE EXPOSED SURFACE OF THE COVER.

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1		STD.DETAIL 13P
	Rev. 2		
	Rev. 3		
	Rev. 4		
	File: d-13P	Date: 2/05	

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Sanitary Sewer Details

DRAWING NO.

C-401

Project no.: 21.011

Packet Pg. 1461

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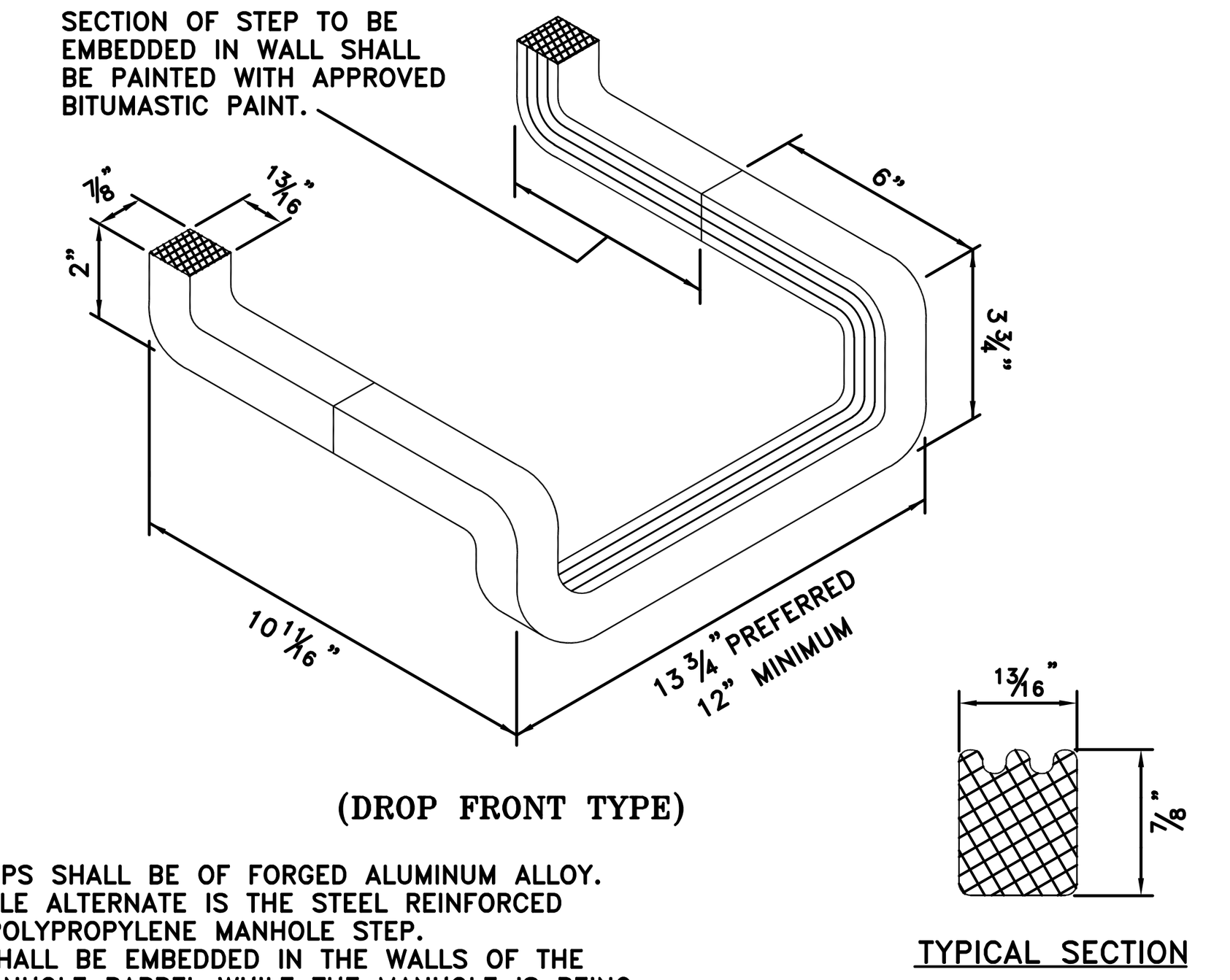
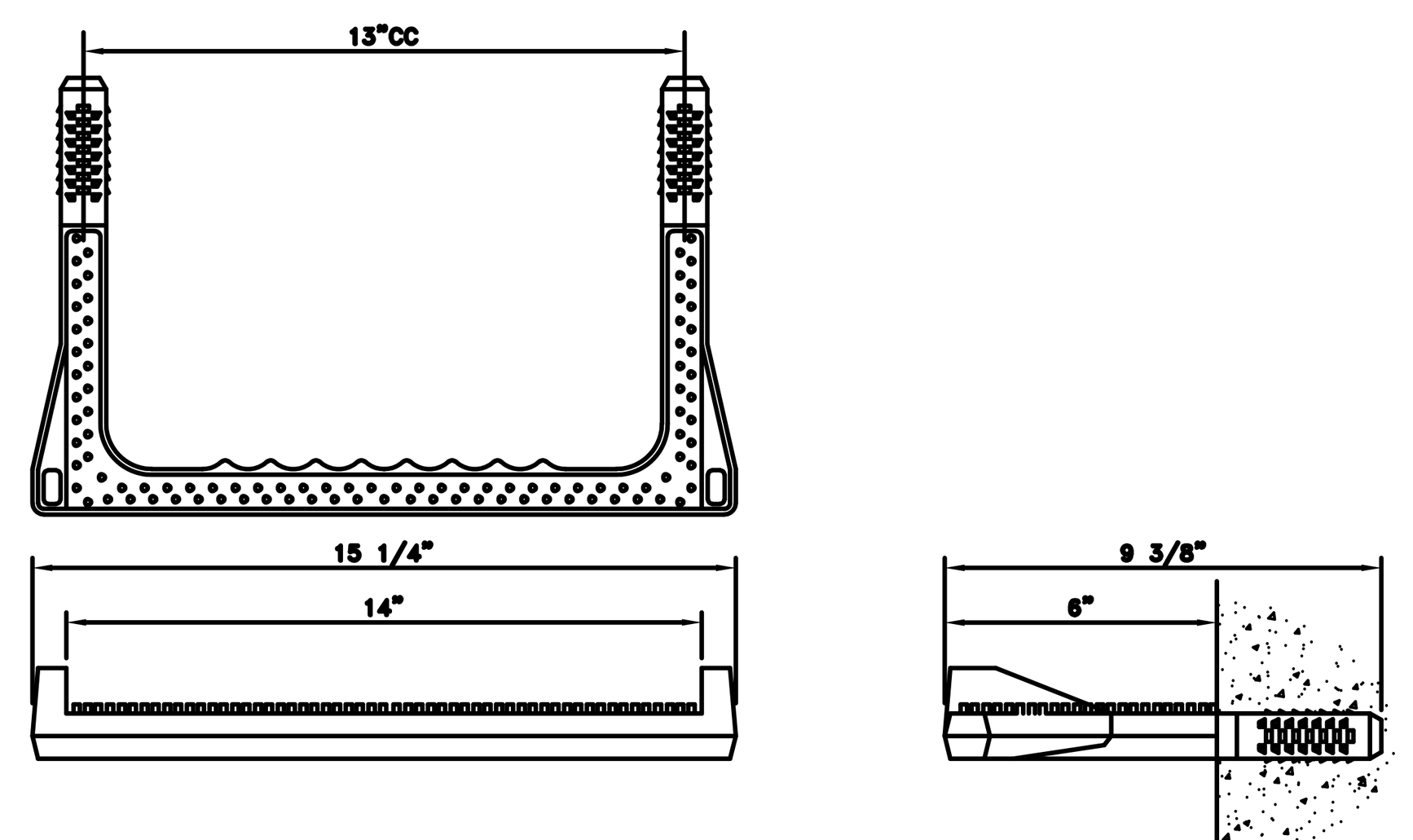
Attachment: SP-2021-05_drawings_061721 (23057 : Sp-2021-05)

STANDARD MANHOLE STEP
(JANUARY 2012)



NOTES:
1. MANHOLE STEPS SHALL BE OF FORGED ALUMINUM ALLOY.
2. AN ACCEPTABLE ALTERNATE IS THE STEEL REINFORCED COPOLYMER POLYPROPYLENE MANHOLE STEP.
3. THE STEPS SHALL BE EMBEDDED IN THE WALLS OF THE CONCRETE MANHOLE BARREL WHILE THE MANHOLE IS BEING CAST OR SECURELY GROUTED IN PLACE AFTER CASTING.



REINFORCED COPOLYMER POLYPROPELENE TYPE

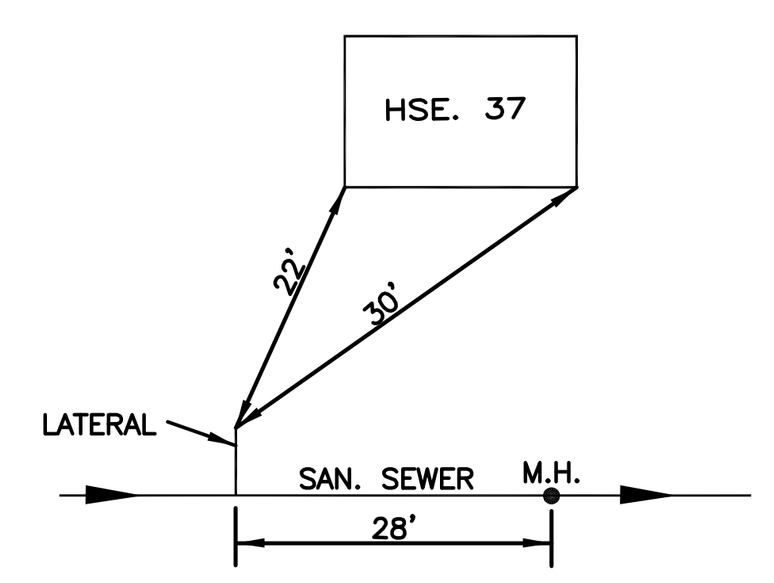
ERIE COUNTY
DEPT. OF ENVIRONMENT & PLANNING
DIVISION OF SEWERAGE MANAGEMENT

Rev. 1 12/9/96 ADDED REINFORCED COLPOLYMER TYPE STEP
Rev. 2
File: d-17 Date: 3/1/91
STD.DETAIL 17

CONSTRUCTION SPECIFICATIONS FOR HOUSE LATERALS
(JANUARY 2012)

1. MATERIAL
   a. THICK WALL PVC – D – 3034, SDR-35
   b. EXTRA HEAVY CAST IRON
   c. DUCTILE IRON
2. FAR SIDE CROSSING
   a. LATERALS INSTALLED ACROSS TOWN ROADS MAY BE BY THE OPEN CUT METHOD WHERE ALLOWED BY THE HIGHWAY PERMIT.
   b. LATERALS INSTALLED ACROSS STATE OR COUNTY ROADS SHALL BE BY THE BORING AND JACKING METHOD (UNLESS OTHERWISE NOTED ON THE PLANS) USING A STEEL CASING PIPE. THE CARRIER PIPE SHALL CONFORM WITH THE MATERIAL SPECIFIED OR APPROVED BY THE ENGINEER.
   c. ALL PAVEMENT CROSSINGS (OPEN CUT METHOD) WITH LESS THAN 4'-0" COVER SHALL BE ENCASED WITH 2000 PSI CONCRETE.
   d. ALL FAR SIDE CROSSINGS SHALL BE INSTALLED UP TO ONE (1) FOOT OF THE R.O.W. LINE.
   e. THE CONTRACTOR SHALL SUPPLY A 2" X 4" WOOD MARKER EXTENDING FROM THE END OF THE CROSSING TO ONE FOOT BELOW GRADE. ALSO, RECORDS SHALL BE KEPT AS TO THE DEPTH OF THE HOUSE SERVICE AND A MINIMUM OF THREE (3) TIES SHALL BE ESTABLISHED FOR THE LOCATION OF THE SERVICE.
   f. LATERALS SHALL BE LAID AT A 2.0% MINIMUM GRADE. IN CASES OF A SHALLOW SEWER, A 1.0% SLOPE MAY BE APPROVED BY THE ENGINEER.
3. NEAR SIDE SERVICES
   a. THE CONTRACTOR SHALL SUPPLY WYE BRANCHES OF THE SAME MATERIAL AND CLASS AS THE SEWER MAIN.
   b. THE LOCATION OF THE WYE BRANCHES WILL BE DETERMINED BY THE CONTRACTOR AND ENGINEER IN THE FIELD AFTER CONFERRING WITH THE HOMEOWNER.
   c. THE LOCATION OF THE BRANCHES SHALL BE MEASURED FROM THE LAST DOWNSTREAM MANHOLE AND AT LEAST THREE (3) TIES FROM AN EXISTING STRUCTURE, NORMALLY THE HOME IT IS TO SERVICE.
   d. NEAR SIDE SERVICES SHALL BE INSTALLED UP TO ONE (1) FOOT OF THE R.O.W. LINE.
   e. THE CONTRACTOR SHALL PROVIDE A 2" X 4" WOOD MARKER EXTENDED FROM THE WYE BRANCH TO ONE (1) FOOT BELOW GRADE.
   f. ON ALL SERVICES WHERE THE MAIN IS GREATER THAN 8' IN DEPTH, THE CONTRACTOR SHALL PROVIDE A RISER PIPE TO AN ELEVATION 8' BELOW EXISTING GRADE.

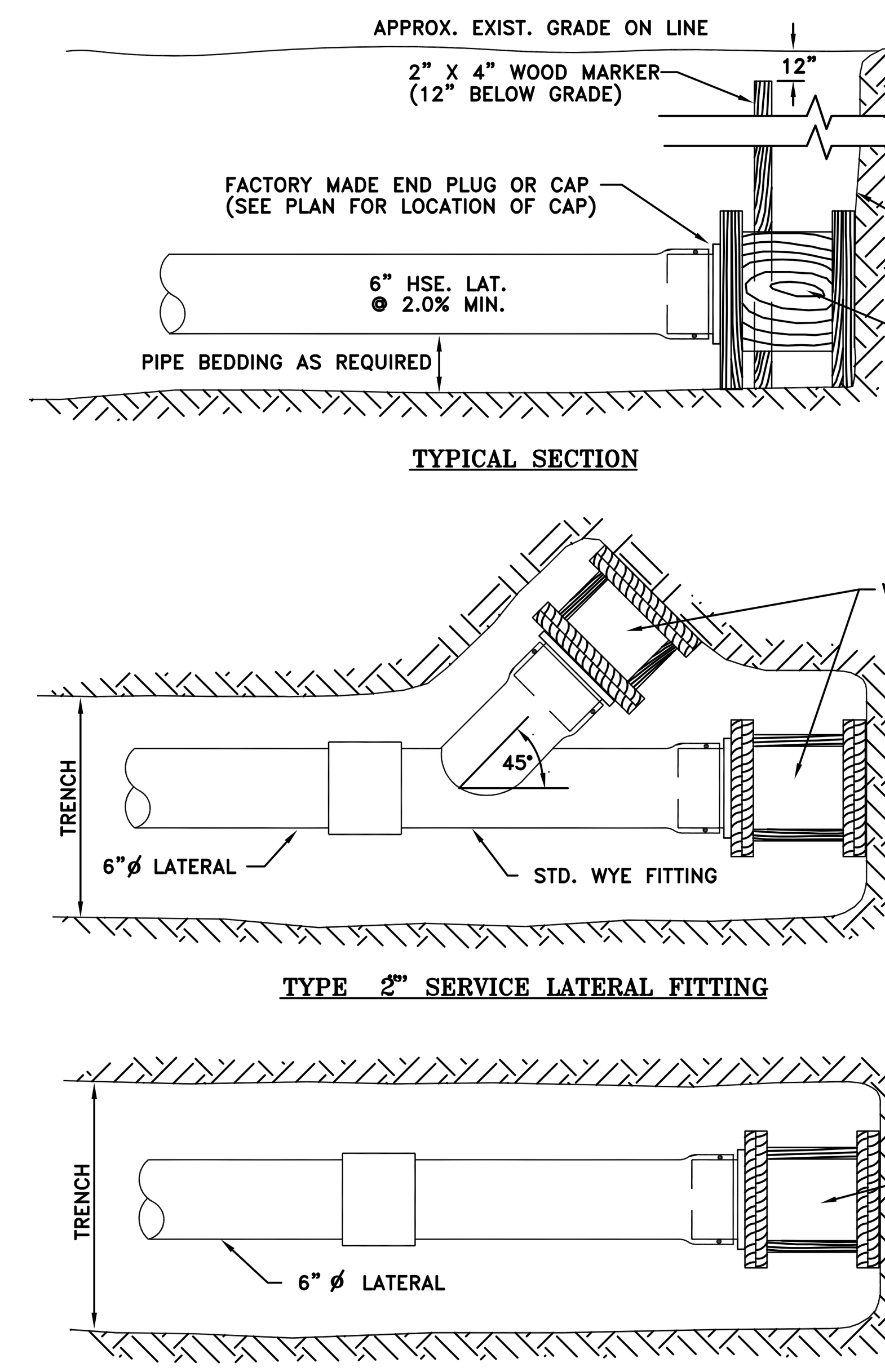
NOTES:
1. RECORDS OF THE DEPTH OF COVER SHALL BE KEPT FOR ALL HOUSE LATERALS BUILT ACROSS PAVEMENTS. SUCH RECORDS SHALL IDENTIFY THE LATERALS BY THE USE OF HOUSE NUMBERS AND SHALL SHOW LOCATION OF THE END OF THE HOUSE LATERAL WITH A MINIMUM OF THREE(3) TIES AS SHOWN IN EXAMPLE BELOW.
2. THE CONTRACTOR SHALL OBTAIN ALL HIGHWAY/R.O.W. PERMITS PRIOR TO START OF WORK.
3. VENTS AND CLEAN OUTS MUST BE INSTALLED IN LAWN AREAS, NOT IN SIDEWALK OR DRIVEWAY AREAS, PREFERABLY BETWEEN THE CURB OR EDGE OF PAVEMENT AND THE SIDEWALK.



ERIE COUNTY
DEPT. OF ENVIRONMENT & PLANNING
DIVISION OF SEWERAGE MANAGEMENT

Rev. 1 5/17/93 NOTE 2c: DEPTH 4'-0"
Rev. 2 12/9/96 CHANGED NOTE 1 TO THREE(3) TIES
Rev. 3 7/14/99 ADDED TITLE
Rev. 4 12/01 ADDED NOTE 3 REGARDING LOCATION OF VENTS AND CLEAN OUTS
File: d-23 Date: 3/1/91
STD.DETAIL 23

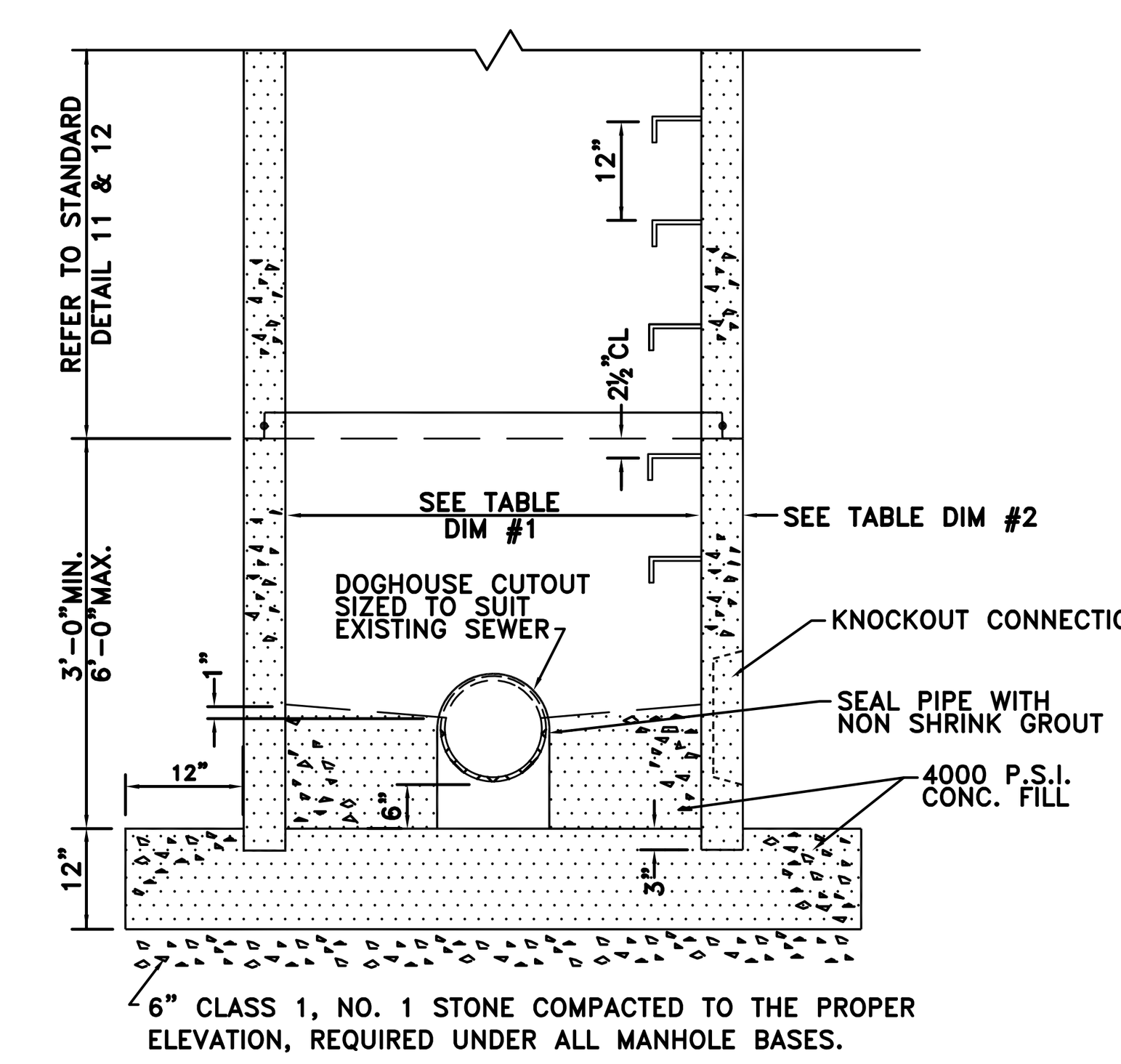
CAP & BLOCKING METHODS FOR AIR TESTING
(JANUARY 2012)



ERIE COUNTY
DEPT. OF ENVIRONMENT & PLANNING
DIVISION OF SEWERAGE MANAGEMENT

Rev. 1
Rev. 2
File: d-26 Date: 3/1/91
STD.DETAIL 26

PRECAST DOGHOUSE BASE MANHOLE
(JANUARY 2012)



PIPE SIZE	DIMENSION #1	DIMENSION #2
8"-16"	4'-0"*	5"
18"	5'-0"	6"
21"-27"	5'-0"	6"
30"-36"	6'-0"	7"

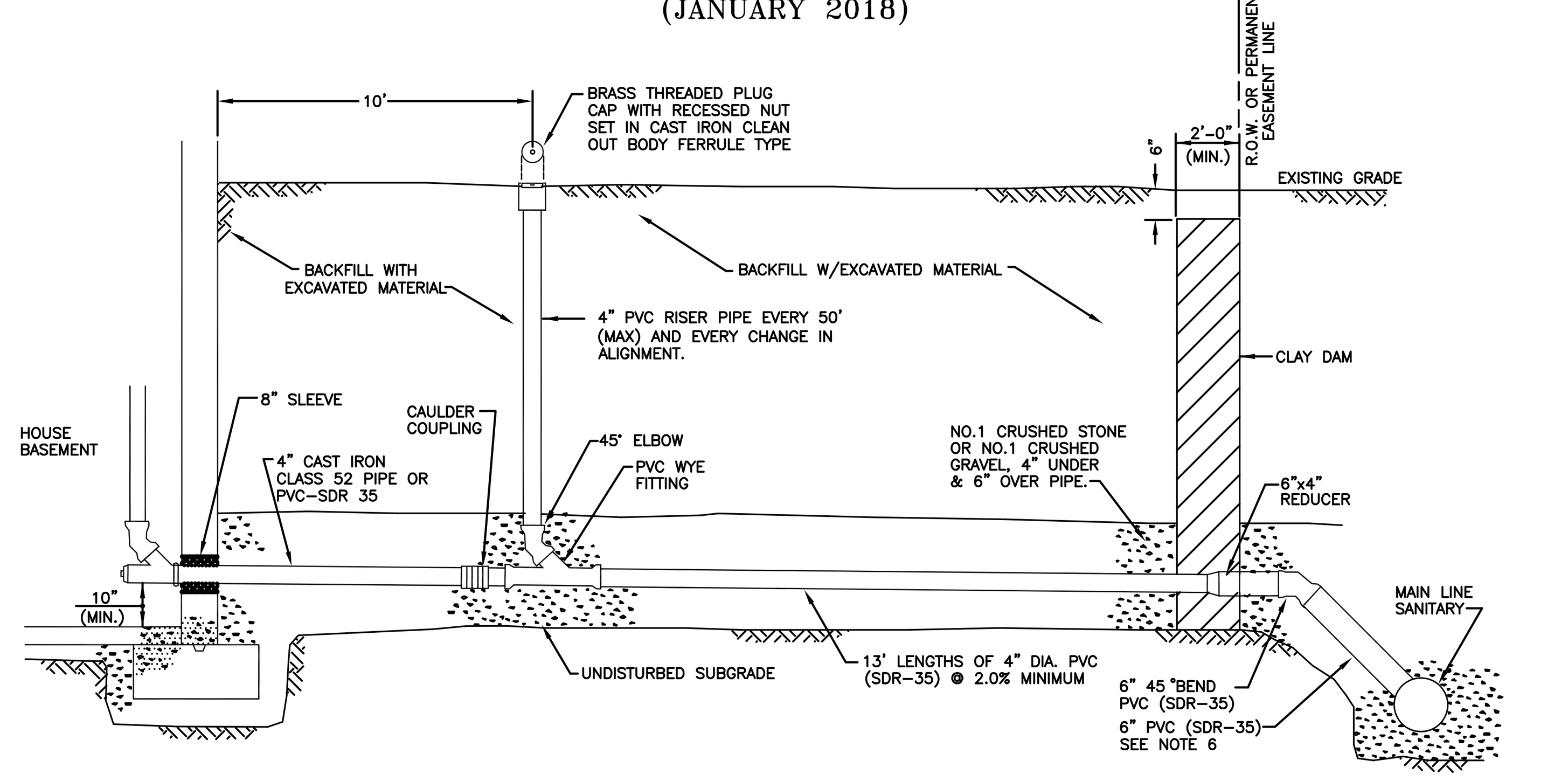
* FOR DROP CONNECTIONS INSIDE DIAMETER SHALL BE 5'-0"

NOTE:
AREA AROUND DOGHOUSE CUTOUT & PIPE TO BE MADE WATERTIGHT UTILIZING A HYDRAULIC CEMENT MIXTURE (WATERPLUG,PRECO-PATCH, OR APPROVED EQUAL).

ERIE COUNTY
DEPT. OF ENVIRONMENT & PLANNING
DIVISION OF SEWERAGE MANAGEMENT

Rev. 1 11/08/91 ADDED PIPE SIZE CHART & NOTE
Rev. 2 2/7/94 REVISED STONE UNDER MANHOLE BASE TO CLASS 1, NO. 1
File: d-35 Date:10/16/91
STD.DETAIL 35

TYPICAL HOUSE SERVICE DETAIL
(JANUARY 2018)

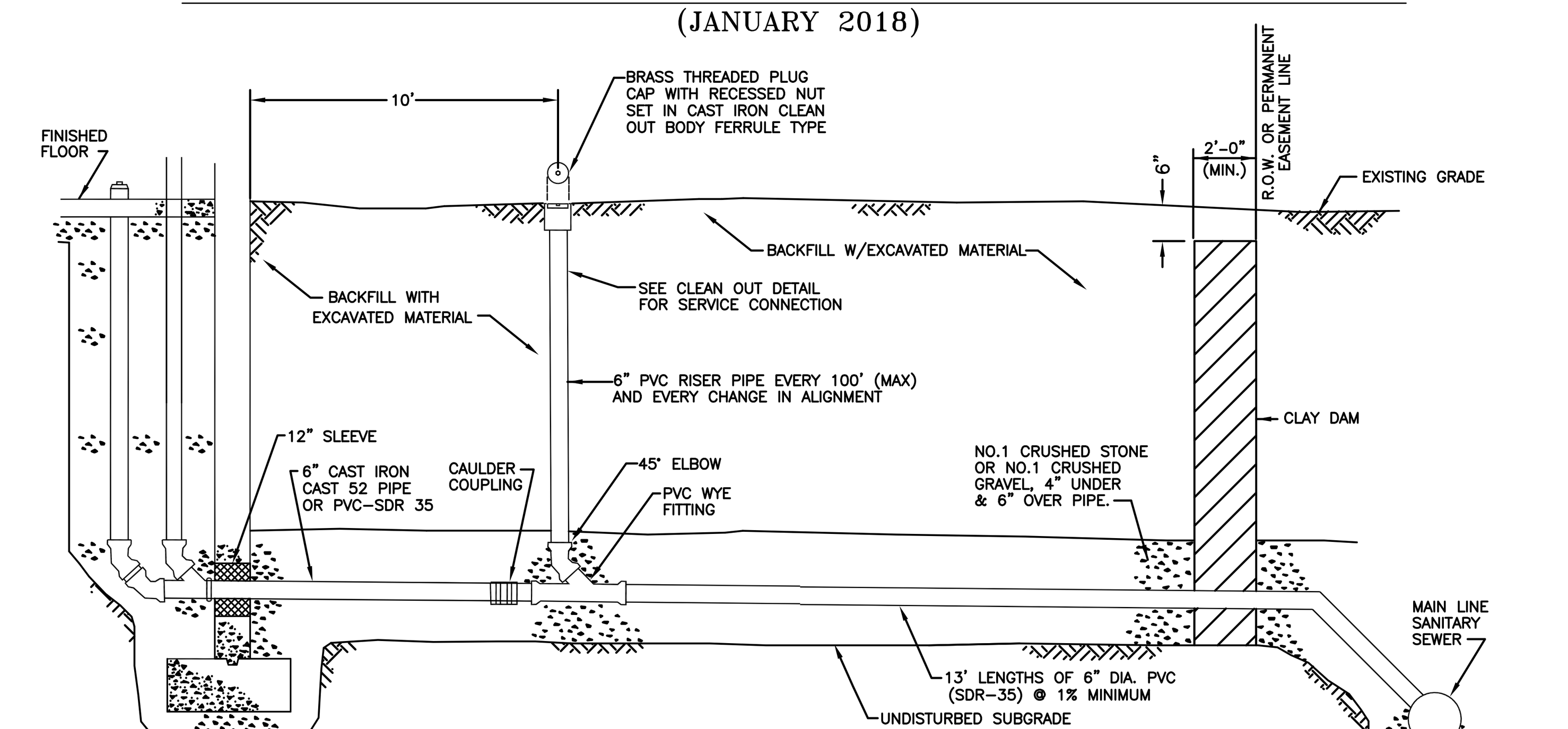


NOTES:
1. NO INSPECTION WILL BE PROVIDED WITHOUT A PERMIT. INSPECTIONS REQUIRE 48 HR. ADVANCE NOTICE FOR SCHEDULING.
2. ALL WORK MUST BE INSPECTED BY A COUNTY INSPECTOR
3. PVC PIPE MATERIAL SHALL BE MANUFACTURED IN ACCORDANCE WITH THE REQUIREMENTS OF THE LATEST ASTM SPECIFICATION D-3033/D-3034. CAST IRON PIPE MATERIAL SHALL BE EXTRA HEAVY CAST IRON MEETING THE REQUIREMENTS OF ASTM A74-42.
4. A MANUAL VALVE SHALL BE INSTALLED ON BASEMENT LAUNDRY DRAIN LINE.
5. CLEAN OUTS MUST BE INSTALLED IN LAWN AREAS, NOT IN SIDEWALKS OR DRIVEWAY AREAS, PREFERABLY BETWEEN THE CURB OR EDGE OF PAVEMENT, AND THE SIDEWALK.
6. SELECT BACKFILL REQUIRED UNDER PAVED AREAS.
7. CONCRETE ENCASEMENT IF COVER DEPTH IS LESS THAN 4'-0" UNDER PAVED AREAS
8. FOR NEW CONSTRUCTION, AN 8x6 WYE WITH 6" PVC TO 6" 45° BEND, THEN 6" x 4" REDUCER IS USED.
9. A 6" CLEAN OUT IS REQUIRED AT R.O.W. WHENEVER THE MAIN SEWER IS UNDER THE PAVEMENT LIMITS OR AT FAR SIDE OF PAVEMENT.
10. ANY EXCAVATION TO BE LEFT OPEN OVERNIGHT SHALL BE COMPLETELY ENCLOSED IN FENCING, OR WHERE NECESSARY, COVERED WITH STEEL PLATES.
11. DOWN SPOUTS, SUMP PUMPS, AND FOOTING DRAINS ARE NOT PERMITTED TO BE CONNECTED TO THE HOUSE LATERAL.
12. FOR NEW STRUCTURES, NO CONNECTION SHALL BE MADE UNTIL BUILDING ROOF IS ERECTED AND BASEMENT FLOOR IS POURED.

ERIE COUNTY
DEPT. OF ENVIRONMENT & PLANNING
DIVISION OF SEWERAGE MANAGEMENT

Rev. 6/05 ADDED NOTE 20 & CLASS 52 TYPE CI PIPE
Rev. 1/07 REMOVED OLD NOTES 1,3,8,10,12,13 AND 20 REVISED TO 6"PVC-DET6, 48 HR ADV NOTICE
Rev. 11/08 ADDED PVC TRAP AND SLEEVE
Rev. 01/12 REVISED 4" CAST IRON TRAP
Rev. 01/18 REMOVED TRAP AND RISER VENT
File: d-21 Date: 3/1/91
STD. DETAIL 21

TYPICAL COMMERCIAL SERVICE WITHOUT BASEMENT DETAIL
(JANUARY 2018)



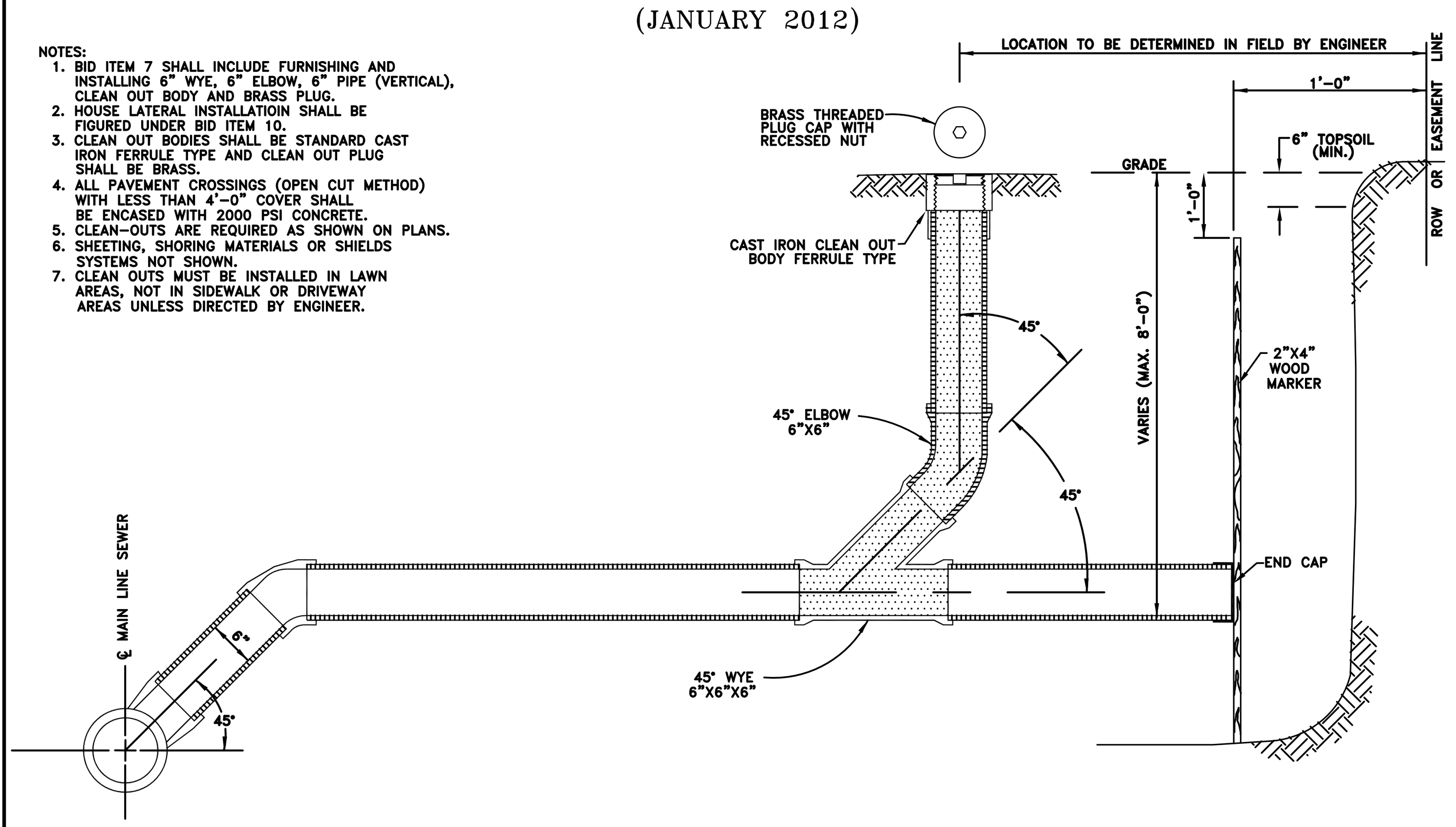
NOTES:
1. NO INSPECTION WILL BE PROVIDED WITHOUT A PERMIT. INSPECTIONS REQUIRE 24 HR. ADVANCE NOTICE FOR SCHEDULING.
2. ALL WORK MUST BE INSPECTED BY A COUNTY INSPECTOR
3. PVC PIPE MATERIAL SHALL BE MANUFACTURED IN ACCORDANCE WITH THE REQUIREMENTS OF THE LATEST ASTM SPECIFICATION D-3033/D-3034. CAST IRON PIPE MATERIAL SHALL BE EXTRA HEAVY CAST IRON MEETING THE REQUIREMENTS OF ASTM A74-42.
4. CLEANOUTS MUST BE INSTALLED IN LAWN AREAS, NOT IN SIDEWALK OR DRIVEWAY AREAS, PREFERABLY BETWEEN THE CURB OR EDGE OF PAVEMENT AND THE SIDEWALK.
5. SELECT BACKFILL REQUIRED UNDER PAVED AREAS.
6. CONCRETE ENCASEMENT IF COVER DEPTH IS LESS THAN 4'-0" UNDER PAVED AREAS
7. MIN. DEPTH OF COVER 3'-0"
8. CLEAN OUT MEASUREMENTS SHALL START FROM CENTERLINE OF MAIN SEWER FOR NEARSIDE LATERALS AND FROM THE 6" CLEAN OUT FOR FAR SIDE CONNECTIONS. A CLEAN OUT MAY BE REQUIRED FOR ANY ABRUPT CHANGES IN LATERAL DIRECTION FLOW.
9. A 6" CLEAN OUT IS REQUIRED AT R.O.W. WHENEVER THE MAIN SEWER IS UNDER THE PAVEMENT LIMITS OR AT FAR SIDE OF OF PAVEMENT.
10. ANY SEWER LAID THROUGH OR OVER A SEPTIC TANK MUST BE CAST IRON (SEPTIC TANK MUST BE FILLED WITH BANK RUN GRAVEL).
11. ANY EXCAVATION TO BE LEFT OPEN OVERNIGHT SHALL BE COMPLETELY ENCLOSED IN FENCING, OR WHERE NECESSARY, COVERED WITH STEEL PLATES.
12. DOWN SPOUTS, SUMP PUMPS, AND FOOTING DRAINS ARE NOT PERMITTED TO BE CONNECTED TO THE LATERAL.
13. FOR NEW STRUCTURES, NO CONNECTION SHALL BE MADE UNTIL BUILDING ROOF IS ERECTED AND BASEMENT FLOOR IS POURED.

ERIE COUNTY
DEPT. OF ENVIRONMENT & PLANNING
DIVISION OF SEWERAGE MANAGEMENT

Rev. 6/05 ADDED NOTE 18 & CLASS 52 TYPE CI PIPE
Rev. 1/07 REMOVED OLD NOTES 2 AND 18 ADDED 1% MIN. TO SERVICE PIPE DETAIL
Rev. 11/08 ADDED SLEEVE AND PVC-SDR 35
Rev. 1/12 REVISED 6" CAST IRON TRAP NOTE
Rev. 1/18 REMOVED TRAP AND RISER VENT
File: d-22 Date: 3/1/91
STD. DETAIL 22

CLEAN-OUT DETAIL FOR SERVICE CONNECTION
(JANUARY 2012)

NOTES:
1. BID ITEM 7 SHALL INCLUDE FURNISHING AND INSTALLING 6" WYE, 6" ELBOW, 6" PIPE (VERTICAL), CLEAN OUT BODY AND BRASS PLUG.
2. HOUSE LATERAL INSTALLATION SHALL BE FIGURED UNDER BID ITEM 10.
3. CLEAN OUT BODIES SHALL BE STANDARD CAST IRON FERRULE TYPE AND CLEAN OUT PLUG SHALL BE BRASS.
4. ALL PAVEMENT CROSSINGS (OPEN CUT METHOD) WITH LESS THAN 4'-0" COVER SHALL BE ENCASED WITH 2000 PSI CONCRETE.
5. CLEAN-OUTS ARE REQUIRED AS SHOWN ON PLANS.
6. SHEETING, SHORING MATERIALS OR SHIELDS SYSTEMS NOT SHOWN.
7. CLEAN OUTS MUST BE INSTALLED IN LAWN AREAS, NOT IN SIDEWALK OR DRIVEWAY AREAS UNLESS DIRECTED BY ENGINEER.



ERIE COUNTY
DEPT. OF ENVIRONMENT & PLANNING
DIVISION OF SEWERAGE MANAGEMENT

Rev. 1 5/93 4'-0" COVER, C.I. CAP "RECESSED NUT"
Rev. 2 2/94 CHANGED DIM LINE FOR MAX. DEPTH
Rev. 3 12/01 ADDED NOTE 7
Rev. 4 5/02 CHANGED C.I. CAP TO BRASS
Rev. 5 6/05 1' MIN. FROM EDGE OF WALK NOTE
Rev. 6 1/12 CHANGED C.I. TO BRASS NOTES 1 & 3
File: d-28 Date: 3/1/91
STD. DETAIL 28

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REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Sanitary Sewer Details

DRAWING NO.
C-402

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

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GENERAL NOTES FOR
SANITARY SEWER CONSTRUCTION
WITHIN ERIE COUNTY SEWER DISTRICTS

1. The Erie County Division of Sewerage Management (DSM), who operates and maintains the existing sewer lines and appurtenances within Erie County Sewer Districts (ECSD), is to be notified at least 48 hours in advance of the start of construction.

2. Construction shall be in accordance with the Rules and Regulations for Erie County Sewer Districts.

3. All permits required by the Federal, State, County, City and/or Town governments to perform work must be obtained prior to the start of work, and paid for by the Contractor.

4. If easement and/or Out of District Agreements are required, they must be complete and ready to be filed before the project will be approved for construction.

5. The contractor shall comply in all respects to the Industrial Code Part (Rule No.) 53 relating to construction, excavation, and demolition operations at or near underground facilities, as issued by the State of New York Department of Labor, Board of Standard and Appeals.

6. The construction of the sanitary sewer facilities shall be under the supervision of a person or firm qualified to practice professional engineering in New York State under the Education Law of the State, whenever engineering services are required by such law for such purposes.

7. Where such sanitary sewer facilities are under the supervision of a professional engineer, he/she shall certify to the DSM and to the applicant that the constructed facilities have been under his/her supervision and that the work has been fully completed in accordance with the approved engineering reports, plans, specifications, and approvals.

8. The Contractor is solely responsible for all site safety. The Contractor's equipment and methods of operation shall be in full compliance with OSHA Standards and satisfy all Federal, State and Local Health and Safety Regulations.

9. The Contractor is advised a trench shield and/or shoring designed in accordance with OSHA Standards shall be used in all open trench excavations.

10. Any contractor and/or plumber performing work in a confined space (i.e. manholes, wetwells, and chambers) owned by an Erie County Sewer District, must certify to the County that they have their own Confined Space Entry Program that meets or exceeds OSHA's regulations. Certification must be notarized by a notary public.

11. The contractor shall expose existing utilities ahead of the pipe laying operation, so if minor adjustments must be made in the pipe elevation and/or alignment due to interference from these utilities, said changes can be made in advance of the work.

12. The contractor shall retain the services of a qualified tree expert to remove, where necessary, branches which interfere with the construction operation, or to repair trees having suffered damage by construction activities. The cost involved is to be included in the various items of the contract.

13. The proposed 8 through 12 inch diameter sanitary sewer pipe shall be polyvinyl chloride (PVC) sewer pipe conforming to the latest revisions of American Society for Testing and Materials (ASTM) designation D-3034, SDR-35, installed in accordance with the ASTM designation D-2321-83a or the latest revision thereof, or approved equal. Larger diameter pipes will be reviewed on a case by case basis.

14. Sewers shall be laid with straight alignment between manholes and shall be checked by using a laser beam or lamping.

15. Should a fluid condition be encountered at the trench bottom, the contractor is to undercut the trench and provide suitable fill material (stone & fabric) to stabilize the trench bottom.

16. Sanitary sewer bedding material shall be No. 1 crushed stone with a gradation conforming to the *DSM Specifications for Subdivisions and Sanitary Sewer Extensions.*

17. Backfill shall be of a suitable material removed from the excavation except where other material is specified. Debris, frozen material, large clods or stones, organic matter, or other unstable materials shall not be used for backfill within two (2') feet of the top of the pipe.

18. All pipes crossing under paved areas are to be backfilled to sub-grade with compacted select material (No. 2 crushed stone) to five (5') feet outside the pavement edges or as required by the highway permit. If any proposed sewer runs under paved areas and has less than four (4) feet of cover, then concrete encasement is required as shown on the DSM Typical Concrete Encasement Detail.

19. Sewers parallel to watermains - *Ten State Standards, Latest Edition, Chapter 30, Section 38.31, and Page 30-11:* Sewers shall be laid at least ten (10') feet (three (3) meters) horizontally from any existing or proposed water main. The distance shall be measured edge to edge. In cases where it is not practical to maintain a ten (10') foot separation, the appropriate reviewing agency may allow deviation on a case-by-case basis, if supported by data from the design engineer. Such deviation may allow installation of the sewer closer to a water main, provided that the water main is in a separate trench or on an undisturbed earth shelf located on one side of the sewer and at an elevation so the bottom of the water main is at least 18-inches (460 mm) above the top of the sewer.

If it is impossible to obtain proper horizontal and vertical separation as described above, both the water main and sewer must be constructed of slip-on or mechanical joint pipe complying with public water supply design standards of the regulatory agency and be pressure tested to 150 pounds per square inch (psi) (1034 kPa) to assure water tightness prior to backfilling.

20. Sewers crossing watermains - *Ten State Standards, Latest Edition, Chapter 30, Section 38.32, Page 30-11 to 30-12:* Sewers crossing water mains shall be laid to provide a minimum vertical distance of 18-inches (460 mm) between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to maintain line and grade.

21. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, one of the following methods must be specified:

    a. The sewer shall be designed and constructed equal to water pipe, and shall be pressure tested at 150 psi (1034 kPa) to assure water tightness prior to backfilling.
    b. Either the water main or the sewer line may be encased in a watertight carrier pipe which extends ten (10') feet (three (3) meters) on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be of materials approved by the regulatory agency for use in water main construction.
    c. The sewer shall be encased in concrete per the DSM Watermain Crossing Detail Typical For Encasement

22. The manhole covers are to bear the inscription "ECSD SANITARY" and comply with the DSM Standard Frame and Cover detail. For private projects the covers shall bear the inscription "SANITARY SEWER" and comply with the DSM Standard Frame and Cover (Private Sewer) detail.

23. Building sanitary sewer vents must be installed six (6) inches above finished grade in a grassy area with a mushroom cap. If the vent is in a sidewalk or paved area, then protect with 6" diameter bollards (2 minimum).

24. Cleanouts (c.o.) are required on 4" and 6" building sewers every fifty feet and one hundred feet respectively, and at every change of alignment.

25. Abandoned building sewer connections from the site, if any, require proof of a District Permit for Disconnection prior to the new connection being made.

26. The following pertains only for direct replacement of in service sanitary sewers:
    a. Each new pipe joint shall be ultrasonic tested after it is laid, but before the next pipe is laid. All tests shall be in accordance with the testing equipment manufacture recommendations.

    b. The ultrasonic test shall be performed in lieu of the hydrostatic and air tests.
    c. A video inspection of the entire sewer shall be performed. Forward the video inspection tape and related paperwork to DSM for review and approval.
    d. A deflection test is required in all cases.

27. For all sanitary sewer installations, a written certificate of construction completeness and compliance, including the results of the hydrostatic leakage test, lamp test, deflection test, air test, etc. shall be submitted to the Erie County Health Department and DSM within thirty (30) days after completion of construction.

28. For all public and private 8" diameter pipe or larger sanitary sewer installations, the developer/contractor must provide one (1) set of record drawings on "D" size paper (24" x 36") and in an electronic file format (CD or flash drive) compatible with the latest AutoCAD release.

29. All public sewer extension projects that consist of more than 750 LF of 8" diameter pipe or larger, shall furnish a 2 year maintenance bond to the DSM.

30. Final Certification will be issued upon the full completeness and compliance of the project including any requirement(s) of I&I remedial work.

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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Sanitary Sewer
General Notes

DRAWING NO.
C-403

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

1e

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A. Requirements

1. After backfilling and prior to the final acceptance of the project, the Contractor will be required to perform the following three tests on all sewers built under this project:

a) Air Tests
b) Infiltration or Exfiltration
c) Deflection Test (15" dia. and smaller).

2. No more than 1,000 linear feet of installed sewer shall be allowed to remain untested.

3. In view of the fact that house laterals and riser pipes often contribute considerable infiltration, such laterals and risers are to be installed and capped, tied and blocked as the work progresses, prior to the air testing of the lines.

4. The Contractor's testing procedures shall be completed in accordance with OSHA Standards for confined space entry. The Contractor will be required to provide and operate all equipment necessary for full compliance for his operation. Equipment such as gas detectors, safety harnesses, ventilating blowers, respirators etc. shall be provided by the Contractor.

B. Air Tests (Required for All Diameters up to and including 36") 10 State Standards Section, 33.94

1) This test shall be performed no earlier than 14 calendar days after the trenches are backfilled.

2) The procedure for air testing shall be as specified herein. The minimum allowable time for the test pressure to decrease from 3.5 psi to 3.0 psi shall be not less than as called for in the following table:

Minimum Acceptance Times* For Length Shown (min:sec)

Pipe Diameter	Up to 100'	100 - 200'	200 - 300'	300 - 400'
6"	2:50	2:50	2:50	2:51
8"	3:47	3:47	3:48	5:04
12"	5:40	5:42	8:33	11:24
15"	7:05	8:54	13:21	17:48
18"	8:30	12:49	19:14	25:38
21"	9:55	17:27	26:11	34:54
24"	11:24	22:48	34:11	45:35
27"	14:25	28:51	43:16	57:42
30"	17:48	35:37	53:25	71:13
33"	21:33	43:56	64:38	86:10
36"	25:39	51:17	76:55	102:34

* Erie County Sewer District Inspector will extend time to the next full minute during the test.

3. Pipe lines in sizes up to 36 inches in diameter can be air tested from manhole to manhole for distances not to exceed 400 feet.

4. In wet trenches where pumping to lower the water table is impractical, approved 4" diameter, solid PVC drain pipe (with approved cap) shall be placed at each manhole to extend from a point 6 inches below the lowest invert to the top of the ground. Embed the pipe a minimum of 12" into clean #1 stone. Ground water elevations will be measured at each manhole in order to calculate the groundwater pressure acting on the pipe exterior. The initial air test pressure shall be increased as necessary to overcome the calculated groundwater pressure.

5. The testing procedures outlined shall be strictly adhered to.

6. All testing equipment shall be supplied by the Contractor and be in good working condition. Some of the major equipment required for air tests is:

a) Stop watch graduated in tenths of a second.
b) Compressor of 50 to 100 psi capacity.
c) Bulkheads for pipe.
d) Approximately 100 feet of 3/8" diameter air hose.
e) Pressure gauge - 0 to 5 psi graduated in 1/16th of a pound increments.
f) Three 3/8 inch diameter check valves.

C. Infiltration Tests (Applicable Only if Ground Water is Two Feet Above the Top of the Pipe)

1. This test shall be performed no earlier than 14 calendar days after the trenches are backfilled.

2. Infiltration tests for all sewers constructed under this project shall not exceed 100 gallons per inch diameter per mile of sewer, per 24 hours. Each individual run of sewer (from one manhole to the next manhole if greater than 100 feet) shall comply with the allowable rate of infiltration. All equipment for the tests shall be furnished by the Contractor and be in good working condition.

3. The allowable rate of infiltration given in gallons per mile is not to be construed as a commitment on the part of the District to accept an entire line, where overall infiltration is less than the allowable, while one or more runs contribute excessive infiltration.

4. The infiltration test is intended to measure the water tightness of a sewer as related to the infiltration of ground water and is only applicable if the water table level is 2 feet or higher above the top of the pipe for the entire length of the test section.

RECOMMENDED STANDARDS FOR WASTEWATER FACILITIES, 2014 EDITION

38.3 Relation to Water Mains

38.31 Horizontal and Vertical Separation

Sewers shall be laid at least 10 feet (3 m) horizontally from any existing or proposed water main. The distance shall be measured edge to edge. For gravity sewers where it is not practical to maintain a 10 foot (3 m) separation, the appropriate reviewing agency may allow deviation on a case-by-case basis, if supported by data from the design engineer. Such deviation may allow installation of the gravity sewer closer to a water main, provided that the water main is in a separate trench or on an undisturbed earth shelf located on one side of the gravity sewer and at an elevation so the bottom of the water main is at least 18 inches (460 mm) above the top of the sewer.
If it is impossible to obtain proper horizontal and vertical separation as described above for gravity sewers, both the water main and gravity sewer shall be constructed of slip-on or mechanical joint pipe complying with Section 8.1 and Section 8.7 of the 'Recommended Standards for Water Works - 2012 Edition' and shall be pressure rated to at least 150 psi (1034 kPa) and pressure tested to ensure watertightness.

38.32 Crossings

Sewers crossing water mains shall be laid to provide a minimum vertical distance of 18 inches (460 mm) between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to maintain line and grade.
When it is impossible to obtain proper horizontal and vertical separation as stipulated above, one of the following methods shall be specified:
30-11
a. The sewer shall be designed and constructed equal to water pipe, as described in Paragraph 38.31.
b. Either the water main or the sewer line may be encased in a watertight carrier pipe that extends 10 feet (3 m) on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be made of materials approved by the regulatory agency for use in water main construction.

a) Approved 4" diameter solid PVC drain pipe (with an approved cap) shall be placed at each manhole to extend from a point 6 inches below the lowest invert to the top of the ground. Embed the pipe a minimum of 12" into clean #1 stone. Ground water elevations will be measured at each manhole so that the ground water level can be correlated with the infiltration measurements.

b) Before conducting the tests, the water table should be allowed to stabilize at its normal level and verified that it is 2 feet above the top of the pipe during the test period. The test is usually conducted between adjacent manholes with the upstream end of the sewer bulkheaded in a suitable manner to isolate the test section. All service laterals, stubs and fittings should be properly plugged or capped at the connections to the test pipe section to prevent the entrance of ground water at these locations.

c) A V-notch weir or other suitable measuring device should be installed in the inlet pipe of the downstream manhole. Infiltrating water is then allowed to build up and level off behind the weir until a steady, uniform flow occurs over the weir. Leakage is determined by direct reading from graduations on the weir consecutively for five (5) days and converting the flow quantity to gallons per unit length of pipe per unit of time.

d) An important factor in applying the test criteria is to properly correlate the variable water head over the length of the sewer being tested to the high ground water level. A minimum of 2 feet of water over the pipe is required at the upper manhole before the infiltration test will be allowed.

5. When a sewer run between two consecutive manholes or chambers is found to contribute infiltration at a rate above the allowable, inspection by television or other cameras may be made by the Contractor so that the defective section of sewer can be located and repaired. Each individual run of sewer (from one manhole to the next manhole if greater than 100 feet) shall comply with the allowable rate of infiltration of 100 gallons per inch diameter per mile of sewer per 24 hours.

D. Exfiltration Tests

1. This test shall be performed no earlier than 14 calendar days after the trenches are backfilled.

2. The exfiltration test for all diameter sewers shall be as described below. Although actual infiltration will normally be less than that indicated by the water exfiltration test, the test does provide a positive means of subjecting the completed sewer system to an actual pressure test. Since sanitary sewers are not designed or expected to operate as a pressure system, care must be exercised in conducting the test and correlating the results with the allowable exfiltration limits.

a) The test is usually conducted between adjacent manholes. Prior to the test, all service laterals, stubs and fittings within the test section should be plugged or capped and adequately braced or blocked to withstand the water pressure resulting from the test.

b) If manholes are to be included in the test, the inlet pipe to each manhole should be bulkheaded and the test section filled with water through the upstream manhole. To allow air to escape from the sewer, the flow should be at a steady rate until the water level in the upstream manhole provides an average pressure of 5 psi (11.6' head) at the center point of the test section or the upstream manhole is filled. If necessary, provisions should be made to bleed off entrapped air during the filling of the test section.

c) Once the test section is filled, the water should be allowed to stand for an adequate period of time (one day minimum) to allow for water absorption by the pipe and manhole. After water absorption has stabilized, the water level in the upstream manhole is brought up to the proper test level and this level established by measuring down from the manhole rim or other convenient datum point. After 24 hours, the water elevation should be measured from the same reference point and the loss of water during the test period calculated, or the water can be restored to the level existing at the beginning of the test, and the amount added used to determine the leakage.

d) To exclude both manholes from the test,it is necessary to bulkhead the outlet pipe of the upstream manhole. Provision must be made in the bulkhead for filling the pipe and expelling trapped air.

e) The water level at the upstream manhole shall be computed and varies above the top of the pipe. Since the sewer is installed on a grade, the test section downstream will most likely be subjected to a greater pressure. Therefore, the test pressure head at the upstream manhole should be adjusted such that the maximum pressure on the pipe being tested is no greater than 10 psi, (23 feet of head).

3. When a sewer run between two consecutive manholes or chambers is found to exfiltrate at a rate above the allowable, inspection by television or other cameras may be made by the Contractor during wet weather, so that the defective section of sewer can be located and repaired. Each individual run of sewer (from one manhole to the next manhole) shall comply with the allowable rate of infiltration of 100 gallons per inch diameter per mile of sewer per 24 hours.

E. Deflection Test

1. This test shall be performed no earlier than 30 calendar days after the trenches are backfilled.

2. All flexible (PVC) sewers 8" diameter or larger constructed under this project shall be internally checked with a five percent (5%) deflection "go-no-go pig" or Mandrel to determine if the pipes are deflecting excessively. Any section of pipe unable to pass the deflection test "pig test" shall be removed and replaced at the Contractor's expense.

3. Deflection testing mandrels or pig shall be pulled thru the pipe by hand or hand operated winch. Power winches or drives are not permitted.

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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Sanitary Sewer Testing Notes

DRAWING NO.
C-404

Project no.: 21.011

Packet Pg. 1464

1e

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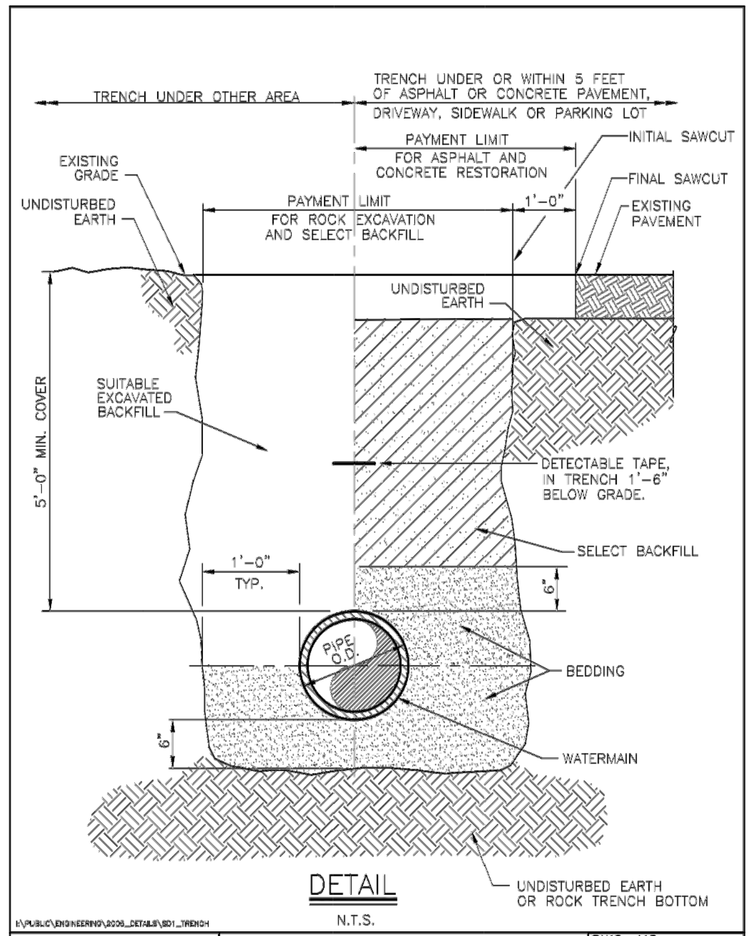
Attachment: SP-2021-05_drawings_061721 (2305?: SP-2021-05)

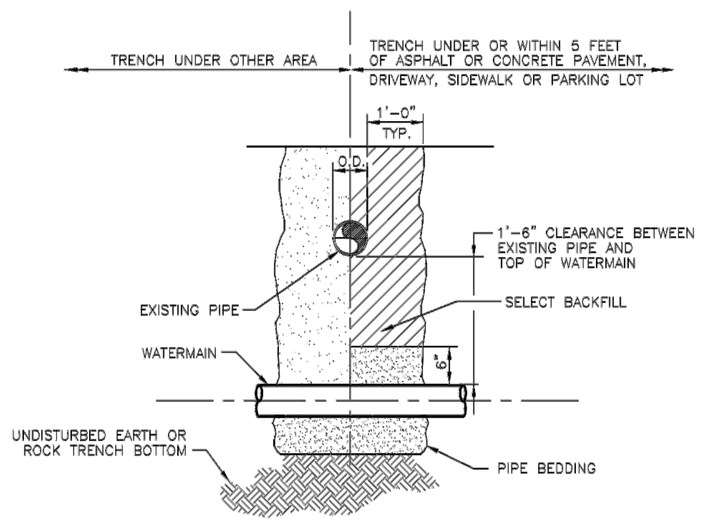
Packet Pg. 1465



DETAIL
N.T.S.

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD1_TRENCH

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TRENCH THROUGH 12–INCH DIAMETER WATERMAIN	DWG. NO. SD1	
		DATE 4/28/92	REVISED 10/05



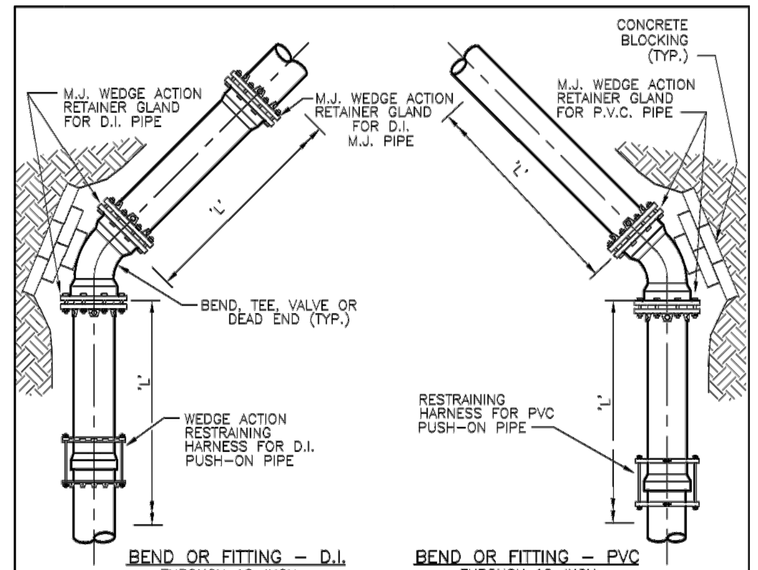
NOTES:

1. ALL EXISTING UTILITIES MUST BE SUPPORTED DURING CONSTRUCTION OF THE NEW WATERMAIN.
2. WHEN CROSSING A SEWERLINE WITH A NEW WATERMAIN, ONE FULL PIPE LENGTH (18 FT. MIN.) SHALL BE USED AT THE POINT OF CROSSING. THE WATERMAIN SHALL BE PLACED SO THAT BOTH JOINT ENDS ARE AS FAR AS POSSIBLE FROM THE EXISTING SEWERLINE.

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD2_PIPE_CROSSING

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL PIPE CROSSING	DWG. NO. SD2	
		DATE 4/28/92	REVISED 10/05



BEND OR FITTING – D.I.
THROUGH 12–INCH

BEND OR FITTING – PVC
THROUGH 10–INCH

RESTRAINED JOINT SCHEDULE					
PIPE SIZE	PIPE TYPE	11.25° ELBOW 'L'	22.5° ELBOW 'L'	45° ELBOW 'L'	TEE BRANCH, 90° BEND, VALVE OR DEAD END 'L'
6"	PVC	13'	25'	50'	120' MIN.
8"	PVC	15'	30'	59'	122' MIN.
8"	D.I.P.	15'	30'	59'	122' MIN.

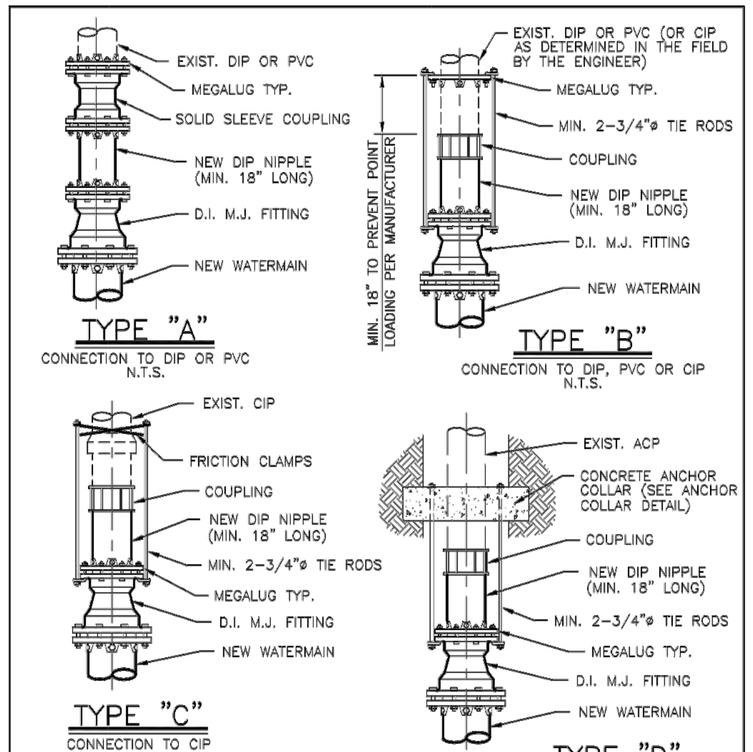
NOTES:

1. DIMENSION 'L' REPRESENTS THE LENGTH OF RESTRAINED PIPE REQUIRED IN FEET EACH SIDE OF THE PIPE FITTING.

PLAN
N.T.S.

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD4_REST_JOINT_SCHED

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL RESTRAINED JOINT SCHEDULE	DWG. NO. SD4	
		DATE 4/28/92	REVISED 10/05

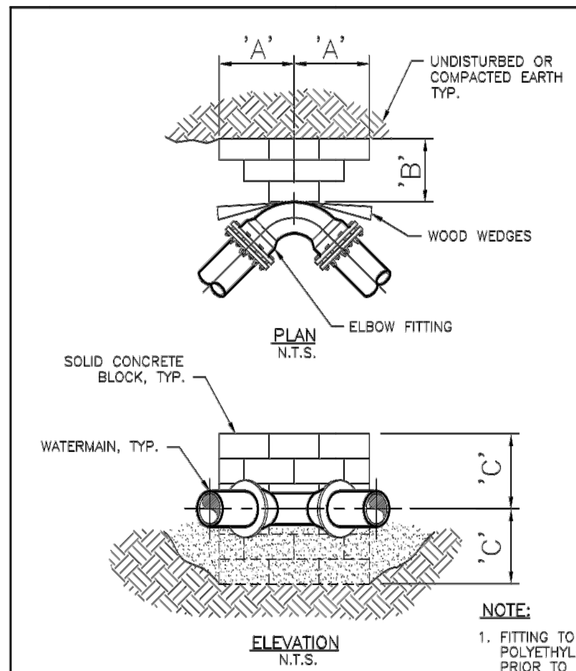


NOTES:

1. VALVES AND TEES MAY BE HARNESSED SIMILARLY.
2. HARNESSING IS FOR RESISTANCE TO INTERNAL PRESSURE–PIPE ITSELF MUST BE SUPPORTED ON FIRM BEDDING AND CAREFULLY BACKFILLED.
3. COAT ALL EXPOSED SURFACES OF HARNESS ASSEMBLY WITH BITUMINOUS COATING.
4. TIE RODS SHALL BE PLACED ON SIDES OF PIPE.

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD5_CONN_EXIST_WMAIN

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TYPICAL CONNECTION TO EXISTING WATERMAIN THROUGH 12–INCH DIAMETER WATERMAIN	DWG. NO. SD5	
		DATE 3/05	REVISED 10/05



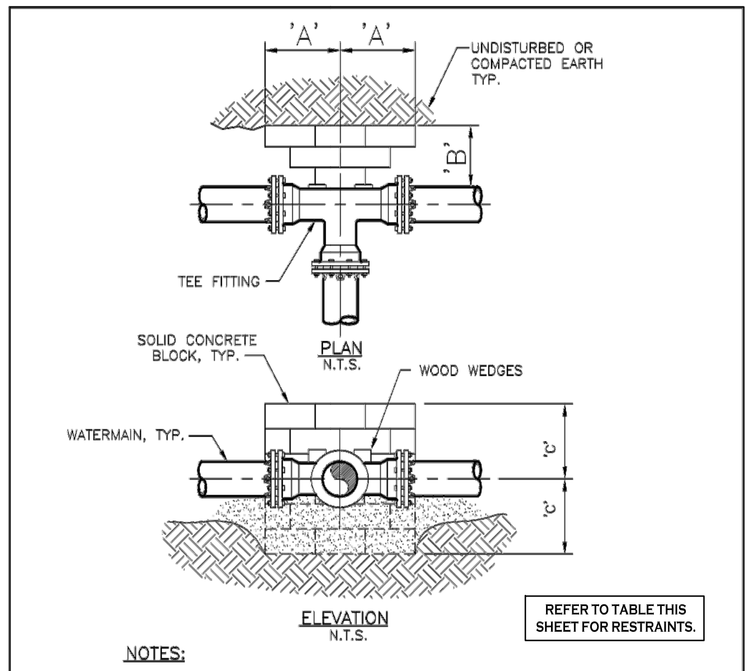
NOTE:

1. FITTING TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.

DIMENSION SCHEDULE												
PIPE SIZE	11.25° ELBOW			22.5° ELBOW			45° ELBOW			90° ELBOW		
	'A'	'B'	'C'	'A'	'B'	'C'	'A'	'B'	'C'	'A'	'B'	'C'
8"	1.5'	1.5'	2.5'	2.5'	1.5'	2.5'	3.0'	1.5'	3.5'	3.5'	1.5'	5.0'

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD6_THRUST_BLOCKS_ELBOW

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR ELBOW FITTING	DWG. NO. SD6	
		DATE 4/28/92	REVISED 10/05



REFER TO TABLE THIS SHEET FOR RESTRAINTS.

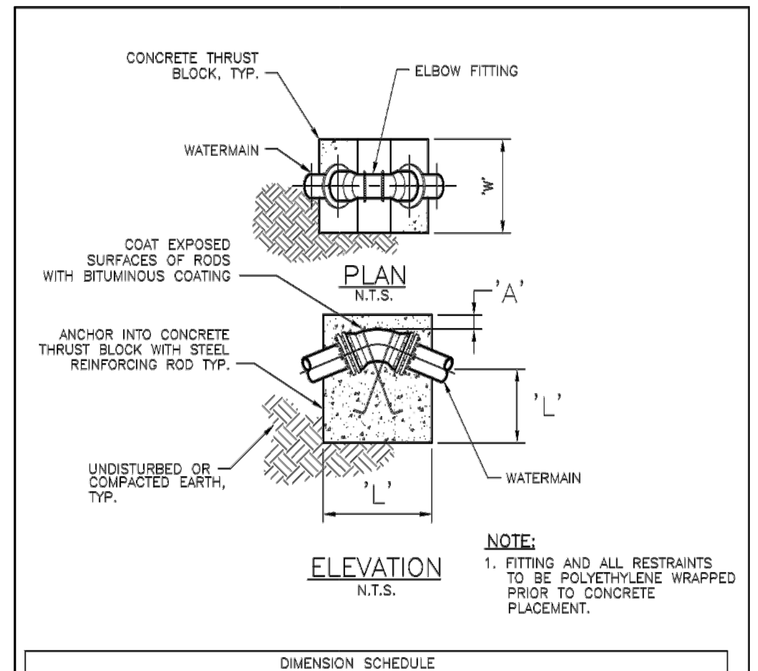
NOTES:

1. THRUST BLOCK REQUIRED FOR TEES, HYDRANT LATERAL TEES AND TAPPING SLEEVE INSTALLATIONS.
2. FITTING TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.

BRANCH TEE SIZE	DIMENSION SCHEDULE		
	'A'	'B'	'C'
6"	1'-0"	1'-0"	0'-6"
8"	1'-6"	1'-0"	0'-6"

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD7_THRUST_BLOCKS_TEE

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR TEE OR "DEAD END" FITTING	DWG. NO. SD7	
		DATE 4/28/92	REVISED 10/05



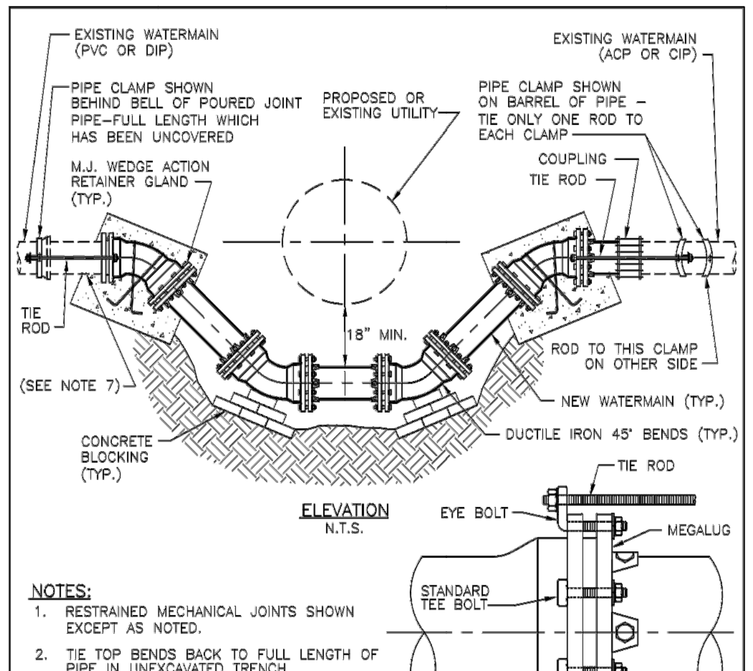
NOTE:

1. FITTING AND ALL RESTRAINTS TO BE POLYETHYLENE WRAPPED PRIOR TO CONCRETE PLACEMENT.

DIMENSION SCHEDULE													
PIPE SIZE	PIPE TYPE	11.25° ELBOW				22.5° ELBOW				45° ELBOW			
		'A'	'W'	'L'	ROD ø	'A'	'W'	'L'	ROD ø	'A'	'W'	'L'	ROD ø
8"	D.I.P	12"	1'-0"	1'-0"	1/2"	12"	1'-9"	1'-9"	1/2"	1'-6"	2'-0"	2'-0"	1/2"

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD8_THRUST_BLOCKS_VBEND

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR VERTICAL BEND	DWG. NO. SD8	
		DATE 4/28/92	REVISED 10/05



NOTES:

1. RESTRAINED MECHANICAL JOINTS SHOWN EXCEPT AS NOTED.
2. TIE TOP BENDS BACK TO FULL LENGTH OF PIPE IN UNEXCAVATED TRENCH.
3. VALVES, TEES AND HYDRANTS MAY BE HARNESSED SIMILARLY.
4. HARNESSING IS FOR RESISTANCE TO INTERNAL PRESSURES–PIPE ITSELF MUST BE SUPPORTED ON FIRM BEDDING AND CAREFULLY BACKFILLED.
5. COAT ALL EXPOSED SURFACES OF HARNESS ASSEMBLY WITH BITUMINOUS COATING.
6. TIE RODS SHALL BE PLACED ON SIDES OF PIPE.
7. IF EXISTING PIPE IS CIP OR PVC, CONNECT TO NEW FITTING ONLY WHEN ALLOWED BY ENGINEER.

TIE ROD SCHEDULE			
PIPE SIZE	PIPE TYPE	ROD ø	NUMBER OF RODS
8"	PVC	3/4"	2

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD10_HARN_OFFSET_EXIST_WMAIN

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL HARNESSING DETAILS–INSTALL OFFSET IN EXISTING WATERMAIN	DWG. NO. SD10	
		DATE 6/00	REVISED 10/05

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Water Details

DRAWING NO.

C-405

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

1.e

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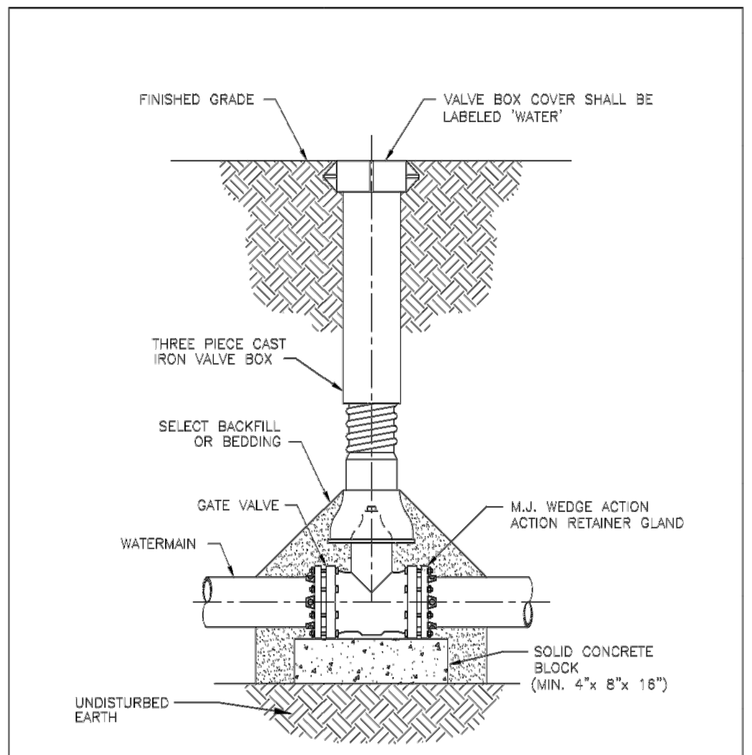
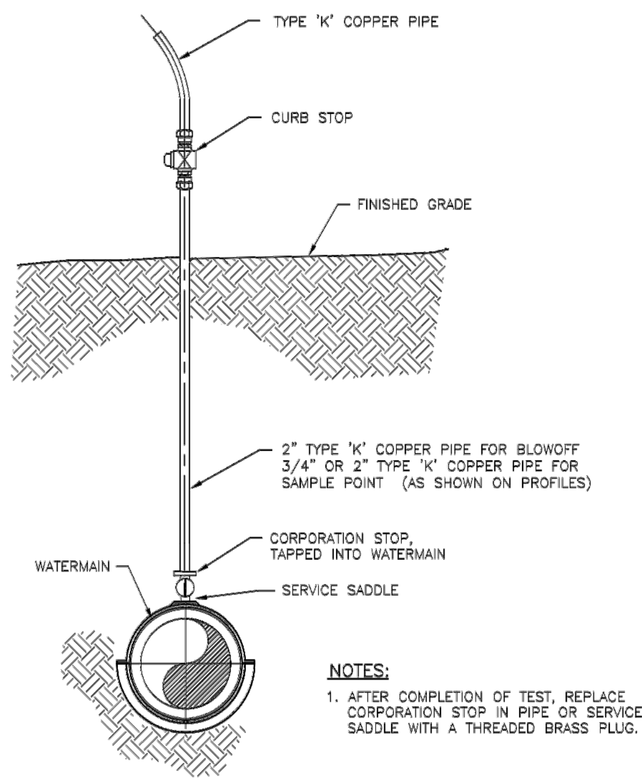


NOTES:
1. VALVE SHALL NOT SUPPORT VALVE BOX.
2. GATE VALVE SHALL BE INSTALLED LEVEL.
3. VALVE BOX SHALL BE PLUMB TO GRADE, WITH OPERATING NUT CENTERED IN BOX.

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD11_GATE_VALVE_SET

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GATE VALVE SETTING	DWG. NO. SD11	
		DATE 4/28/92	REVISED 02/17

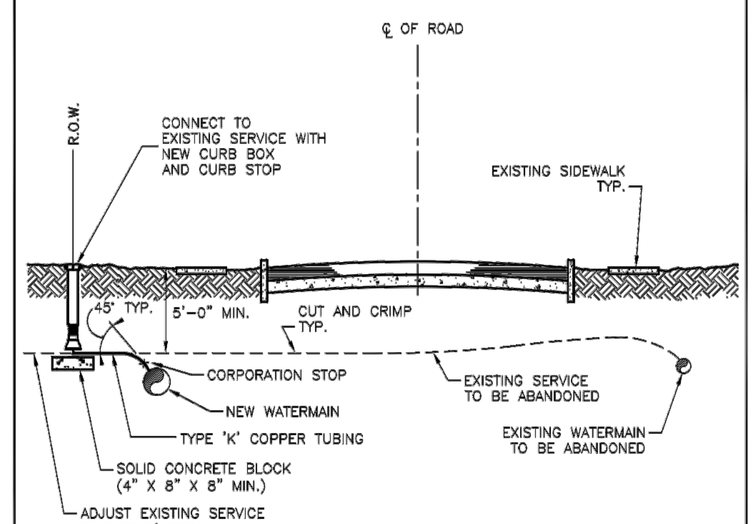


NOTES:
1. AFTER COMPLETION OF TEST, REPLACE CORPORATION STOP IN PIPE OR SERVICE SADDLE WITH A THREADED BRASS PLUG.

ELEVATION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD17_TEMP_BO_SAMP_PT

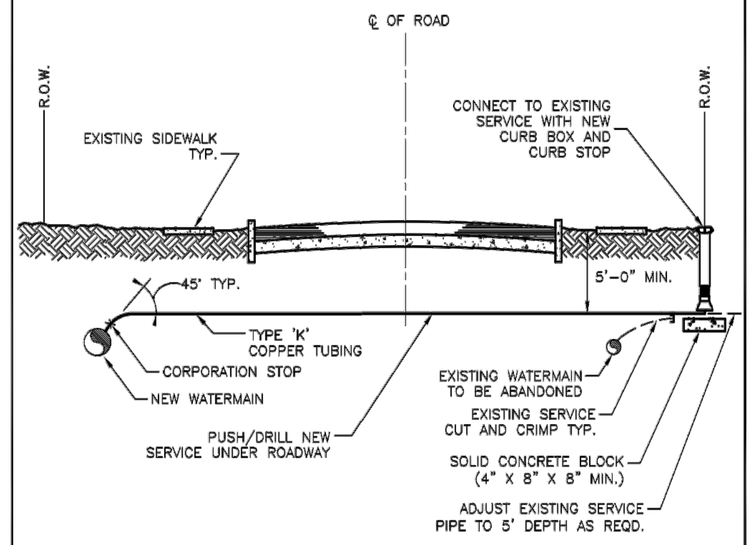
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TEMPORARY BLOW-OFF/SAMPLING POINT	DWG. NO. SD17	
		DATE 4/28/92	REVISED 10/05



NOTES:
1. EXISTING SERVICES SHALL BE CRIMPED AND ABANDONED IN PLACE.
2. SERVICE SADDLES SHALL BE USED UNDER THE FOLLOWING CONDITIONS:
   A. WHEN SERVICES ARE PLACED ON 4" OR SMALLER PIPES.
   B. WHEN SERVICES LARGER THAN 1" ARE PLACED ON A 6" PIPE.
   C. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON AN 8" PIPE.
   D. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON DUCTILE IRON PIPE.
   E. WHEN TAPPING ALL PLASTIC (PVC) PIPE.
   F. WHEN TAPPING ALL ASBESTOS-CEMENT PIPE.
3. CURB BOXES SHALL NOT BE PLACED IN SIDEWALKS, DRIVEWAYS, OR CURB RAMPS.
4. UNIONS ON COPPER TUBING ARE NOT ALLOWED UNLESS APPROVED BY ECWA PRIOR TO INSTALLATION.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD15_WS_SERV_REPLACE

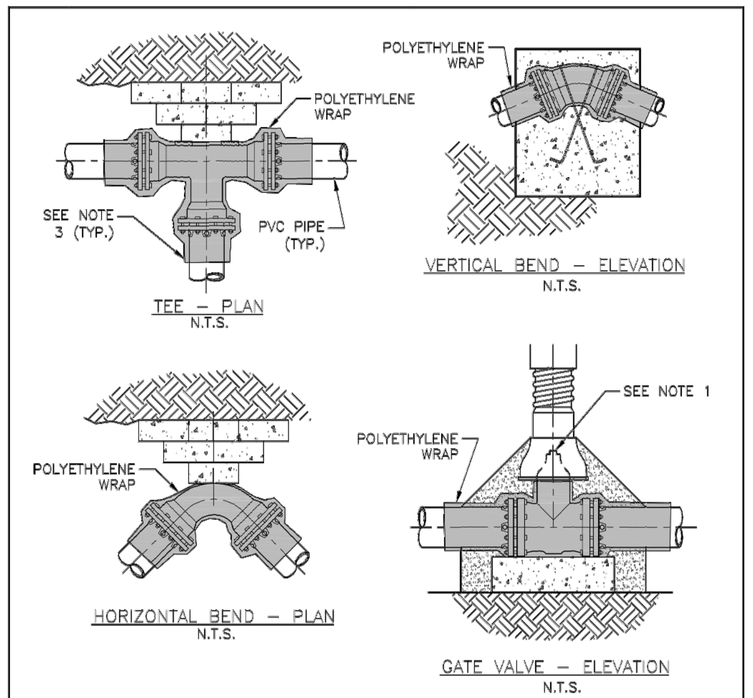
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL NEAR SIDE SERVICE REPLACEMENT/INSTALLATION	DWG. NO. SD15	
		DATE 4/92	REVISED 09/16



NOTES:
1. EXISTING SERVICES SHALL BE CRIMPED AND ABANDONED IN PLACE.
2. SERVICE SADDLES SHALL BE USED UNDER THE FOLLOWING CONDITIONS:
   A. WHEN SERVICES ARE PLACED ON 4" OR SMALLER PIPES.
   B. WHEN SERVICES LARGER THAN 1" ARE PLACED ON A 6" PIPE.
   C. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON AN 8" PIPE.
   D. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON DUCTILE IRON PIPE.
   E. WHEN TAPPING ALL PLASTIC (PVC) PIPE.
   F. WHEN TAPPING ALL ASBESTOS-CEMENT PIPE.
3. CURB BOXES SHALL NOT BE PLACED IN SIDEWALKS, DRIVEWAYS, OR CURB RAMPS.
4. USE POLYETHYLENE FOR 3/4" AND 1" SERVICES GREATER THAN 100 FEET IN LENGTH, AND FOR 1-1/2" AND 2" SERVICES GREATER THAN 60 FEET IN LENGTH. ALL POLYETHYLENE SERVICES SHALL INCLUDE A TRACER WIRE FOR DETECTION BY ECWA FORCES.
5. UNIONS ON COPPER TUBING ARE NOT ALLOWED UNLESS APPROVED BY ECWA PRIOR TO INSTALLATION.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD16_FS_SERV_REPLACE

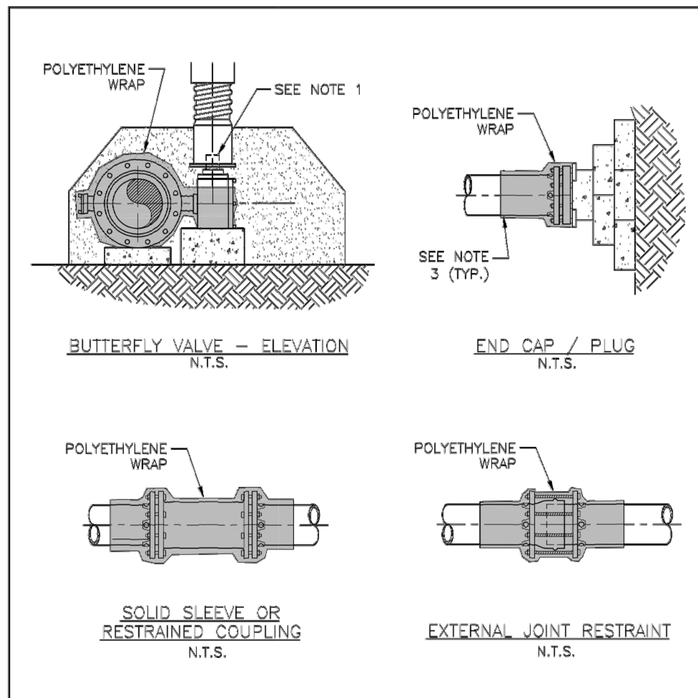
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL FAR SIDE SERVICE REPLACEMENT/INSTALLATION	DWG. NO. SD16	
		DATE 4/92	REVISED 09/16



NOTES:
1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP IS NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PIPE (OR POLYWRAP IF DIP) WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD39A_POLYWRAPPING_FITTINGS

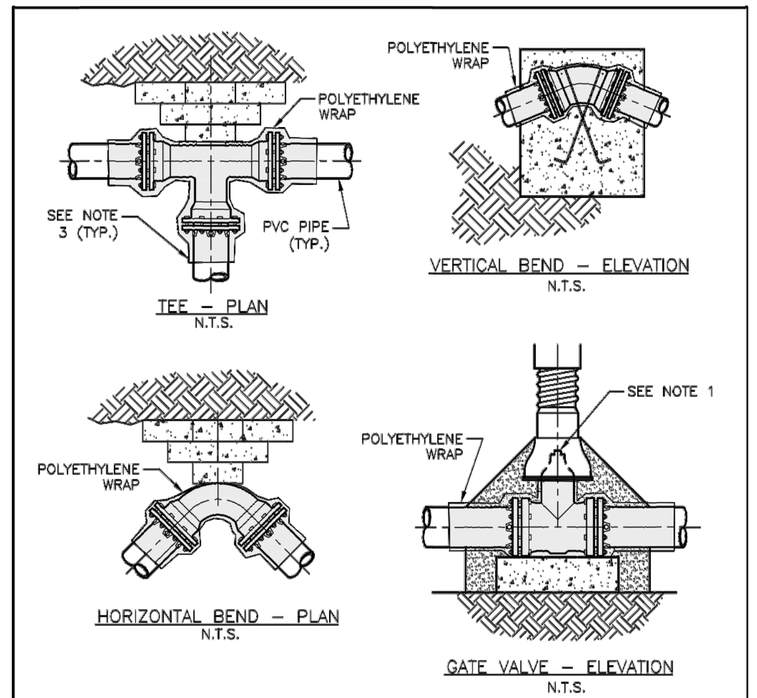
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING CAST/DUCTILE IRON FITTINGS	DWG. NO. SD39A	
		DATE 3/18	REVISED 12/18



NOTES:
1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP IS NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PIPE (OR POLYWRAP IF DIP) WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD39B_POLYWRAPPING_FITTINGS

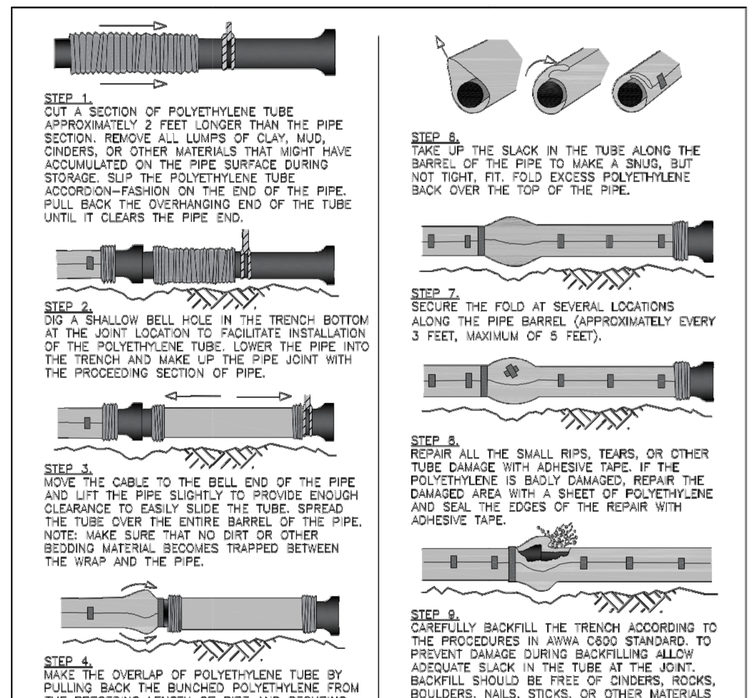
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING CAST/DUCTILE IRON FITTINGS	DWG. NO. SD39B	
		DATE 12/18	REVISED



NOTES:
1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON GATE VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PVC PIPE WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD39_POLYWRAPPING_FITTINGS

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING DUCTILE IRON FITTINGS ON PVC PIPE	DWG. NO. SD39	
		DATE 3/18	REVISED



NOTES:
1 - POLYETHYLENE WRAP (POLYWRAP) SHALL BE OF PROPER DIAMETER TO FIT OVER BELLS AND EXTERNAL WEDGE-ACTION RETAINER GLANDS.
2 - CAST AND DUCTILE IRON FITTINGS (BENDS, TEES, VALVES, ETC.) ARE TO BE WRAPPED IN POLYWRAP AND SECURED IN PLACE.
3 - DO NOT USE CHAINS, METAL WIRE, OR OTHER SUPPORTING SYSTEMS WHICH MAY DAMAGE THE POLYETHYLENE ENCASEMENT. REPLACE DAMAGED POLYWRAP ACCORDINGLY.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD32_POLY_WRAP

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYETHYLENE ENCASEMENT OF DUCTILE IRON PIPE	DWG. NO. SD32	
		DATE 08/16	REVISED 02/19

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REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Water Details

DRAWING NO.
C-406

Project no.: 21.011

Packet Pg. 1466

Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

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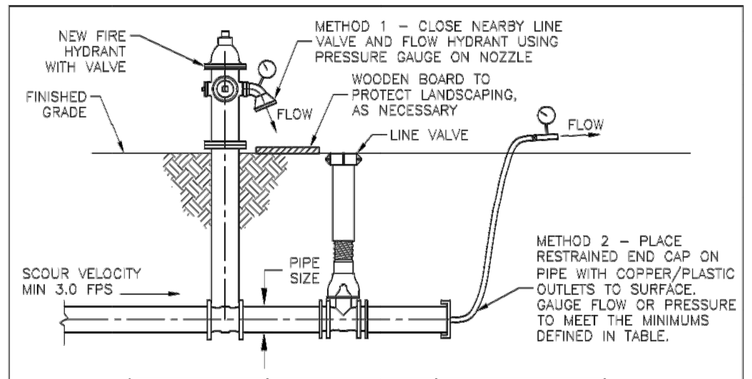


PIPE SIZE (IN)	REQUIRED FLOW (GPM)	METHOD 1 HYDRANT FLOW		METHOD 2 END CAP FLOW	
		2 1/2" NOZZLE PRESSURE (PSI)	4" NOZZLE PRESSURE (PSI)	2" I.D. PRESSURE (PSI)	3" I.D. PRESSURE (PSI)
6	275	7	1	7	2
8	500	9	2	22	5
10	750	20	4	50	10
12	1100	44	7	–	22
16	1900	–	20	–	62
20	3000	–	50	–	–

I.D. = INNER DIAMETER

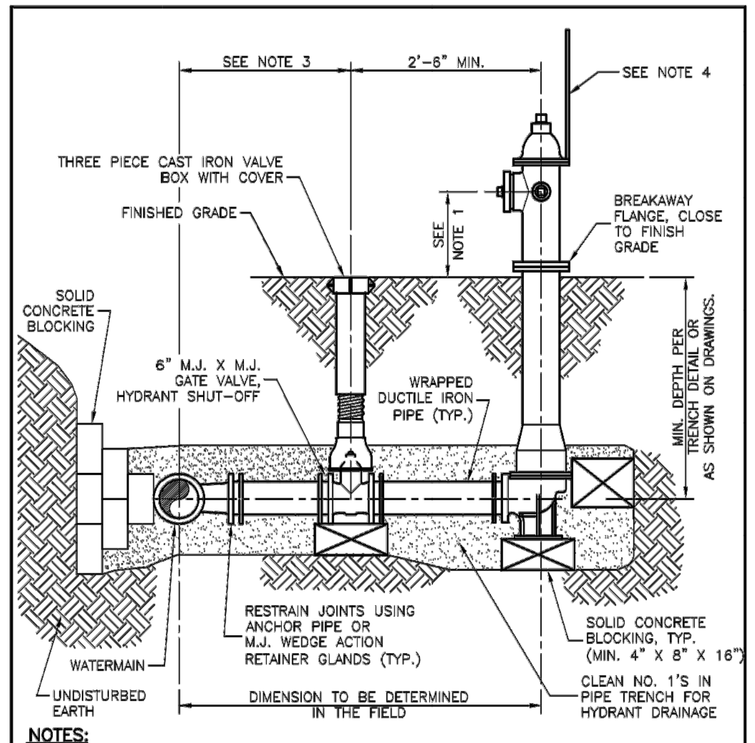
NOTES:

1. TO OBTAIN SCOUR VELOCITY (3.0 FPS) IN THE WATERLINE, CONTRACTOR SHALL ACHIEVE FLOWRATE AT NOZZLE DEFINED IN TABLE. PRESSURE GAUGE USED SHALL SHOW A HIGHER PRESSURE THAN THE MINIMUMS DEFINED IN THE TABLE.
2. OUTLET PRESSURE MEASURED BY PITOT GAUGE.
3. ENGINEER SHALL PROVIDE CALCULATIONS IF CONNECTIONS ARE OTHER THAN THOSE SHOWN, IF MULTIPLE CONNECTIONS ARE USED, OR AS REQUESTED BY ECWA.
4. TO FLUSH THREE PIPE VOLUMES, MINIMUM FLUSHING TIME (IN SECONDS) EQUALS THE LENGTH OF PIPE BEING FLUSHED, IN FEET.

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD36_WATERLINE_FLUSHING

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL WATERLINE FLUSHING	DWG. NO. SD36	
		DATE 6/16	REVISED 3/18



NOTES:

1. CENTERLINE OF THE LOWEST NOZZLE TO FINISHED GRADE SHALL BE A MIN. OF 15" & MAX. OF 18".
2. HYDRANT RISER SHALL BE INSTALLED PLUMB.
3. VALVE BOX SHALL NOT BE PLACED IN PAVEMENT.
4. RELOCATE HYDRANT MARKER (IF PRESENT), FOR WATERLINE REPLACEMENT PROJECTS ONLY.
5. HYDRANT FACE TO BE A MINIMUM OF 3' FROM THE BACK FACE OF ALL CURBS OR A MINIMUM OF 5' FROM ALL EDGES OF PAVEMENT (IF NO CURB).

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD13_HYD_INST

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL FIRE HYDRANT INSTALLATION	DWG. NO. SD13	
		DATE 6/00	REVISED 11/16

NOTES

1. All elevations refer to USGS NAVD83 datum.
2. The CONTRACTOR shall obtain necessary permits and furnish copies to the ENGINEER prior to commencing work.
3. The CONTRACTOR'S work area shall be confined to the limits of the right-of-ways and easements. The CONTRACTOR shall obtain any additional easements or work releases should the CONTRACTOR require additional area to accommodate his operations.
4. The CONTRACTOR shall provide maintenance and protection of traffic in accordance with the Erie County Highway Department standards and the NYSDOT Manual of Uniform Traffic Control Devices.
5. The locations and depths of existing underground utilities as shown on the plans and profiles are approximate. Other underground utilities not shown may be encountered. The CONTRACTOR shall perform test pits to verify the location and elevation of utilities at interconnections and crossings as shown, directed, or required. The CONTRACTOR shall excavate in advance of the pipe laying operation and expose all existing underground utilities to prevent damage during construction and to determine required changes in grade necessary to install the watermain to avoid conflicts.
6. The CONTRACTOR shall install those measures required to limit erosion of areas disturbed by the work. Clearing shall be performed on an as-needed basis, phased to reduce erosion and visual impact.
7. Blasting will not be permitted.
8. No more than one connection may be made to any existing watermain prior to testing, disinfection, and approval of the Waterline Installation Completed Works Approval Report(s) by the Erie County Water Authority and the Erie County Health Department.
9. The Erie County Water Authority shall only operate existing valves and fire hydrants, including newly installed valves and fire hydrants that have been placed into service. The CONTRACTOR is advised that watertight conditions may not exist when existing valves are closed.
10. The CONTRACTOR shall have all equipment, manpower, and materials required on site and ready for use prior to commencing any shut-down or removing any existing facilities from service. The CONTRACTOR shall notify all affected customers in writing of any shut-down at least 48 hours in advance. The CONTRACTOR shall notify the appropriate fire stations 48 hours in advance prior to taking any fire hydrants out of service. Any fire hydrants not in service shall be bagged in burlap or plastic. Any shut-down shall be limited to 4 consecutive hours. It may be necessary to schedule shut-downs at night, weekends, or other off hours so as to not affect schools, businesses or other customers, as determined by the ENGINEER. Shut-down requests shall be submitted to the Erie County Water Authority a minimum of 5 business days in advance of the requested shut-down date.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD29_GENERAL_NOTES

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GENERAL NOTES	DWG. NO. SD29	
		DATE 3/05	REVISED 7/17

11. All watermain piping shall be installed with a minimum of 5'-0" of cover.
12. All watermain piping shall be installed with a minimum of 1'-6" of vertical clearance and 10'-0" of horizontal clearance from sanitary and storm piping, measured from the outside of the pipes at the point of crossing.
13. If the material at the design grade is unsuitable as determined by the ENGINEER, the CONTRACTOR, when ordered in writing, shall excavate additional material to the depth necessary and shall backfill to the proposed grade with the select granular material.
14. The installation of 90 degree bends in the watermain is not allowed, unless approved by the Erie County Water Authority.
15. Thrust restraint for watermain piping through 12-inch diameter shall consist of thrust blocks and pipe joint restraint.
16. The CONTRACTOR shall notify the owner of any utility pole in advance of any excavation work that will take place within 5'-0" of the utility pole. The CONTRACTOR shall include the cost of temporary pole support in the appropriate bid item.Where utility poles are required to be supported during construction, the CONTRACTOR shall make all necessary arrangements with the utility company.
17. If materials are encountered during the construction that are suspected of being contaminated, the CONTRACTOR shall immediately notify the NYSDEC for direction regarding testing, separation, containment, and disposal procedures.
18. Existing fire hydrants removed during construction and not reinstalled as part of the work shall be scheduled and returned to the Erie County Water Authority Service Center, 3030 Union Road, Cheektowaga, New York 14227.
19. The CONTRACTOR shall cold patch all trench excavations in traveled areas including roads, driveways, sidewalks, and parking areas.
20. The CONTRACTOR shall not restrict access for school buses or any emergency vehicles.
21. The use of existing fire hydrants for any reason is prohibited without prior approval of the Erie County Water Authority. This includes newly installed fire hydrants that have been placed into service.
22. The CONTRACTOR shall submit procedures for testing and disinfection of the watermain to the ENGINEER for review prior to the start of testing.
23. The CONTRACTOR shall be present and assist in the Final Walk inspection. The CONTRACTOR shall provide sufficient personnel and equipment to demonstrate to the ENGINEER that all valves, fire hydrants, and curb stops operate as required.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD30_GENERAL_NOTES

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GENERAL NOTES	DWG. NO. SD30	
		DATE 3/05	REVISED 7/17

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REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Water Details & Notes

DRAWING NO.
C-407

Project no.: 21.011

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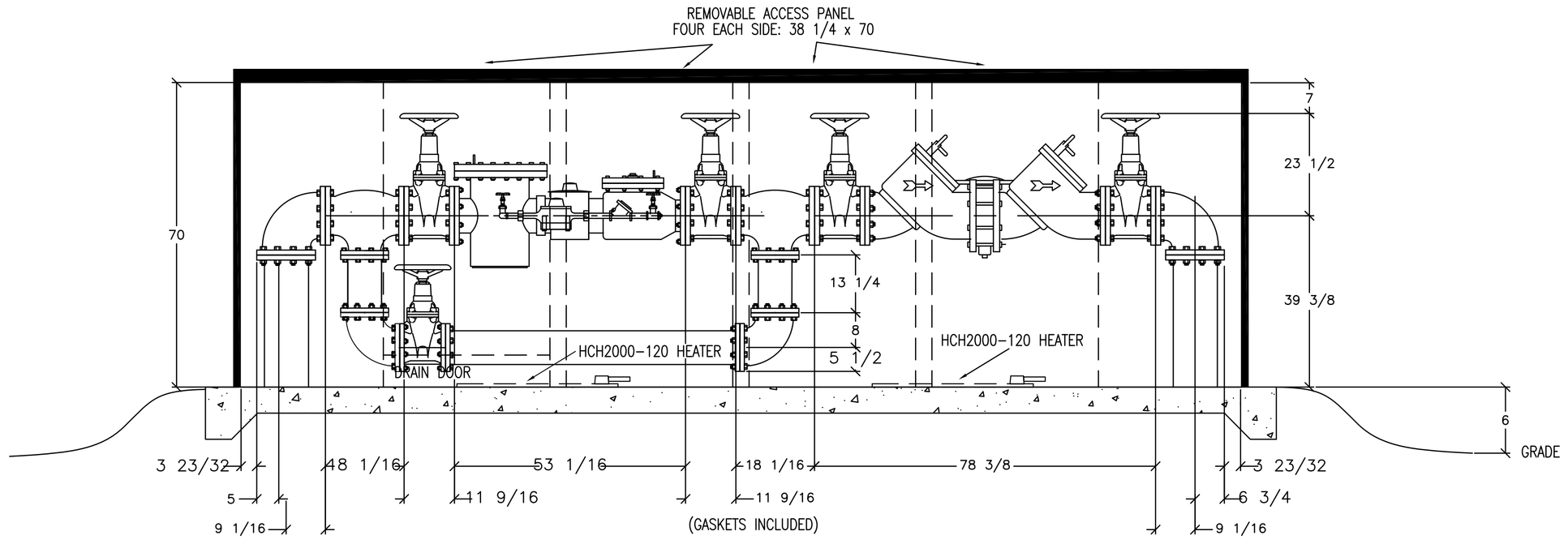

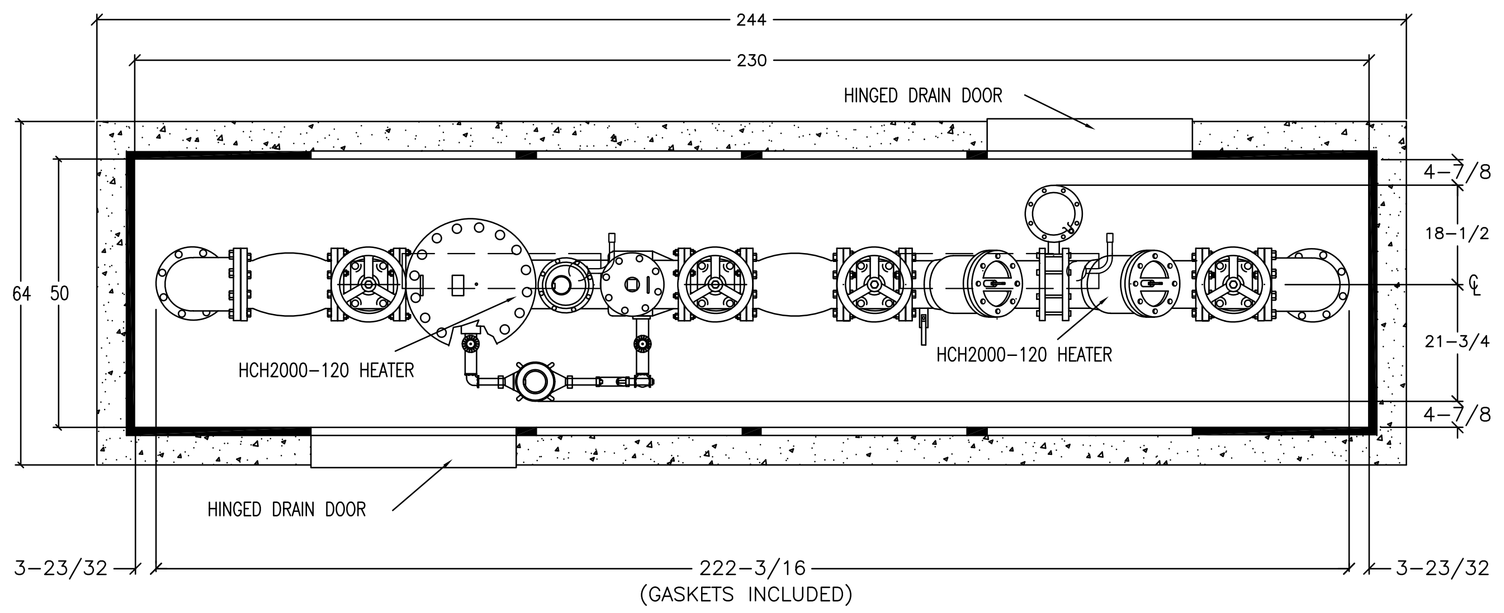

NOTES:

1. BACKFLOW PREVENTER DIMENSIONS FURNISHED BY WATTS
2. ALL DIMENSIONS ARE IN INCHES
3. WALL & INSULATION THICKNESS IS 1 1/2"
4. ROOF & INSULATION THICKNESS IS 3"
5. ENCLOSURE SHOWN IS SAFE-T-COVER MODEL 1000D-ALC00-17
6. EXTERIOR ENCLOSURE DIMENSIONS: 53"W x 233"L x 73" H
7. CONCRETE PAD IS 64"W x 244"L x 6"THK W/W.W.F. 6X6/10X10
8. METER SHOWN: 8" PROTECTUS III, SPOOL PIECE & METER SUPPLIED BY ECWA, VERIFY DIMENSIONS PRIOR TO ORDERING
9. RPZ SHOWN: 8" WATTS 909 NRS
10. CONTRACTOR TO INSTALL ELECTRIC SERVICE TO ENCLOSURE, COORDINATE SOURCE WITH OWNER
11. INSTALL A 120V GFI OUTLET IN THE ENCLOSURE
12. HEATERS TO HAVE THERMOSTAT CONTROL
13. ALL PIPING WITHIN THE ENCLOSURE SHALL BE DUCTILE IRON

LEGEND:

REMOVABLE ACCESS PANEL 38 1/4"W x 70"H w/DRAIN DOOR

REMOVABLE ACCESS PANEL 38 1/4"W x 70"H

8"METER & RPZ INSULATED ENCLOSURE

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Insulated Enclosure Detail

DRAWING NO.
C-408

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

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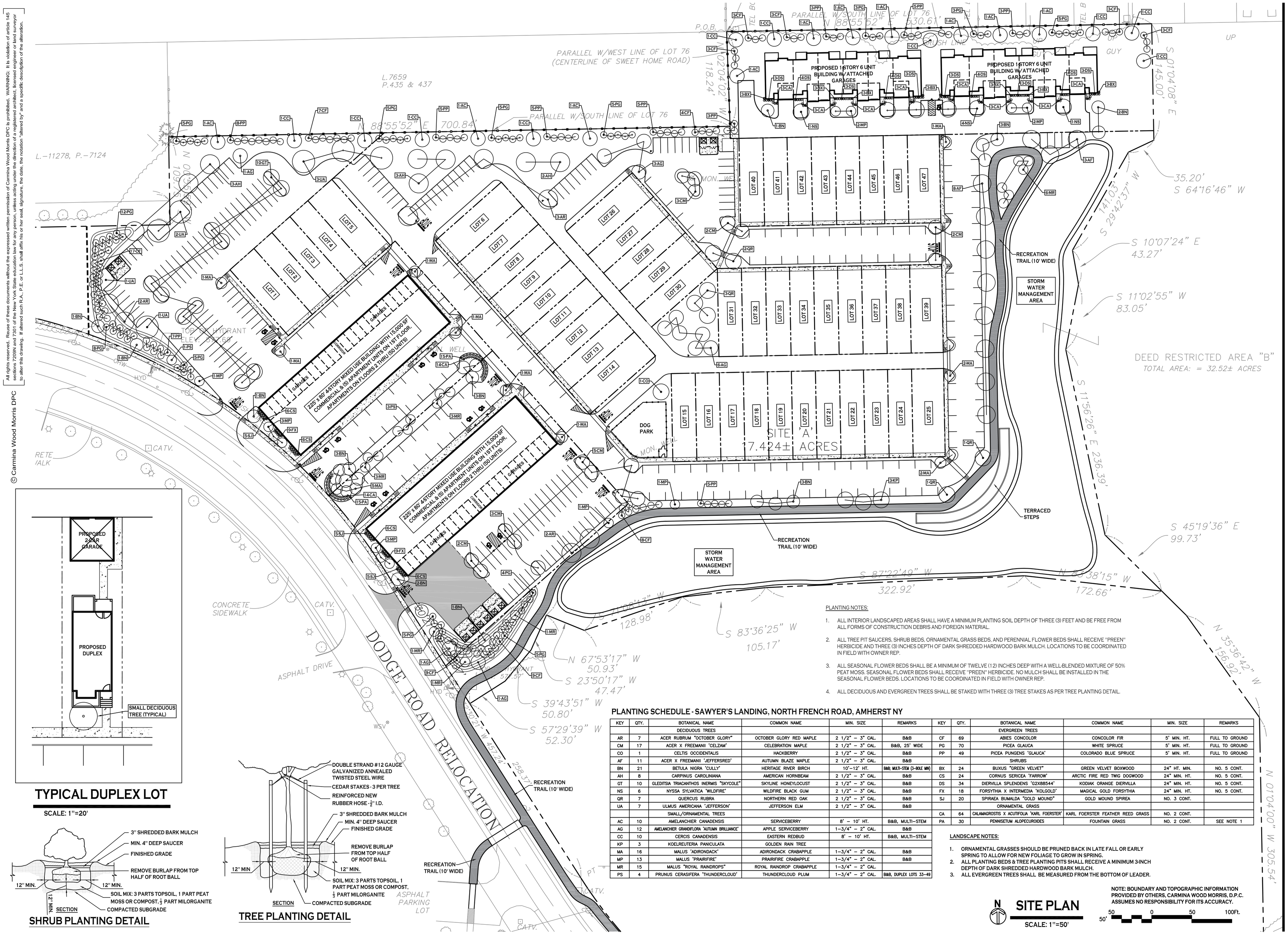

TYPICAL DUPLEX LOT

SCALE: 1"=20'

SHRUB PLANTING DETAIL

TREE PLANTING DETAIL

PLANTING NOTES:

1. ALL INTERIOR LANDSCAPED AREAS SHALL HAVE A MINIMUM PLANTING SOIL DEPTH OF THREE (3) FEET AND BE FREE FROM ALL FORMS OF CONSTRUCTION DEBRIS AND FOREIGN MATERIAL.
2. ALL TREE PIT SAUCERS, SHRUB BEDS, ORNAMENTAL GRASS BEDS, AND PERENNIAL FLOWER BEDS SHALL RECEIVE "PREEN" HERBICIDE AND THREE (3) INCHES DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
3. ALL SEASONAL FLOWER BEDS SHALL BE A MINIMUM OF TWELVE (12) INCHES DEEP WITH A WELL-BLENDED MIXTURE OF 50% PEAT MOSS. SEASONAL FLOWER BEDS SHALL RECEIVE "PREEN" HERBICIDE. NO MULCH SHALL BE INSTALLED IN THE SEASONAL FLOWER BEDS. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
4. ALL DECIDUOUS AND EVERGREEN TREES SHALL BE STAKED WITH THREE (3) TREE STAKES AS PER TREE PLANTING DETAIL.

PLANTING SCHEDULE - SAWYER'S LANDING, NORTH FRENCH ROAD, AMHERST NY

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		DECIDUOUS TREES			
AR	7	ACER RUBRUM "OCTOBER GLORY"	OCTOBER GLORY RED MAPLE	2 1/2" – 3" CAL.	B&B
CM	17	ACER X. FREEMANII "CELZAM"	CELEBRATION MAPLE	2 1/2" – 3" CAL.	B&B, 25' WIDE
CO	1	CELTIS OCCIDENTALIS	HACKBERRY	2 1/2" – 3" CAL.	B&B
AF	11	ACER X FREEMANII "JEFFERSRED"	AUTUMN BLAZE MAPLE	2 1/2" – 3" CAL.	B&B
BN	21	BETULA NIGRA "CULLY"	HERITAGE RIVER BIRCH	10'–12' HT.	B&B; MULTI-STEM (3-BOLE MIN)
AH	8	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2 1/2" – 3" CAL.	B&B
GT	10	GLEDITSIA TRIACANTHOS INERMIS "SKYCOLE"	SKYLINE HONEYLOCUST	2 1/2" – 3" CAL.	B&B
NS	6	NYSSA SYLVATICA "WILDFIRE"	WILDFIRE BLACK GUM	2 1/2" – 3" CAL.	B&B
QR	7	QUERCUS RUBRA	NORTHERN RED OAK	2 1/2" – 3" CAL.	B&B
UA	7	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2 1/2" – 3" CAL.	B&B
		SMALL/ORNAMENTAL TREES			
AC	10	AMELANCHIER CANADENSIS	SERVICEBERRY	8' – 10' HT.	B&B, MULTI-STEM
AG	12	AMELANCHIER GRANDIFLORA 'AUTUMN BRILLIANCE'	APPLE SERVICEBERRY	1–3/4" – 2" CAL.	B&B
CC	10	CERCIS CANADENSIS	EASTERN REDBUD	8' – 10' HT.	B&B, MULTI-STEM
KP	3	KOELREUTERIA PANICULATA	GOLDEN RAIN TREE		
MA	16	MALUS 'ADIRONDACK'	ADIRONDACK CRABAPPLE	1–3/4" – 2" CAL.	B&B
MP	13	MALUS 'PRAIRIFIRE'	PRAIRIFIRE CRABAPPLE	1–3/4" – 2" CAL.	B&B
MR	15	MALUS "ROYAL RAINDROPS"	ROYAL RAINDROP CRABAPPLE	1–3/4" – 2" CAL.	
PS	4	PRUNUS CERASIFERA 'THUNDERCLOUD'	THUNDERCLOUD PLUM	1–3/4" – 2" CAL.	B&B, DUPLEX LOTS 33–49
		EVERGREEN TREES			
CF	69	ABIES CONCOLOR	CONCOLOR FIR	5' MIN. HT.	FULL TO GROUND
PG	70	PICEA GLAUCA	WHITE SPRUCE	5' MIN. HT.	FULL TO GROUND
PP	49	PICEA PUNGENS 'GLAUCA'	COLORADO BLUE SPRUCE	5' MIN. HT.	FULL TO GROUND
		SHRUBS			
BX	24	BUXUS "GREEN VELVET"	GREEN VELVET BOXWOOD	24" HT. MIN.	NO. 5 CONT.
CS	24	CORNUS SERICEA 'FARROW'	ARCTIC FIRE RED TWIG DOGWOOD	24" MIN. HT.	NO. 5 CONT.
DS	34	DIERVILLA SPLENDENS 'G2X88544'	KODIAK ORANGE DIERVILLA	24" MIN. HT.	NO. 5 CONT.
FX	18	FORSYTHIA X INTERMEDIA 'KOLGOLD'	MAGICAL GOLD FORSYTHIA	24" MIN. HT.	NO. 5 CONT.
SJ	20	SPIRAEA BUMALDA "GOLD MOUND"	GOLD MOUND SPIREA	NO. 3 CONT.	
		ORNAMENTAL GRASS			
CA	64	CALAMAGROSTIS X ACUTIFOLIA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	NO. 2 CONT.	
PA	30	PENNISETUM ALOPECUROIDES	FOUNTAIN GRASS	NO. 2 CONT.	SEE NOTE 1

LANDSCAPE NOTES:

1. ORNAMENTAL GRASSES SHOULD BE PRUNED BACK IN LATE FALL OR EARLY SPRING TO ALLOW FOR NEW FOLIAGE TO GROW IN SPRING.
2. ALL PLANTING BEDS & TREE PLANTING PITS SHALL RECEIVE A MINIMUM 3-INCH DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH.
3. ALL EVERGREEN TREES SHALL BE MEASURED FROM THE BOTTOM OF LEADER.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

SITE PLAN

SCALE: 1"=50'

50' 0 50 100Ft.

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/9/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Landscape Plan

DRAWING NO.

L-100

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York
SITE DEVELOPMENT DRAWINGS

AGENCIES

ENGINEERING DEPARTMENT
NAME/TITLE: JEFFERY BURROUGHS, P.E. – TOWN ENGINEER
COMPANY/DEPT: TOWN OF AMHERST ENGINEERING DEPARTMENT
ADDRESS: 1100 NORTH FOREST ROAD
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716–631–7154

PLANNING & ZONING DEPARTMENT
NAME/TITLE: DANIEL HOWARD – PLANNING DIRECTOR
COMPANY/DEPT: TOWN OF AMHERST PLANNING DEPARTMENT
ADDRESS: 5583 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716–631–7051

LAND SURVEYOR
NAME/TITLE: GPI ENGINEERING, LANDSCAPE ARCHITECTURE SURVEYING, LLP
COMPANY/DEPT: 4950 GENESEE STREET, SUITE 100
ADDRESS: BUFFALO, NEW YORK 14225
TELEPHONE 716–633–4844

UTILITIES

NATURAL GAS
COMPANY/DEPT:. NATIONAL FUEL GAS CORP.
ADDRESS: 6363 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716–857–7000

TELEPHONE COMPANY
COMPANY/DEPT: VERIZON
ADDRESS: 65 FRANKLIN STREET
BUFFALO, NEW YORK 14203
TELEPHONE 716–840–8748

CABLE COMPANY
COMPANY/DEPT: TIME WARNER
ADDRESS: 789 CHURCH ROAD
WEST SENECA, NEW YORK
TELEPHONE 716–558–8615

ELECTRIC COMPANY
COMPANY/DEPT: NATIONAL GRID
ADDRESS: 144 KENSINGTON AVENUE
BUFFALO, NEW YORK 14214
TELEPHONE 716–236–2738

WATER
COMPANY/DEPT:. ERIE COUNTY WATER AUTHORITY
ADDRESS: 3030 UNION ROAD
CHEEKTOWAGA, NEW YORK 14227
TELEPHONE 716–684–1510

DIG SAFELY NEW YORK
TELEPHONE 1–800–962–7962

OWNER/DEVELOPER

NAME: Sawyer's Landing LLC
ADDRESS 43 Central Ave Suite #300
Lancaster, NY 14086
TELEPHONE 716 818-0207

ENGINEER

Carmina • Wood • Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
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FEBRUARY 2021

DWG NO.	DRAWING TITLE
–	COVER SHEET
–	TOPOGRAPHIC MAP
–	BOUNDARY SURVEY
C–001	DEMOLITION & EROSION CONTROL PLAN
C–002	DEMOLITION & EROSION CONTROL DETAILS
C–100	OVERALL SITE PLAN
C–101	SITE PLAN
C–102	PARCEL MAP
C–103	SITE DETAILS
C–104	SITE DETAILS
C–200	GRADING PLAN
C–300	STORM DRAINAGE PLAN
C–301	STORM DRAINAGE DETAILS
C–302	STORM DRAINAGE DETAILS
C–303	STORM DRAINAGE DETAILS
C–400	UTILITY PLAN
C–401	SANITARY SEWER DETAILS
C–402	SANITARY SEWER DETAILS
C–403	SANITARY SEWER GENERAL NOTES
C–404	SANITARY SEWER TESTING NOTES
C–405	WATER DETAILS
C–406	WATER DETAILS
C–407	WATER DETAILS & NOTES
C–408	INSULATED ENCLOSURE DETAIL
L–100	LANDSCAPE PLAN

NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE.
● SET OR EX. 5/8" REBAR

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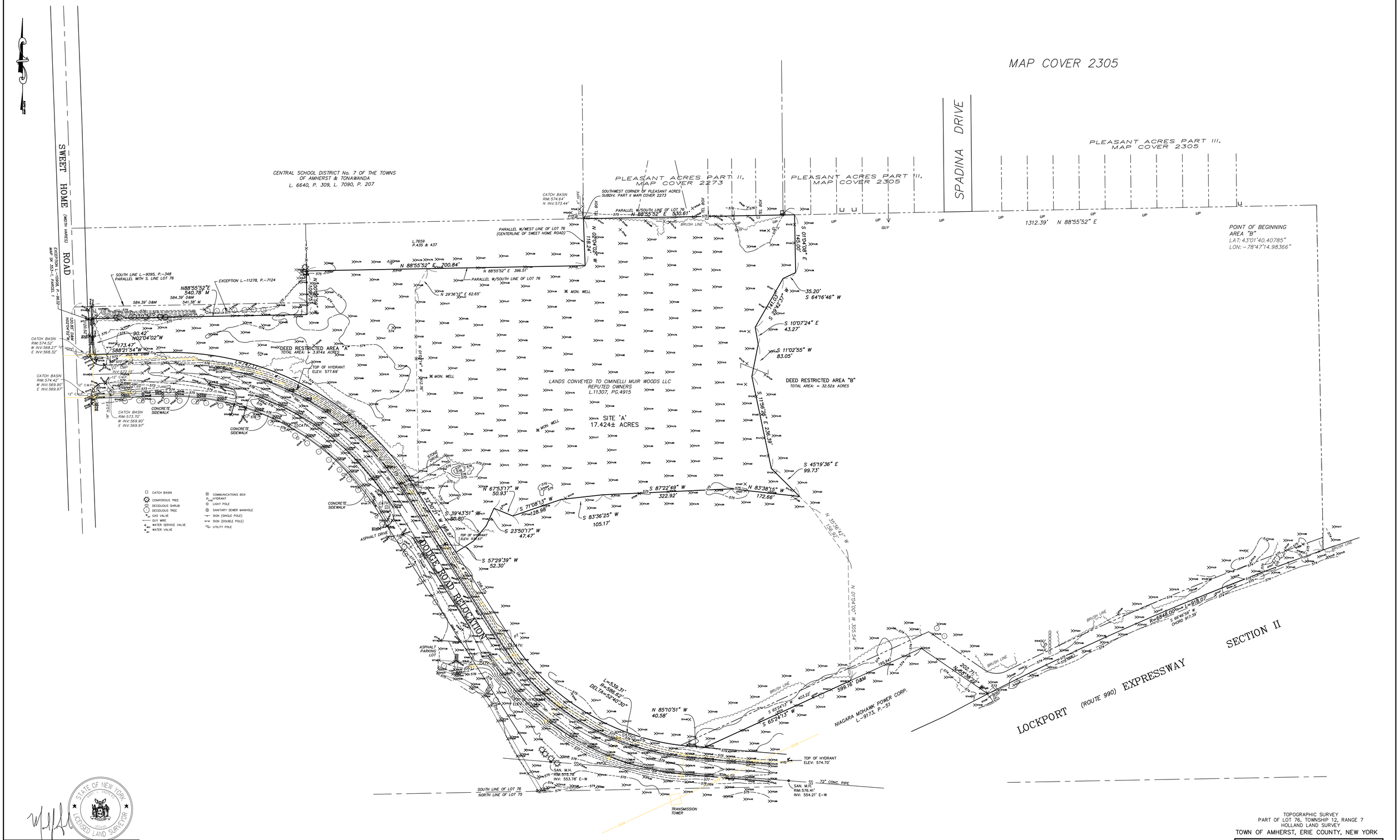

DATE	REVISION/TYPE

TOPOGRAPHIC SURVEY
PART OF LOT 76, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK

GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE
4950 GENESEE STREET, SUITE 100
BUFFALO, NEW YORK 14225
(716) 633-4844 FAX 633-4940

Job No. 2013062-SITE A Date: DECEMBER 22, 2020
Scale: 1" = 100' TAX No. 40.08-3-13.1 (PART OF)

Attachment: SP-2021-05_drawings_061721 (23057 : Sp-2021-05)

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF SECTION 7209 PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

SWEET HOME (WIDTH VARIES) ROAD

CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA
L. 6640, P. 309, L. 7090, P. 207

PLEASANT ACRES PART II, MAP COVER 2273

PLEASANT ACRES PART III, MAP COVER 2305

SOUTHWEST CORNER OF PLEASANT ACRES SUBDIV. PART II MAP COVER 2273

P.O.B.

TEL BOX

UP

GUY

N 88°55'52" E 530.61'
PARALLEL W/SOUTH LINE OF LOT 76

PARALLEL W/WEST LINE OF LOT 76
(CENTERLINE OF SWEET HOME ROAD)

N 02°04'02" W
118.24'

L.7659
P.435 & 437

N 88°55'52" E 700.84'

N 88°55'52" E 396.51'

PARALLEL W/SOUTH LINE OF LOT 76

N 29°36'12" E 62.65'

S 01°04'08" E
145.00'

35.20'
S 64°16'46" W

141.03'
S 29°42'37" W

S 10°07'24" E
43.27'

S 11°02'55" W
83.05'

S 11°56'26" E 236.39'

S 45°19'36" E
98.73'

SOUTH LINE L.-9095, P.-348
PARALLEL WITH S. LINE LOT 76

EXCEPTION L.-11278, P.-7124

584.39' D&M
541.38' M

N88°55'52"E
540.78' M

N 00°55'59" W
109.75'

EXCEPTION L.-10808, P.-9632
MAP SK 353-1, PARCEL 1

120.85' D&M
N02°04'02"W

120.52'

N02°04'02"W
90.42'

173.47'
S88°21'54"W
216.48' D&M

DEED RESTRICTED AREA "A"
TOTAL AREA: = 3.914± ACRES

N 01°03'14" W 512.26'

LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC
REPUTED OWNERS
L.11307, PG.4915

SITE 'A'
17.424± ACRES

DEED RESTRICTED AREA "B"
TOTAL AREA: = 32.52± ACRES

L=747.17
R=724.00

N 32°30'21" W 198.87'

N 67°53'17" W
50.93'

S 39°43'51" W
50.80'

S 71°08'13" W
128.98'

S 83°36'25" W
105.17'

S 87°22'49" W
322.92'

N 83°38'15" W
172.66'

S 23°50'17" W
47.47'

S 57°29'39" W
52.30'

N 32°30'21" W 457.24'

258.37'

DODGE ROAD RELOCATION

PT

L=539.31'
R=586.62'
DELTA=52°40'30"

PC

N 85°10'51" W
40.58'

N 35°36'42" W
136.92'

N 01°04'00" W 305.54'

195.94'

599.16' D&M

S 65°24'13" W 403.22'

S 65°24'13" W

NIAGARA MOHAWK POWER CORP.
L.-9173, P.-51

SOUTH LINE OF LOT 76
NORTH LINE OF LOT 75

STATE OF NEW YORK
MARK J. ANDREWS
050455
LICENSED LAND SURVEYOR

DATE	REVISION/TYPE
12/4/20	REVISE PARCEL BOUNDARY

NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE.
● SET OR EX. 5/8" REBAR

SURVEY OF
PART OF LOT 76, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK

GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
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4950 GENESEE STREET, SUITE 100
BUFFALO, NEW YORK 14225
(716) 633-4844 FAX 633-4940

Job No. 2013062-SITE A Date: JUNE 27, 2019
Scale: 1" = 100' TAX No.

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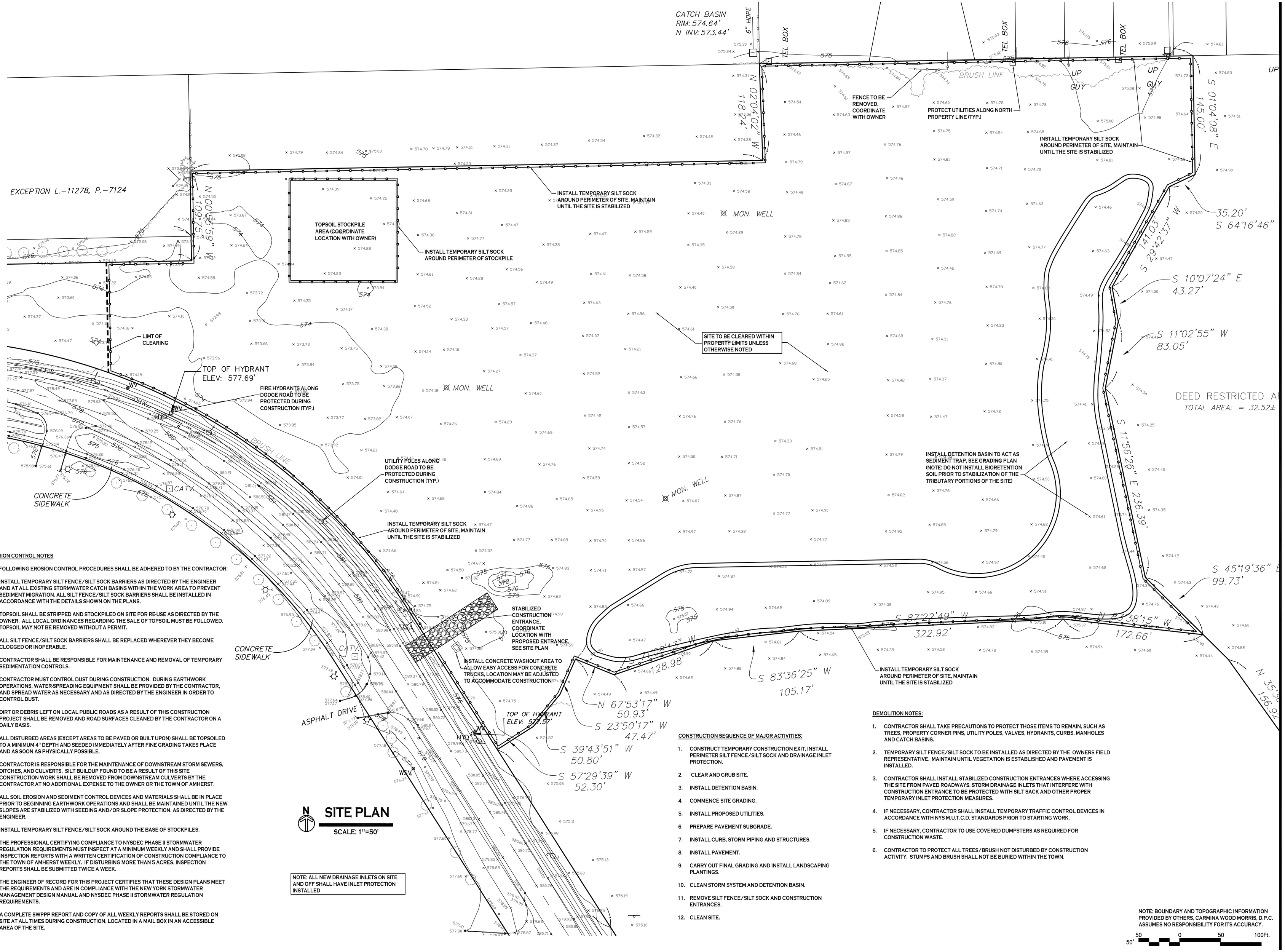

SITE PLAN

SCALE: 1"=50'

NOTE: ALL NEW DRAINAGE INLETS ON SITE AND OFF SHALL HAVE INLET PROTECTION INSTALLED

EROSION CONTROL NOTES

THE FOLLOWING EROSION CONTROL PROCEDURES SHALL BE ADHERED TO BY THE CONTRACTOR:

1. INSTALL TEMPORARY SILT FENCE/SILT SOCK BARRIERS AS DIRECTED BY THE ENGINEER AND AT ALL EXISTING STORMWATER CATCH BASINS WITHIN THE WORK AREA TO PREVENT SEDIMENT MIGRATION. ALL SILT FENCE/SILT SOCK BARRIERS SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS SHOWN ON THE PLANS.
2. TOPSOIL SHALL BE STRIPPED AND STOCKPILED ON SITE FOR RE-USE AS DIRECTED BY THE OWNER. ALL LOCAL ORDINANCES REGARDING THE SALE OF TOPSOIL MUST BE FOLLOWED. TOPSOIL MAY NOT BE REMOVED WITHOUT A PERMIT.
3. ALL SILT FENCE/SILT SOCK BARRIERS SHALL BE REPLACED WHEREVER THEY BECOME CLOGGED OR INOPERABLE.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE AND REMOVAL OF TEMPORARY SEDIMENTATION CONTROLS.
5. CONTRACTOR MUST CONTROL DUST DURING CONSTRUCTION. DURING EARTHWORK OPERATIONS, WATER-SPREADING EQUIPMENT SHALL BE PROVIDED BY THE CONTRACTOR, AND SPREAD WATER AS NECESSARY AND AS DIRECTED BY THE ENGINEER IN ORDER TO CONTROL DUST.
6. DIRT OR DEBRIS LEFT ON LOCAL PUBLIC ROADS AS A RESULT OF THIS CONSTRUCTION PROJECT SHALL BE REMOVED AND ROAD SURFACES CLEANED BY THE CONTRACTOR ON A DAILY BASIS.
7. ALL DISTURBED AREAS (EXCEPT AREAS TO BE PAVED OR BUILT UPON) SHALL BE TOPSOILED TO A MINIMUM 4" DEPTH AND SEEDED IMMEDIATELY AFTER FINE GRADING TAKES PLACE AND AS SOON AS PHYSICALLY POSSIBLE.
8. CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE OF DOWNSTREAM STORM SEWERS, DITCHES, AND CULVERTS. SILT BUILDUP FOUND TO BE A RESULT OF THIS SITE CONSTRUCTION WORK SHALL BE REMOVED FROM DOWNSTREAM CULVERTS BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER OR THE TOWN OF AMHERST.
9. ALL SOIL EROSION AND SEDIMENT CONTROL DEVICES AND MATERIALS SHALL BE IN PLACE PRIOR TO BEGINNING EARTHWORK OPERATIONS AND SHALL BE MAINTAINED UNTIL THE NEW SLOPES ARE STABILIZED WITH SEEDING AND/OR SLOPE PROTECTION, AS DIRECTED BY THE ENGINEER.
10. INSTALL TEMPORARY SILT FENCE/SILT SOCK AROUND THE BASE OF STOCKPILES.
11. THE PROFESSIONAL CERTIFYING COMPLIANCE TO NYSDEC PHASE II STORMWATER REGULATION REQUIREMENTS MUST INSPECT AT A MINIMUM WEEKLY AND SHALL PROVIDE INSPECTION REPORTS WITH A WRITTEN CERTIFICATION OF CONSTRUCTION COMPLIANCE TO THE TOWN OF AMHERST WEEKLY. IF DISTURBING MORE THAN 5 ACRES, INSPECTION REPORTS SHALL BE SUBMITTED TWICE A WEEK.
12. THE ENGINEER OF RECORD FOR THIS PROJECT CERTIFIES THAT THESE DESIGN PLANS MEET THE REQUIREMENTS AND ARE IN COMPLIANCE WITH THE NEW YORK STORMWATER MANAGEMENT DESIGN MANUAL AND NYSDEC PHASE II STORMWATER REGULATION REQUIREMENTS.
13. A COMPLETE SWPPP REPORT AND COPY OF ALL WEEKLY REPORTS SHALL BE STORED ON SITE AT ALL TIMES DURING CONSTRUCTION, LOCATED IN A MAIL BOX IN AN ACCESSIBLE AREA OF THE SITE.

CONSTRUCTION SEQUENCE OF MAJOR ACTIVITIES:

1. CONSTRUCT TEMPORARY CONSTRUCTION EXIT, INSTALL PERIMETER SILT FENCE/SILT SOCK AND DRAINAGE INLET PROTECTION.
2. CLEAR AND GRUB SITE.
3. INSTALL DETENTION BASIN.
4. COMMENCE SITE GRADING.
5. INSTALL PROPOSED UTILITIES.
6. PREPARE PAVEMENT SUBGRADE.
7. INSTALL CURB, STORM PIPING AND STRUCTURES.
8. INSTALL PAVEMENT.
9. CARRY OUT FINAL GRADING AND INSTALL LANDSCAPING PLANTINGS.
10. CLEAN STORM SYSTEM AND DETENTION BASIN.
11. REMOVE SILT FENCE/SILT SOCK AND CONSTRUCTION ENTRANCES.
12. CLEAN SITE.

DEMOLITION NOTES:

1. CONTRACTOR SHALL TAKE PRECAUTIONS TO PROTECT THOSE ITEMS TO REMAIN, SUCH AS TREES, PROPERTY CORNER PINS, UTILITY POLES, VALVES, HYDRANTS, CURBS, MANHOLES AND CATCH BASINS.
2. TEMPORARY SILT FENCE/SILT SOCK TO BE INSTALLED AS DIRECTED BY THE OWNERS FIELD REPRESENTATIVE. MAINTAIN UNTIL VEGETATION IS ESTABLISHED AND PAVEMENT IS INSTALLED.
3. CONTRACTOR SHALL INSTALL STABILIZED CONSTRUCTION ENTRANCES WHERE ACCESSING THE SITE FROM PAVED ROADWAYS. STORM DRAINAGE INLETS THAT INTERFERE WITH CONSTRUCTION ENTRANCE TO BE PROTECTED WITH SILT SACK AND OTHER PROPER TEMPORARY INLET PROTECTION MEASURES.
4. IF NECESSARY, CONTRACTOR SHALL INSTALL TEMPORARY TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH NYS M.U.T.C.D. STANDARDS PRIOR TO STARTING WORK.
5. IF NECESSARY, CONTRACTOR TO USE COVERED DUMPSTERS AS REQUIRED FOR CONSTRUCTION WASTE.
6. CONTRACTOR TO PROTECT ALL TREES/BRUSH NOT DISTURBED BY CONSTRUCTION ACTIVITY. STUMPS AND BRUSH SHALL NOT BE BURIED WITHIN THE TOWN.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Demolition & Erosion Control Plan

DRAWING NO.

C-001

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (2305?: SP-2021-05)

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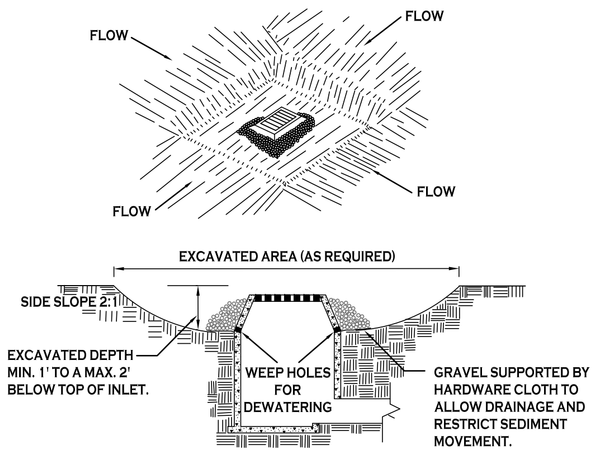


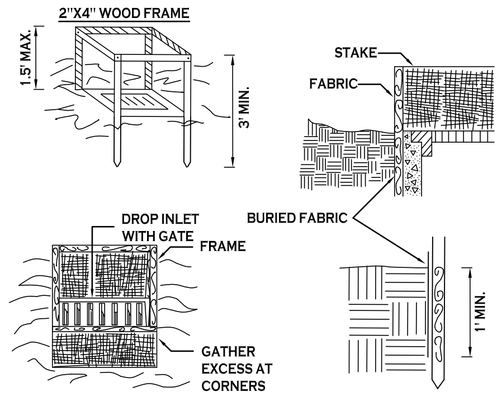
CONSTRUCTION SPECIFICATIONS

1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER EXCAVATION.
2. GRADE APPROACH TO THE INLET UNIFORMLY AROUND THE BASIN.
3. WEEP HOLES SHALL BE PROTECTED BY GRAVEL.
4. UPON STABILIZATION OF CONTRIBUTING DRAINAGE AREA, SEAL WEEP HOLES, FILL BASIN WITH STABLE SOIL TO FINAL GRADE, COMPACT IT PROPERLY AND STABILIZE WITH PERMANENT SEEDING.

MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 1

NOT TO SCALE



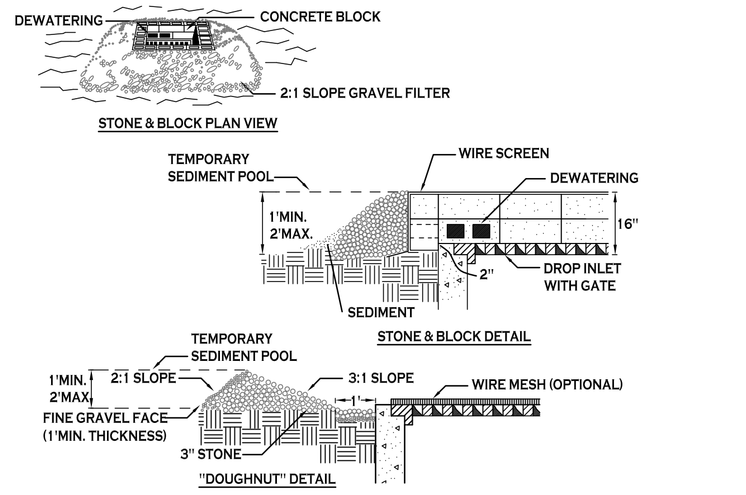
CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2" x 4" WOOD OR EQUIVALENT. METAL WITH A MINIMUM LENGTH OF 3 FEET.
4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2" x 4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.

MAXIMUN DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 2

NOT TO SCALE



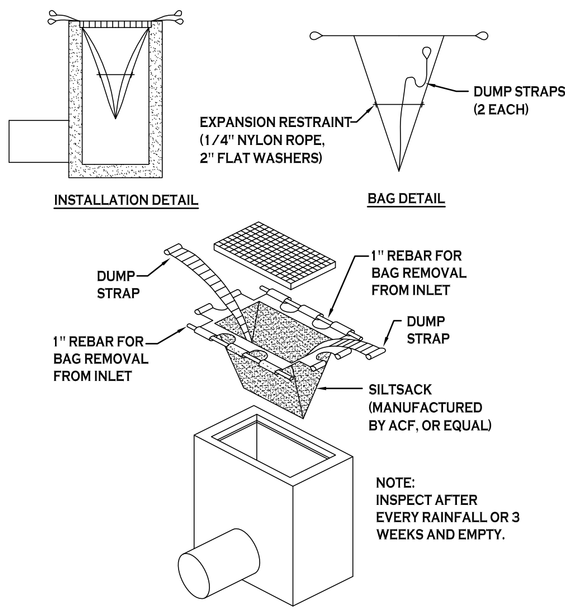
CONSTRUCTION SPECIFICATIONS

1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE FOR DEWATERING. FOUNDATION SHALL BE 2 INCHES MINIMUM BELOW REST OF INLET AND BLOCKS SHALL BE PLACED AGAINST INLET FOR SUPPORT.
2. HARDWARE CLOTH OR 1/2" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.
3. USE CLEAN STONE OR GRAVEL 1/2-3/4 INCH IN DIAMETER PLACED 2 INCHES BELOW TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER.
4. FOR STONE STRUCTURES ONLY, A 1 FOOT THICK LAYER OF THE FILTER STONE WILL BE PLACED AGAINST THE 3 INCH STONE AS SHOWN ON THE DRAWINGS.

MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 3

NOT TO SCALE



SILT SACK DETAIL

NOT TO SCALE

NOTE: INSTALL ONE OF THE INLET PROTECTION OPTIONS SHOWN PRIOR TO CONSTRUCTION

CONSTRUCTION SPECIFICATIONS

1. WOVEN FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
3. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

SILT FENCE DETAIL

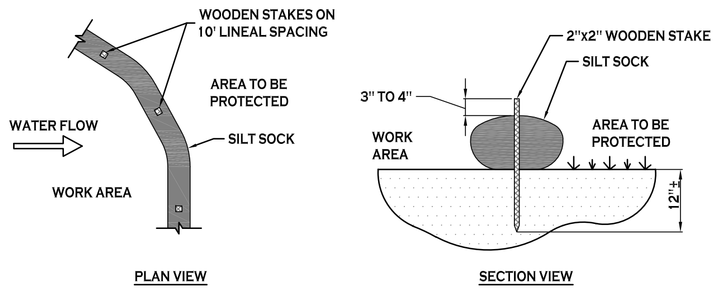
NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

STABILIZED CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE



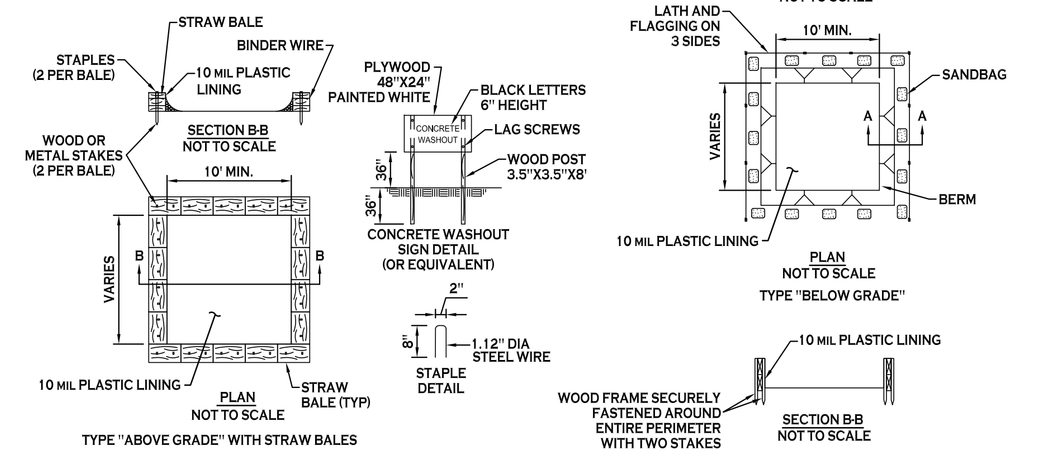
NOTES:

CONTRACTOR SHALL INSPECT AND MAINTAIN SILT SOCK AS NEEDED DURING THE DURATION OF CONSTRUCTION PROJECT.

CONTRACTOR SHALL REMOVE SEDIMENT COLLECTED AT THE BASE OF THE SILT SOCK WHEN IT HAS REACHED ½ OF THE EXPOSED HEIGHT OF THE SILT SOCK. ALTERNATIVELY, RATHER THAN CREATE A SOIL DISTURBING ACTIVITY, THE ENGINEER MAY CALL FOR ADDITIONAL SILT SOCK TO BE ADDED AT AREAS OF HIGH SEDIMENTATION, PLACED IMMEDIATELY ON TOP OF THE EXISTING SEDIMENT LADEN SILT SOCK.

SILT SOCK DETAIL

NOT TO SCALE



NOTES

1. ACTUAL LAYOUT TO BE DETERMINED IN THE FIELD.
2. A CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30' OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
3. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF OR RECYCLED.
4. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE BACKFILLED, REPAIRED, AND STABILIZED TO PREVENT EROSION.

CONCRETE WASHOUT DETAIL

NOT TO SCALE

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Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Demolition & Erosion Control Details

DRAWING NO.

C-002

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

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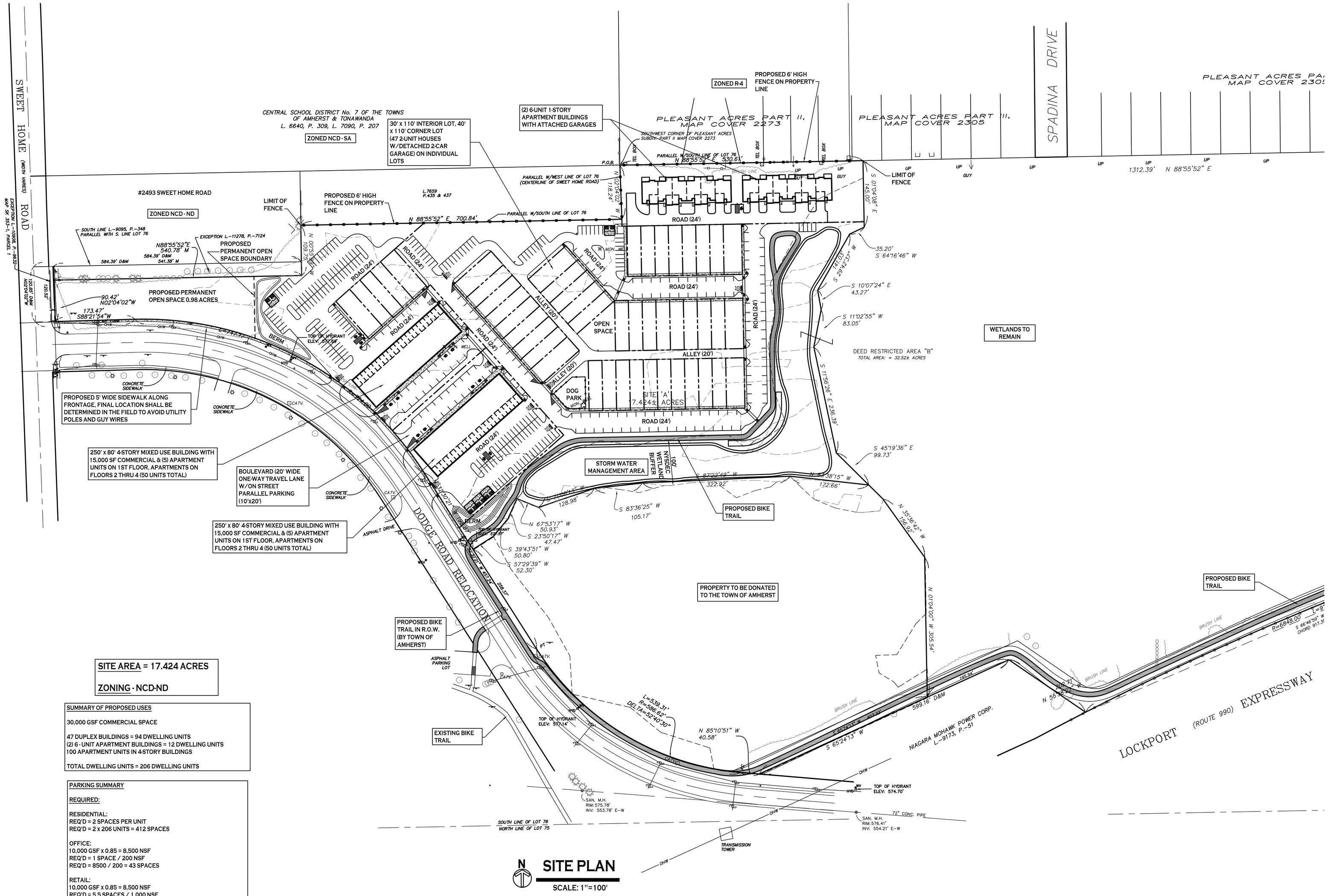

N

SITE PLAN

SCALE: 1"=100'

SITE AREA = 17.424 ACRES

ZONING - NCD-ND

SUMMARY OF PROPOSED USES

30,000 GSF COMMERCIAL SPACE

47 DUPLEX BUILDINGS = 94 DWELLING UNITS
(2) 6 - UNIT APARTMENT BUILDINGS = 12 DWELLING UNITS
100 APARTMENT UNITS IN 4-STORY BUILDINGS

TOTAL DWELLING UNITS = 206 DWELLING UNITS

PARKING SUMMARY

REQUIRED:

RESIDENTIAL:
REQ'D = 2 SPACES PER UNIT
REQ'D = 2 x 206 UNITS = 412 SPACES

OFFICE:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 1 SPACE / 200 NSF
REQ'D = 8500 / 200 = 43 SPACES

RETAIL:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 5.5 SPACES / 1,000 NSF
REQ'D = 8500 / 1000 x 5.5 = 47 SPACES

RESTAURANT:
REQ'D = 1 SPACE / 3 SEATS + 1 SPACE / 100 SF TAKE OUT AREA
REQ'D = 100 SEAT / 3 + 500 SF / 100 = 38 SPACES

TOTAL REQ'D = 540 SPACES

PROVIDED:

158 PARALLEL PARKING SPACES
213 9'x19' SPACES *
40 GARAGE SPACES IN 4-STORY BLDGS
94 GARAGE SPACES IN DETACHED GARAGES
505 TOTAL SPACES

* INCLUDES SPACES IN FRONT OF APARTMENT GARAGES

PERMANENT OPEN SPACE SUMMARY

TOTAL PROPOSED PERMANENT OPEN SPACE = 0.98 ACRES

WETLAND SUMMARY

FEDERAL IMPACTS PROPOSED = 6.089 AC
FEDERAL IMPACTS PREVIOUSLY PROPOSED = 13.01 AC
DECREASE = 6.921 AC (53% DECREASE)

NYSDEC IMPACTS PROPOSED = 1.20 AC
NYSDEC IMPACTS PREVIOUSLY PROPOSED = 9.46 AC
DECREASE = 8.26 AC (87% DECREASE)

NYSDEC BUFFER IMPACT PROPOSED = 3.65 AC
NYSDEC BUFFER IMPACTS PREVIOUSLY PROPOSED = 4.20 AC
DECREASE = 0.55 AC (13% DECREASE)

NOTE: NYSDEC IMPACTS INCLUDES FEDERAL WETLAND IMPACT OVERLAP AREAS

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Overall Site Plan

DRAWING NO.

C-100

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (2305?) : SP-2021-05)

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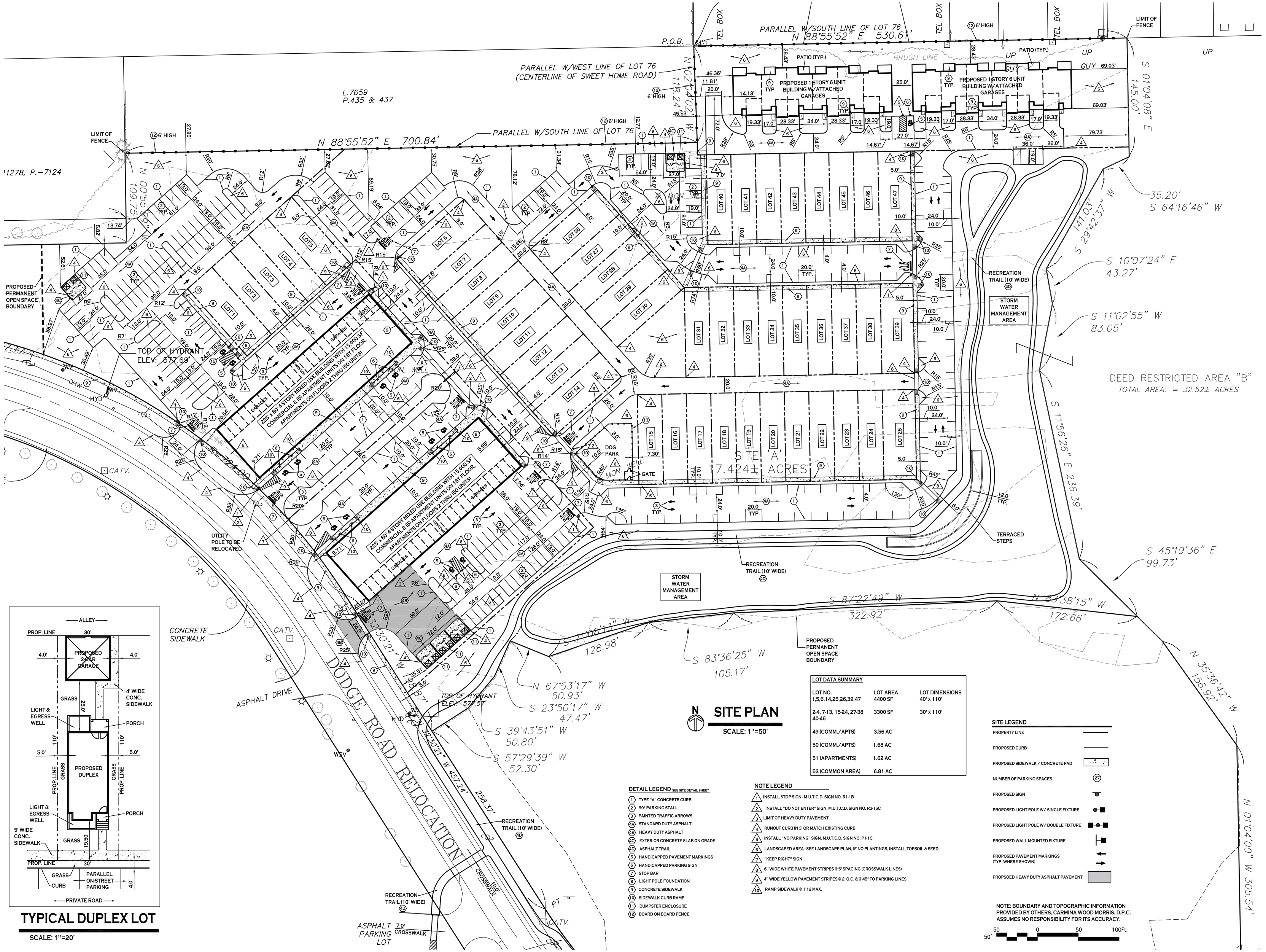

TYPICAL DUPLEX LOT

SCALE: 1"=20'

SITE PLAN

SCALE: 1"=50'

LOT DATA SUMMARY		
LOT NO.	LOT AREA	LOT DIMENSIONS
1,5,6,14,25,26,39,47	4400 SF	40' x 110'
2-4, 7-13, 15-24, 27-38 40-46	3300 SF	30' x 110'
49 (COMM./APTS)	3.56 AC	
50 (COMM./APTS)	1.68 AC	
51 (APARTMENTS)	1.62 AC	
52 (COMMON AREA)	6.81 AC	

DETAIL LEGEND SEE SITE DETAIL SHEET

1. TYPE "A" CONCRETE CURB
2. 90° PARKING STALL
3. PAINTED TRAFFIC ARROWS
4A. STANDARD DUTY ASPHALT
4B. HEAVY DUTY ASPHALT
4C. EXTERIOR CONCRETE SLAB ON GRADE
4D. ASPHALT TRAIL
5. HANDICAPPED PAVEMENT MARKINGS
6. HANDICAPPED PARKING SIGN
7. STOP BAR
8. LIGHT POLE FOUNDATION
9. CONCRETE SIDEWALK
10. SIDEWALK CURB RAMP
11. DUMPSTER ENCLOSURE
12. BOARD ON BOARD FENCE

NOTE LEGEND

1. INSTALL STOP SIGN - M.U.T.C.D. SIGN NO. R1-1 B
2. INSTALL "DO NOT ENTER" SIGN, M.U.T.C.D. SIGN NO. R3-15C
3. LIMIT OF HEAVY DUTY PAVEMENT
4. RUNOUT CURB IN 3' OR MATCH EXISTING CURB
5. INSTALL "NO PARKING" SIGN, M.U.T.C.D. SIGN NO. P1-1C
6. LANDSCAPED AREA - SEE LANDSCAPE PLAN, IF NO PLANTINGS, INSTALL TOPSOIL & SEED
7. "KEEP RIGHT" SIGN
8. 6" WIDE WHITE PAVEMENT STRIPES @ 5' SPACING (CROSSWALK LINES)
9. 4" WIDE YELLOW PAVEMENT STRIPES @ 2' O.C. & @ 45° TO PARKING LINES
10. RAMP SIDEWALK @ 1:12 MAX.

SITE LEGEND

- PROPERTY LINE
- PROPOSED CURB
- PROPOSED SIDEWALK / CONCRETE PAD
- NUMBER OF PARKING SPACES (27)
- PROPOSED SIGN
- PROPOSED LIGHT POLE W/ SINGLE FIXTURE
- PROPOSED LIGHT POLE W/ DOUBLE FIXTURE
- PROPOSED WALL MOUNTED FIXTURE
- PROPOSED PAVEMENT MARKINGS (TYP. WHERE SHOWN)
- PROPSOED HEAVY DUTY ASPHALT PAVEMENT

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Site Plan

DRAWING NO.

C-101

Project no.: 21.011

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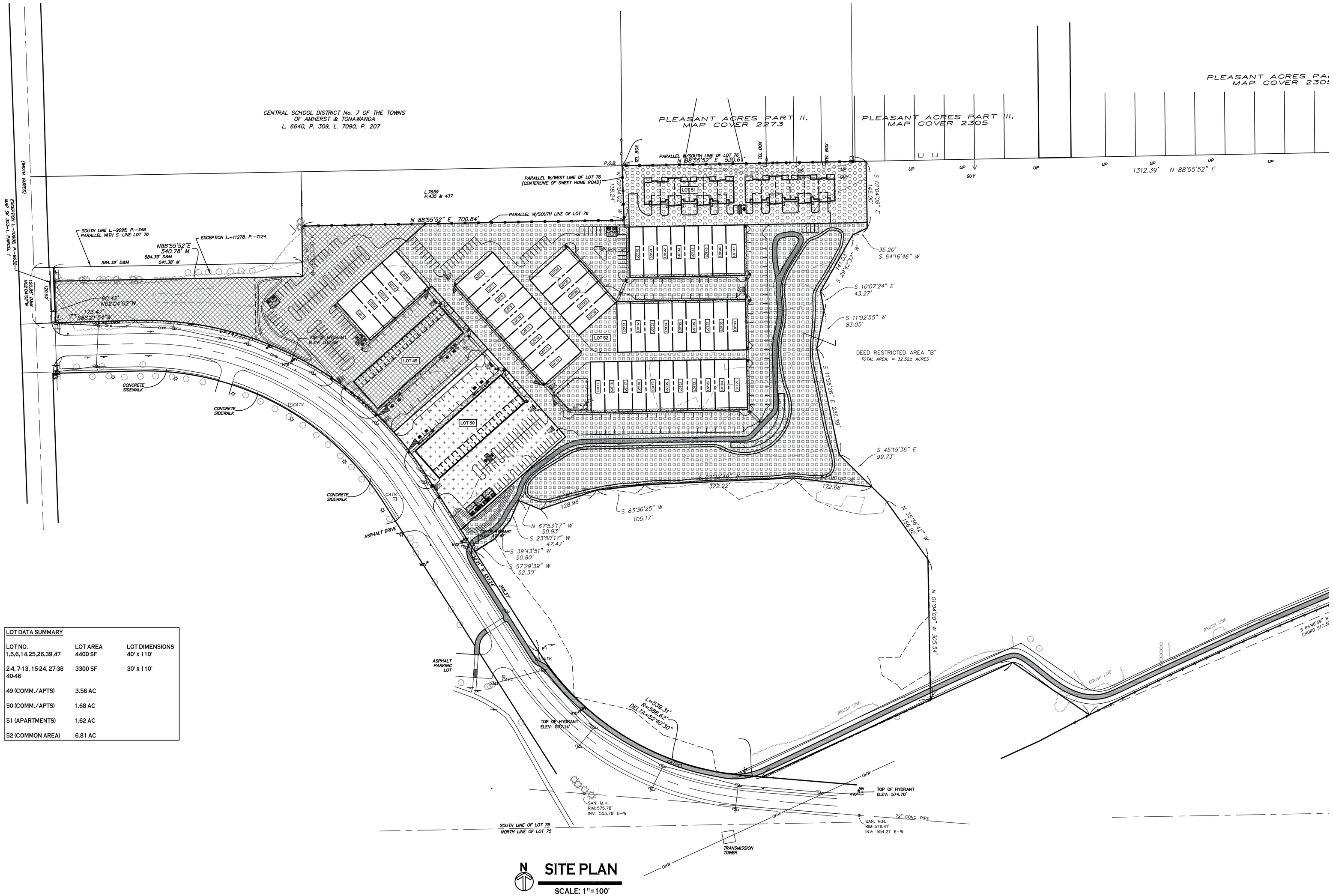

N

SITE PLAN

SCALE: 1"=100'

LOT DATA SUMMARY		
LOT NO.	LOT AREA	LOT DIMENSIONS
1,5,6,14,25,26,39,47	4400 SF	40' x 110'
2-4, 7-13, 15-24, 27-38 40-46	3300 SF	30' x 110'
49 (COMM./APTS)	3.56 AC	
50 (COMM./APTS)	1.68 AC	
51 (APARTMENTS)	1.62 AC	
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100' 100 0 100 200Ft.

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Parcel Map

DRAWING NO.

C-102

Project no.: 21.011

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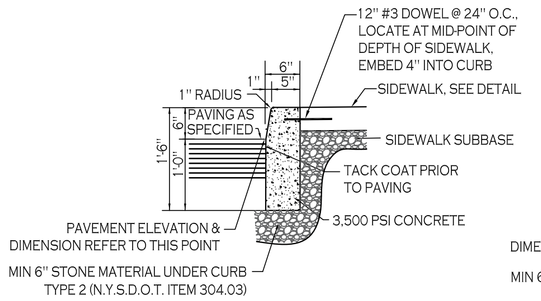
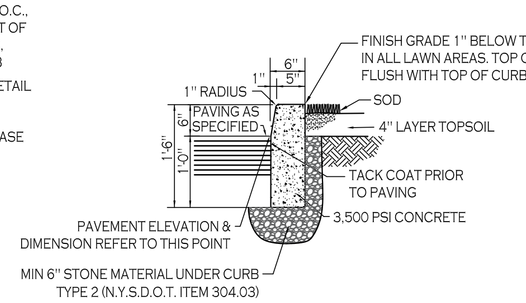


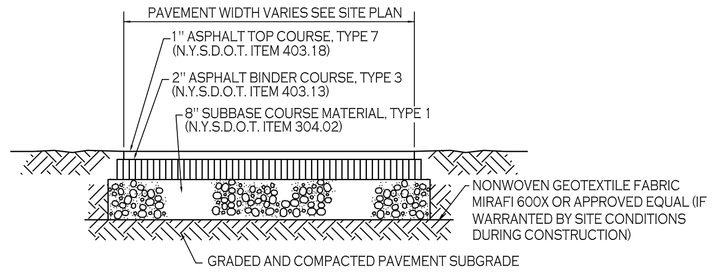
ABUTTING SIDEWALK



ABUTTING LANDSCAPE/GRASS

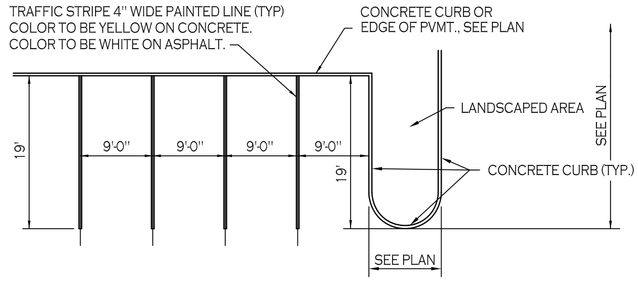
NOTES:
1. CONTROL JOINTS TO BE 2" DEEP AT 15'-0" O.C. - SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
2. WHERE THE CURB DROPS (IS FLUSH WITH ASPHALT) THE DEPTH OF CURB BELOW GRADE SHALL BE INCREASED TO 1'-6" AND OTHER DIMENSIONS ADJUSTED ACCORDINGLY.

TYPE "A" CONCRETE CURB - 1

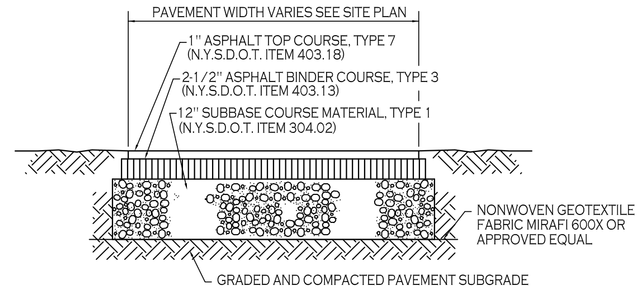


NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 401-3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304-3.

STANDARD DUTY ASPHALT SECTION - 4A

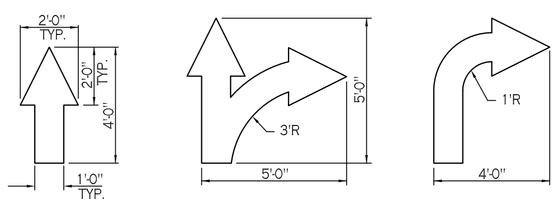


90° PARKING STALL LAYOUT - 2

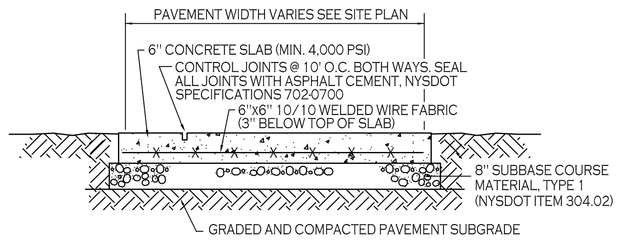


NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 401-3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304-3.

HEAVY DUTY ASPHALT SECTION - 4B

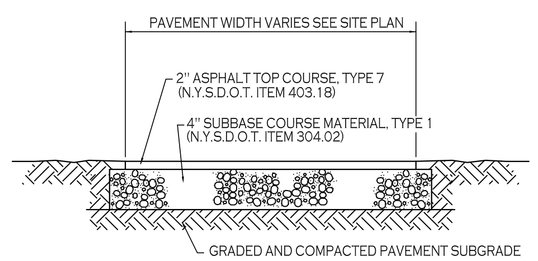


PAINTED TRAFFIC ARROWS - 3



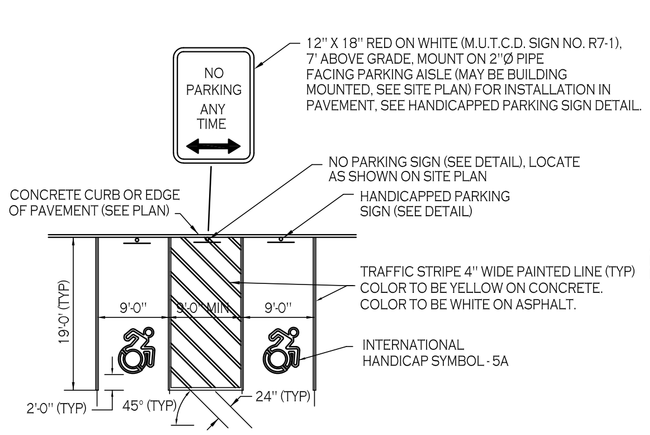
NOTE: CONCRETE PAVEMENT MATERIAL SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 501 AND CONSTRUCTION METHODS SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 502-3.

EXTERIOR CONCRETE SLAB-ON-GRADE SECTION - 4C

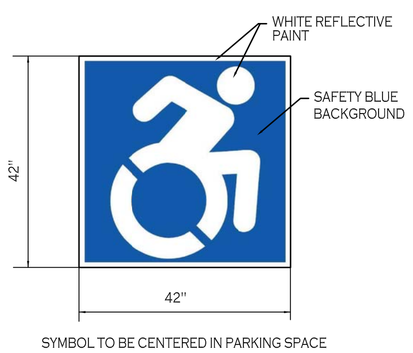


NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 401-3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304-3.

ASPHALT TRAIL SECTION - 4D

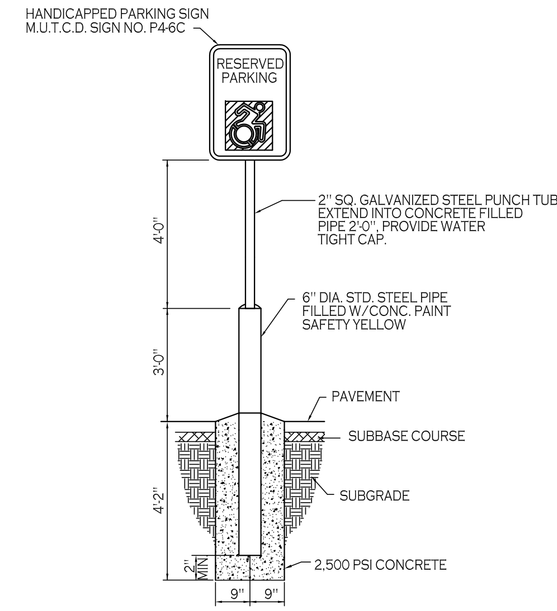


HANDICAPPED PAVEMENT MARKINGS & SIGNAGE - 5



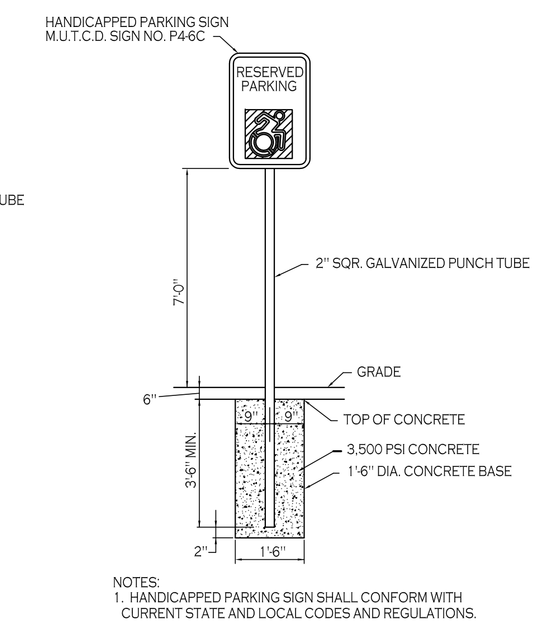
SYMBOL TO BE CENTERED IN PARKING SPACE

INTERNATIONAL HANDICAP SYMBOL - 5A



HANDICAPPED PARKING SIGN - 6

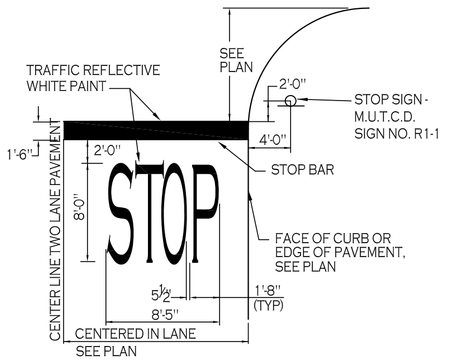
INSTALLED IN PAVEMENT



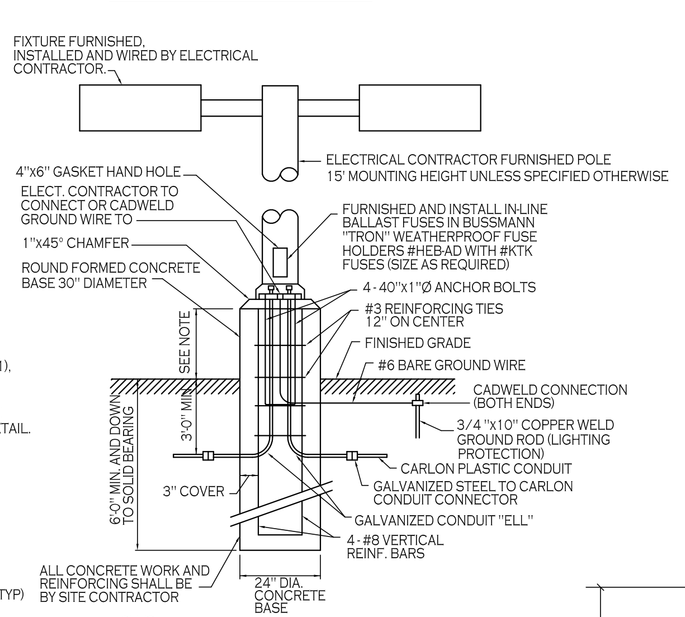
NOTES:
1. HANDICAPPED PARKING SIGN SHALL CONFORM WITH CURRENT STATE AND LOCAL CODES AND REGULATIONS.

HANDICAP PARKING SIGNS - 6

INSTALLED IN GRASS/LANDSCAPED AREA



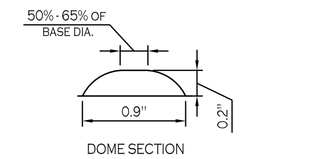
STOP BAR DETAIL - 7



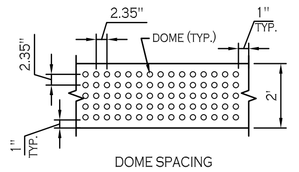
NOTES:
1. FOR LOCATIONS OF FOUNDATIONS SEE SITE PLAN
2. FOR LIGHT FIXTURE ORDERING INFORMATION SEE SITE LIGHTING PLAN
3. LIGHT POLE BASE EXPOSURE ABOVE GRADE SHALL BE:
   IN CURBED ISLANDS: 6" ABOVE TOP OF CURB ELEVATION
   IN PAVEMENT: 3" ABOVE GRADE
   IN NONCURBED GRASS AREAS: 6" ABOVE GRADE

LIGHT POLE FOUNDATION - 8

USE FOR 15' MOUNTING HEIGHT L.E.D. FIXTURES

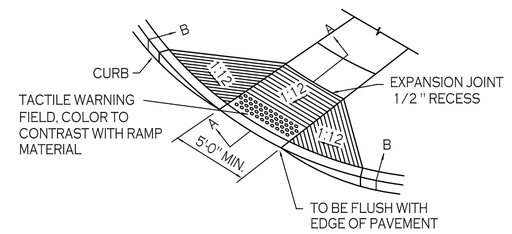


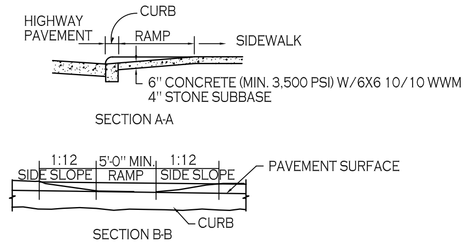
DOME SECTION



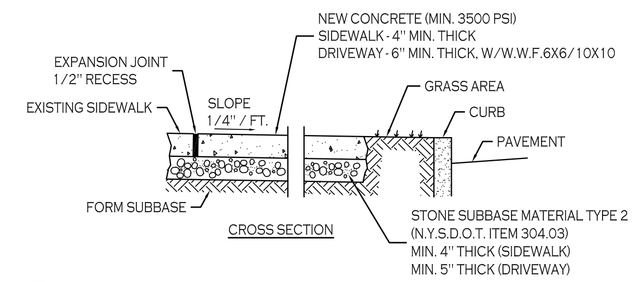
DOME SPACING

NOTE: TACTILE WARNING DEVICES SHALL BE PER ICC/ANSI A117.1-1998, SECTION 705.3.1.2 OR CURRENT UPDATE



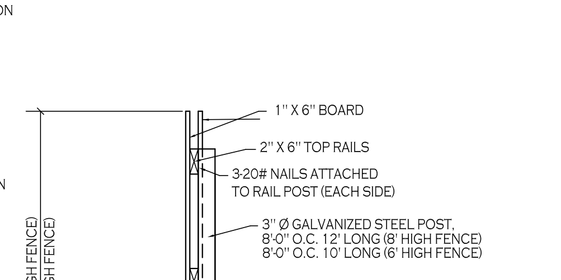


SIDEWALK CURB RAMP - 10



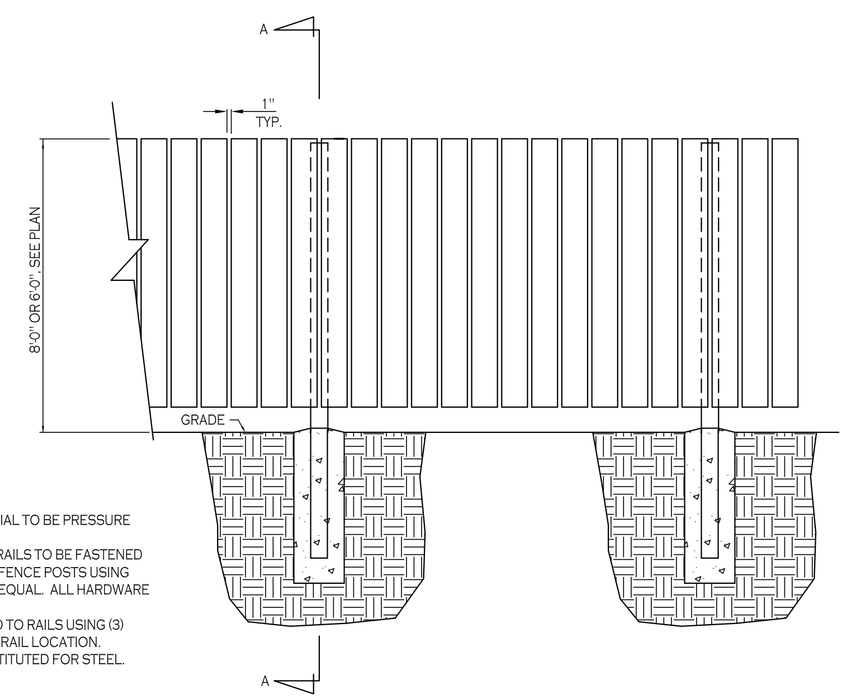
NOTES:
1. CONTROL JOINTS TO BE AT 5'-0" O.C., BOTH WAYS WHERE APPLICABLE. SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
2. CONCRETE SIDEWALK AND DRIVEWAY MATERIAL SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 501 AND CONSTRUCTION METHODS SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 608-3.
3. SUBBASE GRADE SHALL FOLLOW THE PROPOSED GRADE OF THE SIDEWALK AND SLOPE AWAY FROM BUILDING WHERE APPLICABLE, PROVIDE CONTINUOUS STONE PATH TO CURB UNDERDRAIN WHERE PROVIDED.
4. FULL DEPTH EXPANSION JOINTS SHALL BE INSTALLED EVERY 20' O.C., BOTHWAYS WHERE APPLICABLE. SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
5. SEE CURB DETAIL FOR DOWLING REQUIREMENTS WHERE ABUTTING CURB.
6. INSTALL 6" LONG #3 DOWELS @ 12" O.C. WHERE SIDEWALK ABUTS A BUILDING WALL AT AN ENTRANCE, THICKEN SIDEWALK TO 6" AT BUILDING WALL AND INSTALL DOWEL CENTERED IN THE 6" DEPTH. DOWELS AND THICKENING OF SIDEWALK SHALL EXTEND 18" EITHER SIDE OF ENTRANCE.
7. INSTALL 1/2" PREMOLDED EXPANSION JOINT WITH BACKER ROD & SEALANT WHERE SIDEWALK ABUTS BUILDING OR OTHER STRUCTURE.

CONCRETE SIDEWALK - 9



SECTION A-A

NOTES:
1. ALL WOODEN FENCE MATERIAL TO BE PRESSURE TREATED PINE.
2. CENTER, BOTTOM AND TOP RAILS TO BE FASTENED TO 3" Ø GALVANIZED STEEL FENCE POSTS USING SIMPSON PIPE GRIP TIES OR EQUAL. ALL HARDWARE TO BE GALVANIZED.
3. ATTACH EACH 1" X 6" BOARD TO RAILS USING (3) GALVANIZED NAILS AT EACH RAIL LOCATION.
4. WOOD POSTS CAN BE SUBSTITUTED FOR STEEL.



BOARD ON BOARD FENCE FENCE - 12

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F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Site Details

DRAWING NO.

C-103

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (2305?) : SP-2021-05)

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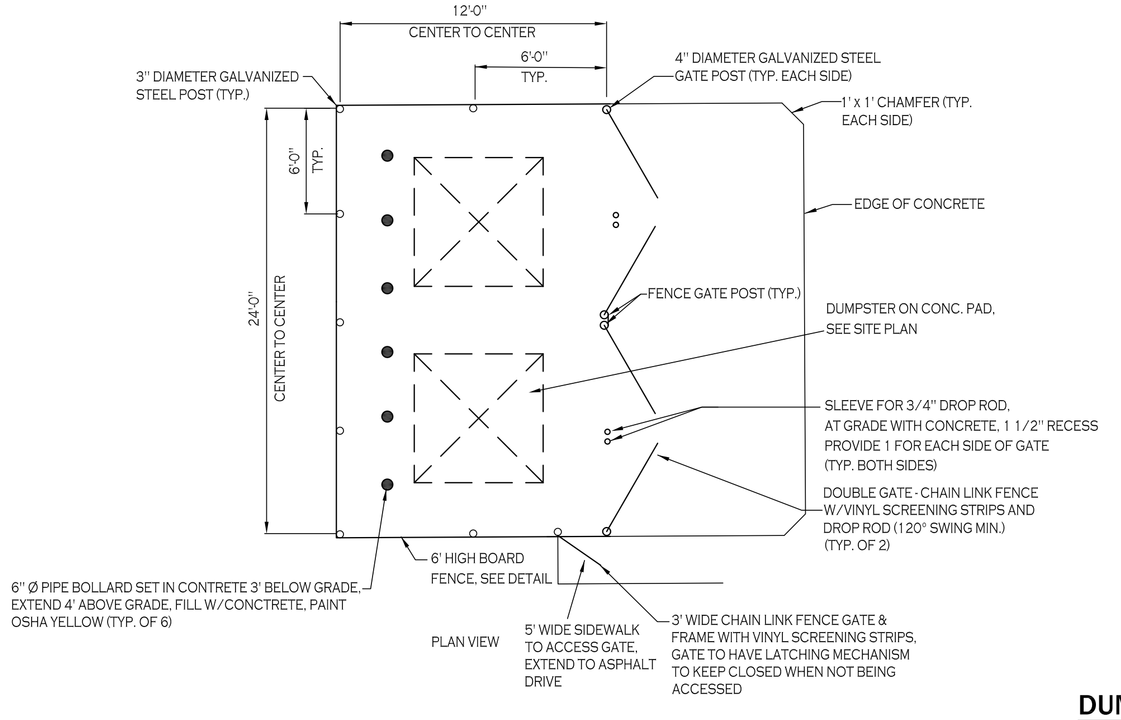
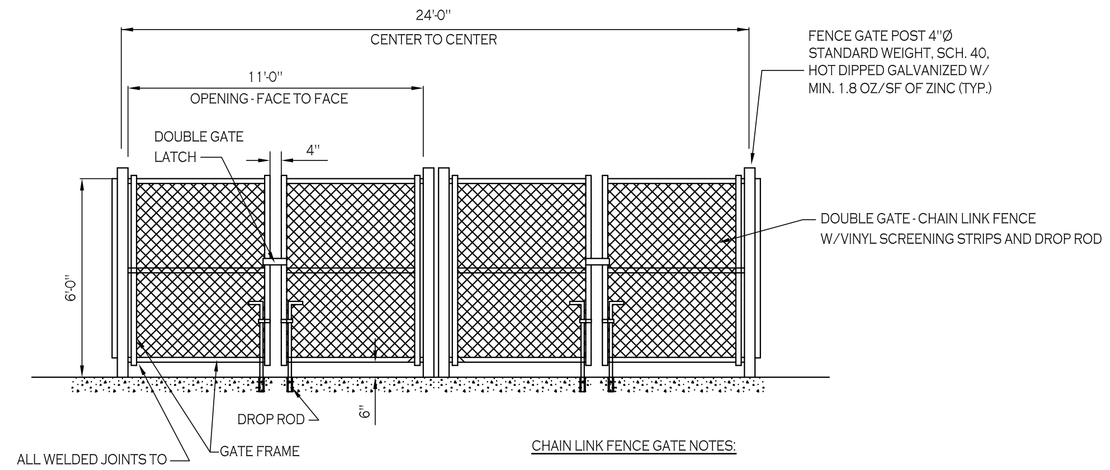
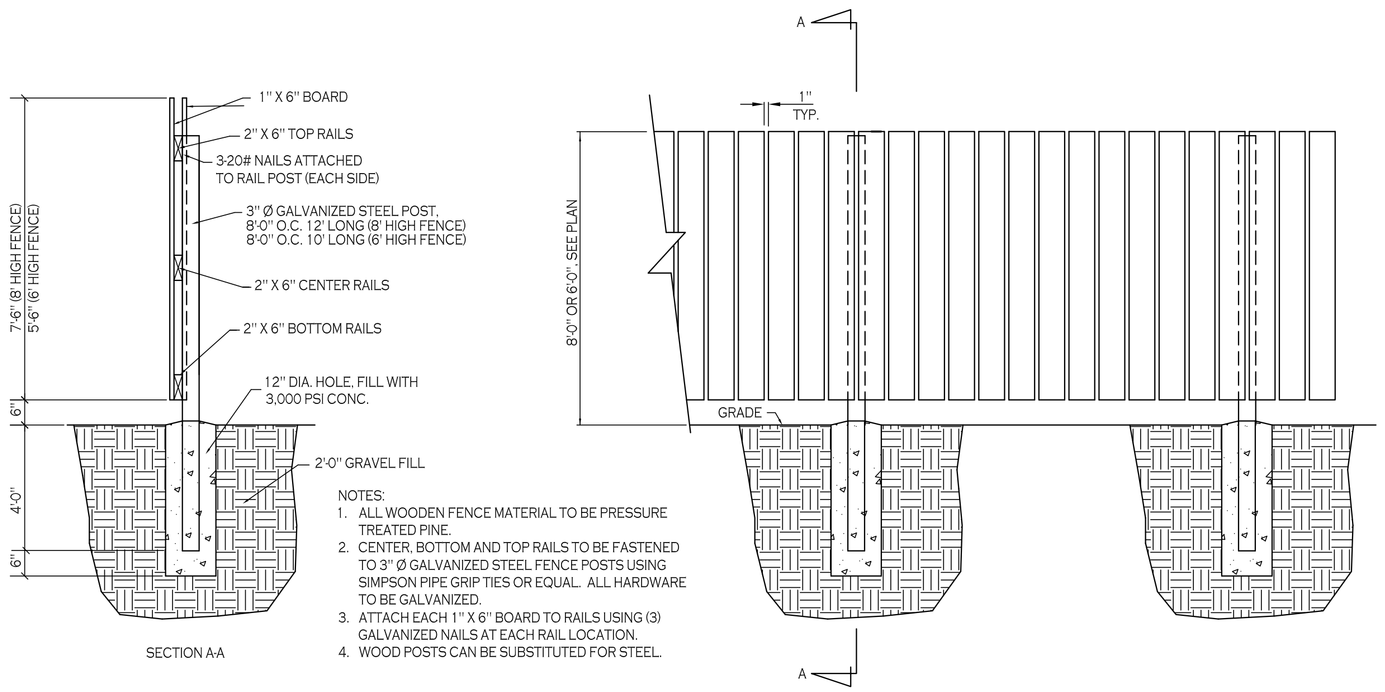




DUMPSTER ENCLOSURE - 11

CHAIN LINK FENCE GATE NOTES:

1. GATE POST FOOTINGS TO BE MIN. 36" DEEP x (4x) POST DIAMETER, EXTEND POST TO WITHIN 6" OF BOTTOM.
2. GATE FRAMES TO BE 2" SQ. GALVANIZED STEEL, WEIGHING 2.60 LB/FT IN ACCORDANCE WITH ASTM F 900.
3. CHAIN LINK FENCE FABRIC SHALL BE 2" MESH, 9 GAUGE, ZINC COATED STEEL CORE WIRE. INSTALL MESH WITH HOOK BOLTS AND TENSION BARS ON ALL 4 SIDES. ATTACH AT 15" MAX.
4. DOUBLE GATE LATCH TO BE FORKED TYPE CAPABLE OF RETAINING GATE IN CLOSED POSITION AND HAVE PROVISION FOR PAD LOCK. LATCH SHALL BE OPERABLE FROM EITHER SIDE OF GATE.
5. ALL HARDWARE TO BE HOT DIPPED GALVANIZED STEEL TO SUIT GATE SIZE.



NOTES:
1. ALL WOODEN FENCE MATERIAL TO BE PRESSURE TREATED PINE.
2. CENTER, BOTTOM AND TOP RAILS TO BE FASTENED TO 3" Ø GALVANIZED STEEL FENCE POSTS USING SIMPSON PIPE GRIP TIES OR EQUAL. ALL HARDWARE TO BE GALVANIZED.
3. ATTACH EACH 1" X 6" BOARD TO RAILS USING (3) GALVANIZED NAILS AT EACH RAIL LOCATION.
4. WOOD POSTS CAN BE SUBSTITUTED FOR STEEL.

BOARD ON BOARD FENCE FENCE - FOR DUMPSTER ENCLOSURE

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Site
Details

DRAWING NO.

C-104

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (2305?: SP-2021-05)

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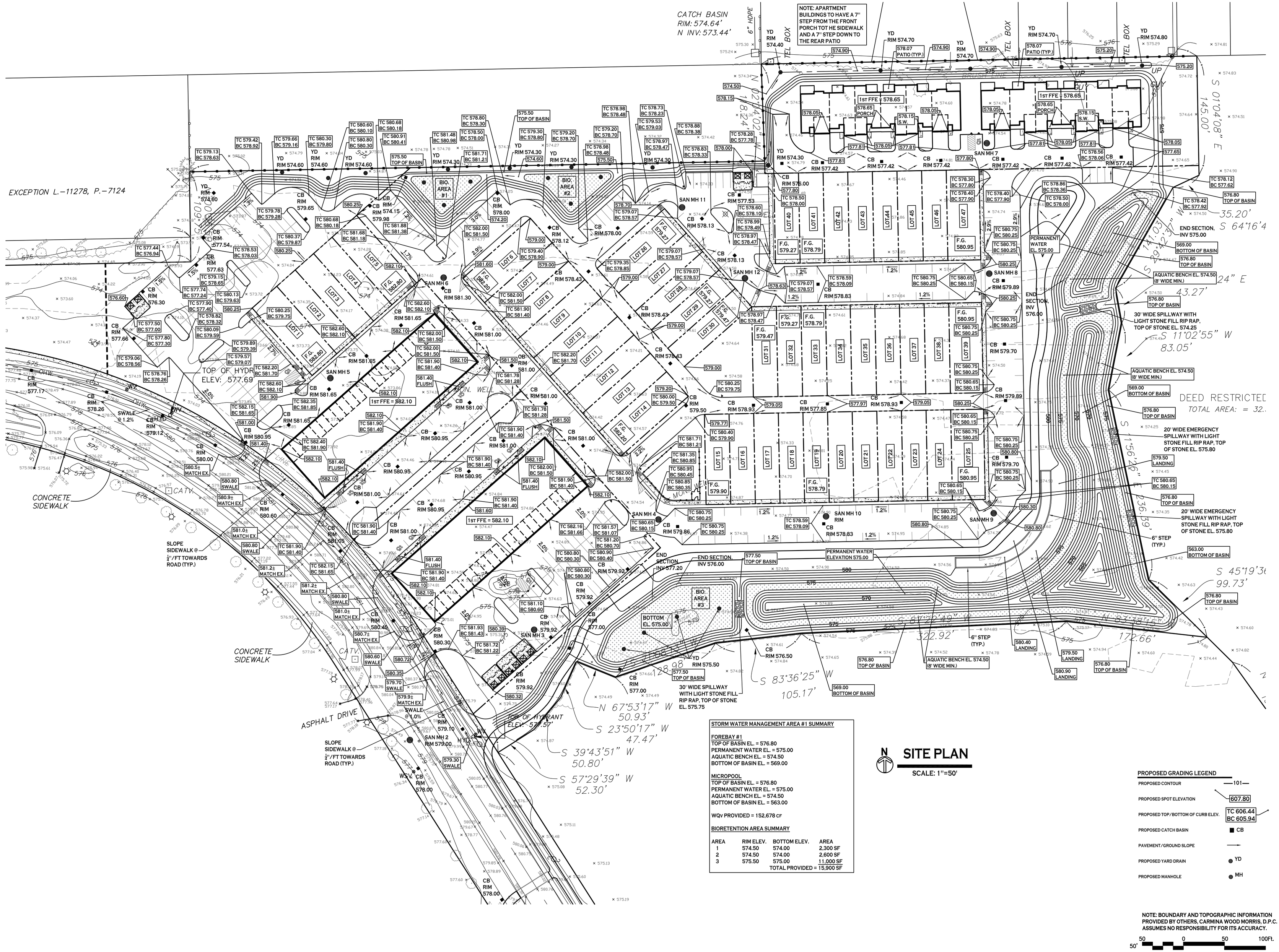

STORM WATER MANAGEMENT AREA #1 SUMMARY

FOREBAY #1
TOP OF BASIN EL. = 576.80
PERMANENT WATER EL. = 575.00
AQUATIC BENCH EL. = 574.50
BOTTOM OF BASIN EL. = 569.00

MICROPOOL
TOP OF BASIN EL. = 576.80
PERMANENT WATER EL. = 575.00
AQUATIC BENCH EL. = 574.50
BOTTOM OF BASIN EL. = 563.00

WQv PROVIDED = 152,678 CF

BIORETENTION AREA SUMMARY

AREA	RIM ELEV.	BOTTOM ELEV.	AREA
1	574.50	574.00	2,300 SF
2	574.50	574.00	2,600 SF
3	575.50	575.00	11,000 SF
		TOTAL PROVIDED =	15,900 SF

SITE PLAN

SCALE: 1"=50'

PROPOSED GRADING LEGEND

PROPOSED CONTOUR	101
PROPOSED SPOT ELEVATION	607.80
PROPOSED TOP/BOTTOM OF CURB ELEV.	TC 606.44 / BC 605.94
PROPOSED CATCH BASIN	CB
PAVEMENT/GROUND SLOPE	
PROPOSED YARD DRAIN	YD
PROPOSED MANHOLE	MH

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50 0 50 100Ft.

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REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Grading Plan

DRAWING NO.
C-200

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

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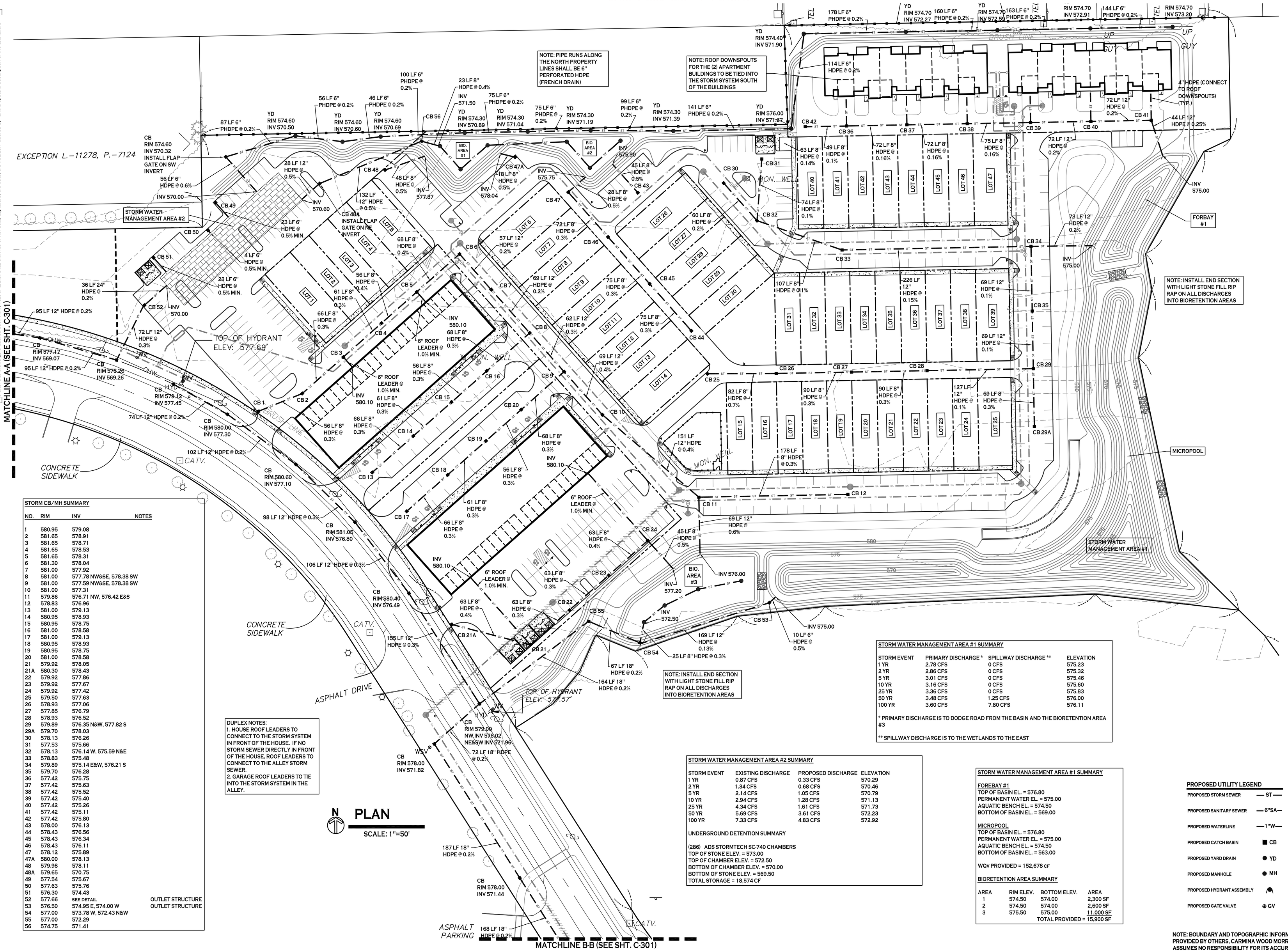

STORM CB/MH SUMMARY

NO.	RIM	INV	NOTES
1	580.95	579.08	
2	581.65	578.91	
3	581.65	578.71	
4	581.65	578.53	
5	581.65	578.31	
6	581.30	578.04	
7	581.00	577.92	
8	581.00	577.78 NW&SE, 578.38 SW	
9	581.00	577.59 NW&SE, 578.38 SW	
10	581.00	577.31	
11	579.86	576.71 NW, 576.42 E&S	
12	578.83	576.96	
13	581.00	579.13	
14	580.95	578.93	
15	580.95	578.75	
16	581.00	578.58	
17	581.00	579.13	
18	580.95	578.93	
19	580.95	578.75	
20	581.00	578.58	
21	579.92	578.05	
21A	580.30	578.43	
22	579.92	577.86	
23	579.92	577.67	
24	579.92	577.42	
25	579.50	577.63	
26	578.93	577.06	
27	577.85	576.79	
28	578.93	576.52	
29	579.89	576.35 N&W, 577.82 S	
29A	579.70	578.03	
30	578.13	576.26	
31	577.53	575.66	
32	578.13	576.14 W, 575.59 N&E	
33	578.83	575.48	
34	579.89	575.14 E&W, 576.21 S	
35	579.70	576.28	
36	577.42	575.75	
37	577.42	575.63	
38	577.42	575.52	
39	577.42	575.40	
40	577.42	575.26	
41	577.42	575.11	
42	577.42	575.80	
43	578.00	576.13	
44	578.43	576.56	
45	578.43	576.34	
46	578.43	576.11	
47	578.12	575.89	
47A	580.00	578.13	
48	579.98	578.11	
48A	579.65	570.75	
49	577.54	575.67	
50	577.63	575.76	
51	576.30	574.43	
52	577.66	SEE DETAIL	OUTLET STRUCTURE
53	576.50	574.95 E, 574.00 W	OUTLET STRUCTURE
54	577.00	573.78 W, 572.43 N&W	
55	577.00	572.29	
56	574.75	571.41	

DUPLEX NOTES:
1. HOUSE ROOF LEADERS TO CONNECT TO THE STORM SYSTEM IN FRONT OF THE HOUSE. IF NO STORM SEWER DIRECTLY IN FRONT OF THE HOUSE, ROOF LEADERS TO CONNECT TO THE ALLEY STORM SEWER.
2. GARAGE ROOF LEADERS TO TIE INTO THE STORM SYSTEM IN THE ALLEY.

N

PLAN

SCALE: 1"=50'

STORM WATER MANAGEMENT AREA #2 SUMMARY

STORM EVENT	EXISTING DISCHARGE	PROPOSED DISCHARGE	ELEVATION
1 YR	0.87 CFS	0.33 CFS	570.29
2 YR	1.34 CFS	0.68 CFS	570.46
5 YR	2.14 CFS	1.05 CFS	570.79
10 YR	2.94 CFS	1.28 CFS	571.13
25 YR	4.34 CFS	1.61 CFS	571.73
50 YR	5.69 CFS	3.61 CFS	572.23
100 YR	7.33 CFS	4.83 CFS	572.92

UNDERGROUND DETENTION SUMMARY

(286) ADS STORMTECH SC-740 CHAMBERS
TOP OF STONE ELEV. = 573.00
TOP OF CHAMBER ELEV. = 572.50
BOTTOM OF CHAMBER ELEV. = 570.00
BOTTOM OF STONE ELEV. = 569.50
TOTAL STORAGE = 18,574 CF

STORM WATER MANAGEMENT AREA #1 SUMMARY

STORM EVENT	PRIMARY DISCHARGE *	SPILLWAY DISCHARGE **	ELEVATION
1 YR	2.78 CFS	0 CFS	575.23
2 YR	2.86 CFS	0 CFS	575.32
5 YR	3.01 CFS	0 CFS	575.46
10 YR	3.16 CFS	0 CFS	575.60
25 YR	3.36 CFS	0 CFS	575.83
50 YR	3.48 CFS	1.25 CFS	576.00
100 YR	3.60 CFS	7.80 CFS	576.11

* PRIMARY DISCHARGE IS TO DODGE ROAD FROM THE BASIN AND THE BIORETENTION AREA #3

** SPILLWAY DISCHARGE IS TO THE WETLANDS TO THE EAST

STORM WATER MANAGEMENT AREA #1 SUMMARY

FOREBAY #1
TOP OF BASIN EL. = 576.80
PERMANENT WATER EL. = 575.00
AQUATIC BENCH EL. = 574.50
BOTTOM OF BASIN EL. = 569.00

MICROPOOL
TOP OF BASIN EL. = 576.80
PERMANENT WATER EL. = 575.00
AQUATIC BENCH EL. = 574.50
BOTTOM OF BASIN EL. = 563.00

WQV PROVIDED = 152,678 CF

BIORETENTION AREA SUMMARY

AREA	RIM ELEV.	BOTTOM ELEV.	AREA
1	574.50	574.00	2,300 SF
2	574.50	574.00	2,600 SF
3	575.50	575.00	11,000 SF
		TOTAL PROVIDED =	15,900 SF

PROPOSED UTILITY LEGEND

- PROPOSED STORM SEWER — ST —
- PROPOSED SANITARY SEWER — 6"SA —
- PROPOSED WATERLINE — 1"W —
- PROPOSED CATCH BASIN ■ CB
- PROPOSED YARD DRAIN ● YD
- PROPOSED MANHOLE ● MH
- PROPOSED HYDRANT ASSEMBLY
- PROPOSED GATE VALVE ⊕ GV

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100FT.

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Storm Drainage Plan

DRAWING NO.

C-300

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

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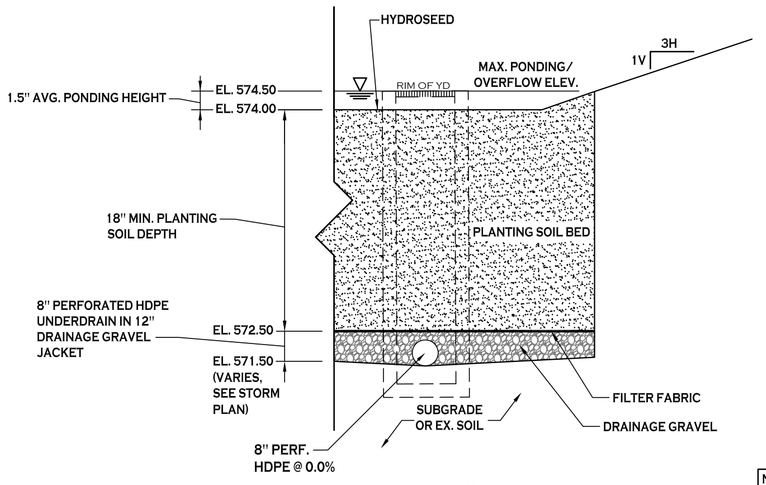
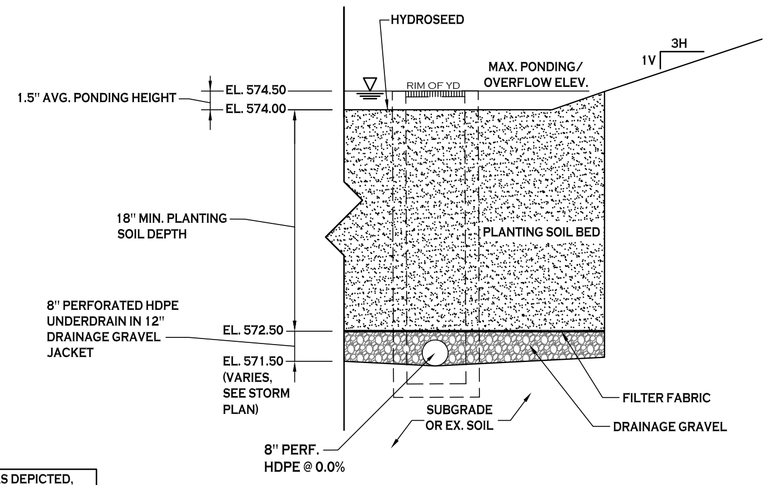
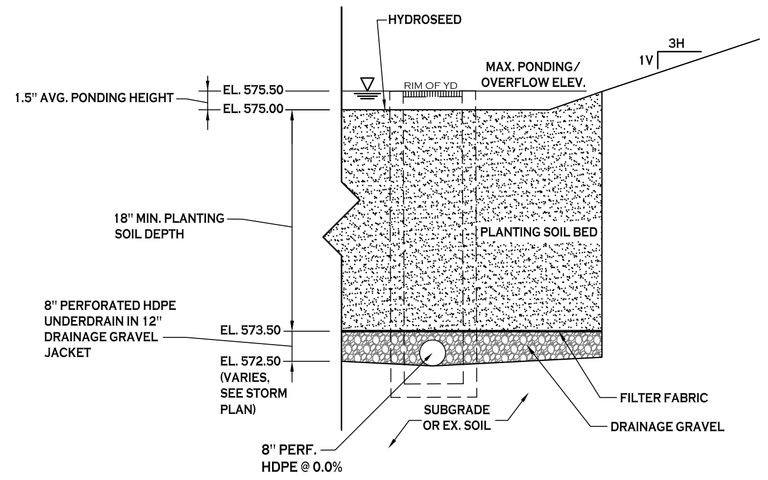


BIORETENTION AREA #1



BIORETENTION AREA #2

NOTE: AS DEPICTED, YARD DRAIN RIM ELEVATIONS ARE TO BE SET 6" ABOVE PROPOSED GRADE IN BIORETENTION AREAS.



BIORETENTION AREA #3

NOTES:
1. FILTER FABRIC TO BE NON-WOVEN CLASS 'C', MIRAFI 180-N OR APPROVED EQUIVALENT
2. MULCH TO BE SHREDDED HARDWOOD, AGED 12 MONTHS MIN.
3. DRAINAGE GRAVEL TO MEET AASHTO M-43. NO.67, SIZE 0.25" TO 0.75"
4. CONTRACTOR TO PROVIDE PLANTING SOIL SUBMITTAL SPECIFICATION FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.

NOTE: PLANTING SOIL SHALL BE LOAM/SAND MIX CONTAINING A MINIMUM OF 35 TO 60% SAND BY VOLUME AND LESS THAN 25% CLAY. SOIL SHOULD FALL WITHIN USCS TYPES SM OR ML WITH PERMEABILITY OF AT LEAST 0.5 FEET PER DAY. SOIL SHOULD BE FREE FROM STONES, STUMPS, ROOTS OR OTHER WOODY MATERIAL OVER 1" IN DIAMETER. PLACEMENT OF THE PLANTING SOIL SHOULD BE IN LIFTS OF 12" TO 18", LOOSELY COMPACTED.

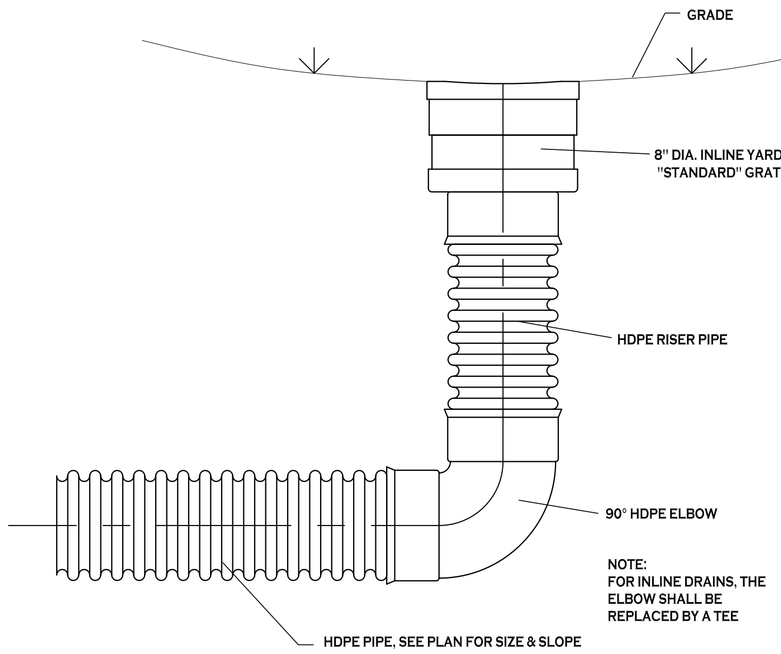
CHARACTERISTICS SHALL BE:
PH RANGE: 5.2 - 7.00
ORGANIC MATTER: 1.5 - 4.0%
MAGNESIUM: 35 LBS PER ACRE MIN.
PHOSPHORUS: 75 LBS PER ACRE MIN.
POTASSIUM: 85 LBS PER ACRE MIN.
SOLUBLE SALTS: 500 PPM
CLAY: 10 TO 25%
SILT: 30 TO 55%
SAND: 35 TO 60%

BIO-RETENTION AREA SEEDING SPEC (NORTHEAST WETLAND GRASS SEED MIX):

SEED MIXTURE	VARIETY	PERCENT BY NO. OF SEEDS
CREEPING BENTGRASS	AGROSTIS STOLONIFERA	63.0
ROUGH BLUEGRASS	POA TRIVIALIS	17.0
MEADOW FOXTAIL	ALOPECURUS ARUNDINACEUS	11.0
ANNUAL RYEGRASS	LOLIUM MULTIFLORUM	4.5
DEERTONGUE	PANICUM CLANDESTINUM	4.5

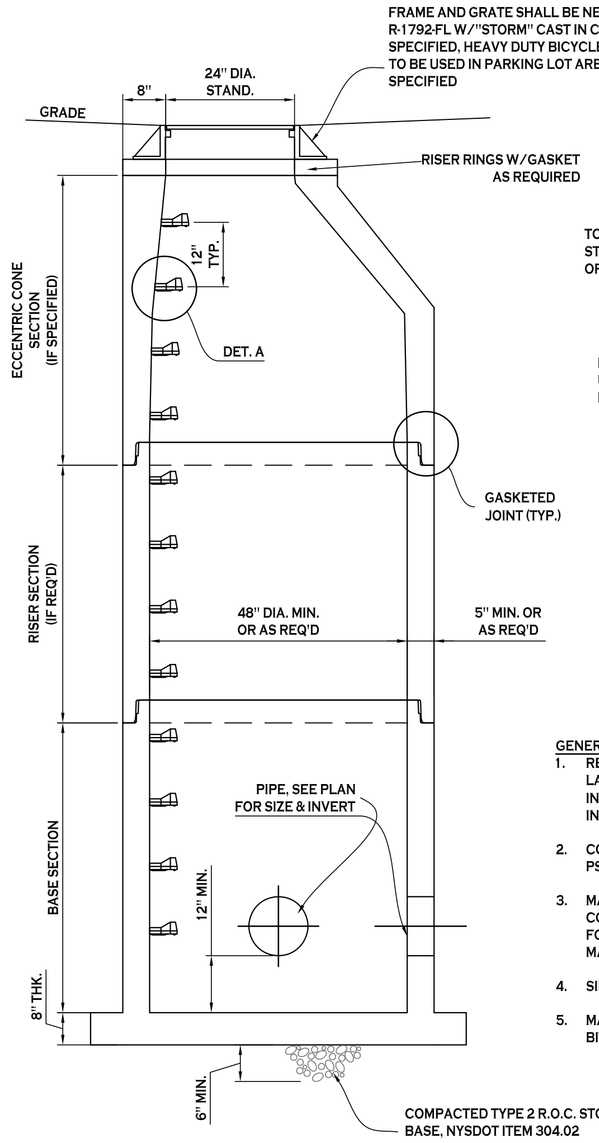
BIORETENTION AREA - TYPICAL SECTIONS

NOT TO SCALE



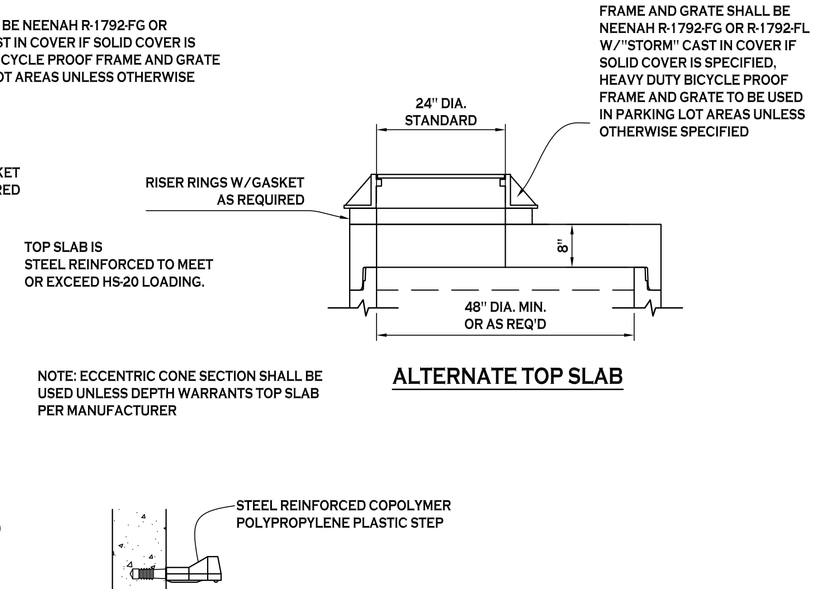
NOTE:
SEE TYPICAL TRENCH SECTION FOR BEDDING REQUIREMENTS

TYPICAL YARD DRAIN DETAIL



TYPICAL STORM MANHOLE DETAIL

NOT TO SCALE

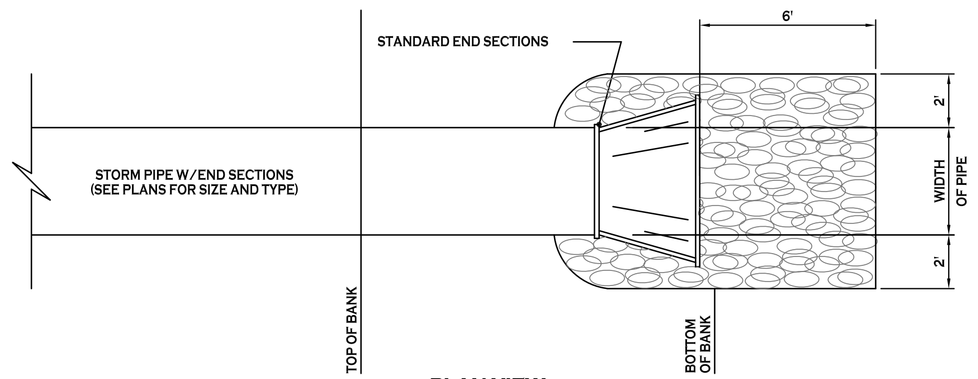


ALTERNATE TOP SLAB

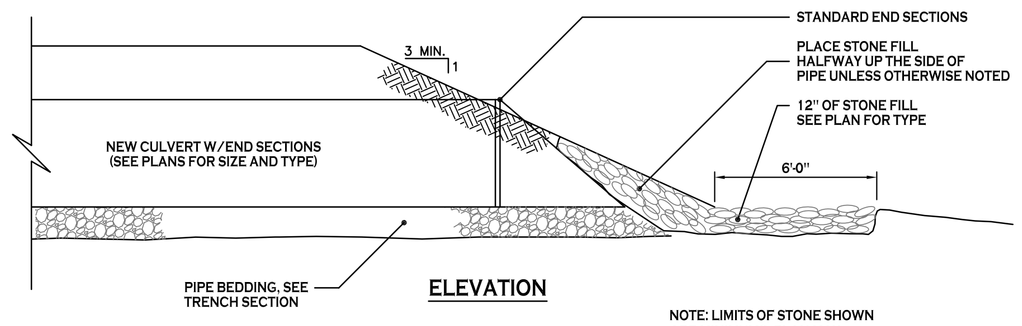
NOTE: ECCENTRIC CONE SECTION SHALL BE USED UNLESS DEPTH WARRANTS TOP SLAB PER MANUFACTURER

DETAIL A

GENERAL NOTES:
1. REINFORCED STEEL TO CONFORM TO LATEST A.S.T.M. A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) IN BASE SLAB.
2. CONCRETE COMPRESSIVE STRENGTH - 4000 PSI MINIMUM.
3. MANHOLE DESIGN SPECIFICATIONS TO CONFORM TO LATEST A.S.T.M. C478 SPEC. FOR PRE-CAST REINFORCED CON-CRETE MANHOLE SECTIONS.
4. SINGLE POUR MONOLITHIC BASE SECTION.
5. MANHOLE TO BE COATED ON OUTSIDE WITH BITUMASTIC SEALER.



PLAN VIEW

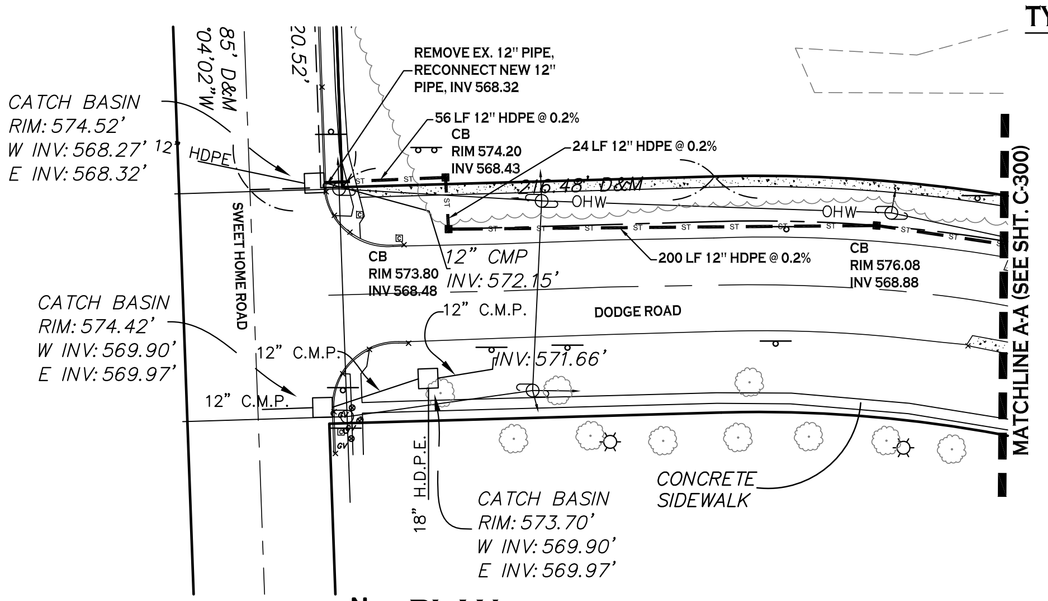


ELEVATION

NOTE: LIMITS OF STONE SHOWN ARE MINIMUMS, PLAN MAY INDICATE GREATER LIMITS

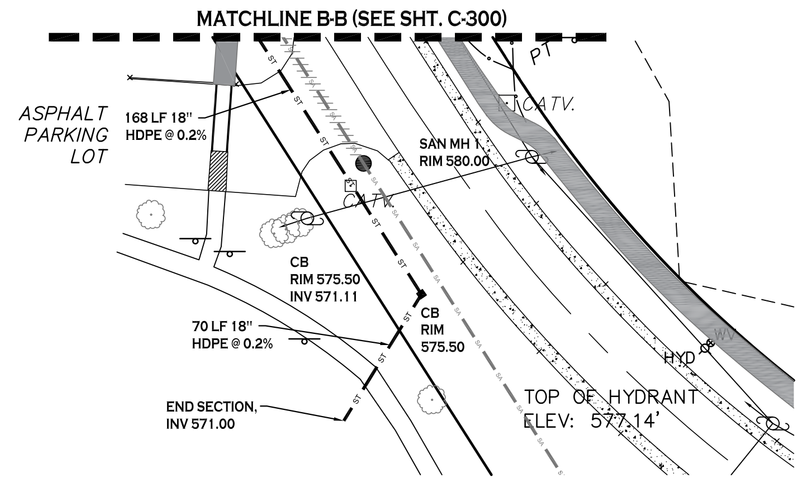
TYPICAL PIPE OUTLET W/ END SECTION & RIP RAP

NOT TO SCALE



PLAN

SCALE: 1"=50'



PLAN

SCALE: 1"=50'

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Storm Drainage Details

DRAWING NO.
C-301

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

1.e

Packet Pg. 1483

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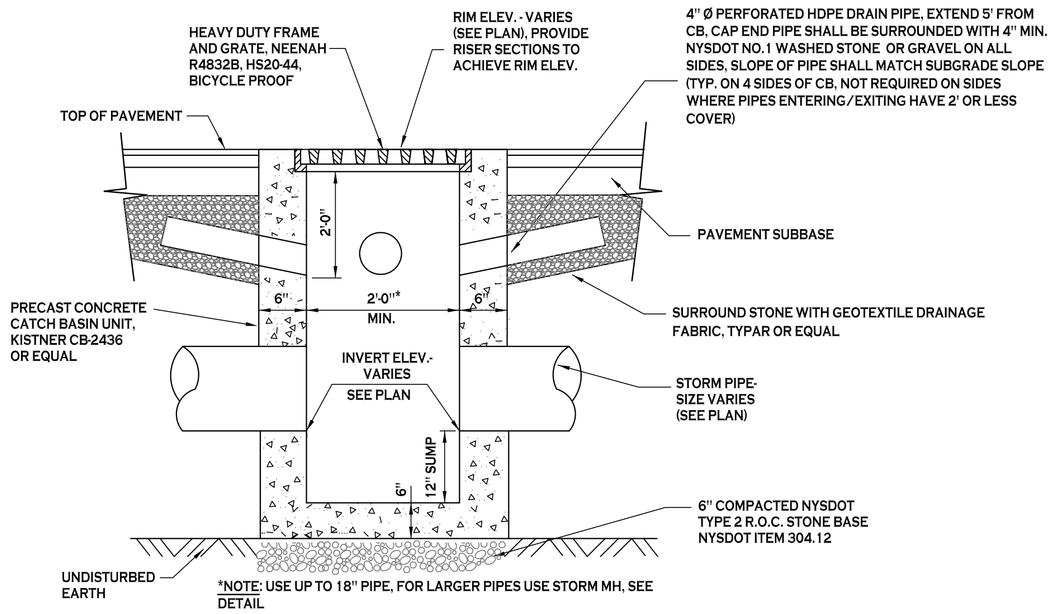
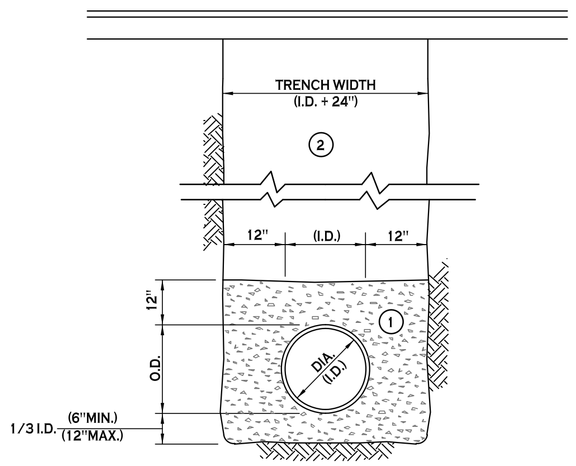


TYPICAL PRECAST CATCH BASIN

NOT TO SCALE



NOTES:

A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.

C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT 1985 EDITION)

(1) NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

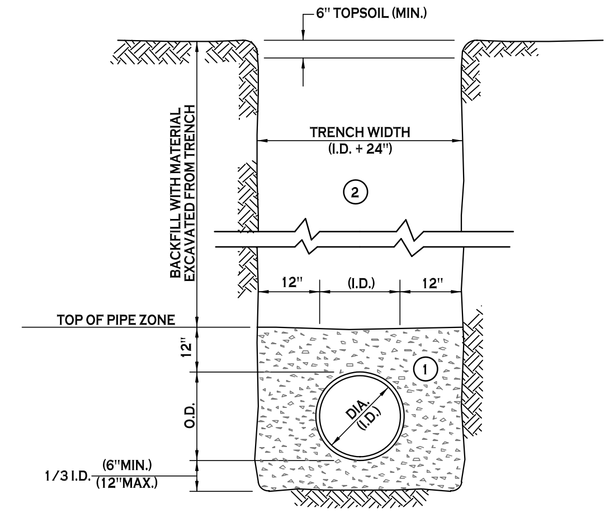
NO SLAG SHALL BE ALLOWED FOR MATERIAL (1)

(2) TYPE 2 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 304-2.02 TYPE 2. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN TWO INCHES AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL (2)

STORM SEWER TRENCH SECTION IN PAVED AREAS

NOT TO SCALE



NOTES:

A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.

C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT 1985 EDITION)

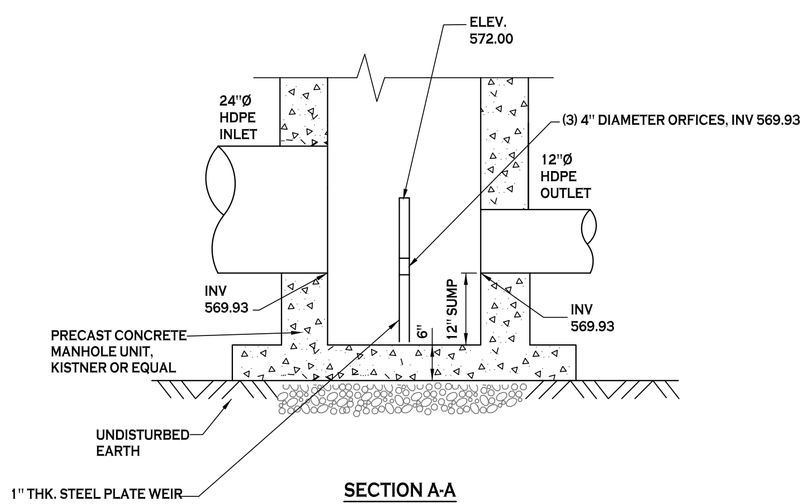
(1) NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL (1)

(2) BACKFILL MATERIAL SHALL BE NATIVE SOIL CONTAINING NO UNSUITABLE MATERIAL COMPACTED IN 6" LIFTS.

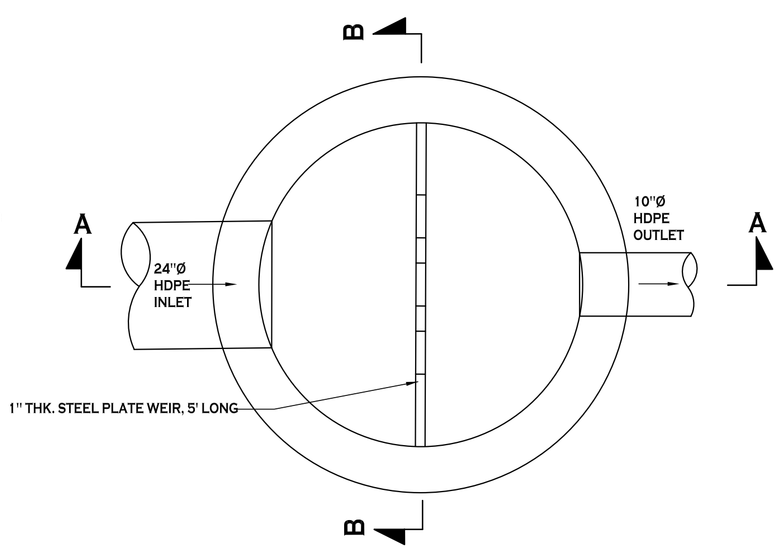
STORM SEWER TRENCH SECTION IN UNPAVED AREAS

NOT TO SCALE



SECTION A-A

NOTES:
1. FASTEN STEEL PLATE TO CB WALL WITH ANGLE CLIPS AND BOLTS
2. STEEL PLATE, ANGLE CLIPS, AND BOLTS TO BE HOT DIPPED GALVANIZED

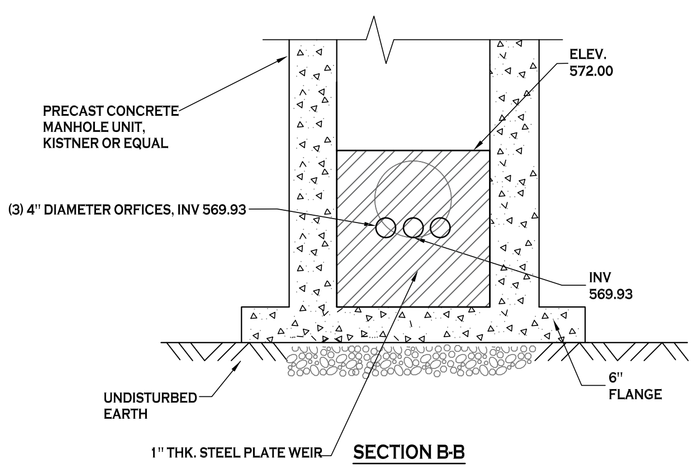


PLAN

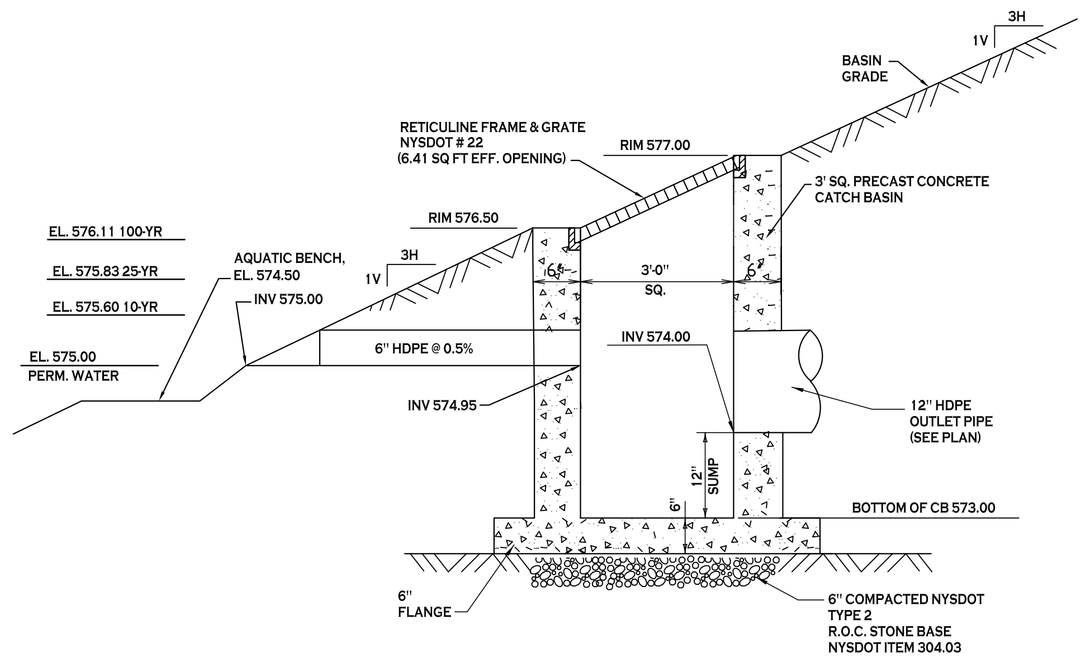
*NOTE: USE 5'-0" I.D. MANHOLE

OUTLET CONTROL STRUCTURE - CB 52

NOT TO SCALE



SECTION B-B



DETENTION BASIN OUTLET STRUCTURE - CB 53

N.T.S.

Carmina Wood Morris DPC
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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Storm Drainage Details

DRAWING NO.

C-302

Project no.: 21.011

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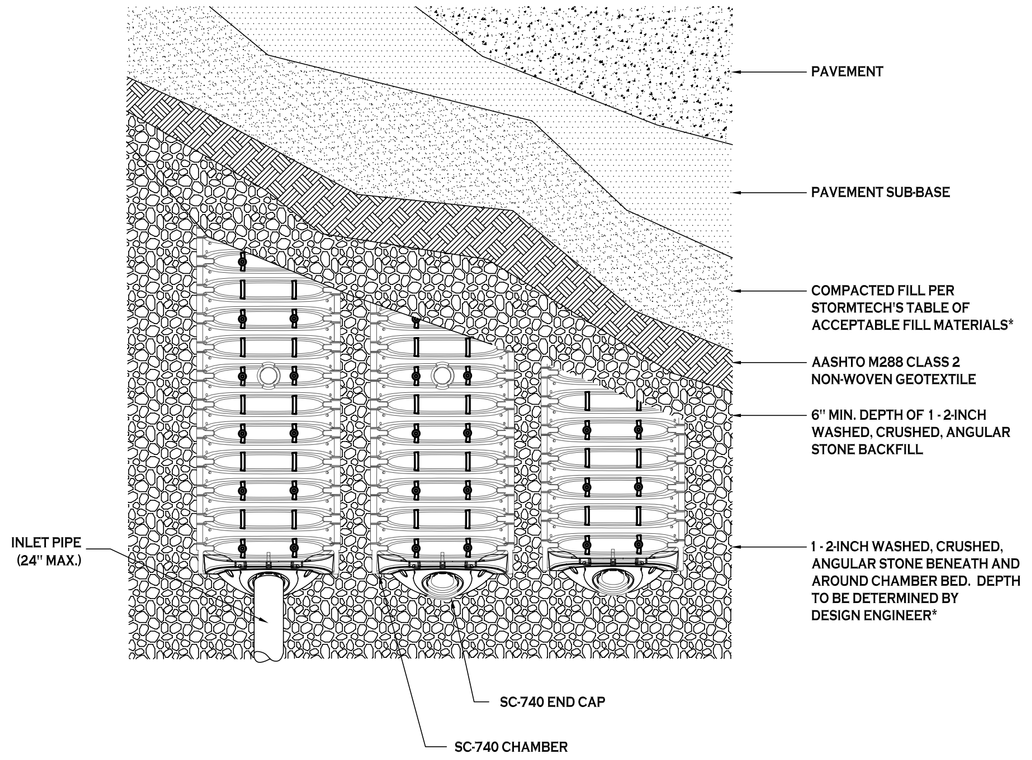
Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)



STORMTECH SC-740 CHAMBER SYSTEM
PLAN VIEW DETAIL

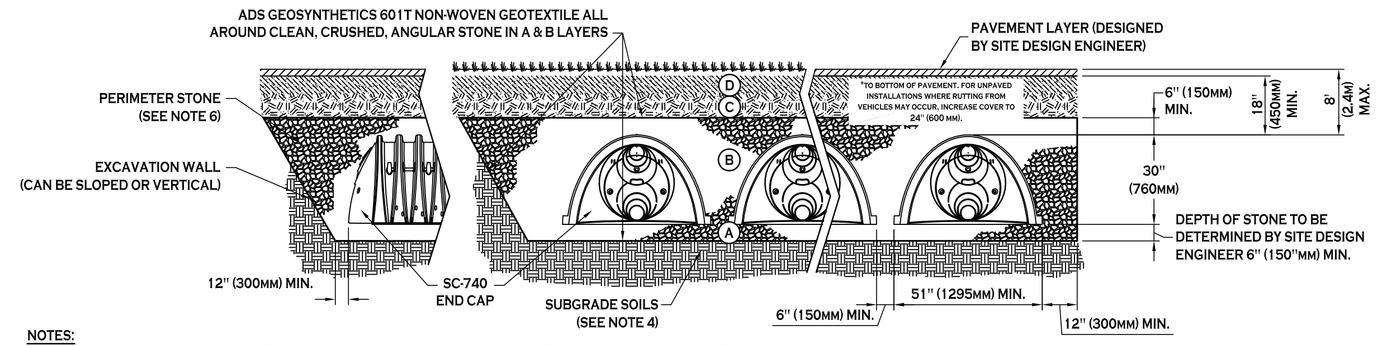
NOT TO SCALE

*SEE STORMTECH'S DESIGN MANUAL

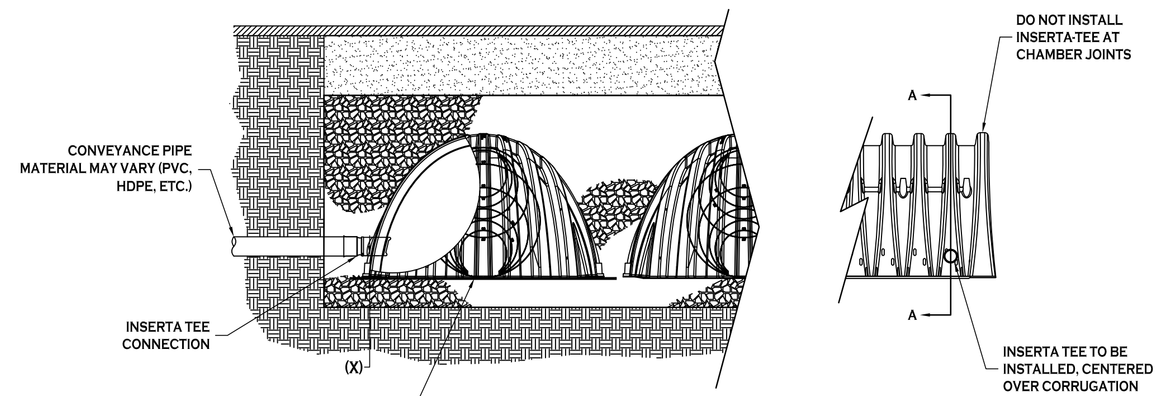
ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION/DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 MM) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LATER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 MM) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 MM) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 LBS (53 KN). DYNAMIC FORCE NOT TO EXCEED 20,000 LBS (89 KN).
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. [2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 MM) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



NOTES:
1. SC-740 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
6. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTE:
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 MM)	4" (100 MM)
SC-740	10" (250 MM)	4" (100 MM)
DC-780	10" (250 MM)	4" (100 MM)
MC-3500	12" (300 MM)	6" (150 MM)
MC-4500	12" (300 MM)	8" (200 MM)
INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON		

INSERTA TEE DETAIL

NOT TO SCALE

INSPECTION AND MAINTENANCE

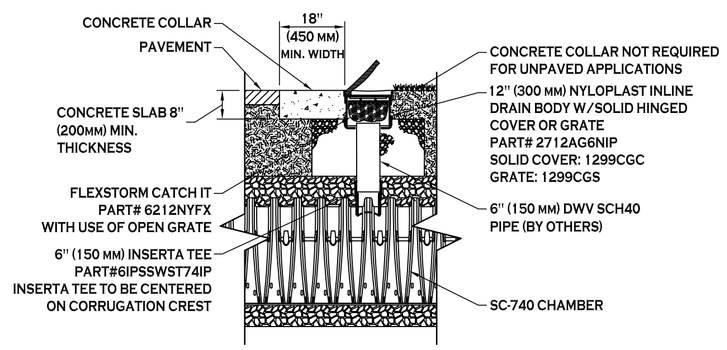
STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
- A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
- A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
- A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
- A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
- A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 MM) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
- B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
- B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
  - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
  - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
- B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 MM) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 M) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES:
1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



SC-740 6" INSPECTION PORT DETAIL

NOT TO SCALE

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/15/21
Drawn by: 2/24/21
Scale: As Noted

DRAWING NAME:

Storm Drainage Details

DRAWING NO.

C-303

Project no.: 21.011

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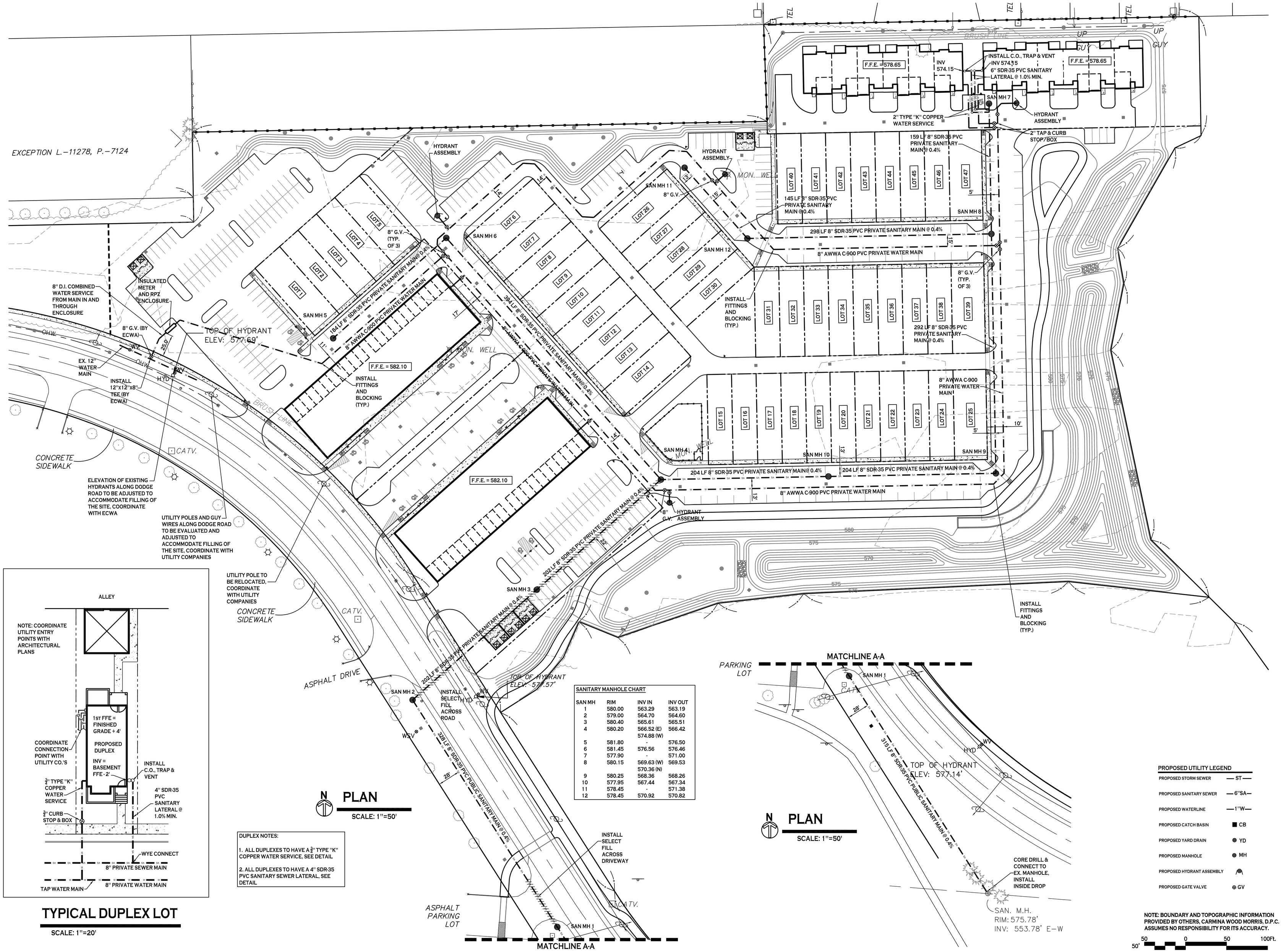

PLAN

SCALE: 1"=50'

PLAN

SCALE: 1"=50'

TYPICAL DUPLEX LOT

SCALE: 1"=20'

DUPLEX NOTES:

1. ALL DUPLEXES TO HAVE A ¾" TYPE "K" COPPER WATER SERVICE, SEE DETAIL
2. ALL DUPLEXES TO HAVE A 4" SDR-35 PVC SANITARY SEWER LATERAL, SEE DETAIL

SANITARY MANHOLE CHART

SAN MH	RIM	INV IN	INV OUT
1	580.00	563.29	563.19
2	579.00	564.70	564.60
3	580.40	565.61	565.51
4	580.20	566.52 (E)	566.42
		574.88 (W)	
5	581.80	-	576.50
6	581.45	576.56	576.46
7	577.90	-	571.00
8	580.15	569.63 (W)	569.53
		570.36 (N)	
9	580.25	568.36	568.26
10	577.95	567.44	567.34
11	578.45	-	571.38
12	578.45	570.92	570.82

PROPOSED UTILITY LEGEND

PROPOSED STORM SEWER	ST
PROPOSED SANITARY SEWER	6"SA
PROPOSED WATERLINE	1"W
PROPOSED CATCH BASIN	CB
PROPOSED YARD DRAIN	YD
PROPOSED MANHOLE	MH
PROPOSED HYDRANT ASSEMBLY	
PROPOSED GATE VALVE	GV

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 0 50 100Ft.

Carmina Wood Morris DPC
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Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Utility Plan

DRAWING NO.

C-400

Project no.: 21.011

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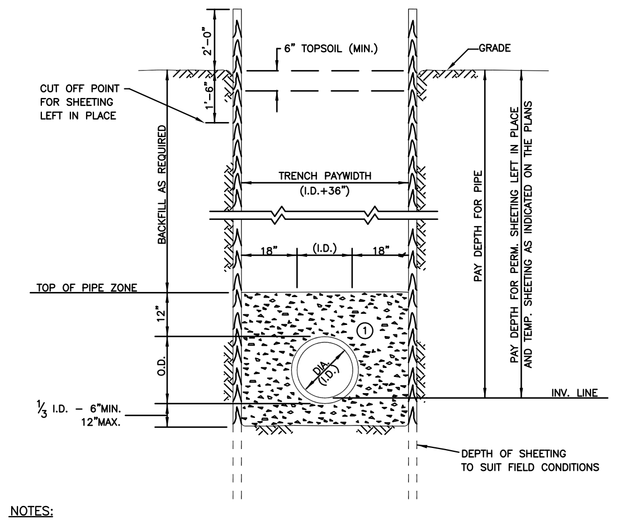
SHEETED TRENCH
(JANUARY 2012)



NOTES:

1. MAINTAIN 18" BETWEEN PIPE AND INSIDE FACE OF TEMPORARY SHEETING. IF SHEETING EXTENDS BELOW PIPE INVERT AS SHOWN, WHEN PVC PIPE MATERIAL IS USED, COMPACT MATERIAL ① BEFORE PULLING THE SHEETING.
2. SHEETED TRENCH OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING EQUIPMENT.
3. SHEETING DRIVEN BELOW THE INVERT OF THE PIPE FOR BEDDING MATERIAL AND TOE SUPPORT WILL NOT BE CONSIDERED IN THE FORMULA FOR PAYMENT BUT SHOULD BE FIGURED BY THE CONTRACTOR IN DETERMINING HIS UNIT BID PRICE PER SQUARE FOOT OF SHEETING.
4. WHERE INDICATED ON THE PLANS OR AS ORDERED BY THE ENGINEER, TEMPORARY SHEETING WILL BE PAID FOR UNDER THE APPLICABLE BID ITEM. OTHER AREAS WHERE THE CONTRACTOR ELECTS TO USE TEMPORARY SHEETING NOT PREVIOUSLY AUTHORIZED BY THE ENGINEER SHALL BE AT HIS OPTION AND EXPENSE.

MATERIALS

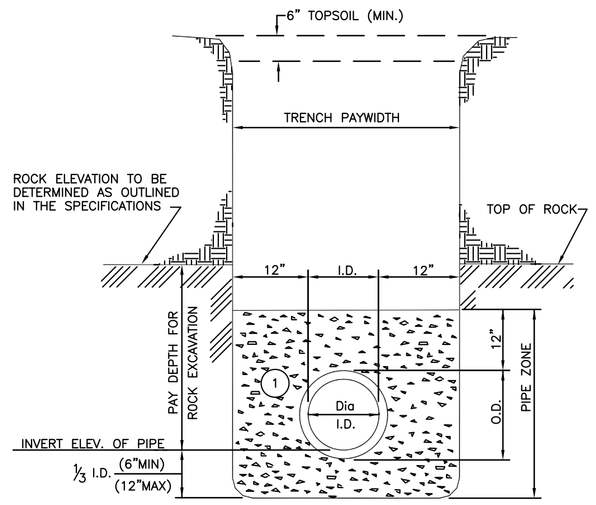
PIPE BEDDING MATERIAL (NYSDOT LATEST EDITION)

① NO.1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE CRUSHED STONE SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN 1" AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NOTE: SLAG SHALL NOT BE ALLOWED FOR MATERIALS ①

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1 12/01	REVISED TOPSOIL DIMENSION	STD.DETAIL 2
	Rev. 2 6/5/06	UPDATED MATERIALS TO NYSDOT LATEST EDITION	
	File: d-02	Date: 3/1/91	

ROCK TRENCH DETAIL
(JANUARY 2012)



NOTE:

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MATERIALS

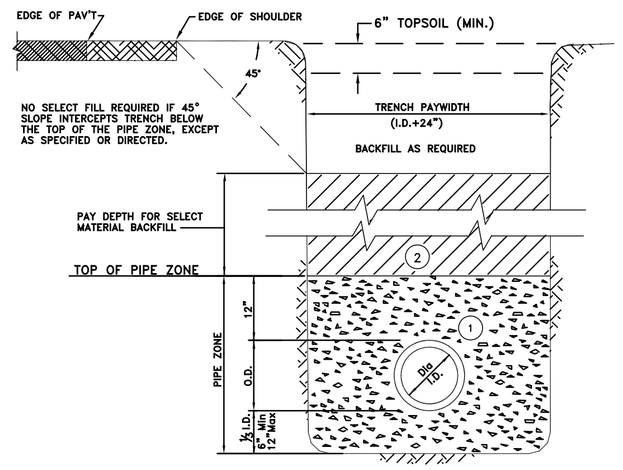
PIPE BEDDING MATERIAL (NYSDOT LATEST EDITION)

① NO.1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE CRUSHED STONE SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN 1" AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NOTE: SLAG SHALL NOT BE ALLOWED FOR MATERIALS ①

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1 1/6/94	ADDED 6" TOPSOIL (MIN.)	STD.DETAIL 3
	Rev. 2 2/7/94	ADDED NOTES A & B	
	File: d-03	Date: 3/1/91	

SELECT BACKFILL FOR TRENCH PARALLEL TO ROADWAYS
(JANUARY 2012)



NOTE:

A. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

B. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT LATEST EDITION)

① NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE CRUSHED STONE SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

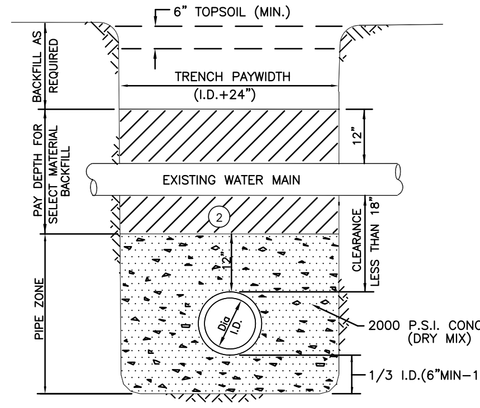
SELECT MATERIAL BACKFILL (NYSDOT LATEST EDITION)

② NO. 2 RUN OF CRUSHER STONE OR NO. 2 RUN OF CRUSHER GRAVEL WITH A GRADATION CONFORMING WITH NYSDOT SECTION 304-2.02 TYPE 4 AND NYSDOT SECTION 703-02. (COMPACTED IN 6" LIFTS TO 90% DENSITY)

NO SLAG SHALL BE ALLOWED FOR MATERIALS ① & ②

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 2 12/28/00	UPDATED MATERIALS TO NYSDOT LATEST EDITION	STD.DETAIL 4
	Rev. 3 12/01	Updated NYS DOT Editions	
	File: d-04	Date: 3/1/91	

WATERMAIN CROSSING DETAIL TYPICAL FOR ENCASEMENT
(JANUARY 2012)



NOTES:

A. IN ALL CASES WHERE THERE IS LESS THAN 18" CLEARANCE BETWEEN EXISTING WATER MAIN AND PROPOSED SEWER (INCLUDING HOUSE LATERALS) THE NEW WORK SHALL BE ENCASED IN CONCRETE AS SHOWN. WHEN A CASING PIPE IS SPECIFIED, NO CONCRETE ENCASEMENT IS REQUIRED.

B. THE CONCRETE ENCASEMENT SHALL EXTEND 3'-0" EACH SIDE OF THE WATER MAIN.

C. SEWERS SHALL BE LAID AT LEAST 10' (3.0 m) HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATERMAIN THE DISTANCE SHALL BE MEASURED EDGE TO EDGE. IN CASES WHERE IT IS NOT PRACTICAL TO MAINTAIN A 10' SEPARATION, THE APPROPRIATE REVIEWING AGENCY MAY ALLOW DEVIATION ON A CASE BY CASE BASIS, IF SUPPORTED BY DATA FROM THE DESIGN ENGINEER. SUCH DEVIATION MAY ALLOW INSTALLATION OF THE SEWER CLOSER TO A WATERMAIN, PROVIDED THE WATERMAIN IS IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF LOCATED ON ONE SIDE OF THE SEWER AND THE ELEVATION OF THE BOTTOM OF THE WATERMAIN IS AT LEAST 18" (46 cm) ABOVE THE TOP OF SEWER.

D. SEWERS CROSSING WATERMAINS SHALL BE LAID TO PROVIDE MINIMUM VERTICAL DISTANCE OF 18" (46 CM) BETWEEN THE OUTSIDE OF THE WATERMAIN AND THE OUTSIDE OF THE SEWER. THIS SHALL BE THE CASE WHEN THE WATERMAIN IS ABOVE OR BELOW THE SEWER. THE CROSSING SHALL BE ARRANGED SO THE JOINTS OF THE SEWER PIPE WILL BE EQUIDISTANT FROM AND AS FAR AWAY FROM THE WATERMAIN JOINTS AS POSSIBLE. WHERE THE WATERMAIN CROSSES UNDER A SEWER, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER TO PREVENT DAMAGE TO THE WATERMAIN.

E. WHEN IT IS IMPOSSIBLE TO OBTAIN THE PROPER HORIZONTAL AND VERTICAL SEPARATION AS STIPULATED ABOVE, THE SEWER SHALL BE EITHER ENCASED IN CONCRETE OR CONSTRUCTED OF PIPE MATERIAL EQUAL TO THE WATERMAIN AND PRESSURE TESTED AT 150 PSI TO ASSURE WATER TIGHTNESS.

F. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIALS PLACEMENT AND MAXIMUM PAY LIMITS.

G. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

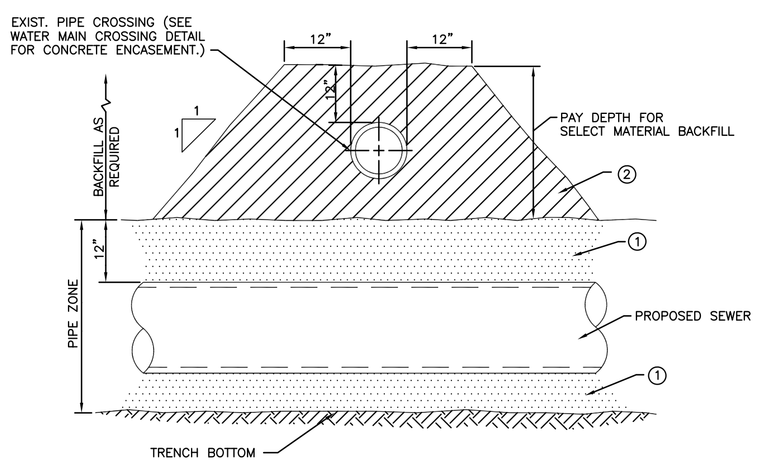
SELECT MATERIAL BACKFILL (NYSDOT LATEST EDITION)

② NO.2 RUN OF CRUSHER STONE OR NO.2 RUN OF CRUSHER GRAVEL WITH A GRADATION CONFORMING WITH NYSDOT SECTION 304-2.02 TYPE 4 AND NYSDOT SECTION 703-02. (COMPACTED IN 6"LIFTS TO 90% DENSITY)

NOTE: SLAG SHALL NOT BE ALLOWED FOR MATERIALS ②

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Revisions		STD.DETAIL 5
	2/7/94	ADDED 6" TOPSOIL(MIN.) & NOTE F&G	
	01/03/01	REVISED NOTE A	
	12/01	Revised Note "A"	
	File: d-05	Date: 3/1/91	

PIPE CROSSING SUPPORT DETAIL
(JANUARY 2012)



MATERIALS

PIPE BEDDING MATERIAL (NYSDOT LATEST EDITION)

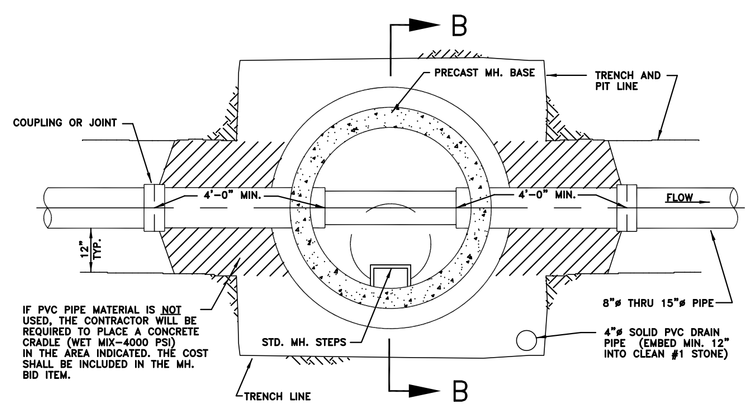
① NO.1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE CRUSHED STONE SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN 1" AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

SELECT MATERIAL BACKFILL (NYSDOT LATEST EDITION)

② NO.2 RUN OF CRUSHER STONE OR NO.2 RUN OF CRUSHER GRAVEL WITH A GRADATION CONFORMING WITH NYSDOT SECTION 304-2.02 TYPE 4 AND NYSDOT SECTION 703-02. (COMPACTED IN 6"LIFTS TO 90% DENSITY) NOTE: SLAG SHALL NOT BE ALLOWED FOR MATERIALS ① AND ②

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1 12/01	UPDATED MATERIALS TO NYSDOT LATEST EDITION	STD.DETAIL 9
	Rev. 2		
	File: d-09	Date: 3/1/91	

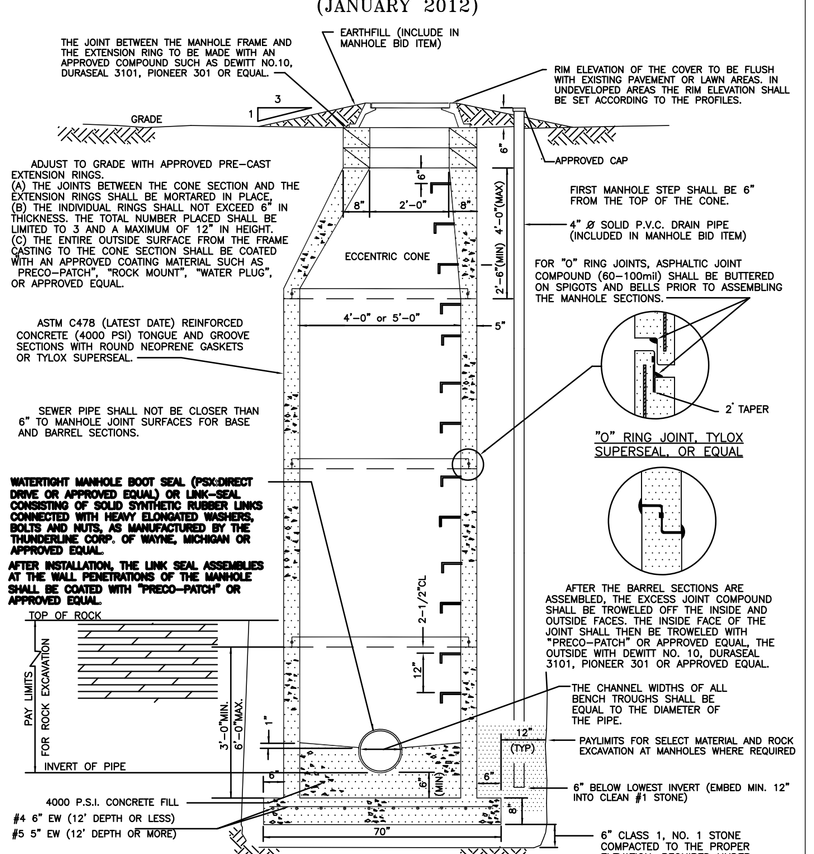
MONOLITHIC PRECAST BASE MANHOLES 4'-5' DIA. BASE FOR 15"ø SEWERS OR LESS
(JANUARY 2012)



PLAN

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1 12/01	REVISED 4" PVC TO SOLID PIPE IN #1 STONE BED	STD.DETAIL 10
	Rev. 2		
	File: d-10	Date: 3/1/91	

MONOLITHIC PRECAST BASE MANHOLES 4'-5' DIA. BASE FOR 15"ø SEWERS OR LESS (SECTION B-B)
(JANUARY 2012)



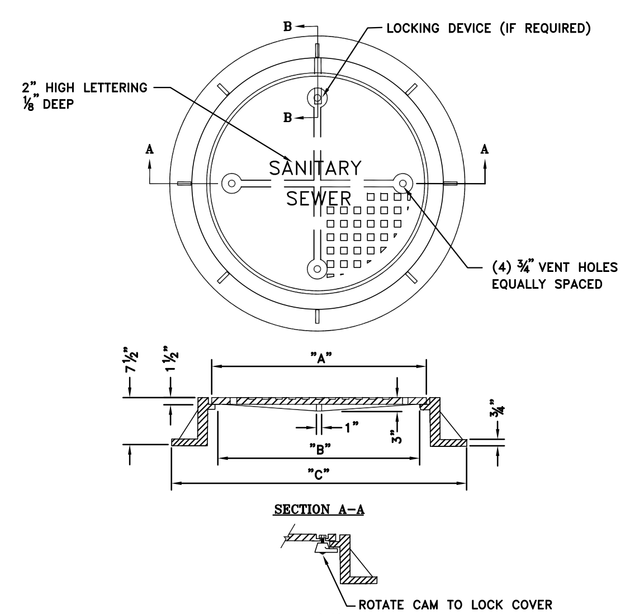
SECTION B-B

Revisions

07/15/98	ADD ROCK EXCAVATION PAYLIMITS
11/23/98	ADD 4"x4"x9" MARKER AND NOTES
12/01	REVISED 4" P.V.C. TO SOLID PIPE
03/04/03	ADDED WATER TIGHT BOOT SEAL NOTE
06/22/05	ADDED TYLOX SUPERSEAL NOTES
02/27/07	REMOVED WOOD POST AND NOTES
	CHANGED THE NUMBER OF EXTENSION RINGS FROM 2 TO 3

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT			STD.DETAIL 11
	File: d-11	Date: 3/1/91	

STANDARD FRAME AND COVER (PRIVATE SEWER)
(JANUARY 2012)



LOCKING DEVICE

TABLE				
PIPE SIZE	DIMENSION "A"	DIMENSION "B"	DIMENSION "C"	WEIGHT OF COVER
8" THRU 18"	24"	22 1/4"	35"(MAX.)	150 LBS. ± 5%
OVER 18"	32"	30"	46"(MAX.)	200 LBS. ± 5%

STANDARD FRAME AND COVER NOTES

1. MATERIAL ASTM A48 CLASS 30B CAST IRON.
2. UNIT MUST WITHSTAND H-20 WHEEL LOADING.
3. ALL DIMENSIONS ARE TO BE CONSIDERED MINIMUM WITH THE EXCEPTION OF THE COVER, WHICH MUST CONFORM EXACTLY TO MAINTAIN INTERCHANGEABILITY WITHIN THE COUNTY.
4. COVER WEIGHT 210 LBS. (MAX)
5. COATING NOT REQUIRED.
6. FRAMES AND COVERS SHALL HAVE MACHINED BEARING SURFACES.
7. LOCKING DEVICE MUST BE SITUATED TO ALLOW EASY REMOVAL OF COVER.
8. NO COMMERCIAL "BRAND NAME" LETTERING WILL BE ALLOWED ON THE EXPOSED SURFACE OF THE COVER.

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1		STD.DETAIL 13P
	Rev. 2		
	Rev. 3		
	Rev. 4		
	File: d-13P	Date: 2/05	

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Sanitary Sewer Details

DRAWING NO.

C-401

Project no.: 21.011

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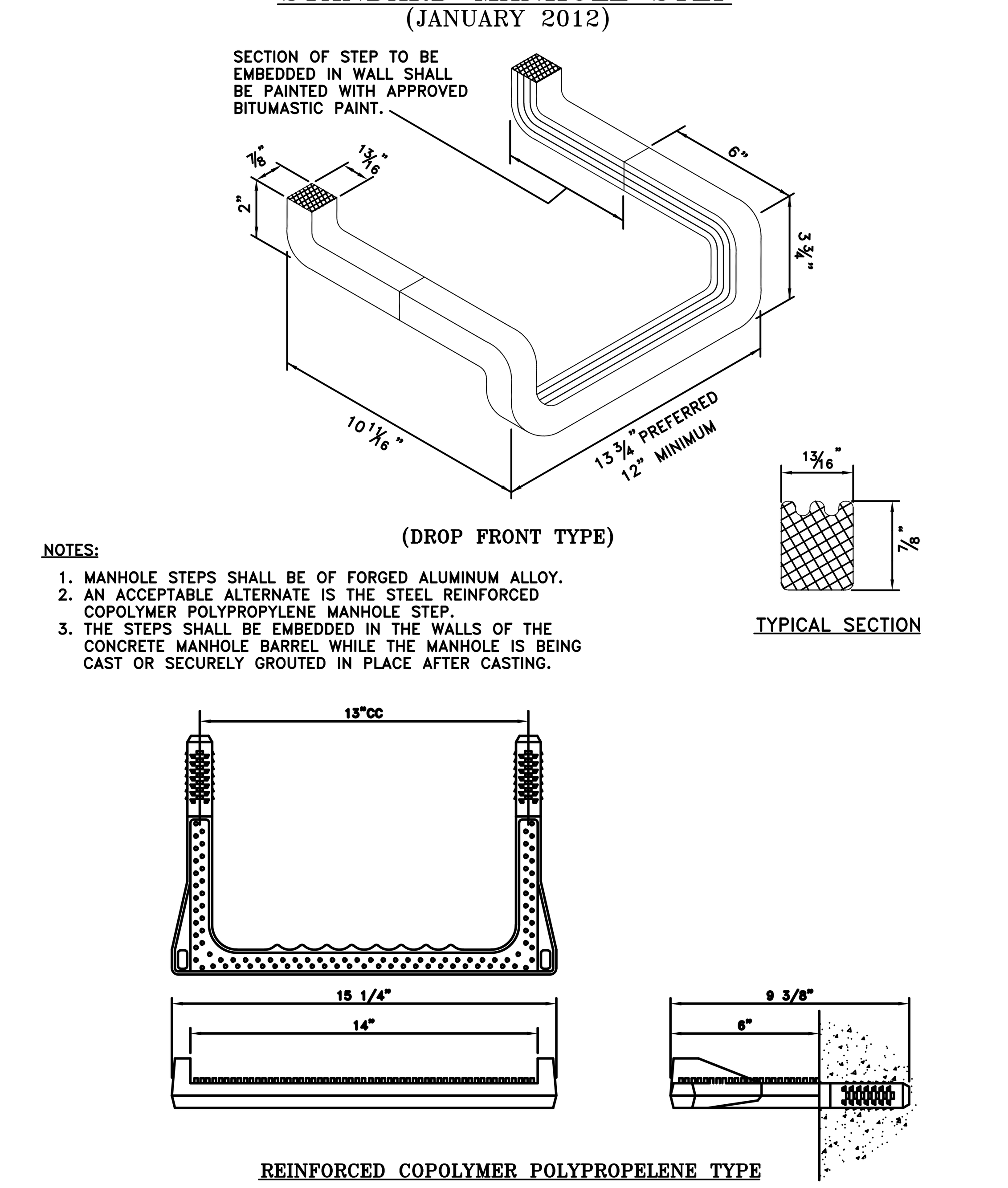
Attachment: SP-2021-05_drawings_061721 (23057 : Sp-2021-05)

STANDARD MANHOLE STEP
(JANUARY 2012)



NOTES:
1. MANHOLE STEPS SHALL BE OF FORGED ALUMINUM ALLOY.
2. AN ACCEPTABLE ALTERNATE IS THE STEEL REINFORCED COPOLYMER POLYPROPYLENE MANHOLE STEP.
3. THE STEPS SHALL BE EMBEDDED IN THE WALLS OF THE CONCRETE MANHOLE BARREL WHILE THE MANHOLE IS BEING CAST OR SECURELY GROUTED IN PLACE AFTER CASTING.

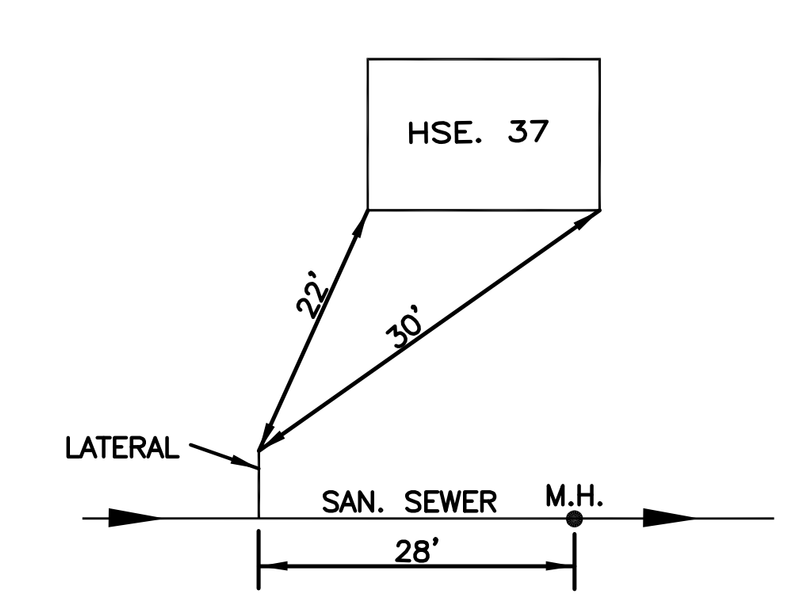
ERIE COUNTY
DEPT. OF ENVIRONMENT & PLANNING
DIVISION OF SEWERAGE MANAGEMENT

Rev. 1 12/9/96	ADDED REINFORCED COLPOLYMER TYPE STEP	STD.DETAIL 17
Rev. 2		
File: d-17	Date: 3/1/91	

CONSTRUCTION SPECIFICATIONS FOR HOUSE LATERALS
(JANUARY 2012)

1. MATERIAL
   a. THICK WALL PVC – D – 3034, SDR–35
   b. EXTRA HEAVY CAST IRON
   c. DUCTILE IRON
2. FAR SIDE CROSSING
   a. LATERALS INSTALLED ACROSS TOWN ROADS MAY BE BY THE OPEN CUT METHOD WHERE ALLOWED BY THE HIGHWAY PERMIT.
   b. LATERALS INSTALLED ACROSS STATE OR COUNTY ROADS SHALL BE BY THE BORING AND JACKING METHOD (UNLESS OTHERWISE NOTED ON THE PLANS) USING A STEEL CASING PIPE. THE CARRIER PIPE SHALL CONFORM WITH THE MATERIAL SPECIFIED OR APPROVED BY THE ENGINEER.
   c. ALL PAVEMENT CROSSINGS (OPEN CUT METHOD) WITH LESS THAN 4'–0" COVER SHALL BE ENCASED WITH 2000 PSI CONCRETE.
   d. ALL FAR SIDE CROSSINGS SHALL BE INSTALLED UP TO ONE (1) FOOT OF THE R.O.W. LINE.
   e. THE CONTRACTOR SHALL SUPPLY A 2" X 4" WOOD MARKER EXTENDING FROM THE END OF THE CROSSING TO ONE FOOT BELOW GRADE. ALSO, RECORDS SHALL BE KEPT AS TO THE DEPTH OF THE HOUSE SERVICE AND A MINIMUM OF THREE (3) TIES SHALL BE ESTABLISHED FOR THE LOCATION OF THE SERVICE.
   f. LATERALS SHALL BE LAID AT A 2.0% MINIMUM GRADE. IN CASES OF A SHALLOW SEWER, A 1.0% SLOPE MAY BE APPROVED BY THE ENGINEER.
3. NEAR SIDE SERVICES
   a. THE CONTRACTOR SHALL SUPPLY WYE BRANCHES OF THE SAME MATERIAL AND CLASS AS THE SEWER MAIN.
   b. THE LOCATION OF THE WYE BRANCHES WILL BE DETERMINED BY THE CONTRACTOR AND ENGINEER IN THE FIELD AFTER CONFERRING WITH THE HOMEOWNER.
   c. THE LOCATION OF THE BRANCHES SHALL BE MEASURED FROM THE LAST DOWNSTREAM MANHOLE AND AT LEAST THREE (3) TIES FROM AN EXISTING STRUCTURE, NORMALLY THE HOME IT IS TO SERVICE.
   d. NEAR SIDE SERVICES SHALL BE INSTALLED UP TO ONE (1) FOOT OF THE R.O.W. LINE.
   e. THE CONTRACTOR SHALL PROVIDE A 2" X 4" WOOD MARKER EXTENDED FROM THE WYE BRANCH TO ONE (1) FOOT BELOW GRADE.
   f. ON ALL SERVICES WHERE THE MAIN IS GREATER THAN 8' IN DEPTH, THE CONTRACTOR SHALL PROVIDE A RISER PIPE TO AN ELEVATION 8' BELOW EXISTING GRADE.

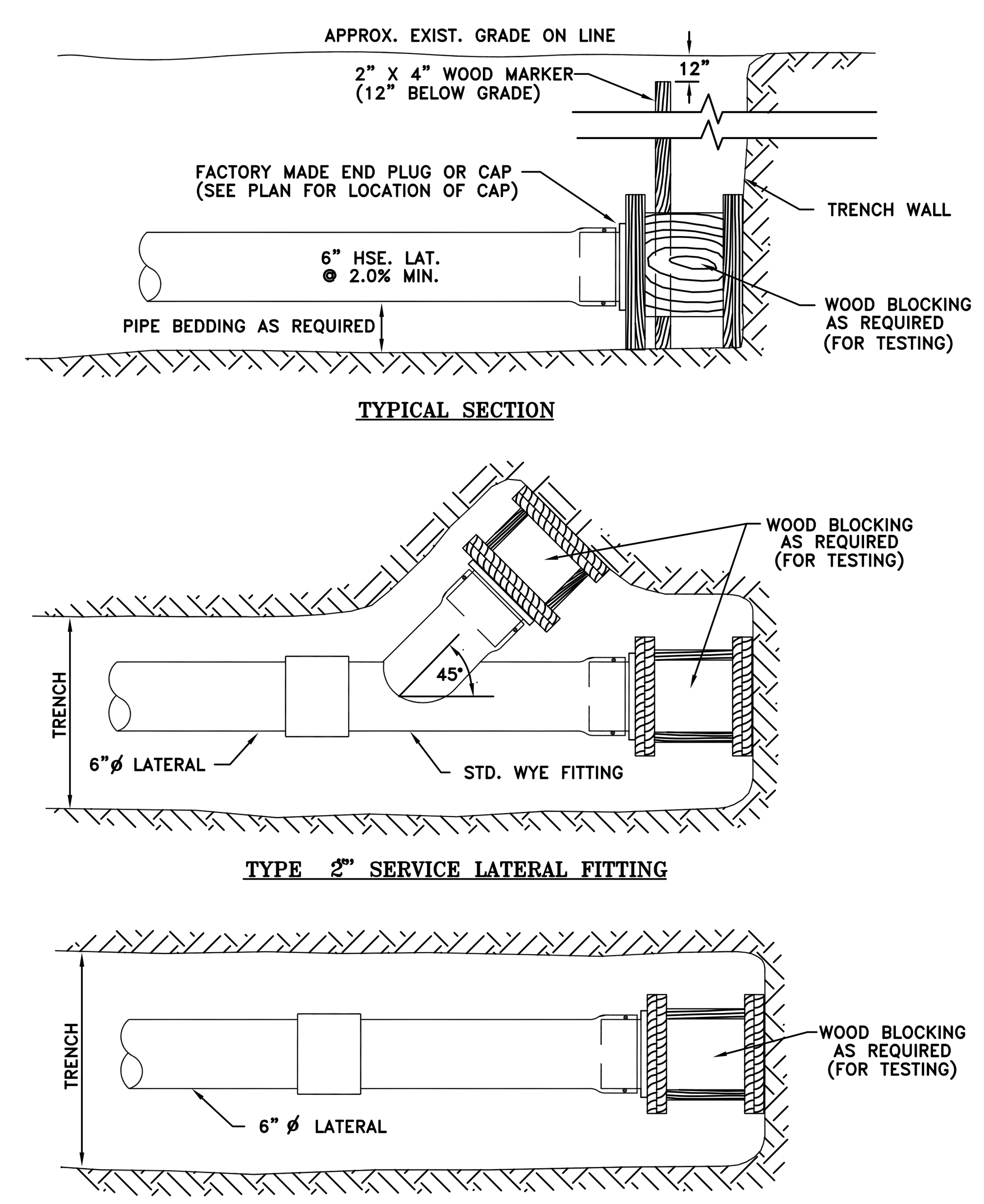
NOTES:
1. RECORDS OF THE DEPTH OF COVER SHALL BE KEPT FOR ALL HOUSE LATERALS BUILT ACROSS PAVEMENTS. SUCH RECORDS SHALL IDENTIFY THE LATERALS BY THE USE OF HOUSE NUMBERS AND SHALL SHOW LOCATION OF THE END OF THE HOUSE LATERAL WITH A MINIMUM OF THREE(3) TIES AS SHOWN IN EXAMPLE BELOW.
2. THE CONTRACTOR SHALL OBTAIN ALL HIGHWAY/R.O.W. PERMITS PRIOR TO START OF WORK.
3. VENTS AND CLEAN OUTS MUST BE INSTALLED IN LAWN AREAS, NOT IN SIDEWALK OR DRIVEWAY AREAS, PREFERABLY BETWEEN THE CURB OR EDGE OF PAVEMENT AND THE SIDEWALK.



ERIE COUNTY
DEPT. OF ENVIRONMENT & PLANNING
DIVISION OF SEWERAGE MANAGEMENT

Rev. 1 5/17/93	NOTE 2c: DEPTH 4'–0"	STD.DETAIL 23
Rev. 2 12/9/96	CHANGED NOTE 1 TO THREE(3) TIES	
Rev. 3 7/14/99	ADDED TITLE	
Rev. 4 12/01	ADDED NOTE 3 REGARDING LOCATION OF VENTS AND CLEAN OUTS	
File: d-23	Date: 3/1/91	

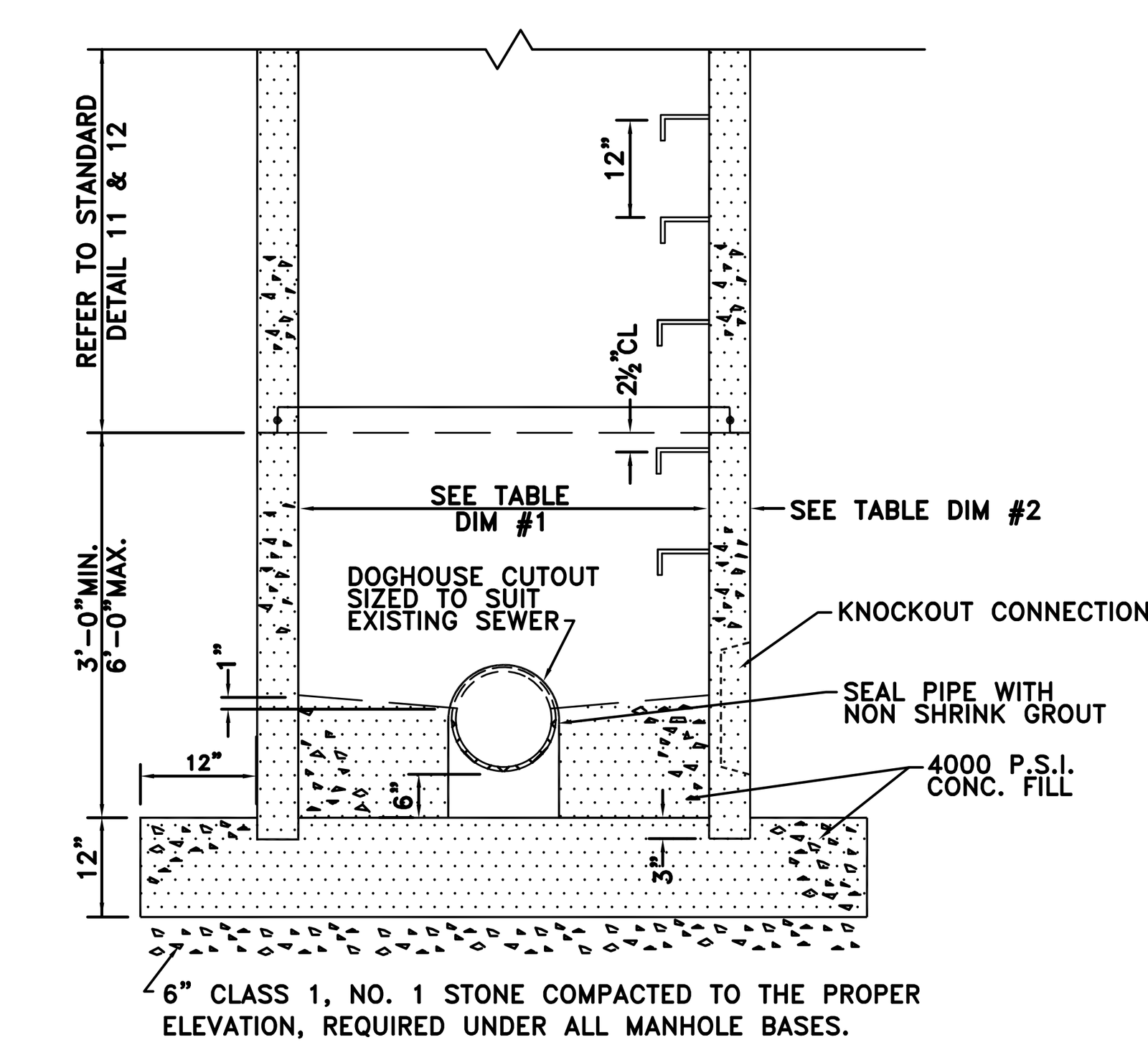
CAP & BLOCKING METHODS FOR AIR TESTING
(JANUARY 2012)



ERIE COUNTY
DEPT. OF ENVIRONMENT & PLANNING
DIVISION OF SEWERAGE MANAGEMENT

Rev. 1		STD.DETAIL 26
Rev. 2		
File: d-26	Date: 3/1/91	

PRECAST DOGHOUSE BASE MANHOLE
(JANUARY 2012)



PIPE SIZE	DIMENSION #1	DIMENSION #2
8"–16"	4'–0"*	5"
18"	5'–0"	6"
21"–27"	5'–0"	6"
30"–36"	6'–0"	7"

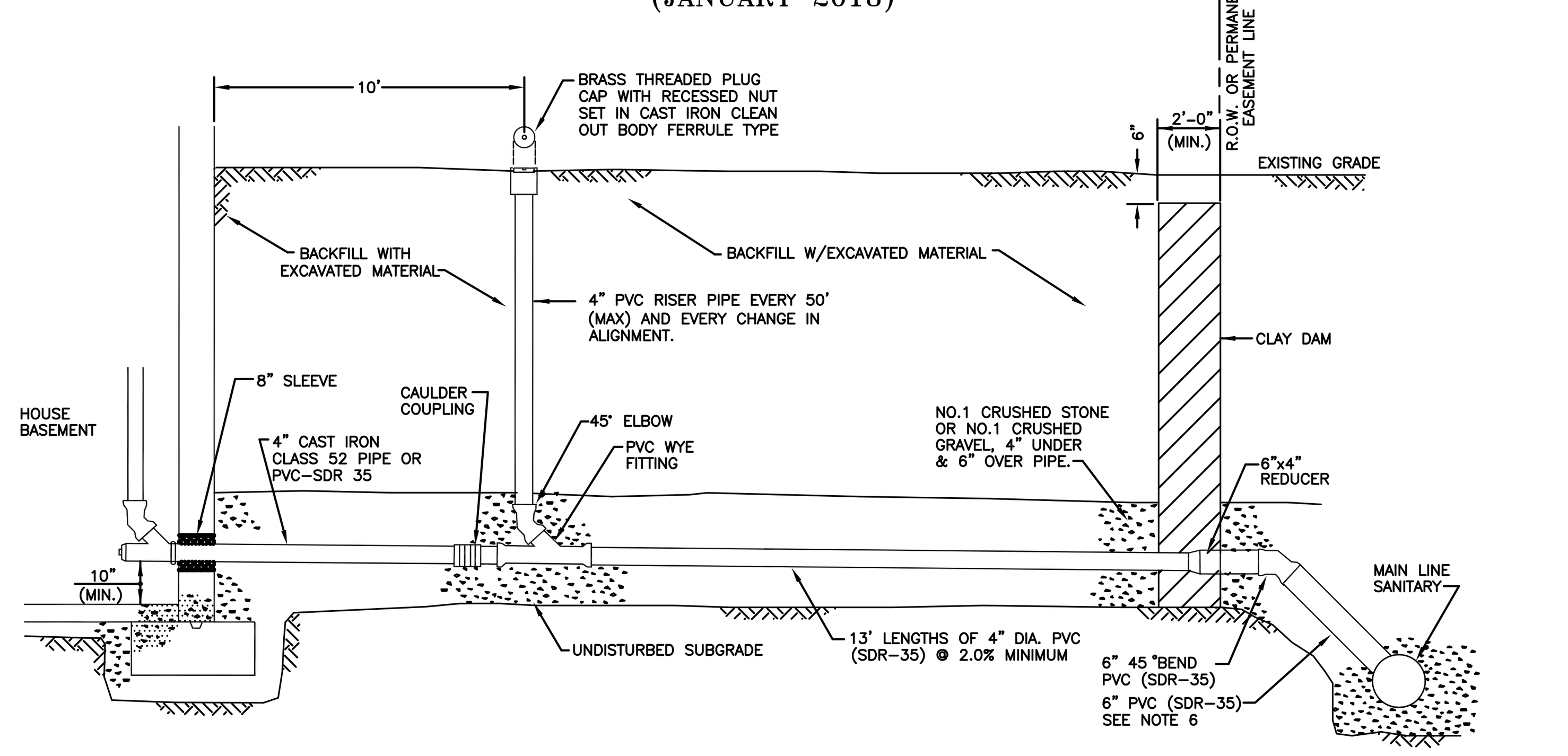
* FOR DROP CONNECTIONS INSIDE DIAMETER SHALL BE 5'–0"

NOTE:
AREA AROUND DOGHOUSE CUTOUT & PIPE TO BE MADE WATERTIGHT UTILIZING A HYDRAULIC CEMENT MIXTURE (WATERPLUG,PRECO–PATCH, OR APPROVED EQUAL).

ERIE COUNTY
DEPT. OF ENVIRONMENT & PLANNING
DIVISION OF SEWERAGE MANAGEMENT

Rev. 1 11/08/91	ADDED PIPE SIZE CHART & NOTE	STD.DETAIL 35
Rev. 2 2/7/94	REVISED STONE UNDER MANHOLE BASE TO CLASS 1, NO. 1	
File: d-35	Date:10/16/91	

TYPICAL HOUSE SERVICE DETAIL
(JANUARY 2018)

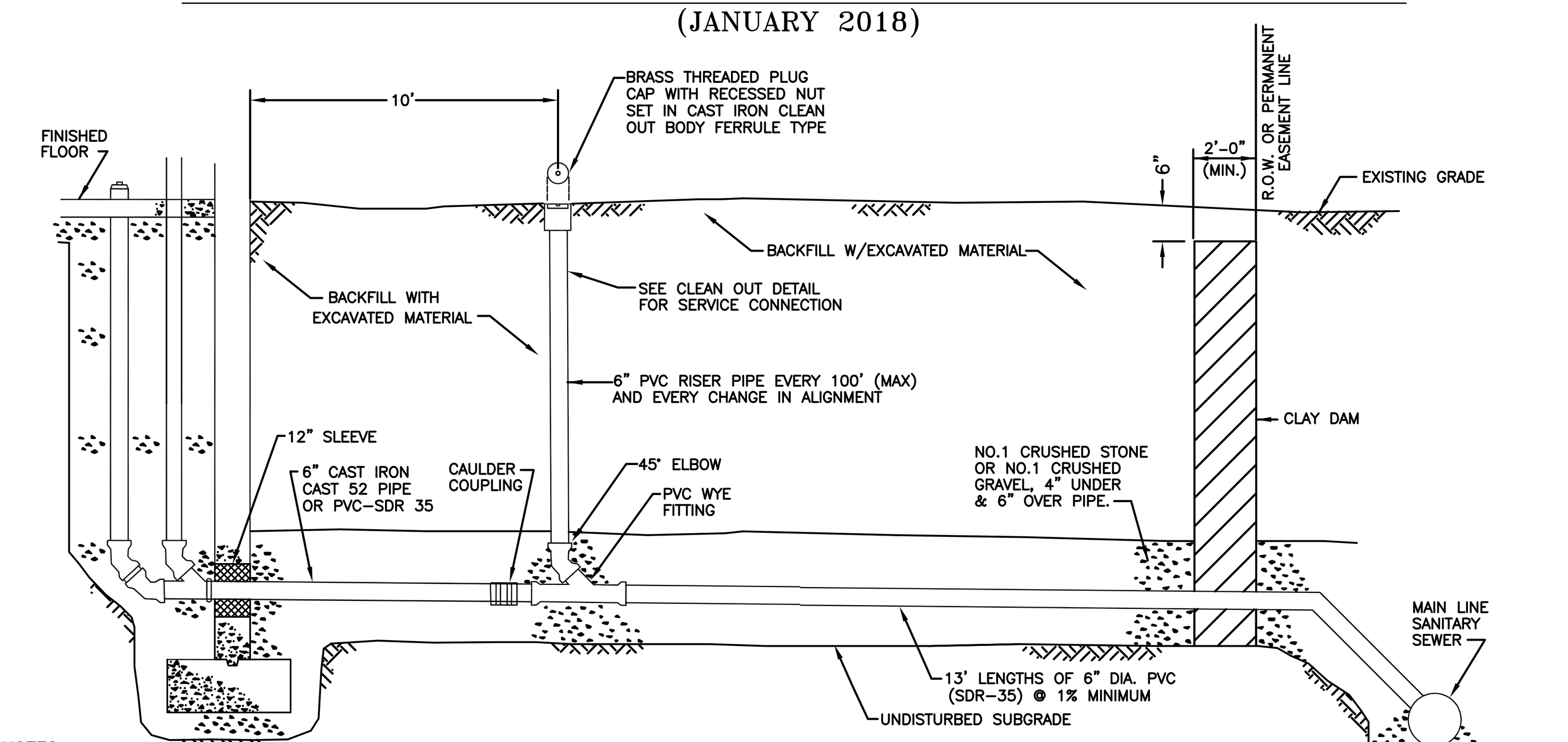


NOTES:
1. NO INSPECTION WILL BE PROVIDED WITHOUT A PERMIT. INSPECTIONS REQUIRE 48 HR. ADVANCE NOTICE FOR SCHEDULING.
2. ALL WORK MUST BE INSPECTED BY A COUNTY INSPECTOR
3. PVC PIPE MATERIAL SHALL BE MANUFACTURED IN ACCORDANCE WITH THE REQUIREMENTS OF THE LATEST ASTM SPECIFICATION D–3033/D–3034. CAST IRON PIPE MATERIAL SHALL BE EXTRA HEAVY CAST IRON MEETING THE REQUIREMENTS OF ASTM A74–42.
4. A MANUAL VALVE SHALL BE INSTALLED ON BASEMENT LAUNDRY DRAIN LINE.
5. CLEAN OUTS MUST BE INSTALLED IN LAWN AREAS, NOT IN SIDEWALKS OR DRIVEWAY AREAS, PREFERABLY BETWEEN THE CURB OR EDGE OF PAVEMENT, AND THE SIDEWALK.
6. SELECT BACKFILL REQUIRED UNDER PAVED AREAS.
7. CONCRETE ENCASEMENT IF COVER DEPTH IS LESS THAN 4'–0" UNDER PAVED AREAS
8. FOR NEW CONSTRUCTION, AN 8x6 WYE WITH 6" PVC TO 6" 45° BEND, THEN 6" x 4" REDUCER IS USED.
9. A 6" CLEAN OUT IS REQUIRED AT R.O.W. WHENEVER THE MAIN SEWER IS UNDER THE PAVEMENT LIMITS OR AT FAR SIDE OF PAVEMENT.
10. ANY EXCAVATION TO BE LEFT OPEN OVERNIGHT SHALL BE COMPLETELY ENCLOSED IN FENCING, OR WHERE NECESSARY, COVERED WITH STEEL PLATES.
11. DOWN SPOUTS, SUMP PUMPS, AND FOOTING DRAINS ARE NOT PERMITTED TO BE CONNECTED TO THE HOUSE LATERAL.
12. FOR NEW STRUCTURES, NO CONNECTION SHALL BE MADE UNTIL BUILDING ROOF IS ERECTED AND BASEMENT FLOOR IS POURED.

ERIE COUNTY
DEPT. OF ENVIRONMENT & PLANNING
DIVISION OF SEWERAGE MANAGEMENT

Rev. 6/05	ADDED NOTE 20 & CLASS 52 TYPE CI PIPE	STD. DETAIL 21
Rev. 1/07	REMOVED OLD NOTES 1,3,8,10,12,13 AND 20 REVISED TO 6"PVC–DET6, 48 HR ADV NOTICE	
Rev. 11/08	ADDED PVC TRAP AND SLEEVE	
Rev. 01/12	REVISED 4" CAST IRON TRAP	
Rev. 01/18	REMOVED TRAP AND RISER VENT	
File: d-21	Date: 3/1/91	

TYPICAL COMMERCIAL SERVICE WITHOUT BASEMENT DETAIL
(JANUARY 2018)



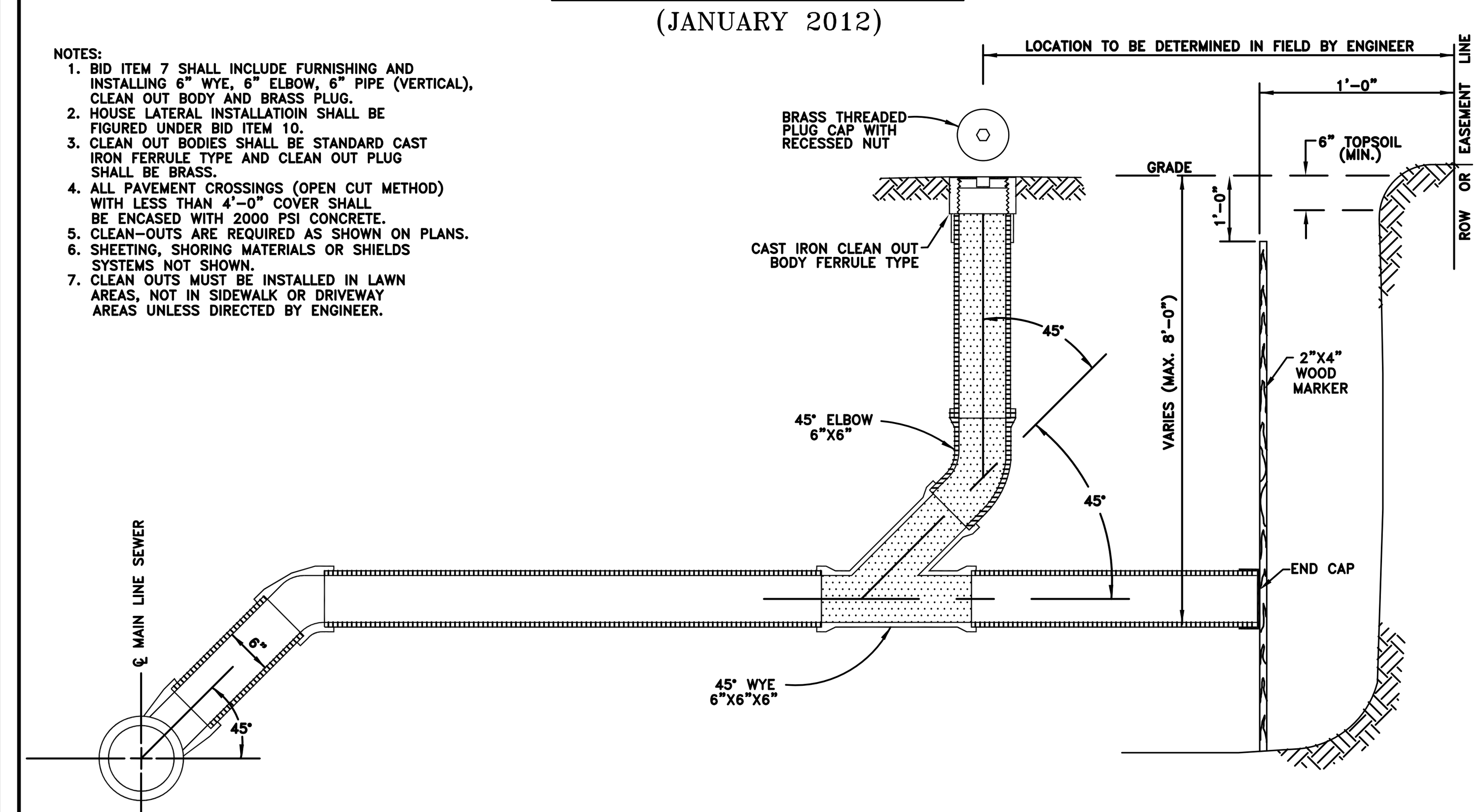
NOTES:
1. NO INSPECTION WILL BE PROVIDED WITHOUT A PERMIT. INSPECTIONS REQUIRE 24 HR. ADVANCE NOTICE FOR SCHEDULING.
2. ALL WORK MUST BE INSPECTED BY A COUNTY INSPECTOR
3. PVC PIPE MATERIAL SHALL BE MANUFACTURED IN ACCORDANCE WITH THE REQUIREMENTS OF THE LATEST ASTM SPECIFICATION D–3033/D–3034. CAST IRON PIPE MATERIAL SHALL BE EXTRA HEAVY CAST IRON MEETING THE REQUIREMENTS OF ASTM A74–42.
4. CLEANOUTS MUST BE INSTALLED IN LAWN AREAS, NOT IN SIDEWALK OR DRIVEWAY AREAS, PREFERABLY BETWEEN THE CURB OR EDGE OF PAVEMENT AND THE SIDEWALK.
5. SELECT BACKFILL REQUIRED UNDER PAVED AREAS.
6. CONCRETE ENCASEMENT IF COVER DEPTH IS LESS THAN 4'–0" UNDER PAVED AREAS
7. MIN. DEPTH OF COVER 3'–0"
8. CLEAN OUT MEASUREMENTS SHALL START FROM CENTERLINE OF MAIN SEWER FOR NEARSIDE LATERALS AND FROM THE 6" CLEAN OUT FOR FAR SIDE CONNECTIONS. A CLEAN OUT MAY BE REQUIRED FOR ANY ABRUPT CHANGES IN LATERAL DIRECTION FLOW.
9. A 6" CLEAN OUT IS REQUIRED AT R.O.W. WHENEVER THE MAIN SEWER IS UNDER THE PAVEMENT LIMITS OR AT FAR SIDE OF OF PAVEMENT.
10. ANY SEWER LAID THROUGH OR OVER A SEPTIC TANK MUST BE CAST IRON (SEPTIC TANK MUST BE FILLED WITH BANK RUN GRAVEL).
11. ANY EXCAVATION TO BE LEFT OPEN OVERNIGHT SHALL BE COMPLETELY ENCLOSED IN FENCING, OR WHERE NECESSARY, COVERED WITH STEEL PLATES.
12. DOWN SPOUTS, SUMP PUMPS, AND FOOTING DRAINS ARE NOT PERMITTED TO BE CONNECTED TO THE LATERAL.
13. FOR NEW STRUCTURES, NO CONNECTION SHALL BE MADE UNTIL BUILDING ROOF IS ERECTED AND BASEMENT FLOOR IS POURED.

ERIE COUNTY
DEPT. OF ENVIRONMENT & PLANNING
DIVISION OF SEWERAGE MANAGEMENT

Rev. 6/05	ADDED NOTE 18 & CLASS 52 TYPE CI PIPE	STD. DETAIL 22
Rev. 1/07	REMOVED OLD NOTES 2 AND 18 ADDED 1% MIN. TO SERVICE PIPE DETAIL	
Rev. 11/08	ADDED SLEEVE AND PVC–SDR 35	
Rev. 1/12	REVISED 6" CAST IRON TRAP NOTE	
Rev. 1/18	REMOVED TRAP AND RISER VENT	
File: d-22	Date: 3/1/91	

CLEAN–OUT DETAIL FOR SERVICE CONNECTION
(JANUARY 2012)

NOTES:
1. BID ITEM 7 SHALL INCLUDE FURNISHING AND INSTALLING 6" WYE, 6" ELBOW, 6" PIPE (VERTICAL), CLEAN OUT BODY AND BRASS PLUG.
2. HOUSE LATERAL INSTALLATION SHALL BE FIGURED UNDER BID ITEM 10.
3. CLEAN OUT BODIES SHALL BE STANDARD CAST IRON FERRULE TYPE AND CLEAN OUT PLUG SHALL BE BRASS.
4. ALL PAVEMENT CROSSINGS (OPEN CUT METHOD) WITH LESS THAN 4'–0" COVER SHALL BE ENCASED WITH 2000 PSI CONCRETE.
5. CLEAN–OUTS ARE REQUIRED AS SHOWN ON PLANS.
6. SHEETING, SHORING MATERIALS OR SHIELDS SYSTEMS NOT SHOWN.
7. CLEAN OUTS MUST BE INSTALLED IN LAWN AREAS, NOT IN SIDEWALK OR DRIVEWAY AREAS UNLESS DIRECTED BY ENGINEER.



ERIE COUNTY
DEPT. OF ENVIRONMENT & PLANNING
DIVISION OF SEWERAGE MANAGEMENT

Rev. 1 5/93	4'–0" COVER, C.I. CAP "RECESSED NUT"	STD. DETAIL 28
Rev. 2 2/94	CHANGED DIM LINE FOR MAX. DEPTH	
Rev. 3 12/01	ADDED NOTE 7	
Rev. 4 5/02	CHANGED C.I. CAP TO BRASS	
Rev. 5 6/05	1' MIN. FROM EDGE OF WALK NOTE	
Rev. 6 1/12	CHANGED C.I. TO BRASS NOTES 1 & 3	
File: d-28	Date: 3/1/91	

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REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Sanitary Sewer Details

DRAWING NO.
C-402

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

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GENERAL NOTES FOR
SANITARY SEWER CONSTRUCTION
WITHIN ERIE COUNTY SEWER DISTRICTS

1. The Erie County Division of Sewerage Management (DSM), who operates and maintains the existing sewer lines and appurtenances within Erie County Sewer Districts (ECSD), is to be notified at least 48 hours in advance of the start of construction.

2. Construction shall be in accordance with the Rules and Regulations for Erie County Sewer Districts.

3. All permits required by the Federal, State, County, City and/or Town governments to perform work must be obtained prior to the start of work, and paid for by the Contractor.

4. If easement and/or Out of District Agreements are required, they must be complete and ready to be filed before the project will be approved for construction.

5. The contractor shall comply in all respects to the Industrial Code Part (Rule No.) 53 relating to construction, excavation, and demolition operations at or near underground facilities, as issued by the State of New York Department of Labor, Board of Standard and Appeals.

6. The construction of the sanitary sewer facilities shall be under the supervision of a person or firm qualified to practice professional engineering in New York State under the Education Law of the State, whenever engineering services are required by such law for such purposes.

7. Where such sanitary sewer facilities are under the supervision of a professional engineer, he/she shall certify to the DSM and to the applicant that the constructed facilities have been under his/her supervision and that the work has been fully completed in accordance with the approved engineering reports, plans, specifications, and approvals.

8. The Contractor is solely responsible for all site safety. The Contractor's equipment and methods of operation shall be in full compliance with OSHA Standards and satisfy all Federal, State and Local Health and Safety Regulations.

9. The Contractor is advised a trench shield and/or shoring designed in accordance with OSHA Standards shall be used in all open trench excavations.

10. Any contractor and/or plumber performing work in a confined space (i.e. manholes, wetwells, and chambers) owned by an Erie County Sewer District, must certify to the County that they have their own Confined Space Entry Program that meets or exceeds OSHA's regulations. Certification must be notarized by a notary public.

11. The contractor shall expose existing utilities ahead of the pipe laying operation, so if minor adjustments must be made in the pipe elevation and/or alignment due to interference from these utilities, said changes can be made in advance of the work.

12. The contractor shall retain the services of a qualified tree expert to remove, where necessary, branches which interfere with the construction operation, or to repair trees having suffered damage by construction activities. The cost involved is to be included in the various items of the contract.

13. The proposed 8 through 12 inch diameter sanitary sewer pipe shall be polyvinyl chloride (PVC) sewer pipe conforming to the latest revisions of American Society for Testing and Materials (ASTM) designation D-3034, SDR-35, installed in accordance with the ASTM designation D-2321-83a or the latest revision thereof, or approved equal. Larger diameter pipes will be reviewed on a case by case basis.

14. Sewers shall be laid with straight alignment between manholes and shall be checked by using a laser beam or lamping.

15. Should a fluid condition be encountered at the trench bottom, the contractor is to undercut the trench and provide suitable fill material (stone & fabric) to stabilize the trench bottom.

16. Sanitary sewer bedding material shall be No. 1 crushed stone with a gradation conforming to the *DSM Specifications for Subdivisions and Sanitary Sewer Extensions.*

17. Backfill shall be of a suitable material removed from the excavation except where other material is specified. Debris, frozen material, large clods or stones, organic matter, or other unstable materials shall not be used for backfill within two (2') feet of the top of the pipe.

18. All pipes crossing under paved areas are to be backfilled to sub-grade with compacted select material (No. 2 crushed stone) to five (5') feet outside the pavement edges or as required by the highway permit. If any proposed sewer runs under paved areas and has less than four (4) feet of cover, then concrete encasement is required as shown on the DSM Typical Concrete Encasement Detail.

19. Sewers parallel to watermains - *Ten State Standards, Latest Edition, Chapter 30, Section 38.31, and Page 30-11:* Sewers shall be laid at least ten (10') feet (three (3) meters) horizontally from any existing or proposed water main. The distance shall be measured edge to edge. In cases where it is not practical to maintain a ten (10') foot separation, the appropriate reviewing agency may allow deviation on a case-by-case basis, if supported by data from the design engineer. Such deviation may allow installation of the sewer closer to a water main, provided that the water main is in a separate trench or on an undisturbed earth shelf located on one side of the sewer and at an elevation so the bottom of the water main is at least 18-inches (460 mm) above the top of the sewer.

If it is impossible to obtain proper horizontal and vertical separation as described above, both the water main and sewer must be constructed of slip-on or mechanical joint pipe complying with public water supply design standards of the regulatory agency and be pressure tested to 150 pounds per square inch (psi) (1034 kPa) to assure water tightness prior to backfilling.

20. Sewers crossing watermains - *Ten State Standards, Latest Edition, Chapter 30, Section 38.32, Page 30-11 to 30-12:* Sewers crossing water mains shall be laid to provide a minimum vertical distance of 18-inches (460 mm) between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to maintain line and grade.

21. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, one of the following methods must be specified:

    a. The sewer shall be designed and constructed equal to water pipe, and shall be pressure tested at 150 psi (1034 kPa) to assure water tightness prior to backfilling.
    b. Either the water main or the sewer line may be encased in a watertight carrier pipe which extends ten (10') feet (three (3) meters) on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be of materials approved by the regulatory agency for use in water main construction.
    c. The sewer shall be encased in concrete per the DSM Watermain Crossing Detail Typical For Encasement

22. The manhole covers are to bear the inscription "ECSD SANITARY" and comply with the DSM Standard Frame and Cover detail. For private projects the covers shall bear the inscription "SANITARY SEWER" and comply with the DSM Standard Frame and Cover (Private Sewer) detail.

23. Building sanitary sewer vents must be installed six (6) inches above finished grade in a grassy area with a mushroom cap. If the vent is in a sidewalk or paved area, then protect with 6" diameter bollards (2 minimum).

24. Cleanouts (c.o.) are required on 4" and 6" building sewers every fifty feet and one hundred feet respectively, and at every change of alignment.

25. Abandoned building sewer connections from the site, if any, require proof of a District Permit for Disconnection prior to the new connection being made.

26. The following pertains only for direct replacement of in service sanitary sewers:
    a. Each new pipe joint shall be ultrasonic tested after it is laid, but before the next pipe is laid. All tests shall be in accordance with the testing equipment manufacture recommendations.

    b. The ultrasonic test shall be performed in lieu of the hydrostatic and air tests.
    c. A video inspection of the entire sewer shall be performed. Forward the video inspection tape and related paperwork to DSM for review and approval.
    d. A deflection test is required in all cases.

27. For all sanitary sewer installations, a written certificate of construction completeness and compliance, including the results of the hydrostatic leakage test, lamp test, deflection test, air test, etc. shall be submitted to the Erie County Health Department and DSM within thirty (30) days after completion of construction.

28. For all public and private 8" diameter pipe or larger sanitary sewer installations, the developer/contractor must provide one (1) set of record drawings on "D" size paper (24" x 36") and in an electronic file format (CD or flash drive) compatible with the latest AutoCAD release.

29. All public sewer extension projects that consist of more than 750 LF of 8" diameter pipe or larger, shall furnish a 2 year maintenance bond to the DSM.

30. Final Certification will be issued upon the full completeness and compliance of the project including any requirement(s) of I&I remedial work.

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No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Sanitary Sewer
General Notes

DRAWING NO.
C-403

Project no.: 21.011

1e

Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

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A. Requirements

1. After backfilling and prior to the final acceptance of the project, the Contractor will be required to perform the following three tests on all sewers built under this project:

a) Air Tests
b) Infiltration or Exfiltration
c) Deflection Test (15" dia. and smaller).

2. No more than 1,000 linear feet of installed sewer shall be allowed to remain untested.

3. In view of the fact that house laterals and riser pipes often contribute considerable infiltration, such laterals and risers are to be installed and capped, tied and blocked as the work progresses, prior to the air testing of the lines.

4. The Contractor's testing procedures shall be completed in accordance with OSHA Standards for confined space entry. The Contractor will be required to provide and operate all equipment necessary for full compliance for his operation. Equipment such as gas detectors, safety harnesses, ventilating blowers, respirators etc. shall be provided by the Contractor.

B. Air Tests (Required for All Diameters up to and including 36") 10 State Standards Section, 33.94

1) This test shall be performed no earlier than 14 calendar days after the trenches are backfilled.

2) The procedure for air testing shall be as specified herein. The minimum allowable time for the test pressure to decrease from 3.5 psi to 3.0 psi shall be not less than as called for in the following table:

Minimum Acceptance Times* For Length Shown (min:sec)

Pipe Diameter	Up to 100'	100 - 200'	200 - 300'	300 - 400'
6"	2:50	2:50	2:50	2:51
8"	3:47	3:47	3:48	5:04
12"	5:40	5:42	8:33	11:24
15"	7:05	8:54	13:21	17:48
18"	8:30	12:49	19:14	25:38
21"	9:55	17:27	26:11	34:54
24"	11:24	22:48	34:11	45:35
27"	14:25	28:51	43:16	57:42
30"	17:48	35:37	53:25	71:13
33"	21:33	43:56	64:38	86:10
36"	25:39	51:17	76:55	102:34

* Erie County Sewer District Inspector will extend time to the next full minute during the test.

3. Pipe lines in sizes up to 36 inches in diameter can be air tested from manhole to manhole for distances not to exceed 400 feet.

4. In wet trenches where pumping to lower the water table is impractical, approved 4" diameter, solid PVC drain pipe (with approved cap) shall be placed at each manhole to extend from a point 6 inches below the lowest invert to the top of the ground. Embed the pipe a minimum of 12" into clean #1 stone. Ground water elevations will be measured at each manhole in order to calculate the groundwater pressure acting on the pipe exterior. The initial air test pressure shall be increased as necessary to overcome the calculated groundwater pressure.

5. The testing procedures outlined shall be strictly adhered to.

6. All testing equipment shall be supplied by the Contractor and be in good working condition. Some of the major equipment required for air tests is:

a) Stop watch graduated in tenths of a second.
b) Compressor of 50 to 100 psi capacity.
c) Bulkheads for pipe.
d) Approximately 100 feet of 3/8" diameter air hose.
e) Pressure gauge - 0 to 5 psi graduated in 1/16th of a pound increments.
f) Three 3/8 inch diameter check valves.

C. Infiltration Tests (Applicable Only if Ground Water is Two Feet Above the Top of the Pipe)

1. This test shall be performed no earlier than 14 calendar days after the trenches are backfilled.

2. Infiltration tests for all sewers constructed under this project shall not exceed 100 gallons per inch diameter per mile of sewer, per 24 hours. Each individual run of sewer (from one manhole to the next manhole if greater than 100 feet) shall comply with the allowable rate of infiltration. All equipment for the tests shall be furnished by the Contractor and be in good working condition.

3. The allowable rate of infiltration given in gallons per mile is not to be construed as a commitment on the part of the District to accept an entire line, where overall infiltration is less than the allowable, while one or more runs contribute excessive infiltration.

4. The infiltration test is intended to measure the water tightness of a sewer as related to the infiltration of ground water and is only applicable if the water table level is 2 feet or higher above the top of the pipe for the entire length of the test section.

RECOMMENDED STANDARDS FOR WASTEWATER FACILITIES, 2014 EDITION

38.3 Relation to Water Mains

38.31 Horizontal and Vertical Separation

Sewers shall be laid at least 10 feet (3 m) horizontally from any existing or proposed water main. The distance shall be measured edge to edge. For gravity sewers where it is not practical to maintain a 10 foot (3 m) separation, the appropriate reviewing agency may allow deviation on a case-by-case basis, if supported by data from the design engineer. Such deviation may allow installation of the gravity sewer closer to a water main, provided that the water main is in a separate trench or on an undisturbed earth shelf located on one side of the gravity sewer and at an elevation so the bottom of the water main is at least 18 inches (460 mm) above the top of the sewer.
If it is impossible to obtain proper horizontal and vertical separation as described above for gravity sewers, both the water main and gravity sewer shall be constructed of slip-on or mechanical joint pipe complying with Section 8.1 and Section 8.7 of the "Recommended Standards for Water Works - 2012 Edition" and shall be pressure rated to at least 150 psi (1034 kPa) and pressure tested to ensure watertightness.

38.32 Crossings

Sewers crossing water mains shall be laid to provide a minimum vertical distance of 18 inches (460 mm) between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to maintain line and grade.
When it is impossible to obtain proper horizontal and vertical separation as stipulated above, one of the following methods shall be specified:
30-11
a. The sewer shall be designed and constructed equal to water pipe, as described in Paragraph 38.31.
b. Either the water main or the sewer line may be encased in a watertight carrier pipe that extends 10 feet (3 m) on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be made of materials approved by the regulatory agency for use in water main construction.

a) Approved 4" diameter solid PVC drain pipe (with an approved cap) shall be placed at each manhole to extend from a point 6 inches below the lowest invert to the top of the ground. Embed the pipe a minimum of 12" into clean #1 stone. Ground water elevations will be measured at each manhole so that the ground water level can be correlated with the infiltration measurements.

b) Before conducting the tests, the water table should be allowed to stabilize at its normal level and verified that it is 2 feet above the top of the pipe during the test period. The test is usually conducted between adjacent manholes with the upstream end of the sewer bulkheaded in a suitable manner to isolate the test section. All service laterals, stubs and fittings should be properly plugged or capped at the connections to the test pipe section to prevent the entrance of ground water at these locations.

c) A V-notch weir or other suitable measuring device should be installed in the inlet pipe of the downstream manhole. Infiltrating water is then allowed to build up and level off behind the weir until a steady, uniform flow occurs over the weir. Leakage is determined by direct reading from graduations on the weir consecutively for five (5) days and converting the flow quantity to gallons per unit length of pipe per unit of time.

d) An important factor in applying the test criteria is to properly correlate the variable water head over the length of the sewer being tested to the high ground water level. A minimum of 2 feet of water over the pipe is required at the upper manhole before the infiltration test will be allowed.

5. When a sewer run between two consecutive manholes or chambers is found to contribute infiltration at a rate above the allowable, inspection by television or other cameras may be made by the Contractor so that the defective section of sewer can be located and repaired. Each individual run of sewer (from one manhole to the next manhole if greater than 100 feet) shall comply with the allowable rate of infiltration of 100 gallons per inch diameter per mile of sewer per 24 hours.

D. Exfiltration Tests

1. This test shall be performed no earlier than 14 calendar days after the trenches are backfilled.

2. The exfiltration test for all diameter sewers shall be as described below. Although actual infiltration will normally be less than that indicated by the water exfiltration test, the test does provide a positive means of subjecting the completed sewer system to an actual pressure test. Since sanitary sewers are not designed or expected to operate as a pressure system, care must be exercised in conducting the test and correlating the results with the allowable exfiltration limits.

a) The test is usually conducted between adjacent manholes. Prior to the test, all service laterals, stubs and fittings within the test section should be plugged or capped and adequately braced or blocked to withstand the water pressure resulting from the test.

b) If manholes are to be included in the test, the inlet pipe to each manhole should be bulkheaded and the test section filled with water through the upstream manhole. To allow air to escape from the sewer, the flow should be at a steady rate until the water level in the upstream manhole provides an average pressure of 5 psi (11.6' head) at the center point of the test section or the upstream manhole is filled. If necessary, provisions should be made to bleed off entrapped air during the filling of the test section.

c) Once the test section is filled, the water should be allowed to stand for an adequate period of time (one day minimum) to allow for water absorption by the pipe and manhole. After water absorption has stabilized, the water level in the upstream manhole is brought up to the proper test level and this level established by measuring down from the manhole rim or other convenient datum point. After 24 hours, the water elevation should be measured from the same reference point and the loss of water during the test period calculated, or the water can be restored to the level existing at the beginning of the test, and the amount added used to determine the leakage.

d) To exclude both manholes from the test,it is necessary to bulkhead the outlet pipe of the upstream manhole. Provision must be made in the bulkhead for filling the pipe and expelling trapped air.

e) The water level at the upstream manhole shall be computed and varies above the top of the pipe. Since the sewer is installed on a grade, the test section downstream will most likely be subjected to a greater pressure. Therefore, the test pressure head at the upstream manhole should be adjusted such that the maximum pressure on the pipe being tested is no greater than 10 psi, (23 feet of head).

3. When a sewer run between two consecutive manholes or chambers is found to exfiltrate at a rate above the allowable, inspection by television or other cameras may be made by the Contractor during wet weather, so that the defective section of sewer can be located and repaired. Each individual run of sewer (from one manhole to the next manhole) shall comply with the allowable rate of infiltration of 100 gallons per inch diameter per mile of sewer per 24 hours.

E. Deflection Test

1. This test shall be performed no earlier than 30 calendar days after the trenches are backfilled.

2. All flexible (PVC) sewers 8" diameter or larger constructed under this project shall be internally checked with a five percent (5%) deflection "go-no-go pig" or Mandrel to determine if the pipes are deflecting excessively. Any section of pipe unable to pass the deflection test "pig test" shall be removed and replaced at the Contractor's expense.

3. Deflection testing mandrels or pig shall be pulled thru the pipe by hand or hand operated winch. Power winches or drives are not permitted.

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REVISIONS:
No. Description Date

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Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Sanitary Sewer Testing Notes

DRAWING NO.
C-404

Project no.: 21.011

Packet Pg. 1489

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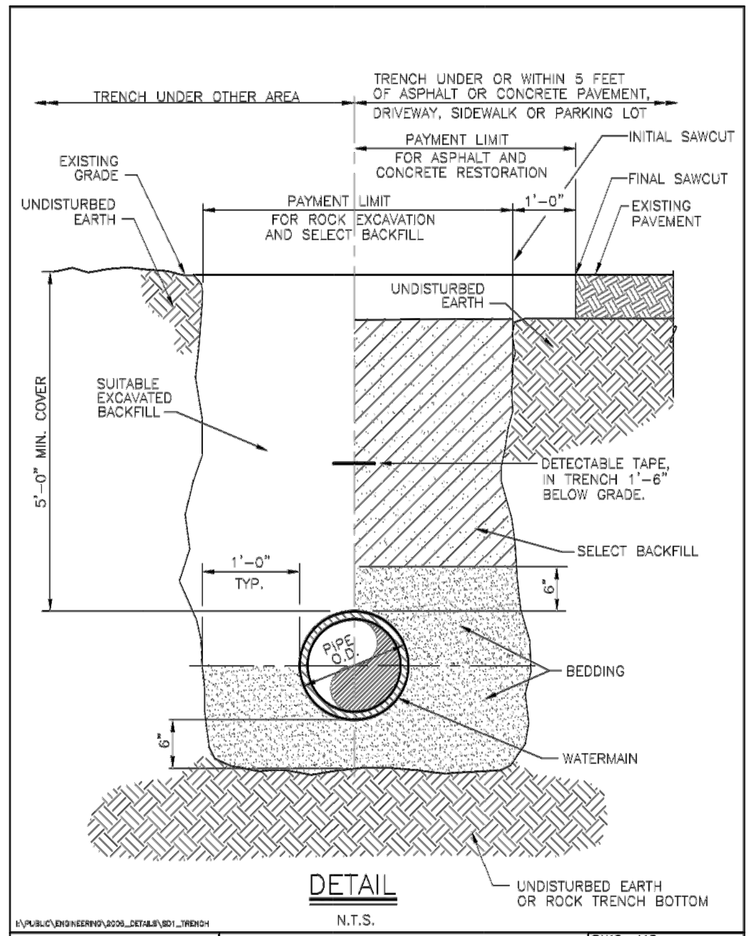
Attachment: SP-2021-05_drawings_061721 (2305?) : SP-2021-05)

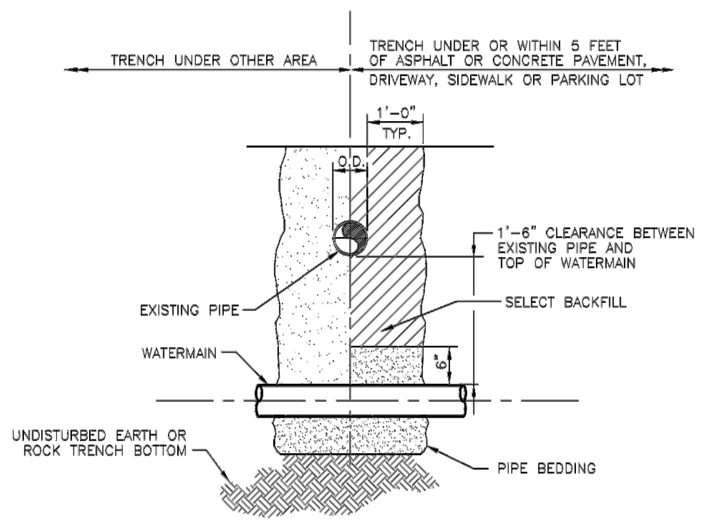
Packet Pg. 1490



DETAIL
N.T.S.

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD1_TRENCH

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TRENCH THROUGH 12–INCH DIAMETER WATERMAIN	DWG. NO. SD1	
		DATE 4/28/92	REVISED 10/05



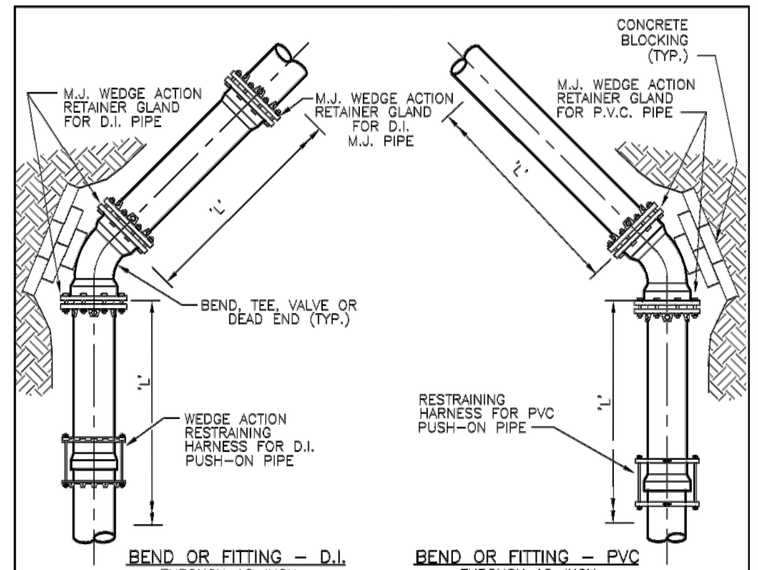
NOTES:

1. ALL EXISTING UTILITIES MUST BE SUPPORTED DURING CONSTRUCTION OF THE NEW WATERMAIN.
2. WHEN CROSSING A SEWERLINE WITH A NEW WATERMAIN, ONE FULL PIPE LENGTH (18 FT. MIN.) SHALL BE USED AT THE POINT OF CROSSING. THE WATERMAIN SHALL BE PLACED SO THAT BOTH JOINT ENDS ARE AS FAR AS POSSIBLE FROM THE EXISTING SEWERLINE.

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD2_PIPE_CROSSING

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL PIPE CROSSING	DWG. NO. SD2	
		DATE 4/28/92	REVISED 10/05



BEND OR FITTING – D.I.
THROUGH 12–INCH

BEND OR FITTING – PVC
THROUGH 10–INCH

RESTRAINED JOINT SCHEDULE					
PIPE SIZE	PIPE TYPE	11.25° ELBOW 'L'	22.5° ELBOW 'L'	45° ELBOW 'L'	TEE BRANCH, 90° BEND, VALVE OR DEAD END 'L'
6"	PVC	13'	25'	50'	120' MIN.
8"	PVC	15'	30'	59'	122' MIN.
8"	D.I.P.	15'	30'	59'	122' MIN.

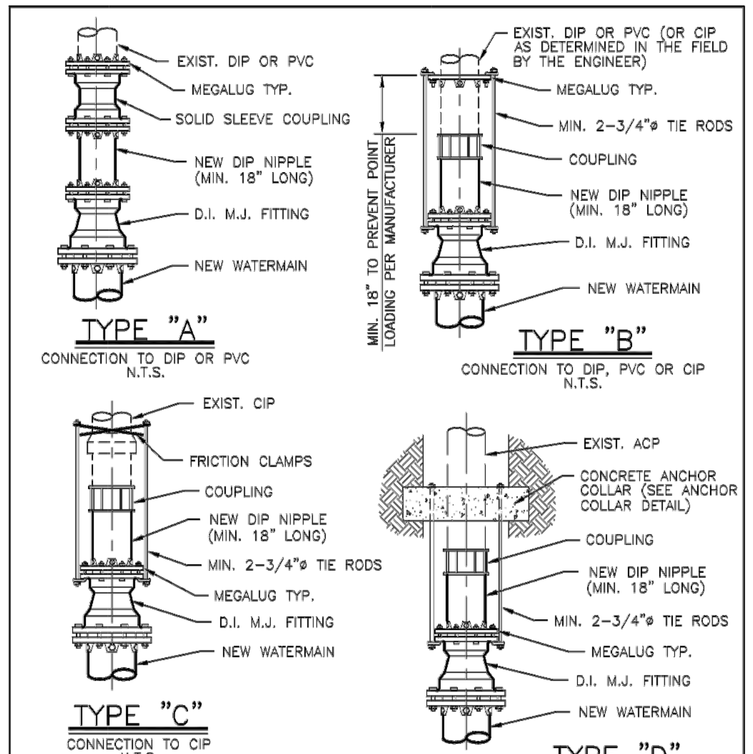
NOTES:

1. DIMENSION 'L' REPRESENTS THE LENGTH OF RESTRAINED PIPE REQUIRED IN FEET EACH SIDE OF THE PIPE FITTING.

PLAN
N.T.S.

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD4_REST_JOINT_SCHED

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL RESTRAINED JOINT SCHEDULE	DWG. NO. SD4	
		DATE 4/28/92	REVISED 10/05

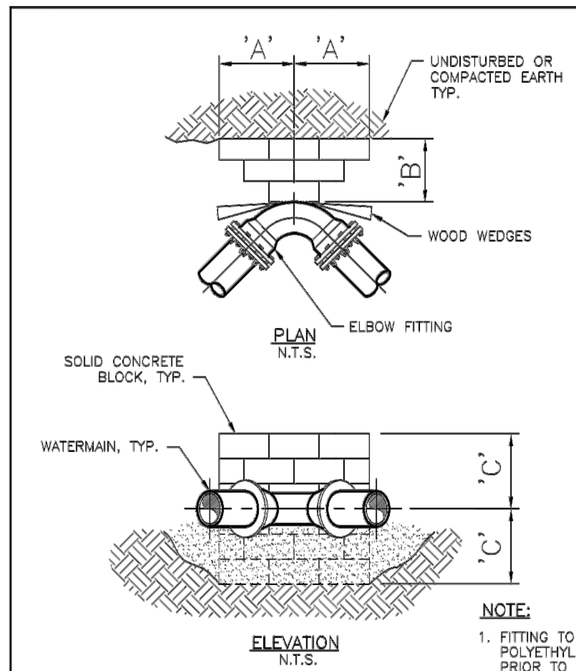


NOTES:

1. VALVES AND TEES MAY BE HARNESSED SIMILARLY.
2. HARNESSING IS FOR RESISTANCE TO INTERNAL PRESSURE–PIPE ITSELF MUST BE SUPPORTED ON FIRM BEDDING AND CAREFULLY BACKFILLED.
3. COAT ALL EXPOSED SURFACES OF HARNESS ASSEMBLY WITH BITUMINOUS COATING.
4. TIE RODS SHALL BE PLACED ON SIDES OF PIPE.

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD5_CONN_EXIST_MAIN

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TYPICAL CONNECTION TO EXISTING WATERMAIN THROUGH 12–INCH DIAMETER WATERMAIN	DWG. NO. SD5	
		DATE 3/05	REVISED 10/05



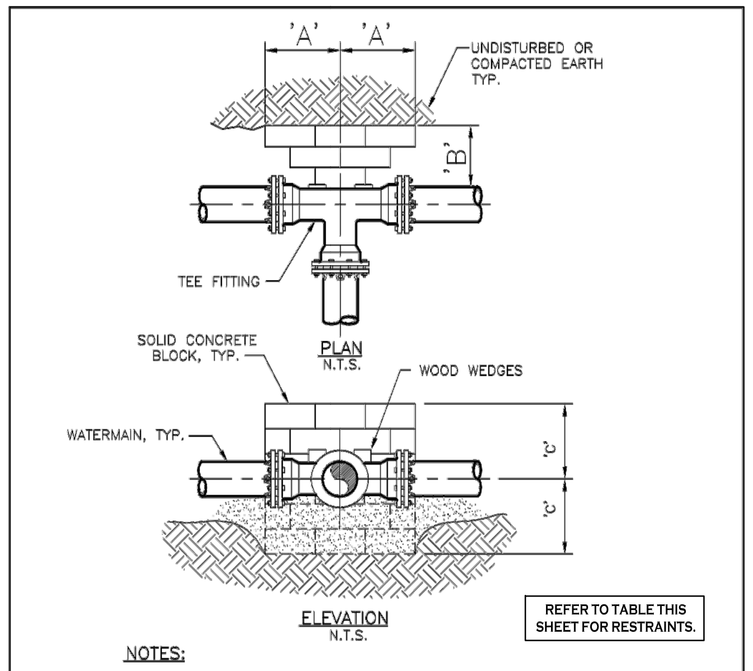
NOTE:

1. FITTING TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.

DIMENSION SCHEDULE												
PIPE SIZE	11.25° ELBOW			22.5° ELBOW			45° ELBOW			90° ELBOW		
	'A'	'B'	'C'	'A'	'B'	'C'	'A'	'B'	'C'	'A'	'B'	'C'
8"	1.5'	1.5'	2.5'	2.5'	1.5'	2.5'	3.0'	1.5'	3.5'	3.5'	1.5'	5.0'

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD6_THRUST_BLOCKS_ELBOW

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR ELBOW FITTING	DWG. NO. SD6	
		DATE 4/28/92	REVISED 10/05



REFER TO TABLE THIS SHEET FOR RESTRAINTS.

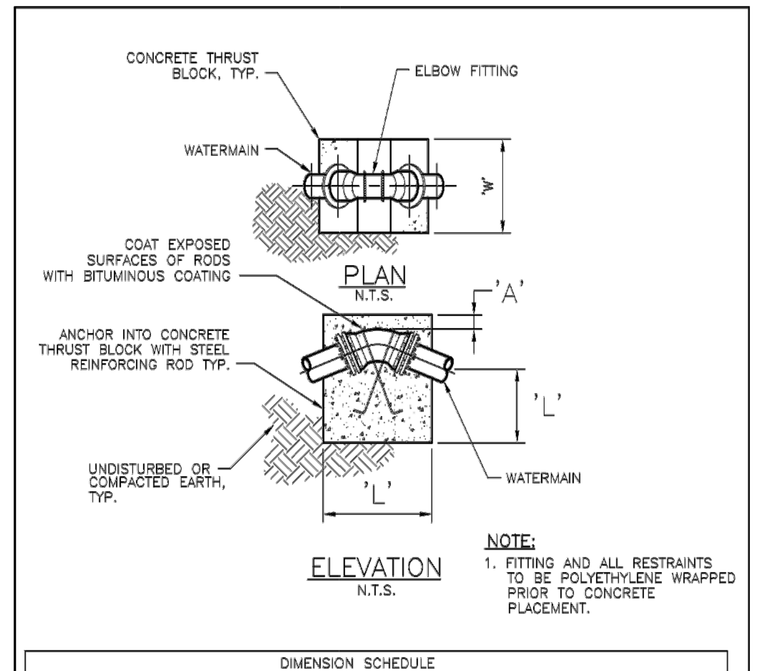
NOTES:

1. THRUST BLOCK REQUIRED FOR TEES, HYDRANT LATERAL TEES AND TAPPING SLEEVE INSTALLATIONS.
2. FITTING TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.

BRANCH TEE SIZE	DIMENSION SCHEDULE 'A'	'B'	'C'
6"	1'-0"	1'-0"	0'-6"
8"	1'-6"	1'-0"	0'-6"

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD7_THRUST_BLOCKS_TEE

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR TEE OR "DEAD END" FITTING	DWG. NO. SD7	
		DATE 4/28/92	REVISED 10/05



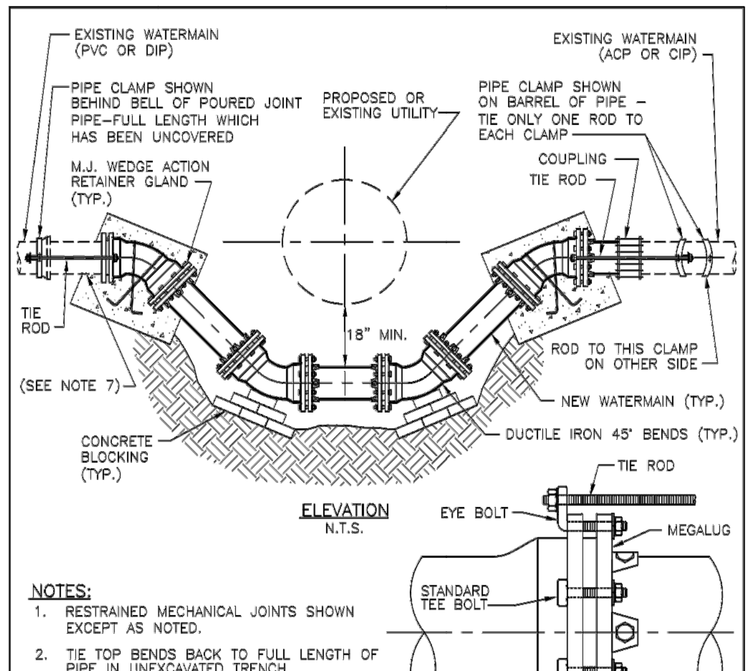
NOTE:

1. FITTING AND ALL RESTRAINTS TO BE POLYETHYLENE WRAPPED PRIOR TO CONCRETE PLACEMENT.

DIMENSION SCHEDULE													
PIPE SIZE	PIPE TYPE	11.25° ELBOW				22.5° ELBOW				45° ELBOW			
		'A'	'W'	'L'	ROD ø	'A'	'W'	'L'	ROD ø	'A'	'W'	'L'	ROD ø
8"	D.I.P	12"	1'-0"	1'-0"	1/2"	12"	1'-9"	1'-9"	1/2"	1'-6"	2'-0"	2'-0"	1/2"

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD8_THRUST_BLOCKS_VBEND

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR VERTICAL BEND	DWG. NO. SD8	
		DATE 4/28/92	REVISED 10/05



NOTES:

1. RESTRAINED MECHANICAL JOINTS SHOWN EXCEPT AS NOTED.
2. TIE TOP BENDS BACK TO FULL LENGTH OF PIPE IN UNEXCAVATED TRENCH.
3. VALVES, TEES AND HYDRANTS MAY BE HARNESSED SIMILARLY.
4. HARNESSING IS FOR RESISTANCE TO INTERNAL PRESSURES–PIPE ITSELF MUST BE SUPPORTED ON FIRM BEDDING AND CAREFULLY BACKFILLED.
5. COAT ALL EXPOSED SURFACES OF HARNESS ASSEMBLY WITH BITUMINOUS COATING.
6. TIE RODS SHALL BE PLACED ON SIDES OF PIPE.
7. IF EXISTING PIPE IS CIP OR PVC, CONNECT TO NEW FITTING ONLY WHEN ALLOWED BY ENGINEER.

TIE ROD SCHEDULE			
PIPE SIZE	PIPE TYPE	ROD ø	NUMBER OF RODS
8"	PVC	3/4"	2

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD10_HARN_OFFSET_EXIST_WMAIN

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL HARNESSING DETAILS–INSTALL OFFSET IN EXISTING WATERMAIN	DWG. NO. SD10	
		DATE 6/00	REVISED 10/05

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Buffalo, New York 14203
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F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Water Details

DRAWING NO.

C-405

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

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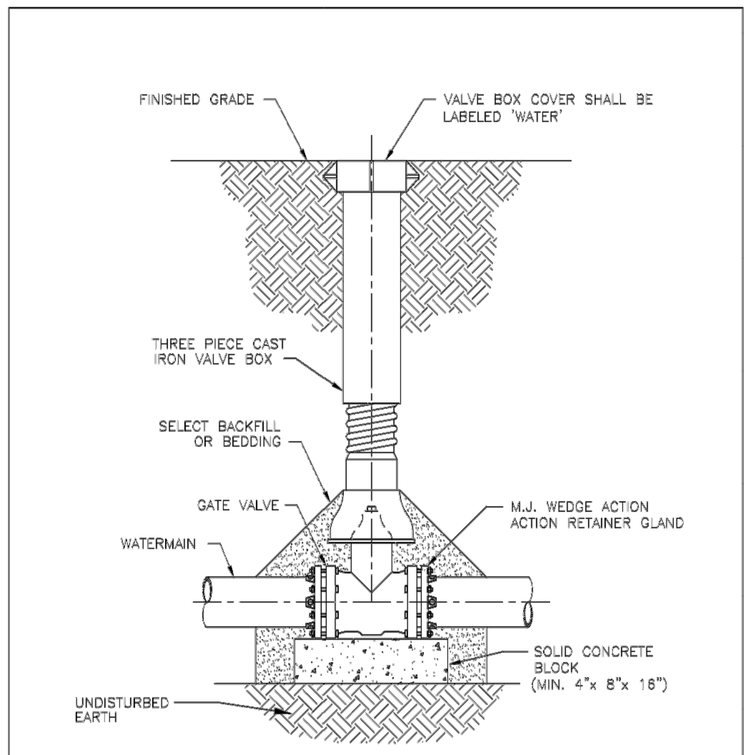
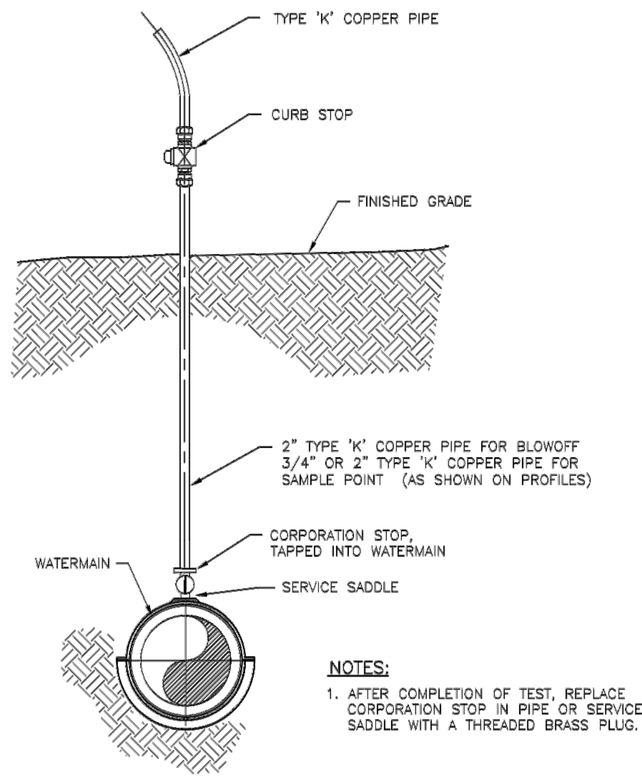


NOTES:
1. VALVE SHALL NOT SUPPORT VALVE BOX.
2. GATE VALVE SHALL BE INSTALLED LEVEL.
3. VALVE BOX SHALL BE PLUMB TO GRADE, WITH OPERATING NUT CENTERED IN BOX.

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD11_GATE_VALVE_SET

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GATE VALVE SETTING	DWG. NO. SD11	
		DATE 4/28/92	REVISED 02/17

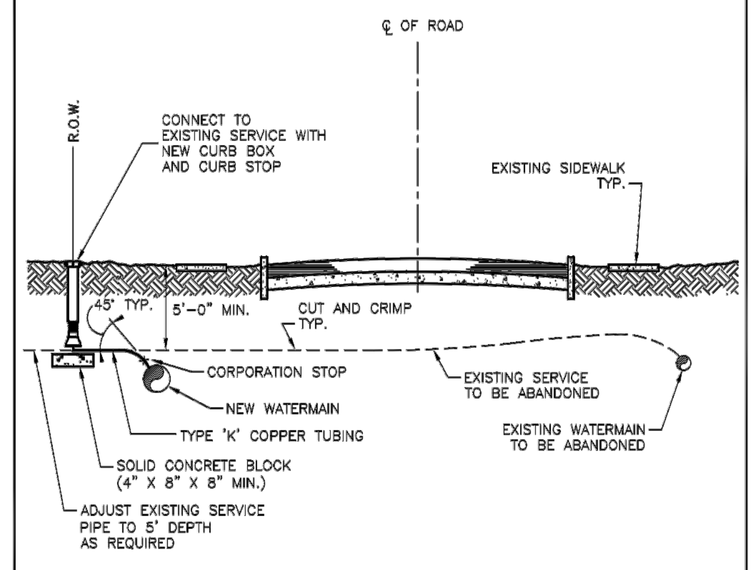


NOTES:
1. AFTER COMPLETION OF TEST, REPLACE CORPORATION STOP IN PIPE OR SERVICE SADDLE WITH A THREADED BRASS PLUG.

ELEVATION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD17_TEMP_BO_SAMP_PT

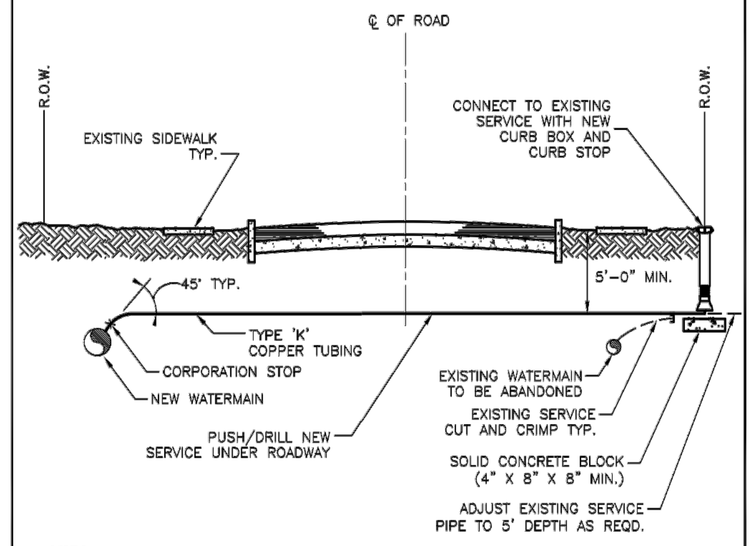
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TEMPORARY BLOW-OFF/SAMPLING POINT	DWG. NO. SD17	
		DATE 4/28/92	REVISED 10/05



NOTES:
1. EXISTING SERVICES SHALL BE CRIMPED AND ABANDONED IN PLACE.
2. SERVICE SADDLES SHALL BE USED UNDER THE FOLLOWING CONDITIONS:
   A. WHEN SERVICES ARE PLACED ON 4" OR SMALLER PIPES.
   B. WHEN SERVICES LARGER THAN 1" ARE PLACED ON A 6" PIPE.
   C. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON AN 8" PIPE.
   D. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON DUCTILE IRON PIPE.
   E. WHEN TAPPING ALL PLASTIC (PVC) PIPE.
   F. WHEN TAPPING ALL ASBESTOS-CEMENT PIPE.
3. CURB BOXES SHALL NOT BE PLACED IN SIDEWALKS, DRIVEWAYS, OR CURB RAMPS.
4. UNIONS ON COPPER TUBING ARE NOT ALLOWED UNLESS APPROVED BY ECWA PRIOR TO INSTALLATION.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD15_WS_SERV_REPLACE

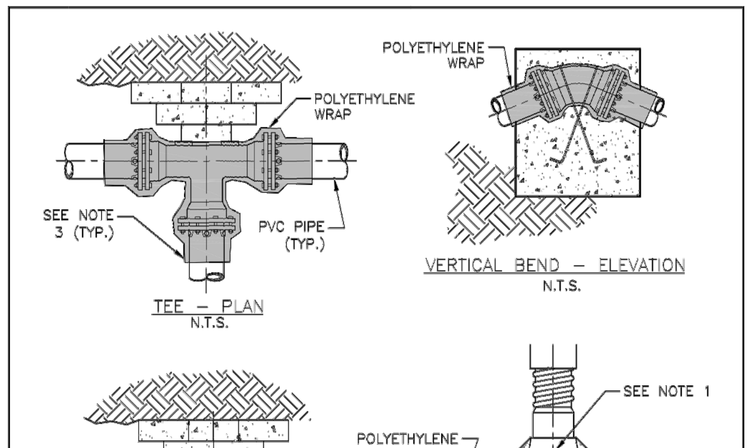
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL NEAR SIDE SERVICE REPLACEMENT/INSTALLATION	DWG. NO. SD15	
		DATE 4/92	REVISED 09/16



NOTES:
1. EXISTING SERVICES SHALL BE CRIMPED AND ABANDONED IN PLACE.
2. SERVICE SADDLES SHALL BE USED UNDER THE FOLLOWING CONDITIONS:
   A. WHEN SERVICES ARE PLACED ON 4" OR SMALLER PIPES.
   B. WHEN SERVICES LARGER THAN 1" ARE PLACED ON A 6" PIPE.
   C. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON AN 8" PIPE.
   D. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON DUCTILE IRON PIPE.
   E. WHEN TAPPING ALL PLASTIC (PVC) PIPE.
   F. WHEN TAPPING ALL ASBESTOS-CEMENT PIPE.
3. CURB BOXES SHALL NOT BE PLACED IN SIDEWALKS, DRIVEWAYS, OR CURB RAMPS.
4. USE POLYETHYLENE FOR 3/4" AND 1" SERVICES GREATER THAN 100 FEET IN LENGTH, AND FOR 1-1/2" AND 2" SERVICES GREATER THAN 60 FEET IN LENGTH. ALL POLYETHYLENE SERVICES SHALL INCLUDE A TRACER WIRE FOR DETECTION BY ECWA FORCES.
5. UNIONS ON COPPER TUBING ARE NOT ALLOWED UNLESS APPROVED BY ECWA PRIOR TO INSTALLATION.

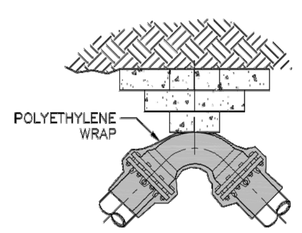
I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD16_FS_SERV_REPLACE

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL FAR SIDE SERVICE REPLACEMENT/INSTALLATION	DWG. NO. SD16	
		DATE 4/92	REVISED 09/16

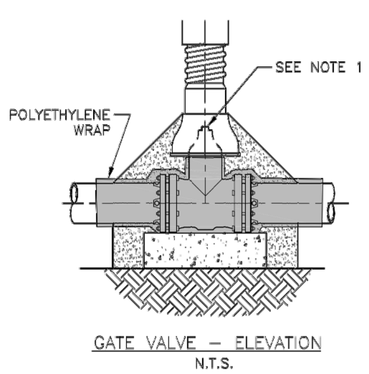


TEE - PLAN
N.T.S.

VERTICAL BEND - ELEVATION
N.T.S.



HORIZONTAL BEND - PLAN
N.T.S.

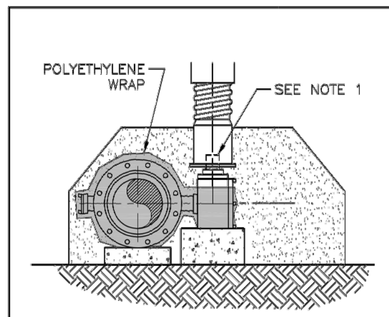


GATE VALVE - ELEVATION
N.T.S.

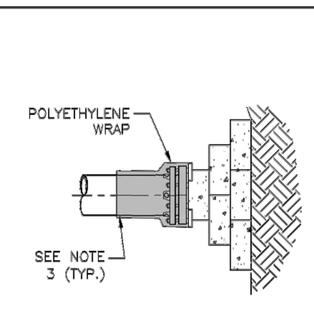
NOTES:
1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP IS NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PIPE (OR POLYWRAP IF DIP) WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD39A_POLYWRAPPING_FITTINGS

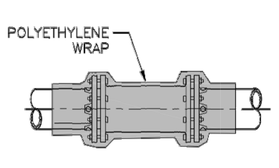
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING CAST/DUCTILE IRON FITTINGS	DWG. NO. SD39A	
		DATE 3/18	REVISED 12/18



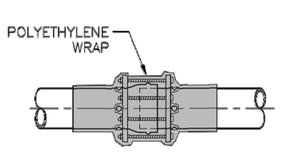
BUTTERFLY VALVE - ELEVATION
N.T.S.



END CAP / PLUG
N.T.S.



SOLID SLEEVE OR RESTRAINED COUPLING
N.T.S.

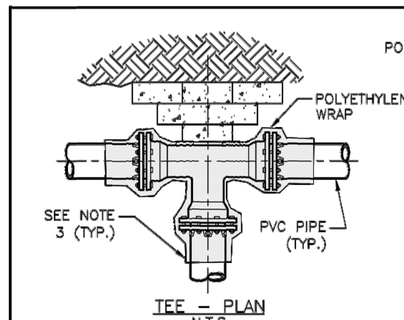


EXTERNAL JOINT RESTRAINT
N.T.S.

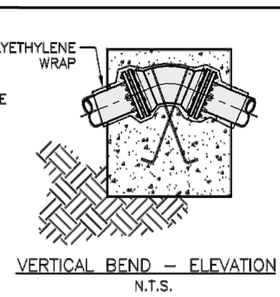
NOTES:
1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP IS NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PIPE (OR POLYWRAP IF DIP) WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD38_POLYWRAPPING_FITTINGS

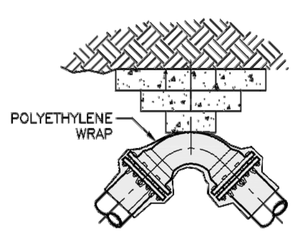
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING CAST/DUCTILE IRON FITTINGS	DWG. NO. SD39B	
		DATE 12/18	REVISED



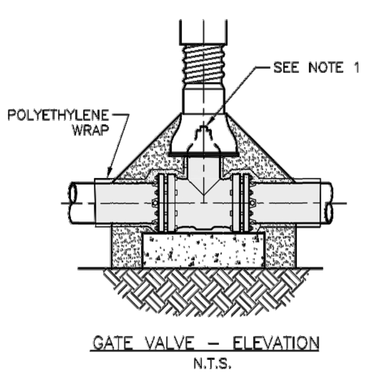
TEE - PLAN
N.T.S.



VERTICAL BEND - ELEVATION
N.T.S.



HORIZONTAL BEND - PLAN
N.T.S.

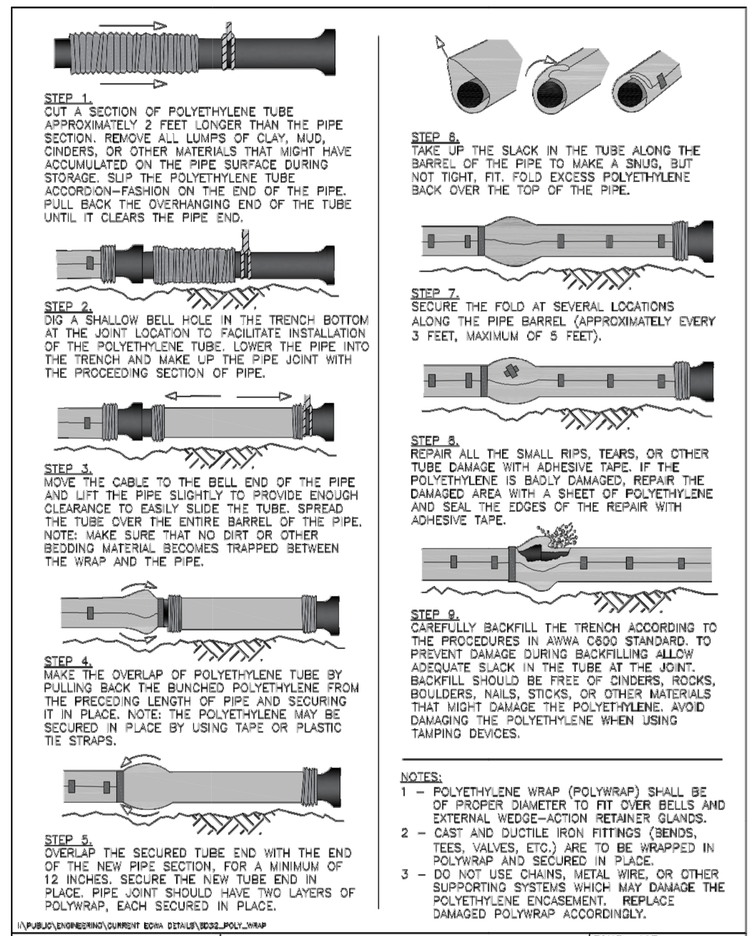


GATE VALVE - ELEVATION
N.T.S.

NOTES:
1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON GATE VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PVC PIPE WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD39_POLYWRAPPING_FITTINGS

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING DUCTILE IRON FITTINGS ON PVC PIPE	DWG. NO. SD39	
		DATE 3/18	REVISED



NOTES:
1 - POLYETHYLENE WRAP (POLYWRAP) SHALL BE OF PROPER DIAMETER TO FIT OVER BELLS AND EXTERNAL WEDGE-ACTION RETAINER GLANDS.
2 - CAST AND DUCTILE IRON FITTINGS (BENDS, TEES, VALVES, ETC.) ARE TO BE WRAPPED IN POLYWRAP AND SECURED IN PLACE.
3 - DO NOT USE CHAINS, METAL WIRE, OR OTHER SUPPORTING SYSTEMS WHICH MAY DAMAGE THE POLYETHYLENE ENCASEMENT. REPLACE DAMAGED POLYWRAP ACCORDINGLY.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD32_POLY_WRAP

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYETHYLENE ENCASEMENT OF DUCTILE IRON PIPE	DWG. NO. SD32	
		DATE 08/16	REVISED 02/19

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REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Water Details

DRAWING NO.
C-406

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

1e

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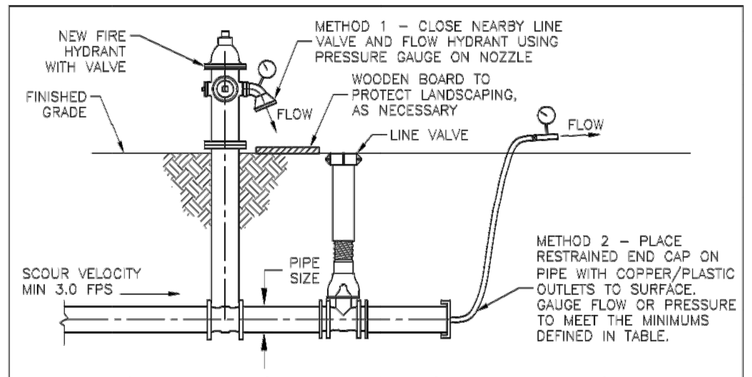


PIPE SIZE (IN)	REQUIRED FLOW (GPM)	METHOD 1 HYDRANT FLOW		METHOD 2 END CAP FLOW	
		2 1/2" NOZZLE PRESSURE (PSI)	4" NOZZLE PRESSURE (PSI)	2" I.D. PRESSURE (PSI)	3" I.D. PRESSURE (PSI)
6	275	7	1	7	2
8	500	9	2	22	5
10	750	20	4	50	10
12	1100	44	7	–	22
16	1900	–	20	–	62
20	3000	–	50	–	–

I.D. = INNER DIAMETER

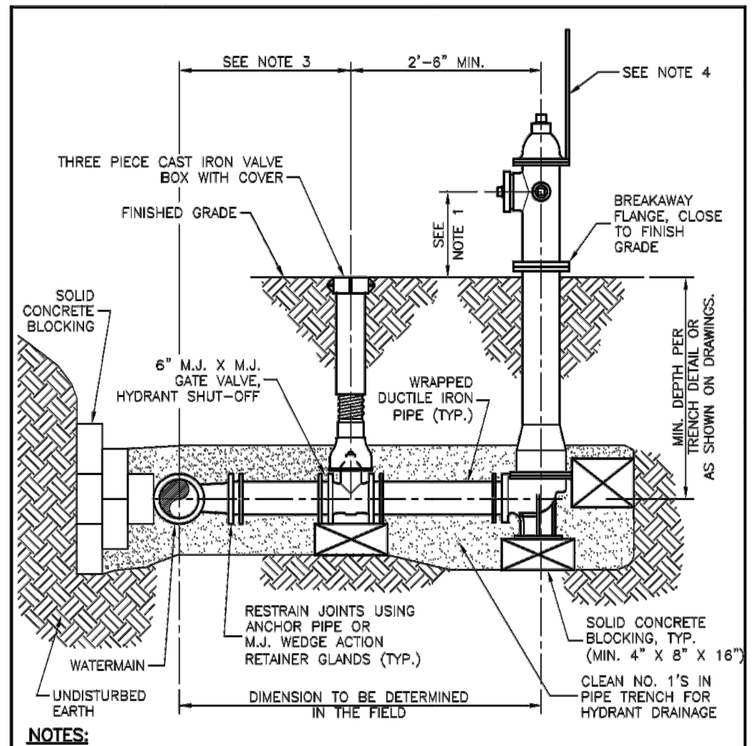
NOTES:

1. TO OBTAIN SCOUR VELOCITY (3.0 FPS) IN THE WATERLINE, CONTRACTOR SHALL ACHIEVE FLOWRATE AT NOZZLE DEFINED IN TABLE. PRESSURE GAUGE USED SHALL SHOW A HIGHER PRESSURE THAN THE MINIMUMS DEFINED IN THE TABLE.
2. OUTLET PRESSURE MEASURED BY PITOT GAUGE.
3. ENGINEER SHALL PROVIDE CALCULATIONS IF CONNECTIONS ARE OTHER THAN THOSE SHOWN, IF MULTIPLE CONNECTIONS ARE USED, OR AS REQUESTED BY ECWA.
4. TO FLUSH THREE PIPE VOLUMES, MINIMUM FLUSHING TIME (IN SECONDS) EQUALS THE LENGTH OF PIPE BEING FLUSHED, IN FEET.

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD36_WATERLINE_FLUSHING

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL WATERLINE FLUSHING	DWG. NO. SD36	
		DATE 6/16	REVISED 3/18



NOTES:

1. CENTERLINE OF THE LOWEST NOZZLE TO FINISHED GRADE SHALL BE A MIN. OF 15" & MAX. OF 18".
2. HYDRANT RISER SHALL BE INSTALLED PLUMB.
3. VALVE BOX SHALL NOT BE PLACED IN PAVEMENT.
4. RELOCATE HYDRANT MARKER (IF PRESENT), FOR WATERLINE REPLACEMENT PROJECTS ONLY.
5. HYDRANT FACE TO BE A MINIMUM OF 3' FROM THE BACK FACE OF ALL CURBS OR A MINIMUM OF 5' FROM ALL EDGES OF PAVEMENT (IF NO CURB).

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD13_HYD_INST

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL FIRE HYDRANT INSTALLATION	DWG. NO. SD13	
		DATE 6/00	REVISED 11/16

NOTES

1. All elevations refer to USGS NAVD83 datum.
2. The CONTRACTOR shall obtain necessary permits and furnish copies to the ENGINEER prior to commencing work.
3. The CONTRACTOR'S work area shall be confined to the limits of the right-of-ways and easements. The CONTRACTOR shall obtain any additional easements or work releases should the CONTRACTOR require additional area to accommodate his operations.
4. The CONTRACTOR shall provide maintenance and protection of traffic in accordance with the Erie County Highway Department standards and the NYSDOT Manual of Uniform Traffic Control Devices.
5. The locations and depths of existing underground utilities as shown on the plans and profiles are approximate. Other underground utilities not shown may be encountered. The CONTRACTOR shall perform test pits to verify the location and elevation of utilities at interconnections and crossings as shown, directed, or required. The CONTRACTOR shall excavate in advance of the pipe laying operation and expose all existing underground utilities to prevent damage during construction and to determine required changes in grade necessary to install the watermain to avoid conflicts.
6. The CONTRACTOR shall install those measures required to limit erosion of areas disturbed by the work. Clearing shall be performed on an as-needed basis, phased to reduce erosion and visual impact.
7. Blasting will not be permitted.
8. No more than one connection may be made to any existing watermain prior to testing, disinfection, and approval of the Waterline Installation Completed Works Approval Report(s) by the Erie County Water Authority and the Erie County Health Department.
9. The Erie County Water Authority shall only operate existing valves and fire hydrants, including newly installed valves and fire hydrants that have been placed into service. The CONTRACTOR is advised that watertight conditions may not exist when existing valves are closed.
10. The CONTRACTOR shall have all equipment, manpower, and materials required on site and ready for use prior to commencing any shut-down or removing any existing facilities from service. The CONTRACTOR shall notify all affected customers in writing of any shut-down at least 48 hours in advance. The CONTRACTOR shall notify the appropriate fire stations 48 hours in advance prior to taking any fire hydrants out of service. Any fire hydrants not in service shall be bagged in burlap or plastic. Any shut-down shall be limited to 4 consecutive hours. It may be necessary to schedule shut-downs at night, weekends, or other off hours so as to not affect schools, businesses or other customers, as determined by the ENGINEER. Shut-down requests shall be submitted to the Erie County Water Authority a minimum of 5 business days in advance of the requested shut-down date.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD29_GENERAL_NOTES

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GENERAL NOTES	DWG. NO. SD29	
		DATE 3/05	REVISED 7/17

11. All watermain piping shall be installed with a minimum of 5'-0" of cover.
12. All watermain piping shall be installed with a minimum of 1'-6" of vertical clearance and 10'-0" of horizontal clearance from sanitary and storm piping, measured from the outside of the pipes at the point of crossing.
13. If the material at the design grade is unsuitable as determined by the ENGINEER, the CONTRACTOR, when ordered in writing, shall excavate additional material to the depth necessary and shall backfill to the proposed grade with the select granular material.
14. The installation of 90 degree bends in the watermain is not allowed, unless approved by the Erie County Water Authority.
15. Thrust restraint for watermain piping through 12-inch diameter shall consist of thrust blocks and pipe joint restraint.
16. The CONTRACTOR shall notify the owner of any utility pole in advance of any excavation work that will take place within 5'-0" of the utility pole. The CONTRACTOR shall include the cost of temporary pole support in the appropriate bid item.Where utility poles are required to be supported during construction, the CONTRACTOR shall make all necessary arrangements with the utility company.
17. If materials are encountered during the construction that are suspected of being contaminated, the CONTRACTOR shall immediately notify the NYSDEC for direction regarding testing, separation, containment, and disposal procedures.
18. Existing fire hydrants removed during construction and not reinstalled as part of the work shall be scheduled and returned to the Erie County Water Authority Service Center, 3030 Union Road, Cheektowaga, New York 14227.
19. The CONTRACTOR shall cold patch all trench excavations in traveled areas including roads, driveways, sidewalks, and parking areas.
20. The CONTRACTOR shall not restrict access for school buses or any emergency vehicles.
21. The use of existing fire hydrants for any reason is prohibited without prior approval of the Erie County Water Authority. This includes newly installed fire hydrants that have been placed into service.
22. The CONTRACTOR shall submit procedures for testing and disinfection of the watermain to the ENGINEER for review prior to the start of testing.
23. The CONTRACTOR shall be present and assist in the Final Walk inspection. The CONTRACTOR shall provide sufficient personnel and equipment to demonstrate to the ENGINEER that all valves, fire hydrants, and curb stops operate as required.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD30_GENERAL_NOTES

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GENERAL NOTES	DWG. NO. SD30	
		DATE 3/05	REVISED 7/17

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Water Details & Notes

DRAWING NO.
C-407

Project no.: 21.011

Packet Pg. 1492

Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

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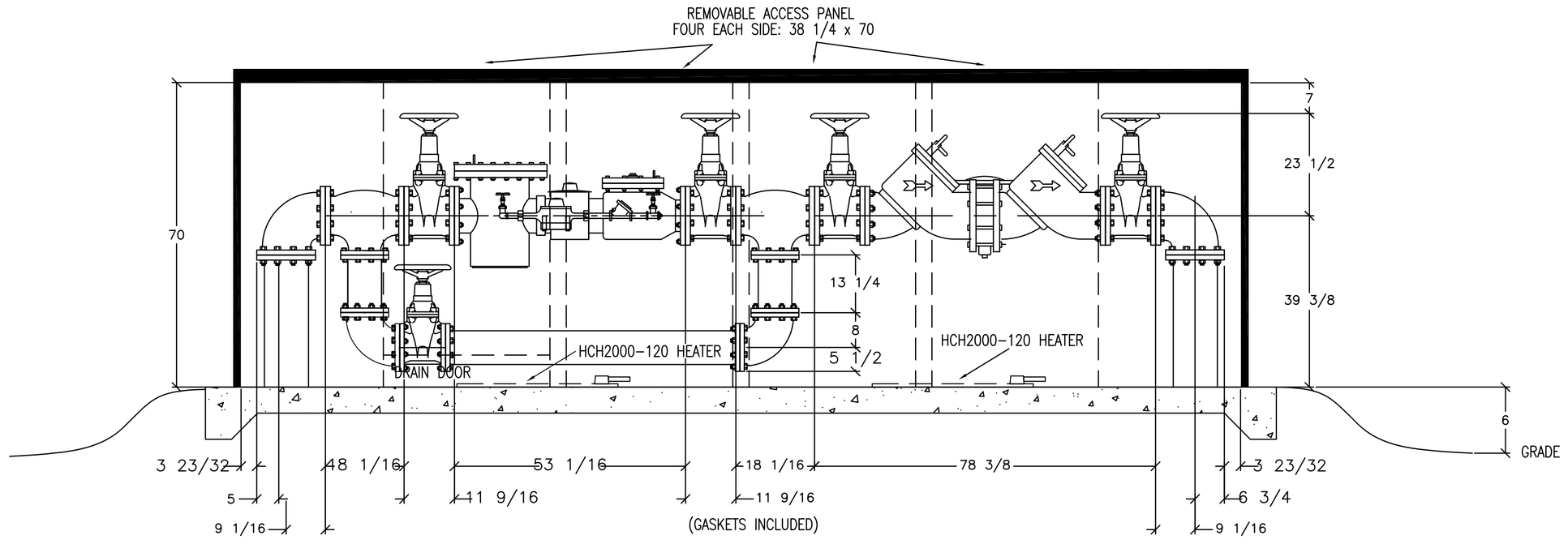

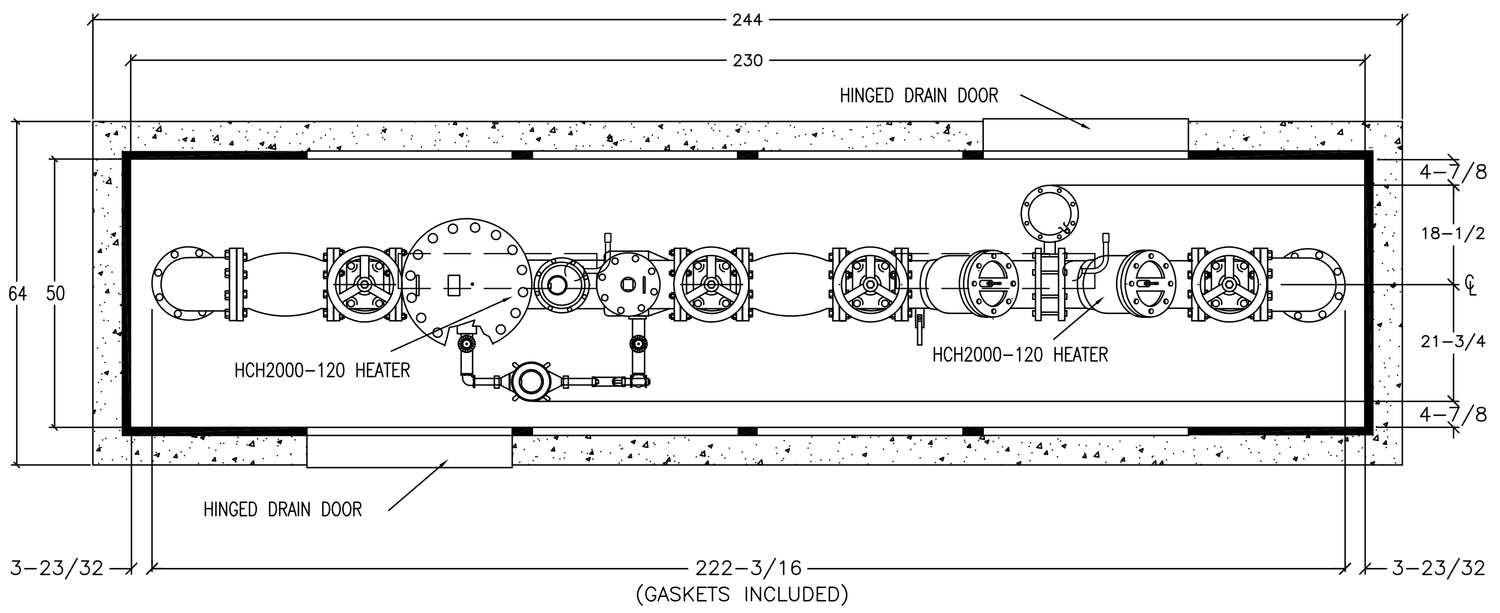

NOTES:

1. BACKFLOW PREVENTER DIMENSIONS FURNISHED BY WATTS
2. ALL DIMENSIONS ARE IN INCHES
3. WALL & INSULATION THICKNESS IS 1 1/2"
4. ROOF & INSULATION THICKNESS IS 3"
5. ENCLOSURE SHOWN IS SAFE-T-COVER MODEL 1000D-ALC00-17
6. EXTERIOR ENCLOSURE DIMENSIONS: 53"W x 233"L x 73" H
7. CONCRETE PAD IS 64"W x 244"L x 6"THK W/W.W.F. 6X6/10X10
8. METER SHOWN: 8" PROTECTUS III, SPOOL PIECE & METER SUPPLIED BY ECWA, VERIFY DIMENSIONS PRIOR TO ORDERING
9. RPZ SHOWN: 8" WATTS 909 NRS
10. CONTRACTOR TO INSTALL ELECTRIC SERVICE TO ENCLOSURE, COORDINATE SOURCE WITH OWNER
11. INSTALL A 120V GFI OUTLET IN THE ENCLOSURE
12. HEATERS TO HAVE THERMOSTAT CONTROL
13. ALL PIPING WITHIN THE ENCLOSURE SHALL BE DUCTILE IRON

LEGEND:

REMOVABLE ACCESS PANEL 38 1/4"W x 70"H w/DRAIN DOOR

REMOVABLE ACCESS PANEL 38 1/4"W x 70"H

8"METER & RPZ INSULATED ENCLOSURE

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Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Insulated Enclosure Detail

DRAWING NO.
C-408

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

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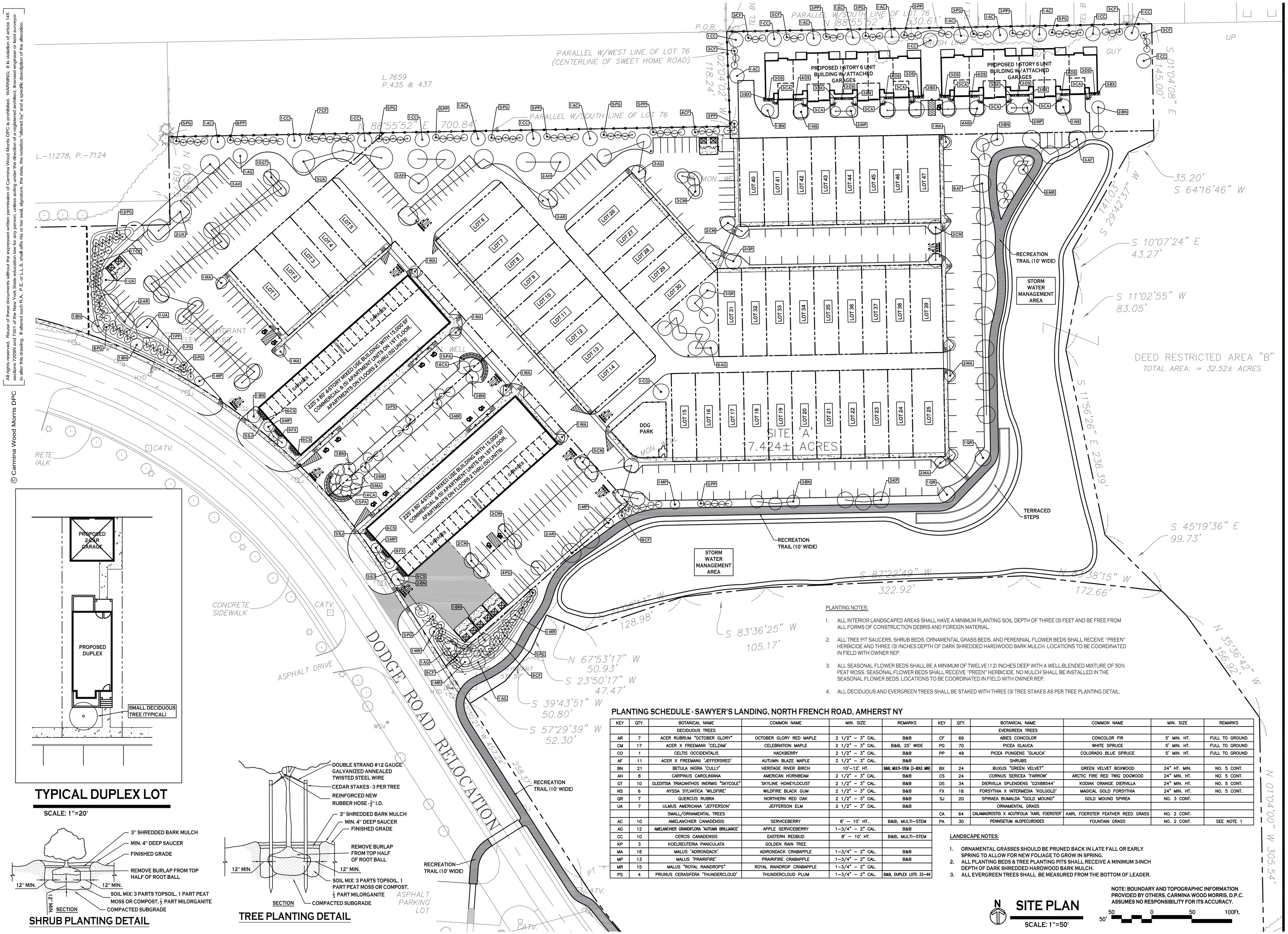

TYPICAL DUPLEX LOT

SCALE: 1"=20'

SHRUB PLANTING DETAIL

TREE PLANTING DETAIL

PLANTING NOTES:

1. ALL INTERIOR LANDSCAPED AREAS SHALL HAVE A MINIMUM PLANTING SOIL DEPTH OF THREE (3) FEET AND BE FREE FROM ALL FORMS OF CONSTRUCTION DEBRIS AND FOREIGN MATERIAL.
2. ALL TREE PIT SAUCERS, SHRUB BEDS, ORNAMENTAL GRASS BEDS, AND PERENNIAL FLOWER BEDS SHALL RECEIVE "PREEN" HERBICIDE AND THREE (3) INCHES DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
3. ALL SEASONAL FLOWER BEDS SHALL BE A MINIMUM OF TWELVE (12) INCHES DEEP WITH A WELL-BLENDED MIXTURE OF 50% PEAT MOSS. SEASONAL FLOWER BEDS SHALL RECEIVE "PREEN" HERBICIDE. NO MULCH SHALL BE INSTALLED IN THE SEASONAL FLOWER BEDS. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
4. ALL DECIDUOUS AND EVERGREEN TREES SHALL BE STAKED WITH THREE (3) TREE STAKES AS PER TREE PLANTING DETAIL.

PLANTING SCHEDULE - SAWYER'S LANDING, NORTH FRENCH ROAD, AMHERST NY

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		DECIDUOUS TREES			
AR	7	ACER RUBRUM "OCTOBER GLORY"	OCTOBER GLORY RED MAPLE	2 1/2" – 3" CAL.	B&B
CM	17	ACER X. FREEMANII "CELZAM"	CELEBRATION MAPLE	2 1/2" – 3" CAL.	B&B, 25' WIDE
CO	1	CELTIS OCCIDENTALIS	HACKBERRY	2 1/2" – 3" CAL.	B&B
AF	11	ACER X FREEMANII "JEFFERSRED"	AUTUMN BLAZE MAPLE	2 1/2" – 3" CAL.	B&B
BN	21	BETULA NIGRA "CULLY"	HERITAGE RIVER BIRCH	10'–12' HT.	B&B; MULTI-STEM (3-BOLE MIN)
AH	8	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2 1/2" – 3" CAL.	B&B
GT	10	GLEDITSIA TRIACANTHOS INERMIS "SKYCOLE"	SKYLINE HONEYLOCUST	2 1/2" – 3" CAL.	B&B
NS	6	NYSSA SYLVATICA "WILDFIRE"	WILDFIRE BLACK GUM	2 1/2" – 3" CAL.	B&B
QR	7	QUERCUS RUBRA	NORTHERN RED OAK	2 1/2" – 3" CAL.	B&B
UA	7	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2 1/2" – 3" CAL.	B&B
		SMALL/ORNAMENTAL TREES			
AC	10	AMELANCHIER CANADENSIS	SERVICEBERRY	8' – 10' HT.	B&B, MULTI-STEM
AG	12	AMELANCHIER GRANDIFLORA 'AUTUMN BRILLIANCE'	APPLE SERVICEBERRY	1–3/4" – 2" CAL.	B&B
CC	10	CERCIS CANADENSIS	EASTERN REDBUD	8' – 10' HT.	B&B, MULTI-STEM
KP	3	KOELREUTERIA PANICULATA	GOLDEN RAIN TREE		
MA	16	MALUS 'ADIRONDACK'	ADIRONDACK CRABAPPLE	1–3/4" – 2" CAL.	B&B
MP	13	MALUS 'PRAIRIFIRE'	PRAIRIFIRE CRABAPPLE	1–3/4" – 2" CAL.	B&B
MR	15	MALUS "ROYAL RAINDROPS"	ROYAL RAINDROP CRABAPPLE	1–3/4" – 2" CAL.	
PS	4	PRUNUS CERASIFERA 'THUNDERCLOUD'	THUNDERCLOUD PLUM	1–3/4" – 2" CAL.	B&B, DUPLEX LOTS 33–49
		EVERGREEN TREES			
CF	69	ABIES CONCOLOR	CONCOLOR FIR	5' MIN. HT.	FULL TO GROUND
PG	70	PICEA GLAUCA	WHITE SPRUCE	5' MIN. HT.	FULL TO GROUND
PP	49	PICEA PUNGENS 'GLAUCA'	COLORADO BLUE SPRUCE	5' MIN. HT.	FULL TO GROUND
		SHRUBS			
BX	24	BUXUS "GREEN VELVET"	GREEN VELVET BOXWOOD	24" HT. MIN.	NO. 5 CONT.
CS	24	CORNUS SERICEA 'FARROW'	ARCTIC FIRE RED TWIG DOGWOOD	24" MIN. HT.	NO. 5 CONT.
DS	34	DIERVILLA SPLENDENS 'G2X88544'	KODIAK ORANGE DIERVILLA	24" MIN. HT.	NO. 5 CONT.
FX	18	FORSYTHIA X INTERMEDIA 'KOLGOLD'	MAGICAL GOLD FORSYTHIA	24" MIN. HT.	NO. 5 CONT.
SJ	20	SPIRAEA BUMALDA "GOLD MOUND"	GOLD MOUND SPIREA	NO. 3 CONT.	
		ORNAMENTAL GRASS			
CA	64	CALAMAGROSTIS X ACUTIFOLIA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	NO. 2 CONT.	
PA	30	PENNISETUM ALOPECUROIDES	FOUNTAIN GRASS	NO. 2 CONT.	SEE NOTE 1

LANDSCAPE NOTES:

1. ORNAMENTAL GRASSES SHOULD BE PRUNED BACK IN LATE FALL OR EARLY SPRING TO ALLOW FOR NEW FOLIAGE TO GROW IN SPRING.
2. ALL PLANTING BEDS & TREE PLANTING PITS SHALL RECEIVE A MINIMUM 3-INCH DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH.
3. ALL EVERGREEN TREES SHALL BE MEASURED FROM THE BOTTOM OF LEADER.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

N

SITE PLAN

SCALE: 1"=50'

50' 0 50 100Ft.

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Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/9/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Landscape Plan

DRAWING NO.

L-100

Project no.: 21.011



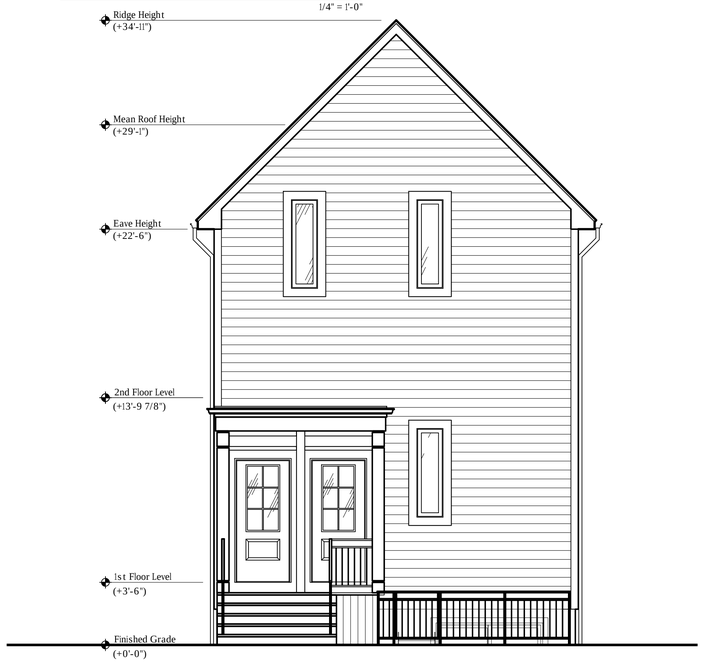
Front Elevation

1/4" = 1'-0"



Right Elevation

1/4" = 1'-0"



Rear Elevation

1/4" = 1'-0"



Left Elevation

1/4" = 1'-0"

SEVERYN DEVELOPMENT
BETTER BUILT HOMES

Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing
Two Family

Portion Of 1081 North French Road Amherst, NY
2/23/21

SUTTON architecture
"Design 2 Build"
5409 Main Street
716-932-7156

Attachment: SP-2021-05_drawings_061721 (23057 : Sp-2021-05)



South Elevation

1/8" = 1'-0"



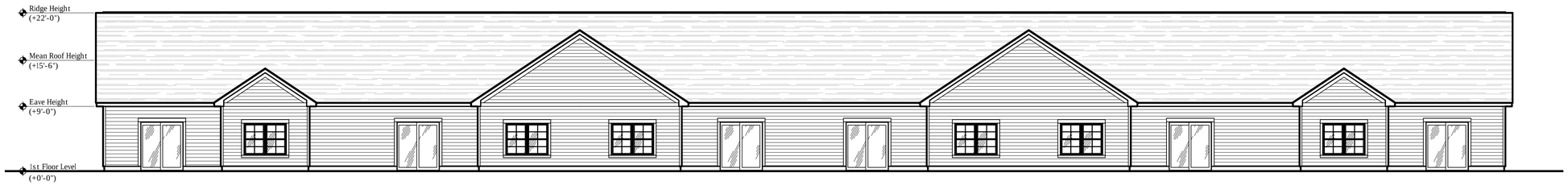
East Elevation

1/8" = 1'-0"



West Elevation

1/8" = 1'-0"



North Elevation

1/8" = 1'-0"

SEVERYN DEVELOPMENT
BETTER BUILT HOMES

Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing
6 Unit Multifamily

Portion Of 1081 North French Road Amherst, NY
2/23/21

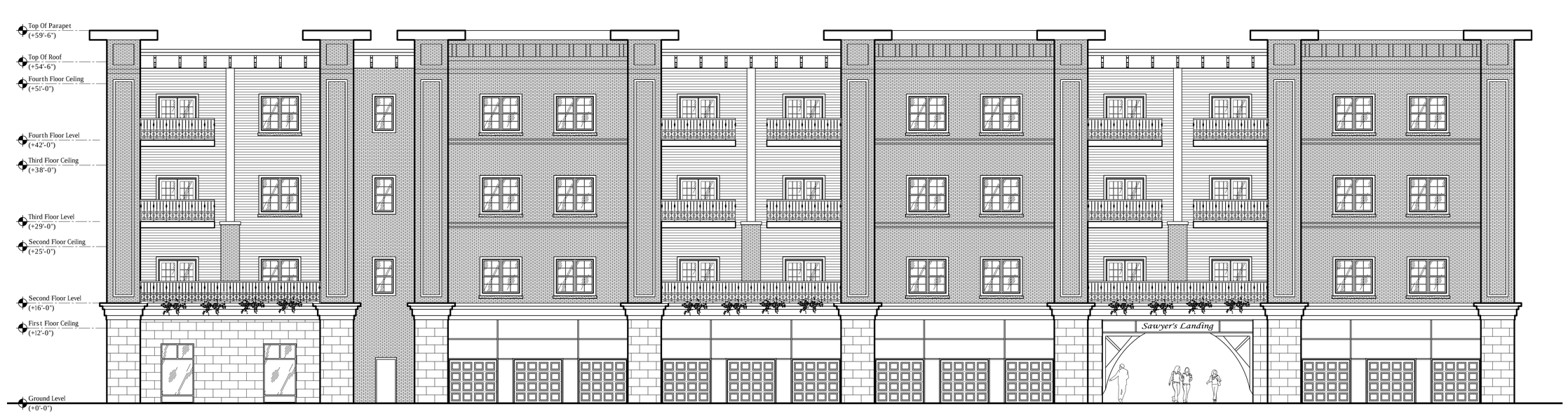
SUTTON architecture
"Design 2 Build"
5409 Main Street
716-932-7156

Attachment: SP-2021-05_drawings_061721 (23057 : Sp-2021-05)



North Elevation

1/8" = 1'-0"



South Elevation

1/8" = 1'-0"

SEVERYN DEVELOPMENT
BETTER BUILT HOMES
Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing
4 Story Mixed Use

Portion Of 1081 North French Road Amherst, NY
2/23/21

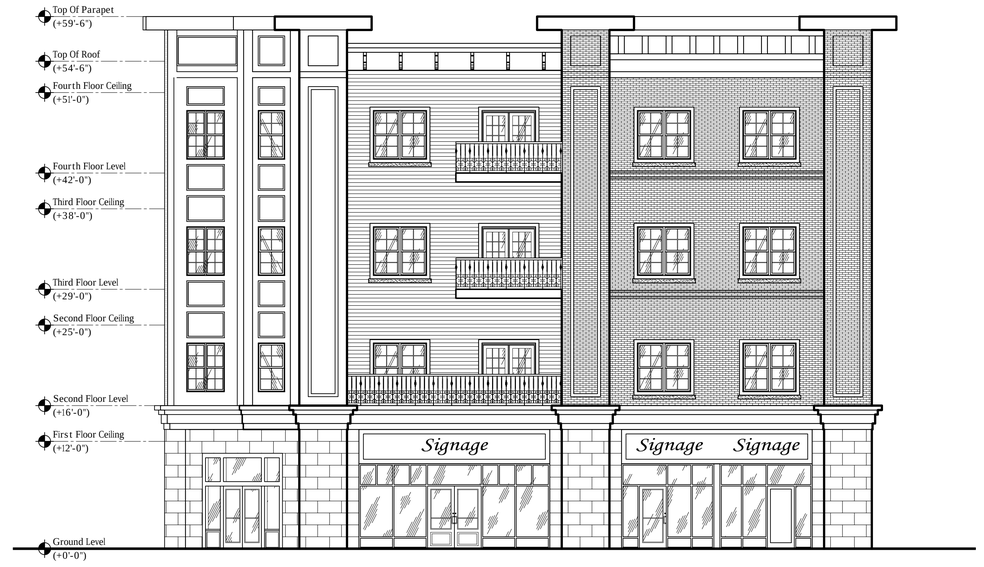
SUTTON architecture
"Design 2 Build"
5409 Main Street
716-932-7156

Attachment: SP-2021-05_drawings_061721 (23057 : Sp-2021-05)



East Elevation

1/8" = 1'-0"



West Elevation

1/8" = 1'-0"

SEVERYN DEVELOPMENT
BETTER BUILT HOMES
Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing
4 Story Mixed Use

Portion Of 1081 North French Road Amherst, NY
2/23/21

SUTTON architecture
"Design 2 Build"
5409 Main Street
716-932-7156

Attachment: SP-2021-05_drawings_061721 (23057 : Sp-2021-05)

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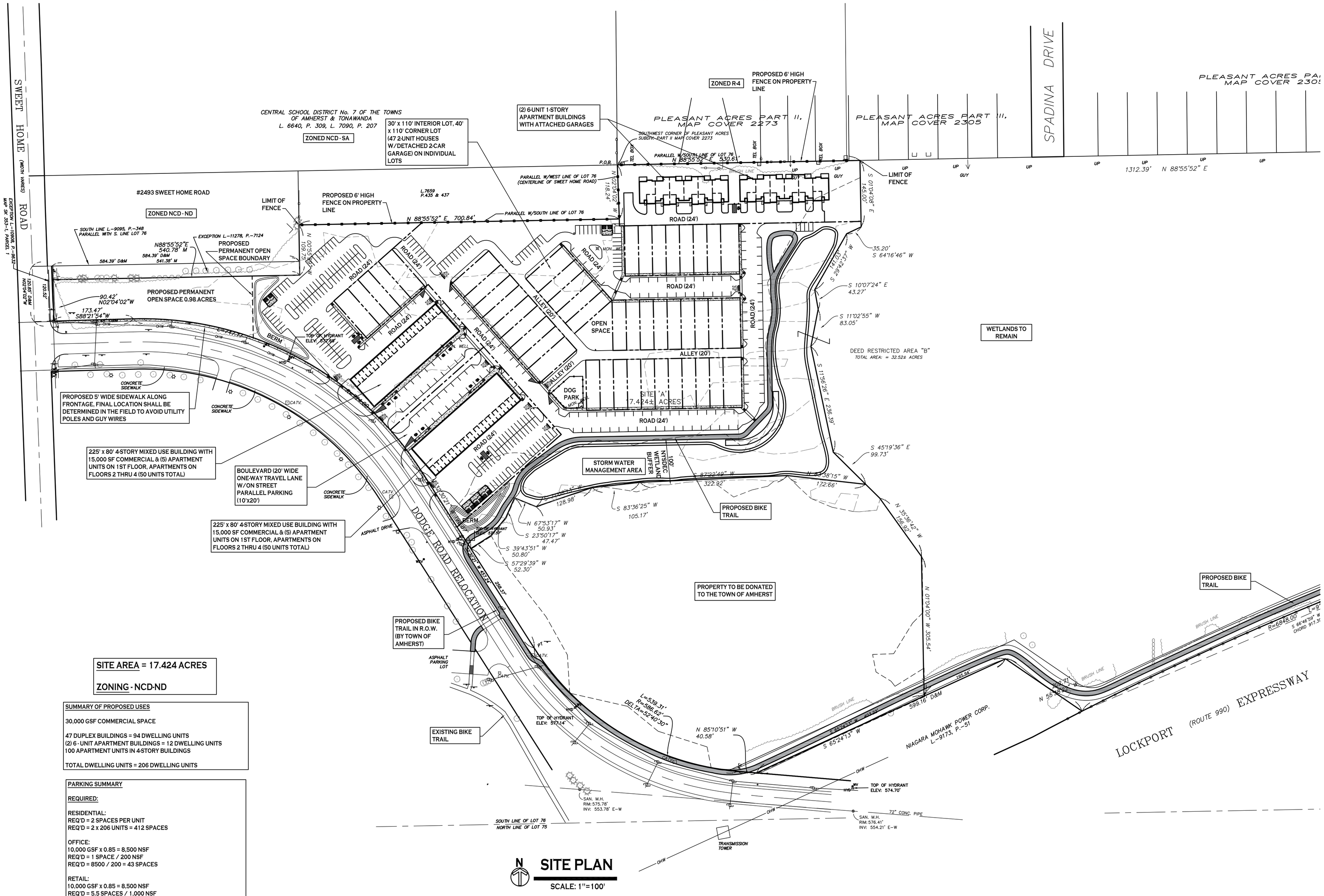

N

SITE PLAN

SCALE: 1"=100'

SITE AREA = 17.424 ACRES

ZONING - NCD-ND

SUMMARY OF PROPOSED USES

30,000 GSF COMMERCIAL SPACE

47 DUPLEX BUILDINGS = 94 DWELLING UNITS
(2) 6 - UNIT APARTMENT BUILDINGS = 12 DWELLING UNITS
100 APARTMENT UNITS IN 4-STORY BUILDINGS

TOTAL DWELLING UNITS = 206 DWELLING UNITS

PARKING SUMMARY

REQUIRED:

RESIDENTIAL:
REQ'D = 2 SPACES PER UNIT
REQ'D = 2 x 206 UNITS = 412 SPACES

OFFICE:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 1 SPACE / 200 NSF
REQ'D = 8500 / 200 = 43 SPACES

RETAIL:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 5.5 SPACES / 1,000 NSF
REQ'D = 8500 / 1000 x 5.5 = 47 SPACES

RESTAURANT:
REQ'D = 1 SPACE / 3 SEATS + 1 SPACE / 100 SF TAKE OUT AREA
REQ'D = 100 SEAT / 3 + 500 SF / 100 = 38 SPACES

TOTAL REQ'D = 540 SPACES

PROVIDED:

158 PARALLEL PARKING SPACES
213 9'x19' SPACES *
40 GARAGE SPACES IN 4-STORY BLDGS
94 GARAGE SPACES IN DETACHED GARAGES
505 TOTAL SPACES

* INCLUDES SPACES IN FRONT OF APARTMENT GARAGES

PERMANENT OPEN SPACE SUMMARY

TOTAL PROPOSED PERMANENT OPEN SPACE = 0.98 ACRES

WETLAND SUMMARY

FEDERAL IMPACTS PROPOSED = 6.089 AC
FEDERAL IMPACTS PREVIOUSLY PROPOSED = 13.01 AC
DECREASE = 6.921 AC (53% DECREASE)

NYSDEC IMPACTS PROPOSED = 1.20 AC
NYSDEC IMPACTS PREVIOUSLY PROPOSED = 9.46 AC
DECREASE = 8.26 AC (87% DECREASE)

NYSDEC BUFFER IMPACT PROPOSED = 3.65 AC
NYSDEC BUFFER IMPACTS PREVIOUSLY PROPOSED = 4.20 AC
DECREASE = 0.55 AC (13% DECREASE)

NOTE: NYSDEC IMPACTS INCLUDES FEDERAL WETLAND IMPACT OVERLAP AREAS

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

Carmina Wood Morris DPC
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Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/22/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Overall Site Plan

DRAWING NO.

C-100

Project no.: 21.011

Attachment: SP-2021-05_drawings_061721 (23057 : SP-2021-05)

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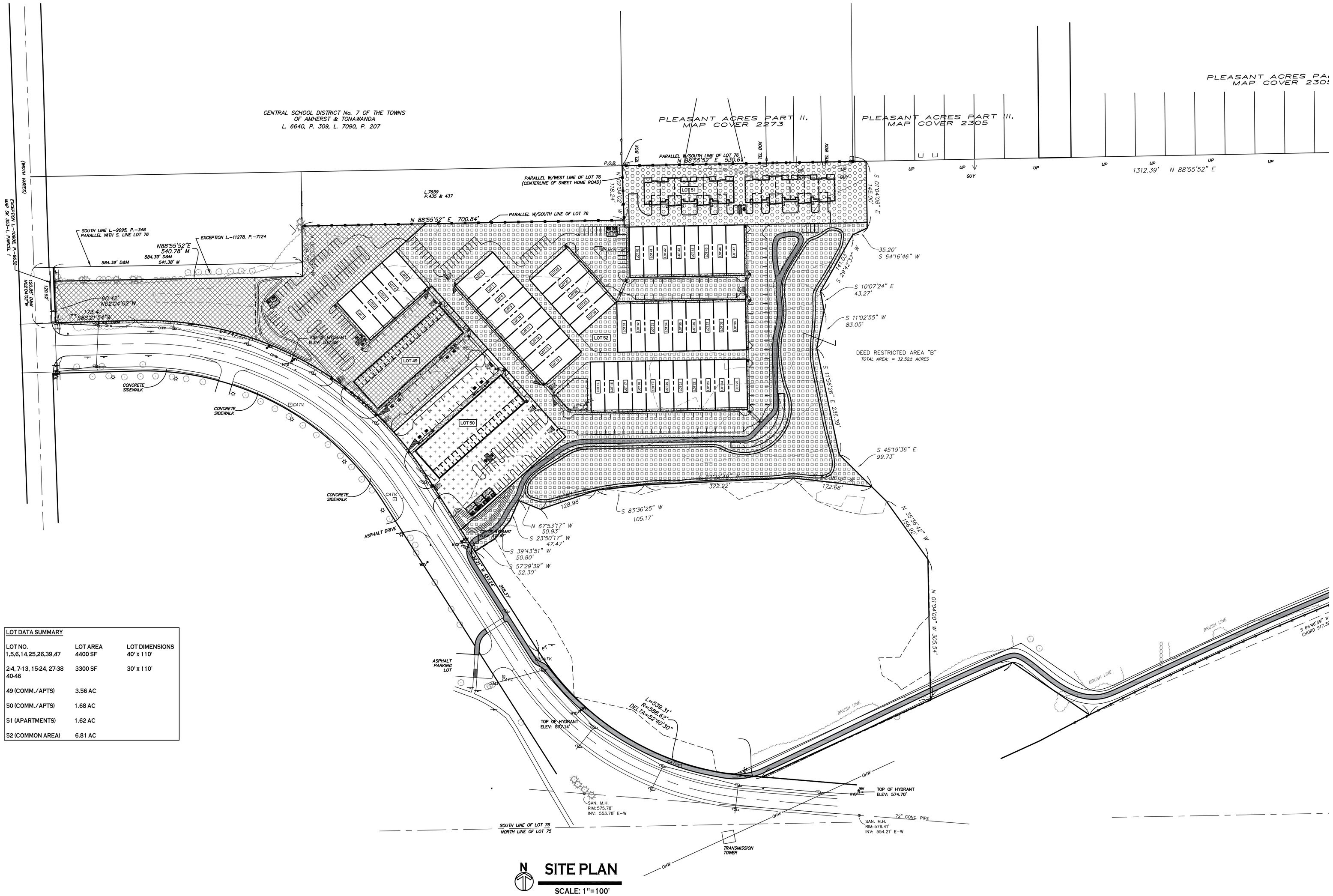

N

SITE PLAN

SCALE: 1"=100'

LOT DATA SUMMARY		
LOT NO.	LOT AREA	LOT DIMENSIONS
1,5,6,14,25,26,39,47	4400 SF	40' x 110'
2-4, 7-13, 15-24, 27-38 40-46	3300 SF	30' x 110'
49 (COMM./APTS)	3.56 AC	
50 (COMM./APTS)	1.68 AC	
51 (APARTMENTS)	1.62 AC	
52 (COMMON AREA)	6.81 AC	

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

Carmina Wood Morris DPC
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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/22/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Parcel Map

DRAWING NO.

C-102

Project no.: 21.011

NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE.

● SET OR EX. 5/8" REBAR

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MAP COVER 2305

SWEET HOME ROAD (NORTH VARIES)

EXCEPTION L-10908, P-363
MAP 39 353-1 PARCEL 1

CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA
L. 6640, P. 309, L. 7090, P. 207

PLEASANT ACRES PART II, MAP COVER 2273

PLEASANT ACRES PART III, MAP COVER 2305

SPADINA DRIVE

PLEASANT ACRES PART III, MAP COVER 2305

SOUTHWEST CORNER OF PLEASANT ACRES SUBDIV. PART II MAP COVER 2273

PARALLEL W/SOUTH LINE OF LOT 76

N 88°55'52" E 530.61'

1312.39' N 88°55'52" E

POINT OF BEGINNING
AREA "B"
LAT: 43°01'40.40785"
LON: -78°47'14.98366"

PARALLEL W/WEST LINE OF LOT 76
(CENTERLINE OF SWEET HOME ROAD)

L.7659 P.435 & 437

N 88°55'52" E 700.84'

N 88°55'52" E 396.51'

N 20°40'24" W 118.24'

S 10°40'10" E 145.00'

SOUTH LINE L.-9095, P.-348
PARALLEL WITH S. LINE LOT 76

EXCEPTION L.-11278, P.-7124

N88°55'52"E 540.78' M
584.39' D&M
541.38' M

N 00°04'08" W 1180.00'

PARALLEL W/SOUTH LINE OF LOT 76

N 29°36'17" E 62.65'

MON. WELL

S 41°03'37" W 202.37'

S 64°16'46" W 35.20'

S 10°07'24" E 43.27'

S 11°02'55" W 83.05'

S 11°56'26" E 236.98'

S 45°19'36" E 99.73'

N 35°56'42" W 159.92'

N 10°40'10" W 305.54'

N 02°04'02"W 90.42'

S88°21'54"W 173.47'

120.85' D&M
N02°04'02" W

CATCH BASIN
RIM:574.52'
W INV:568.27' 12"
E INV:568.32'

CATCH BASIN
RIM:574.42'
W INV:569.90' 12" CMP
E INV:569.97' 12" CMP

CATCH BASIN
RIM:573.70'
W INV:569.90' 12" CMP
E INV:569.97' 12" CMP

DEED RESTRICTED AREA "A"
TOTAL AREA: = 3.9146 ACRES

TOP OF HYDRANT
ELEV: 577.69'

LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC
REPUTED OWNERS
L.11307, PG.4915

SITE 'A'
17.424± ACRES

DEED RESTRICTED AREA "B"
TOTAL AREA: = 32.52± ACRES

CONCRETE SIDEWALK

CONCRETE SIDEWALK

CONCRETE SIDEWALK

ASPHALT DRIVE

ASPHALT PARKING LOT

STONE DRIVE

DOUGH ROAD RELOCATION

N 67°53'17" W 50.93'

S 71°08'13" W 128.98'

S 83°36'25" W 105.17'

S 87°22'49" W 322.92'

N 83°38'15" W 172.66'

S 39°43'51" W 50.80'

S 23°50'17" W 47.47'

S 57°29'39" W 52.30'

L=539.31'
R=598.60'
DELTA=52°01'30"

N 85°10'51" W 40.58'

S 85°24'13" W 405.22'

599.16' D&M

NIAGARA MOHAWK POWER CORP.
L.-9173, P.-51

TOP OF HYDRANT
ELEV: 574.70'

SAN. M.H.
RIM: 573.78'
INV: 553.78' E-W

SAN. M.H.
RIM:576.41'
INV: 554.21' E-W

72" CONC. PIPE

SOUTH LINE OF LOT 76
NORTH LINE OF LOT 75

TRANSMISSION TOWER

BRUSH LINE

L=918.07'
R=6848.00'
S 65°48'39" W
CHORD 917.39'

N 41°39'22" W 202.71'

SECTION II

LOCKPORT (ROUTE 990) EXPRESSWAY

- CATCH BASIN
- CONIFEROUS TREE
- DECIDUOUS SHRUB
- DECIDUOUS TREE
- GAS VALVE
- GUY WIRE
- WATER SERVICE VALVE
- WATER VALVE
- COMMUNICATIONS BOX
- HYDRANT
- LIGHT POLE
- SANITARY SEWER MANHOLE
- SIGN (SINGLE POLE)
- SIGN (DOUBLE POLE)
- UTILITY POLE

STATE OF NEW YORK
LICENSED LAND SURVEYOR

DATE	REVISION/TYPE

TOPOGRAPHIC SURVEY
PART OF LOT 76, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK

GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE
4950 GENESEE STREET, SUITE 100
BUFFALO, NEW YORK 14225
(716) 633-4844 FAX 633-4940

Job No. 2013062-SITE A Date: DECEMBER 22, 2020
Scale: 1" = 100' TAX No. 40.08-3-13.1 (PART OF)

Attachment: SP-2021-05_drawings_061721 (23057 : Sp-2021-05)

Amherst

Town of Amherst Planning Department *Erie County, New York*

Brian J. Kulpa
Supervisor
Daniel C. Howard, AICP
Planning Director
Ellen M. Kost, AICP
Assistant Planning Director

May 27, 2021

Sawyer's Landing LLC
c/o Sean W. Hopkins, Esq.
Hopkins Sorgi & McCarthy
5500 Main Street, Suite 343
Williamsville, New York 14221

SUBJECT: MAJOR SITE PLAN REVIEW, **SP-2021-05**; PROPOSED SAWYERS LANDING MIXED-USE DEVELOPMENT; PROPERTY LOCATED AT **1081 NORTH FRENCH ROAD (PORTION) (MUIR WOODS SITE A)**; SAWYERS LANDING LLC, PETITIONER.

Dear Mr. Hopkins:

At its meeting of May 20, 2021 the Planning Board voted to **adjourn** the subject site plan at your request pending resolution of the secondary emergency access issue.

Should you have any questions regarding the Planning Board's decision, please do not hesitate to call us.

Very truly yours,

Daniel C. Howard, AICP
Planning Director

DH/ac
X:\Current_Planning\Files\Site Plans\2021\SP-2021-05_(1081 N_FrenchRd)_2021\SP-2021-05_Adjournment Letter_052021.doc
cc: William Severyn, Severyn Development, 43 Central Ave. Suite 300, Lancaster, NY 14086
Adam Faeth, Ciminelli Real Estate Corp., 50 Fountain Plaza, Suite 500, Buffalo, NY 14202
Chris Wood, Carmina Wood Morris, 487 Main St, Suite 500, Buffalo, NY 14203
David Sutton, Sutton Architects, 5409 Main St, 2nd Floor, Williamsville, NY 14221

Attachment: SP-2021-05_adjournment_052021 (23057 : Sp-2021-05)

Amherst

Town of Amherst Planning Department *Erie County, New York*

Brian J. Kulpa
Supervisor
Daniel C. Howard, AICP
Planning Director
Ellen M. Kost, AICP
Assistant Planning Director

July 1, 2021

Sawyer's Landing LLC
c/o Sean W Hopkins, Esq.
Hopkins Sorgi & McCarthy
5500 Main Street, Suite 343
Williamsville, New York 14221

SUBJECT: MAJOR SITE PLAN REVIEW, **SP-2021-05**; PROPOSED SAWYERS LANDING MIXED-USE DEVELOPMENT; PROPERTY LOCATED AT **1081 NORTH FRENCH ROAD (PORTION) (MUIR WOODS SITE A)**; SAWYERS LANDING LLC, PETITIONER.

Dear Mr. Hopkins:

At its meeting of June 24, 2021 the Planning Board voted to **adjourn** the subject site plan at your request pending resolution of the secondary emergency access issue.

Should you have any questions regarding the Planning Board's decision, please do not hesitate to call us.

Very truly yours,

for Daniel C. Howard, AICP
Planning Director

DH/ac
X:\Current_Planning\Files\Site Plans\2021\SP-2021-05_(1081 N_FrenchRd)_2021\SP-2021-05_Adjournment Letter_062421.doc
cc: William Severyn, Severyn Development, 43 Central Ave. Suite 300, Lancaster, NY 14086
Adam Faeth, Ciminelli Real Estate Corp., 50 Fountain Plaza, Suite 500, Buffalo, NY 14202
Chris Wood, Carmina Wood Morris, 487 Main St, Suite 500, Buffalo, NY 14203
David Sutton, Sutton Architects, 5409 Main St, 2nd Floor, Williamsville, NY 14221

JUL 02 '21 AM 10:01 RCVD

Attachment: SP-2021-05_adjournment_062421 (23057 : Sp-2021-05)

Application for Site Plan Approval 1021 North French Road [Including Subdivision of Project Site] - Proposed Mixed-Use Project - Site "A" of Muir Woods Property
Applicant: Sawyers Landing LLC

Prepared By: Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221
Tel: 510-4338
E-mail: shopkins@hsr-legal.com

TOWN OF AMHERST PLANNING DEPARTMENT

Application for Major Site Plan Review

For Official Use

File #: SP-2021-05 **Acreage** 17.42 **Fee $** 13,315.00

Address Verified by Assessor's Office
VERIFIED BY DATE

Site Plan Review

		Fill In Applicable Fees
1 acre or less	$1,250.00	$1,250.00
Each Additional acre or fraction thereof	$ 650.00/acre	$11,050.00
Amendments to Site Plans	$1,200.00	
Request for Relief of / or Change to Conditions of Site Plan Approval	$1,200.00	
Request for Extension of Site Plan Approval	$ 450.00	
Stormwater Pollution Prevention Plan		
1-4.99 Acres	$ 500.00	
5-10 Acres	$ 750.00	
>10 Acres	$1,000.00	$1,000.00
Affidavit Fee for Public Hearing	$ 15.00	$15.00
	TOTAL FEE:	$ 13,315.00

Materials Received by Planning Department
RECEIVED BY DATE

RECEIVED FEB 22 2021 TOWN OF AMHERST PLANNING DEPT.

Materials Accepted by Town Clerk & Fee Paid
ACCEPTED BY DATE

To Be Completed By Applicant

Petitioner: Name: Sawyers Landing LLC c/o Sean W. Hopkins, Esq.

Address: 5500 Main Street, Suite 343

Williamsville, New York 14221

city state zip code

Phone: 510-4338 Fax: _____ E Mail: shopkins@hsr-legal.com

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Representative (Architect, Engineer, Landscape Architect, Surveyor, or Attorney):

Name: Christopher Wood, P.E.

Address: Carmina Wood Morris DPC

483 Main Street, Suite 600

Buffalo (city) New York (state) 14203 (zip code)

Phone: 842-3165 [Ext. 103] Fax: 842-0263

E Mail: cwood@cwm-ae.com

Project Location (must be verified by Town Assessor's Office):

Address: Portion of 1081 North French Road

SBL No(s): 40.08-3-13.1/A

Project Name: Proposed Mixed-Use Project

Project Description:

See attached Exhibit "2" for Project Description. The layout of the proposed mixed-use project to be located on the New Community District - General Commercial ("NCD-GC") zoned property at 1081 North French Road as depicted on the Overall Site Plan [Drawing C-100] prepared by Carmina Wood Morris DPC. A reduced size copy of the Overall Site Plan is provided at Exhibit "3". and a reduced size copy of the Site Plan [Drawing C-101] is provided at Exhibit "4". The proposed mixed-use project includes the subdivision of the 17.42 acre Project Site into 52 parcels as depicted on the Parcel Map [Drawing C-102] prepared by Carmina Wood Morris DPC. A reduced size copy of the Parcel Map [Drawing C-102] is provided at Exhibit "5".

Town of Amherst Planning Department 5583 Main Street Williamsville-NY-14221
(716) 631-7051- Fax: (716) 631-7153

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

If this petition is an amendment to a previously approved site plan, please describe the proposed changes (include type and size of existing structures and number of existing parking spaces):

Not Applicable.

Gross Floor Area (non-residential):	0 existing	30,000 sq. ft. proposed	30,000 sq. ft. total
Number of Residential Units:	0 existing	206 proposed	206 total
Number of Parking Spaces:	0 existing	505 proposed	505 total

Acreage of Parcel: 17.42 Acres

Frontage on Public Roads: The proposed parcel will have approximately 1,120 ft. on Dodge Road and approximately 120 ft. of frontage on Sweet Home Road.

Existing Zoning District(s) NCD-GC

[Note: A completed Part 1 of the Full Environmental Assessment Form prepared pursuant to the State Environmental Quality Review Act ("SEQRA") is attached as Exhibit "1" of this Site Plan Application.]

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Town of Amherst Planning Department 5583 Main Street Williamsville-NY-14221
(716) 631-7051- Fax: (716) 631-7153

Exhibit 1 – Part 1 of the Full Environmental Assessment Form prepared pursuant to the State Environmental Quality Review Act ("SEQRA") with attached Page 5[a] and Attachments "A" and "B"

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Full Environmental Assessment Form Part 1 - Project and Setting

Prepared By: Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221
Tel: 716.510-4338
E-mail: shopkins@hsr-legal.com

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project: Proposed Mixed-Use Project - Site A of Muir Woods		
Project Location (describe, and attach a general location map): Portion of 1081 North French Road - Town of Amherst - Erie County		
Brief Description of Proposed Action (include purpose or need): The proposed action consists of a request for Site Plan Approval [including the subdivision of the Project Site] for a mixed use project consisting of 2 four story mixed-use buildings [15,000 sq. ft of commercial space and 50 units per building], 47 two-family town homes on individual lots and 2 single-story apartment buildings [6 units per building] along with all related site improvements depicted on the fully engineered plans prepared by Carmina Wood Morris DPC. A reduced size copy of the Overall Site Plan [Drawing C-100] is provided at Exhibit "3". The action has been defined broadly to include all required discretionary approvals and permits as well as all site improvements including the proposed driveway connections to Dodge Road, access aisles, parking spaces, driveways, wetland impacts, lighting, landscaping, on-site storm water management improvements, sanitary sewer and water lines and connections and all other required utility improvements. The project purpose is to develop Site "A" of overall Muir Woods Project Site as a mixed-use project. The proposed mixed-use project is a Type I action pursuant to SEQRA and the Town Board issued an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") on October 19, 2020 to allow mixed-use development of the Project Site. On October 19, 2020, the Town Board also adopted a resolution to amend the Town's Comprehensive to designate the Project Site as appropriate for mixed-use.		
Name of Applicant/Sponsor: Sawyers Landing LLC c/o Sean Hopkins, Esq.	Telephone: 716.510-4338 E-Mail: shopkins@hsr-legal.com	
Address: 5500 Main Street, Suite 343		
City/PO: Williamsville, NY	State: NY	Zip Code: 14221
Project Contact (if not same as sponsor; give name and title/role):	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:
Property Owner (if not same as sponsor): Ciminelli Muir Woods, LLC c/o Adam Faeth, Esq.	Telephone: 716.631-8000 E-Mail: afaeth@ciminelli.com	
Address: 50 Fountain Plaza, Suite 500		
City/PO: Buffalo	State: NY	Zip Code: 14202

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees ☑Yes ☐No	Sewage Works Corporation and PIPs	To be determined
b. City, Town or Village Planning Board or Commission ☑Yes ☐No	Planning Board - Site Plan Approval [includes Subdivision Approval - 52 lots]	February 22, 2021
c. City, Town or Village Zoning Board of Appeals ☐Yes ☑No		
d. Other local agencies ☑Yes ☐No	Building Department - Building Permits; Amherst IDA [PILOT, etc.]	To be determined
e. County agencies ☑Yes ☐No	ECPDW - Highway Work Permit; ECWA - Water; ECHD - Sewer and Water	To be determined
f. Regional agencies ☐Yes ☑No		
g. State agencies ☑Yes ☐No	NYSDEC - Amended Wetland Permit; DSCA Approval, Sewage Work Corp. & SPDES Permit	Amended Wetland Permit issued on 12/24/20; To be determined.
h. Federal agencies ☑Yes ☐No	USACE - Amended Wetland Permit [Pending]	July 1, 2020

i. Coastal Resources.

i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐Yes ☑No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☑Yes ☐No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☑Yes ☐No

If Yes, identify the plan(s):

NYS Heritage Areas:West Erie Canal Corridor [Note: The project will not have any impacts on the West Erie Canal Corridor.]

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes ☑No

If Yes, identify the plan(s):

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
Site "A" of the Muir Woods property is zoned New Community District - Neighborhood District ("NCD-ND") pursuant to the Town of Amherst Zoning Map.

b. Is the use permitted or allowed by a special or conditional use permit? ☐ Yes ☑ No

c. Is a zoning change requested as part of the proposed action? ☐ Yes ☑ No
If Yes,
i. What is the proposed new zoning for the site?

C.4. Existing community services.

a. In what school district is the project site located? Sweet Home Central School District

b. What police or other public protection forces serve the project site?
Town of Amherst Police Department

c. Which fire protection and emergency medical services serve the project site?
Volunteer Fire Department

d. What parks serve the project site?
Various Town Parks including Nature View Park

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)?Mixed-use project consisting of 2 four-story buildings with 15,000 sq. ft. of 1st floor commercial space and 50 apartments per building; 47 two-family townhomes; and two six-unit single-story apartment buildings.

b. a. Total acreage of the site of the proposed action? 28.47 acres
b. Total acreage to be physically disturbed? 17.0 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 326 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % Units:

d. Is the proposed action a subdivision, or does it include a subdivision? ☑ Yes ☐ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
The 45 two-family townhome buildings will consist of individual lots and mixed-use buildings may consist of separate parcels.
ii. Is a cluster/conservation layout proposed? ☐ Yes ☐ No
iii. Number of lots proposed? 52 [47 lots for the two-family townhomes]
iv. Minimum and maximum proposed lot sizes? Minimum 3300 sf Maximum 6.81 Acres

e. Will the proposed action be constructed in multiple phases? ☑ Yes ☐ No
i. If No, anticipated period of construction: ____ months
ii. If Yes:
- Total number of phases anticipated 3-4
- Anticipated commencement date of phase 1 (including demolition) Fall month 2021 year
- Anticipated completion date of final phase July month 2024 year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases:
The infrastructure necessary for each phase will be installed to ensure compliance with applicable technical standards including those for stormwater management.

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

f. Does the project include new residential uses? ☑ Yes ☐ No
If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase		20		50
At completion of all phases		47		112

The build-out of the residential components will be based on market conditions.

g. Does the proposed action include new non-residential construction (including expansions)? ☑ Yes ☐ No
If Yes, There will be 15,000 sq. ft. of commercial space in each of the two 4-story mixed-use buildings.
i. Total number of structures 2
ii. Dimensions (in feet) of largest proposed structure: 55' height; 80' width; and 225' length
iii. Approximate extent of building space to be heated or cooled: 30,000 square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☑ Yes ☐ No
If Yes,
i. Purpose of the impoundment: Storm water management
ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☑ Other specify: Storm water runoff from impervious surfaces.
iii. If other than water, identify the type of impounded/contained liquids and their source.
N/A
iv. Approximate size of the proposed impoundment. Volume: ____ million gallons; surface area: 1.5 acres
v. Dimensions of the proposed dam or impounding structure: N/A height; ____ length
vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):
Impoundment area is an excavation consisting of earth fill.

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐ Yes ☑ No
If Yes:
i. What is the purpose of the excavation or dredging?
ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?
- Volume (specify tons or cubic yards):
- Over what duration of time?

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.
iv. Will there be onsite dewatering or processing of excavated materials? ☐ Yes ☐ No
If yes, describe.
v. What is the total area to be dredged or excavated? ____ acres
vi. What is the maximum area to be worked at any one time? ____ acres
vii. What would be the maximum depth of excavation or dredging? ____ feet
viii. Will the excavation require blasting? ☐ Yes ☐ No
ix. Summarize site reclamation goals and plan:

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☑ Yes ☐ No
If Yes:
i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): The proposed mixed-use project will result in 4.89 acres of impacts to federal wetlands (reduction of 7.87 acres), 1.20 acres of impacts to NYSDEC Freshwater Wetlands (reduction of 8.26 acres) and 3.65 acres of impacts to regulated 100 ft. Adjacent Areas of of the NYSDEC Freshwater Wetlands (reduction of .55 acres).

[The New York State Department of Environmental Conservation issued an Amended Wetland Permit on December 24, 2020. A copy of the Amended Wetland Permit is provided at Exhibit "8".]

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

iii. Will the proposed action cause or result in disturbance to bottom sediments? ☐Yes ☑No
If Yes, describe:

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☑No
If Yes:

- acres of aquatic vegetation proposed to be removed:
- expected acreage of aquatic vegetation remaining after project completion:
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access):
- proposed method of plant removal:
- if chemical/herbicide treatment will be used, specify product(s):

v. Describe any proposed reclamation/mitigation following disturbance:

c. Will the proposed action use, or create a new demand for water? ☑Yes ☐No
If Yes:

i. Total anticipated water usage/demand per day: 50,820 gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑Yes ☐No
If Yes:

- Name of district or service area: ECWA Consolidated Water District
- Does the existing public water supply have capacity to serve the proposal? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No
- Do existing lines serve the project site? ☑Yes ☐No

iii. Will line extension within an existing district be necessary to supply the project? ☐Yes ☑No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project:
- Source(s) of supply for the district:

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐Yes ☐No
If, Yes:

- Applicant/sponsor for new district:
- Date application submitted or anticipated:
- Proposed source(s) of supply for new district:

v. If a public water supply will not be used, describe plans to provide water supply for the project:

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑Yes ☐No
If Yes:

i. Total anticipated liquid waste generation per day: 50,820 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each):
Sanitary wastewater

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑Yes ☐No
If Yes:

- Name of wastewater treatment plant to be used: Tonawanda Creek Wastewater Treatment Plant
- Name of district: Town of Amherst Consolidated Sanitary Sewer District
- Does the existing wastewater treatment plant have capacity to serve the project? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

- Do existing sewer lines serve the project site? ☑Yes ☐No
- Will a line extension within an existing district be necessary to serve the project? ☐Yes ☑No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☑No

If Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑Yes ☐No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or 8.0 acres (impervious surface)

_____ Square feet or 28.47 acres (parcel size)

ii. Describe types of new point sources. Parking lots and roof tops

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

Stormwater runoff will be conveyed into the on-site stormwater management system to be installed per the applicable stringent stormwater quality and quantity standards of the NYS Department of Environmental Conservation ("NYSDEC")

- If to surface waters, identify receiving water bodies or wetlands: NYSDEC & Federal wetlands on the east portion of the Project Site.
- Will stormwater runoff flow to adjacent properties? ☐Yes ☑No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☑Yes ☐No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☑No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:

- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

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1.h

h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? ☐Yes ☑No A Traffic Impact Study was prepared by SRF Associates DPC dated August 3, 2020 and 4 copies have been submitted with the Site Plan Application dated February 22, 2020.

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐Weekend ☐ Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): _____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☑Yes ☐No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: _____

To be determined

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):

National Grid

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐Yes ☑No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 7:00 to 7:00
- Saturday: 8:00 to 6:00
- Sunday: As needed
- Holidays: Not Applicable

ii. During Operations:

- Monday - Friday: 8:00 to 11:00
- Saturday: 8:00 to 11:00
- Sunday: 8:00 to 10:00
- Holidays: 8:00 to 10:00

The hours of operation during "During Operations" as listed above apply to the first floor commercial space in the two mixed-use buildings. The hours are estimates since the tenants that will lease the first floor commercial space including both office and retail tenants have not yet been identified.

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m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

Construction activities will include the use of construction equipment during daytime hours that will exceed ambient background noise levels. The construction related noise impacts are a temporary unavoidable impact.

ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☑ No

Describe:

n. Will the proposed action **have outdoor lighting?** ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

Lighting will be installed in compliance with the lighting standards contained in the Town of Amherst Zoning Code. There will not be any lighting spillover onto contiguous properties.

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☑ No

Describe:

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures:

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally, describe the proposed storage facilities:

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☑ Yes ☐ No

If Yes:

i. Describe proposed treatment(s):

Potential use of lawn fertilizer and pesticides on maintained portions of property in accordance with applicable standards for application and use of lawn fertilizer and pesticides.

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☑ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☑ Yes ☐ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: 2 tons per week (unit of time)
- Operation : 2 tons per week (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: wood and metal waste may be recycled by the contract at their discretion
- Operation: Town of Amherst recycling program will be followed

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: approved NYSDEC landfill via contractor or private disposal company
- Operation: approved NYSDEC landfill via private disposal company

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s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☑ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)
☑ Forest ☐ Agriculture ☐ Aquatic ☑ Other (specify): Wetlands

ii. If mix of uses, generally describe:

There are mixture of uses in the vicinity of the Project Site including residential uses to the north in the Bucyrus Heights Subdivision, an elementary school, apartments and office buildings on Sweet Home Road and permanent open space to the east of Site "A".

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	0	8.0	+ 8.0
• Forested	12.17	1.87	-10.3
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	0	0	0
• Agricultural (includes active orchards, field, greenhouse etc.)	0	0	0
• Surface water features (lakes, ponds, streams, rivers, etc.)	0	0	0
• Wetlands (freshwater or tidal)	16.3	10.2	- 6.1
• Non-vegetated (bare rock, earth or fill)	0	0	0
• Other Describe: Greenspace, Landscaping, Pond	0	8.4	+8.4

The categories as listed above include the large wetland area subject to the jurisdiction of both the NYSDEC and USACE consisting of approximately 9.81 acres that was previously approved for development by the Town Board that will consist of Permanent Open Space to be donated to the Town of Amherst.

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c. Is the project site presently used by members of the community for public recreation? ☐Yes ☑No
i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☑Yes ☐No
If Yes,
i. Identify Facilities:
1. Heritage Heights Elementary School (Sweet Home School District- 2545 Sweet Home Road); 2. Creative Play Learning Center (Private Day Care Facility- 647 Dodge Road); and 3. Four Seasons Child Care & Preschool (Private Day Care Facility- 1639 North French Road).

e. Does the project site contain an existing dam? ☐Yes ☑No
If Yes:
i. Dimensions of the dam and impoundment:
- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____
iii. Provide date and summarize results of last inspection:
_____
_____

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐Yes ☑No
If Yes:
i. Has the facility been formally closed? ☐Yes ☐No
- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:
_____
_____

iii. Describe any development constraints due to the prior solid waste activities: _____
_____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐Yes ☑No
If Yes:
i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:
_____
_____

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐Yes ☑No
If Yes:
i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐Yes ☐No
☐ Yes – Spills Incidents database — Provide DEC ID number(s): _____
☐ Yes – Environmental Site Remediation database — Provide DEC ID number(s): _____
☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures: _____
_____
_____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐Yes ☑No
If yes, provide DEC ID number(s): _____

iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):
_____
_____

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v. Is the project site subject to an institutional control limiting property uses? ☐ Yes ☑ No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐ Yes ☐ No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? >5 feet

b. Are there bedrock outcroppings on the project site? ☐ Yes ☑ No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____ %

c. Predominant soil type(s) present on project site:

Getzville silt loam	94 %
Swormville clay loam	6 %
	%

d. What is the average depth to the water table on the project site? Average: >5 feet

e. Drainage status of project site soils:
☐ Well Drained: _____ % of site
☐ Moderately Well Drained: _____ % of site
☑ Poorly Drained 100 % of site

f. Approximate proportion of proposed action site with slopes:
☑ 0-10%: 100 % of site
☐ 10-15%: _____ % of site
☐ 15% or greater: _____ % of site

g. Are there any unique geologic features on the project site? ☐ Yes ☑ No
If Yes, describe: _____

h. Surface water features.
i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☑ Yes ☐ No
ii. Do any wetlands or other waterbodies adjoin the project site? ☑ Yes ☐ No
If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.
iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑ Yes ☐ No
iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name Federal Waters, NYS Wetland Approximate Size NYS Wetland (in a...
- Wetland No. (if regulated by DEC) TE-33

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐ Yes ☑ No
If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐ Yes ☑ No

j. Is the project site in the 100-year Floodplain? ☐ Yes ☑ No

k. Is the project site in the 500-year Floodplain? ☑ Yes ☐ No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐ Yes ☑ No
If Yes:
i. Name of aquifer: _____

The proposed mixed-use project will result in 4.89 acres of impacts to federal wetlands (reduction of 7.87 acres), 1.20 acres of impacts to NYSDEC Freshwater Wetlands (reduction of 8.26 acres) and 3.65 acres of impacts to regulated 100 ft. Adjacent Areas of NYSDEC Freshwater Wetlands (reduction of .55 acres). A copy of the Amended Wetland Permit issued by the New York State Department of Environmental Conservation authorizing the impacts to the NYSDEC Freshwater Wetlands and the regulated 100 ft. Adjacent Area to accommodate the proposed mixed-use project on Site A of the Muir Woods property is provided at Attachment "A" of this Part 1 of the Full Environmental Assessment Form.

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m. Identify the predominant wildlife species that occupy or use the project site:
Typical suburban species

n. Does the project site contain a designated significant natural community? ☐Yes ☑No
If Yes:
i. Describe the habitat/community (composition, function, and basis for designation):
ii. Source(s) of description or evaluation:
iii. Extent of community/habitat:
- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐Yes ☑No

If Yes:
i. Species and listing (endangered or threatened):

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☑Yes ☐No

If Yes:
i. Species and listing:
Spiny Softshell - The Project Sponsor does not believe that Spiny Softshell is present on Site A of the Muir Woods property.

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐Yes ☑No
If yes, give a brief description of how the proposed action may affect that use:

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐Yes ☑No
If Yes, provide county plus district name/number:

b. Are agricultural lands consisting of highly productive soils present? ☐Yes ☑No
i. If Yes: acreage(s) on project site?
ii. Source(s) of soil rating(s):

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐Yes ☑No
If Yes:
i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature
ii. Provide brief description of landmark, including values behind designation and approximate size/extent:

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐Yes ☑No
If Yes:
i. CEA name:
ii. Basis for designation:
iii. Designating agency and date:

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e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? ☑ Yes ☐ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: Eligible property:Heritage Heights Elementary School

iii. Brief description of attributes on which listing is based:

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☑ Yes ☐ No

[Ccopy of the No Impact Determination letter issued by the NYSOPRP dated October 10, 2001 is provided at Attachment "B".]

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s):

ii. Basis for identification:

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☐ Yes ☑ No

If Yes:

i. Identify resource:

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.):

iii. Distance between project and resource: _____ miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation:

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

Documentation evaluating potential adverse environmental impacts pursuant to the State Environmental Quality Review Act ("SEQRA") including the fully engineered plans prepared by Carmina Wood Morris DPC have been submitted with the Site Plan Application.

G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name: Sawyers Landing LLC Date: February 22, 2021

Signature _____ Title Attorney for Project Sponsor

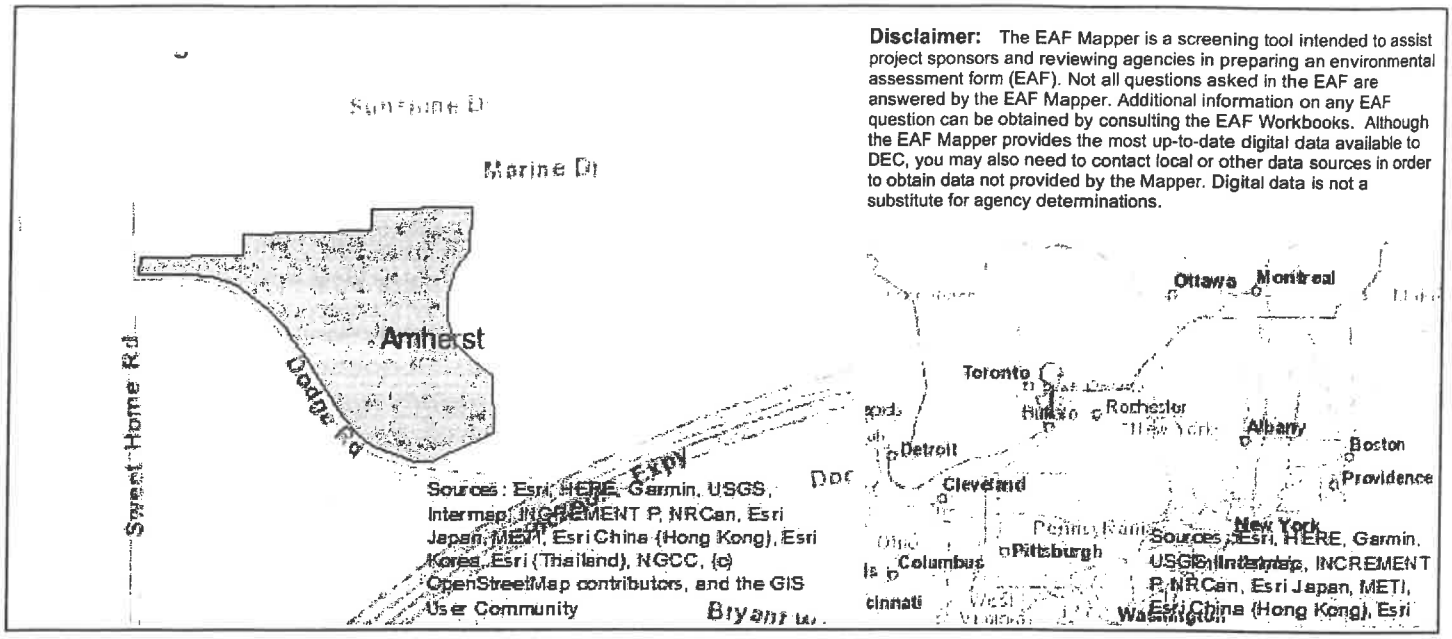
Sean W. Hopkins, Esq.

PRINT FORM

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

EAF Mapper Summary Report

Thursday, June 18, 2020 8:50 AM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.

B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Yes - Digital mapping data are not available for all Special Planning Districts. Refer to EAF Workbook.
C.2.b. [Special Planning District - Name]	NYS Heritage Areas:West Erie Canal Corridor
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	Yes
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.iv [Surface Water Features - Wetlands Name]	Federal Waters, NYS Wetland
E.2.h.iv [Surface Water Features - Wetlands Size]	NYS Wetland (in acres):34.6
E.2.h.iv [Surface Water Features - DEC Wetlands Number]	TE-33
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	No

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

E.2.k. [500 Year Floodplain]	Yes
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	No
E.2.o. [Endangered or Threatened Species]	No
E.2.p. [Rare Plants or Animals]	Yes
E.2.p. [Rare Plants or Animals - Name]	Spiny Softshell
E.3.a. [Agricultural District]	No
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Yes - Digital mapping data for archaeological site boundaries are not available. Refer to EAF Workbook.
E.3.e.ii [National or State Register of Historic Places or State Eligible Sites - Name]	Eligible property:Heritage Heights Elementary School
E.3.f. [Archeological Sites]	Yes
E.3.i. [Designated River Corridor]	No

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

TOWN OF AMHERST ATTACHMENT
State Environmental Quality Review
ENVIRONMENTAL ASSESSMENT FORM
Proposed Mixed-Use Project - Portion of 1081 North French Road

1. For each applicable category of proposed new structures, including additions to existing structures, provide the following information for all soil types on the project site (*according to Soil Survey of Erie County, NY; Table 11, Building Site Development, pp 294-305):*

Soil Name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Getzville Silt Loam	Severe	Severe	Severe	Severe	Moderate
Swormville Clay Loam	Severe	Severe	Severe	Severe	Severe

2. If the Soil survey indicates either "severe" or "moderate" suitability for the proposed types of construction, a geotechnical and hydrological analysis based on one test per 3.5 acres of project area must be provided (per Town Board resolution, 3/17/03, amended 6/16/03).

   _____ Geotechnical report attached _____ Not applicable

   [Note: 3 copies of the Geotechnical Report that has been ordered for the relevant portion of 1081 North French Road to be developed as a mixed-use project will be submitted to the Planning Department. A comprehensive Geotechnical Report for the entire overall Muir Woods Property was previously submitted.

3. Is your property located: On Youngs Road between Dodge and Klein Roads? ☐ Yes ■ No
   On Wehrle Dr. between Spindrift Dr. and Oakwood Rd? ☐ Yes ■ No

   If so, the property may be within an area of the Town that is affected by a moratorium on connections to the sanitary sewer system.

4. Are there alternative locations on the site for this project? ☐ Yes ■ No

5. Location and size of real property owned by petitioner within one (1) mile of subject proposal:
   X Not Applicable

6. Are you aware of current or future plans or intentions by others in the Town of Amherst to develop property within 1000± ft. of the present project request: ■ Yes No

   Describe A student housing community is proposed on property to the east of the Project Site commonly referred to as Site "B" of Muir Woods.

   (Potential environmental impacts from adjacent or nearby projects undergoing the approval process will receive a coordinated environmental review to determine cumulative effects on common receivers (e.g. traffic and drainage corridors) and other relevant environmental concerns.)

7. Maximum number of vehicular trips to be generated per peak hour upon completion of project 106
   Source: Traffic Impact Study prepared by SRF Associates DPC dated August 3, 2020. 3 copies of the Traffic Impact Study have been submitted with the Site Plan Application.

8. Will blasting occur during construction? ☐ Yes ■ No

9. Does the project propose to connect and be tributary to the public sanitary sewer system? ■ Yes ☐ No

10. Proposed net additional gallons per day (gpd) of sanitary sewer discharge upon completion of project:
    50,820 average flow 203,280 peak flow.

    (Average flows of 2,500 gpd or greater will require an Engineer's Report that includes a detailed downstream sewer capacity analysis and the identification of and commitment to required I/I offset work during peak wastewater flow conditions.)

11. Based on the Town's *2011 Reconnaissance Level Survey of Historic Resources,* is your property 'blue-rated' for historic significance? Yes ■ No
    [There are not any buildings located on the Project Site.]

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Attachment "A" of Part 1 of Full Environmental Assessment Form - Amended Wetland Permit Issued by the New York State Separtment of Environmental Conservation dated December 24, 2020

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

PERMIT

Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
Ciminelli Muir Woods LLC
50 Fountain Plaza, Suite 500
Buffalo, NY 14202
(716) 631-8000

Facility:
MUIR WOODS DEVELOPMENT
1121 N French Rd
Amherst, NY 14228

Facility Location: in AMHERST in ERIE COUNTY
Facility Principal Reference Point: NYTM-E: 191.586 NYTM-N: 4770.823
Latitude: 43°01'38.9" Longitude: 78°47'07.2"

Authorized Activity: Construction of a mixed-use project named "Muir Woods" consisting of approximately two 4-story mixed-use buildings consisting of commercial space and residential units, 90 two-family townhouses and 2 six-unit apartment buildings, approximately 133 detached single-family residential units and 515 cottage-style and apartment-style housing units with various amenities; and gas, electric, sanitary, potable water and storm water (the necessary infrastructure), while maintaining open space on approximately 224 acres in the Audubon New Community District. The Muir Woods project property is a 326 acre site bounded by the Lockport Expressway (Interstate Route 990) and Dodge Road on the south, Sweet Home Road on the west, North French Road on the north and Campbell Boulevard on the east. The project will result in permanent impacts to approximately 2.39 acres of State regulated wetlands (TE-22, TE-23 and TE-34), and 11.38 acres of State regulated 100 foot wide wetland adjacent area. As mitigation for those impacts the project includes creation of 19.58 acres of in-kind and out-of-kind wetlands on-site, in six areas, to replace the functions and benefits of the impacted wetlands. There will be 4.3 acres of stream channel enhancement on-site as mitigation for State wetland regulated adjacent area impacts. The project also includes construction at 520 Campbell Road property as detailed on plan sheets referenced in Natural Resource Condition No. 4.

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Permit Authorizations

Freshwater Wetlands - Under Article 24
Permit ID 9-1422-00398/00001

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

Water Quality Certification - Under Section 401 - Clean Water Act
Permit ID 9-1422-00398/00002

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: DAVID S DENK, Regional Permit Administrator
Address: NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY 14203 -2915

Authorized Signature: David S. Denk Digitally signed by David S. Denk DN: cn=David S. Denk, o=NYS DEC, ou=Div. of Env. Permits, email=david.denk@dec.ny.gov, c=US Date: 2020.12.24 10:29:47 -05'00' Date ___/___/___

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: FRESHWATER WETLANDS; WATER QUALITY CERTIFICATION

1. **No Work Prior to Approval of Legal Instrument for Preservation of Undeveloped Areas of Site** No work authorized by this permit may begin until the Department approves a legal instrument, such as a deed restriction and/or conservation easement, that will preserve in perpetuity the natural resource values of the undeveloped areas of the site. This condition does not apply to the 520 Campbell Boulevard property.

2. **Declaration of Restrictions 520 Campbell Boulevard Property** A Declaration of Restrictions permanently prohibiting any future development of the 6.88 acres of jurisdictional federal wetlands and portion of the upland area on 520 Campbell Boulevard as depicted on the Wetland Restriction Exhibit Map must be incorporated into the deeds for lots 1 – 12 and 21. By 60 days after Water Quality Certification issuance, the permittee shall file with the real property records of the Erie County Clerk`s Office, the deed for each applicable lot containing this notice. The permittee shall within two weeks following the filing of the deed(s) submit proof of filing from the County Clerk's Office

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showing the Liber and page number at which the deed notice was filed and the date of filing for one of the affected lots to: Regional Permit Administrator, NYSDEC Region 9 Headquarters, 270 Michigan Ave, Buffalo, NY 14203-2915.

3. **Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by Ciminelli Development Company, Inc. and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009.

4. **Conformance with Plans Site B** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include the "Concept Plan - Muir Woods" dated 08 November 2019 amended to show Conifer Planting Area (attached).

5. **Conformance with Plans - 520 Campbell Boulevard** All activities authorized by this permit for the 520 Campbell Boulevard property must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans include those sheets entitled: The Preserve at Muir Woods (DEC Planting Exhibit, DEC Earthwork Exhibit and the Wetland Restriction Exhibit) by Greenman-Pedersen, Inc. dated May 2018.

6. **Conformance with Plans Site A** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include Drawing C-100 dated July 20, 2020 and received by this Department on August 10, 2020.

7. **Future Phases** Prior to development of Muir Woods Sites A and B, the permittee must obtain specific approval of engineered plans for Sites A and B to ensure compliance with the terms and condition of this permit, the approved wetland mitigation plans and the most current Findings Statement for the overall Muir Woods Project issued pursuant to the State Environmental Quality Review Act. The permittee shall submit the engineered plans for the development of Sites A and B for review by the Department simultaneous with submission of such engineered plans to the Town of Amherst. If required by the Department, the permittee shall make any necessary modifications to the engineered plans to ensure compliance with the terms and conditions of this permit, the approved wetland mitigation plans and the most current Findings Statement.

8. **Permit Conditions Prevail over Plans** If any condition of this permit conflicts with the approved plans noted in Condition Number 1, the permit conditions shall prevail over the plans unless specific written approval for such a change is obtained from this Department prior to implementation.

9. **Pre-construction Meeting to Review Permit** Prior to commencing work at the project site, the permittee shall schedule a pre-construction meeting with Department staff (Contact: Mr. David Denk, Regional Permit Administrator, NYSDEC, Division of Environmental Permits, Telephone : 716/851- 7165 and/or Mr. Charles P. Rosenburg, NYSDEC, Division of Fish and Wildlife, Telephone: 716/851-7010) and selected contractors to review the conditions contained in this permit.

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10. Mark Areas of No Disturbance on the Muir Woods Site Grade stakes and/or other appropriate measures (substantial contractor fencing, perhaps in combination with necessary silt fencing) shall be used to ensure that no equipment enters identified areas of no disturbance within the immediate area under construction (i.e.- Site A, Site B, Site C or Site D) on the Muir Woods project site. Boundaries of the on-site mitigation areas shall likewise be marked to define the limits of that work.

11. Install Controls Along Limits of Disturbance Before any soil is disturbed within a specific Site Development Area, as detailed in Condition #6 above, the permittee shall install securely anchored silt fencing and/or continuous staked hay bales along the limits-of-disturbance as shown on the plans or drawings referenced in this permit. Such erosion and sedimentation controls shall be maintained until unpaved portions of the subject site are stabilized by a self-sustaining cover of vegetation that is adequate to prevent erosion and sedimentation on and off the site. Sediment which has accumulated at the controls shall be removed periodically as necessary during the construction period. Before the controls are removed, the permittee shall remove all sediment that has accumulated at the controls.

12. Work Within Ares Depicted on Plans All construction activity, including operation of machinery, excavation, filling, grading, clearing of vegetation, disposal of waste, street paving and stockpiling of material must take place within the Site Development Areas or mitigation areas as depicted on the project plans referenced by this permit. Construction activity is prohibited within areas to be left in a natural condition or locations on the property not within the Site Development Areas or mitigation areas designated by this permit. Disturbance to the wetlands and their regulated 100 foot wide adjacent areas shall be strictly limited to the work areas identified in the plans, and specifically the MAP SHOWING WETLAND IMPACT AREAS - NEW YORK STATE WETLANDS, and APPENDIX M - PROPOSED ON-SITE MITIGATION PLAN.

13. Invasive Species (Non-Native Vegetation) To prevent the unintentional introduction or spread of invasive species, the permittee must ensure that all construction equipment is cleaned of mud, seeds, vegetation and other debris before entering any approved Site Development Areas within State regulated wetlands or their 100 foot wide adjacent areas, as well as all on-site wetland mitigation areas.

14. Prevention of Invasive Species The permittee shall prevent the establishment of invasive species (purple loosestrife, Phragmites, reed canary-grass, Japanese knotweed, glossy buckthorn and common buckthorn) across all disturbed areas within the wetland mitigation area for five growing seasons. If any of these invasive species become established, monitoring and treatment may be extended for an additional 5 years at the Department's discretion.

15. Wetland Mitigation is Mandatory Completion of all freshwater wetland mitigation is mandatory regardless of whether or not construction proceeds to completion. The required mitigation must be completed by the expiration date of this permit. Mitigation will be subject to remediation, if necessary, pursuant to Condition #16 below. All mitigation areas shall be monitored for a period of ten (10) years or until the mitigation is deemed successful by this Department. Monitoring reports shall be prepared for the first four (4) years after construction of the mitigation areas and every other year (years 6, 8 and 10) thereafter. This Department may, at its discretion, modify the 10-year monitoring period and/or monitoring report requirement at any time. Monitoring reports shall be submitted to Mr. Charles P. Rosenburg, Habitat Manager, NYSDEC, Bureau of Ecosystem Health, 270 Michigan Avenue, Buffalo, NY 14203-2915 Telephone: 716/851-7024.

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16. **On-Site Mitigation to be in Accordance with Mitigation Plan** The on-site mitigation shall be in accordance with Appendix M - Proposed On-Site Wetland Mitigation for Muir Woods prepared by Earth Dimensions, Inc. revised May 25, 2009 and with the modifications shown in Exhibit 22 of the July 20, 2020 application binder.

17. **Planting Row of Native Conifers** The permittee shall plant a row of native conifer trees in the location shown on the attached plan. The tree plantings must be a minimum of 6 feet tall, spaced 15 feet apart, and must be planted no later than October 15th following the completion of construction of the adjacent apartment units.

18. **Survival Rate for Mitigation Plantings** The permittee shall prepare a care, maintenance, inspection, and replacement schedule for the tree and shrub plantings described in the mitigation plan to ensure an 85% survival rate for five growing seasons. This condition includes all on-site landscape "buffer" plantings.

19. **Herbicides, Pesticides in Wetland or Adjacent Area** The use of herbicides and other pesticides in State regulated wetlands or their 100 foot wide adjacent areas is a regulated activity and may only be conducted pursuant to a valid Article 33 Pesticides Permit.

20. **Requirement for SPDES General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities** Since development of the Muir Woods site in the Town of Amherst will involve land disturbance of one (1) or more acres, the permittee is required to obtain coverage under State Pollutant Discharge Elimination System (SPDES) General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities. A Notice of Intent (NOI) is required to be sent to NYSDEC, Division of Water, 625 Broadway, 4th Floor, Albany, New York 12233-3505, Telephone: 518/402-8111 and approved before construction commences. Alternatively, an eNOI may be filed electronically as described on the Department's website. The General Permit GP-0-15-002 and NOI form are available on the Department's website at www.dec.state.ny.us.

21. **Visibly Turbid Discharges Prohibited** Visibly turbid discharges from project dewatering operations, excavation and grading activities are strictly prohibited to any "water body" (pond, wetland, stream or water course). Any such discharges shall be (1) retained in an appropriately maintained upland settling basin, filtered through crushed stone, sand, filter fabric fences, hay bales etc., or (2) directed to a grassy area sufficiently distant from any water body to preclude such entry.

22. **Stockpiling of Soil** Stockpiling of excavated soil is prohibited at locations within any portion of the TE-22, TE-23 and TE-34 Wetlands or their regulated 100 foot wide adjacent areas, or within any mapped 100-year floodplain beyond the Site Development Areas or mitigation areas identified in the plans.

23. **Stabilize Disturbed Areas** All areas of soil disturbance resulting from this project shall be seeded with an appropriate perennial grass seed and mulched with straw, or hydro-seeded. Mulch shall be maintained until suitable vegetative cover is established.

24. **Temporary Mulch, Final Seeding** If seeding is impracticable due to the time of year, a temporary mulch shall be applied and final seeding shall be performed at the earliest opportunity when weather conditions favor germination and growth.

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25. **Disposal of Material** Any non-merchantable tree and brush debris, demolition debris, excess construction materials, and/or excess excavated materials shall be immediately and completely disposed of on an approved upland site more than 100 feet from any regulated freshwater wetland. These materials shall be suitably stabilized so as not to re-enter any water body, wetland, or wetland adjacent area; and must be disposed of in accordance with all local, state, and federal statutes, regulations, or ordinances.

26. **Placement of Interpretive Signs Required** Permanent interpretive signs shall be placed at various wetland boundary locations throughout the Muir Woods project site . The permittee shall submit a proposal for the signs to the Department for approval. The interpretive signs shall be a minimum of 12 inches by 12 inches and shall be placed on permanent posts.

27. **Annual Project Inspection / Meeting** The permittee shall schedule an annual inspection/meeting to update Department staff on project progress and compliance with conditions of this permit for the on-site wetland mitigation area.

28. **Wetland Monuments** Monuments shall be placed every 200 feet along the outer edge of the wetland preservation areas. The monuments shall be 30" long, 5/8" rebar and cap embedded flush and in the center of the top exposed surface of concrete in a minimum 4 inch diameter, 4.5 foot long section of PVC Schedule 40 drain pipe filled with concrete, extending vertically1.5 to 2 feet above existing grade at each location. The caps shall say "Conservation Area Marker, Do Not Disturb". These monuments are to be permanently maintained.

29. **Wetland Boundaries** The boundaries of the TE-22, TE-23 and TE-34 Wetlands shall be fixed for the period of this permit (expires November 30, 2024). At that time, new boundary delineations for those wetlands will be required by this Department (to be performed or confirmed by a Department Biologist). Since project activities will be subject to the updated wetland boundary delineations and pertinent regulations at that time, any future permit modification (if necessary) would be reviewed based on the updated delineations and pertinent regulations. As such, modifications to the current project plan may be necessary depending upon the updated wetland delineations and permit regulations in effect at that time.

30. **State Not Liable for Damage** The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

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31. **State May Order Removal or Alteration of Work** If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

32. **State May Require Site Restoration** If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may lawfully require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.

33. **Precautions Against Contamination of Waters** All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. **Water Quality Certification** The authorized project, as conditioned pursuant to the Certificate, complies with Section 301, 302, 303, 306, and 307 of the Federal Water Pollution Control Act, as amended and as implemented by the limitations, standards, and criteria of state statutory and regulatory requirements set forth in 6 NYCRR Section 608.9(a). The authorized project, as conditioned, will also comply with applicable New York State water quality standards, including but not limited to effluent limitations, best usages and thermal discharge criteria, as applicable, as set forth in 6 NYCRR Parts 701, 702, 703, and 704.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. **Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

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The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. Relationship of this Permit to Other Department Orders and Determinations Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. Applications For Permit Renewals, Modifications or Transfers The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY14203 -2915

4. Submission of Renewal Application The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Freshwater Wetlands, Water Quality Certification.

5. Permit Modifications, Suspensions and Revocations by the Department The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

a. materially false or inaccurate statements in the permit application or supporting papers;

b. failure by the permittee to comply with any terms or conditions of the permit;

c. exceeding the scope of the project as described in the permit application;

d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;

e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. Permit Transfer Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

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NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification
The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit
The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits
The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights
This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

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Attachment "B" of Part 1 of Full Environmental Assessment Form - No Impact Determination Letter Issued by Ruth Pierpont, Director, New York State Office of Parks, Recreation and Historic Preservation, dated October 10, 2001

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

NEW YORK STATE
Bernadette Castro
Commissioner

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189

518-237-8643

October 10, 2001

Carolyn A. Pierce
CCRG
105 Robie Avenue
Buffalo, New York 14214

Dear Ms. Pierce:

Re: SEQRA
Muir Woods Mixed-Use Development
Amherst/Erie County
01PR0345

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Parks, Recreation and Historic Preservation Law, Section 14.09.

Based upon this review, it is the OPRHP's opinion that your project will have No Impact upon cultural resources in or eligible for inclusion in the State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Director

RLP:cmp

RECEIVED
OCT 16 2001
CIMINELLI DEVELOPMENT COMPANY, INC.

An Equal Opportunity/Affirmative Action Agency
printed on recycled paper

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Exhibit 2 – Description of the Proposed Mixed-Use Project on a Portion of 1081 North French Road [Site "A" of the Muir Woods Property]

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

EXHIBIT 2 OF SITE PLAN APPLICATION

DESCRIPTION OF PROPOSED MIXED-USE PROJECT TO BE LOCATION ON A PORTION OF 1081 NORTH FRENCH ROAD [SITE "A" OF MUIR WOODS PROPERTY]

The proposed project consists of a mixed-use project on a portion of 1081 North French Road [Site "A" of Muir Woods Property] (the "Project Site"). The Project Site is properly zoned for the proposed mixed-use project. The mixed-use project consists of 2 four-story mixed-use buildings [15,000 sq. ft. of 1st floor commercial space and 50 units per building], 47 two-family town homes on individual lots, and 2 single-story apartment buildings [6 units per building] along with all related site improvements depicted on the fully engineered plans prepared by Christopher Wood, P.E. of Carmina Wood Morris DPC submitted with this Site Plan Application. A reduced size copy of the Overall Site Plan [Drawing C-100] is provided at Exhibit "3". The Elevation Plans as prepared by Sutton Architecture PLLC are provided at Exhibit "8". The fully engineered plans for the mixed-use project consist of the following:

- Cover Sheet;
- Topographic Survey;
- Boundary Survey;
- Demolition & Erosion Control Plan [Drawing C-001];
- Demolition & Erosion Control Details Plan [Drawing C-002];
- Overall Site Plan [Drawing C-100];
- Site Plan [Drawing C-101];
- Parcel Map [Drawing C-102];
- Site Details Plan [Drawing C-103];
- Site Details Plan [Drawing C-104];
- Grading Plan [Drawing C-200];
- Storm Drainage Plan [Drawing C-300];
- Storm Drainage Details Plan [Drawing C-301];

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- Storm Drainage Plan [Drawing C-302];
- Storm Drainage Details Plan [Drawing C-303];
- Storm Drainage Details Plan [Drawing C-304];
- Utility Plan [Drawing C-400];
- Sanitary Sewer Details Plan [Drawing C-401];
- Sanitary Sewer Details Plan [Drawing C-402];
- Sanitary Sewer General Notes Plan [Drawing C-403];
- Sanitary Sewer Testing Notes Plan [Drawing C-404];
- Water Details Plan [Drawing C-405];
- Water Details & Notes Plan [Drawing C-407];
- Insulated Enclosure Detail Plan [Drawing C-408]; and
- Landscape Plan as Prepared by Robert Walter, RLA [Drawing L-100]

For purposes of the review process, the proposed mixed-use project has been defined broadly to include all required discretionary approvals and permits as well as all site improvements including the proposed driveway connections to Dodge Road, access aisles, parking spaces, driveways, wetland impacts, lighting, landscaping, on-site storm water management improvements, sanitary sewer and water lines and connections and all other required utility improvements.[1] The project purpose is to develop Site "A" of overall Muir Woods Project Site as an innovative mixed-use project on property that has been designated for development for several decades. The proposed mixed-use project is a Type I action pursuant to SEQRA. The Town Board issued an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") on October 19, 2020 to allow mixed-use development of the Project Site.[2]

[1] A completed Part 1 of the Full Environmental Assessment Form with attached Page 5[a] and Attachments "A" and "B" is provided at Exhibit "1".

[2] A copy Resolution 2020-791 as adopted by the Town of Amherst Town Board on October 19, 2020 for the purpose of Issuing an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") for allowing mixed-use development on the Project Site is provided at Exhibit "9".

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Additionally, on October 19, 2020, the Town Board also adopted a resolution to amend the Town's Comprehensive to designate the Project Site as appropriate for mixed-use.[3]

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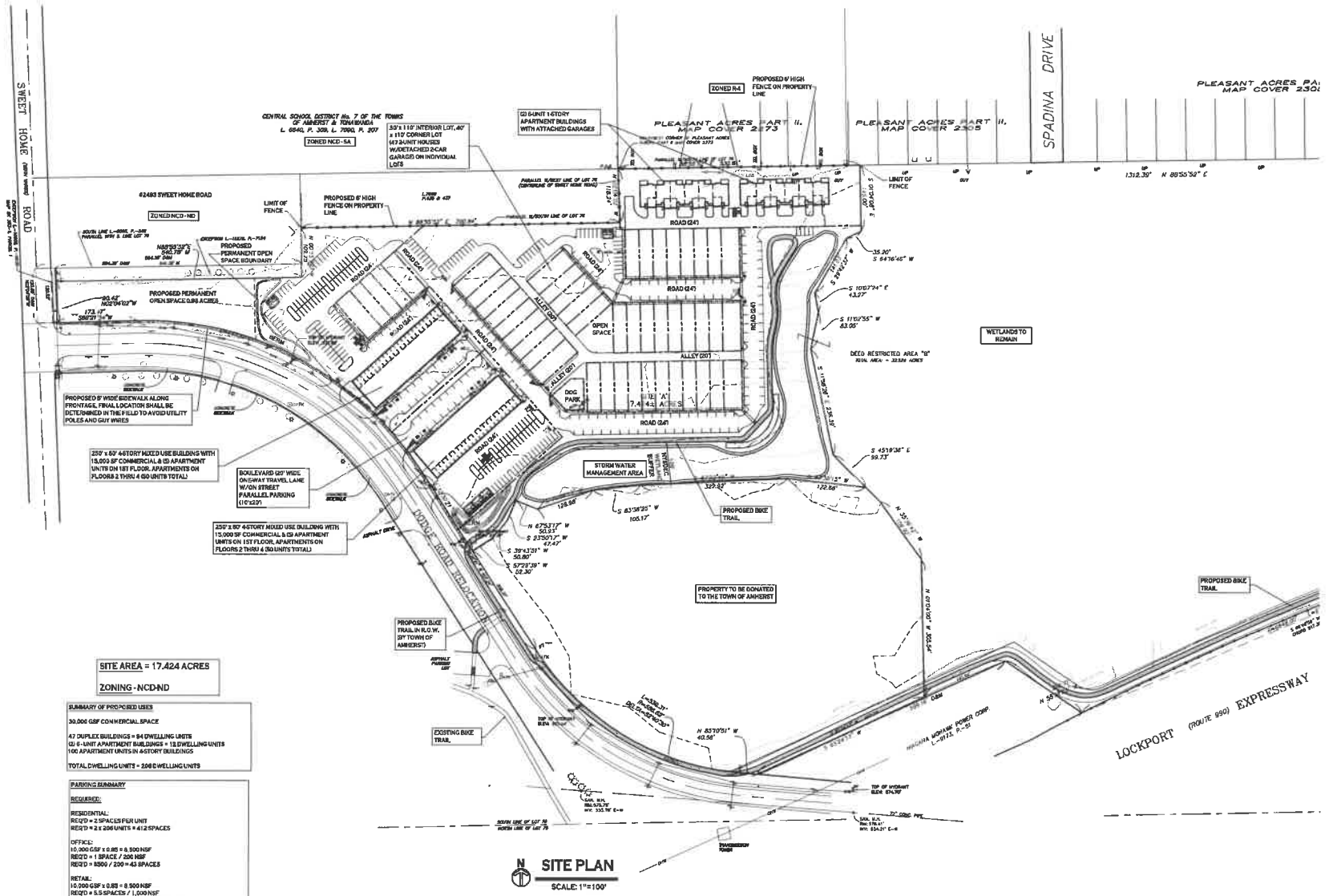
[3] A copy of Resolution 2020-792 as Adopted by the Town of Amherst Town Board on October 19, 2020 for the purpose of approving an Amendment to the Town of Amherst Comprehensive Plan to accommodate mixed-use development on the Project Site is provided at Exhibit "10".

Exhibit 3 – Reduced Size Copy of Overall Site Plan [Drawing C-100] as Prepared by Christopher Wood, P.E., of Carmina Wood Morris DPC

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



SITE AREA = 17.424 ACRES

ZONING - NCD/ND

SUMMARY OF PROPOSED USES

30,000 GSF COMMERCIAL SPACE

47 DUPLEX BUILDINGS = 94 DWELLING UNITS
(2) 6-UNIT APARTMENT BUILDINGS = 12 DWELLING UNITS
100 APARTMENT UNITS IN 4-STORY BUILDINGS

TOTAL DWELLING UNITS = 206 DWELLING UNITS

PARKING SUMMARY

REQUIRED:

RESIDENTIAL:
REQ'D = 2 SPACES PER UNIT
REQ'D = 2 x 206 UNITS = 412 SPACES

OFFICE:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 1 SPACE / 200 NSF
REQ'D = 8500 / 200 = 43 SPACES

RETAIL:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 5.5 SPACES / 1,000 NSF
REQ'D = 8500 / 1000 x 5.5 = 47 SPACES

RESTAURANT:
REQ'D = 1 SPACE / 3 SEATS + 1 SPACE / 100 SF TAKE OUT AREA
REQ'D = 100 SEAT / 3 + 500 SF / 100 = 38 SPACES

TOTAL REQ'D = 540 SPACES

PROVIDED:

158 PARALLEL PARKING SPACES
213 PVI'S* SPACES *
49 GARAGE SPACES IN 4-STORY BLDGS
94 GARAGE SPACES IN DETACHED GARAGES
TOTAL SPACES

* INCLUDES SPACES IN FRONT OF APARTMENT GARAGES

PERMANENT OPEN SPACE SUMMARY

TOTAL PROPOSED PERMANENT OPEN SPACE = 0.98 ACRES

WETLAND SUMMARY

FEDERAL IMPACTS PROPOSED = 6.089 AC
FEDERAL IMPACTS PREVIOUSLY PROPOSED = 13.01 AC
DECREASE = 6.921 AC (53% DECREASED)

NYSDEC IMPACTS PROPOSED = 1.20 AC
NYSDEC IMPACTS PREVIOUSLY PROPOSED = 8.48 AC
DECREASE = 8.20 AC (87% DECREASED)

NYSDEC BUFFER IMPACT PROPOSED = 3.65 AC
NYSDEC BUFFER IMPACTS PREVIOUSLY PROPOSED = 4.20 AC
DECREASE = 0.55 AC (13% DECREASED)

NOTE: NYSDEC IMPACTS INCLUDES FEDERAL WETLAND IMPACT OVERLAP AREAS

N

SITE PLAN

SCALE: 1"=100'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 0 100 200FT

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Carmina Wood Morris DPC
497 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0283

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Overall Site Plan

DRAWING NO.

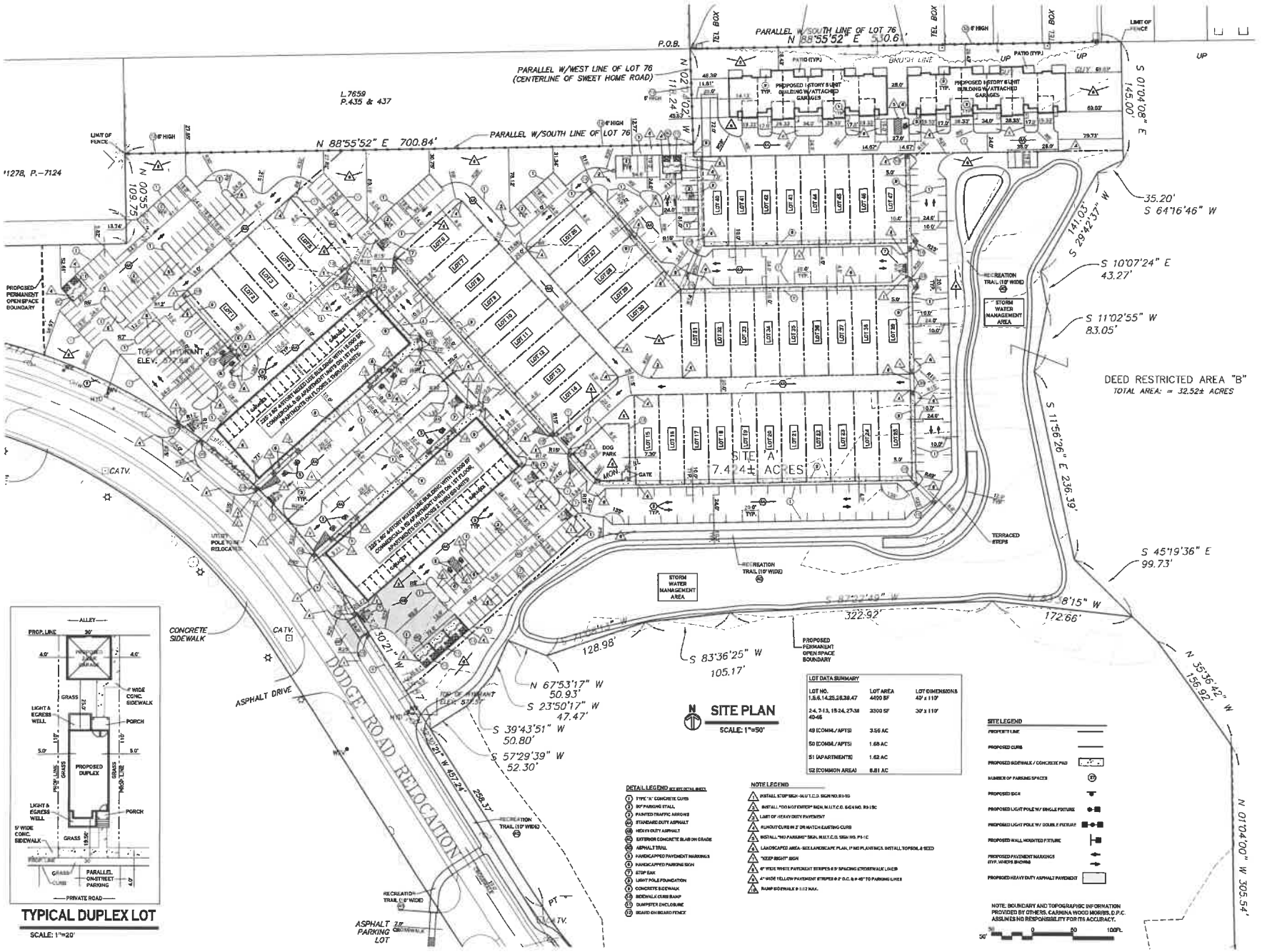
C-100

Project no.: 21.011

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Exhibit 4 – Reduced Size Copy of Site Plan [Drawing C-101] as Prepared by Christopher Wood, P.E., of Carmina Wood Morris DPC

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

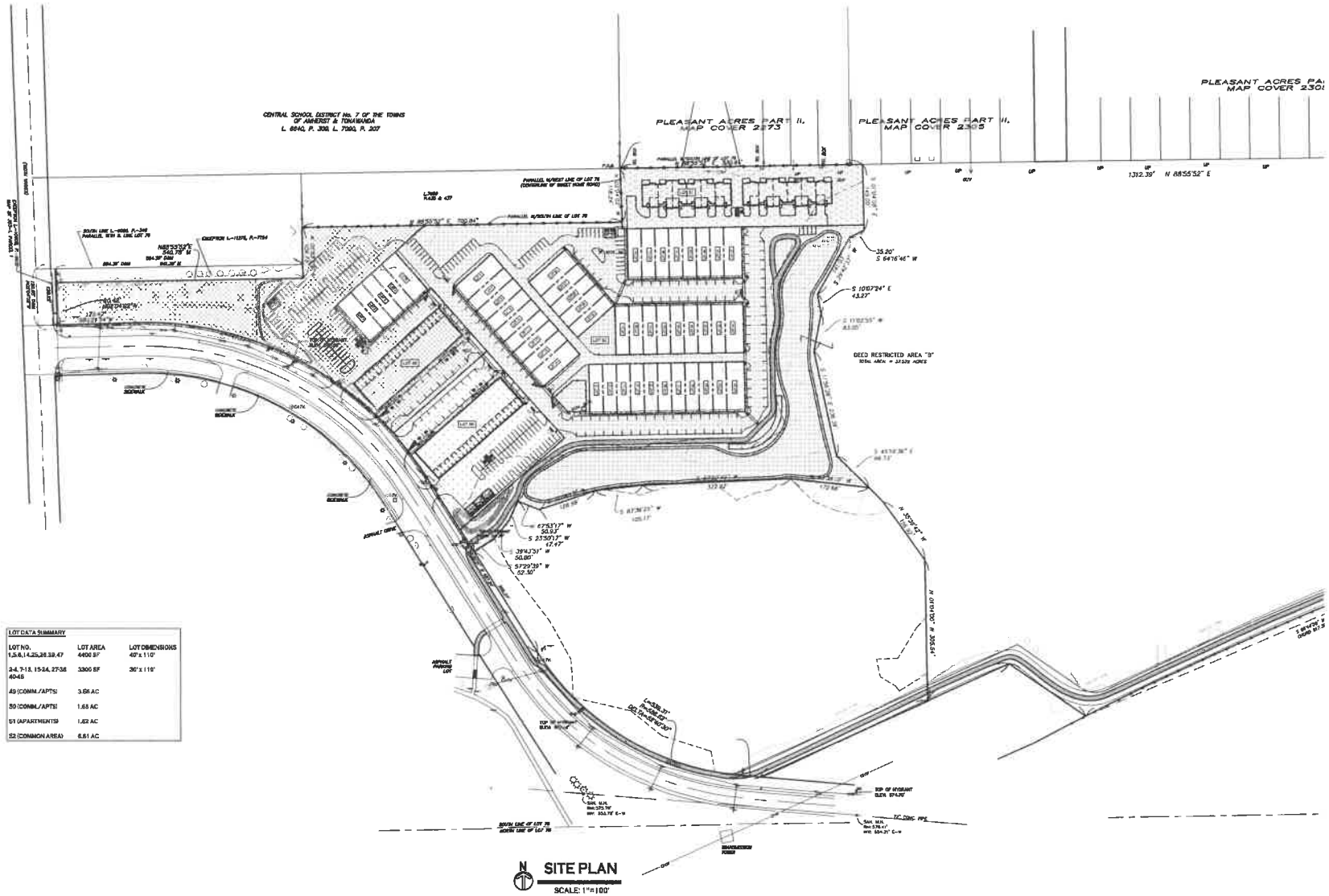
DRAWING NAME:
Site Plan

DRAWING NO.
C-101
Project no.: 21.011

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Exhibit 5 – Reduced Size Copy of Parcel Map [Drawing C-102] as Prepared by Christopher Wood, P.E., of Carmina Wood Morris DPC

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



LOT DATA SUMMARY		
LOT NO. 1,5,6,14,25,26,39,47	LOT AREA 4400 SF	LOT DIMENSIONS 40' x 110'
2-4, 7-13, 15-24, 27-38, 40-46	3300 SF	30' x 110'
49 (COMM./APTS)	3.56 AC	
50 (COMM./APTS)	1.65 AC	
51 (APARTMENTS)	1.62 AC	
52 (COMMON AREA)	6.51 AC	

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200FL

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Buffalo, New York, 14203
P 716.842.3148
F 716.842.0263

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

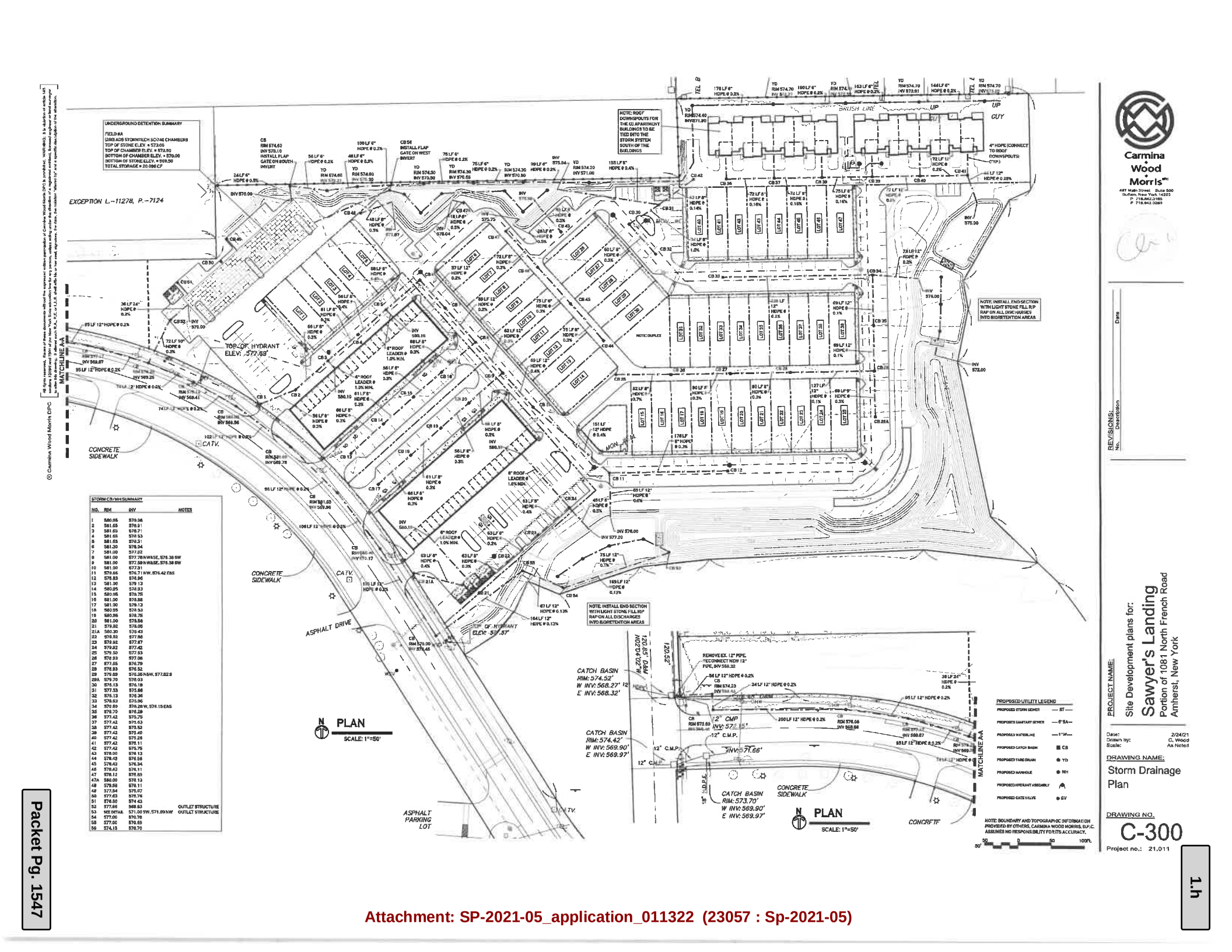
DRAWING NAME:
Parcel Map

DRAWING NO.
C-102

Project no.: 21.011

Exhibit 6 – Reduced Size Copy of Storm Drainage Plan [Drawing C-300] as Prepared by Christopher Wood, P.E., of Carmina Wood Morris DPC

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



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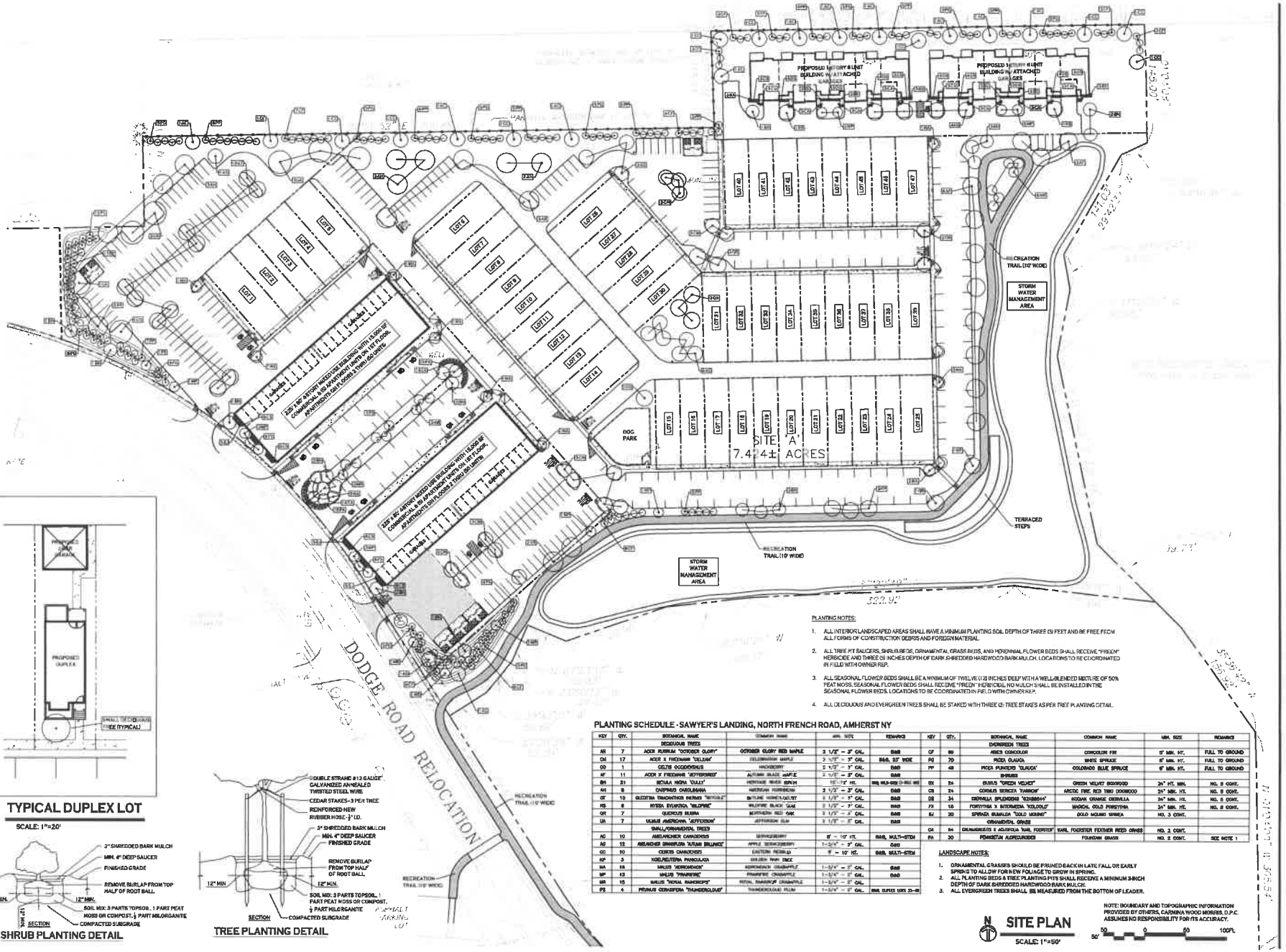
Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Exhibit 7 – Reduced Size Copy of Landscape Plan [Drawing L-100] as Prepared by Robert Walter, Registered Landscape Architect

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



PLANTING NOTES:

1. ALL INTERIOR LANDSCAPED AREAS SHALL HAVE A MINIMUM PLANTING SOIL DEPTH OF THREE (3) FEET AND BE FREE FROM ALL FORMS OF CONSTRUCTION DEBRIS AND FOREIGN MATERIAL.
2. ALL TREE PIT SAUCERS, SHRUB BEDS, ORNAMENTAL GRASS BEDS, AND HERENNIAL FLOWER BEDS SHALL RECEIVE "PRIEN" HERBICIDE AND THREE (3) INCHES DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
3. ALL SEASONAL FLOWER BEDS SHALL BE A MINIMUM OF TWELVE (12) INCHES DEEP WITH A WELL-BLENDED MIXTURE OF 50% PEAT MOSS. SEASONAL FLOWER BEDS SHALL RECEIVE "PRIEN" HERBICIDE, NO MULCH SHALL BE INSTALLED IN THE SEASONAL FLOWER BEDS. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
4. ALL DECIDUOUS AND EVERGREEN TREES SHALL BE STAKED WITH THREE (3) TREE STAKES AS PER TREE PLANTING DETAIL.

PLANTING SCHEDULE - SAWYER'S LANDING, NORTH FRENCH ROAD, AMHERST NY

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		DECIDUOUS TREES			
AR	7	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	2 1/2" – 3" CAL.	B&B
CM	17	ACER X FREEMANII 'CELZAM'	CELEBRATION MAPLE	2 1/2" – 3" CAL.	B&B, 12' WIDE
CO	1	CELTIS OCCIDENTALIS	HACKBERRY	2 1/2" – 3" CAL.	B&B
KF	11	ACER X FREEMANII 'JEFFERSRED'	AUTUMN BLAZE MAPLE	2 1/2" – 3" CAL.	B&B
GH	21	GLEDITSIA TRIACANTHOS INERMIS 'SKYCOLE'	SKYLINE HONEYLOCUST	2 1/2" – 3" CAL.	B&B, MULTI-STEM
NS	8	NYSSA SYLVATICA 'WILDFIRE'	WILDFIRE BLACK GUM	2 1/2" – 3" CAL.	B&B
QR	7	QUERCUS RUBRA	NORTHERN RED OAK	2 1/2" – 3" CAL.	B&B
UA	7	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2 1/2" – 3" CAL.	B&B
		SMALL ORNAMENTAL TREES			
AC	10	AMELANCHIER CANADENSIS	SERVICEBERRY	8' – 10' HT.	B&B, MULTI-STEM
AG	12	AMELANCHIER GRANDIFLORA 'AUTUMN BRILLIANCE'	APPLE SERVICEBERRY	1-3/4" – 2" CAL.	B&B
CC	10	CERCIS CANADENSIS	EASTERN REDBUD	8' – 10' HT.	B&B, MULTI-STEM
KP	3	KOELREUTERIA PANICULATA	GOLDEN RAIN TREE		
MA	16	MALUS 'ADIRONDACK'	ADIRONDACK CRABAPPLE	1-3/4" – 2" CAL.	B&B
MF	12	MALUS 'PRAIRIFIRE'	PRAIRIFIRE CRABAPPLE	1-3/4" – 2" CAL.	B&B
MR	15	MALUS 'ROYAL RAINDROPS'	ROYAL RAINDROPS CRABAPPLE	1-3/4" – 2" CAL.	
PS	4	PRUNUS SERRASFERA 'THUNDERCLOUD'	THUNDERCLOUD PLUM	1-3/4" – 2" CAL.	B&B, SUPER VARS 25-45
		EVERGREEN TREES			
CF	80	ABIES CONCOLOR	CONCOLOR FIR	5' MIN. HT.	FULL TO GROUND
PG	70	PICEA GLAUCA	WHITE SPRUCE	5' MIN. HT.	FULL TO GROUND
PP	48	PICEA PUNGENS 'GLAUCA'	COLORADO BLUE SPRUCE	5' MIN. HT.	FULL TO GROUND
		SHRUBS			
BX	24	BUXUS 'GREEN VELVET'	GREEN VELVET BOXWOOD	24" MIN. HT.	NO. 5 CONT.
CS	24	CORNUS SERICEA 'FARROW'	ARCTIC FIRE RED TWIG DOGWOOD	24" MIN. HT.	NO. 5 CONT.
DS	34	DEUTZIA SPLENDENS 'KOMSPLEN'	KOSMIK ORANGE DEUTZIA	24" MIN. HT.	NO. 5 CONT.
FX	18	FORSYTHIA X INTERMEDIA 'KOLGOLD'	MAGICAL GOLD FORSYTHIA	24" MIN. HT.	NO. 5 CONT.
SJ	20	SPIRAEA JAPONICA 'GOLD MOUND'	GOLD MOUND SPIREA	NO. 3 CONT.	
		ORNAMENTAL GRASS			
CA	84	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	NO. 2 CONT.	
PA	30	PENNISETUM ALOPECUROIDES	FOUNTAIN GRASS	NO. 2 CONT.	SEE NOTE 1

LANDSCAPE NOTES:

1. ORNAMENTAL GRASSES SHOULD BE PRUNED BACK IN LATE FALL OR EARLY SPRING TO ALLOW FOR NEW FOLIAGE TO GROW IN SPRING.
2. ALL PLANTING BEDS & TREE PLANTING PITS SHALL RECEIVE A MINIMUM 3-INCH DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH.
3. ALL EVERGREEN TREES SHALL BE MEASURED FROM THE BOTTOM OF LEADER.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

N

SITE PLAN
SCALE: 1"=50'

50' 0 50' 100'FT.

TYPICAL DUPLEX LOT
SCALE: 1"=20'

SHRUB PLANTING DETAIL

TREE PLANTING DETAIL

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F 716.842.0251

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/9/21
Drawn by: C. Wood
Scale: As Noted

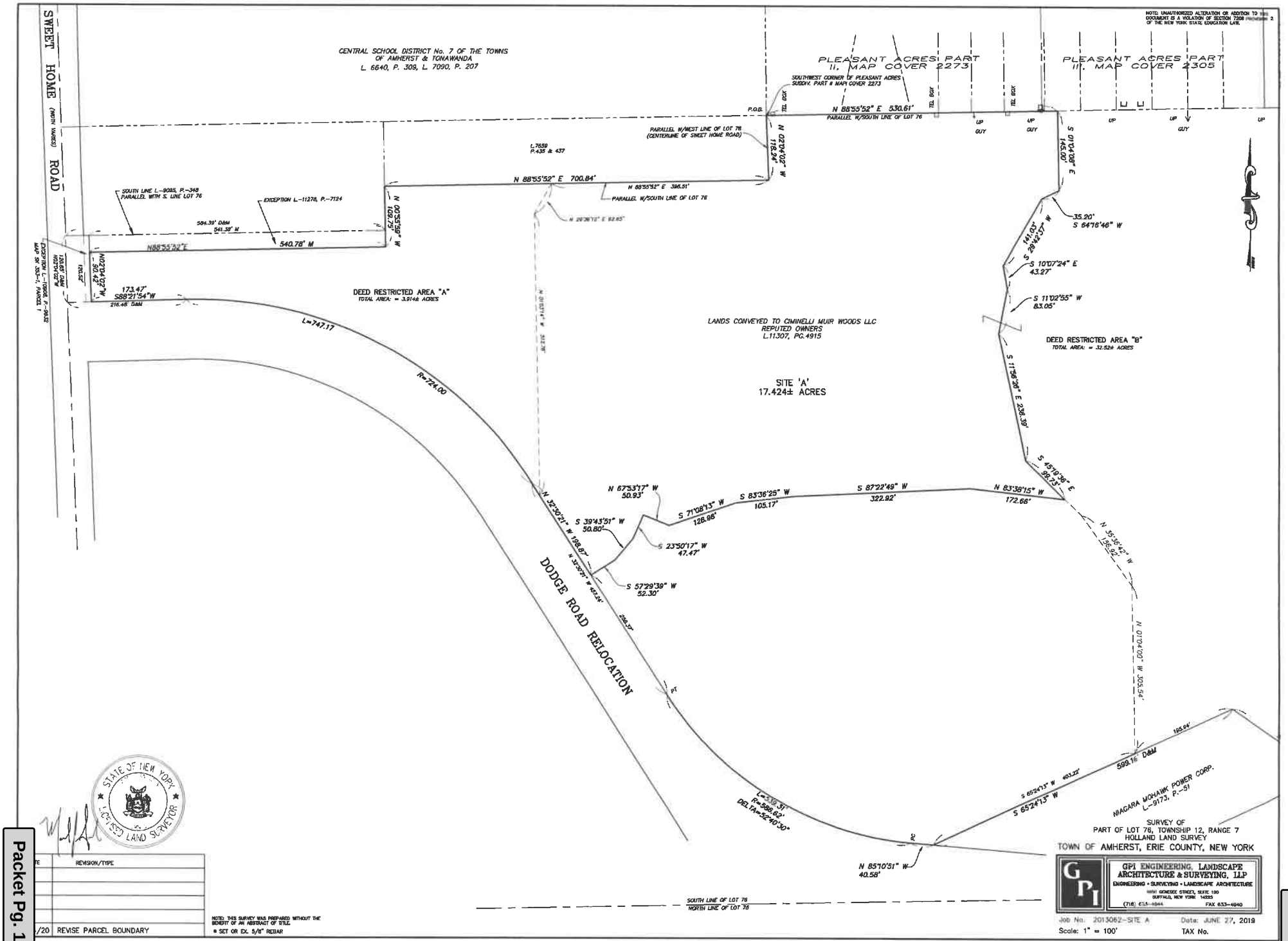
DRAWING NAME:
Landscape Plan

DRAWING NO.
L-100
Project no.: 21.011

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Exhibit 6 – Reduced Size Copy of Storm Drainage Plan [Drawing C-300] as Prepared by Christopher Wood, P.E., of Carmina Wood Morris DPC

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)


SWEET HOME (MAIN MARKS) ROAD
CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA
L 6640, P. 309, L 7090, P. 207
PLEASANT ACRES I PART II, MAP COVER 2273
PLEASANT ACRES I PART III, MAP COVER 2305
SOUTHWEST CORNER OF PLEASANT ACRES SUBDIV. PART II MAP COVER 2273
P.O.B.
N 88°55'52" E 530.61'
PARALLEL W/SOUTH LINE OF LOT 76
PARALLEL W/WEST LINE OF LOT 76 (CENTERLINE OF SWEET HOME ROAD)
L.7659 P.435 & 437
N 88°55'52" E 700.84'
N 88°55'52" E 396.51'
PARALLEL W/SOUTH LINE OF LOT 76
N 02°04'02" W 118.24'
S 01°04'08" E 145.00'
35.20'
S 64°16'46" W
141.03'
S 29°42'57" W
S 10°07'24" E 43.27'
S 11°02'55" W 83.05'
SOUTH LINE L.-9085, P.-348 PARALLEL WITH S. LINE LOT 76
EXCEPTION L.-11278, P.-7124
584.39' D&M 541.38' M
540.78' M
N88°55'52"E
N 00°55'59" W 109.75'
N 02°04'02" W 120.36'
120.35'
EXCEPTION L.-10808, P.-9832 MAP SH 353-1, PARCEL 1
180.65' D&M N02°04'02"W
173.47' S88°21'54"W 216.48' D&M
DEED RESTRICTED AREA "A"
TOTAL AREA: = 3.914± ACRES
L=747.17
R=724.00
LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC REPUTED OWNERS L.11307, PG.4915
SITE 'A' 17.424± ACRES
DEED RESTRICTED AREA "B"
TOTAL AREA: = 32.52± ACRES
S 11°36'26" E 238.39'
S 45°19'36" E 99.73'
N 67°53'17" W 50.93'
S 71°08'13" W 128.86'
S 83°36'25" W 105.17'
S 87°22'49" W 322.92'
N 83°38'15" W 172.66'
N 35°15'42" W 126.92'
S 39°43'51" W 50.80'
S 23°50'17" W 47.47'
S 57°29'39" W 52.30'
N 32°30'21" W 198.87'
N 32°30'21" W 452.24'
DODGE ROAD RELOCATION
PT
PC
L=318.31' R=388.62' DELTA=52°40'30"
N 01°04'00" W 325.54'
185.84'
599.16' D&M
S 65°24'13" W 403.22'
S 65°24'13" W
NIAGARA MOHAWK POWER CORP. L.-9173, P.-51
N 85°10'51" W 40.58'
SOUTH LINE OF LOT 76
NORTH LINE OF LOT 76
STATE OF NEW YORK LICENSED LAND SURVEYOR
NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW.
REVISION/TYPE
/20 REVISE PARCEL BOUNDARY
NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE.
⊕ SET OR EX. 5/8" REBAR
SURVEY OF PART OF LOT 76, TOWNSHIP 12, RANGE 7 HOLLAND LAND SURVEY TOWN OF AMHERST, ERIE COUNTY, NEW YORK
GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE
(716) 856-0599 FAX 853-4040
Job No. 2013062-SITE A
Date: JUNE 27, 2019
Scale: 1" = 100'
TAX No.

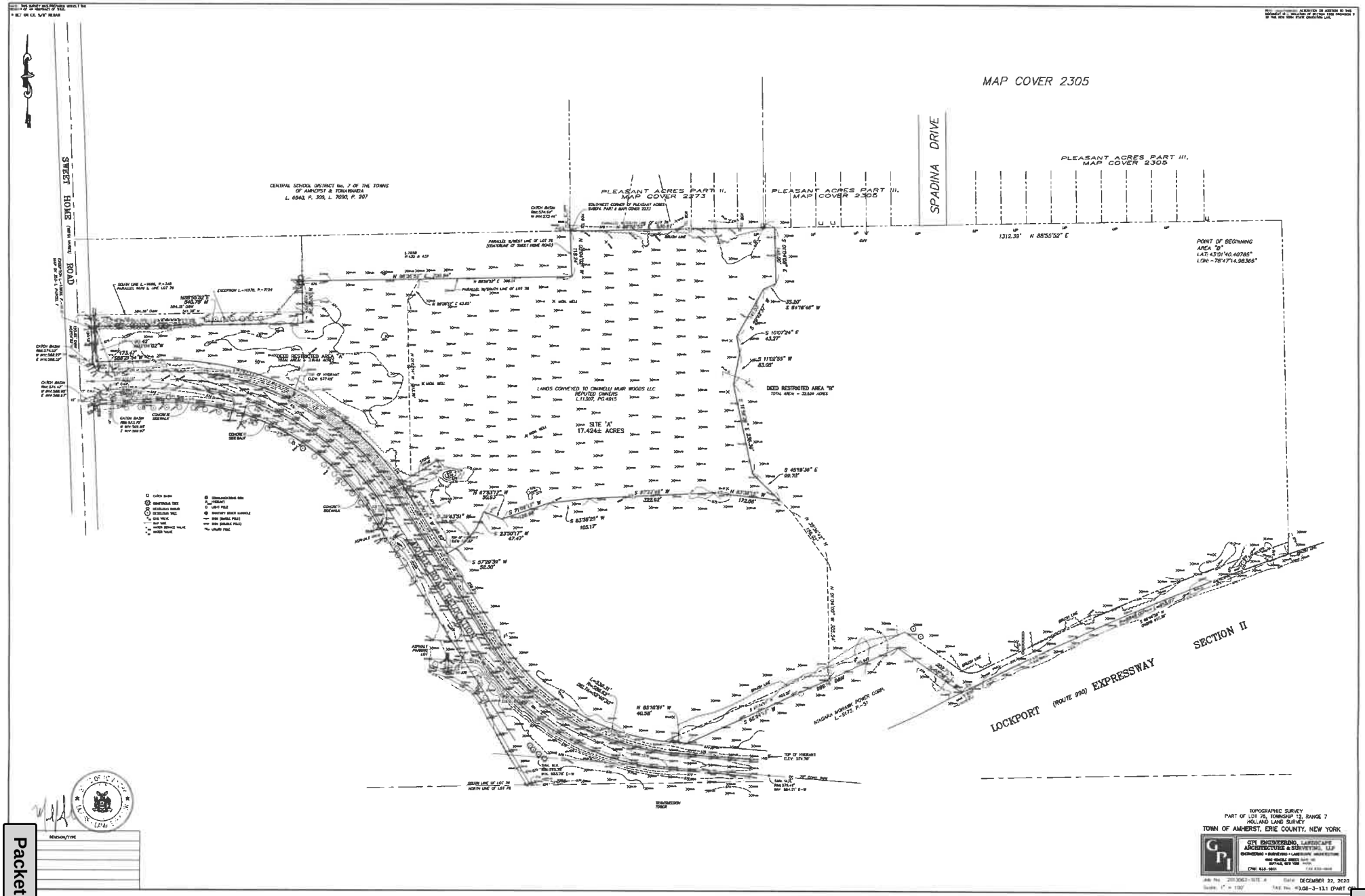
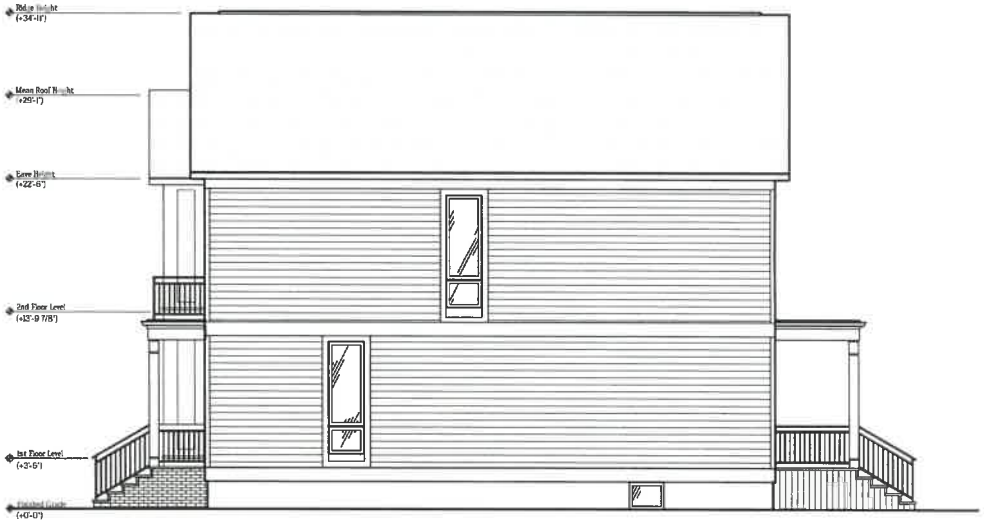

MAP COVER 2305
SPADINA DRIVE
SHEET HOLMES ROAD
PLEASANT ACRES PART II, MAP COVER 2273
PLEASANT ACRES PART III, MAP COVER 2305
PLEASANT ACRES PART III, MAP COVER 2305
CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA L. 6840, P. 309, L. 7090, P. 207
POINT OF BEGINNING AREA "B" LAT: 43°01'40.40785" LON: -78°47'14.98386"
DEED RESTRICTED AREA "B" TOTAL AREA = 32,529 ACRES
SITE "A" 17.424± ACRES
LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC REPUTED OWNERS L.11307, Pg.4915
DEED RESTRICTED AREA "A" TOTAL AREA = 2.844 ACRES
LOCKPORT (ROUTE 990) EXPRESSWAY
SECTION II
NIAGARA MOHAWK POWER CORP. L.-9173, P.-51
TOPOGRAPHIC SURVEY
PART OF LOT 78, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK
GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
DECEMBER 22, 2020

Exhibit 8 – 11” x 17” Size Copies of Elevation Plans for Two-Family Townhomes on Individual Lots, Six-Unit Single-Story Buildings and Four-Story Mixed Use Buildings as Prepared by Sutton Architecture PLLC

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



Front Elevation



Right Elevation

1/4" = 1'-0"



Rear Elevation

1/4" = 1'-0"



Left Elevation

1/4" = 1'-0"

SEVERYN DEVELOPMENT
BETTER BUILT HOMES
Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing
Two Family

Portion Of 1081 North French Road Amherst, NY
2/23/21

SUTTON architecture
"Design 2 Build"
5409 Main Street
716-932-7156

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



South Elevation

1/8" = 1'-0"



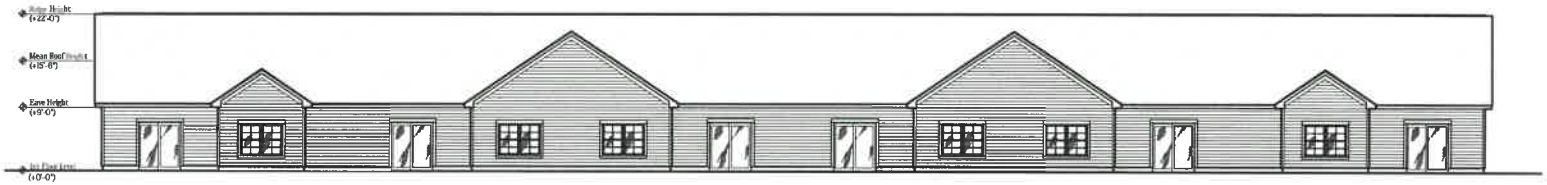
East Elevation

1/8" = 1'-0"



West Elevation

1/8" = 1'-0"



North Elevation

1/8" = 1'-0"

SEVERYN DEVELOPMENT
BETTER BUILT HOMES

Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing
6 Unit Multifamily

Portion Of 1081 North French Road Amherst, NY
2/23/21

SUTTON architecture
"Design 2 Build"
5409 Main Street
716-992-7156

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



North Elevation

1/8" = 1'-0"



South Elevation

1/8" = 1'-0"

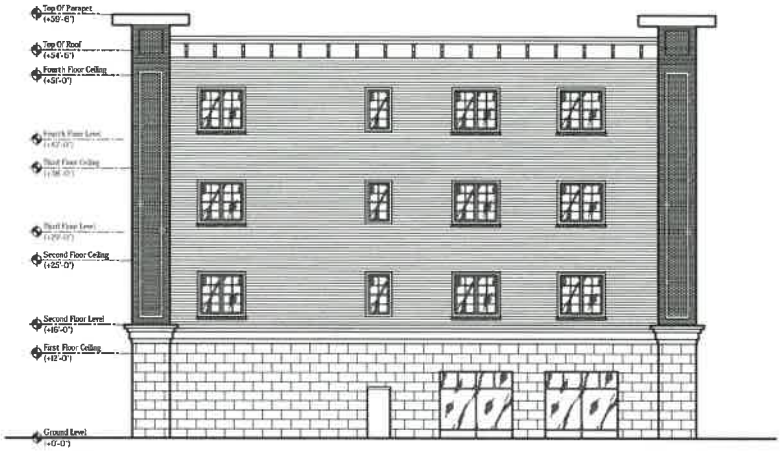
SEVERYN DEVELOPMENT
BETTER BUILT HOMES
Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing
4 Story Mixed Use

Portion Of 1081 North French Road Amherst, NY
2/23/21

SUTTON architecture
"Design 2 Build"
5409 Main Street
716-832-7158

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



East Elevation

1/8" = 1'-0"



West Elevation

1/8" = 1'-0"

SEVERYN DEVELOPMENT
BETTER BUILT HOMES
Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing

4 Story Mixed Use

Portion Of 1081 North French Road Amherst, NY

2/23/21

SUTTON architecture
"Design 2 Build"
5409 Main Street
716-932-7156

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Exhibit 9 – Resolution 2020-791 as Adopted by the Town of Amherst Town Board on October 19, 2020 for the Purpose of Issuing an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") for Mixed-Use Development on 1081 North French Road [Site "A" of Muir Woods Property]

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Amherst Town Board
5583 Main Street
Williamsville, NY 14221
www.amherst.ny.us

Francina J. Spoth
Town Clerk

Meeting: 10/19/20 07:00 PM
Department: Town Clerk
Initiated by: **Kathleen Cooper**
Co-Sponsored by:

DOC ID: 22383 **RESOLUTION 2020-791** **ROLL CALL VOTE (ADOPTED)**

Amendment to the SEQR Findings Statement for "Muir Woods - Site A" (1081 N. French Road)

Amendment to the SEQR Findings Statement for
"Muir Woods - Site A"
[1081 North French Road (NCD); Z-2002-09C]

RESOLVED, that pursuant to 6NYCRR Part 617 (SEQR) and Town Code Section 104, as amended, that the requirements of SEQR have been completed, and be it further

RESOLVED, that pursuant to NYS Town Law Section 272-a, the Town Board concurs with the findings of the Planning Board as stated in their resolution of August 20, 2020 to amend the "Development Program" within the SEQR Findings Statement approved by the Town Board on August 5, 2020 to permit "Site A" located at the western end of the overall Muir Woods site located at 1081 North French Road (NCD) to be developed as a mixed-use residential/commercial project instead of flex office/R&D buildings.

RESOLVED, that Ciminelli Muir Woods, LLC has offered to donate to the Town approximately 43 acres of Permanent Open Space located between Site "A" and Site "B" of the Overall Muir Wood Property as depicted on a plan prepared by Greenman-Pedersen Consulting Engineers Inc. dated October 13, 2020;

RESOLVED, the approximately 43 acres of Permanent Open Space includes a portion of the Muir Woods Project with frontage on Dodge Road and is also contiguous to the southern boundary of a portion of the Bucyrus Heights Subdivision and the approximately 43 acres of Permanent Open Space includes extensive existing vegetation and also includes wetlands subject to the jurisdiction of the United States Army Corps of Engineers ("USACE") and wetlands and regulated 100 ft. adjacent areas subject to the jurisdiction of the New York State Department of Environmental Conservation ("NYSDEC"); and

RESOLVED, the Town Board hereby finds as follows: i.) Acquisition of the approximately 43 acres of Permanent Open Space on the Muir Woods Project Site is consistent with the Conceptual Land Use Plan for the Town contained at Figure 6 of the adopted Bicentennial Comprehensive Plan that designates this acreage as "Recreation, Open Space & Gateways"; and, ii.) Acquisition of the approximately 43 acres of Permanent Open Space on the Muir Woods Project Site as described herein will result in benefits to the Town and its residents including homeowners in the Bucyrus Heights Subdivision.

RESOLVED, the Town Board has evaluated the potential adverse environmental impacts associated with the acquisition of the 43 acres of Permanent Open Space and determined that such acquisition will not result in any potentially significant adverse environmental impacts.

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

RESOLVED, that the Town Board hereby authorizes the acquisition of the approximately 43 acres of Permanent Open Space on the Muir Woods Project Site as described herein via a donation from Ciminelli Muir Woods, LLC subject to the following terms and conditions:

1. The adoption of this resolution by the Town Board for the purpose of acquiring the Permanent Open Space described herein does not include the Town Board designating the Permanent Open Space as "parkland". The Town Board shall adopt a separate resolution in the future if it determines designating the Permanent Open Space as "parkland" is appropriate.

2. Ciminelli Muir Woods, LLC, its successors and assigns, shall retain an easement with respect to the approximately 43 acres of Permanent Open Space for the purpose of completing required wetland mitigation and wetland mitigation monitoring in accordance with the terms and conditions contained in wetland permits issued by the USACE and the NYSDEC. Upon the USACE and the NYSDEC determining that the required wetland mitigation has been completed to their satisfaction and the expiration of the monitoring period, the easement shall terminate.

3. Prior to the recording of a deed from Ciminelli Muir Woods, LLC to the Town of Amherst for the purpose of conveying ownership of the Permanent Open Space as described herein, a Declaration of Restrictive Covenants shall be recorded at the Erie County Clerk's Office for the restricting the use of the approximately 43 acres of Permanent Open Space in accordance with the terms and conditions of wetland permits issued by the USACE and the NYSDEC and also for the purpose of prohibiting future development of the approximately 43 acres of Permanent Open Space.

4. Ciminelli Muir Woods, LLC shall be responsible for the expenses associated with the preparation of a survey and an Abstract of Title for the Permanent Open Space as described herein and the recording fees for the deed to be recorded at the Erie County Clerk's Office.

5. The documentation required to effectuate the transfer of the Permanent Open Space as described herein and to comply with the above conditions shall be subject to review and approval by the Town Attorney's Office.

6. The Supervisor is authorized to execute any documentation required to effectuate the acquisition of the 43 acres of Permanent Open Space in accordance with the terms and conditions contained in this resolution.

10/06/2020

A motion to open the public hearing was made by Supervisor Kulpa, seconded by Councilmember Lavin and unanimously approved 4-0. The public hearing was opened at 7:51 PM.

Sean W. Hopkins, Esq., presented for both resolution #791 and #792 and answered questions from the Board.

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

There were no speakers from the public, therefore Supervisor Kulpa moved to adjourn the public hearing and set a Decision Date for October 19th. The motion was seconded by Councilmember Lavin and unanimously approved 4-0. The public hearing was adjourned at 8:13 PM.

10/19/2020
A motion to open the public hearing was made by Supervisor Kulpa, seconded by Councilmember Lavin and unanimously approved 5-0. The public hearing was opened at 7:18 PM.

Sean W. Hopkins, Esq., presented under Res #792.

There were no speakers from the public, therefore Supervisor Kulpa moved to close the public hearing, seconded by Councilmember Lavin and unanimously approved 5-0. The public hearing was closed at 7:20 PM.

A motion to adopt the amended SEQR Findings Statement was made by Supervisor Kulpa, seconded by Deputy Supervisor Berger and approved via Roll Call vote 4-1 (nay, Bucki).

RESULT:	**ROLL CALL VOTE (ADOPTED) [4 TO 1]**
MOVER:	Brian J. Kulpa, Supervisor
SECONDER:	Jacqualine Berger, Deputy Supervisor
AYES:	Kulpa, Berger, Lavin, Szukala
NAYS:	Bucki

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Exhibit 10 – Resolution 2020-792 as Adopted by the Town of Amherst Town Board on October 19, 2020 for the Purpose of Approving an Amendment to the Town of Amherst Comprehensive Plan

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Amherst Town Board
5583 Main Street
Williamsville, NY 14221
www.amherst.ny.us

Francina J. Spoth
Town Clerk

Meeting: 10/19/20 07:00 PM
Department: Town Clerk
Initiated by: **Kathleen Cooper**
Co-Sponsored by:

DOC ID: 22366 **RESOLUTION 2020-792** **ROLL CALL VOTE (ADOPTED)**

Amendment to the Comprehensive Plan for "Muir Woods - Site A" (1081 N. French Road)

Amendment to the Comprehensive Plan for
"Muir Woods - Site A"
[1081 North French Road (NCD); BCPA-2020-02]

RESOLVED, that pursuant to 6NYCRR Part 617 (SEQR) and Town Code Section 104, as amended, that the requirements of SEQR have been completed, and be it further

RESOLVED, that pursuant to NYS Town Law Section 272-a and Section 11.6 of the Town Comprehensive Plan, the Town Board concurs with the findings of the Planning Board as stated in their resolution of August 20, 2020 to amend the Conceptual Land Use Plan (Figure 6) and the University Focal Planning Area (Figure 21) of the Comprehensive Plan for "Muir Woods - Site A" located at 1081 North French Road (NCD) to permit mixed-use residential/commercial use on Site A.

For additional information (copy & paste link):
https://share.amherst.ny.us:443/docman/doc_files_list.php?hash=uaaidrb0hpn0mkelzsugvr62

10/06/2020
A motion to open the public hearing was made by Supervisor Kulpa, seconded by Councilmember Lavin and unanimously approved 4-0. The public hearing was opened at 7:51 PM.

Sean W. Hopkins, Esq., presented for both resolution #791 and #792 and answered questions from the Board.

There were no speakers from the public, therefore Supervisor Kulpa moved to adjourn the public hearing and set a Decision Date for October 19th. The motion was seconded by Councilmember Lavin and unanimously approved 4-0. The public hearing was adjourned at 8:13 PM.

10/19/2020
A motion to open the public hearing was made by Supervisor Kulpa, seconded by Deputy Supervisor Berger and unanimously approved 5-0. The public hearing was opened at 7:07 PM.

Sean W. Hopkins, Esq., presented.

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

There were no speakers from the public, therefore Supervisor Kulpa moved to close the public hearing, seconded by Deputy Supervisor Berger and unanimously approved 5-0. The public hearing was closed at 7:18 PM.

A motion to approve the Negative Declaration was made by Supervisor Kulpa, seconded by Deputy Supervisor Berger and approved 4-1 (nay, Bucki). A motion to adopt the resolution was made by Supervisor Kulpa, seconded by Deputy Supervisor Berger and approved via Roll Call vote 4-1 (nay, Bucki).

RESULT:	**ROLL CALL VOTE (ADOPTED) [4 TO 1]**
MOVER:	Brian J. Kulpa, Supervisor
SECONDER:	Jacqualine Berger, Deputy Supervisor
AYES:	Kulpa, Berger, Lavin, Szukala
NAYS:	Bucki

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

HSM

February 26, 2021

Ellen Kost, AICP, Assistant Planning Director
Town of Amherst Planning Department
5583 Main Street
Williamsville, NY 14221

Re: Proposed Mixed Use Project - Site A of Muir Woods [SP-2021-05]
Portion of 1081 North French Road – Town of Amherst
File No. 10024.12

Dear Ellen:

Attached as Exhibit "1" is a copy of the Amended Wetland Permit [LRB-2001-00067] issued by the United States Army Corps of Engineers ("USACE") on February 25, 2021 authorizing impacts to 6.089 acres of federal wetlands [reduction of 6.921 acres of previously authorized impacts to federal wetlands] in order to accommodate the mixed-use development of Site "A" of the Muir Woods Property in accordance with the project layout depicted on the Concept Site Plan prepared by Christopher Wood, P.E. of Carmina Wood Morris DPC attached as Sheet 1 of 3.

Please feel free to call me at 510-4338 or via e-mail if you have any questions regarding this letter or the Amended Wetland Permit issued by the USACE on February 25, 2021 or the status of the pending request for Major Site Plan Approval for the proposed mixed-use project.

Thank you for your continued cooperation.

Sincerely,

HOPKINS SORGI & MCCARTHY PLLC

Sean W. Hopkins, Esq.

cc: Adam Faeth, Esq., Ciminelli Real Estate Corporation [Via e-mail and mail]
William Severyn, Severyn Development Inc. [Via e-mail and mail]
Christopher Wood, P.E., Carmina Wood Morris DPC [Via e-mail]
Scott J. Livingstone, Earth Dimensions, Inc. [Via e-mail]
Jody Celeste, Earth Dimensions, Inc. [Via e-mail]

HOPKINS SORGI & MCCARTHY PLLC
Attorneys at Law
5500 Main Street, Suite 343 • Williamsville, New York 14221
Direct: 716-510-4338 • E-mail: shopkins@hsr-legal.com • www.hsr-legal.com

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Exhibit 1 – Amended Wetland Permit Issued by the United States Army Corps of Engineers dated February 25, 2021

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

DEPARTMENT OF THE ARMY
BUFFALO DISTRICT, CORPS OF ENGINEERS
1776 NIAGARA STREET
BUFFALO, NEW YORK 14207-3199

February 25, 2021

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

Mr. Adam Faeth
Development Manager
Ciminelli Muir Woods LLC
350 Essjay Road Suite 101
Williamsville, NY 14221

Dear Mr. Faeth:

This is in reply to your submittal dated July 20, 2020 in which you requested a modification of Department of the Army Permit No. LRB-2001-00067. The project is located on a 326-acre parcel in the Town of Amherst, Erie County, New York. Specifically, you seek authorization to change the proposed use of an area identified as Site A from research and development and flex office space to a mixed-use commercial and residential development. This includes two 4-story mixed-use buildings, two-family townhouses, 6-unit apartment buildings, and a recreational trail to connect Site A with Site B. Wetland impacts have been reduced from 13.01 acres to 6.089 acres in Site A. A reduction of 6.921 acres. In addition, because of the reconfigured project including the significant reduction of wetland impacts, you have requested that the requirement of off-site compensatory mitigation be removed. Lastly, you have requested that 134 acres of the overall Muir Woods site located northeast of Site B, is donated to the Town of Amherst. This area will remain as open space in perpetuity. Permit compliance with mitigation requirements will remain as it currently is on the 134-acre site as a responsibility of Ciminelli Muir Woods LLC.

A Public Notice was published and coordinated with agencies and adjacent property owners using standard procedures. No comments were received as a result of the Public Notice. Based upon our evaluation, I concluded your request will not result in any unacceptable environmental or navigational impacts. Therefore, I am modifying Department of the Army permit No. LRB-2001-00067 to reflect the changes outlined in your request and identified on the attached drawings. All other terms and conditions of Permit No. LRB-2001-00067 remain in full force and effect.

Sheets 1, 2, and 3 of 3 are hereby made part of Permit No. LRB-2001-00067. Sheet 1 of 3 of this modification is an update to Sheets 2, 3, and 5 of 6 of the original permit. Sheet 2 and 3 of 3 of this modification are updates to Sheet 5 of 6 of the original permit. In addition, the following Special Conditions No. 6 and 8 of Permit No. LRB-2001-00067 are modified so that they no

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

longer include the requirement of off-site compensatory mitigation, as indicated below with the original and the following modified condition:

1. Special Condition Number 6: As mitigation to compensate for unavoidable and permanent impacts to 17.83 acres of Federal wetlands and 1.29 acres of Federal tributaries (approximately 5227 linear feet), the permittee shall create, at a minimum; 26.91 acres of wetland on-site, and 27.37 acres of wetland off-site. In addition, the permittee shall enhance 4.3 acres of tributary (approximately 2630 linear feet) on-site, all in accordance with the approved on-site and off-site mitigation plan that is made part of this permit. The mitigation area must be constructed in accordance with the approved plan as well as all permit conditions.

   Modified Special Condition Number 6: As mitigation to compensate for unavoidable and permanent impacts to 10.91 acres of Federal wetlands and 1.29 acres of Federal tributaries (approximately 5227 linear feet), the permittee shall create, at a minimum; 26.91 acres of wetland on-site. In addition, the permittee shall enhance 4.3 acres of tributary (approximately 2630 linear feet) on-site, all in accordance with the approved on-site mitigation plan that is made part of this permit. The mitigation area must be constructed in accordance with the approved plan as well as all permit conditions.

2. Special Condition Number 8: The approved compensatory mitigation must be in strict conformance with the plans approved by the Corps of Engineers. Such approved plans were prepared by Ciminelli Development Company, Incorporated and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009, including the Proposed On-Site Wetland Mitigation Plan, and the Proposed Off-Site Wetland Mitigation Plan dated November 16, 2009. The stated mitigation plans are hereby incorporated into and made part of the permit as Attachments 1 and 2. The permittee shall implement the mitigation in accordance with the plans and all permit conditions. Where permit conditions differ from the mitigation plan, the permit conditions shall be the ruling condition.

   Modified Special Condition Number 8: The approved compensatory mitigation must be in strict conformance with the plans approved by the Corps of Engineers. Such approved plans were prepared by Ciminelli Development Company, Incorporated and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009, including the Proposed On-Site Wetland Mitigation Plan dated November 16, 2009. The stated on-site mitigation plan is hereby incorporated into and made part of the permit as Attachments 1. The permittee shall implement the mitigation in accordance with the plans and all permit conditions. Where permit conditions differ from the mitigation plan, the permit conditions shall be the ruling condition.

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

Questions pertaining to this matter should be directed to Martin Crosson at 716-879-4346, by writing to the following address: U.S. Army Corps of Engineers, 1776 Niagara Street, Buffalo, New York 14207 or by E-mail at: martin.h.crosson@usace.army.mil

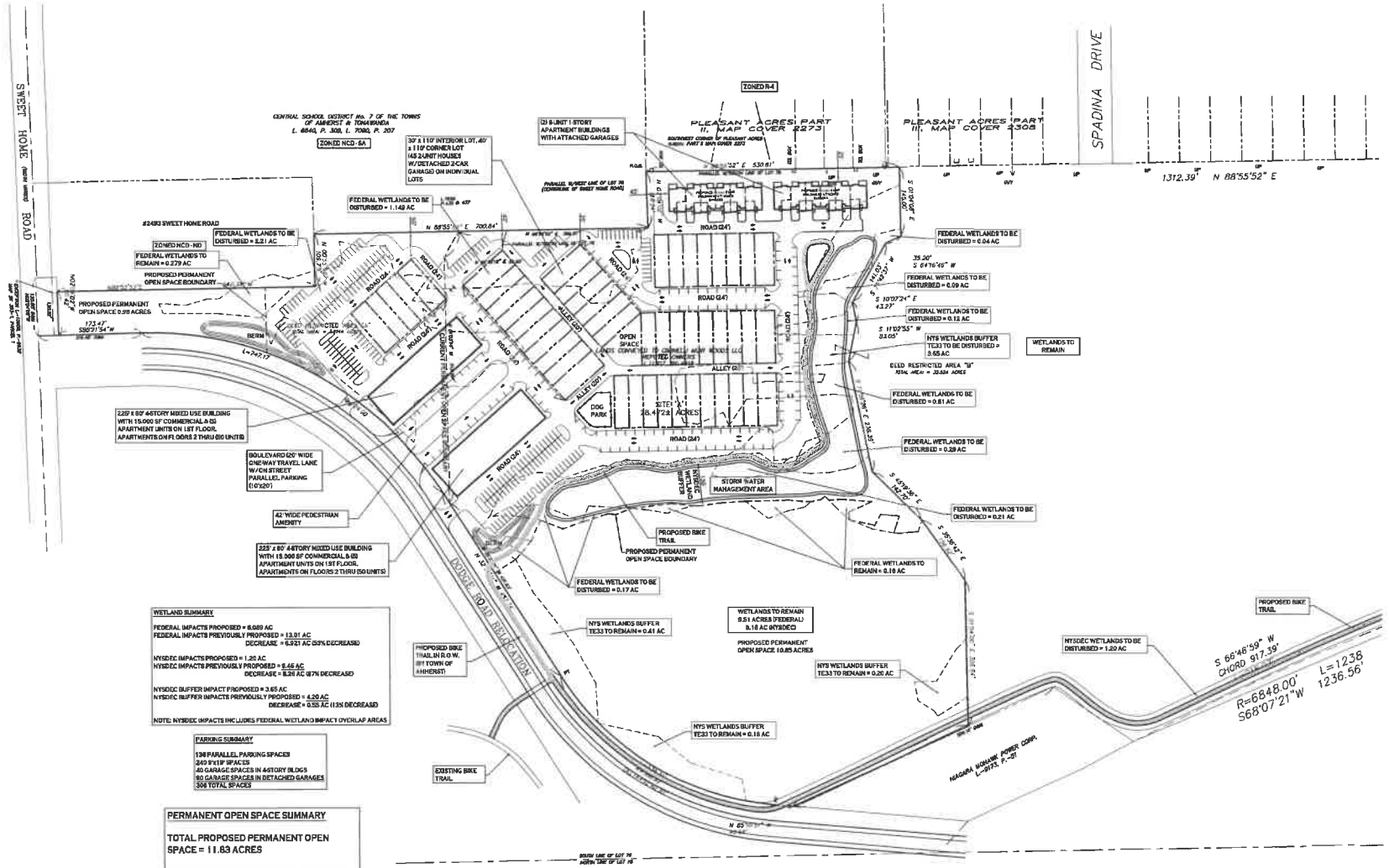
BY AUTHORITY OF THE SECRETARY OF THE ARMY

Steven V. Metivier

For: Mark Scalabrino
Acting Chief, Regulatory Branch

Enclosures

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 1 of 3

© Camina Wood Morris DPC
All rights reserved. Reuse of these documents without the expressed written permission of Camina Wood Morris DPC is prohibited. WARNING: It is a violation of article 145 sections 7209(2) and 7301 of the New York State education law for any person, unless acting under the direction of a registered architect, licensed engineer or land surveyor to alter this drawing. If altered such R.A., P.E., or L.L.S. shall affix his or her seal, signature, the letter "altered by" and a specific description of the alteration.

Camina Wood Morris
467 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0061

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Muir Woods Site "A"
Sweet Home & Dodge Road
Amherst, New York

Date: 7/1/20
Drawn by: C. Wood
Scale: As Noted

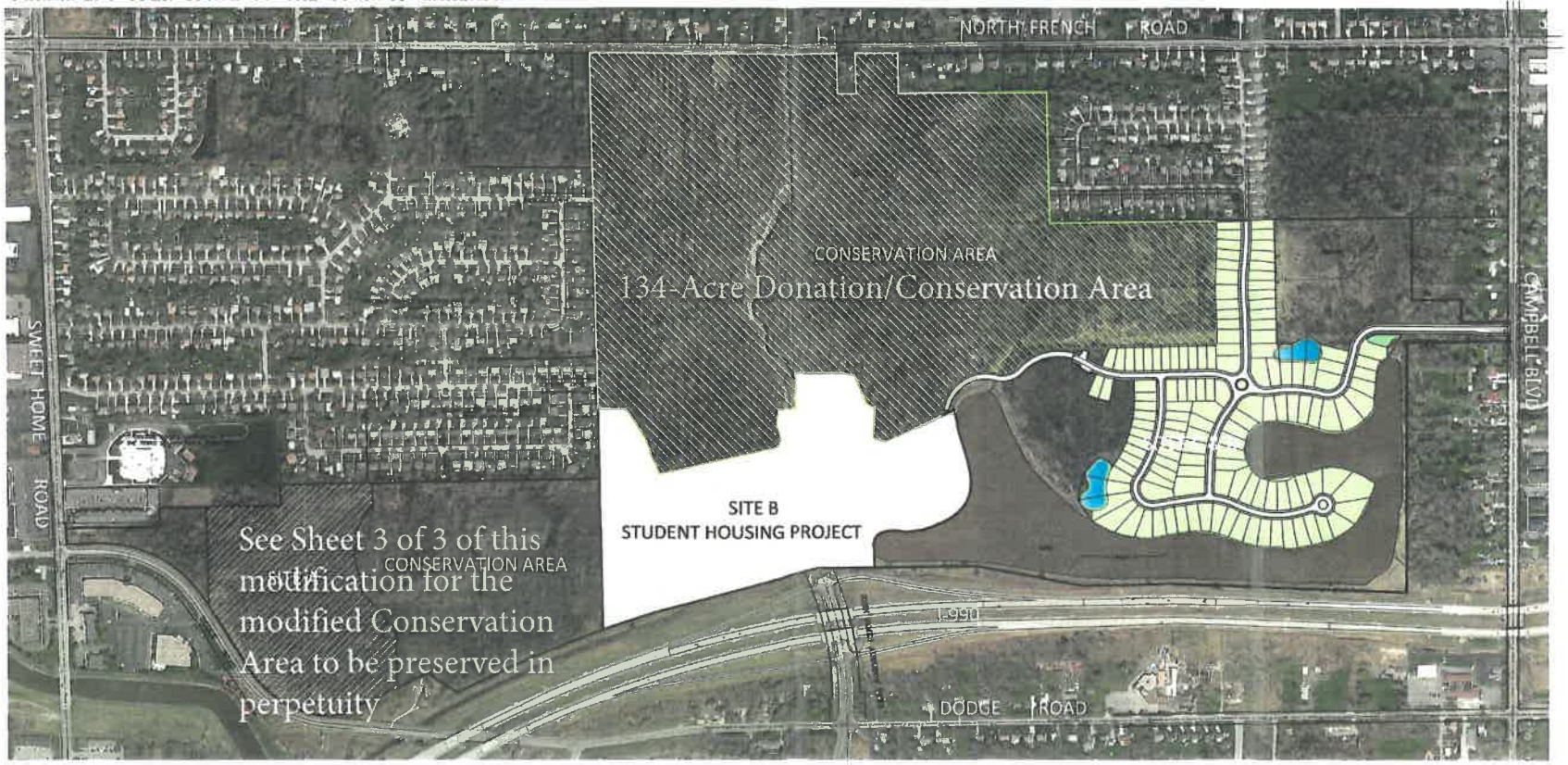
DRAWING NAME:
Concept Site Plan

DRAWING NO.
C-100
Project no.: 19.192

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

MUIR WOODS OVERALL PROJECT AREA

PROPOSED DONATION OF APPROXIMATELY 134 ACRES OF
PERMANENT OPEN SPACE TO THE TOWN OF AMHERST

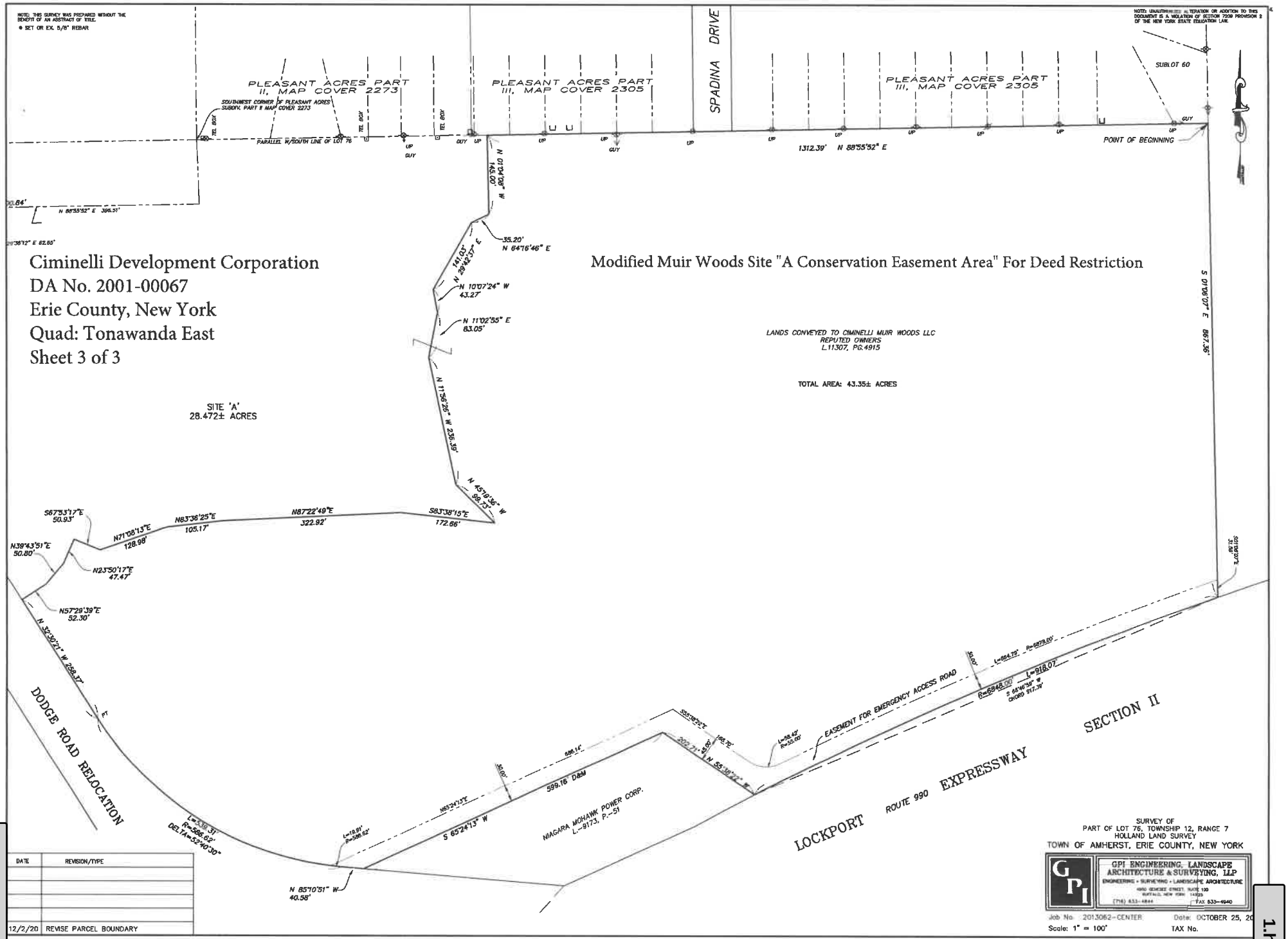


CONSERVATION AREA TO BE DONATED

Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 2 of 3

GPI GREENMAN-PEDERSEN, INC. CONSULTING ENGINEERS ENGINEERING • SURVEYING • PLANNING

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

HSM

December 26, 2020

Ellen Kost, AICP, Assistant Planning Director
Town of Amherst Planning Department
5583 Main Street
Williamsville, NY 14221

Re: Proposed Mixed Use Project - Site A of Muir Woods [Z-2002-09C & BCPA-2020-02]
Portion of 1081 North French Road
Applicant/Project Sponsor: Ciminelli Real Estate Corporation
File No. 10024.12

Dear Ellen:

Attached as Exhibit "1" is a copy of the Amended Wetland Permit [Permit No. 9-1422-00398/0001] issued by the New York State Department of Environmental Conservation ("NYSDEC") on December 24, 2020 authorizing the impacts to NYSDEC Freshwater Wetlands and the associated regulated 100 ft. Adjacent Area in order to accommodate the mixed-use development of Site "A" of the Muir Woods Property in accordance with the project layout depicted on the Concept Site Plan prepared by Christopher Wood, P.E. of Carmina Wood Morris DPC.

Attached as Exhibit "2" is a copy of the Public Notice of the United States Army Corps of Engineers ("USACE") dated December 21, 2020. The comment period on the pending requested Amended Wetland Permit being sought from the USACE expires on January 11, 2021. The Project Sponsor anticipates receiving an Amended Wetland Permit from the USACE by the end of January.

Please feel free to call me at 510-4338 or via e-mail if you have any questions regarding this letter or the Amended Wetland Permit issued by the NYSDEC on December 24, 2020 or the status of the mixed-use project.

Thank you for your continued cooperation.

Sincerely,

HOPKINS SORGI & MCCARTHY PLLC

Sean W. Hopkins, Esq.

cc: Adam Faeth, Esq., Ciminelli Real Estate Corporation [Via e-mail and mail]
William Severyn, Severyn Development Inc. [Via e-mail and mail]
Christopher Wood, P.E., Carmina Wood Morris DPC [Via e-mail]

HOPKINS SORGI & MCCARTHY PLLC
Attorneys at Law
5500 Main Street, Suite 343 • Williamsville, New York 14221
Direct: 716-510-4338 • E-mail: shopkins@hsr-legal.com • www.hsr-legal.com

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Scott J. Livingstone, Earth Dimensions, Inc. [Via e-mail]
Jody Celeste, Earth Dimensions, Inc. [Via e-mail]

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Exhibit 1 – Amended Wetland Permit Issued by the NYS Department of Environmental Conservation dated December 24, 2020

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 9
270 Michigan Avenue, Buffalo, NY 14203-2915
P: (716) 851-7165 I F: (716) 851-7168
www.dec.ny.gov

December 24, 2020

Mr. Adam Faeth
Ciminelli Real Estate Corporation
50 Fountain Plaza, Suite 500
Buffalo, New York 14202

Muir Woods Development – "Site A"
Permit Transmittal Letter
Permit No. 9-1422-00398/00001

Dear Mr. Faeth:

Enclosed is your permit which was issued in accordance with applicable provisions of the Environmental Conservation Law. The permit is valid for only that project, activity or operation expressly authorized. If modifications are desired after permit issuance, you must submit the proposed revisions and receive written approval from the Permit Administrator prior to initiating any change. If the Department determines that the modification represents a material change in the scope of the authorized project, activity, operation or permit conditions, you will be required to submit a new application for permit.

Please review all permit conditions carefully. In particular, identify your initial responsibilities under this permit in order to assure timely action if required. Since failure to comply precisely with permit conditions may be treated as a violation of the environmental conservation law, you are requested to provide a copy of the permit to the project contractor, facility operator, and other persons directly responsible for permit implementation (if any).

If you have any questions, please contact this office at the above address.

Respectfully,
David S. Denk
Regional Permit Administrator

Enclosure
ecc: NYSDEC Law Enforcement
Maureen Brady, NYSDEC Office of General Counsel
Mr. Chuck Rosenburg, NYSDEC Division of Fish and Wildlife
Mr. Martin Crossen, USACOE
Sean Hopkins, Esq., Hopkins Sorgi & McCarthy PLLC

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

PERMIT
Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
Ciminelli Muir Woods LLC
50 Fountain Plaza, Suite 500
Buffalo, NY 14202
(716) 631-8000

Facility:
MUIR WOODS DEVELOPMENT
1121 N French Rd
Amherst, NY 14228

Facility Location: in AMHERST in ERIE COUNTY
Facility Principal Reference Point: NYTM-E: 191.586 NYTM-N: 4770.823
Latitude: 43°01'38.9" Longitude: 78°47'07.2"

Authorized Activity: Construction of a mixed-use project named "Muir Woods" consisting of approximately two 4-story mixed-use buildings consisting of commercial space and residential units, 90 two-family townhouses and 2 six-unit apartment buildings, approximately 133 detached single-family residential units and 515 cottage-style and apartment-style housing units with various amenities; and gas, electric, sanitary, potable water and storm water (the necessary infrastructure), while maintaining open space on approximately 224 acres in the Audubon New Community District. The Muir Woods project property is a 326 acre site bounded by the Lockport Expressway (Interstate Route 990) and Dodge Road on the south, Sweet Home Road on the west, North French Road on the north and Campbell Boulevard on the east. The project will result in permanent impacts to approximately 2.39 acres of State regulated wetlands (TE-22, TE-23 and TE-34), and 11.38 acres of State regulated 100 foot wide wetland adjacent area. As mitigation for those impacts the project includes creation of 19.58 acres of in-kind and out-of-kind wetlands on-site, in six areas, to replace the functions and benefits of the impacted wetlands. There will be 4.3 acres of stream channel enhancement on-site as mitigation for State wetland regulated adjacent area impacts. The project also includes construction at 520 Campbell Road property as detailed on plan sheets referenced in Natural Resource Condition No. 4.

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Permit Authorizations

Freshwater Wetlands - Under Article 24
Permit ID 9-1422-00398/00001

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

Water Quality Certification - Under Section 401 - Clean Water Act
Permit ID 9-1422-00398/00002

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: DAVID S DENK, Regional Permit Administrator
Address: NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY 14203 -2915

Authorized Signature: David S. Denk Digitally signed by David S. Denk DN: cn=David S. Denk, o=NYS DEC, ou=Div. of Env. Permits, email=david.denk@dec.ny.gov, c=US Date: 2020.12.24 10:29:47 -05'00' Date ___/___/___

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: FRESHWATER WETLANDS; WATER QUALITY CERTIFICATION

1. **No Work Prior to Approval of Legal Instrument for Preservation of Undeveloped Areas of Site** No work authorized by this permit may begin until the Department approves a legal instrument, such as a deed restriction and/or conservation easement, that will preserve in perpetuity the natural resource values of the undeveloped areas of the site. This condition does not apply to the 520 Campbell Boulevard property.

2. **Declaration of Restrictions 520 Campbell Boulevard Property** A Declaration of Restrictions permanently prohibiting any future development of the 6.88 acres of jurisdictional federal wetlands and portion of the upland area on 520 Campbell Boulevard as depicted on the Wetland Restriction Exhibit Map must be incorporated into the deeds for lots 1 – 12 and 21. By 60 days after Water Quality Certification issuance, the permittee shall file with the real property records of the Erie County Clerk`s Office, the deed for each applicable lot containing this notice. The permittee shall within two weeks following the filing of the deed(s) submit proof of filing from the County Clerk's Office

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

showing the Liber and page number at which the deed notice was filed and the date of filing for one of the affected lots to: Regional Permit Administrator, NYSDEC Region 9 Headquarters, 270 Michigan Ave, Buffalo, NY 14203-2915.

3. **Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by Ciminelli Development Company, Inc. and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009.

4. **Conformance with Plans Site B** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include the "Concept Plan - Muir Woods" dated 08 November 2019 amended to show Conifer Planting Area (attached).

5. **Conformance with Plans - 520 Campbell Boulevard** All activities authorized by this permit for the 520 Campbell Boulevard property must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans include those sheets entitled: The Preserve at Muir Woods (DEC Planting Exhibit, DEC Earthwork Exhibit and the Wetland Restriction Exhibit) by Greenman-Pedersen, Inc. dated May 2018.

6. **Conformance with Plans Site A** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include Drawing C-100 dated July 20, 2020 and received by this Department on August 10, 2020.

7. **Future Phases** Prior to development of Muir Woods Sites A and B, the permittee must obtain specific approval of engineered plans for Sites A and B to ensure compliance with the terms and condition of this permit, the approved wetland mitigation plans and the most current Findings Statement for the overall Muir Woods Project issued pursuant to the State Environmental Quality Review Act. The permittee shall submit the engineered plans for the development of Sites A and B for review by the Department simultaneous with submission of such engineered plans to the Town of Amherst. If required by the Department, the permittee shall make any necessary modifications to the engineered plans to ensure compliance with the terms and conditions of this permit, the approved wetland mitigation plans and the most current Findings Statement.

8. **Permit Conditions Prevail over Plans** If any condition of this permit conflicts with the approved plans noted in Condition Number 1, the permit conditions shall prevail over the plans unless specific written approval for such a change is obtained from this Department prior to implementation.

9. **Pre-construction Meeting to Review Permit** Prior to commencing work at the project site, the permittee shall schedule a pre-construction meeting with Department staff (Contact: Mr. David Denk, Regional Permit Administrator, NYSDEC, Division of Environmental Permits, Telephone : 716/851- 7165 and/or Mr. Charles P. Rosenburg, NYSDEC, Division of Fish and Wildlife, Telephone: 716/851-7010) and selected contractors to review the conditions contained in this permit.

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10. Mark Areas of No Disturbance on the Muir Woods Site Grade stakes and/or other appropriate measures (substantial contractor fencing, perhaps in combination with necessary silt fencing) shall be used to ensure that no equipment enters identified areas of no disturbance within the immediate area under construction (i.e.- Site A, Site B, Site C or Site D) on the Muir Woods project site. Boundaries of the on-site mitigation areas shall likewise be marked to define the limits of that work.

11. Install Controls Along Limits of Disturbance Before any soil is disturbed within a specific Site Development Area, as detailed in Condition #6 above, the permittee shall install securely anchored silt fencing and/or continuous staked hay bales along the limits-of-disturbance as shown on the plans or drawings referenced in this permit. Such erosion and sedimentation controls shall be maintained until unpaved portions of the subject site are stabilized by a self-sustaining cover of vegetation that is adequate to prevent erosion and sedimentation on and off the site. Sediment which has accumulated at the controls shall be removed periodically as necessary during the construction period. Before the controls are removed, the permittee shall remove all sediment that has accumulated at the controls.

12. Work Within Ares Depicted on Plans All construction activity, including operation of machinery, excavation, filling, grading, clearing of vegetation, disposal of waste, street paving and stockpiling of material must take place within the Site Development Areas or mitigation areas as depicted on the project plans referenced by this permit. Construction activity is prohibited within areas to be left in a natural condition or locations on the property not within the Site Development Areas or mitigation areas designated by this permit. Disturbance to the wetlands and their regulated 100 foot wide adjacent areas shall be strictly limited to the work areas identified in the plans, and specifically the MAP SHOWING WETLAND IMPACT AREAS - NEW YORK STATE WETLANDS, and APPENDIX M - PROPOSED ON-SITE MITIGATION PLAN.

13. Invasive Species (Non-Native Vegetation) To prevent the unintentional introduction or spread of invasive species, the permittee must ensure that all construction equipment is cleaned of mud, seeds, vegetation and other debris before entering any approved Site Development Areas within State regulated wetlands or their 100 foot wide adjacent areas, as well as all on-site wetland mitigation areas.

14. Prevention of Invasive Species The permittee shall prevent the establishment of invasive species (purple loosestrife, Phragmites, reed canary-grass, Japanese knotweed, glossy buckthorn and common buckthorn) across all disturbed areas within the wetland mitigation area for five growing seasons. If any of these invasive species become established, monitoring and treatment may be extended for an additional 5 years at the Department's discretion.

15. Wetland Mitigation is Mandatory Completion of all freshwater wetland mitigation is mandatory regardless of whether or not construction proceeds to completion. The required mitigation must be completed by the expiration date of this permit. Mitigation will be subject to remediation, if necessary, pursuant to Condition #16 below. All mitigation areas shall be monitored for a period of ten (10) years or until the mitigation is deemed successful by this Department. Monitoring reports shall be prepared for the first four (4) years after construction of the mitigation areas and every other year (years 6, 8 and 10) thereafter. This Department may, at its discretion, modify the 10-year monitoring period and/or monitoring report requirement at any time. Monitoring reports shall be submitted to Mr. Charles P. Rosenburg, Habitat Manager, NYSDEC, Bureau of Ecosystem Health, 270 Michigan Avenue, Buffalo, NY 14203-2915 Telephone: 716/851-7024.

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16. **On-Site Mitigation to be in Accordance with Mitigation Plan** The on-site mitigation shall be in accordance with Appendix M - Proposed On-Site Wetland Mitigation for Muir Woods prepared by Earth Dimensions, Inc. revised May 25, 2009 and with the modifications shown in Exhibit 22 of the July 20, 2020 application binder.

17. **Planting Row of Native Conifers** The permittee shall plant a row of native conifer trees in the location shown on the attached plan. The tree plantings must be a minimum of 6 feet tall, spaced 15 feet apart, and must be planted no later than October 15th following the completion of construction of the adjacent apartment units.

18. **Survival Rate for Mitigation Plantings** The permittee shall prepare a care, maintenance, inspection, and replacement schedule for the tree and shrub plantings described in the mitigation plan to ensure an 85% survival rate for five growing seasons. This condition includes all on-site landscape "buffer" plantings.

19. **Herbicides, Pesticides in Wetland or Adjacent Area** The use of herbicides and other pesticides in State regulated wetlands or their 100 foot wide adjacent areas is a regulated activity and may only be conducted pursuant to a valid Article 33 Pesticides Permit.

20. **Requirement for SPDES General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities** Since development of the Muir Woods site in the Town of Amherst will involve land disturbance of one (1) or more acres, the permittee is required to obtain coverage under State Pollutant Discharge Elimination System (SPDES) General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities. A Notice of Intent (NOI) is required to be sent to NYSDEC, Division of Water, 625 Broadway, 4th Floor, Albany, New York 12233-3505, Telephone: 518/402-8111 and approved before construction commences. Alternatively, an eNOI may be filed electronically as described on the Department's website. The General Permit GP-0-15-002 and NOI form are available on the Department's website at www.dec.state.ny.us.

21. **Visibly Turbid Discharges Prohibited** Visibly turbid discharges from project dewatering operations, excavation and grading activities are strictly prohibited to any "water body" (pond, wetland, stream or water course). Any such discharges shall be (1) retained in an appropriately maintained upland settling basin, filtered through crushed stone, sand, filter fabric fences, hay bales etc., or (2) directed to a grassy area sufficiently distant from any water body to preclude such entry.

22. **Stockpiling of Soil** Stockpiling of excavated soil is prohibited at locations within any portion of the TE-22, TE-23 and TE-34 Wetlands or their regulated 100 foot wide adjacent areas, or within any mapped 100-year floodplain beyond the Site Development Areas or mitigation areas identified in the plans.

23. **Stabilize Disturbed Areas** All areas of soil disturbance resulting from this project shall be seeded with an appropriate perennial grass seed and mulched with straw, or hydro-seeded. Mulch shall be maintained until suitable vegetative cover is established.

24. **Temporary Mulch, Final Seeding** If seeding is impracticable due to the time of year, a temporary mulch shall be applied and final seeding shall be performed at the earliest opportunity when weather conditions favor germination and growth.

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25. **Disposal of Material** Any non-merchantable tree and brush debris, demolition debris, excess construction materials, and/or excess excavated materials shall be immediately and completely disposed of on an approved upland site more than 100 feet from any regulated freshwater wetland. These materials shall be suitably stabilized so as not to re-enter any water body, wetland, or wetland adjacent area; and must be disposed of in accordance with all local, state, and federal statutes, regulations, or ordinances.

26. **Placement of Interpretive Signs Required** Permanent interpretive signs shall be placed at various wetland boundary locations throughout the Muir Woods project site . The permittee shall submit a proposal for the signs to the Department for approval. The interpretive signs shall be a minimum of 12 inches by 12 inches and shall be placed on permanent posts.

27. **Annual Project Inspection / Meeting** The permittee shall schedule an annual inspection/meeting to update Department staff on project progress and compliance with conditions of this permit for the on-site wetland mitigation area.

28. **Wetland Monuments** Monuments shall be placed every 200 feet along the outer edge of the wetland preservation areas. The monuments shall be 30" long, 5/8" rebar and cap embedded flush and in the center of the top exposed surface of concrete in a minimum 4 inch diameter, 4.5 foot long section of PVC Schedule 40 drain pipe filled with concrete, extending vertically1.5 to 2 feet above existing grade at each location. The caps shall say "Conservation Area Marker, Do Not Disturb". These monuments are to be permanently maintained.

29. **Wetland Boundaries** The boundaries of the TE-22, TE-23 and TE-34 Wetlands shall be fixed for the period of this permit (expires November 30, 2024). At that time, new boundary delineations for those wetlands will be required by this Department (to be performed or confirmed by a Department Biologist). Since project activities will be subject to the updated wetland boundary delineations and pertinent regulations at that time, any future permit modification (if necessary) would be reviewed based on the updated delineations and pertinent regulations. As such, modifications to the current project plan may be necessary depending upon the updated wetland delineations and permit regulations in effect at that time.

30. **State Not Liable for Damage** The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

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31. **State May Order Removal or Alteration of Work** If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

32. **State May Require Site Restoration** If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may lawfully require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.

33. **Precautions Against Contamination of Waters** All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. **Water Quality Certification** The authorized project, as conditioned pursuant to the Certificate, complies with Section 301, 302, 303, 306, and 307 of the Federal Water Pollution Control Act, as amended and as implemented by the limitations, standards, and criteria of state statutory and regulatory requirements set forth in 6 NYCRR Section 608.9(a). The authorized project, as conditioned, will also comply with applicable New York State water quality standards, including but not limited to effluent limitations, best usages and thermal discharge criteria, as applicable, as set forth in 6 NYCRR Parts 701, 702, 703, and 704.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. **Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

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The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. **Relationship of this Permit to Other Department Orders and Determinations** Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. **Applications For Permit Renewals, Modifications or Transfers** The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY14203 -2915

4. **Submission of Renewal Application** The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Freshwater Wetlands, Water Quality Certification.

5. **Permit Modifications, Suspensions and Revocations by the Department** The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

a. materially false or inaccurate statements in the permit application or supporting papers;

b. failure by the permittee to comply with any terms or conditions of the permit;

c. exceeding the scope of the project as described in the permit application;

d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;

e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. **Permit Transfer** Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

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NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification
The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit
The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits
The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights
This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

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Exhibit 2 – Public Notice as Published by the United States Army Corps of Engineers dated December 21, 2020

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Public Notice

U.S. Army Corps
of Engineers
Buffalo District
CELRB-TDR

Applicant: Ciminelli Real Estate Corporation

Published: December 21, 2020
Expires: January 11, 2021

Application No: 2001-00067 (2020 Site A Modification)
Section: New York

All written comments should reference the above Application No. and be addressed to:
Attn: Martin Crosson
U.S. Army Corps of Engineers, Buffalo District
1776 Niagara Street
Buffalo, NY 14207

THE PURPOSE OF THIS PUBLIC NOTICE IS TO SOLICIT COMMENTS FROM THE PUBLIC REGARDING THE WORK DESCRIBED BELOW. NO DECISION HAS BEEN MADE AS TO WHETHER OR NOT A PERMIT WILL BE ISSUED AT THIS TIME.

Application for Permit Modification under Authority of Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act (33 U.S.C. 1344).

APPLICANT: Ciminelli Real Estate Corporation/Ciminelli Muir Woods, LLC ("Ciminelli"). Ciminelli has requested a modification to an existing permit described below.

WATERWAY & LOCATION: approximately 98 acres of Federal wetlands, a 32 acre lake and approximately 4.4 acres of tributaries have been previously identified as jurisdictional on the 326 acre parcel permitted for development known as "Muir Woods". The permitted project is located in the Town of Amherst, County of Erie and State of New York.

LATITUDE & LONGITUDE: Latitude North: 43°01'46"
Longitude West: -78°46'33"

EXISTING CONDITIONS: On May 14, 2012 a permit was issued to Ciminelli for placement of fill into 17.83 acres of Federal wetland and 1.29 acres of federally regulated tributaries for the multi-use development known as "Muir Woods". The current jurisdictional determination remains valid until the existing permit expiration date of November 30, 2024.

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PROPOSED MODIFICATION: Ciminelli proposes to modify the existing permit to change the proposed use of the area identified as Site A of the "Muir Woods" site. Under the existing permit, Site A was to consist of research and development and flex office space. The applicant is currently proposing to change the previously proposed use of Site A to a mixed-use commercial and residential development. The concept plan for the proposed project includes two 4-story mixed-use buildings, in addition to two-family townhouses and 6-unit apartment buildings. Also in association with the proposed changes, a new recreational bike/walking trail that will enter Site A from the southeast connection with Site B ultimately connecting to the rest of the on-site trail system and the Town's recreational trail that connects to the North Campus of the University of Buffalo and the Ellicott Creek Trailway system. The applicant has indicated these modifications are necessary due to changes in economic conditions in the real estate market, and also due to their consideration of input from the Town of Amherst municipal boards and the local public.

PROJECT PURPOSE
Basic: Construction of a multi-use development.
Overall: Modification of an existing permitted Ciminelli construction project by changing the proposed use of Site A of the Muir Woods site to the planned development from Research and Development and flex office space to mixed-use commercial and residential development with associated amenities on Site A due to market changes and consideration of the Town of Amherst municipal boards and local public input.

Water Dependency Determination: As with the existing permit, this newly proposed modification resulting in changes in project purpose and use within Site A, impacts to waters of the US have been determined to not be water dependent. Therefore, alternatives that do not require impacts to US waters are presumed to exist. The applicant adequately demonstrated that US waters have been avoided and minimized to the greatest extent practicable. As a result, wetland impacts have been reduced from the currently permitted 13.010 acres to 6.089 in Site A.

Mitigation: The currently permitted wetland impact in Site A is 13.010 acres. The new proposed impact to Site A wetlands are 6.089 acres resulting in a reduction in wetland impacts by 6.921 acres. As a result of the decrease in wetland impacts in Site A, the previously approved off-site mitigation consisting of creation of 27.37 acres of wetland habitat in the Town of Newstead has been proposed to be removed as a permit requirement. The previously approved and currently permitted on-site mitigation for Site A consisting of creation of approximately 10.47 acres of wetland remains unchanged. In addition, the increase in avoided wetland area and the reduction in developed area proposed in Site A results in an increase to the amount of wetland area to be preserved on-site as permanent open space from 3.91 acres to 11.83 acres.

Location and details of the above described work are shown on the attached maps and drawings.

Comments or questions pertaining to the work described in this notice should reference the Application Number and be directed to the attention of Martin Crosson, who can be contacted at the above address, by calling (716) 879-4346, or by e-mail at: martin.h.crosson@usace.army.mil. A lack of response will be interpreted as meaning that there is no objection to the work as proposed.

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Comments submitted in response to this notice will be fully considered during the public interest review for this permit application. All written comments will be made a part of the administrative record which is available to the public under the Freedom of Information Act. The Administrative Record, or portions thereof, may also be posted on a Corps of Engineers internet web site. Due to resource limitations, this office will normally not acknowledge the receipt of comments or respond to individual letters of comment.

Any individual may request a public hearing by submitting their written request, stating the specific reasons for holding a hearing, in the same manner and time period as other comments.

Pursuant to Section 106 of the National Historic Preservation Act, this proposed modification to Site A does not constitute an action that requires additional consultation with the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP). In a letter dated September 10, 2009 NYSOPRHP indicated the proposed project will have No Effect upon cultural resources in or eligible for inclusion in the National Registers of Historic Places. The proposed modification does not change the previously considered permit area or determination.

Pursuant to Section 7 of the Endangered Species Act (16 U.S.C. 1531), the Corps of Engineers has concluded consultation with the USFWS to evaluate potential impacts to the northern long-eared bat (NLEB). The Corps has previously determined that the project may affect the NLEB, but that the scope of the work falls within the parameters of the 4(d) Rule. Therefore, consultation has concluded. The existing permit for the project included the entire Site A area. This proposed modification does not constitute an action that requires further coordination or consideration under the Endangered Species Act (16 U.S.C. 1531).

Pursuant to Section 401(d) of the Clean Water Act, A Water Quality Certification will be issued or waived for this proposed project modification by the State of New.

Public hearings for the purposes of the Corps permit program will be held when the District Commander determines he can obtain additional information, not available in written comments, that will aid him in the decision-making process for this application. A Corps hearing is not a source of information for the general public, nor a forum for the resolution of issues or conflicting points of view (witnesses are not sworn, and cross examination is prohibited). Hearings will not be held to obtain information on issues unrelated to the work requiring a permit, such as property ownership, neighbor disputes, or the behavior or actions of the public or applicant on upland property not regulated by the Department of the Army. Information obtained from a public hearing is given no greater weight than that obtained from written comments. Therefore, you should not fail to make timely written comments because a hearing might be held.

The decision to approve or deny this permit modification request will be based on an evaluation of the probable impact, including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may

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be relevant to the proposal will be considered including the cumulative effects thereof; among these are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, flood plain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and in general, the needs and welfare of the people.

The Corps of Engineers is soliciting comments from the public; Federal, state and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

SIGNED

Diane C. Kozlowski
Chief, Regulatory Branch

NOTICE TO POSTMASTER: It is requested that this notice be posted continuously and conspicuously for 20 days from the date of issuance.

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Traffic Impact Study

for the proposed

Muir Woods - Site A
Proposed Mixed-Use Project
1081 North French Road

Town of Amherst
Erie County, New York
August 3, 2020

Project No. 40027

Prepared For:

Ciminelli Real Estate Corporation
350 Essjay Road
Williamsville, New York 14221

Prepared By:

SRF Associates
www.srfa.net
Transportation Planning / Engineering / Design

3495 Winton Place
Building E, Suite 110
Rochester, New York 14623

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LIST OF REFERENCES

1. Highway Capacity Manual, Sixth Edition. Transportation Research Board. National Research Council, Washington, DC. 2016.
2. New York State Department of Transportation (NYSDOT) Traffic Data Viewer. 2020. Retrieved from https://www.dot.ny.gov/tdv.
3. Trip Generation, Tenth Edition. Institute of Transportation Engineers. Washington, DC. 2017.
4. Traffic Impact Study for Submittal to Town of Amherst The Hub Amherst. Kimley-Horn of New York, P.C. 2017.
5. Traffic Impact Study for Access Modification Report For Break in Access Application For Northerly Extension of John James Audubon Parkway As A Town of Amherst Roadway. GPI Engineering. 2020.

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EXECUTIVE SUMMARY

OVERVIEW

The purpose of this report is to identify and evaluate the potential traffic impacts associated with the proposed development of Site "A" of the overall Muir Woods Property as a mixed-use project. Site "A" of the Muir Woods Property consists of approximately 28.47 acres located 1081 North French Road in the Town of Amherst, Erie County, New York ("Project Site"). The Applicant is seeking to amend the Amended Findings Statement issued by the Town of Amherst Town Board ("Town Board") pursuant to the State Environmental Quality Review Act ("SEQRA") on August 5, 2019 to accommodate a change of the previously proposed use of the Project Site as 237,000 sq. ft. of flex office and R&D space to a mixed-use project as described in this report and depicted on the Concept Site Plan prepared by Carmina Wood Morris DPC.

The operating characteristics of the proposed access points and impacts to the adjacent roadway network are identified and mitigating measures, if any, are provided to minimize capacity or safety concerns.

In an effort to define traffic impact, this analysis establishes existing base traffic conditions, projects background traffic flow including area growth and/or additional traffic resulting from new development in the area, and determines the traffic operations that would result the full development of the proposed mixed-use project.

The Project Site consists of vacant land and is located along the north side of Dodge Road, west of Interstate 990, in the Town of Amherst, Erie County, New York. Surrounding the proposed development is residential development and Heritage Heights Elementary School to the north, vacant land to the east, offices to the south, and a medical plaza to the west. Land uses in the vicinity of the Project Site include residential, office, medical, and educational uses. The study area consists of the following intersections:

- Dodge Road/Sweet Home Road
- Dodge Road/ North Forest Road

Access to the Project Site will be provided via three proposed driveways connecting to Dodge Road as follows: one full access driveway located at the southerly/easterly end of the Project Site, one full access driveway located at the northerly/westerly end of the Project Site, and a driveway separated by a 42 ft. wide median which has been designed to be a pedestrian amenity area (i.e. one driveway is enter-only and the other is exit only).

Construction of the proposed mixed-use project is anticipated to be completed within two years. Town of Amherst officials were contacted to discuss projects within the study area that are under construction and/or approved. Three projects were identified that are either under construction, approved for construction, or completed after data was collected in 2017: The Hub Amherst at 2949 North Forest Road, a student housing community on Site "B" of the overall Muir Woods Property, and a mixed-use building at 315 Campbell Boulevard.

Traffic related to full build out of The Hub Development was used to develop the 2020 base traffic volumes. Additional traffic related to the proposed student housing community on Site "B" of the Muir Woods Property has been added to the base traffic volumes at the study area intersections. To account for normal increases in background traffic growth including the mixed-use building 315 Campbell @ Dodge, as well as any other unforeseen developments in the project study area, a growth rate of 1% per year has been applied to the base traffic volumes. This growth rate is

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based upon historical traffic growth derived from NYSDOT traffic volume data for the area as well as consideration of the approved projects previously mentioned.

CONCLUSIONS & RECOMMENDATIONS

This study evaluates the potential traffic impacts resulting from the Muir Woods Site A Development. This study also provides the Town of Amherst and other governmental agencies with detailed information providing a hard look at potential traffic impacts for the purpose of the environmental review of the proposed mixed-use project pursuant to the State Environmental Quality Review Act ("SEQRA").

Based upon the analyses, the results indicate that the proposed mixed-use project will not have significant adverse traffic impacts on the existing roadway network. The following sets forth conclusions based upon the results of the analyses:

1. The proposed mixed-use project is expected to generate approximately 47 entering/85 exiting vehicle trips during the AM peak hour and 106 entering/82 exiting vehicle trips during the PM peak hour.

2. The proposed mixed-use project will not result in any potentially significant adverse traffic impacts to the study area intersections. No mitigation is warranted at the study area intersections as a result of the proposed mixed-use project.

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I. INTRODUCTION

The purpose of this report is to identify the potential traffic impacts associated with the proposed Muir Woods Site A Development in the Town of Amherst, Erie County, New York. The operating characteristics of the proposed access points and impacts to the adjacent roadway network are identified and mitigating measures, if any, are provided to minimize capacity or safety concerns.

In an effort to define traffic impact, this analysis establishes 2020 existing base traffic conditions, projects background traffic flow including area growth and/or additional traffic resulting from new development in the area, and determines the traffic operations that would result from full development of the proposed project.

II. LOCATION

The proposed mixed-use project is located along the north side of Dodge Road, west of Interstate 990, in the Town of Amherst, Erie County, New York. The site is currently vacant. Surrounding the proposed development is residential development and Heritage Heights Elementary School to the north, vacant land to the east, offices to the south, and a medical plaza to the west. Land uses in the vicinity of the project site include residential, office, medical, and educational uses. The study area consists of the following existing intersections:

- Dodge Road/Sweet Home Road
- Dodge Road/ North Forest Road

The site location and study area are shown in **Figure 1** (all figures are included at the end of the report).

III. EXISTING HIGHWAY SYSTEM

The following information outlined in **Table I** provides a description of the existing roadway network within the project study area.

TABLE I: EXISTING HIGHWAY SYSTEM

ROADWAY	ROUTE[1]	FUNC. CLASS[2]	JURIS.[3]	SPEED LIMIT[4]	# OF TRAVEL LANES[5]	TRAVEL PATTERN/ DIRECTION	EST. AADT[6]	AADT SOURCE[7]
Dodge Road (from Sweet Home Road to Campbell Road)	CR 45	Minor Arterial	ECDPW	40	2	Two-way/ East-West	7,058	NYSDOT (2016)
Sweet Home Road (from N Ellicott Road to Commerce Drive)	CR 301	Minor Arterial	ECDPW	45	4	Two-way/ North-South	22,713	NYSDOT (2016)
Sweet Home Road (from Commerce Drive to N French Road)	CR 301	Minor Arterial	ECDPW	45	4	Two-way/ North-South	16,008	NYSDOT (2016)

Notes:

1. "CR" = County Route.

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2. State Functional Classification of Roadway: Urban.
3. Jurisdiction: "ECDPW" = Erie County Department of Public Works.
4. Posted or Statewide Limit in Miles per Hour (MPH).
5. Excludes turning/auxiliary lanes developed at intersections.
6. Estimated Annual Average Daily Traffic (AADT) in Vehicles per Day (vpd).
7. "NYSDOT" = New York Department of Transportation. Source (Year). Obtained volumes represent the most recent available data.

Figure 2 illustrates the lane geometry at each of the study intersections and the AADT/ADT volumes on the study roadways.

IV. EXISTING TRAFFIC CONDITIONS

A. Peak Intervals for Analysis

Given the functional characteristics of the land uses proposed for the Project Site (residential, office and retail), the peak hours selected for analysis are the weekday commuter AM and PM peaks. The combination of site traffic and adjacent through traffic produces the greatest demand during these time periods.

B. Existing Traffic Volume Data

Historical weekday commuter AM (7:00-9:00 AM) and PM (4:00-6:00 PM) peak hour volumes were obtained from the Greater Buffalo Niagara Regional Transportation Council (GRBNRTC) and the Traffic Impact Statement for The Hub Amherst at the study area intersections, as noted in *Section II*, on Tuesday February 28, 2017 and Monday, July 17, 2017. The peak hour traffic periods generally occurred between 7:30-8:30 AM and 4:45-5:45 PM at the study intersections. Given the current traffic situation due to business restrictions resulting from COVID-19, it is not possible to collect more current traffic data.

All turning movement count data was collected on a typical weekday. The traffic volumes were reviewed to confirm the accuracy and relative balance of the collective traffic counts. Traffic volumes were adjusted to reflect 2020 traffic conditions by adding traffic associated with any developments (e.g. The Hub residential development) that have been constructed or are currently under construction since the data collection in 2017. The 2020 weekday AM and PM peak hour base volumes used for analysis purposes in this study are reflected in **Figure 3**.

C. Field Observations

Signal timing information was obtained by the Town of Amherst at the signalized intersection within the study area to determine peak hour phasing plans and phase durations during each interval.

D. Existing Crash History Analysis

Crash data has been requested from local agencies and an analysis will be provided once all data is received.

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V. FUTURE AREA DEVELOPMENT AND LOCAL GROWTH

Construction of the proposed mixed-use project is anticipated to be completed within two years. Town of Amherst officials were contacted to discuss projects within the study area that are under construction and/or approved. Three projects were identified that are either under construction, approved for construction, or completed after data was collected in 2017: The Hub Amherst at 2949 North Forest Road, a student housing project on Site "B" of the Muir Woods Property , and a mixed-use building at 315 Campbell Boulevard.

Traffic related to full build out of The Hub Development was used to develop the 2020 base traffic volumes. Additional traffic related to the proposed student housing project on Site "B" of the Muir Woods Property has been added to the base traffic volumes at the study area intersections. To account for normal increases in background traffic growth including the mixed-use building 315 Campbell Boulevard, as well as any other unforeseen developments in the project study area, a growth rate of one percent (1%) per year has been applied to the base traffic volumes. This growth rate is based upon historical traffic growth derived from NYSDOT traffic volume data for the area as well as consideration of the approved projects previously mentioned. The 2022 background traffic volumes are depicted in **Figure 4** for the build out time period.

VI. PROPOSED DEVELOPMENT

A. Description

The proposed mixed-use project will construct:

- (45) 2-unit attached townhomes
- (2) 6-unit 1-story apartment buildings
- (2) 4-story mixed-use buildings with (12) commercial units and (5) apartment units on the 1st floor; apartments on floors 2-4 (50 units total)

An estimated 1,875 square feet (SF) per commercial tenant for the 12 commercial units. Of the 12 units, it is estimated that 8 units will consist of retail use and 4 units will consist of general office space. Access to the Project Site will be provided via three proposed driveways connecting to Dodge Road as follows: one full access driveway located at the southerly/easterly end of the site, one full access driveway located at the northerly/westerly end of the site, and a one-way couple separated by a 42 ft wide pedestrian amenity area (i.e. one driveway is enter-only and the other is exit only).

B. Site Traffic Generation

The volume of traffic generated by a site is dependent on the intended land use and size of the development. Trip generation is an estimate of the number of trips generated by a specific building or land use. These trips represent the volume of traffic entering and exiting the development. Trip Generation, 10th Edition is used as a reference for this information. Data published by the ITE is the nationally accepted standard for generating trips for new uses. The trip rate for the peak hour of the generator may or may not coincide in time or volume with the trip rate for the peak hour of adjacent street traffic. Volumes generated during the peak hour of adjacent street traffic, in this case, the weekday AM and PM peaks, represent a more critical volume when analyzing the capacity of the system; those intervals will provide the basis of this analysis. All trip generation information has been included in the appendix.

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Table II summarizes the volume of projected site trips during the weekday AM and PM peak hours.

TABLE II
SITE GENERATED TRIPS

DESCRIPTION	ITE LUC	SIZE/ UNITS	AM PEAK HOUR		PM PEAK HOUR	
			ENTER	EXIT	ENTER	EXIT
Houses w/ 2- Car Detached Garage	210	90 units	17	50	56	33
1-Story Apartments	220	12 units	1	5	6	3
4-Story Apartment Units	221	100 units	9	25	27	17
General Office Building	710	15,000 SF	14	2	2	14
Variety/Retail Store	814	15,000 SF	6	3	15	15
		Total Site Trips	***47***	***85***	***106***	***82***

Notes:
1. "ITE LUC" = ITE Land Use Code.

The proposed mixed-use project is expected to generate approximately 47 entering/85 exiting vehicle trips during the AM weekday peak hour and 106 entering/82 exiting vehicle trips during the PM weekday peak hour.

C. Site Traffic Distribution

The cumulative effect of site traffic on the transportation network is dependent on the origins and destinations of that traffic and the location of the access drive serving the Project Site.

The proposed arrival/departure distribution of traffic to be generated at this site is considered a function of several parameters, including the following:

- Employment centers in the local area and region;
- Population centers in the local area and region;
- Proximity and access to Interstate 990;
- Proximity to the North Campus of the University at Buffalo;
- Site access drive locations and internal roadway circulation;
- Existing highway network;
- Existing traffic patterns; and
- Existing traffic conditions and controls

Based on these parameters, **Figure 6** shows the anticipated trip distribution patterns for the proposed development. **Figure 7** illustrates the peak hour of site-generated traffic based on those percentages for the proposed development.

VII. FULL DEVELOPMENT VOLUMES

The projected design hour traffic volumes were developed for the weekday AM and PM peak hours by combining the future background traffic conditions (Figure 4), and projected site generated for the proposed development (Figure 7) to yield the total traffic conditions expected under full development conditions. **Figure 8** illustrate the total weekday AM and PM peak hour

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volumes anticipated for the proposed mixed-use project under full development conditions respectively.

VIII. CAPACITY ANALYSIS

Capacity analysis is a technique used for determining a measure of effectiveness for a section of roadway and/or intersection based on the number of vehicles during a specific time period. The measure of effectiveness used for the capacity analysis is referred to as a Level of Service (LOS). Levels of Service are calculated to provide an indication of the amount of delay that a motorist experiences while traveling along a roadway or through an intersection. Since the most amount of delay to motorists usually occurs at intersections, capacity analysis typically focuses on intersections, as opposed to highway segments.

Six Levels of Service are defined for analysis purposes. They are assigned letter designations, from "A" to "F", with LOS "A" representing the best conditions and LOS "F" the worst. Suggested ranges of service capacity and an explanation of Levels of Service are included in the Appendix.

The standard procedure for capacity analysis of signalized and un-signalized intersections is outlined in the Highway Capacity Manual (HCM 2016) published by the Transportation Research Board. Traffic analysis software, Synchro 10, which is based on procedures and methodologies contained in the HCM, was used to analyze operating conditions at study area intersections. The procedure yields a Level of Service (LOS) based on the HCM as an indicator of how well intersections operate.

Existing base and background operating conditions during the peak study periods are evaluated to determine a basis for comparison with the projected future conditions. The future traffic conditions generated by the proposed development under Phase I and full build out were analyzed to assess the operations of the intersections in the study area. Capacity results for existing, background, and full development conditions are listed in **Table III**. The discussion following the table summarizes capacity conditions. All capacity analysis calculations are included in the Appendices.

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TABLE III: CAPACITY ANALYSIS RESULTS

INTERSECTION	2020 BASE CONDITIONS				2022 BACKGROUND CONDITIONS				FULL BUILD CONDITIONS			
	AM		PM		AM		PM		AM		PM	
Sweet Home Road / Commerce Drive/Dodge Road (S)												
EB left - Commerce Road	D	40.5	C	30.3	D	41.1	C	30.9	D	41.1	C	32.1
EB thru/right - Commerce Drive	B	14.2	E	77.7	B	14.3	F	88.5	B	15.0	F	100.2
WB left- Dodge Road	C	27.7	F	191.3	C	28.0	F	*	C	29.3	F	*
WB thru/right - Dodge Road	E	76.4	B	19.3	F	86.8	B	19.9	F	106.8	C	22.9
NB left - Sweet Home Road	C	31.5	C	32.4	C	33.3	C	34.3	C	33.3	C	34.8
NB thru/right - Sweet Home Road	C	20.9	B	18.8	C	21.0	B	19.2	C	21.2	C	20.5
SB left - Sweet Home Road	B	17.6	B	10.1	B	19.0	B	10.3	C	21.2	B	11.9
SB thru/right - Sweet Home Road	C	30.0	C	32.2	C	30.8	C	33.8	C	30.7	C	33.7
Overall LOS	***C***	***34.0***	***D***	***37.6***	***D***	***36.3***	***D***	***40.3***	***D***	***40.4***	***D***	***47.7***
Dodge Road / Proposed North Driveway (U)												
SEB thru/left - Dodge Road	N/A				N/A				A	8.3	A	8.5
SWB - Proposed North Driveway									B	14.9	B	14.9
Dodge Road / Proposed Middle Exit Only Driveway (U)												
SWB - Proposed Middle Exit Only Driveway	N/A				N/A				B	13.3	B	13.4
Dodge Road / Proposed South Driveway (U)												
SEB thru/left - Dodge Road	N/A				N/A				A	8.2	A	8.5
SWB - Proposed South Driveway									C	16.2	C	16.1
Dodge Road / North ForestRoad (U)												
WB thru/left - Dodge Road	A	9.2	A	8.3	A	9.3	A	8.4	A	9.5	A	8.6
NB - North Forest Road	D	27.5	D	28.6	D	31.1	E	35.9	E	39.6	F	59.6

NOTES:

1. A(2.8) = Level of Service (Delay in seconds per vehicle)
2. (U) = Unsignalized
3. N/A = Approach does not exist and/or was not analyzed during this condition
4. F(*) = Delay greater than 200 seconds per vehicle

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Sweet Home Rd/Commerce Drive-Dodge Road
All approaches operate at LOS "D" or better during the AM and PM peak hours under all conditions with the exception of the westbound through/right turn movement which operates at LOS "F" under background and future conditions during the AM peak hour; in addition the westbound left turn and the eastbound through/right turn movements also operate at LOS "F" under background conditions during the PM peak hour. The southbound left turn movement is projected to change from LOS "B" to "C" between background and full development conditions during the AM peak hour. No other changes in LOS are projected as a result of the development. The existing traffic signal is fully actuated and will automatically adjust, within the set parameters, to accommodate the additional traffic. No mitigation is warranted or recommended at this intersection as a result of the proposed development.

Dodge Road/Proposed Driveways
All of the proposed driveways are projected to operate at LOS "C" or better during both peak hours under full development conditions.

Dodge Road/North Forest Road
All approaches operate at LOS "D" or better during the AM peak hour under the existing base and background conditions. During the PM peak hour, the northbound approach operates at LOS "E" under background conditions. Under full development conditions, the northbound approach is projected to operate at LOS "E" during the AM peak hour and LOS "F" with delays on the order of 59.6 seconds per vehicle during the PM peak hour. The development will add 7(16) northbound left turns during the AM(PM) peak hours. The traffic volumes that are exiting northbound North Forest Road are relatively small and a traffic signal is not warranted at this location. No mitigation is warranted or recommended at this intersection as a result of the proposed development.

IX. CONCLUSIONS

This study evaluates the potential traffic impacts resulting from the Muir Woods Site A Development. This study also provides the Town of Amherst and other governmental agencies with detailed information providing a hard look at potential traffic impacts for the purpose of the environmental review of the proposed mixed-use project pursuant to the State Environmental Quality Review Act ("SEQRA").

Based upon the analyses, the results indicate that the proposed mixed-use project will not have significant adverse traffic impacts on the existing roadway network. The following sets forth conclusions based upon the results of the analyses:

1. The proposed mixed-use project is expected to generate approximately 47 entering/85 exiting vehicle trips during the AM peak hour and 106 entering/82 exiting vehicle trips during the PM peak hour.

2. The proposed mixed-use project will not result in any potentially significant adverse traffic impacts to the study area intersections. No mitigation is warranted at the study area intersections as a result of the proposed mixed-use project.

X. FIGURES

Figures 1 through 8 are included on the following pages.

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

FIGURE 1 - SITE LOCATION AND STUDY AREA



Legend

- Study Intersection
- Proposed Driveway
- Site Location
- Study Area

PROPOSED MUIR WOODS SITE A DEVELOPMENT

TOWN OF AMHERST, NY

0 250 500 1000

Feet

N

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Transportation

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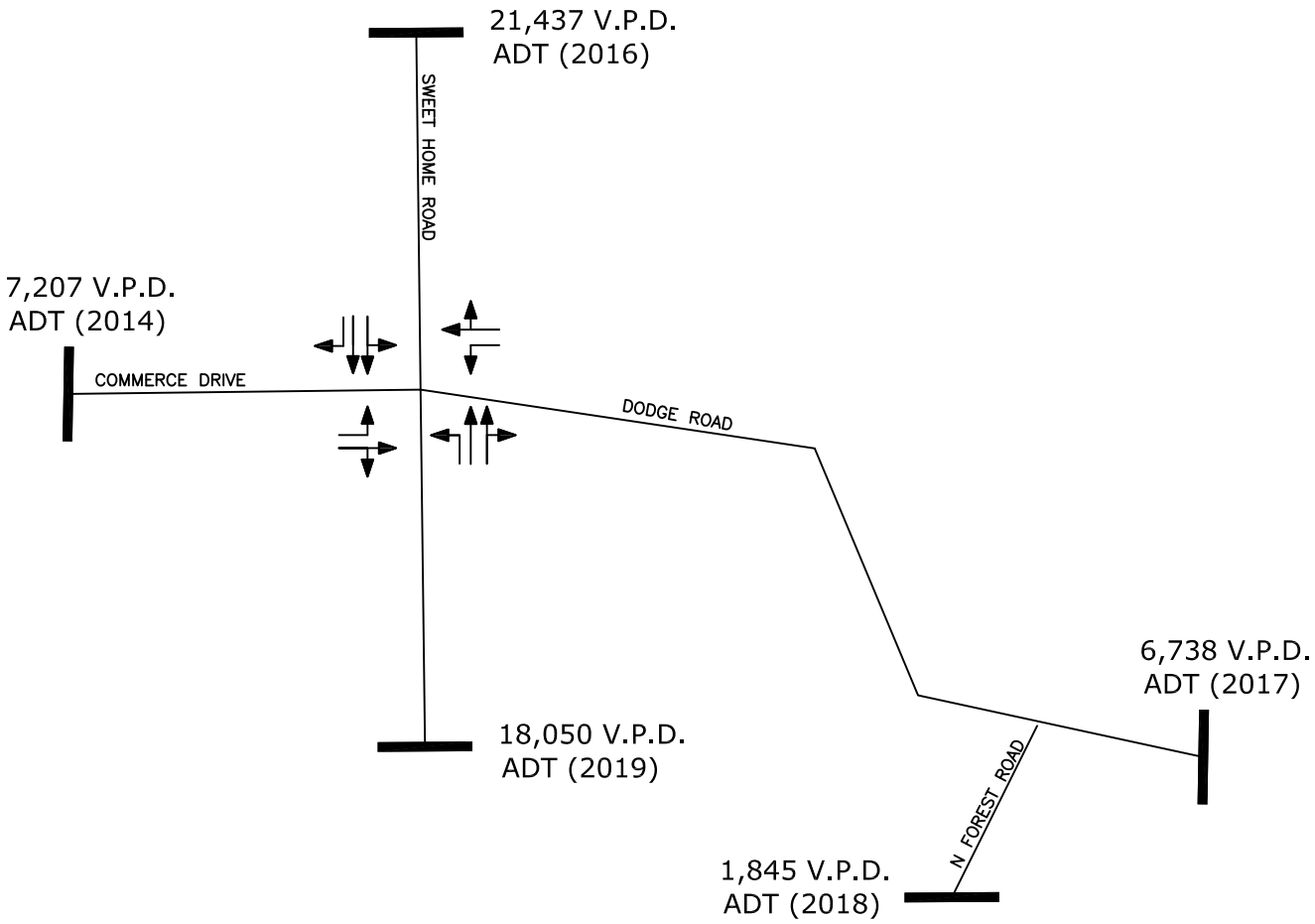

NOTES:
1. All counts by NYSDOT
2. V.P.D. = Vehicles per Day

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N
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FIGURE 2

LANE GEOMETRY &
AVERAGE DAILY TRAFFIC

PROPOSED MUIR WOODS SITE A,
TOWN OF AMHERST, NY

KEY

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

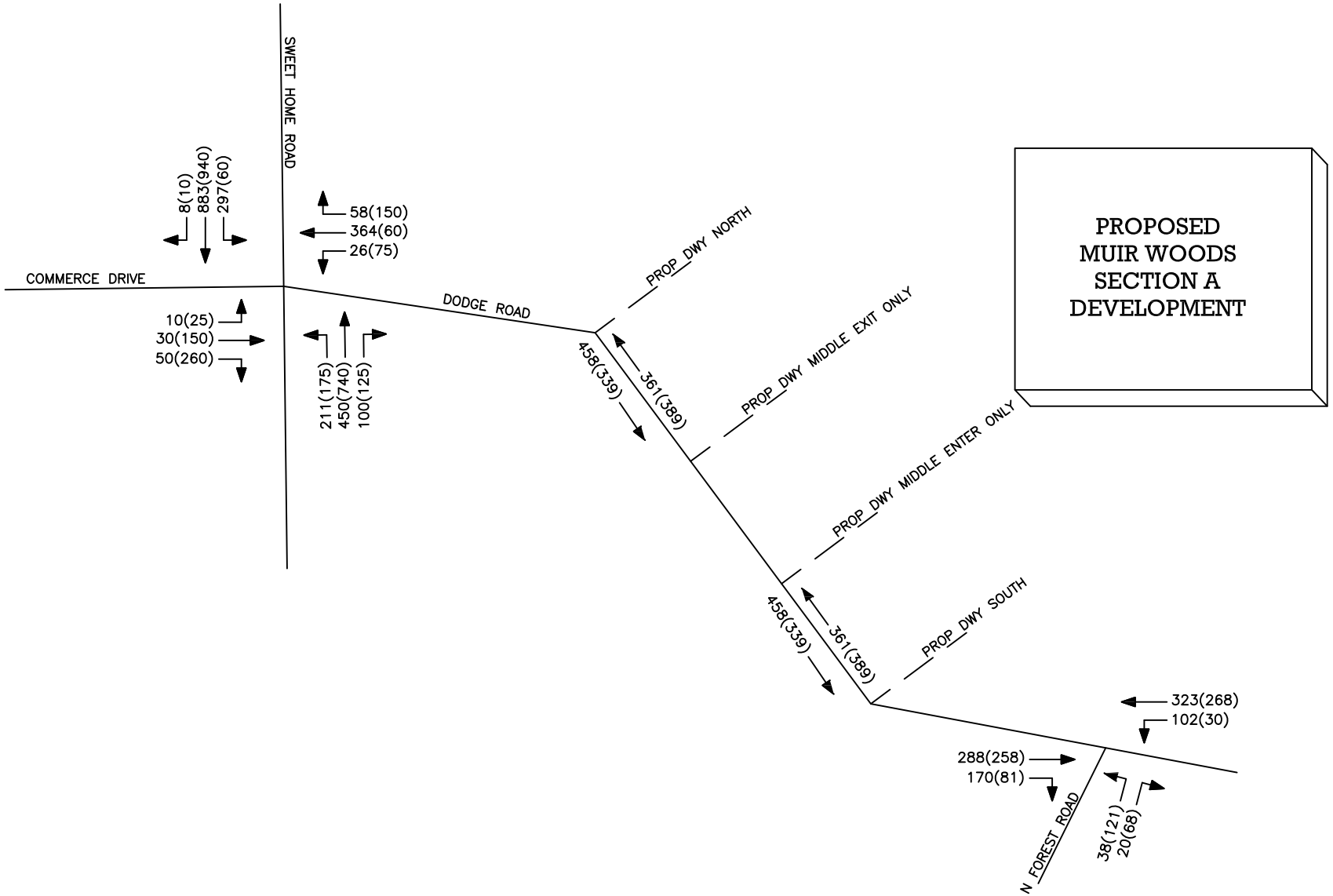

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FIGURE 3

PEAK HOUR VOLUMES
2020 BASE CONDITIONS

PROPOSED MUIR WOODS SITE A,
TOWN OF AMHERST, NY

KEY

00(00) = AM(PM)

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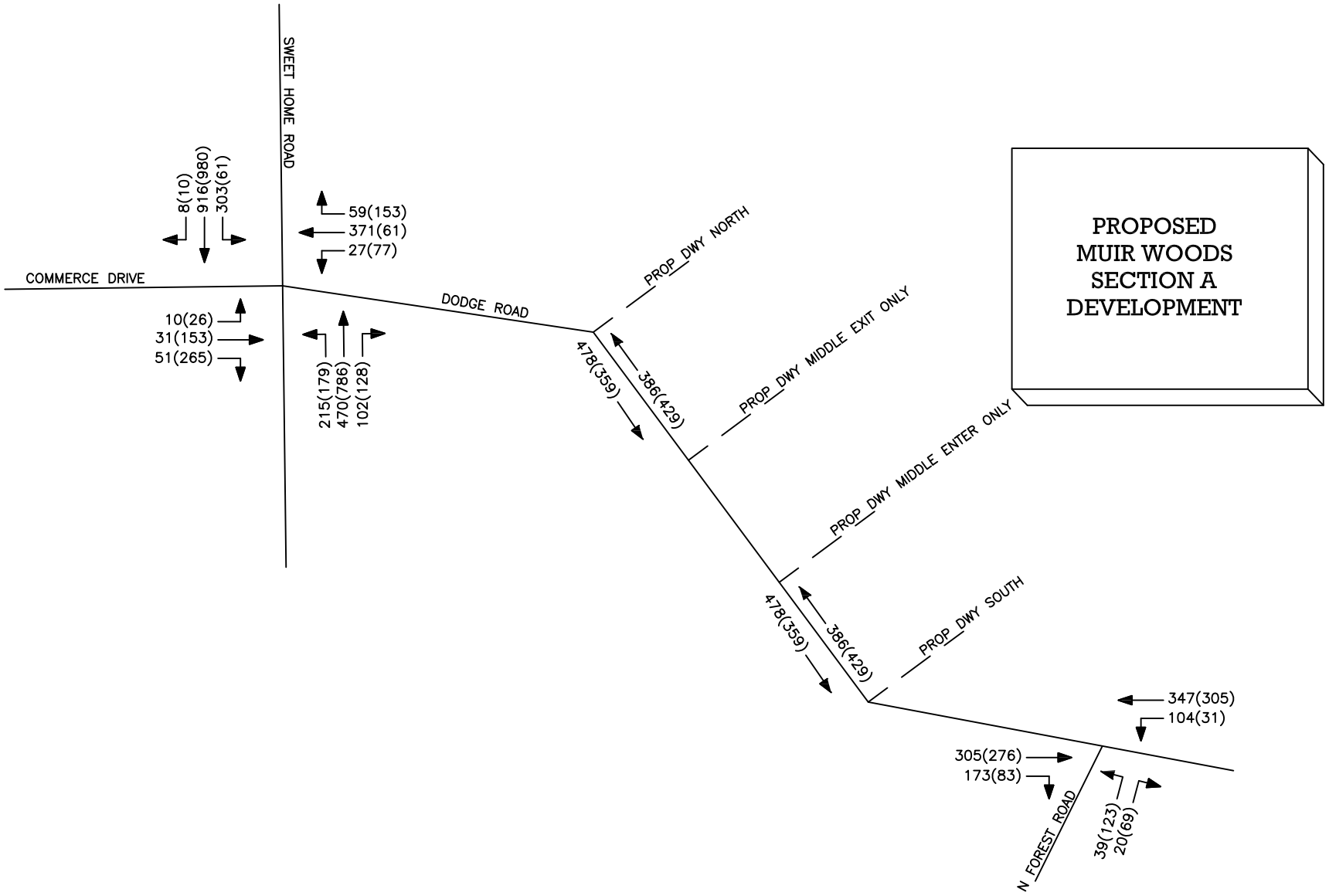

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FIGURE 4

PEAK HOUR VOLUMES
2022 BACKGROUND CONDITIONS

PROPOSED MUIR WOODS SITE A,

KEY

00(00) = AM(PM)

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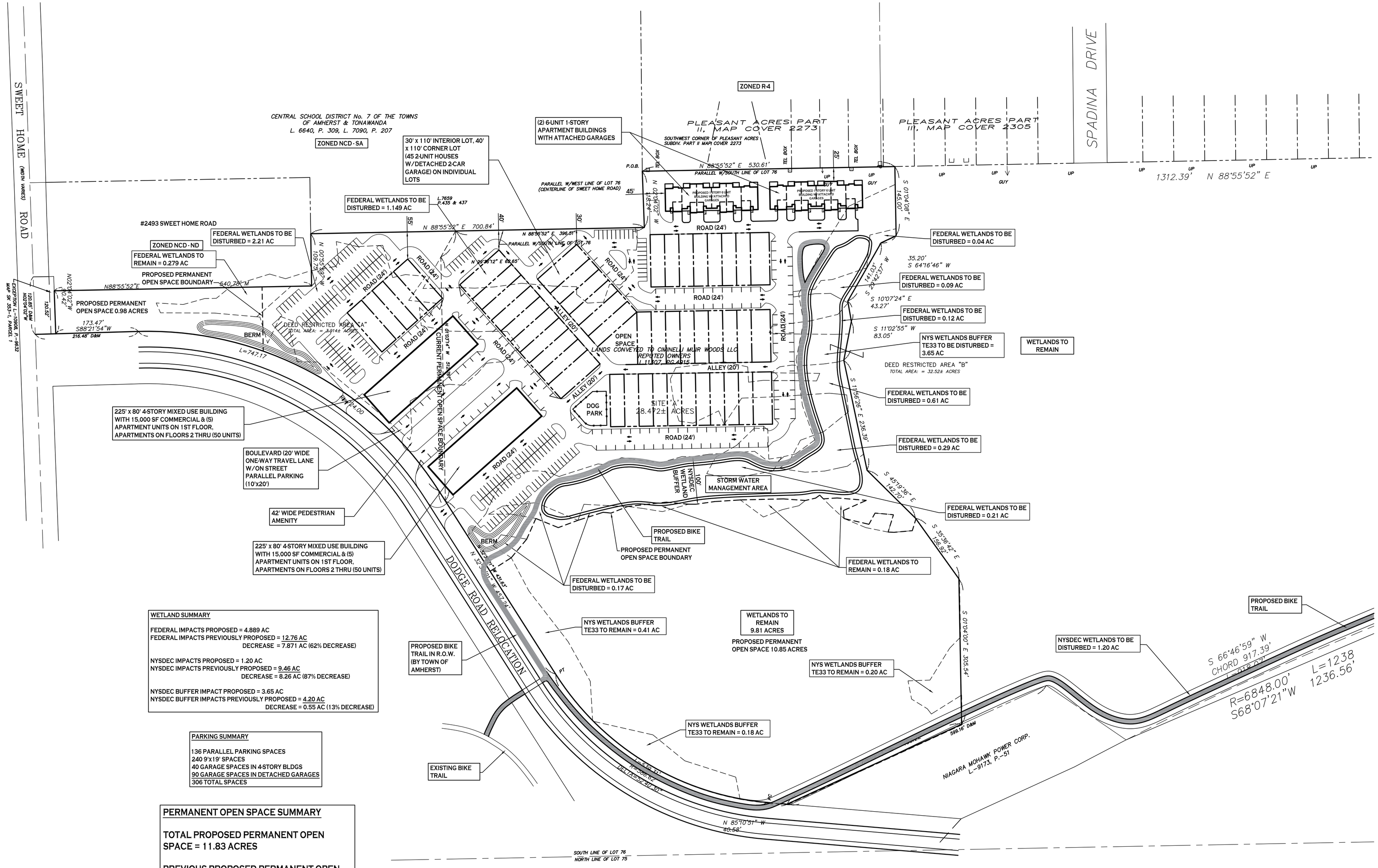

WETLAND SUMMARY

FEDERAL IMPACTS PROPOSED = 4.889 AC
FEDERAL IMPACTS PREVIOUSLY PROPOSED = 12.76 AC
DECREASE = 7.871 AC (62% DECREASE)

NYSDEC IMPACTS PROPOSED = 1.20 AC
NYSDEC IMPACTS PREVIOUSLY PROPOSED = 9.46 AC
DECREASE = 8.26 AC (87% DECREASE)

NYSDEC BUFFER IMPACT PROPOSED = 3.65 AC
NYSDEC BUFFER IMPACTS PREVIOUSLY PROPOSED = 4.20 AC
DECREASE = 0.55 AC (13% DECREASE)

PARKING SUMMARY

136 PARALLEL PARKING SPACES
240 9'x19' SPACES
40 GARAGE SPACES IN 4-STORY BLDGS
90 GARAGE SPACES IN DETACHED GARAGES
306 TOTAL SPACES

PERMANENT OPEN SPACE SUMMARY

TOTAL PROPOSED PERMANENT OPEN SPACE = 11.83 ACRES

PREVIOUS PROPOSED PERMANENT OPEN SPACE = 3.91 ACRES

NET INCREASE = 7.92 ACRES

SITE DATA

28.47 ACRES TOTAL
ZONED: NCD - ND

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Muir Woods Site "A"
Sweet Home & Dodge Road
Amherst, New York

Date: 7/1/20
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Concept Site Plan

DRAWING NO.
C-100

Project no.: 19.192

Packet Pg. 1607

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

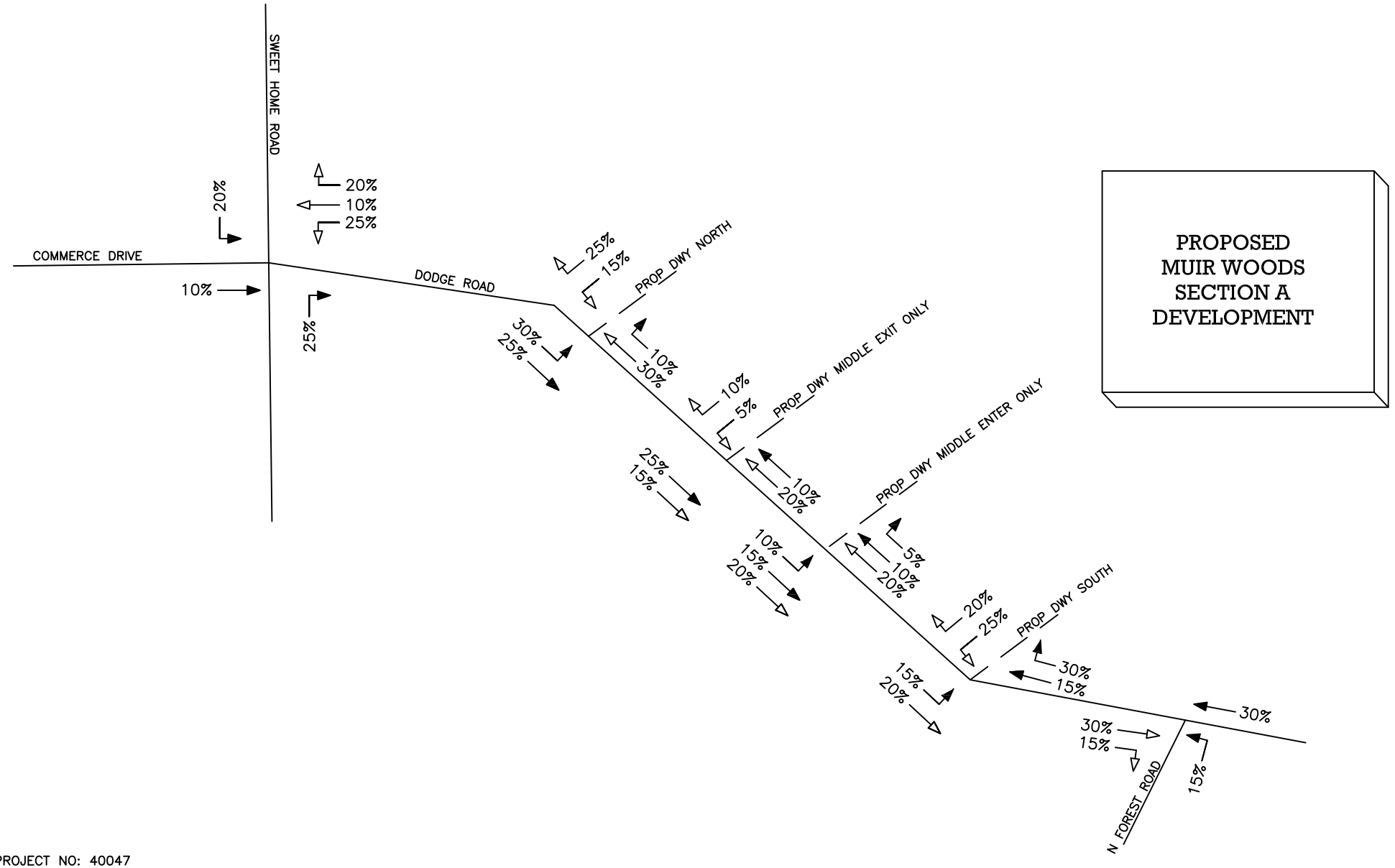

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FIGURE 6

TRIP DISTRIBUTION

PROPOSED MUIR WOODS SITE A,
TOWN OF AMHERST, NY

KEY

00(00) = AM(PM)
ENTERING TRIPS →
EXITING TRIPS →

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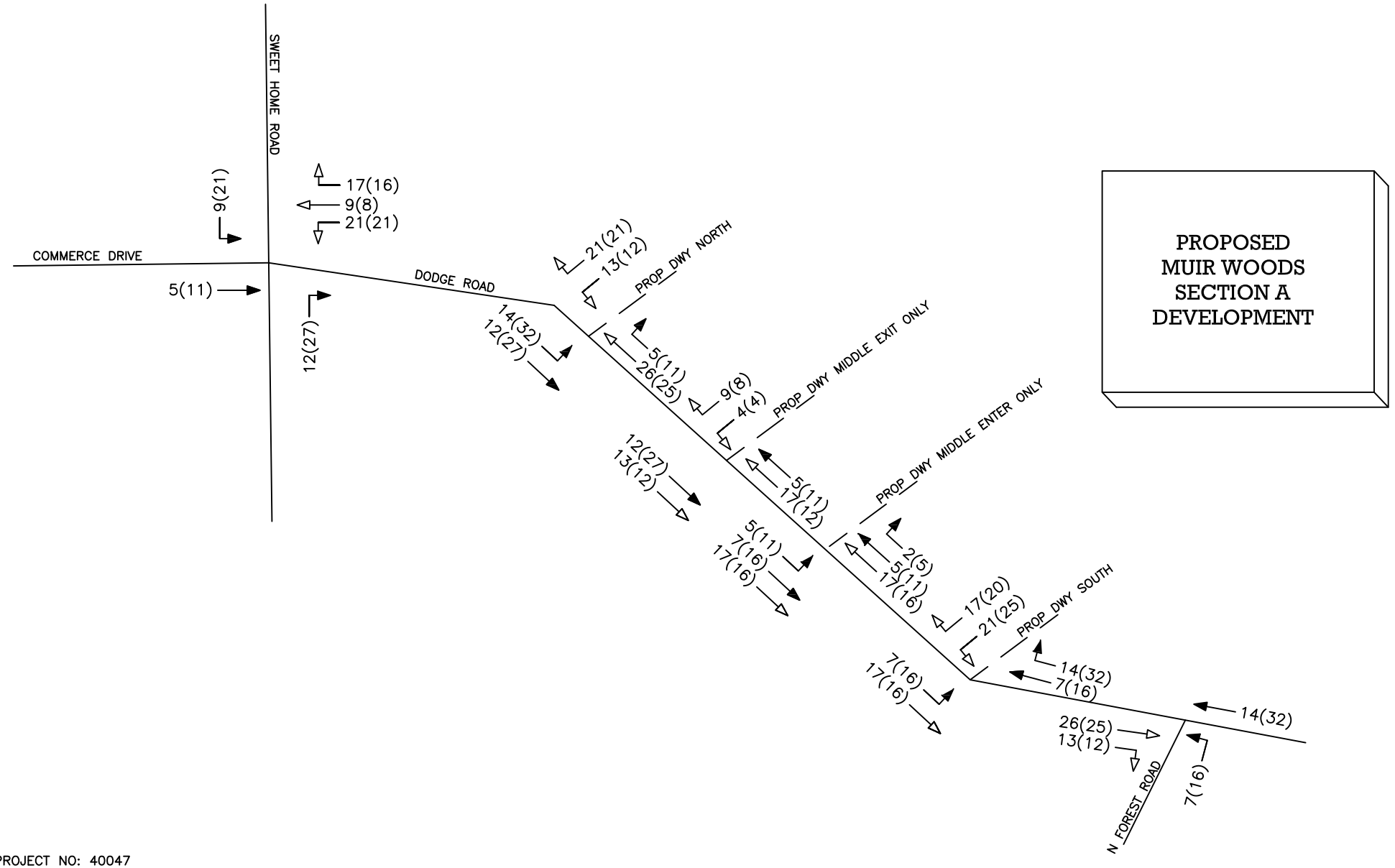

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FIGURE 7

SITE GENERATED TRIPS

PROPOSED MUIR WOODS SITE A,
TOWN OF AMHERST, NY

KEY

00(00) = AM(PM)
ENTERING TRIPS →
EXITING TRIPS →

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

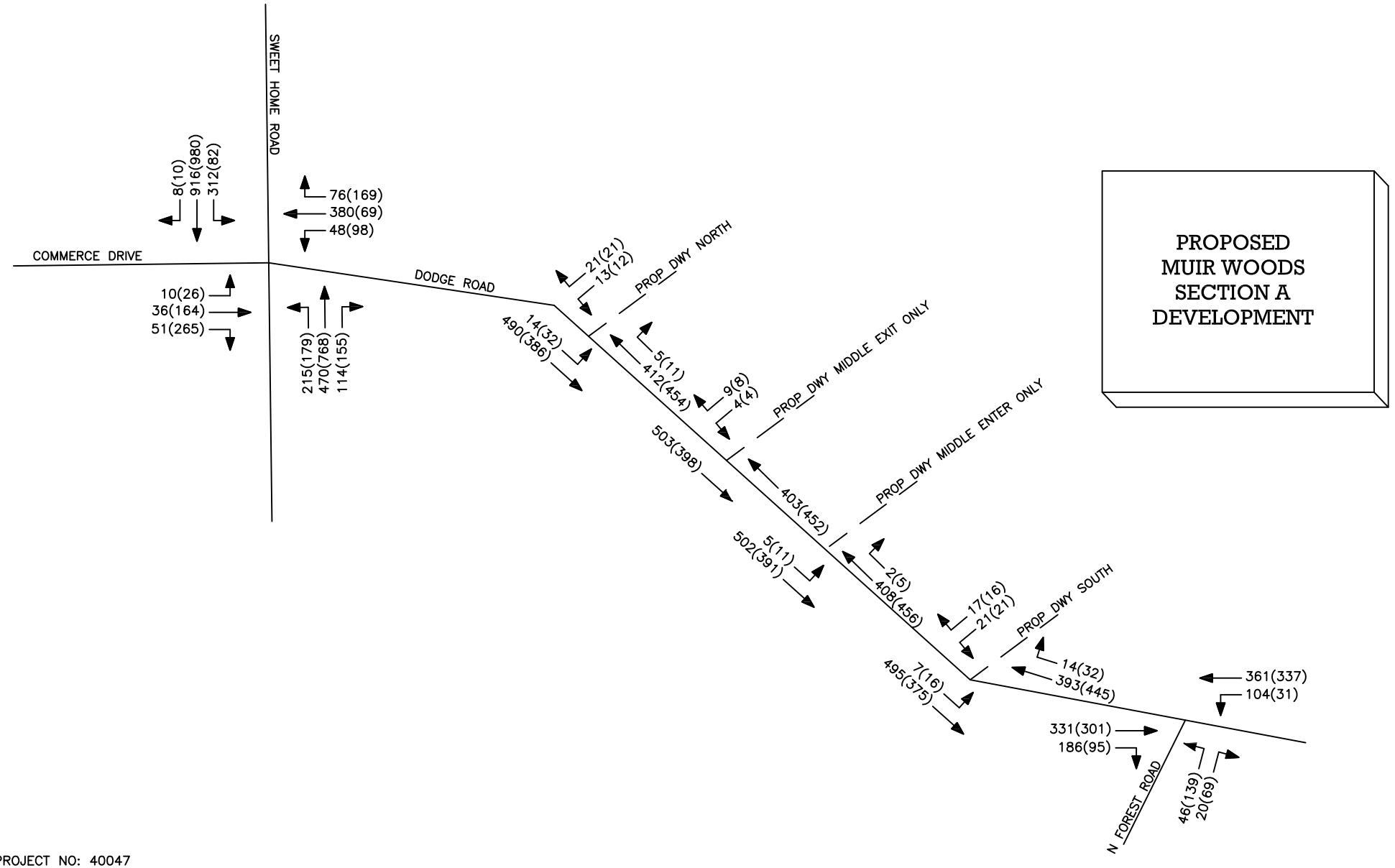

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FIGURE 8

PEAK HOUR VOLUMES
FULL DEVELOPMENT CONDITIONS

PROPOSED MUIR WOODS SITE A,
TOWN OF AMHERST, NY

KEY

00(00) = AM(PM)

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APPENDICES

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

A1

Collected Traffic Volume Data

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TRI-STATE TRAFFIC DATA

www.TSTData.com
184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Amherst, NY
N Forest Rd/Dodge Rd
Tuesday, February 28, 2017
Location: 43.023716, -78.788008

Count Name: N Forest Rd/Dodge Rd
Site Code:
Start Date: 02/28/2017
Page No: 1

Turning Movement Data

Start Time	Dodge Rd Westbound					North Forest Rd Northbound					Dodge Rd Eastbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
7:00 AM	32	3	0	0	35	2	12	0	0	14	21	30	0	0	51	100
7:15 AM	51	5	0	0	56	1	8	0	0	9	23	37	0	0	60	125
7:30 AM	77	15	0	0	92	4	10	0	0	14	54	55	0	0	109	215
7:45 AM	101	41	0	0	142	5	5	0	0	10	53	85	0	0	138	290
Hourly Total	261	64	0	0	325	12	35	0	0	47	151	207	0	0	358	730
8:00 AM	83	19	0	0	102	2	5	0	0	7	37	53	0	0	90	199
8:15 AM	59	25	0	0	84	6	14	0	0	20	24	59	0	0	83	187
8:30 AM	37	10	0	0	47	3	12	0	0	15	32	45	0	0	77	139
8:45 AM	44	14	0	0	58	4	14	0	1	18	26	50	0	0	76	152
Hourly Total	223	68	0	0	291	15	45	0	1	60	119	207	0	0	326	677
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	56	8	0	0	64	35	35	0	0	70	20	37	0	0	57	191
4:15 PM	51	2	0	0	53	13	30	0	0	43	16	44	0	0	60	156
4:30 PM	58	5	0	0	63	16	34	0	0	50	19	51	0	0	70	183
4:45 PM	45	5	0	0	50	7	25	0	0	32	18	61	0	0	79	161
Hourly Total	210	20	0	0	230	71	124	0	0	195	73	193	0	0	266	691
5:00 PM	84	6	0	0	90	32	38	0	0	70	22	86	0	0	108	268
5:15 PM	78	11	0	0	89	10	22	0	0	32	19	55	0	0	74	195
5:30 PM	39	3	0	0	42	4	23	0	0	27	11	67	0	0	78	147
5:45 PM	53	3	0	0	56	3	17	0	0	20	15	37	0	0	52	128
Hourly Total	254	23	0	0	277	49	100	0	0	149	67	245	0	0	312	738
6:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Grand Total	949	175	0	0	1124	147	304	0	1	451	410	852	0	0	1262	2837
Approach %	84.4	15.6	0.0	-	-	32.6	67.4	0.0	-	-	32.5	67.5	0.0	-	-	-
Total %	33.5	6.2	0.0	-	39.6	5.2	10.7	0.0	-	15.9	14.5	30.0	0.0	-	44.5	-
Lights	936	175	0	-	1111	144	303	0	-	447	408	841	0	-	1249	2807
% Lights	98.6	100.0	-	-	98.8	98.0	99.7	-	-	99.1	99.5	98.7	-	-	99.0	98.9
Buses	8	0	0	-	8	3	1	0	-	4	2	8	0	-	10	22
% Buses	0.8	0.0	-	-	0.7	2.0	0.3	-	-	0.9	0.5	0.9	-	-	0.8	0.8
Trucks	5	0	0	-	5	0	0	0	-	0	0	3	0	-	3	8
% Trucks	0.5	0.0	-	-	0.4	0.0	0.0	-	-	0.0	0.0	0.4	-	-	0.2	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

TRI-STATE TRAFFIC DATA
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184 Baker Rd
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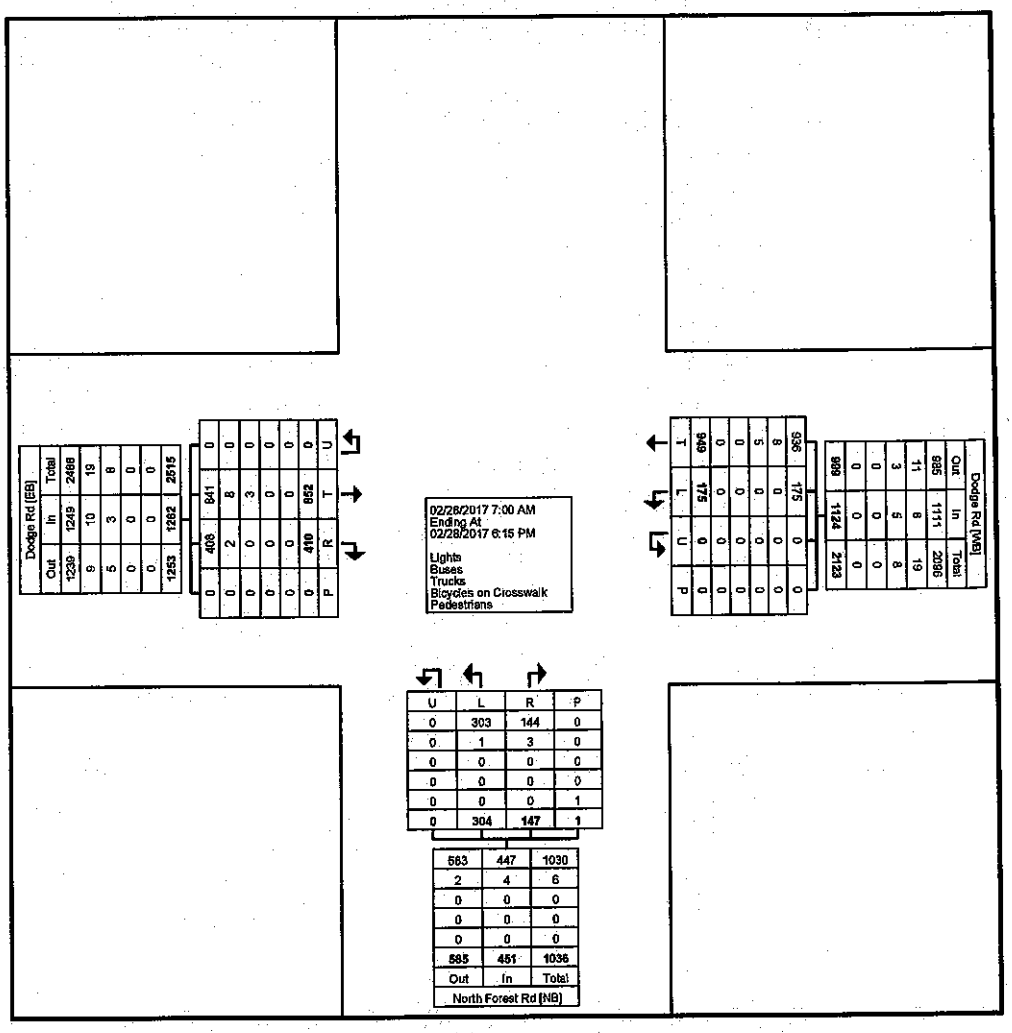
610-466-1469
Serving Transportation Professionals Since 1995

Amherst, NY
N Forest Rd/Dodge Rd
Tuesday, February 28, 2017
Location: 43.023716, -78.788008

Count Name: N Forest Rd/Dodge Rd
Site Code:
Start Date: 02/28/2017
Page No: 2



Dodge Rd (EB)	U	L	R	P	Total
Out	0	408	410	0	1239
In	0	841	852	0	1249
Total	0	1249	1262	0	2488
	0	10	19	0	29
	0	3	8	0	11
	0	0	0	0	0
	0	0	0	0	0
	0	1253	1262	0	2515

	T	L	U	P	
	936	175	0	0	
	8	0	0	0	
	5	0	0	0	
	0	0	0	0	
	0	0	0	0	
Dodge Rd (WB)	949	175	0	0	1124
In	1111	8	5	0	1129
Out	885	11	3	0	899
Total	2096	19	8	0	2123

U	L	R	P
0	303	144	0
0	1	3	0
0	0	0	0
0	0	0	0
0	0	0	1
0	304	147	1

583	447	1030
2	4	6
0	0	0
0	0	0
0	0	0
585	451	1036
Out	In	Total
North Forest Rd (NB)		

Turning Movement Data Plot

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

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N Forest Rd/Dodge Rd
Tuesday, February 28, 2017
Location: 43.023716, -78.788008

Count Name: N Forest Rd/Dodge Rd
Site Code:
Start Date: 02/28/2017
Page No: 3

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Dodge Rd Westbound					North Forest Rd Northbound					Dodge Rd Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	
7:30 AM	77	15	0	0	92	4	10	0	0	14	54	55	0	0	109	215
7:45 AM	101	41	0	0	142	5	5	0	0	10	53	85	0	0	138	290
8:00 AM	83	19	0	0	102	2	5	0	0	7	37	53	0	0	90	199
8:15 AM	59	25	0	0	84	6	14	0	0	20	24	59	0	0	83	187
Total	320	100	0	0	420	17	34	0	0	51	168	252	0	0	420	891
Approach %	76.2	23.8	0.0	-	-	33.3	66.7	0.0	-	-	40.0	60.0	0.0	-	-	-
Total %	35.9	11.2	0.0	-	47.1	1.9	3.8	0.0	-	5.7	18.9	28.3	0.0	-	47.1	-
PHF	0.792	0.610	0.000	-	0.739	0.708	0.607	0.000	-	0.638	0.778	0.741	0.000	-	0.761	0.768
Lights	318	100	0	-	418	15	33	0	-	48	168	248	0	-	416	882
% Lights	99.4	100.0	-	-	99.5	88.2	97.1	-	-	94.1	100.0	98.4	-	-	99.0	99.0
Buses	1	0	0	-	1	2	1	0	-	3	0	2	0	-	2	6
% Buses	0.3	0.0	-	-	0.2	11.8	2.9	-	-	5.9	0.0	0.8	-	-	0.5	0.7
Trucks	1	0	0	-	1	0	0	0	-	0	0	2	0	-	2	3
% Trucks	0.3	0.0	-	-	0.2	0.0	0.0	-	-	0.0	0.0	0.8	-	-	0.5	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

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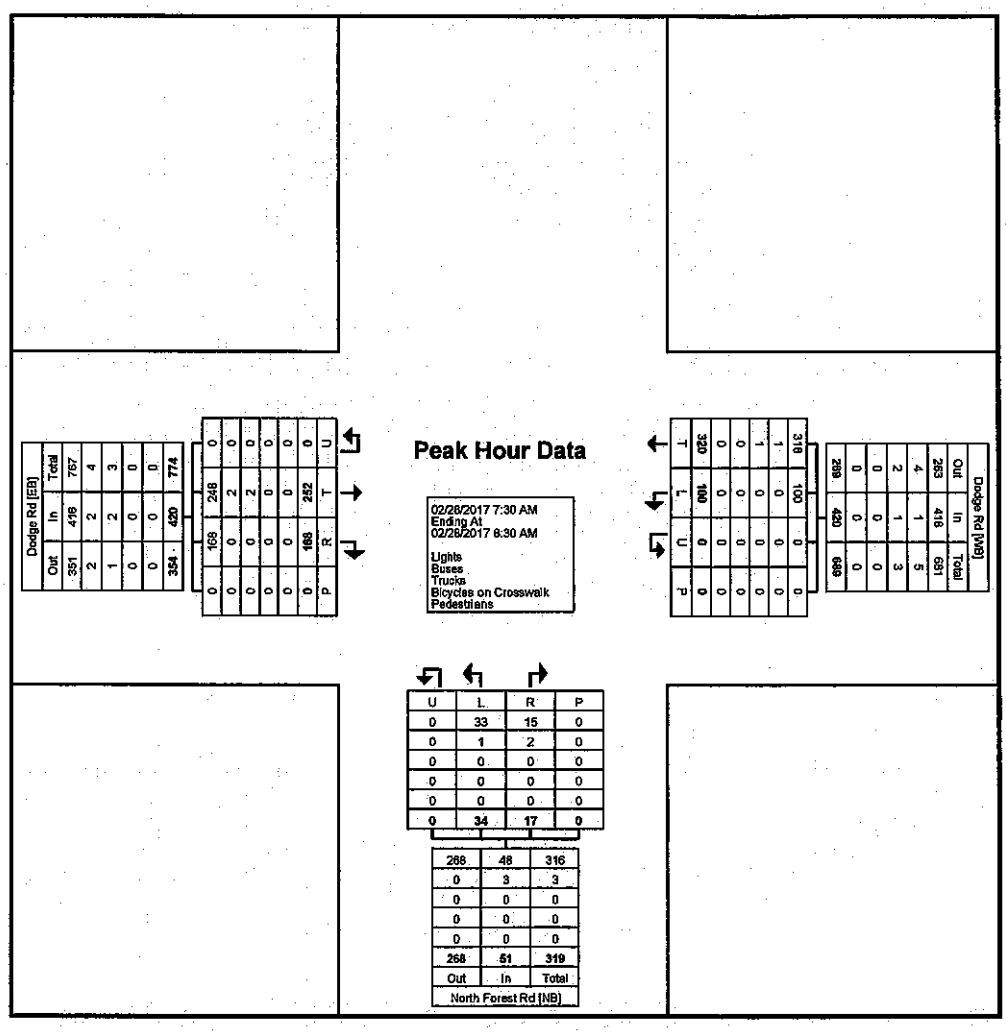

Turning Movement Peak Hour Data Plot (7:30 AM)

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Amherst, NY
N Forest Rd/Dodge Rd
Tuesday, February 28, 2017
Location: 43.023716, -78.788008

Count Name: N Forest Rd/Dodge Rd
Site Code:
Start Date: 02/28/2017

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Dodge Rd Westbound					North Forest Rd Northbound					Dodge Rd Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	
4:30 PM	58	5	0	0	63	16	34	0	0	50	19	51	0	0	70	183
4:45 PM	45	5	0	0	50	7	25	0	0	32	18	61	0	0	79	161
5:00 PM	84	6	0	0	90	32	38	0	0	70	22	86	0	0	108	268
5:15 PM	78	11	0	0	89	10	22	0	0	32	19	55	0	0	74	195
Total	265	27	0	0	292	65	119	0	0	184	78	253	0	0	331	807
Approach %	90.8	9.2	0.0	-	-	35.3	64.7	0.0	-	-	23.6	76.4	0.0	-	-	-
Total %	32.8	3.3	0.0	-	36.2	8.1	14.7	0.0	-	22.8	9.7	31.4	0.0	-	41.0	-
PHF	0.789	0.614	0.000	-	0.811	0.508	0.783	0.000	-	0.657	0.886	0.735	0.000	-	0.766	0.753
Lights	265	27	0	-	292	65	119	0	-	184	78	253	0	-	331	807
% Lights	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

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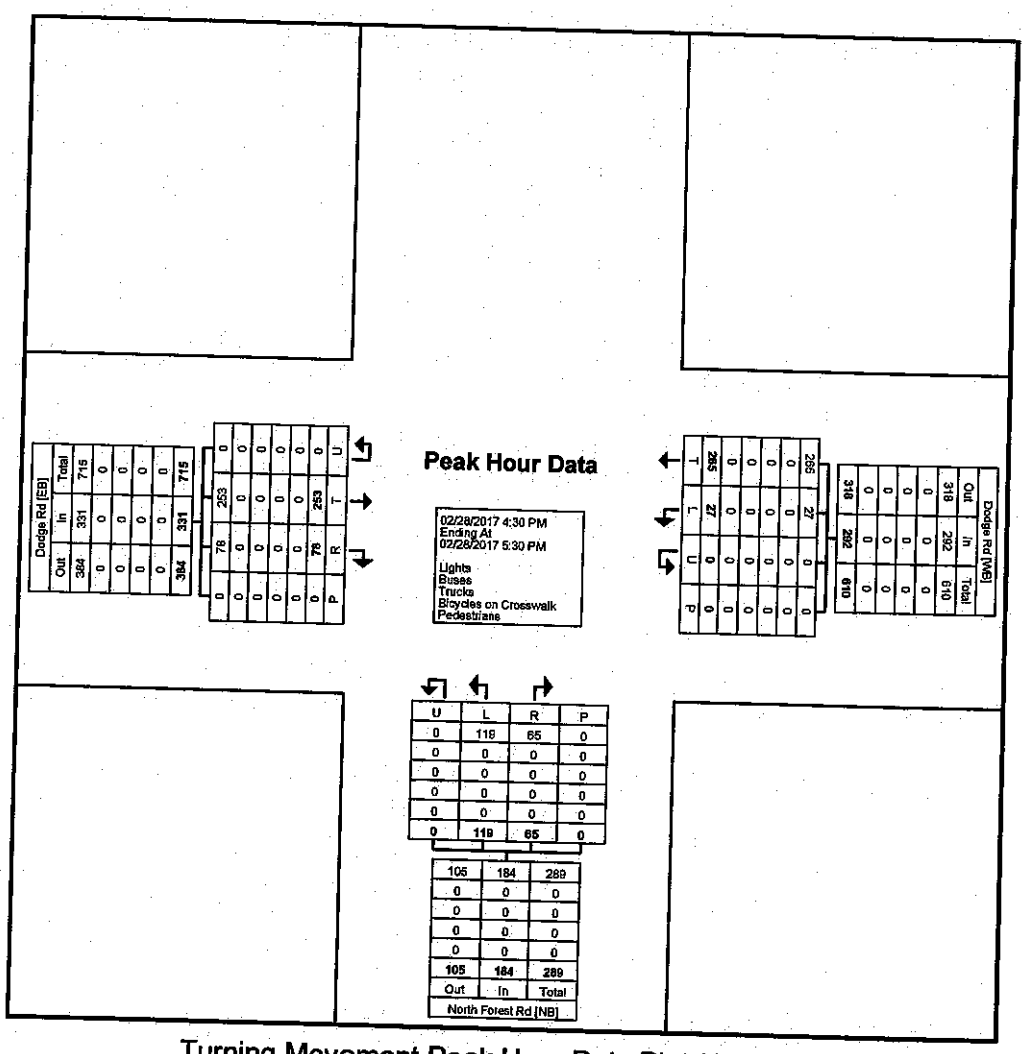


Turning Movement Peak Hour Data Plot (4:30 PM)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

TIS - THE HUB - 2949 N. FOREST
KIMLEY-HORN, 3/2017

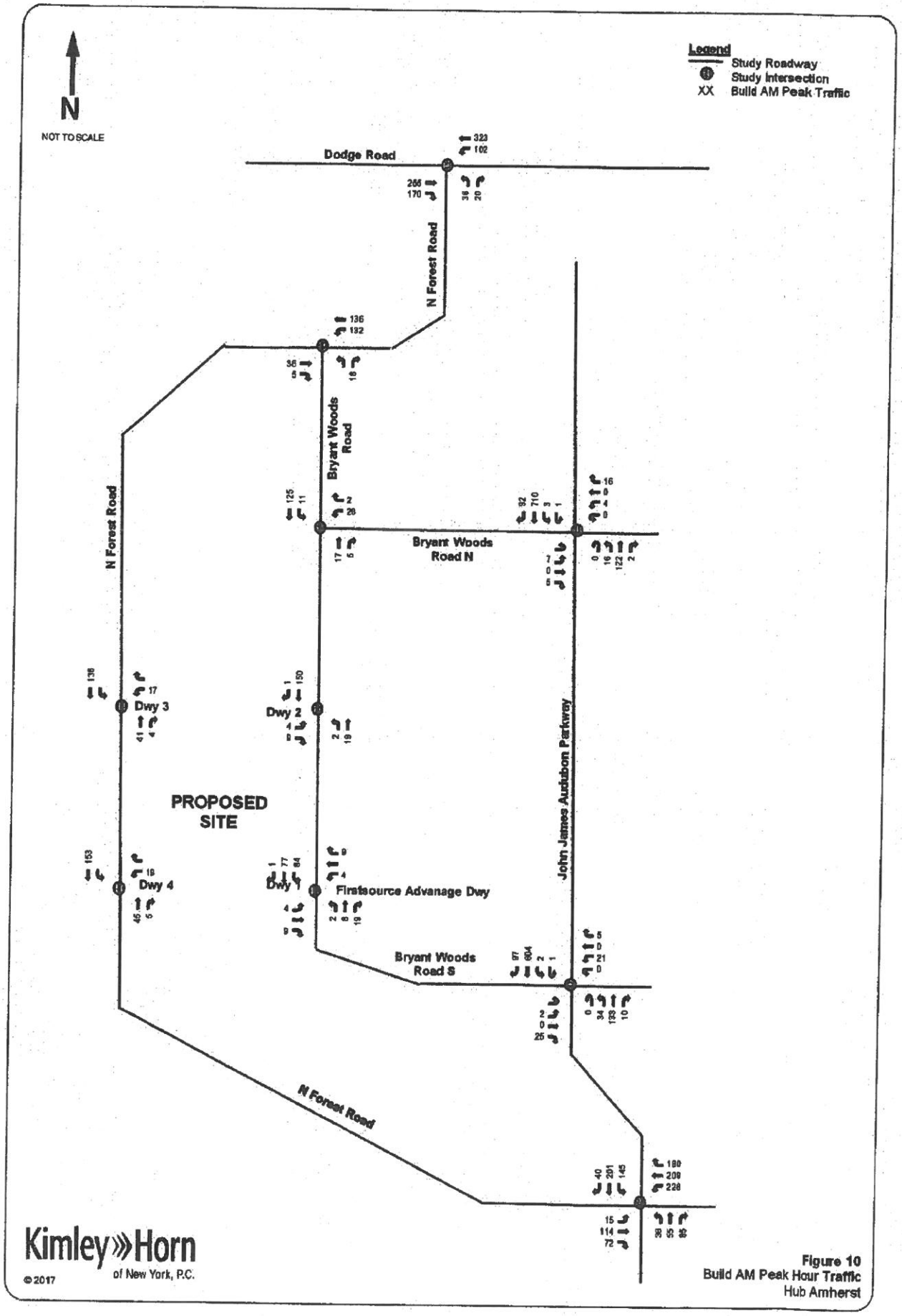
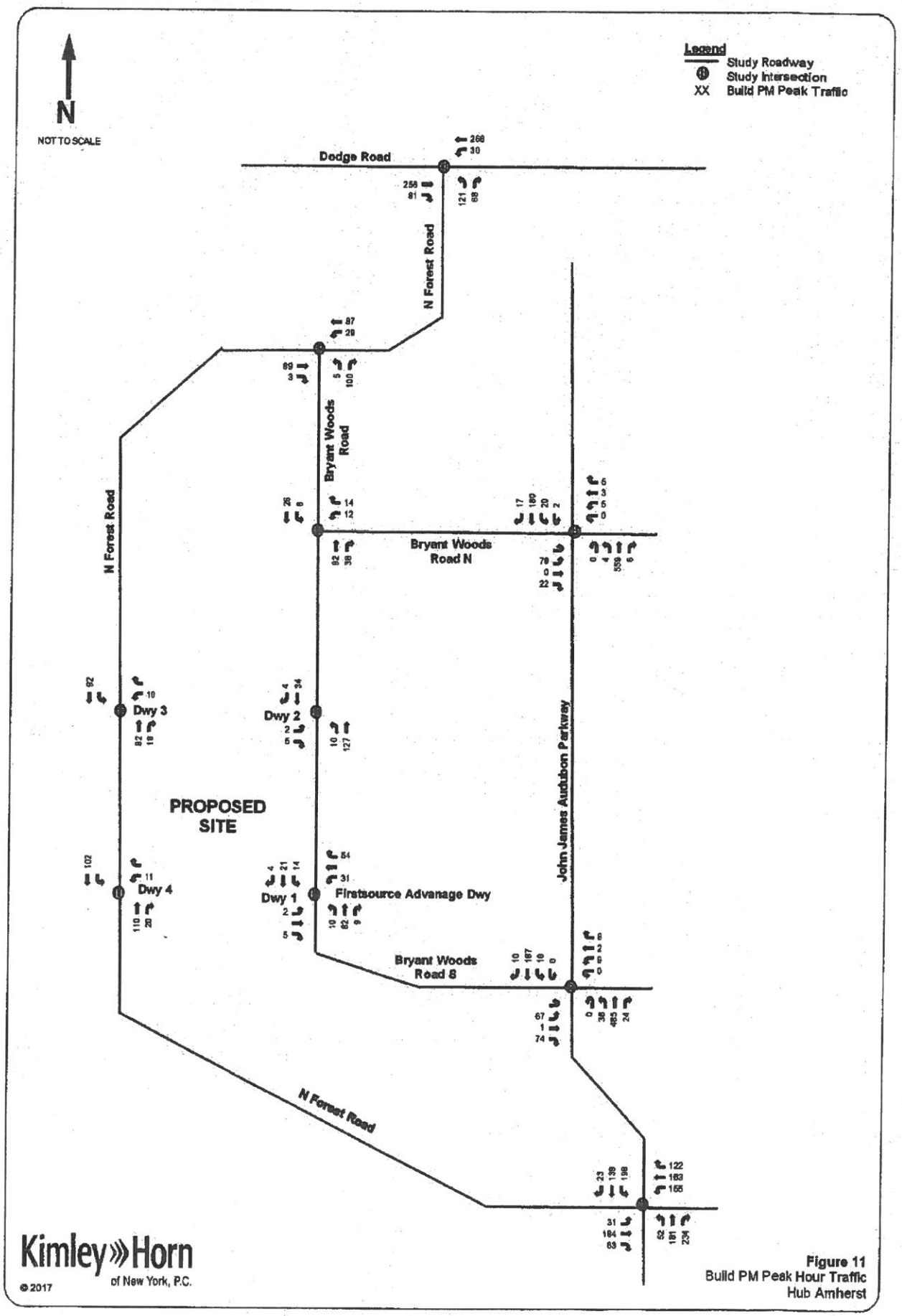


Figure 10
Build AM Peak Hour Traffic
Hub Amherst

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



Kimley»Horn
of New York, P.C.
© 2017

Figure 11
Build PM Peak Hour Traffic
Hub Amherst

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Peak Hour Data for Intersection

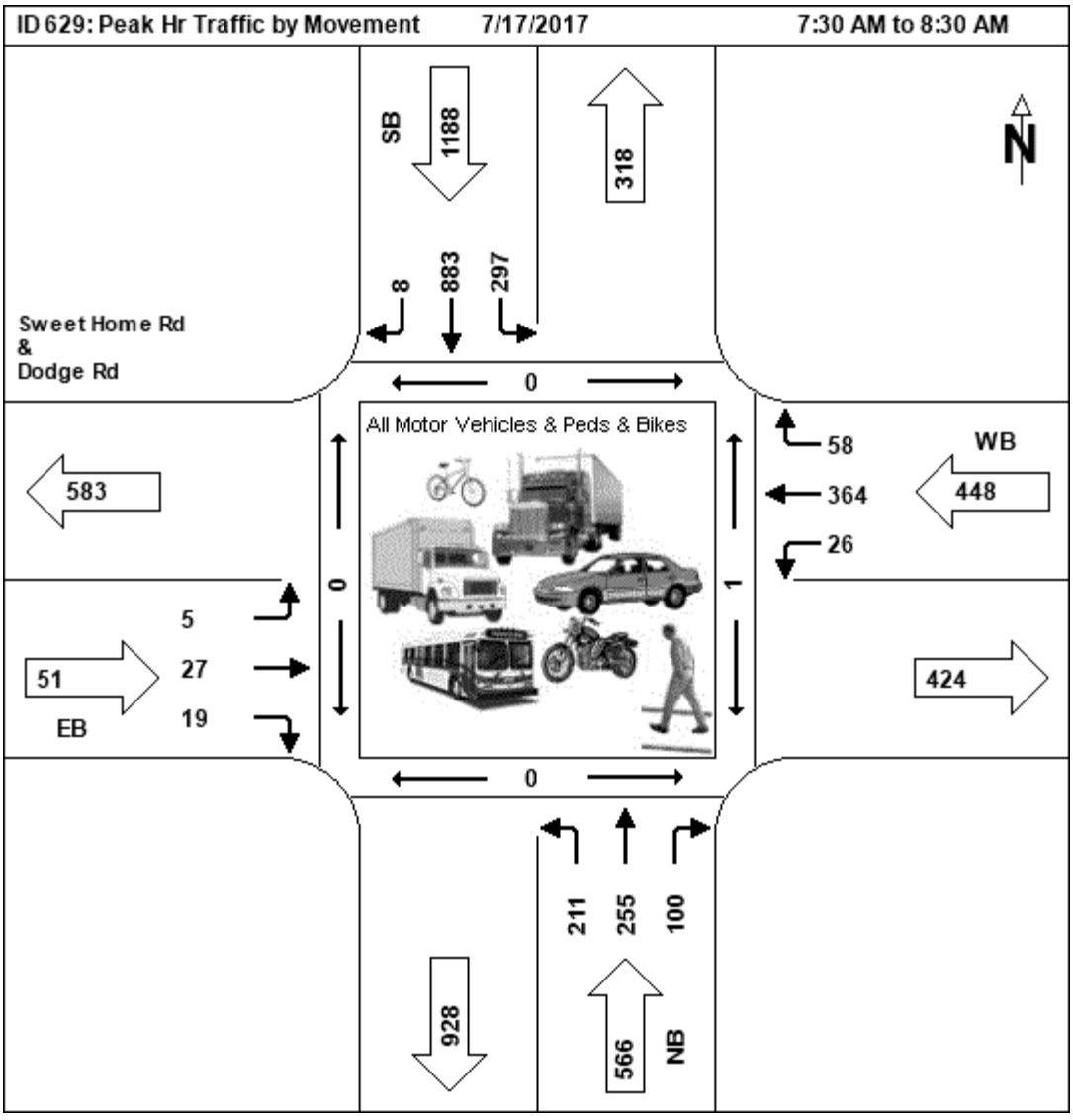
Int ID:	629		
Community:	Amherst	**Corridor:**	NA
Road 1:	Sweet Home Rd	**Road 3:**	Commerce Dr
Road 2:	Dodge Rd	**Road 4:**	

|<< < > >>| 1-2 of 2

AM Peak Hour
07/17/2017

Start Time	NB Left	NB Thru	NB Right	NB Ped	NB App Total	EB Left	EB Thru	EB Right	EB Ped	EB App Total	SB Left	SB Thru	SB Right	SB Ped	SB App Total	WB Left	WB Thru	WB Right	WB Ped	WB App Total	Int Total
7:30 AM	65	54	17	1	136	3	14	4	0	21	60	290	2	0	352	3	97	11	0	111	620
7:45 AM	50	69	31	0	150	0	3	0	0	3	75	196	0	0	271	6	120	8	0	134	558
8:00 AM	49	66	25	0	140	1	5	4	0	10	66	175	2	0	243	10	72	22	0	104	497
8:15 AM	47	66	27	0	140	1	5	11	0	17	96	222	4	0	322	7	75	17	0	99	578
Total	211	255	100	1	566	5	27	19	0	51	297	883	8	0	1188	26	364	58	0	448	2253
PHF	0.81	0.92	0.81		0.94	0.42	0.48	0.43		0.61	0.77	0.76	0.50		0.84	0.65	0.76	0.66		0.84	
HV %	6	4	6			60	0	32			1	3	0			12	1	2			

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes



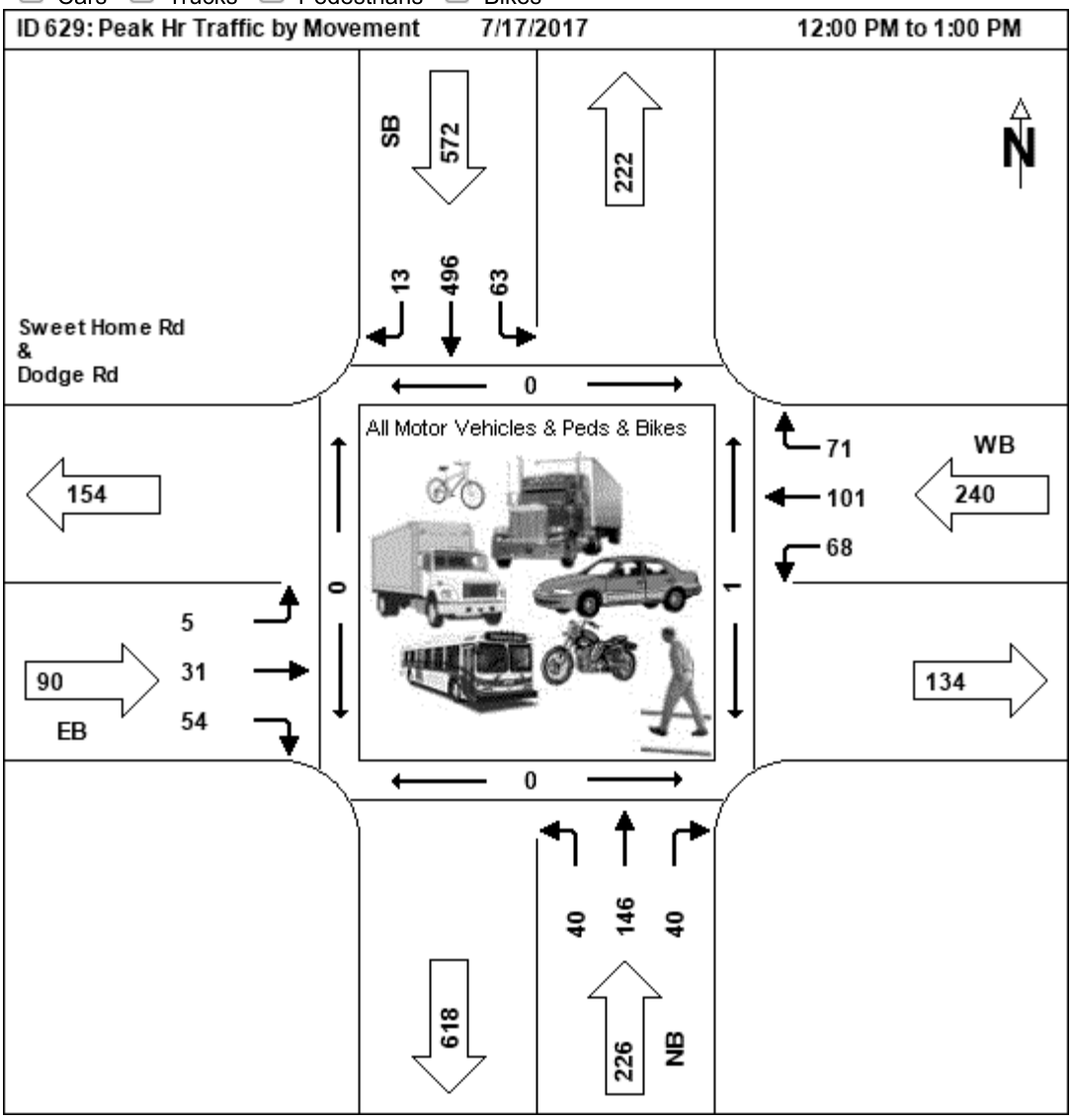
Midday Peak Hour
07/17/2017

Start Time	NB Left	NB Thru	NB Right	NB Ped	NB App Total	EB Left	EB Thru	EB Right	EB Ped	EB App Total	SB Left	SB Thru	SB Right	SB Ped	SB App Total	WB Left	WB Thru	WB Right	WB Ped	WB App Total	Int Total

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

12:00 PM	6	34	11	1	51	0	6	12	0	18	20	127	4	0	151	26	19	26	0	71	291
12:15 PM	10	15	4	0	29	5	16	13	0	34	17	110	2	0	129	12	23	26	0	61	253
12:30 PM	3	34	10	0	47	0	5	14	0	19	19	120	3	0	142	11	24	11	0	46	254
12:45 PM	21	63	15	0	99	0	4	15	0	19	7	139	4	0	150	19	35	8	0	62	330
Total	40	146	40	1	226	5	31	54	0	90	63	496	13	0	572	68	101	71	0	240	1128
PHF	0.48	0.58	0.67		0.57	0.25	0.48	0.90		0.66	0.79	0.89	0.81		0.95	0.65	0.72	0.68		0.85	
HV %	13	8	5			20	3	4			2	2	0			1	0	1			

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes

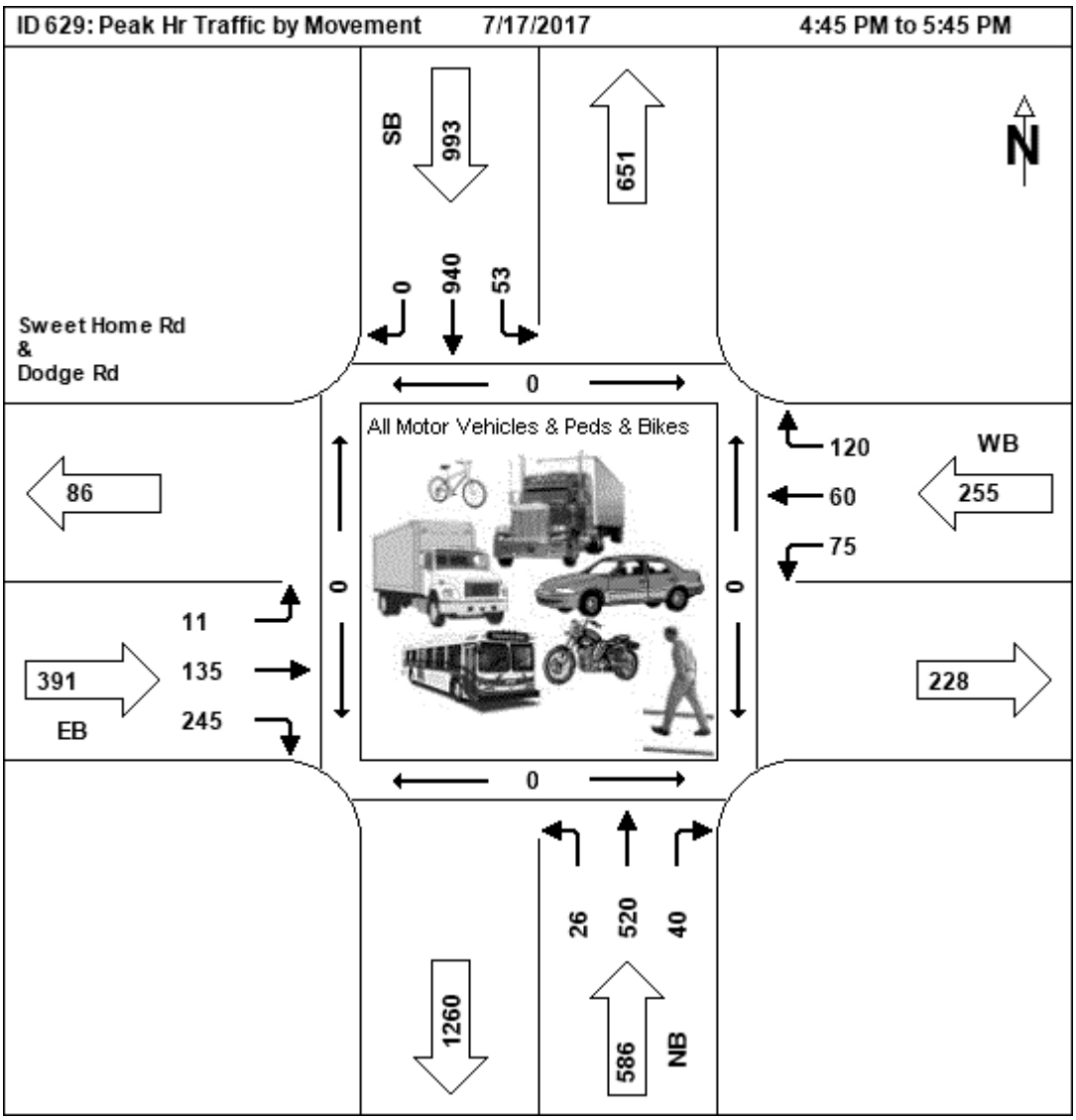


PM Peak Hour
07/17/2017

	NB					EB					SB					WB					
Start Time	Left	Thru	Right	Ped	App Total	Left	Thru	Right	Ped	App Total	Left	Thru	Right	Ped	App Total	Left	Thru	Right	Ped	App Total	Int Total
4:45 PM	8	132	12	0	152	2	28	51	0	81	24	190	0	0	214	30	22	21	0	73	520
5:00 PM	5	119	6	0	130	4	51	116	0	171	10	258	0	0	268	20	22	50	0	92	661
5:15 PM	7	149	10	0	166	4	27	34	0	65	14	266	0	0	280	18	10	21	0	49	560
5:30 PM	6	119	12	0	137	1	27	44	0	72	5	226	0	0	231	7	6	28	0	41	481
Total	26	519	40	0	585	11	133	245	0	389	53	940	0	0	993	75	60	120	0	255	2222
PHF	0.81	0.87	0.83		0.88	0.69	0.65	0.53		0.57	0.55	0.88			0.89	0.63	0.68	0.60		0.69	
HV %	12	1	5			18	2	1			0	1				0	2	1			

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

A2

Miscellaneous Traffic Data and Calculations

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

STATION: **531020**

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR294** ROAD NAME: **NORTH FOREST RD** FROM: **1.0 N OF NY263** TO: **DODGE RD** COUNTY: **Erie**
DIRECTION: Northbound FACTOR GROUP: 30 REC. SERIAL #: W699 FUNC. CLASS: 16 TOWN: **AMHERST**
STATE DIR CODE: 6 WK OF YR: 16 PLACEMENT: .57m S of Bryant Woods S NHS: no LION#:
DATE OF COUNT: 04/19/2015 @ REF MARKER: JURIS: Village BIN:
NOTES LANE 1: North ADDL DATA: Class Speed CC Stn: RR CROSSING:
COUNT TYPE: VEHICLES BATCH ID: DOT-SJWR5Cww17a CLASS HPMS SAMPLE: 3010446
COUNT TAKEN BY: ORG CODE: TTG INITIALS: DKS PROCESSED BY: ORG CODE: DOT INITIALS: SJW

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M																											
7	T																											
8	W																											
9	T																											
10	F																											
11	S																											
12	S																											
13	M																											
14	T																											
15	W																											
16	T																											
17	F																											
18	S																											
19	S																											
20	M	**2**	**0**	**0**	**0**	**1**	**4**	**12**	**48**	**64**	**42**	**59**	**47**	**74**	**74**	**68**	**100**	**94**	**82**	**63**	**32**	**41**	**20**	**17**	**11**	955	100	15
21	T	**3**	**0**	**1**	**0**	**0**	**1**	**11**	**48**	**43**	**39**	**47**	**66**	**77**	**69**	**81**	**114**	**96**	**98**	**72**	**37**	**40**	**22**	**13**	**8**	986	114	15
22	W	**5**	**1**	**1**	**2**	**2**	**1**	**12**	**48**	**55**	**42**	**46**	**58**	**81**	**59**	**79**	**97**	**98**	**82**	**56**	**47**	**35**	**27**	**23**				
23	T																											
24	F																											
25	S																											
26	S																											
27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																								ADT
4	**0**	**1**	**1**	**1**	**1**	**12**	**48**	**54**	**41**	**51**	**57**	**77**	**67**	**76**	**104**	**96**	**87**	**64**	**39**	**39**	**23**	**18**	**10**	**971**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
3	71	2	65	104	11%	1.000	1.047	**AADT 927**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

STATION: **531020**

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR294** ROAD NAME: **NORTH FOREST RD** FROM: **1.0 N OF NY263** TO: **DODGE RD** COUNTY: **Erie**
DIRECTION: Southbound FACTOR GROUP: 30 REC. SERIAL #: W805 FUNC. CLASS: 16 TOWN: **AMHERST**
STATE DIR CODE: 7 WK OF YR: 16 PLACEMENT: .57m S of Bryant Woods S NHS: no LION#:
DATE OF COUNT: 04/19/2015 @ REF MARKER: JURIS: Village BIN:
NOTES LANE 1: South ADDL DATA: Class Speed CC Stn: RR CROSSING:
COUNT TYPE: VEHICLES BATCH ID: DOT-SJWR5Cww17a CLASS HPMS SAMPLE: 3010446
COUNT TAKEN BY: ORG CODE: TTG INITIALS: dks PROCESSED BY: ORG CODE: DOT INITIALS: SJW

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	W																											
2	T																											
3	F																											
4	S																											
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6	M																											
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8	W																											
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10	F																											
11	S																											
12	S																											
13	M																											
14	T																											
15	W																											
16	T																											
17	F																											
18	S																											
19	S																											
20	M	**1**	**1**	**1**	**1**	**1**	**11**	**42**	**77**	**104**	**51**	**48**	**44**	**53**	**52**	**71**	**69**	**104**	**79**	**50**	**23**	**18**	**13**	**12**	**3**	929	104	8
21	T	**1**	**1**	**2**	**0**	**0**	**12**	**42**	**84**	**91**	**53**	**56**	**55**	**67**	**63**	**60**	**56**	**85**	**97**	**44**	**28**	**15**	**10**	**7**	**9**	938	97	17
22	W	**1**	**1**	**1**	**2**	**1**	**13**	**41**	**72**	**87**	**57**	**51**	**55**	**63**	**51**	**54**	**66**	**79**	**96**	**56**	**31**	**16**	**15**	**12**				
23	T																											
24	F																											
25	S																											
26	S																											
27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
1	**1**	**2**	**1**	**0**	**12**	**42**	**78**	**94**	**54**	**52**	**51**	**61**	**55**	**62**	**64**	**89**	**91**	**50**	**27**	**16**	**13**	**10**	**6**	**932**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
3	71	2	65	94	10%	1.000	1.047	**AADT 890**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

STATION: **534232**

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR45** ROAD NAME: **DODGE RD** FROM: **SWEET HOME RD** TO: **NY 270 CAMPBELL BLVD** COUNTY: **Erie**

DIRECTION: Eastbound FACTOR GROUP: 30 REC. SERIAL #: Y110 FUNC. CLASS: 16 TOWN:

STATE DIR CODE: 6 WK OF YR: 32 PLACEMENT: 450 FEET EAST OF AUDUBON PK NHS: no LION#:

DATE OF COUNT: 08/07/2017 @ REF MARKER: JURIS: Village BIN:

NOTES LANE 1: EB 1 Lane - 40 mph ADDL DATA: Class Speed CC Stn: RR CROSSING:

COUNT TYPE: AXLE PAIRS BATCH ID: DOT-R05c32aMBN0000-2017 HPMS SAMPLE:

COUNT TAKEN BY: ORG CODE: MBN INITIALS: APV PROCESSED BY: ORG CODE: DOT INITIALS: CW

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	T																											
2	W																											
3	T																											
4	F																											
5	S																											
6	S																											
7	M																		472	223	157	142	81	43	41			
8	T	23	10	6	6	4	17	55	207	272	174	158	216	271	230	243	301	447	457	249	168	165	116	61	41	3897	457	17
9	W	27	14	6	7	3	13	69	195	244	172	177	212	283	268	250	319	412	437	234	185	162	133	51	37	3910	437	17
10	T	18	10	7	5	6	8	60	158	204	154	182	202	301	264	267	326	438	436	228	158	152	114	66	46	3810	438	16
11	F	27	8	13	8	6	16	64	172																			
12	S																											
13	S																											
14	M																											
15	T																											
16	W																											
17	T																											
18	F																											
19	S																											
20	S																											
21	M																											
22	T																											
23	W																											
24	T																											
25	F																											
26	S																											
27	S																											
28	M																											
29	T																											
30	W																											
31	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

24	10	8	6	5	14	62	183	240	167	172	210	285	254	253	315	432	450	234	167	155	111	55	41	ADT 3853

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
4	87	4	87	450	12%	1.000	1.100	**AADT 3503**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR45** ROAD NAME: **DODGE RD**
DIRECTION: Westbound FACTOR GROUP: 30
STATE DIR CODE: 7 WK OF YR: 32
DATE OF COUNT: 08/07/2017
NOTES LANE 1: WB 1 Lane - 40 mph

COUNT TAKEN BY: ORG CODE: MBN INITIALS: APV

FROM: **SWEET HOME RD** TO: **NY 270 CAMPBELL BLVD**
REC. SERIAL #: Y110 FUNC. CLASS: 16
PLACEMENT: 450 FEET EAST OF AUDUBON PK NHS: no
@ REF MARKER: JURIS: Village
ADDL DATA: Class Speed BIN:
CC Stn: RR CROSSING:
COUNT TYPE: AXLE PAIRS BATCH ID: DOT-R05c32aMBN0000-2017 SAMPLE:
PROCESSED BY: ORG CODE: DOT INITIALS: CW

COUNTY: **Erie**
TOWN:
LION#:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	T																											
2	W																											
3	T																											
4	F																											
5	S																											
6	S																											
7	M																		250	150	104	92	61	38	18			
8	T	**17**	**5**	**2**	**7**	**8**	**27**	**124**	**380**	**419**	**243**	**185**	**169**	**293**	**250**	**231**	**233**	**211**	**287**	**189**	**121**	**109**	**66**	**54**	**17**	3647	419	8
9	W	**9**	**5**	**6**	**6**	**13**	**22**	**125**	**348**	**424**	**225**	**194**	**200**	**202**	**243**	**280**	**212**	**234**	**268**	**206**	**133**	**102**	**68**	**59**	**15**	3599	424	8
10	T	**16**	**3**	**1**	**7**	**9**	**31**	**120**	**335**	**390**	**219**	**208**	**208**	**208**	**243**	**285**	**225**	**252**	**261**	**187**	**127**	**106**	**68**	**50**	**26**	3585	390	8
11	F	**11**	**5**	**5**	**3**	**11**	**27**	**111**	**302**																			
12	S																											
13	S																											
14	M																											
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29	T																											
30	W																											
31	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																									ADT
13	**4**	**4**	**6**	**10**	**27**	**120**	**341**	**411**	**229**	**196**	**192**	**234**	**245**	**265**	**223**	**232**	**266**	**183**	**121**	**102**	**66**	**50**	**19**	**3559**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
5	87	5	87	411	12%	1.000	1.100

ESTIMATED

AADT
3235

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

1.h

STATION: **534822**

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Northbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 23
DATE OF COUNT: 06/03/2019
NOTES LANE 0: North

FROM: **COMMERCE DRIVE**
REC. SERIAL #: W807
PLACEMENT: 151' N of Sunshine Dr
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS

TO: **N FRENCH RD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05V23aTTG5196

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

COUNT TAKEN BY: ORG CODE: TTG INITIALS: DKS
PROCESSED BY: ORG CODE: DOT INITIALS: JH

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	S																											
2	S																											
3	M																**774**	**1037**	**1082**	**627**	**443**	**469**	**345**	**209**	**140**			
4	T	**69**	**39**	**23**	**11**	**18**	**46**	**199**	**447**	**506**	**431**	**399**	**484**	**556**	**524**	**607**	**754**	**1009**	**977**	**661**	**468**	**428**	**347**	**201**	**141**	9345	1009	16
5	W	**83**	**50**	**29**	**19**	**27**	**43**	**207**	**467**	**509**	**430**	**409**	**541**	**597**	**521**	**671**	**841**	**1058**	**958**	**630**	**444**	**451**	**358**	**195**	**135**	9673	1058	16
6	T	**89**	**37**	**19**	**18**	**19**	**69**	**186**	**466**	**515**	**474**	**403**	**509**	**563**	**563**	**658**	**825**	**1015**	**1079**	**699**	**549**	**498**	**378**	**235**				
7	F																											
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26	W																											
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28	F																											
29	S																											
30	S																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																									ADT
79	**41**	**24**	**16**	**21**	**52**	**194**	**454**	**503**	**439**	**399**	**504**	**565**	**529**	**637**	**788**	**1017**	**1011**	**645**	**470**	**456**	**352**	**207**	**137**	**9540**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	80	4	80	1017	11%	0.987	1.113

ESTIMATED (one way)

AADT
8571

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Southbound FACTOR GROUP: 30
STATE DIR CODE: 2 WK OF YR: 23
DATE OF COUNT: 06/03/2019
NOTES LANE 0: South

FROM: **COMMERCE DRIVE**
REC. SERIAL #: R314
PLACEMENT: 151' N of Sunshine Dr
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS

TO: **N FRENCH RD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05V23aTTG5196

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

COUNT TAKEN BY: ORG CODE: TTG INITIALS: DKS
PROCESSED BY: ORG CODE: DOT INITIALS: JH

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	S																											
2	S																											
3	M																**699**	**811**	**832**	**567**	**382**	**321**	**258**	**169**	**84**			
4	T	**43**	**33**	**20**	**20**	**51**	**171**	**524**	**1071**	**994**	**566**	**536**	**553**	**542**	**550**	**618**	**636**	**794**	**850**	**622**	**297**	**303**	**219**	**180**	**95**	10288	1071	7
5	W	**55**	**29**	**17**	**25**	**42**	**175**	**509**	**1093**	**1076**	**641**	**534**	**616**	**658**	**581**	**586**	**741**	**804**	**788**	**592**	**379**	**319**	**248**	**132**	**88**	10728	1093	7
6	T	**51**	**28**	**12**	**19**	**45**	**168**	**510**	**1095**	**978**	**632**	**570**	**657**	**697**	**639**	**635**	**714**	**823**	**897**	**616**	**377**	**315**	**308**	**189**				
7	F																											
8	S																											
9	S																											
10	M																											
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12	W																											
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18	T																											
19	W																											
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28	F																											
29	S																											
30	S																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																									ADT
49	**30**	**16**	**21**	**45**	**169**	**507**	**1072**	**1003**	**605**	**540**	**601**	**624**	**582**	**605**	**689**	**797**	**831**	**591**	**354**	**310**	**255**	**166**	**88**	**10550**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	80	4	80	1072	10%	0.987	1.113

ESTIMATED (one way)

AADT
9479

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD** FROM: **N ELLICOTT RD** TO: **COMMERCE DRIVE** COUNTY: **Erie**

DIRECTION: Northbound FACTOR GROUP: 30 REC. SERIAL #: W796 FUNC. CLASS: 16 TOWN:

STATE DIR CODE: 1 WK OF YR: 15 PLACEMENT: 605ft N of N Ellicott Creek NHS: no LION#:

DATE OF COUNT: 04/06/2020 @ REF MARKER: JURIS: Village BIN: 3367090

NOTES LANE 1: North ADDL DATA: Class Speed CC Stn: RR CROSSING:

NOTES LANE 2: North COUNT TYPE: VEHICLES BATCH ID: DOT-R05C15cTTG5196 HPMS SAMPLE:

COUNT TAKEN BY: ORG CODE: TTG INITIALS: JB PROCESSED BY: ORG CODE: DOT INITIALS: CPA

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M															**393**	**465**	**479**	**413**	**323**	**216**	**173**	**102**	**83**	**53**			
7	T	**35**	**23**	**26**	**24**	**22**	**64**	**243**	**301**	**262**	**259**	**316**	**328**	**380**	**389**	**430**	**478**	**462**	**403**	**294**	**237**	**166**	**120**	**81**	**65**	5408	478	15
8	W	**30**	**26**	**25**	**16**	**18**	**87**	**235**	**303**	**264**	**225**	**242**	**286**	**320**	**329**	**353**	**467**	**400**	**397**	**318**	**242**	**183**	**135**	**90**	**75**	5066	467	15
9	T	**40**	**22**	**24**	**22**	**23**	**78**	**231**	**270**	**258**	**239**	**266**	**294**	**346**	**309**	**418**	**419**	**477**	**421**	**284**	**231**	**146**	**114**	**96**	**72**	5100	477	16
10	F	**44**	**29**	**25**	**26**	**19**	**53**	**164**	**213**	**248**	**199**																	
11	S																											
12	S																											
13	M																											
14	T																											
15	W																											
16	T																											
17	F																											
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19	S																											
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27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

37	**25**	**25**	**22**	**20**	**70**	**218**	**272**	**258**	**230**	**275**	**303**	**349**	**342**	**398**	**457**	**454**	**408**	**305**	**232**	**167**	**118**	**88**	**66**

ADT **5139**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	**ESTIMATED**
5	92	5	92	457	9%	1.000	1.054	**AADT 4876**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD** FROM: **N ELLICOTT RD** TO: **COMMERCE DRIVE** COUNTY: **Erie**

DIRECTION: Southbound FACTOR GROUP: 30 REC. SERIAL #: JH88 FUNC. CLASS: 16 TOWN:

STATE DIR CODE: 2 WK OF YR: 15 PLACEMENT: 605ft N of N Ellicott Creek NHS: no LION#:

DATE OF COUNT: 04/06/2020 @ REF MARKER: JURIS: Village BIN: 3367090

NOTES LANE 1: South ADDL DATA: Class Speed CC Stn: RR CROSSING:

NOTES LANE 2: South COUNT TYPE: VEHICLES BATCH ID: DOT-R05C15cTTG5196 HPMS SAMPLE:

COUNT TAKEN BY: ORG CODE: TTG INITIALS: JB PROCESSED BY: ORG CODE: DOT INITIALS: CPA

DATE	DAY	AM 12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	PM 12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M															**404**	**497**	**481**	**434**	**284**	**212**	**129**	**97**	**72**	**69**			
7	T	**31**	**29**	**9**	**16**	**27**	**86**	**208**	**320**	**270**	**294**	**276**	**331**	**371**	**388**	**428**	**472**	**470**	**384**	**262**	**229**	**133**	**86**	**70**	**82**	5272	472	15
8	W	**35**	**21**	**15**	**15**	**28**	**88**	**220**	**300**	**264**	**272**	**320**	**266**	**314**	**227**	**248**	**298**	**282**	**248**	**187**	**129**	**97**	**70**	**44**	**58**	4046	320	10
9	T	**25**	**17**	**11**	**12**	**17**	**52**	**122**	**173**	**154**	**137**	**186**	**198**	**222**	**212**	**224**	**308**	**256**	**281**	**165**	**153**	**91**	**74**	**41**	**48**	3179	308	15
10	F	**25**	**9**	**13**	**13**	**20**	**38**	**116**	**194**	**135**	**149**																	
11	S																											
12	S																											
13	M																											
14	T																											
15	W																											
16	T																											
17	F																											
18	S																											
19	S																											
20	M																											
21	T																											
22	W																											
23	T																											
24	F																											
25	S																											
26	S																											
27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																								ADT
29	**19**	**12**	**14**	**23**	**66**	**166**	**247**	**206**	**213**	**261**	**265**	**302**	**276**	**326**	**394**	**372**	**337**	**224**	**181**	**112**	**82**	**57**	**64**	**4248**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
5	92	5	92	394	9%	1.000	1.054	**AADT 4030**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Northbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 28
DATE OF COUNT: 07/05/2016
NOTES LANE 0: NB 2 lane - 45 mph

COUNT TAKEN BY: ORG CODE: CSE INITIALS: CDM

FROM: **COMMERCE DRIVE**
REC. SERIAL #: 1867
PLACEMENT: 525 ft N of Bucyrus Dr
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS

PROCESSED BY: ORG CODE: MBN INITIALS: AHL

TO: **N FRENCH RD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05MBN-28-5-July-6-2016

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	F																											
2	S																											
3	S																											
4	M																											
5	T											**397**	**468**	**580**	**510**	**566**	**692**	**905**	**889**	**578**	**443**	**430**	**359**	**229**	**159**			
6	W	**73**	**44**	**20**	**17**	**22**	**45**	**168**	**374**	**471**	**384**	**409**	**448**	**529**	**483**	**557**	**696**	**887**	**1021**	**711**	**498**	**442**	**371**	**225**	**192**	9087	1021	17
7	T	**96**	**51**	**22**	**20**	**21**	**60**	**154**	**375**	**494**	**367**	**368**	**439**	**526**	**522**	**602**	**639**	**856**	**931**	**582**	**459**	**434**	**361**	**270**	**167**	8816	931	17
8	F	**105**	**57**	**27**	**25**	**36**	**53**	**138**	**358**	**407**																		
9	S																											
10	S																											
11	M																											
12	T																											
13	W																											
14	T																											
15	F																											
16	S																											
17	S																											
18	M																											
19	T																											
20	W																											
21	T																											
22	F																											
23	S																											
24	S																											
25	M																											
26	T																											
27	W																											
28	T																											
29	F																											
30	S																											
31	S																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
91	**51**	**23**	**21**	**26**	**53**	**153**	**369**	**457**	**376**	**391**	**452**	**545**	**505**	**575**	**676**	**883**	**947**	**624**	**467**	**435**	**364**	**241**	**173**	**8898**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	71	4	71	947	11%	1.000	1.093

ESTIMATED (one way)

AADT
8141

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

STATION: **534822**

New York State Department of Transportation
Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Southbound FACTOR GROUP: 30
STATE DIR CODE: 2 WK OF YR: 28
DATE OF COUNT: 07/05/2016
NOTES LANE 0: SB 2 lane - 45 mph

COUNT TAKEN BY: ORG CODE: CSE INITIALS: CDM

FROM: **COMMERCE DRIVE**
REC. SERIAL #: 1867
PLACEMENT: 525 ft N of Bucyrus Dr
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS

PROCESSED BY: ORG CODE: MBN INITIALS: AHL

TO: **N FRENCH RD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05MBN-28-5-July-6-2016

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	F																											
2	S																											
3	S																											
4	M																											
5	T											470	454	539	500	503	502	618	686	463	376	257	240	176	126			
6	W	56	33	9	16	32	135	372	705	742	499	460	444	525	530	497	544	627	705	507	365	306	289	206	108	8712	742	8
7	T	60	32	19	17	33	124	387	685	746	501	501	484	551	523	521	558	629	700	497	385	286	255	203	103	8800	746	8
8	F	65	31	30	28	35	111	354	655	571																		
9	S																											
10	S																											
11	M																											
12	T																											
13	W																											
14	T																											
15	F																											
16	S																											
17	S																											
18	M																											
19	T																											
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21	T																											
22	F																											
23	S																											
24	S																											
25	M																											
26	T																											
27	W																											
28	T																											
29	F																											
30	S																											
31	S																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
60	32	19	20	33	123	371	682	686	500	477	461	538	518	507	535	625	697	489	375	283	261	195	112	8599

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	71	4	71	697	8%	1.000	1.093

ESTIMATED (one way)

AADT
7867

ROAD #: **CR301** ROAD NAME: **SWEET HOME RD** FROM: **COMMERCE DRIVE** TO: **N FRENCH RD** COUNTY: **Erie**
STATION: **534822** STATE DIR CODE: **2** PLACEMENT: **525 ft N of Bucyrus Dr** **DATE OF COUNT: 07/05/2016**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR45** ROAD NAME: **DODGE RD**
DIRECTION: Eastbound FACTOR GROUP: 30
STATE DIR CODE: 6 WK OF YR: 46
DATE OF COUNT: 11/07/2016
NOTES LANE 1: One Lane EB - 35 MPH

COUNT TAKEN BY: ORG CODE: TTG INITIALS: DKS

FROM: **SWEET HOME RD**
REC. SERIAL #: EZ53
PLACEMENT: 850' E of Audubon Pkwy
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS
PROCESSED BY: ORG CODE: R05 INITIALS: RPJ

TO: **NY 270 CAMPBELL BLVD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05V46aTTG5196

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	T																											
2	W																											
3	T																											
4	F																											
5	S																											
6	S																											
7	M															**269**	**339**	**457**		**259**	**156**		**60**	**53**	**27**			
8	T	**37**	**11**	**6**	**3**	**4**	**20**												**482**	**264**	**153**	**114**	**75**	**55**	**30**			
9	W	**16**	**11**	**5**	**6**	**6**	**19**	**47**	**184**	**175**	**128**	**138**	**211**	**256**	**193**	**233**	**330**	**484**	**513**	**212**	**143**	**134**	**76**	**61**	**45**	3626	513	17
10	T	**16**	**7**	**2**	**6**	**5**	**17**	**53**	**204**	**170**	**144**	**152**	**213**	**250**	**220**	**268**	**365**	**466**	**447**	**226**	**159**	**141**	**94**	**62**	**43**	3730	466	16
11	F	**30**																										
12	S																											
13	S																											
14	M																											
15	T																											
16	W																											
17	T																											
18	F																											
19	S																											
20	S																											
21	M																											
22	T																											
23	W																											
24	T																											
25	F																											
26	S																											
27	S																											
28	M																											
29	T																											
30	W																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
25	**10**	**4**	**5**	**5**	**19**	**49**	**191**	**170**	**134**	**143**	**209**	**250**	**203**	**254**	**341**	**463**	**475**	**237**	**151**	**128**	**75**	**57**	**36**	**3634**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
5	70	5	70	475	13%	0.987	1.017

ESTIMATED

AADT
3573

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR45** ROAD NAME: **DODGE RD** FROM: **SWEET HOME RD** TO: **NY 270 CAMPBELL BLVD** COUNTY: **Erie**

DIRECTION: Westbound FACTOR GROUP: 30 REC. SERIAL #: EZ96 FUNC. CLASS: 16 TOWN:

STATE DIR CODE: 7 WK OF YR: 46 PLACEMENT: 850' E of Audubon Pkwy NHS: no LION#:

DATE OF COUNT: 11/07/2016 @ REF MARKER: JURIS: Village BIN:

NOTES LANE 1: One Lane WB - 35 MPH ADDL DATA: CC Stn: RR CROSSING:

COUNT TYPE: AXLE PAIRS BATCH ID: DOT-R05V46aTTG5196 HPMS SAMPLE:

COUNT TAKEN BY: ORG CODE: TTG INITIALS: DKS PROCESSED BY: ORG CODE: R05 INITIALS: RPJ

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	T																											
2	W																											
3	T																											
4	F																											
5	S																											
6	S																											
7	M															**233**	**227**	**267**		**162**	**127**		**54**	**33**	**19**			
8	T	**9**	**6**	**2**	**10**	**9**	**34**												**329**	**165**	**105**	**91**	**48**	**40**	**21**			
9	W	**7**	**7**	**2**	**14**	**7**	**38**	**138**	**416**	**453**	**239**	**188**	**168**	**207**	**226**	**250**	**227**	**241**	**275**	**178**	**103**	**81**	**63**	**43**	**14**	3585	453	8
10	T	**10**	**5**	**1**	**9**	**14**	**37**	**144**	**421**	**469**	**222**	**187**	**175**	**209**	**212**	**227**	**213**	**250**	**254**	**178**	**120**	**70**	**64**	**38**	**16**	3545	469	8
11	F	**9**																										
12	S																											
13	S																											
14	M																											
15	T																											
16	W																											
17	T																											
18	F																											
19	S																											
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21	M																											
22	T																											
23	W																											
24	T																											
25	F																											
26	S																											
27	S																											
28	M																											
29	T																											
30	W																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
9	**6**	**2**	**11**	**10**	**36**	**139**	**413**	**455**	**227**	**186**	**170**	**205**	**216**	**234**	**219**	**250**	**282**	**169**	**113**	**80**	**56**	**38**	**18**	**3544**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
5	70	5	70	455	13%	0.987	1.017	**AADT 3485**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

STATION: 535024

New York State Department of Transportation
Roadway Traffic Count Hourly Report

ROUTE/ROAD:	COMMERCE DR	FROM:	WOODRIDGE DR	TO:	SWEET HOME RD	REGION-COUNTY:	5-ERIE
FED DIR CODE:	3, 7	REF. MARKER:		FUNC. CLASS:	19 - U Local System	MUNI:	Amherst-Town-0019
ST DIR CODE:	7	END MILEPOST:	.82	FACTOR GROUP:	30	BIN:	
DOT ID:	157446	LANES BY DIR:	1 East 1 West	CC STN:		RR CROSSING:	
BEGIN DATE:	9/21/2014	WEEK OF YEAR:	38	ADDL DATA:		HPMS SAMPLE:	
NOTES 1:	West	PLACEMENT:	.2m E of John Glenn DR	JURISDICTION:	03-Town	1 WAY CODE:	
NOTES 2:						COUNT TYPE:	Vehicle
TAKEN BY:	TTG-DKS	PROCESSED BY:	DOT-VJR	BATCH ID:	DOT-R5 WW39A	SPEED LIMIT:	

DATE	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	DAILY TOTAL	HIGH COUNT	HIGH HOUR
9/21, Sun																	**82**	**77**	**96**	**81**	**42**	**34**	**28**	**12**	452		
9/22, Mon	**13**	**7**	**4**	**3**	**28**	**66**	**336**	**761**	**730**	**393**	**330**	**457**	**486**	**431**	**429**	**673**	**855**	**684**	**321**	**185**	**154**	**82**	**34**	**35**	7497	855	16-17
9/23, Tue	**28**	**5**	**45**	**6**	**36**	**69**	**347**	**783**	**739**	**414**	**319**	**330**	**491**	**397**	**374**	**650**	**842**	**707**	**351**	**226**	**137**	**72**	**35**	**28**	7431	842	16-17
9/24, Wed	**24**	**14**	**42**	**6**	**31**	**61**	**351**	**761**	**721**	**414**	**288**	**355**	**467**	**408**	**447**	**646**	**785**	**759**	**322**	**215**	**127**	**88**	**39**	**36**	7407	785	16-17
9/25, Thu	**22**	**11**	**37**	**8**	**27**	**77**	**336**																		518		
AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6 AM to Fri Noon)																									**AWDT**		
	25	**10**	**41**	**7**	**31**	**69**	**343**	**768**	**730**	**407**	**312**	**381**	**481**	**412**	**417**	**656**	**827**	**717**	**331**	**209**	**139**	**81**	**36**	**33**	7463		

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY Roadway High Hour	Roadway % of day	East High Hour	East % of day	West High Hour	West % of day	ESTIMATED AADT Roadway	East	West
4	87	3	73	827	11.1	578	14.2	431	12.7	7027	3821	3206

FACTOR

Month	Seasonal	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Axl
9	1.06	1.00	1.00	1.00	1.00	1.00			1.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

New York State Department of Transportation

EB Traffic Count Hourly Report

STATION: 535024

ROUTE/ROAD:	COMMERCE DR	FROM:	WOODRIDGE DR	TO:	SWEET HOME RD	REGION-COUNTY:	5-ERIE
FED DIR CODE:	3	REF. MARKER:		FUNC. CLASS:	19 - U Local System	MUNI:	Amherst-Town-0019
ST DIR CODE:	7	END MILEPOST:	.82	FACTOR GROUP:	30	BIN:	
DOT ID:	157446	LANES BY DIR:	1 East	CC STN:		RR CROSSING:	
BEGIN DATE:	9/21/2014	WEEK OF YEAR:	38	ADDL DATA:		HPMS SAMPLE:	
NOTES 1:	West	PLACEMENT:	.2m E of John Glenn DR	JURISDICTION:	03-Town	1 WAY CODE:	
NOTES 2:						COUNT TYPE:	Vehicle
TAKEN BY:	TTG-DKS	PROCESSED BY:	DOT-VJR	BATCH ID:	DOT-R5 WW39A	SPEED LIMIT:	

DATE	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	DAILY TOTAL	HIGH COUNT	HIGH HOUR
9/21, Sun																	**39**	**33**	**38**	**49**	**21**	**12**	**10**	**5**	207		
9/22, Mon	**5**	**1**	**2**	**1**	**9**	**26**	**65**	**334**	**289**	**185**	**176**	**304**	**261**	**213**	**214**	**406**	**583**	**509**	**192**	**123**	**78**	**31**	**13**	**21**	4041	583	16-17
9/23, Tue	**22**	**4**	**41**	**1**	**14**	**25**	**74**	**351**	**315**	**193**	**149**	**186**	**266**	**208**	**179**	**402**	**602**	**534**	**213**	**132**	**68**	**31**	**11**	**16**	4037	602	16-17
9/24, Wed	**20**	**12**	**39**	**1**	**13**	**20**	**80**	**354**	**292**	**192**	**147**	**199**	**258**	**203**	**224**	**402**	**550**	**577**	**179**	**132**	**67**	**40**	**18**	**20**	4039	577	17-18
9/25, Thu	**17**	**7**	**34**	**2**	**10**	**32**	**72**																		174		
AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6 AM to Fri Noon)																									**AWDT**		
	20	**8**	**38**	**1**	**12**	**26**	**73**	**346**	**299**	**190**	**157**	**230**	**262**	**208**	**206**	**403**	**578**	**540**	**195**	**129**	**71**	**34**	**14**	**19**	4058		

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY Roadway High Hour	Roadway % of day	East High Hour	East % of day	West High Hour	West % of day
4	87	3	73	827	11.1	578	14.2	431	12.7

ESTIMATED AADT		
Roadway	East	West
7027	3821	3206

FACTOR

Month	Seasonal	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Axl
9	1.06	1.00	1.00	1.00	1.00	1.00			1.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

New York State Department of Transportation

WB Traffic Count Hourly Report

STATION: 535024

ROUTE/ROAD:	COMMERCE DR	FROM:	WOODRIDGE DR	TO:	SWEET HOME RD	REGION-COUNTY:	5-ERIE
FED DIR CODE:	7	REF. MARKER:		FUNC. CLASS:	19 - U Local System	MUNI:	Amherst-Town-0019
ST DIR CODE:	7	END MILEPOST:	.82	FACTOR GROUP:	30	BIN:	
DOT ID:	157446	LANES BY DIR:	1 West	CC STN:		RR CROSSING:	
BEGIN DATE:	9/21/2014	WEEK OF YEAR:	38	ADDL DATA:		HPMS SAMPLE:	
NOTES 1:	West	PLACEMENT:	.2m E of John Glenn DR	JURISDICTION:	03-Town	1 WAY CODE:	
NOTES 2:						COUNT TYPE:	Vehicle
TAKEN BY:	TTG-DKS	PROCESSED BY:	DOT-VJR	BATCH ID:	DOT-R5 WW39A	SPEED LIMIT:	

DATE	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	DAILY TOTAL	HIGH COUNT	HIGH HOUR
9/21, Sun																	**43**	**44**	**58**	**32**	**21**	**22**	**18**	**7**	245		
9/22, Mon	**8**	**6**	**2**	**2**	**19**	**40**	**271**	**427**	**441**	**208**	**154**	**153**	**225**	**218**	**215**	**267**	**272**	**175**	**129**	**62**	**76**	**51**	**21**	**14**	3456	441	08-09
9/23, Tue	**6**	**1**	**4**	**5**	**22**	**44**	**273**	**432**	**424**	**221**	**170**	**144**	**225**	**189**	**195**	**248**	**240**	**173**	**138**	**94**	**69**	**41**	**24**	**12**	3394	432	07-08
9/24, Wed	**4**	**2**	**3**	**5**	**18**	**41**	**271**	**407**	**429**	**222**	**141**	**156**	**209**	**205**	**223**	**244**	**235**	**182**	**143**	**83**	**60**	**48**	**21**	**16**	3368	429	08-09
9/25, Thu	**5**	**4**	**3**	**6**	**17**	**45**	**264**																		344		
AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6 AM to Fri Noon)																									**AWDT**		
	5	**2**	**3**	**5**	**19**	**43**	**270**	**422**	**431**	**217**	**155**	**151**	**220**	**204**	**211**	**253**	**249**	**177**	**137**	**80**	**68**	**47**	**22**	**14**	3405		

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY Roadway High Hour	Roadway % of day	East High Hour	East % of day	West High Hour	West % of day	ESTIMATED AADT Roadway	East	West
4	87	3	73	827	11.1	578	14.2	431	12.7	7027	3821	3206

FACTOR

Month	Seasonal	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Axl
9	1.06	1.00	1.00	1.00	1.00	1.00			1.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Northbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 44
DATE OF COUNT: 10/24/2016
NOTES LANE 1: North
NOTES LANE 2: North
COUNT TAKEN BY: ORG CODE: TTG INITIALS: JM

FROM: **N ELLICOTT RD**
REC. SERIAL #: GC47
PLACEMENT: 654ft N of N Ellicott Creek
@ REF MARKER:
ADDL DATA: Class Speed
COUNT TYPE: VEHICLES
PROCESSED BY: ORG CODE: DOT INITIALS: SJW

TO: **COMMERCE DRIVE**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05C44aTTG5196

COUNTY: **Erie**
TOWN:
LION#:
BIN: 3367090
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	S																											
2	S																											
3	M																											
4	T																											
5	W																											
6	T																											
7	F																											
8	S																											
9	S																											
10	M																											
11	T																											
12	W																											
13	T																											
14	F																											
15	S																											
16	S																											
17	M																											
18	T																											
19	W																											
20	T																											
21	F																											
22	S																											
23	S																											
24	M																				**551**	**457**	**315**	**218**	**155**			
25	T	**95**	**35**	**29**	**38**	**46**	**131**	**528**	**977**	**1072**	**621**	**470**	**562**	**659**	**616**	**761**	**837**	**1028**	**1036**	**714**	**520**	**461**	**360**	**232**	**156**	11984	1072	8
26	W	**87**	**42**	**14**	**36**	**41**	**120**	**507**	**931**	**1085**	**628**	**527**	**554**	**618**	**722**	**758**	**852**	**1058**	**1061**	**744**	**555**	**425**	**426**	**251**	**161**	12203	1085	8
27	T	**93**	**37**	**25**	**42**	**40**	**142**	**488**	**951**	**1036**	**600**	**492**	**506**	**588**	**599**	**693**	**862**	**982**	**1040**	**630**	**540**	**454**	**365**	**282**	**188**	11675	1040	17
28	F	**98**	**56**	**37**	**43**	**40**	**111**	**446**	**959**	**988**	**626**																	
29	S																											
30	S																											
31	M																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
93	**42**	**26**	**40**	**42**	**126**	**492**	**954**	**1045**	**619**	**496**	**541**	**622**	**646**	**737**	**850**	**1023**	**1046**	**696**	**542**	**449**	**366**	**246**	**165**	**11904**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	87	4	87	1046	9%	1.000	1.074

ESTIMATED

AADT
11084

ROAD #: **CR301** ROAD NAME: **SWEET HOME RD** FROM: **N ELLICOTT RD** TO: **COMMERCE DRIVE** COUNTY: **Erie**
STATION: **536335** STATE DIR CODE: **1** PLACEMENT: **654ft N of N Ellicott Creek** **DATE OF COUNT: 10/24/2016**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Southbound FACTOR GROUP: 30
STATE DIR CODE: 2 WK OF YR: 44
DATE OF COUNT: 10/24/2016
NOTES LANE 1: South
NOTES LANE 2: South
COUNT TAKEN BY: ORG CODE: TTG INITIALS: MJ

FROM: **N ELLICOTT RD**
REC. SERIAL #: L442
PLACEMENT: 654ft N of N Ellicott Creek
@ REF MARKER:
ADDL DATA: Class Speed
COUNT TYPE: VEHICLES
PROCESSED BY: ORG CODE: DOT INITIALS: SJW

TO: **COMMERCE DRIVE**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05C44aTTG5196

COUNTY: **Erie**
TOWN:
LION#:
BIN: 3367090
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	S																											
2	S																											
3	M																											
4	T																											
5	W																											
6	T																											
7	F																											
8	S																											
9	S																											
10	M																											
11	T																											
12	W																											
13	T																											
14	F																											
15	S																											
16	S																											
17	M																											
18	T																											
19	W																											
20	T																											
21	F																											
22	S																											
23	S																											
24	M																				**399**	**311**	**182**	**134**	**102**			
25	T	**69**	**25**	**16**	**24**	**51**	**179**	**474**	**943**	**769**	**596**	**571**	**643**	**718**	**609**	**625**	**1000**	**1321**	**1416**	**779**	**448**	**300**	**211**	**146**	**121**	12054	1416	17
26	W	**57**	**23**	**24**	**40**	**51**	**179**	**485**	**1005**	**901**	**661**	**630**	**647**	**771**	**713**	**752**	**1206**	**1380**	**1346**	**870**	**459**	**302**	**274**	**166**	**118**	13060	1380	16
27	T	**83**	**42**	**20**	**29**	**70**	**156**	**527**	**1040**	**912**	**650**	**572**	**592**	**808**	**663**	**688**	**983**	**1331**	**1307**	**742**	**489**	**337**	**227**	**167**	**125**	12560	1331	16
28	F	**58**	**43**	**18**	**35**	**45**	**162**	**447**	**952**	**841**	**664**																	
29	S																											
30	S																											
31	M																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

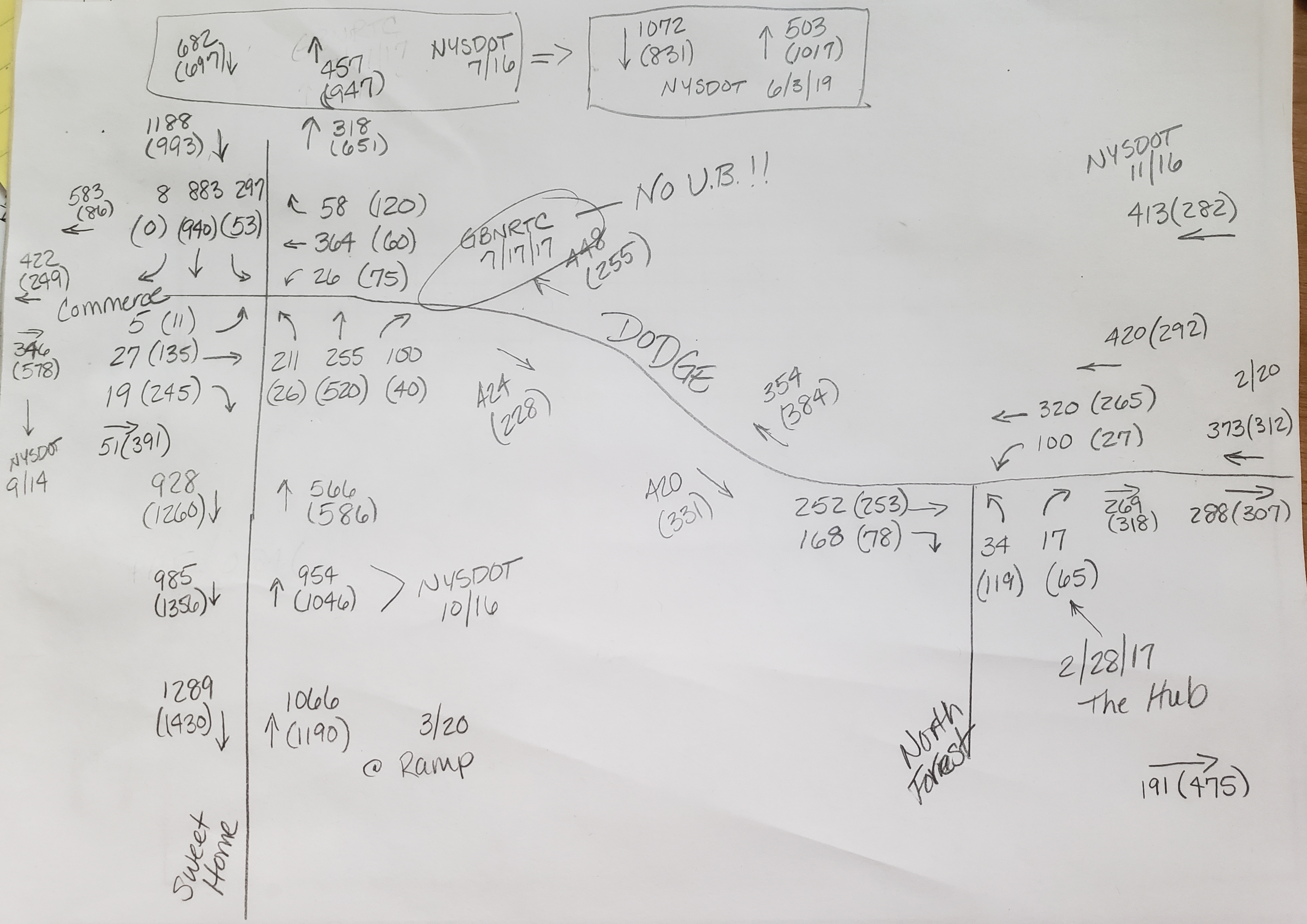
12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
67	**33**	**20**	**32**	**54**	**169**	**483**	**985**	**856**	**643**	**591**	**627**	**766**	**662**	**688**	**1063**	**1344**	**1356**	**797**	**449**	**312**	**224**	**153**	**116**	**12490**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	87	4	87	1356	11%	1.000	1.074

ESTIMATED

AADT
11629

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



682 (697)
457 (947)
NYSDOT 7/16
1072 (831)
503 (1017)
NYSDOT 6/3/19
1188 (993)
318 (651)
583 (86)
8 883 297
(0) (940) (53)
58 (120)
364 (60)
26 (75)
GBNRTC 7/17/17
NO U.B.!!
448 (255)
NYSDOT 11/16
413 (282)
422 (249)
Commerce
5 (11)
27 (135)
19 (245)
346 (578)
211 255 100
(26) (520) (40)
DODGE
424 (228)
354 (384)
420 (292)
2/20
320 (265)
100 (27)
373 (312)
51 (391)
NYSDOT 9/14
928 (1260)
566 (586)
420 (331)
252 (253)
168 (78)
34 (119)
17 (65)
269 (318)
288 (307)
985 (1356)
954 (1046)
NYSDOT 10/16
2/28/17
The Hub
1289 (1430)
1066 (1190)
3/20
@ Ramp
North Forest
191 (475)
Sweet Home

SRF ASSOCIATES
www.srfa.net
Transportation Planning / Engineering / Design

Muir Woods Site A, Town of Amherst, NY

Documentation of Ambient Traffic Volume Growth

Roadway	Segment starts at	Segment end at	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Annual Growth
North Forest Road	1.0 N of NY263/Turtle Creek Apt DWY	Dodge Road								2,189			1,809		1,825	1,845		-2.81%
Dodge Road	Sweet Home Road	NY270 Campbell Road					6,363			5,440				7,058	6,738			0.72%
Sweet Home Road	Commerce Drive	North French Road			16,280				16,606		15,052			16,008			18,050	0.86%
Sweet Home Road	N Ellicott Road	Commerce Drive	23,552		21,115			21,021						21,437				-0.78%
Commerce Drive	Woodbridge Road	Sweet Home Road										7,027						

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

PROJECT DETAILS

Project Name:	Muir Woods	Type of Project:	
Project No:		City:	
Country:		Built-up Area(Sq.ft):	
Analyst Name:	Amy Dake	Clients Name:	
Date:	6/22/2020	ZIP/Postal Code:	
State/Province:		No. of Scenarios:	2
Analysis Region:			

SCENARIO SUMMARY

Scenarios	Name	No. of Land Uses	Phases of Development	No. of Years to Project Traffic	User Group	Estimated New Vehicle Trips		
						Entry	Exit	Total
Scenario - 1	AM Peak Hour	5	1	0		47	85	132
Scenario - 2	PM Peak Hour	5	1	0		106	82	181

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Scenario - 1

Scenario Name: AM Peak Hour
User Group:
Dev. phase: 1
No. of Years to Project Traffic : 0
Analyst Note:
Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method / Rate/Equation	Entry / Split%	Exit / Split%	Total
210 - Single-Family Detached Housing	General Urban/Suburban	Dwelling Units	90	Weekday, Peak Hour of Adjacent Street Traffic,	Average	17	50	67
Data Source: Trip Gen Manual, 10th Ed +					0.74	25%	75%	
220 - Multifamily Housing (Low-Rise)	General Urban/Suburban	Dwelling Units	12	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LOG)	1	5	6
Data Source: Trip Gen Manual, 10th Ed +					Ln(T) =0.95Ln(X) - 0.51	23%	77%	
221 - Multifamily Housing (Mid-Rise) [Private]	General Urban/Suburban	Dwelling Units	100	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LOG)	9	25	34
Data Source: Trip Gen Manual, 10th Ed +					Ln(T) =0.98Ln(X) - 0.98	26%	74%	
710 - General Office Building	General Urban/Suburban	1000 Sq. Ft. GFA	15	Weekday, Peak Hour of Adjacent Street Traffic,	Average	14	2	17
Data Source: Trip Gen Manual, 10th Ed +					1.16	86%	14%	
875 - Department Store	General Urban/Suburban	1000 Sq. Ft. GFA	15	Weekday, Peak Hour of Adjacent Street	Average	6	3	9
Data Source: Trip Gen Manual, 10th Ed +					0.58	64%	36%	

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
210 - Single-Family Detached Housing	100	100	1	1	25	75
220 - Multifamily Housing (Low-Rise)	100	100	1	1	23	77
221 - Multifamily Housing (Mid-Rise) [Private]	100	100	1	1	26	74
710 - General Office Building	100	100	1	1	86	14
875 - Department Store	100	100	1	1	64	36

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
210 - Single-Family Detached Housing	17	50	0	0	17	50
	67		0		67	
220 - Multifamily Housing (Low-Rise)	1	5	0	0	1	5
	6		0		6	
221 - Multifamily Housing (Mid-Rise) [Private]	9	25	0	0	9	25
	34		0		34	
710 - General Office Building	15	2	0	0	14	2
	17		0		17	
875 - Department Store	6	3	0	0	6	3
	9		0		9	

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
210 - Single-Family Detached Housing	17	50	67
220 - Multifamily Housing (Low-Rise)	1	5	6

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

221 - Multifamily Housing (Mid-Rise) [Private]	9	25	34
710 - General Office Building	14	2	17
875 - Department Store	6	3	9

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	47	85	132
External Vehicle Trips	47	85	132
New Vehicle Trips	47	85	132

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Scenario - 2

Scenario Name: PM Peak Hour
User Group:
Dev. phase: 1
No. of Years to Project Traffic : 0
Analyst Note:
Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method / Rate/Equation	Entry / Split%	Exit / Split%	Total
210 - Single-Family Detached Housing	General Urban/Suburban	Dwelling Units	90	Weekday, Peak Hour of Adjacent Street Traffic,	Average	56	33	89
Data Source: Trip Gen Manual, 10th Ed +					0.99	63%	37%	
220 - Multifamily Housing (Low-Rise)	General Urban/Suburban	Dwelling Units	12	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LOG)	6	3	9
Data Source: Trip Gen Manual, 10th Ed +					Ln(T) =0.89Ln(X) - 0.02	63%	37%	
221 - Multifamily Housing (Mid-Rise)	General Urban/Suburban	Dwelling Units	100	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LOG)	27	17	44
Data Source: Trip Gen Manual, 10th Ed +					Ln(T) =0.96Ln(X) - 0.63	61%	39%	
710 - General Office Building	General Urban/Suburban	1000 Sq. Ft. GFA	15	Weekday, Peak Hour of Adjacent Street Traffic,	Average	2	14	17
Data Source: Trip Gen Manual, 10th Ed +					1.15	16%	84%	
875 - Department Store [Private]	General Urban/Suburban	1000 Sq. Ft. GFA	15	Weekday, Peak Hour of Adjacent Street	Average	15	15	30
Data Source: Trip Gen Manual, 10th Ed +					1.95	50%	50%	

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
210 - Single-Family Detached Housing	100	100	1	1	63	37
220 - Multifamily Housing (Low-Rise)	100	100	1	1	63	37
221 - Multifamily Housing (Mid-Rise)	100	100	1	1	61	39
710 - General Office Building	100	100	1	1	16	84
875 - Department Store [Private]	100	100	1	1	50	50

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
210 - Single-Family Detached Housing	56	33	0	0	56	33
	89		0		89	
220 - Multifamily Housing (Low-Rise)	6	3	0	0	6	3
	9		0		9	
221 - Multifamily Housing (Mid-Rise)	27	17	0	0	27	17
	44		0		44	
710 - General Office Building	3	14	0	0	2	14
	17		0		17	
875 - Department Store [Private]	15	15	0	0	15	15
	30		0		30	

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
210 - Single-Family Detached Housing	56	33	89
220 - Multifamily Housing (Low-Rise)	6	3	9

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

221 - Multifamily Housing (Mid-Rise)	27	17	44
710 - General Office Building	2	14	17
875 - Department Store [Private]	15	15	30

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	106	82	188
External Vehicle Trips	106	82	188
New Vehicle Trips	106	82	188

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PROPOSED MUIR WOODS SECTION A
TOWN OF AMHERST, NY
AM PEAK

Fig 3 Fig 4 Fig 6 Fig 7 Fig 8

Num of yrs: 2

LOCATION NUMBER	INTERSECTION DESCRIPTION	2020 Existing Volume	2022 Bkgd Vol 1.00%	Muir Woods Site B	2022 Bkgrd Volume	Proposed Muir Woods Section A Enter Dist. %	Exit Dist. %	Trips IN 47	Trips OUT 85	Total Site Trips	FULL Build Volumes
1	Sweet Home Road Dodge Road/Commerce Drive										
	SR	8	8		8						8
	ST	883	901	15	916						916
	SL	297	303		303	20%		9		9	312
	WR	58	59		59		20%		17	17	76
	WT	364	371		371		10%		9	9	380
	WL	26	27		27		25%		21	21	48
	NR	100	102		102	25%		12		12	114
	NT	450	459	11	470						470
	NL	211	215		215						215
	ER	50	51		51						51
	ET	30	31		31	10%		5		5	36
	EL	10	10		10						10
2	Dodge Road Proposed North Driveway										
	SR						25%		21	21	21
	ST										
	SL						15%		13	13	13
	WR					10%		5		5	5
	WT	361	368	18	386		30%		26	26	412
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	458	467	11	478	25%		12		12	490
	EL					30%		14		14	14
3	Dodge Road Proposed Middle Out Driveway										
	SR						10%		9	9	9
	ST										
	SL						5%		4	4	4
	WR										
	WT	361	368	18	386	10%	15%	5	13	17	403
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	458	467	11	478	25%	15%	12	13	25	503
	EL										
4	Dodge Road Proposed Middle In Driveway										
	SR										
	ST										
	SL										
	WR					5%		2		2	2
	WT	361	368	18	386	10%	20%	5	17	22	408
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	458	467	11	478	15%	20%	7	17	24	502
	EL					10%		5		5	5
5	Dodge Road Proposed South Driveway										
	SR						20%		17	17	17
	ST										
	SL						25%		21	21	21
	WR					30%		14		14	14
	WT	361	368	18	386	15%		7		7	393
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	458	467	11	478		20%		17	17	495
	EL					15%		7		7	7
6	Dodge Road North Forest Road										
	SR										
	ST										
	SL										
	WR										
	WT	323	329	18	347	30%		14		14	361
	WL	102	104		104						104
	NR	20	20		20						20
	NT										
	NL	38	39		39	15%		7		7	46
	ER	170	173		173		15%		13	13	186
	ET	288	294	11	305		30%		26	26	331
	EL										

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PROPOSED MUIR WOODS SECTION A
TOWN OF AMHERST, NY
PM PEAK

Fig 3 Fig 4 Fig 6 Fig 7 Fig 8

Num of yrs: 2

LOCATION NUMBER	INTERSECTION DESCRIPTION	2020 Existing Volume	2022 Bkgd Vol 1.00%	Muir Woods Site B	2022 Bkgrd Volume	Proposed Muir Woods Section A Enter Dist. %	Proposed Muir Woods Section A Exit Dist. %	Proposed Muir Woods Section A Trips IN 106	Proposed Muir Woods Section A Trips OUT 82	Total Site Trips	FULL Build Volumes
1	Sweet Home Road Dodge Road/Commerce Drive										
	SR	10	10		10						10
	ST	940	959	21	980						980
	SL	60	61		61	20%		21		21	82
	WR	150	153		153		20%		16	16	169
	WT	60	61		61		10%		8	8	69
	WL	75	77		77		25%		21	21	98
	NR	125	128		128	25%		27		27	155
	NT	740	755	13	768						768
	NL	175	179		179						179
	ER	260	265		265						265
	ET	150	153		153	10%		11		11	164
	EL	25	26		26						26
2	Dodge Road Proposed North Driveway										
	SR						25%		21	21	21
	ST										
	SL						15%		12	12	12
	WR					10%		11		11	11
	WT	389	397	32	429		30%		25	25	454
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	339	346	13	359	25%		27		27	386
	EL					30%		32		32	32
3	Dodge Road Proposed Middle Out Driveway										
	SR						10%		8	8	8
	ST										
	SL						5%		4	4	4
	WR										
	WT	389	397	32	429	10%	15%	11	12	23	452
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	339	346	13	359	25%	15%	27	12	39	398
	EL										
4	Dodge Road Proposed Middle In Driveway										
	SR										
	ST										
	SL										
	WR					5%		5		5	5
	WT	389	397	32	429	10%	20%	11	16	27	456
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	339	346	13	359	15%	20%	16	16	32	391
	EL					10%		11		11	11
5	Dodge Road Proposed South Driveway										
	SR						20%		16	16	16
	ST										
	SL						25%		21	21	21
	WR					30%		32		32	32
	WT	389	397	32	429	15%		16		16	445
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	339	346	13	359		20%		16	16	375
	EL					15%		16		16	16
6	Dodge Road North Forest Road										
	SR										
	ST										
	SL										
	WR										
	WT	268	273	32	305	30%		32		32	337
	WL	30	31		31						31
	NR	68	69		69						69
	NT										
	NL	121	123		123	15%		16		16	139
	ER	81	83		83		15%		12	12	95
	ET	258	263	13	276		30%		25	25	301
	EL										

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SWEET HOME/DODGE/COMMERCE

Phase Times (next/2/2/2, next/2/2/7/6) E/W									
	1	2	3	4	5	6 SB	7	8	
Movement	SBL	NB			NBL	[redacted]		[redacted]	
Minimum Green	10	40	0	0	10	40	0	15	0 - 255 sec.
Passage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 sec.
Yellow	3.2	4.3	0.0	0.0	3.2	4.3	0.0	3.9	0.0 - 25.5 sec.
Red Clearance	1.1	1.4	0.0	0.0	1.1	1.4	0.0	1.8	0.0 - 25.5 sec. or 0 - 255 sec.
Max 1	20	45	0	0	20	45	0	30	0 - 255 sec
Max 2	0	0	0	0	0	0	0	0	0 - 255 sec
Walk	0	7	0	0	0	7	0	7	0 - 255 sec
Ped Clear	0	15	0	0	0	15	0	15	0 - 255 sec
Seconds Per Actuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 sec.
Time Before Reduction	0	0	0	0	0	0	0	0	0 - 255 sec
Time to Reduce	0	0	0	0	0	0	0	0	0 - 255 sec
Minimum Gap	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0 - 25.5 sec.
Max Variable Initial	0	0	0	0	0	0	0	0	0 - 255 sec
Max Extend	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 sec.
Auto Max	0	0	0	0	0	0	0	0	0 - 255 sec
Inhibit Min Yellow									X = On
Red Decimal Off									X = On

Other Controller Functions (next/2/2/9)									
Phase -->	1	2	3	4	5	6	7	8	
Inhibit Simultaneous Gap Out									X = On
Last Car Passage	2	0 = recall phase, 1 = last car passage, 2 = NOT recall - Not last car passage							
Red Revert (+2seconds)	0.0	0 - 25.5 sec.							
Auto Ped Clear		X = On							
Flashing Don't Walk Thru Yellow		X = On							
Soft Recall / Red Rest Delay	0.0	0 - 25.5 sec.							
Change Sequence	X	X = On (After a download with a power on - off cycle)							
Phase -->	1	2	3	4	5	6	7	8	
Red Clear Extension Detector	0	0	0	0	0	0	0	0	0 = none 1 - 32 = detector 1 - 32
Red Clear Extension Red Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0 - 25.5 sec.

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A3

Level of Service: Criteria and Definitions

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Level of Service Criteria

Highway Capacity Manual 2016

SIGNALIZED INTERSECTIONS

Level of Service is a qualitative measure describing operational conditions within a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. Level of Service for signalized intersections is defined in terms of delay specifically, average total delay per vehicle for a 15 minute analysis period. The ranges are as follows:

Level of Service	Control Delay per vehicle (seconds)
A	< 10
B	10 – 20
C	20 – 35
D	35 – 55
E	55 – 80
F	>80

UNSIGNALIZED INTERSECTIONS

Level of Service for unsignalized intersections is also defined in terms of delay. However, the delay criteria are different from a signalized intersection. The primary reason for this is driver expectation that a signalized intersection is designed to carry higher volumes than an unsignalized intersection. The total delay threshold for any given Level of Service is less for an unsignalized intersection than for a signalized intersection. The ranges are as follows:

Level of Service	Control Delay per vehicle (seconds)
A	< 10
B	10 – 15
C	15 – 25
D	25 – 35
E	35 - 50
F	>50

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A4

Level of Service Calculations: Existing Conditions

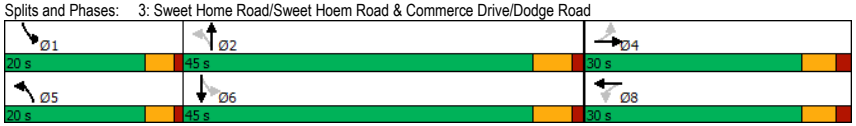
Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	30	50	26	364	58	211	450	100	297	883	8
Future Volume (vph)	10	30	50	26	364	58	211	450	100	297	883	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.906			0.979			0.973			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1128	1434	0	1612	1839	0	1703	3366	0	1787	3502	0
Flt Permitted	0.163			0.693			0.117			0.308		
Satd. Flow (perm)	194	1434	0	1176	1839	0	210	3366	0	579	3502	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		62			8			34			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	60%	0%	32%	12%	1%	2%	6%	4%	6%	1%	3%	0%
Adj. Flow (vph)	12	37	62	32	449	72	260	556	123	367	1090	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	99	0	32	521	0	260	679	0	367	1100	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.5	24.5		24.5	24.5		49.5	34.2		49.0	34.0	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.56	0.39		0.56	0.39	
v/c Ratio	0.23	0.22		0.10	1.01		0.74	0.51		0.72	0.82	
Control Delay	40.5	14.2		27.7	76.4		31.5	20.9		17.6	30.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	40.5	14.2		27.7	76.4		31.5	20.9		17.6	30.0	
LOS	D	B		C	E		C	C		B	C	
Approach Delay		17.0			73.5			23.8			26.9	
Approach LOS		B			E			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 88.2			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 34.0		Intersection LOS: C	
Intersection Capacity Utilization 72.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	288	170	102	323	38	20
Future Volume (vph)	288	170	102	323	38	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.950				0.953	
Flt Protected				0.988	0.968	
Satd. Flow (prot)	1783	0	0	1863	1753	0
Flt Permitted				0.988	0.968	
Satd. Flow (perm)	1783	0	0	1863	1753	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Adj. Flow (vph)	374	221	132	419	49	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	595	0	0	551	75	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.5%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	288	170	102	323	38	20
Future Vol, veh/h	288	170	102	323	38	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	374	221	132	419	49	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	595	0	1168	485
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	683	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	991	-	216	586
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	505	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	991	-	178	586
Mov Cap-2 Maneuver	-	-	-	-	178	-
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	417	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	27.5
HCM LOS			D

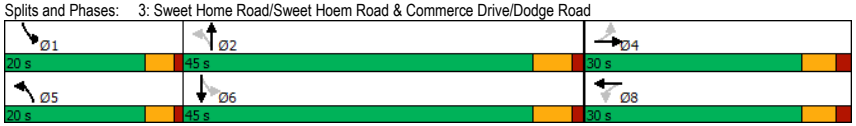
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	234	-	-	991	-
HCM Lane V/C Ratio	0.322	-	-	0.134	-
HCM Control Delay (s)	27.5	-	-	9.2	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.3	-	-	0.5	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	150	260	75	60	150	175	740	125	60	940	10
Future Volume (vph)	25	150	260	75	60	150	175	740	125	60	940	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.905			0.893			0.978			0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1530	1696	0	1805	1675	0	1612	3476	0	1805	3567	0
Flt Permitted	0.435			0.164			0.095			0.188		
Satd. Flow (perm)	700	1696	0	312	1675	0	161	3476	0	357	3567	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		88			127			24			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	18%	2%	1%	0%	2%	1%	12%	1%	5%	0%	1%	0%
Adj. Flow (vph)	33	197	342	99	79	197	230	974	164	79	1237	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	539	0	99	276	0	230	1138	0	79	1250	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.4	24.4		24.4	24.4		55.8	45.4		45.0	36.6	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.62	0.50		0.50	0.41	
v/c Ratio	0.17	1.03		1.18	0.51		0.73	0.65		0.27	0.86	
Control Delay	30.3	77.7		191.3	19.3		32.4	18.8		10.1	32.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	30.3	77.7		191.3	19.3		32.4	18.8		10.1	32.2	
LOS	C	E		F	B		C	B		B	C	
Approach Delay		75.0			64.7			21.1			30.9	
Approach LOS		E			E			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 90.3			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 37.6		Intersection LOS: D	
Intersection Capacity Utilization 81.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	258	81	30	268	121	68
Future Volume (vph)	258	81	30	268	121	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.968				0.951	
Flt Protected				0.995	0.969	
Satd. Flow (prot)	1839	0	0	1890	1751	0
Flt Permitted				0.995	0.969	
Satd. Flow (perm)	1839	0	0	1890	1751	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	344	108	40	357	161	91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	452	0	0	397	252	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.1%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	6.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	258	81	30	268	121	68
Future Vol, veh/h	258	81	30	268	121	68
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	344	108	40	357	161	91

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	452	0	835	398
Stage 1	-	-	-	-	398	-
Stage 2	-	-	-	-	437	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1119	-	340	656
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	655	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1119	-	325	656
Mov Cap-2 Maneuver	-	-	-	-	325	-
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	626	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	28.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	397	-	-	1119	-
HCM Lane V/C Ratio	0.635	-	-	0.036	-
HCM Control Delay (s)	28.6	-	-	8.3	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	4.2	-	-	0.1	-

A5

Level of Service Calculations: Background Conditions

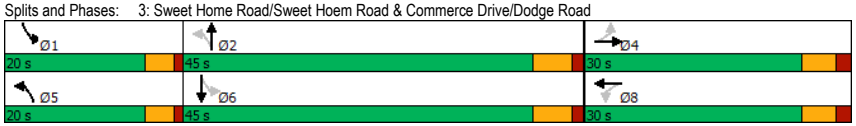
Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	31	51	27	371	59	215	470	102	303	916	8
Future Volume (vph)	10	31	51	27	371	59	215	470	102	303	916	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.906			0.979			0.973			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1128	1435	0	1612	1839	0	1703	3366	0	1787	3502	0
Flt Permitted	0.163			0.692			0.112			0.298		
Satd. Flow (perm)	194	1435	0	1174	1839	0	201	3366	0	561	3502	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		63			8			33			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	60%	0%	32%	12%	1%	2%	6%	4%	6%	1%	3%	0%
Adj. Flow (vph)	12	38	63	33	458	73	265	580	126	374	1131	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	101	0	33	531	0	265	706	0	374	1141	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.5	24.5		24.5	24.5		51.2	35.6		50.2	35.1	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.57	0.40		0.56	0.39	
v/c Ratio	0.23	0.23		0.10	1.05		0.75	0.52		0.75	0.83	
Control Delay	41.1	14.3		28.0	86.8		33.3	21.0		19.0	30.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	41.1	14.3		28.0	86.8		33.3	21.0		19.0	30.8	
LOS	D	B		C	F		C	C		B	C	
Approach Delay		17.1			83.4			24.3			27.9	
Approach LOS		B			F			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 89.6			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.05			
Intersection Signal Delay: 36.3		Intersection LOS: D	
Intersection Capacity Utilization 73.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	305	173	104	347	39	20
Future Volume (vph)	305	173	104	347	39	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.951				0.954	
Flt Protected				0.989	0.968	
Satd. Flow (prot)	1784	0	0	1865	1755	0
Flt Permitted				0.989	0.968	
Satd. Flow (perm)	1784	0	0	1865	1755	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Adj. Flow (vph)	396	225	135	451	51	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	621	0	0	586	77	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.0%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	305	173	104	347	39	20
Future Vol, veh/h	305	173	104	347	39	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	396	225	135	451	51	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	621	0	1230	509
Stage 1	-	-	-	-	509	-
Stage 2	-	-	-	-	721	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	969	-	198	568
Stage 1	-	-	-	-	608	-
Stage 2	-	-	-	-	485	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	969	-	161	568
Mov Cap-2 Maneuver	-	-	-	-	161	-
Stage 1	-	-	-	-	608	-
Stage 2	-	-	-	-	395	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	31.1
HCM LOS			D

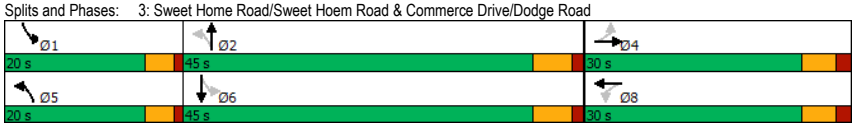
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	213	-	-	969	-
HCM Lane V/C Ratio	0.36	-	-	0.139	-
HCM Control Delay (s)	31.1	-	-	9.3	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.5	-	-	0.5	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	153	265	77	61	153	179	768	128	61	980	10
Future Volume (vph)	26	153	265	77	61	153	179	768	128	61	980	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.905			0.893			0.979			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1530	1696	0	1805	1675	0	1612	3480	0	1805	3571	0
Flt Permitted	0.421			0.164			0.093			0.174		
Satd. Flow (perm)	678	1696	0	312	1675	0	158	3480	0	331	3571	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		88			128			24			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	18%	2%	1%	0%	2%	1%	12%	1%	5%	0%	1%	0%
Adj. Flow (vph)	34	201	349	101	80	201	236	1011	168	80	1289	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	550	0	101	281	0	236	1179	0	80	1302	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.4	24.4		24.4	24.4		57.2	46.6		46.2	37.7	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.62	0.51		0.50	0.41	
v/c Ratio	0.19	1.07		1.23	0.52		0.75	0.66		0.29	0.89	
Control Delay	30.9	88.5		206.8	19.9		34.3	19.2		10.3	33.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	30.9	88.5		206.8	19.9		34.3	19.2		10.3	33.8	
LOS	C	F		F	B		C	B		B	C	
Approach Delay		85.1			69.3			21.7			32.5	
Approach LOS		F			E			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 91.6			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.23			
Intersection Signal Delay: 40.3		Intersection LOS: D	
Intersection Capacity Utilization 83.7%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	276	83	31	305	123	69
Future Volume (vph)	276	83	31	305	123	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.969				0.951	
Flt Protected				0.995	0.969	
Satd. Flow (prot)	1841	0	0	1890	1751	0
Flt Permitted				0.995	0.969	
Satd. Flow (perm)	1841	0	0	1890	1751	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	368	111	41	407	164	92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	479	0	0	448	256	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.4%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	8.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	276	83	31	305	123	69
Future Vol, veh/h	276	83	31	305	123	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	368	111	41	407	164	92

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	479	0	913	424
Stage 1	-	-	-	-	424	-
Stage 2	-	-	-	-	489	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1094	-	306	634
Stage 1	-	-	-	-	664	-
Stage 2	-	-	-	-	621	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1094	-	291	634
Mov Cap-2 Maneuver	-	-	-	-	291	-
Stage 1	-	-	-	-	664	-
Stage 2	-	-	-	-	591	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	35.9
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	361	-	-	1094	-
HCM Lane V/C Ratio	0.709	-	-	0.038	-
HCM Control Delay (s)	35.9	-	-	8.4	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	5.2	-	-	0.1	-

A6

Level of Service Calculations: Full Build Conditions

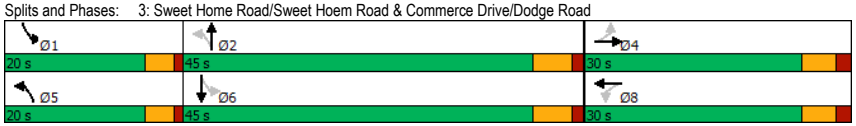
Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	36	51	48	380	76	215	470	114	312	916	8
Future Volume (vph)	10	36	51	48	380	76	215	470	114	312	916	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		150	0		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.912			0.975			0.971			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1128	1458	0	1612	1831	0	1703	3358	0	1787	3502	0
Flt Permitted	0.163			0.688			0.113			0.285		
Satd. Flow (perm)	194	1458	0	1167	1831	0	203	3358	0	536	3502	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		63			10			38			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	60%	0%	32%	12%	1%	2%	6%	4%	6%	1%	3%	0%
Adj. Flow (vph)	12	44	63	59	469	94	265	580	141	385	1131	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	107	0	59	563	0	265	721	0	385	1141	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.5	24.5		24.5	24.5		50.8	35.3		50.5	35.1	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.57	0.39		0.56	0.39	
v/c Ratio	0.23	0.24		0.18	1.11		0.75	0.54		0.77	0.83	
Control Delay	41.1	15.0		29.3	106.8		33.3	21.2		21.2	30.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	41.1	15.0		29.3	106.8		33.3	21.2		21.2	30.7	
LOS	D	B		C	F		C	C		C	C	
Approach Delay		17.7			99.5			24.5			28.3	
Approach LOS		B			F			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 89.6			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 40.4		Intersection LOS: D	
Intersection Capacity Utilization 75.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	331	186	104	361	46	20
Future Volume (vph)	331	186	104	361	46	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.951				0.959	
Flt Protected				0.989	0.966	
Satd. Flow (prot)	1784	0	0	1865	1760	0
Flt Permitted				0.989	0.966	
Satd. Flow (perm)	1784	0	0	1865	1760	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Adj. Flow (vph)	430	242	135	469	60	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	672	0	0	604	86	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.3%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	331	186	104	361	46	20
Future Vol, veh/h	331	186	104	361	46	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	430	242	135	469	60	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	672	0	1290	551
Stage 1	-	-	-	-	551	-
Stage 2	-	-	-	-	739	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	928	-	182	538
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	476	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	928	-	146	538
Mov Cap-2 Maneuver	-	-	-	-	146	-
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	382	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	39.6
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	187	-	-	928	-
HCM Lane V/C Ratio	0.458	-	-	0.146	-
HCM Control Delay (s)	39.6	-	-	9.5	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	2.2	-	-	0.5	-

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	14	490	412	5	13	21
Future Volume (vph)	14	490	412	5	13	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999		0.916	
Flt Protected		0.999			0.981	
Satd. Flow (prot)	0	1861	1861	0	1674	0
Flt Permitted		0.999			0.981	
Satd. Flow (perm)	0	1861	1861	0	1674	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		240	235		405	
Travel Time (s)		5.5	5.3		9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	533	448	5	14	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	548	453	0	37	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.6

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	14	490	412	5	13	21
Future Vol, veh/h	14	490	412	5	13	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	533	448	5	14	23

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	453	0	-	0	1014	451
Stage 1	-	-	-	-	451	-
Stage 2	-	-	-	-	563	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1108	-	-	-	264	608
Stage 1	-	-	-	-	642	-
Stage 2	-	-	-	-	570	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1108	-	-	-	259	608
Mov Cap-2 Maneuver	-	-	-	-	259	-
Stage 1	-	-	-	-	630	-
Stage 2	-	-	-	-	570	-

Approach	SE	NW	SW
HCM Control Delay, s	0.2	0	14.9
HCM LOS			B

Minor Lane/Major Mvmt	NWT	NWR	SEL	SETSWLn1	
Capacity (veh/h)	-	-	1108	-	401
HCM Lane V/C Ratio	-	-	0.014	-	0.092
HCM Control Delay (s)	-	-	8.3	0	14.9
HCM Lane LOS	-	-	A	A	B
HCM 95th %tile Q(veh)	-	-	0	-	0.3

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	0	503	403	0	4	9
Future Volume (vph)	0	503	403	0	4	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.904	
Flt Protected					0.986	
Satd. Flow (prot)	0	1863	1863	0	1660	0
Flt Permitted					0.986	
Satd. Flow (perm)	0	1863	1863	0	1660	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		235	240		378	
Travel Time (s)		5.3	5.5		8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	547	438	0	4	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	547	438	0	14	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.2

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	0	503	403	0	4	9
Future Vol, veh/h	0	503	403	0	4	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	547	438	0	4	10

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	985	438
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	547	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	275	619
Stage 1	0	-	-	0	651	-
Stage 2	0	-	-	0	580	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	275	619
Mov Cap-2 Maneuver	-	-	-	-	275	-
Stage 1	-	-	-	-	651	-
Stage 2	-	-	-	-	580	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	NWT	SETSWLn1
Capacity (veh/h)	-	- 447
HCM Lane V/C Ratio	-	- 0.032
HCM Control Delay (s)	-	- 13.3
HCM Lane LOS	-	- B
HCM 95th %tile Q(veh)	-	- 0.1

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	5	502	408	2	0	0
Future Volume (vph)	5	502	408	2	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999			
Flt Protected						
Satd. Flow (prot)	0	1863	1861	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	1861	0	0	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		240	291		382	
Travel Time (s)		5.5	6.6		8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	546	443	2	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	551	445	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.7%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	7	495	393	14	21	17
Future Volume (vph)	7	495	393	14	21	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.995		0.941	
Flt Protected		0.999			0.973	
Satd. Flow (prot)	0	1861	1853	0	1706	0
Flt Permitted		0.999			0.973	
Satd. Flow (perm)	0	1861	1853	0	1706	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		291	117		311	
Travel Time (s)		6.6	2.7		7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	538	427	15	23	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	546	442	0	41	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 41.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.7

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	7	495	393	14	21	17
Future Vol, veh/h	7	495	393	14	21	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	538	427	15	23	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	442	0	-	0	989	435
Stage 1	-	-	-	-	435	-
Stage 2	-	-	-	-	554	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1118	-	-	-	274	621
Stage 1	-	-	-	-	653	-
Stage 2	-	-	-	-	575	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1118	-	-	-	271	621
Mov Cap-2 Maneuver	-	-	-	-	271	-
Stage 1	-	-	-	-	646	-
Stage 2	-	-	-	-	575	-

Approach	SE	NW	SW
HCM Control Delay, s	0.1	0	16.2
HCM LOS			C

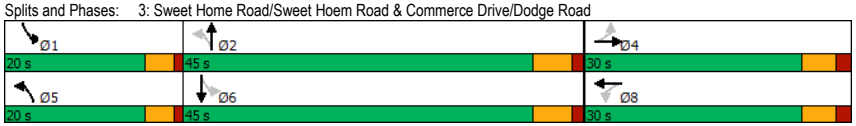
Minor Lane/Major Mvmt	NWT	NWR	SEL	SETSWLn1	
Capacity (veh/h)	-	-	1118	-	362
HCM Lane V/C Ratio	-	-	0.007	-	0.114
HCM Control Delay (s)	-	-	8.2	0	16.2
HCM Lane LOS	-	-	A	A	C
HCM 95th %tile Q(veh)	-	-	0	-	0.4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	164	265	98	69	169	179	768	155	82	980	10
Future Volume (vph)	26	164	265	98	69	169	179	768	155	82	980	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		150	0		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.907			0.894			0.975			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1530	1700	0	1805	1677	0	1612	3462	0	1805	3571	0
Flt Permitted	0.369			0.164			0.093			0.153		
Satd. Flow (perm)	594	1700	0	312	1677	0	158	3462	0	291	3571	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		82			124			30			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	18%	2%	1%	0%	2%	1%	12%	1%	5%	0%	1%	0%
Adj. Flow (vph)	34	216	349	129	91	222	236	1011	204	108	1289	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	565	0	129	313	0	236	1215	0	108	1302	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.4	24.4		24.4	24.4		57.1	45.8		47.0	37.7	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.62	0.50		0.51	0.41	
v/c Ratio	0.22	1.10		1.57	0.58		0.75	0.70		0.39	0.88	
Control Delay	32.1	100.2		333.9	22.9		34.8	20.5		11.9	33.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	32.1	100.2		333.9	22.9		34.8	20.5		11.9	33.7	
LOS	C	F		F	C		C	C		B	C	
Approach Delay		96.4			113.7			22.8			32.0	
Approach LOS		F			F			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 91.5			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.57			
Intersection Signal Delay: 47.7		Intersection LOS: D	
Intersection Capacity Utilization 85.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	301	95	31	337	139	69
Future Volume (vph)	301	95	31	337	139	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.968				0.955	
Flt Protected				0.996	0.968	
Satd. Flow (prot)	1839	0	0	1892	1756	0
Flt Permitted				0.996	0.968	
Satd. Flow (perm)	1839	0	0	1892	1756	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	401	127	41	449	185	92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	528	0	0	490	277	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 62.0%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	13

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	301	95	31	337	139	69
Future Vol, veh/h	301	95	31	337	139	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	401	127	41	449	185	92

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	528	0	996	465
Stage 1	-	-	-	-	465	-
Stage 2	-	-	-	-	531	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1049	-	273	602
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	594	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1049	-	259	602
Mov Cap-2 Maneuver	-	-	-	-	259	-
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	563	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	59.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	319	-	-	1049	-
HCM Lane V/C Ratio	0.869	-	-	0.039	-
HCM Control Delay (s)	59.6	-	-	8.6	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	7.9	-	-	0.1	-

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	32	386	454	11	12	21
Future Volume (vph)	32	386	454	11	12	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.997		0.914	
Flt Protected		0.996			0.982	
Satd. Flow (prot)	0	1855	1857	0	1672	0
Flt Permitted		0.996			0.982	
Satd. Flow (perm)	0	1855	1857	0	1672	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		240	235		405	
Travel Time (s)		5.5	5.3		9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	420	493	12	13	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	455	505	0	36	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 56.8%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.9

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	32	386	454	11	12	21
Future Vol, veh/h	32	386	454	11	12	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	420	493	12	13	23

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	505	0	-	0	989	499
Stage 1	-	-	-	-	499	-
Stage 2	-	-	-	-	490	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1060	-	-	-	274	572
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	616	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1060	-	-	-	262	572
Mov Cap-2 Maneuver	-	-	-	-	262	-
Stage 1	-	-	-	-	584	-
Stage 2	-	-	-	-	616	-

Approach	SE	NW	SW
HCM Control Delay, s	0.7	0	14.9
HCM LOS			B

Minor Lane/Major Mvmt	NWT	NWR	SEL	SETSWLn1	
Capacity (veh/h)	-	-	1060	-	400
HCM Lane V/C Ratio	-	-	0.033	-	0.09
HCM Control Delay (s)	-	-	8.5	0	14.9
HCM Lane LOS	-	-	A	A	B
HCM 95th %tile Q(veh)	-	-	0.1	-	0.3

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑		Y	
Traffic Volume (vph)	0	398	452	0	4	8
Future Volume (vph)	0	398	452	0	4	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.907	
Flt Protected					0.985	
Satd. Flow (prot)	0	1863	1863	0	1664	0
Flt Permitted					0.985	
Satd. Flow (perm)	0	1863	1863	0	1664	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		235	240		378	
Travel Time (s)		5.3	5.5		8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	433	491	0	4	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	433	491	0	13	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.2

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑		Y	
Traffic Vol, veh/h	0	398	452	0	4	8
Future Vol, veh/h	0	398	452	0	4	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	433	491	0	4	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	924	491
Stage 1	-	-	-	-	491	-
Stage 2	-	-	-	-	433	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	299	578
Stage 1	0	-	-	0	615	-
Stage 2	0	-	-	0	654	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	299	578
Mov Cap-2 Maneuver	-	-	-	-	299	-
Stage 1	-	-	-	-	615	-
Stage 2	-	-	-	-	654	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	13.4
HCM LOS			B

Minor Lane/Major Mvmt	NWT	SETSWLn1
Capacity (veh/h)	-	- 441
HCM Lane V/C Ratio	-	- 0.03
HCM Control Delay (s)	-	- 13.4
HCM Lane LOS	-	- B
HCM 95th %tile Q(veh)	-	- 0.1

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	11	391	456	5	0	0
Future Volume (vph)	11	391	456	5	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999			
Flt Protected		0.999				
Satd. Flow (prot)	0	1861	1861	0	0	0
Flt Permitted		0.999				
Satd. Flow (perm)	0	1861	1861	0	0	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		240	291		382	
Travel Time (s)		5.5	6.6		8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	425	496	5	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	437	501	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.8%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	16	375	445	32	21	16
Future Volume (vph)	16	375	445	32	21	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.991		0.943	
Flt Protected		0.998			0.972	
Satd. Flow (prot)	0	1859	1846	0	1707	0
Flt Permitted		0.998			0.972	
Satd. Flow (perm)	0	1859	1846	0	1707	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		291	117		311	
Travel Time (s)		6.6	2.7		7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	408	484	35	23	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	425	519	0	40	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 42.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.8

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	16	375	445	32	21	16
Future Vol, veh/h	16	375	445	32	21	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	408	484	35	23	17

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	519	0	-	0	944	502
Stage 1	-	-	-	-	502	-
Stage 2	-	-	-	-	442	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1047	-	-	-	291	569
Stage 1	-	-	-	-	608	-
Stage 2	-	-	-	-	648	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1047	-	-	-	285	569
Mov Cap-2 Maneuver	-	-	-	-	285	-
Stage 1	-	-	-	-	595	-
Stage 2	-	-	-	-	648	-

Approach	SE	NW	SW
HCM Control Delay, s	0.3	0	16.1
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	1047	-	363
HCM Lane V/C Ratio	-	-	0.017	-	0.111
HCM Control Delay (s)	-	-	8.5	0	16.1
HCM Lane LOS	-	-	A	A	C
HCM 95th %tile Q(veh)	-	-	0.1	-	0.4

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STORMWATER POLLUTION PREVENTION PLAN for CONSTRUCTION ACTIVITIES

Sawyer's Landing

Dodge & Sweet Home Road
Town of Amherst, Erie County, New York

Prepared for

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c/o Severyn Development
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February 2021



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101 SCOPE

A. **PURPOSE:** Sawyer's Landing LLC (SL) has placed an emphasis on following the New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit for Stormwater Discharges from Construction Activity governing storm water discharges during construction, and in accordance with erosion control practices. The Contractor's participation in this program is mandatory and its non-compliance is subject to various remedies, including without limitation, monetary set-offs, withholding payments; reimbursement for costs, expenses (including reasonable attorney's fees), fines and civil penalties incurred by SL; and/or liquidated damages. This section provides a descriptive explanation of SL's Storm Water Pollution Prevention Program and required Contractor participation.

The Engineer of record for this project certifies that this SWPPP meets the requirements and is in compliance with the New York State Stormwater Management Design Manual and latest NYSDEC Phase II stormwater regulation requirements.

B. **SPDES General Permit for Stormwater Discharges from Construction Activity:** Regulations promulgated by the NYSDEC to regulate the discharge of storm water from construction activities on sites where more than one (1) acre of soil is disturbed. One of the ways to comply with these regulations for affected sites is to request coverage under the General Permit for Construction Activities for New York State. In order to use the General Permit, a Notice of Intent (NOI) form must be completed and electronically submitted to the NYSDEC at least 5 business days prior to any earth-disturbing activities (this time frame may increase to 60 business days if a full review of the SWPPP is determined necessary by the NYSDEC) and a Storm Water Pollution Prevention Plan (SWPPP) for the site must be prepared and followed during the construction activities. Once a copy of the SPDES permit is received from NYSDEC after filing, it will be included in Appendix L of this report.

Approval from a regulated, traditional land use control MS4:

1. An **owner or operator** of a construction activity that is <u>not</u> subject to the requirements of a regulated, traditional land use control MS4 must first develop a SWPPP in accordance with all applicable requirements of this permit and then submit a completed NOI form to the NYSDEC.

2. An **owner or operator** of a construction activity that is subject to the requirements of a regulated, traditional land use control MS4 must first

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develop a SWPPP in accordance with all applicable requirements of this permit and then have its SWPPP reviewed and accepted by the MS4 prior to submitting the NOI to the NYSDEC. The **owner or operator** shall have the "MS4 SWPPP Acceptance" form signed by the principal executive officer or ranking elected official from the regulated, traditional land use control MS4, or by a duly authorized representative of that person, and then submit that form along with the NOI to the address referenced under "Notice of Intent (NOI) Submittal".

C. **RESPONSIBILITIES OF THE CONTRACTOR:** The Contractor shall manage the discharge of storm water from the site in accordance with the NYSDEC General Permit for Construction Activities conditions and the following provisions of this section. The Operator shall be responsible for conducting the storm water management practices in accordance with the permit. The Contractor shall be responsible for providing **qualified inspector**s to conduct the inspections required by the SWPPP. The Contractor shall be responsible for any enforcement action taken or imposed by federal, state, or local agencies, including the cost of fines, construction delays, and remedial actions resulting from the Contractor's failure to comply with the permit provisions. It shall be the responsibility of the Contractor to make any changes to the SWPPP necessary when the Contractor or any of his subcontractors elects to use borrow or fill or material storage sites, either contiguous to or remote from the construction site, when such sites are used solely for this construction site. Such sites are considered to be part of the construction site covered by the permit and this SWPPP. Off-site borrow, fill, or material storage sites which are used for multiple construction projects are not subject to this requirement, unless specifically required by state or local jurisdictional entity regulations. The Contractor should consider this requirement in negotiating with earthwork subcontractors, since the choice of an off-site borrow, fill, or material storage site may impact their duty to implement, make changes to, and perform inspections required by the SWPPP for the site.

D. **NOTICE OF INTENT:** The Operator has petitioned the NYSDEC for coverage under the storm water discharges during construction at this site to be covered by the SPDES General Permit for Construction Activity for the State of New York. A Notice of Intent (NOI) for coverage under this permit has been filed by the Operator. The SWPPP must be prepared prior to submittal of the NOI form. The Operator will require the Contractor to be a co-permittee with the Operator. The Contractor will be required to post the NOI at the construction site along with any building permits.

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E. **CONTRACTOR CERTIFICATION & TRAINING:** Proof of Training/Certification of the Contractor's Designated individual shall be kept on site at all times.

F. **REQUIREMENTS FOR THE GENERAL CONTRACTOR AND SUBCONTRACTOR(S):** The General Contractor and Subcontractor(s) shall sign the "Contractor's Certification Statement" (located in the Appendix of this report) verifying they have been instructed on how to comply with and fully understand the requirements of the SPDES General Permit for Construction Activity for the State of New York and the SWPPP. These certifications must be signed, by a responsible corporate officer or other party meeting the "Signatory Requirements" of the SPDES General Permit, on behalf of each entity, prior to the beginning of any construction activities.

G. **STORM WATER POLLUTION PREVENTION PROGRAM LOCATION REQUIREMENTS:** The SWPPP is meant to be a working document that shall be maintained at the site of the Construction Activities at all times throughout the project, shall be readily available upon request by the Operator's personnel or NYSDEC or any other agency with regulatory authority over storm water issues, and shall be kept on-site until the site complies with the Final Stabilization section of this document. A sign or other notice must be posted near the main entrance of the construction site which contains a completed NOI, the location of the SWPPP and the name and phone number of a contact person responsible for scheduling SWPPP viewing times, and any other state specific requirements.

H. **INSPECTIONS AND RECORD-KEEPING:**

A. **General Construction Site Inspection and Maintenance Requirements**

1. The **owner or operator** must ensure that all erosion and sediment control practices and all post-construction stormwater management practices identified in the SWPPP are maintained in effective operating condition at all times.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York, or protect the public health and safety and/or the environment.

B. **Owner or operator Maintenance Inspection Requirements**

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1. The **owner or operator** shall inspect, in accordance with the requirements in the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, the erosion and sediment controls identified in the SWPPP to ensure that they are being maintained in effective operating condition at all times.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the **owner or operator** can stop conducting the maintenance inspections. The **owner or operator** shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of the General Permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the **owner or operator** can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved final stabilization and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. **Qualified inspector Inspection Requirements**

The **owner or operator** shall have a **qualified inspector** conduct site inspections in conformance with the following requirements:

Note: The **trained contractor** identified in Part III.A.6 of the General Permit **cannot** conduct the **qualified inspector** site inspections unless they meet the **qualified inspector** qualifications included in Appendix A of the General Permit. In order to perform these inspections, the trained contractor would have to be a:

- Licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- Registered Landscape Architect, or
- Someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape

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Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity.

1. A **qualified inspector** shall conduct site inspections for all construction activities identified in Tables 1 and 2 of Appendix B of the General Permit, with the exception of:

   a. The construction of a single family residential subdivision with 25% or less impervious cover at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C of the General Permit and not directly discharging to one of the 303(d) segments listed in Appendix E of the General Permit;

   b. The construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E of the General Permit;

   c. Construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

   d. Construction activities located in the watersheds identified in Appendix D of the General Permit that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the **qualified inspector** shall conduct site inspections in accordance with the following timetable:

   a. For construction sites where soil disturbance activities are on-going, the **qualified inspector** shall conduct a site inspection at least once every seven (7) calendar days.

   b. For construction sites where soil disturbance activities are on-going and the **owner or operator** has received authorization in accordance with Part II.C.3 of the General Permit to **disturb greater than five (5) acres** of soil at any one time, the **qualified inspector**

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shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

c. For construction sites where soil disturbance activities have been **temporarily suspended (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas**, the **qualified inspector** shall conduct a site inspection at least once every thirty (30) calendar days. The **owner or operator** shall notify the Regional Office stormwater contact person (see contact information in Appendix F of the General Permit) or, in areas under the jurisdiction of a regulated, traditional land use control MS4, the MS4 (provided the MS4 is not the **owner or operator** of the construction activity) in writing prior to reducing the frequency of inspections.

d. For construction sites where **soil disturbance activities have been shut down with partial project completion**, the **qualified inspector** can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved final stabilization and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The **owner or operator** shall notify the Regional Office stormwater contact person or, in areas under the jurisdiction of a regulated, traditional land use control MS4, the MS4 (provided the MS4 is not the **owner or operator** of the construction activity). in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the **owner or operator** shall have the **qualified inspector** perform a final inspection and certify that all disturbed areas have achieved final stabilization, and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "Final Stabilization" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The **owner or operator** shall then submit the completed NOT form to the address in Part II.A.1 of the General Permit.

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3. At a minimum, the **qualified inspector** shall inspect all erosion and sediment control practices to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved final stabilization, all points of discharge to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the construction site, and all points of discharge from the construction site.

4. The **qualified inspector** shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

   a. Date and time of inspection;

   b. Name and title of person(s) performing inspection;

   c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

   d. A description of the condition of the runoff at all points of discharge from the construction site. This shall include identification of any discharges of sediment from the construction site. Include discharges from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

   e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the construction site which receive runoff from disturbed areas. This shall include identification of any discharges of sediment to the surface waterbody;

   f. Identification of all erosion and sediment control practices that need repair or maintenance;

   g. Identification of all erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

   h. Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection;

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i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s); and

k. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The **qualified inspector** shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The **qualified inspector** shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The **qualified inspector** shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the **qualified inspector** shall notify the **owner or operator** and appropriate contractor or subcontractor identified in Part III.A.6. of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the **qualified inspector**. Pursuant to Part II.C.2 of the General Permit, the inspection reports shall be maintained on site with the SWPPP.

Record Retention - The **owner or operator** shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the site achieves final stabilization. This period may be extended by the Department, in its sole discretion, at any time upon written notification.

l. **SWPPP MODIFICATIONS:** The inspection report should also identify if any revisions to the SWPPP are warranted due to unexpected conditions. The SWPPP is meant

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to be a dynamic working guide that is to be kept current and amended whenever there is a change in design, construction, operation, or maintenance at the construction site that has or could have a significant effect on the discharge of pollutants or when the plan proves to be ineffective in eliminating or significantly minimizing pollutant discharges. The Contractor's failure to modify or report deficiencies to the Operator will result in the Contractor being liable for fines and construction delays resulting from any federal, state, or local agency enforcement action.

J. **FINAL STABILIZATION AND TERMINATION OF PERMIT COVERAGE:** A site can be considered finally stabilized when all soil disturbing activities have been completed and a uniform perennial vegetative cover with a density of **85%** for the unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures have been established and the facility no longer discharges storm water associated with construction activities and a Notice of Termination (NOT) form filed by the Operator(s) with the NYSDEC. The Operator's Project Manager must complete the NOT. The NOT must be signed by the signatory (or equivalent position) on the NOI and subsequently submitted to the appropriate agency. The Operator's Project Manager must provide a completed copy of the NOT to the Contractor for inclusion in the SWPPP, which will then be optically scanned into the final SWPPP document as required. This filing terminates coverage under the General Permit and terminates the Contractor's responsibility to implement the SWPPP, but the requirements of the SWPPP, including periodic inspections, must be continued until the NOT is filed. The **owner or operator** shall also have the **qualified inspector** perform a final site inspection prior to signing and submitting the NOT to the Department. The local MS4/Stormwater Management Officer must also sign the NOT and may require a final site inspection to be completed prior to. Final payment and/or the release of retainage will be withheld until all provisions of the SWPPP have been submitted, completed and accepted by the Operator.

102 PROJECT NAME AND LOCATION

Sawyer's Landing

Dodge Road

Town of Amherst, County of Erie, New York

Easting: 190681.1

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Northing: 4770798.8

Estimated Area of Site ≈ 17.4 acres

Estimated Area to be disturbed by Construction Activities ≈ 16.4 acres

A general location map is included as Appendix A.

103 OPERATOR'S NAME AND ADDRESS

Sawyer's Landing LLC

c/o Severyn Development

43 Central Avenue

Lancaster, NY 14086

Contact Person: William Severyn

Telephone: 716–818-0207

104 PROJECT DESCRIPTION

This project is a development of a 17.4 acre site located on the north side of Dodge Road, west of Sweet Home Road in the Town of Amherst. Both Dodge Road and Sweet Home Road are Erie County roads. Proposed is the construction of a mixed use development to include (2) 4-story buildings with a total of 30,000 sf of commercial and 100 apartments, (47) duplex lots and (2) 1-story apartment buildings with a total of 12 units. A bike trail will be constructed on site, this trail will connect to the existing Town of Amherst bike trail on the south side of Dodge Road. The approximately 1 acre westerly portion will remain undisturbed and be deed restricted as permanent open space. The site is currently undeveloped consisting of woods and overgrown brush/grass. NYSDEC and Federal wetlands were delineated on site by Earth Dimensions, Inc. Approximately 6.1 acres of Federal and 1.2 acres of NYSDEC wetlands have been permitted to be impacted. The proposed site development area to be disturbed for this project is approximately 16.4 acres.

Soil disturbing activities will include:

A. Construction of temporary construction exit points

B. Clearing & grubbing of the site within disturbance limits

C. Installation of detention basins, bioretention areas including topsoil & seed

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D. Installation of storm sewer pipes and inlets

E. Construction of utilities

F. Construction of curb and parking lot

G. Final grading & landscaping

H. Construction of building

This project is owned by Sawyer's Landing LLC and will be developed by the same. The work area consists of approximately 16.4 acres for which erosion and sediment controls have been developed and fully addressed in this written plan and the Erosion and Sediment Control Plans. See the construction documents for additional details.

105 RUNOFF COEFFICIENT, SOILS, AND RAINFALL INFORMATION

The initial runoff curve number for the pre-construction site is "CN" = 78. The post-construction runoff curve number for the site will be "CN" = 91. The site is 17.4 acres of which approximately 16.4 acres will be disturbed by construction activities.

See soils information located in Appendix H.

The site is in Erie County, which receives an average of approximately 45 inches rainfall annually with the highest amounts of rainfall received in the months of May thru September. Annual snow for this area is approximately 120 inches.

106 WATERS

The runoff generated from this site will discharge to the storm system on Dodge Road which is tributary to Ellicott Creek.

107 INDIAN COUNTRY LANDS

This project is not located on Indian Lands.

108 ENDANGERED AND THREATENED SPECIES

No endangered or threatened species have been determined to be on the site.

109 CRITICAL HABITAT

See section 108 above.

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110 HISTORIC PLACES

The assessed property is shown on the NYSHPO map as an archeologically sensitive area. A NYSHPO "no effect" letter is included in Appendix I.

111 WETLANDS AND/OR OTHER SURFACE WATERS

Federal and NYSDEC wetlands were delineated on site by Earth Dimensions, Inc. Approximately 6.1 acres of Federal and 1.2 acres of NYSDEC wetlands have been permitted to be impacted. The USACOE and NYSDEC wetland permits are included in Appendix K of this report.

112 EROSION AND SEDIMENT CONTROLS

112.1 STABILIZATION PRACTICES

Stabilization practices for this site include:

A. Land clearing activities shall be done only in areas where earthwork will be performed and shall progress as earthwork is needed.

B. Use of stabilization method for all slopes with a slope greater than 1V:3H.

C. Permanent seeding and planting of all unpaved areas using the hydromulching grass seeding technique.

D. Mulching exposed areas.

E. Vegetation preservation in undisturbed areas.

F. Frequent watering to minimize wind erosion during construction.

a. **For sites where 5 acres or more are disturbed at any one time**: In areas where soil disturbance activity has been temporarily or permanently ceased, temporary and/or permanent soil stabilization measures shall be installed and/or implemented within seven (7) days from the date the soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the most current version of the New York Standards and Specifications for Erosion and Sediment Control.

b. The **owner or operator** shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

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c. The **owner or operator** shall install any additional measures needed to protect water quality.

112.2 STRUCTURAL PRACTICES

Structural practices for this site include:

A. Inlet protection using a method detailed in the Construction Documents.

B. Perimeter protection using temporary silt fence/silt sock or silt sock.

C. Outlet protection using rip-rap stone and end sections.

D. Stabilized Construction Entrance.

E. Temporary stone wash off areas.

F. Storm sewer, curb/gutter.

G. Sediment traps and basins.

112.3 SEQUENCE OF MAJOR ACTIVITIES

The Contractor will be responsible for implementing the following erosion control and storm water management control measures. The Contractor may designate these tasks to certain subcontractors as he sees fit, but the ultimate responsibility for implementing these controls and ensuring their proper functioning remains with the Contractor. The order of activities will be as follows:

A. Construct temporary construction exits at locations shown on the Demolition & Erosion Control Plan Sheet.

B. Install perimeter silt fence/silt socks/silt sock in the locations shown on the Demolition & Erosion Control Plan Sheet.

C. Clear & Grub site.

D. Installation of detention basin to act as sediment basin.

E. Commence site grading.

F. If less than 5 acres of the site have been disturbed and construction activity has ceased for more than 14 days, temporarily seed and water to stabilize this area. If more than 5 acres of the site have been disturbed and construction activity has ceased for more than 7 days, temporarily seed and water to stabilize this area.

G. Installation of proposed utilities.

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H. Install base material as required for pavement/buildings.

I. Finalize pavement subgrade preparation.

J. Construction of buildings.

K. Construct all curb, drainage inlets, storm sewer pipes and storm sewer manholes, as shown on the plans. Install temporary inlet protection at the locations of all inlets.

L. Dust control.

L. Remove inlet protection around inlets and manholes no more than 48 hours prior to placing stabilized base course.

N. Carry out final grading and seeding and planting.

O. Install bioretention areas (do not install bioretention soil or underdrains until surrounding area is stabilized).

P. Clean storm system following construction, clean detention basin of any silt and return to design grades.

Q. Remove silt fencing/silt sock only after all paving is complete and exposed surfaces are stabilized.

R. Remove temporary construction exits only prior to pavement construction in these areas.

Note: Sediment control storage during construction (traps & basins) during construction shall be 134 cy per acre of disturbance per NYSDEC requirements.

112.4 STORM WATER MANAGEMENT

The existing site is generally flat and slopes west with portions sloping east. The portion that slopes west settles in a low area and once the capacity of that area is exceeded, sheet flow continues towards Sweet Home Road and is collected by an existing 12" pipe on the north side of Dodge Road. This pipe flows to the Erie County system on Sweet Home Road. The portion that flows east flows to the offsite wetlands.

Currently Dodge Road does not have a drainage system. A series of catch basins and pipes will be installed in the green area on the north side of Dodge Road to collect the road drainage. The west portion of this system will connect to the existing closed drainage system on Sweet Home Road. The east portion will discharge to the Ellicott Creek diversion channel using and existing discharge point. This new system will also convey the proposed discharge from the site as described below.

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The proposed onsite storm sewer system consists of smooth interior and perforated HDPE pipes connected by a series of catch basins, manholes and yard drains. The site is split into a storm water management area on the east and west sides.

West Side

The west side of the site has (2) bioretention areas which portions of the westerly area will discharge to. These bioretention areas along with the remainder of the west portion of the site will discharge to the underground detention area. Note that the yard drains installed along the north property line discharge to the underground detention area. An outlet structure in the SW portion of this area will control runoff to at or below existing runoff flow rates. The discharge from the outlet control structure will discharge to the new system on Dodge Road which flows to the Sweet Home Road system.

Underground Detention Summary

(286) ADS Stormtech SC-740 chambers
Top of stone elev. = 573.00
Top of chamber elev. = 572.50
Bottom of chamber elev. = 570.00
Bottom of stone elev. = 569.50
Total storage = 18,574 CF

Event	Ex. Discharge	Pro. Discharge	Elev.
1 yr	0.87 cfs	0.33 cfs	570.29
2 yr	1.34 cfs	0.68 cfs	570.46
5 yr	2.14 cfs	1.05 cfs	570.79
10 yr	2.94 cfs	1.28 cfs	571.13
25 yr	4.34 cfs	1.61 cfs	571.73
50 yr	5.69 cfs	3.61 cfs	572.23
100 yr	7.33 cfs	4.83 cfs	572.92

East Side

The east side of the site has a bioretention area and wet detention pond which this portion of the site discharges to. The NE portion of the site discharges to a forebay which spills into the main micropool portion of the wet detention basin. The SE portion of the site discharges to the bioretention area which also spills into the main micropool portion of the site. An outlet control structure is located in

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the SE portion of the micropool and controls the discharge from this storm water management area. Spillways are also located on the east portion of the micropool which will discharge to the existing wetlands to the east in order to not cut off all flow from this site into this area. The discharge from the outlet control structure will discharge to the new system on Dodge Road which flows to the Ellicott Creek diversion channel.

The bioretention areas and wet detention pond for the project area are sized to provide 100% of the required Runoff Reduction Volume (RRv) and Water Quality Volume (WQv) treatment for the overall site in accordance with Chapter 4 of the NYSDEC Stormwater design manual. The soils in the vicinity of the bioretention areas are mainly USDA hydrologic group 'D' and therefore the system will be installed with underdrains per NYSDEC requirements. The bioretention areas will consist of 6" and 8" perforated HDPE underdrains in 12" of drainage gravel, followed by filter fabric and 18" minimum of planting soil. Overflow yard drains will be installed to allow 6" maximum temporary ponding for RRv treatment. The east bioretention area (area #3) spills into the wet detention pond and the underdrain pipe ties together with the pond discharge and flows to Dodge Road. The east bioretention areas (areas #1 & #2) have a catch basin to act as the spillway and this catch basin and the underdrain pipes discharge to the underground detention area.

Storm Water Management Area Summary

Forebay
Top of basin elev. = 576.80
Permanent water elev. = 575.00
Aquatic bench elev. = 574.50
Bottom of basin elev. = 569.00

Micropool
Top of basin elev. = 576.80
Permanent water elev. = 575.00
Aquatic bench elev. = 574.50
Bottom of basin elev. = 563.00

Overall Storm Water Summary

WQv Provided = 152,678 cf (pond)
WQv Provided = 6,948 cf (bioretention)
WQv Provided = 159,626 cf (total)

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Bioretention Area Summary:

Area	Rim Elev.	Bottom Elev.	Area
1	574.50	574.00	2,300 sf
2	574.50	574.00	2,600 sf
3	575.50	575.00	11,000 sf
		Total Provided =	15,900 sf

Water Quality Summary:
WQv req'd = 28,804 cf (0.661 ac-ft)
RRv min. req'd = 5,518 cf (0.127 ac-ft)
RRv provided = 8,662 cf (0.199 ac-ft)
WQv provided = 159,626 cf (3.665 ac-ft)
Total RRv + WQv provided = 8,662 cf + 159,626 cf = 168,287 cf (3.868 ac-ft)

Detention: Comparison of the existing 1-year vs. the proposed 1-year runoff
Comparison of the existing 10-year vs. the proposed 10-year runoff
Comparison of the existing 100-year vs. the proposed 100-year runoff

Storm pipes: 10-year storm

Refer to the engineer's report in Appendix N for additional details.

113 OTHER CONTROLS

113.1 OFF-SITE VEHICLE TRACKING

A stabilized construction exit will be provided to help reduce vehicle tracking of sediments. Existing paved areas will remain as long as possible and will be used for vehicle wash areas and to further aid in the reduction of vehicle tracking of sediments. The paved streets adjacent to the site entrance shall be inspected daily and swept as necessary to remove any excess mud, dirt, or rock tracked from the site. Dump trucks hauling material to/from the construction site will be covered with a tarpaulin. The job site superintendent will be responsible for seeing that these procedures are followed.

113.2 EXCAVATION SPOIL MATERIALS

Excavation spoil materials are generated during the excavation of the development's building and utilities installation. These materials must be properly managed to prevent them from contributing to storm water discharges. The materials generated from the development of this project will be hauled off-site or stockpiled for re-use in designated areas which will have temporary erosion &

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sediment control measures installed. Any removal from site will be done under the necessary permits required by the local governing agencies.

113.3 DUST CONTROL

Minimizing wind erosion and controlling dust will be accomplished by one or more of the following methods:

A. Frequent watering of excavation and fill areas.

B. Providing gravel or paving at entrance/exit drives, parking areas and transit paths.

113.4 WASTE DISPOSAL

If needed, all waste materials will be collected and stored in securely lidded metal dumpsters rented from an approved waste management company. The dumpster will comply with all local and state solid waste management regulations.

All trash and construction debris from the site will be deposited in the dumpsters. The dumpsters will be emptied when full and then hauled to a NYSDEC approved landfill for proper disposal. No construction waste will be buried on-site. All personnel will be instructed regarding the correct procedures for waste disposal.

113.5 SANITARY WASTE

If needed, portable toilet units or field offices with toilet facilities connected to the municipal sanitary sewer will be used for sanitary purposes. All portable toilet units will be emptied a minimum of once per week by a licensed portable facility provided in compliance with local and state regulations.

113.6 CONCRETE WASTE FROM CONCRETE TRUCKS

A. Emptying of excess unhardened concrete and/or washout from concrete delivery trucks will be allowed on the job site, but in either (1) specifically designated diked areas which have been prepared to prevent contact between concrete and/or washout and storm water which will be discharged from the site or (2) in locations where waste concrete will be poured into forms to make rip-rap or other useful concrete products.

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B. Hardened waste concrete from the designated diked areas described above will be disposed of in accordance with applicable local and state regulations with regards to disposal of construction debris.

113.7 HAZARDOUS SUBSTANCES & HAZARDOUS WASTE

A. All hazardous waste materials will be disposed of by the Contractor in the manner specified by local, state, and/or federal regulations and by the manufacturer of such products. Site personnel will be instructed in these practices by the job superintendent, who will also be responsible for seeing these practices are followed. Material Safety Data Sheets (MSDS's) for each substance with hazardous properties that is used on the job site will be obtained and used for the proper management of potential wastes that may result from these products. An MSDS will be posted in the immediate area where such products are stored and/or used and another copy of each MSDS will be maintained in the SWPPP file at the job site construction office. Each employee who must handle a substance with hazardous properties will be instructed on the use of MSDS sheets and the specific information in the applicable MSDS for the product he/she is using, particularly regarding spill control techniques.

B. The contractor will implement the Spill Prevention Control and Countermeasures (SPCC) Plan found within this SWPPP and will train all personnel in the proper cleanup and handling of spilled materials. No spilled hazardous materials of hazardous wastes will be allowed to come in contact with storm water discharges. If such contact occurs, the storm water discharge shall be contained on site until appropriate measures in compliance with state and federal regulations are taken to dispose of such contaminated storm water. It shall be the responsibility of the job superintendent to properly train all personnel in the use of the SPCC plan.

C. Any spills of hazardous materials which are in excess of the Reportable Quantities as defined by the EPA regulations shall be immediately reported to the EPA National Response Center at 1-100-424-1102. From SWPPP-9 "Reportable Quantity Release Form" must be filled out.

D. In order to minimize the potential for a spill of hazardous materials to come in contact with storm water, the following steps will be implemented:

1. All materials with hazardous properties (such as pesticides, petroleum products, fertilizers, detergents, construction chemicals,

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acids, paints, paint solvents, cleaning solvents, additives for soil stabilization, concrete curing compounds and additives, etc.) will be stored in a secure location, under cover, when not in use.

2. The minimum practical quantity of all such materials will be kept on the job site.

3. A spill control and containment kit (containing for example, absorbent such as kitty litter or sawdust, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided at the storage site.

4. All of the product in a container will be used before the container is disposed of. All such containers will be triple rinsed with water prior to disposal. The rinse water used in these containers will be disposed of in a manner in compliance with state and federal regulations and will not be allowed to mix with storm water discharges.

5. All products will be stored in and used from the original container with the original product label.

6. All products will be used in strict compliance with instructions on the product label.

7. The disposal of excess or used products will be in strict compliance with instructions on the product label.

113.8 CONTAMINATED SOILS

A. Any contaminated soils (resulting from spills of materials with hazardous properties) which may result from construction activities will be contained and cleaned up immediately in accordance with the procedures given in the Spill Prevention Control and Countermeasures (SPCC) Plan and in accordance with applicable state and federal regulations.

B. The job site superintendent will be responsible for seeing that these procedures are followed.

114 COMPLIANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS

The Contractor will obtain copies of any and all local and state regulations which are applicable to storm water management, erosion control, and

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pollution minimization at this job site and will comply fully with such regulations. The Contractor will submit written evidence of such compliance if requested by the Operator or any agent of a regulatory body. The Contractor will comply with all conditions of the SPDES General Permit for Construction Activity for the State of New York, including the conditions related to maintaining the SWPPP and evidence of compliance with the SWPPP at the job site and allowing regulatory personnel access to the job site and to records in order to determine compliance.

The SWPPP for this site development project requires regulated MS4 approval from the Town of Amherst. All changes to the SWPPP must be approved by the Town of Amherst prior to applying changes to the SWPPP in the field.

115 INSPECTION AND MAINTENANCE PROCEDURES

The following inspection and maintenance practices will be used to maintain erosion and sediment controls and stabilization measures.

1. All control measures will be inspected by the owner/operator at least weekly and shall continue until the site complies with the Final Stabilization section of this document (See Section 116).

2. All control measures will be inspected by a Qualified Professional at least weekly and shall continue until the site complies with the Final Stabilization section of this document (See Section 116).

3. All measures will be maintained in good working order; if repairs or other measures are found to be necessary, they will be initiated within 24 hours of report.

4. Built up sediment will be removed from silt fence/silt sock when it has reached one-third the height of the fence.

5. Silt fence/silt socks will be inspected for depth of sediment, tears, etc., to see if the fabric is securely attached to the fence posts, and to see that the fence posts are securely in the ground.

6. Temporary and permanent seeding and all other stabilization measures will be inspected for bare spots, washouts, and healthy growth.

7. A maintenance inspection report will be made after each inspection. Copies of the report forms to be completed by the inspector are included in this SWPPP.

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8. The job site superintendent will be responsible for selecting and training the individuals who will be responsible for these inspections, maintenance and repair activities, and filling out inspection and maintenance reports.

9. Personnel selected for the inspection and maintenance responsibilities will receive training from the job site superintendent. They will be trained in all the inspection and maintenance practices necessary for keeping the erosion and sediment controls that are used onsite in good working order. They will also be trained in the completion of, initiation of actions required by, and the filing of the inspection forms. Documentation of this personnel training will be kept on site with the SWPPP.

10. Disturbed areas and materials storage areas will be inspected for evidence of or potential for pollutants entering stormwater systems.

11. Report to the NYSDEC within 24 hours any noncompliance with the SWPPP that will endanger public health or the environment. Follow up with a written report within 5 days of the noncompliance event. The following events require 24 hour reporting: a) any unanticipated bypass which exceeds any effluent limitation in the permit, b) any upset which exceeds any effluent limitation in the permit, and c) a violation of a maximum daily discharge limitation for any of the pollutants listed by the NYSDEC in the permit to be reported within 24 hours. The written submission must contain a description of the non-compliance and its cause; the period of non-compliance, including exact dates and times, and if the non-compliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the non-compliance.

12. Releases of hazardous substances or oil in excess of reportable quantities (as established under 40 CFR 110, 40 CFR 117 or 40 CFR 302) must be reported.

Upon completion of construction, the property owner is responsible for ensuring that the stormwater facilities are regularly inspected and maintained. Maintenance and inspection procedures are as follows.

1. On a quarterly basis and following significant rainfall events or snow-melts, perform the following:

    - Inspect catch basins, storm manholes, yard drains, storm piping and stormwater pond for debris and accumulation of sediment.

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- Remove and properly dispose of any collected debris and sediment in accordance with applicable state, federal and local regulations.
- Flush piping with water if necessary to remove accumulated sediment.
- Bioretention areas shall be maintained per the NYSDEC Maintenance and Management Checklist included in this SWPPP.
- Check all stone outfall structures for erosion and re-stone if necessary to prevent further erosion.
- Inspect grassed/landscaped areas for un-vegetated areas or areas with less than 85% healthy stand of grass and reseed and mulch as necessary. Water daily if reseeded in July and August.
- A record of all inspections should be kept.

2. Maintain all lawn areas by regular mowing, including the grassed slopes of the stormwater pond and any grass swales. Any eroded areas shall be regarded, seeded and mulched immediately.

116 INSPECTION AND MAINTENANCE REPORT FORMS

Once installation of any required or optional erosion control device or measure has been implemented, inspections shall be performed by a Qualified Professional at least once every seven (7) calendar days. For construction sites where soil disturbance activities are on-going and the **owner or operator** has received authorization in accordance with Part II.C.3 of the General Permit to disturb greater than five (5) acres of soil at any one time, the **qualified inspector** shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days. The owner and contractor shall obtain from the MS4 an approval for disturbing more than five-acres at any given time. For construction sites where active construction has been suspended, inspection frequency under the general permit can be reduced to once every 30 days, provided temporary stabilization measures have been applied to all disturbed areas. The forms found in this SWPPP shall be used by the inspectors to inventory and report the condition of each measure to assist in maintaining the erosion and sediment control measures in good working order.

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These report forms shall become an integral part of the SWPPP and shall be made readily accessible to governmental inspection officials, the Operator's Engineer, and the Operator for review upon request during visits to the project site. In addition, copies of the reports shall be provided to any of these persons, upon request, via mail or facsimile transmission. Inspection and maintenance report forms are to be maintained by the permittee for five years following the final stabilization of the site.

117 OTHER RECORD-KEEPING REQUIREMENTS

The Contractor shall keep the following records related to construction activities at the site:

- Dates when major grading activities occur and the areas which were graded
- Dates and details concerning the installation of structural controls
- Dates when construction activities cease in an area
- Dates when an areas is stabilized, either temporarily or permanently
- Dates of rainfall and the amount of rainfall
- Dates and descriptions of the character and amount of any spills of hazardous materials
- Records of reports filed with regulatory agencies if reportable quantities of hazardous materials spilled

118 SPILL PREVENTION CONTROL AND COUNTERMEASURES (SPCC) PLAN

118.1 MATERIALS COVERED

The following materials or substances are expected to be present onsite during construction:

- Concrete/Additives/Wastes
- Cleaning solvents
- Sanitary wastes
- Detergents
- Petroleum based products
- Paints/Solvents
- Pesticides
- Solid and construction wastes
- Acids

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- Fertilizers
- Soil stabilization additives

118.2 MATERIAL MANAGEMENT PRACTICES

The following are the material management practices that will be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff. The job site superintendent will be responsible for ensuring that these procedures are followed.

A. Good Housekeeping

The following good housekeeping practices will be followed onsite during the construction project.

1. An effort will be made to store only enough products required to do the job.

2. All materials stored onsite will be stored in a neat, orderly manner and, if possible, under a roof or in a containment area. At a minimum, all containers will be stored with their lids on when not in use. Drip pans shall be provided under all dispensers.

3. Products will be kept in their original containers with the original manufacturer's label in legible condition.

4. Substances will not be mixed with one another unless recommended by the manufacturer.

5. Whenever possible, all of a product will be used up before disposing of the container.

6. Manufacturer's recommendations for proper use and disposal will be followed.

7. The job site superintendent will be responsible for daily inspections to ensure proper use and disposal of materials.

B. Hazardous Products

These practices will be used to reduce the risks associated with hazardous materials. Material Safety Data Sheets (MSDS's) for each substance with hazardous properties that is used on the job site will be obtained and used for the proper management of potential wastes that may result from

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these products. An MSDS will be posted in the immediate area where such product is stored and/or used and another copy of each MSDS will be maintained in the SWPPP file at the job site construction trailer office. Each employee who must handle a substance with hazardous properties will be instructed on the use of MSDS sheets and the specific information in the applicable MSDS for the product he/she is using, particularly regarding spill control techniques.

1. Products will be kept in original containers with the original labels in legible condition.

2. Original labels and material safety data sheets (MSDS's) will be procured and used for each material.

3. If surplus product must be disposed of, manufacturer's or local/state/federal recommended methods for proper disposal will be followed.

4. A spill control and containment kit (containing for example, absorbent such as kitty litter or sawdust, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided at the storage site.

5. All of the product in a container will be used before the container is disposed of. All such containers will be triple rinsed with water prior to disposal. The rinse water used in these containers will be disposed of in a manner in compliance with state and federal regulations and will not be allowed to mix with storm water discharges.

C. Hazardous Waste

All hazardous waste materials will be disposed of by the Contractor in the manner specified by local, state, and/or federal regulations and by the manufacturer of such products. Site personnel will be instructed in these practices by the job site superintendent, who will also be responsible for seeing that these practices are followed.

D. Product Specific Practices

The following product specific practices will be followed on the job site.

1. Petroleum Products

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All onsite vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers which are clearly labeled. Any petroleum storage tanks stored onsite will be located within a containment area that is designed with an impervious surface between the tank and the ground. The secondary containment must be designed to provide a containment volume that is equal to 110% of the volume of the largest tank. Drip pans shall be provided for all dispensers. Any asphalt substances used onsite will be applied according to the manufacturer's recommendations. The location of any fuel tanks and/or equipment storage areas must be identified on a plan by the contractor once the locations have been determined.

2. Fertilizers

Fertilizers will be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer will be worked in the soil to limit exposure to stormwater. Storage will be in a covered shed. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.

3. Paints, Paint Solvents, and Cleaning Solvents

All containers will be tightly sealed and stored when not in use. Excess paint and solvents will not be discharged to the storm sewer system but will be properly disposed of according to manufacturer's instructions or state and federal regulations.

4. Concrete Wastes

Concrete trucks will be allowed to wash out or discharge surplus concrete or drum wash water on the site, but only in either (1) specifically designated diked areas which have been prepared to prevent contact between the concrete and/or wash out and storm water which will be discharged from the site or (2) in locations where waste concrete can be poured into forms to make riprap or other useful concrete products.

The hardened residue from the concrete wash out diked areas will be disposed of in the same manner as other non-hazardous construction waste materials or may be broken up and used on site

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as deemed appropriate by the Contractor. The job site superintendent will be responsible for seeing that these procedures are followed.

All concrete wash out areas will be located in an area where the likelihood of the area contributing to storm water discharges is negligible. If required, additional BMPs must be implemented to prevent concrete wastes from contributing to storm water discharges. The location of concrete wash out area(s) must be identified on a plan by the contractor once the locations have been determined. In addition, a standard detail on the construction of the concrete wash out shall be included on this plan.

E. Solid and Construction Wastes

All waste materials will be collected and stored in an appropriately covered container and/or securely lidded metal dumpster rented from a local waste management company which must be a solid waste management company licensed to do business in New York and the Town of Amherst. The dumpster will comply with all local and state solid waste management regulations.

All trash and construction debris from the site will be deposited in the dumpster. The dumpster will be emptied a minimum of twice per week or more often if necessary, and the trash will be hauled to a landfill approved by the NYSDEC. No construction waste materials will be buried on site. All personnel will be instructed regarding the correct procedures for waste disposal.

All waste dumpsters and roll-off containers will be located in an area where the likelihood of the containers contributing to storm water discharges is negligible. If required, additional BMPs must be implemented, such as sandbags around the base, to prevent wastes from contributing to storm water discharges. The location of waste dumpsters and roll-off containers must be identified on a plan by the contractor once the locations have been determined.

F. Sanitary Wastes

Portable toilet units or field offices with toilet facilities connected to the municipal sanitary sewer will be used for sanitary purposes. All portable

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toilet units will be emptied a minimum of once per week by a licensed portable facility provided in compliance with local and state regulations.

All sanitary waste units will be located in an area where the likelihood of the unit contributing to storm water discharges is negligible. If required, additional BMPs must be implemented, such as sandbags around the base, to prevent wastes from contributing to storm water discharges. The location of sanitary waste units must be identified on a plan by the contractor once the locations have been determined.

G. Contaminated Soils

Any contaminated soils (resulting from spills of materials with hazardous properties) which may result from construction activities will be contained and cleaned up immediately in accordance with the procedures given in the Materials Management Plan and in accordance with applicable state and federal regulations.

118.3 SPILL PREVENTION AND RESPONSE PROCEDURES

The Contractor will train all personnel in the proper handling and cleanup of spilled materials. No spilled hazardous materials or hazardous wastes will be allowed to come in contact with storm water discharges. If such contact occurs, the storm water discharge will be contained on site until appropriate measures in compliance with state and federal regulations are taken to dispose of such contaminated storm water. It shall be the responsibility of the job site superintendent to properly train all personnel in spill prevention and clean up procedures.

A. In order to minimize the potential for a spill of hazardous materials to come into contact with storm water, the following steps will be implemented:

1. All materials with hazardous properties (such as pesticides, petroleum products, fertilizers, detergents, construction chemicals, acids, paints, paint solvents, cleaning solvents, additives for soil stabilization, concrete curing compounds and additives, etc.) will be stored in a secure location, with their lids on, preferably under cover, when not in use.

2. The minimum practical quantity of all such materials will be kept on the job site.

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3. A spill control and containment kit (containing, for example, absorbent materials, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided at the storage site.

4. Manufacturer's recommended methods for spill cleanup will be clearly posted and site personnel will be trained regarding these procedures and the location of the information and cleanup supplies.

B. In the event of a spill, the following procedures should be followed

1. All spills will be cleaned up immediately after discovery.

2. The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with the hazardous substances.

3. The project manager and the Engineer of Record will be notified immediately.

   Spills of toxic or hazardous materials will be reported to the appropriate federal, state, and/or local government agency, regardless of the size of the spill. Spills of amounts that exceed Reportable Quantities of certain substances specifically mentioned in federal regulations (40 CFR 110, 40 CFR 117, and 40 CFR 302) must be immediately reported to the EPA National Response Center, telephone 1-100-424-1102. From SWPPP-9 "Reportable Quantity Release Form" must be filled out.

4. If the spill exceeds a Reportable Quantity, the SWPPP must be modified within seven (7) calendar days of knowledge of the discharge to provide a description of the release, the circumstances leading to the release, and the date of the release. The plans must identify measures to prevent the recurrence of such releases and to respond to such releases.

C. The job site superintendent will be the spill prevention and response coordinator. He will designate the individuals who will receive spill prevention and response training. These individuals will each become responsible for a particular phase of prevention and response. The names

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of these personnel will be posted in the material storage area and in the office trailer onsite.

119 CONTROL OF NON-STORM WATER DISCHARGES

Certain types of discharges are allowable under the NYSDEC SPDES General Permit for Construction Activity for the State of New York, and it is the intent of this SWPPP to allow such discharges. These types of discharges will be allowed under the conditions that no pollutants will be allowed to come in contact with the water prior to or after its discharge. The control measures which have been outlined previously in this SWPPP will be strictly followed to ensure that no contamination of these non-storm water discharges takes place. The following allowable non-storm water discharges which may occur at the job site include:

A. Discharges from firefighting activities.

B. Fire hydrant flushings (see note below)

C. Waters used to wash vehicles or control dust in order to minimize offsite sediment tracking.

D. Routine external building washdown which does not use detergents.

E. Pavement wash waters where spills or leaks of hazardous materials have not occurred or detergents have not been used.

F. Air conditioning condensate.

G. Springs or other uncontaminated groundwater, including dewatering ground water infiltration.

H. Foundation or footing drains where no contamination with process materials such as solvents is present.

Note: The Contractor shall discharge any super-chlorinated water from water distribution pipe disinfection activities into sanitary sewer system.

120 STORM WATER CONTROL FACILITY MAINTENANCE

Upon completion of construction, SL shall be responsible for maintenance of the storm sewer system and all ponds, bioretention areas, etc. per a Stormwater Maintenance Agreement to the Town of Amherst that shall be filed with the County of Erie.

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The frequency of inspections for the bioretention areas shall match the frequencies listed on the "Bioretention Operation, Maintenance and Management Inspection Checklist" in Appendix O of the SWPPP.

The proposed catch basins, as per section 115, shall be inspected 4 times per year for removal of floatable debris. Any silt buildup over 6" in depth shall be removed and disposed of properly off-site.

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Appendix A

Site Location Map

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Stormwater Interactive Map



The coordinates of the point you clicked on are:

UTM 18	**Easting:**	190681.063	**Northing:**	4770798.806
Longitude/Latitude	**Longitude:**	-78.796	**Latitude:**	43.027

The approximate address of the point you clicked on is:
26-42 Dodge Rd, Getzville, New York, 14068

County: Erie
Town: Amherst
USGS Quad: TONAWANDA EAST

DEC Administrative Boundaries

Region 9:
(Western New York) Allegany, Chautauqua, Cattaraugus, Erie, Niagara and Wyoming counties. For more information visit http://www.dec.ny.gov/about/617.html.

Regulated MS4s

UA 2000: 11350
Standard: Buffalo
Municipality: AMHERST
SWIS: 142200
Regulated: Automatic

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Appendix B

NYSDEC Notice of Intent (NOI)

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NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR _____ (for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-20-001

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-

RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)
Sawyer's Landing LLC

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
Severyn

Owner/Operator Contact Person First Name
Will

Owner/Operator Mailing Address
43 Central Ave

City
Lancaster

State
NY

Zip
14086 -

Phone (Owner/Operator)
716 - 912 - 0969

Fax (Owner/Operator)
___ - ___ - ____

Email (Owner/Operator)
william.severyn.ny@gmail.com

FED TAX ID
__ - _____ (not required for individuals)

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Project Site Information

Project/Site Name
Sawyer's Landing

Street Address (NOT P.O. BOX)
Dodge Road

Side of Street
● North ○ South ○ East ○ West

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Amherst

State: NY
Zip: 14228 -
County: Erie
DEC Region: 9

Name of Nearest Cross Street
Sweet Home Road

Distance to Nearest Cross Street (Feet)
0

Project In Relation to Cross Street
○ North ○ South ● East ○ West

Tax Map Numbers
Section-Block-Parcel
40.08-3-13.1

Tax Map Numbers

1. Provide the Geographic Coordinates for the project site. To do this, go to the NYSDEC Stormwater Interactive Map on the DEC website at:

https://gisservices.dec.ny.gov/gis/stormwater/

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located the centroid of your project site, go to the bottom right hand corner of the map for the X, Y coordinates. Enter the coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)
-7 8796
Ex. -73.749

Y Coordinates (Northing)
43027
Ex. 42.652

2. What is the nature of this construction project?

● **New Construction**

○ **Redevelopment with increase in impervious area**

○ **Redevelopment with no increase in impervious area**

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3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use	Post-Development Future Land Use
● FOREST	○ SINGLE FAMILY HOME
○ PASTURE/OPEN LAND	○ SINGLE FAMILY SUBDIVISION
○ CULTIVATED LAND	○ TOWN HOME RESIDENTIAL
○ SINGLE FAMILY HOME	○ MULTIFAMILY RESIDENTIAL
○ SINGLE FAMILY SUBDIVISION	○ INSTITUTIONAL/SCHOOL
○ TOWN HOME RESIDENTIAL	○ INDUSTRIAL
○ MULTIFAMILY RESIDENTIAL	○ COMMERCIAL
○ INSTITUTIONAL/SCHOOL	○ MUNICIPAL
○ INDUSTRIAL	○ ROAD/HIGHWAY
○ COMMERCIAL	○ RECREATIONAL/SPORTS FIELD
○ ROAD/HIGHWAY	○ BIKE PATH/TRAIL
○ RECREATIONAL/SPORTS FIELD	○ LINEAR UTILITY (water, sewer, gas, etc.)
○ BIKE PATH/TRAIL	○ PARKING LOT
○ LINEAR UTILITY	○ CLEARING/GRADING ONLY
○ PARKING LOT	○ DEMOLITION, NO REDEVELOPMENT
○ OTHER	○ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
	● OTHER

Number of Lots

Mixed use

***Note:** for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

Total Site Area	Total Area To Be Disturbed	Existing Impervious Area To Be Disturbed	Future Impervious Area Within Disturbed Area
17.4	16.4	0.0	8.0

5. Do you plan to disturb more than 5 acres of soil at any one time? ● **Yes** ○ **No**

6. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	B	C	D
%	%	%	100 %

7. Is this a phased project? ○ **Yes** ● **No**

8. Enter the planned start and end dates of the disturbance activities.

Start Date 7/1/2021 - **End Date** 7/1/2022

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9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.

Name

Ellicott Creek

9a. Type of waterbody identified in Question 9?

- ○ Wetland / State Jurisdiction On Site (Answer 9b)
- ○ Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 9b)
- ○ Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ● Stream / Creek Off Site
- ○ River On Site
- ○ River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ○ Other Type Off Site

9b. How was the wetland identified?

- ○ Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ○ Other (identify)

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001? ○ Yes ● No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001? ○ Yes ● No

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? ○ Yes ● No
If no, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ○ Yes ● No
If Yes, what is the acreage to be disturbed?

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ○ Yes ● No

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15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ● Yes ○ No ○ Unknown

16. What is the name of the municipality/entity that owns the separate storm sewer system?

Erie County

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ Yes ● No ○ Unknown

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law? ○ Yes ● No

19. Is this property owned by a state authority, state agency, federal government or local government? ○ Yes ● No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) ○ Yes ● No

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? ● Yes ○ No

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)? ● Yes ○ No
If No, skip questions 23 and 27-39.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? ● Yes ○ No

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24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ● **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer
Carmina Wood Morris DPC

Contact Name (Last, Space, First)
Wood Christopher

Mailing Address
487 Main St

City
Buffalo

State Zip
NY 14127-

Phone
716-842-3165

Fax
716-842-0263

Email
cwood@cwm-ae.com

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name
Christopher

MI

Last Name
Wood

Signature

Date
03/03/2021

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25. Has a construction sequence schedule for the planned management practices been prepared? ● Yes ○ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ● Check Dams
- ○ Construction Road Stabilization
- ● Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ○ Sediment Basin
- ○ Sediment Traps
- ● Silt Fence
- ● Stabilized Construction Entrance
- ● Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ○ Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ● Mulching
- ● Protecting Vegetation
- ○ Recreation Area Improvement
- ● Seeding
- ○ Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ○ Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ○ Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ○ Retaining Wall
- ○ Riprap Slope Protection
- ○ Rock Outlet Protection
- ○ Streambank Protection

Other

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Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

- ● **Preservation of Undisturbed Areas**
- ● **Preservation of Buffers**
- ○ **Reduction of Clearing and Grading**
- ○ **Locating Development in Less Sensitive Areas**
- ○ **Roadway Reduction**
- ○ **Sidewalk Reduction**
- ○ **Driveway Reduction**
- ○ **Cul-de-sac Reduction**
- ○ **Building Footprint Reduction**
- ○ **Parking Reduction**

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

- ● All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).
- ○ Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

0.661 **acre-feet**

29. Identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required(#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

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Table 1 - Runoff Reduction (RR) Techniques and Standard Stormwater Management Practices (SMPs)

	Total Contributing Area (acres)		Total Contributing Impervious Area (acres)
RR Techniques (Area Reduction)			
● Conservation of Natural Areas (RR-1)	1.0	and/or	0.0
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)		and/or	
○ Tree Planting/Tree Pit (RR-3)		and/or	
○ Disconnection of Rooftop Runoff (RR-4)		and/or	
RR Techniques (Volume Reduction)			
○ Vegetated Swale (RR-5)			
○ Rain Garden (RR-6)			
○ Stormwater Planter (RR-7)			
○ Rain Barrel/Cistern (RR-8)			
○ Porous Pavement (RR-9)			
○ Green Roof (RR-10)			
Standard SMPs with RRv Capacity			
○ Infiltration Trench (I-1)			
○ Infiltration Basin (I-2)			
○ Dry Well (I-3)			
○ Underground Infiltration System (I-4)			
● Bioretention (F-5)	4.3		
○ Dry Swale (O-1)			
Standard SMPs			
○ Micropool Extended Detention (P-1)			
○ Wet Pond (P-2)			
○ Wet Extended Detention (P-3)			
○ Multiple Pond System (P-4)			
● Pocket Pond (P-5)	3.4		
○ Surface Sand Filter (F-1)			
○ Underground Sand Filter (F-2)			
○ Perimeter Sand Filter (F-3)			
○ Organic Filter (F-4)			
○ Shallow Wetland (W-1)			
○ Extended Detention Wetland (W-2)			
○ Pond/Wetland System (W-3)			
○ Pocket Wetland (W-4)			
○ Wet Swale (O-2)			

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Table 2 - Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Alternative SMP	Total Contributing Impervious Area (acres)
○ Hydrodynamic	
○ Wet Vault	
○ Media Filter	
○ Other	

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Name

Manufacturer

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

Total RRv provided

0.199 **acre-feet**

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28).

○ **Yes** ● **No**

If Yes, go to question 36.
If No, go to question 32.

32. Provide the Minimum RRv required based on HSG.
[Minimum RRv Required = (P)(0.95)(Ai)/12, Ai=(S)(Aic)]

Minimum RRv Required

0.127 **acre-feet**

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

● **Yes** ○ **No**

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

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33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRv Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question 29.

WQv Provided

3.664 **acre-feet**

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRv provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a). 3.863

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? ● **Yes** ○ **No**

If Yes, go to question 36.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.

CPv Required

0.42 **acre-feet**

CPv Provided

0.42 **acre-feet**

36a. The need to provide channel protection has been waived because:

○ Site discharges directly to tidal waters or a fifth order or larger stream.

○ Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (37a), if applicable.

Total Overbank Flood Control Criteria (Qp)

Pre-Development

4.34 **CFS**

Post-development

3.63 **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development

7.33 **CFS**

Post-development

4.38 **CFS**

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37a. The need to meet the Qp and Qf criteria has been waived because:

- ○ Site discharges directly to tidal waters or a fifth order or larger stream.
- ○ Downstream analysis reveals that the Qp and Qf controls are not required

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? ● Yes ○ No

If Yes, Identify the entity responsible for the long term Operation and Maintenance

Sawyer's Landing LLC

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required(#28). (See question 32a) This space can also be used for other pertinent project information.

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40. Identify other DEC permits, existing and new, that are required for this project/facility.

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Solid Waste
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ● Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers
- ○ Stream Bed or Bank Protection / Article 15
- ○ Endangered or Threatened Species(Incidental Take Permit)
- ○ Individual SPDES
- ○ SPDES Multi-Sector GP NYR
- ○ Other
- ● None

41. Does this project require a US Army Corps of Engineers Wetland Permit? ● Yes ○ No
If Yes, Indicate Size of Impact. .

42. Is this project subject to the requirements of a regulated, traditional land use control MS4? ● Yes ○ No
(If No, skip question 43)

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ● Yes ○ No

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. NYR

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Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name: Will

MI:

Print Last Name: Severyn

Owner/Operator Signature: William T Severyn

Date: 03/03/2021

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Appendix C

MS4 SWPPP Acceptance Form

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NYS Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit

*(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information	
1. Owner/Operator Name:	Sawyer's Landing LLC
2. Contact Person:	Will Severyn
3. Street Address:	43 Central Ave
4. City/State/Zip:	Lancaster, NY 14086
II. Project Site Information	
5. Project/Site Name:	Sawyer's Landing
6. Street Address:	Dodge Road
7. City/State/Zip:	Amherst, NY 14228
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information	
8. SWPPP Reviewed by:	
9. Title/Position:	
10. Date Final SWPPP Reviewed and Accepted:	
IV. Regulated MS4 Information	
11. Name of MS4:	
12. MS4 SPDES Permit Identification Number: NYR20A	
13. Contact Person:	
14. Street Address:	
15. City/State/Zip:	
16. Telephone Number:	

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MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

Date:

VI. Additional Information

(NYS DEC - MS4 SWPPP Acceptance Form - January 2015)

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Appendix D

NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity Permit No. GP-0-20-001

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70

of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

1-23-20

Authorized Signature

Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

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Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;

2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State.*

3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

*Discharge*s authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the *Stormwater Pollution Prevention Plan* ("SWPPP") the reason(s) for the

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deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:

   (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharge*s;

   (ii) Control stormwater *discharge*s, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;

   (iii) *Minimize* the amount of soil exposed during *construction activity*;

   (iv) *Minimize* the disturbance of *steep slopes*;

   (v) *Minimize* sediment *discharge*s from the site;

   (vi) Provide and maintain *natural buffer*s around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharge*s, unless *infeasible*;

   (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;

   (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and

   (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.

b. **Soil Stabilization**. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments

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listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

c. **Dewatering**. *Discharges* from *dewatering* activities, including *discharges* from *dewatering* of trenches and excavations, must be managed by appropriate control measures.

d. **Pollution Prevention Measures**. Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards.* At a minimum, such measures must be designed, installed, implemented and maintained to:

(i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;

(ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and

(iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

e. **Prohibited *Discharges*.** The following *discharges* are prohibited:

(i) Wastewater from washout of concrete;

(ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

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(iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;

(iv) Soaps or solvents used in vehicle and equipment washing; and

(v) Toxic or hazardous substances from a spill or other release.

f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices ("SMPs") are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

(i) Runoff Reduction Volume ("RRv"): Reduce the total Water Quality Volume ("WQv") by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

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For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site discharges directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria ("Qp"): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria ("Qf"): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

b. *Sizing Criteria* for *New Development* in Enhanced Phosphorus Removal Watershed

(i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be

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calculated in accordance with the criteria in Section 10.3 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible*.

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site *discharges* directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

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c. Sizing Criteria for Redevelopment Activity

(i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.

(1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or

(2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or

(3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or

(4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

(ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iii) *Overbank* Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

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d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharges* necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;

2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharges* authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharges* authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharges* will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

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E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharges*; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.

3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: "Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned"; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharges* from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.

4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **not** authorized by this permit:

1. *Discharges* after *construction activities* have been completed and the site has undergone *final stabilization*;

2. *Discharges* that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;

3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;

4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

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operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;

6. *Construction activities* for residential, commercial and institutional projects:

   a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

7. *Construction activities* for linear transportation projects and linear utility projects:

   a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

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8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:

   a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.

      - 1-5 acres of disturbance - 20 feet
      - 5-20 acres of disturbance - 50 feet
      - 20+ acres of disturbance - 100 feet, or

   b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
      (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
      (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
      (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
      (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or

   c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

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(i) No Affect
(ii) No Adverse Affect
(iii) Executed Memorandum of Agreement, or

d. Documentation that:

(i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharges* from *construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the "MS4 SWPPP Acceptance" form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.

3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of *Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4* . This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

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B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (http://www.dec.ny.gov/). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

   NOTICE OF INTENT
   NYS DEC, Bureau of Water Permits
   625 Broadway, 4th Floor
   Albany, New York 12233-3505

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.

3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.

4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.

2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:

   a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (http://www.dec.ny.gov/) for more information,

   b. where required, all necessary Department permits subject to the *Uniform Procedures Act ("UPA")* (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators* of *construction activities* that are required to obtain *UPA* permits

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must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

c. the final SWPPP has been prepared, and

d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.

3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

   a. For *construction activities* that are not subject to the requirements of a *regulated, traditional land use control MS4*:

      (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or

      (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has not been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;

      (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

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b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:

(i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed "*MS4* SWPPP Acceptance" form, or

(ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed "MS4 SWPPP Acceptance" form.

4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination ("NOT") has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor's or subcontractor's certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land*

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use control MS4, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

a. The *owner or operator* shall have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.

c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

d. The *owner or operator* shall install any additional site-specific practices needed to protect water quality.

e. The *owner or operator* shall include the requirements above in their SWPPP.

4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..

5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.

6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

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regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of *a construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

   An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4,* the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.

2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

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operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.

2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.

3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.

4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:

    a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

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b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*;

c. to address issues or deficiencies identified during an inspection by the *qualified inspector,* the Department or other regulatory authority; and

d. to document the final construction conditions.

5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.

6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor.* The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

   The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

   "I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with

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the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharges* from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:

   a. Background information about the scope of the project, including the location, type and size of project

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b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge*(s);

c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);

d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;

e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;

f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;

g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;

h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;

i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection

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schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;

k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and

l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

   Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

   The post-construction stormwater management practice component of the SWPPP shall include the following:

   a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

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b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;

c. A Stormwater Modeling and Analysis Report that includes:
   (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;

   (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;

   (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;

   (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;

   (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and

   (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;

d. Soil testing results and locations (test pits, borings);

e. Infiltration test results, when required; and

f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

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3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria,* Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators* of *construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators* of the *construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

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begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- New York State Erosion and Sediment Control Certificate Program holder
- Registered Landscape Architect, or
- someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:

   a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located

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in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:

a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.

b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

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d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization,* and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.B.1 of this permit.

e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization,* all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site*, and all points of *discharge* from the *construction site*.

4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

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(Part IV.C.4.a)

a. Date and time of inspection;

b. Name and title of person(s) performing inspection;

c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

d. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This shall include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;

f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;

g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;

i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);

k. Identification and status of all corrective actions that were required by previous inspection; and

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l. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the *qualified inspector.* Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.

2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:

   a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

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b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;

c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.

d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.

3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.

4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the "MS4 Acceptance" statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector*'s final site inspection certification(s) required in Part V.A.3. of this permit.

5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:

a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

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b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),

c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,

d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

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Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator,* its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to $37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

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E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit , or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:

    a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

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(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(i) the chief executive officer of the agency, or

(ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

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superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.

3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.

4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4,* or by a duly authorized representative of that person.

   It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

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include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge*(s), the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner's or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

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3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.

4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.

2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

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R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

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APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

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Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property –means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both "sewage" and "stormwater".

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for "*Construction Activity(ies)*" also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for "*Commence (Commencement of) Construction Activities*" and "*Larger Common Plan of Development or Sale*" *also.*

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system

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and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

Embankment –means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department's rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

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Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term "plan" in "larger common plan of development or sale" is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same "common plan" is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State;
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a *combined sewer*; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer –means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

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New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

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Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

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SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

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Steep Slope – means land area designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint sources*. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint sources*, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

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training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

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APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single family home not located in one of the watersheds listed in Appendix C or not *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E
- Construction of a barn or other *agricultural building*, silo, stock yard or pen.

The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects
- Pond construction
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover
- Cross-country ski trails and walking/hiking trails
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

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Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

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Table 2

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

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Table 2 (Continued)

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover,* and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

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APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River - Figure 1
- Onondaga Lake Watershed - Figure 2
- Greenwood Lake Watershed -Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

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Appendix C

Figure 1 - New York City Watershed East of the Hudson

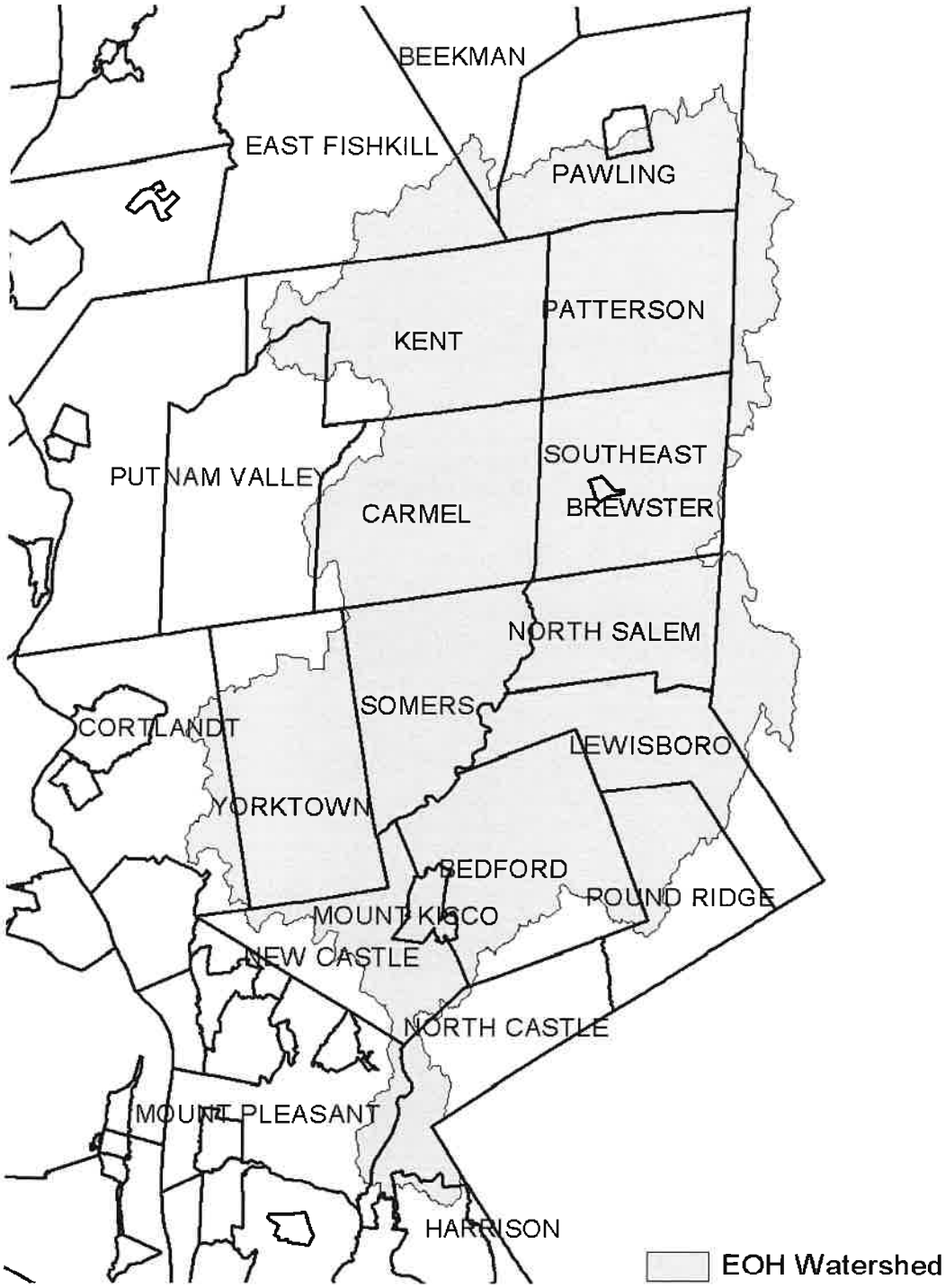

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Figure 2 - Onondaga Lake Watershed



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Appendix C

Figure 3 - Greenwood Lake Watershed



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Figure 4 - Oscawana Lake Watershed

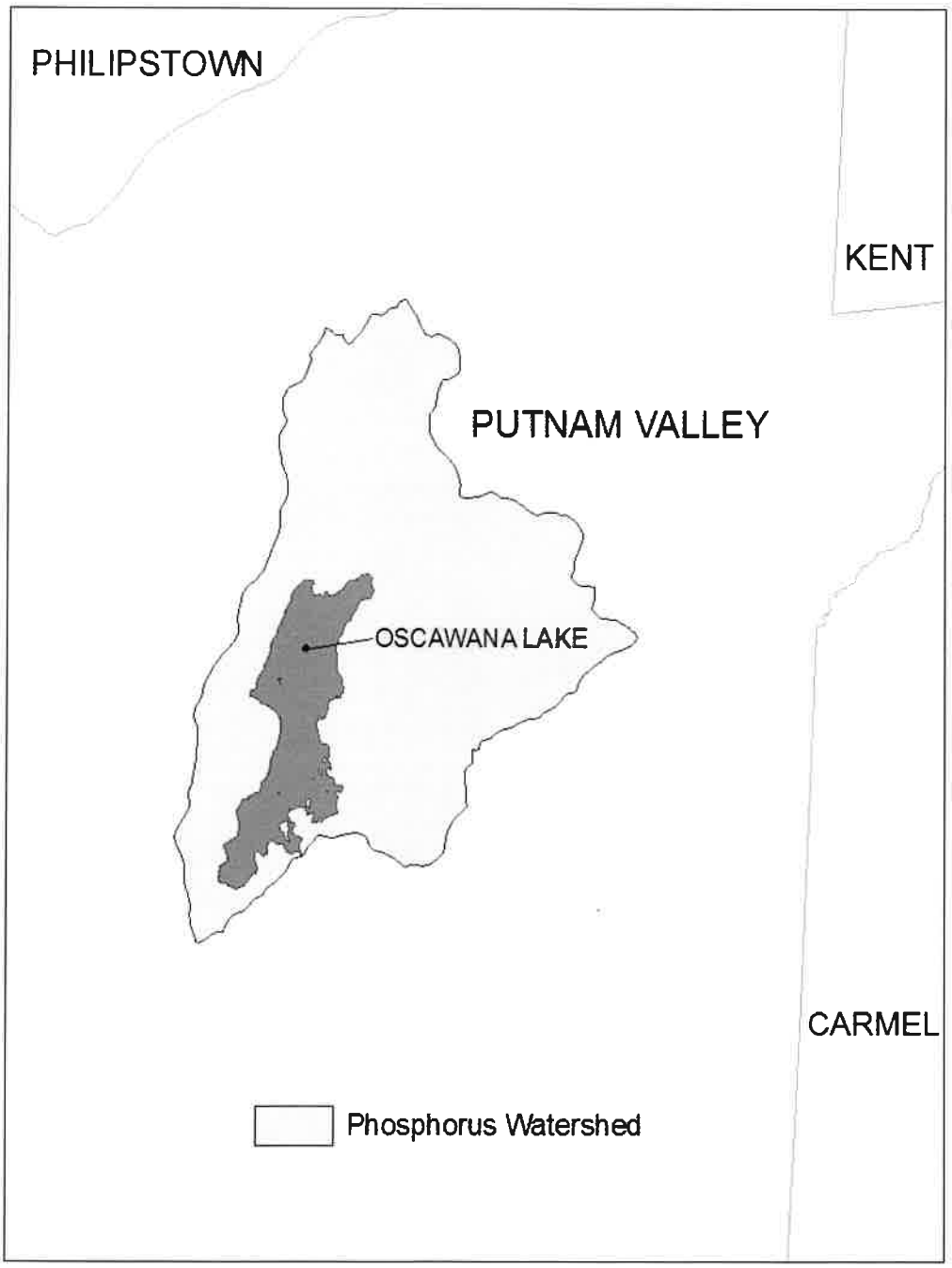

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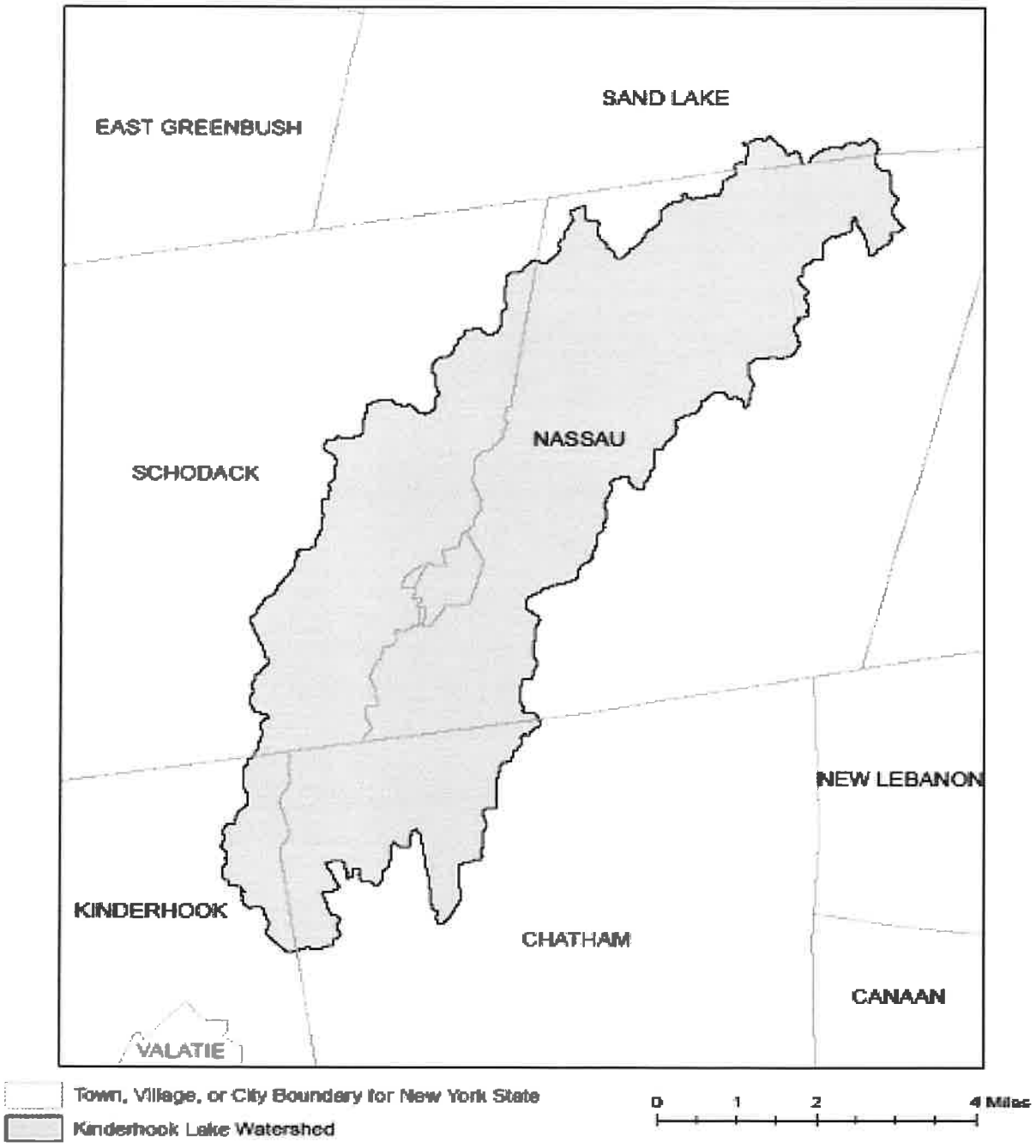
Figure 5 - Kinderhook Lake Watershed



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APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River - See Figure 1 in Appendix C

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APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

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303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

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303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

APPENDIX F – List of NYS DEC Regional Offices

Region	Covering the following counties:	Division of Environmental Permits (DEP) Permit Administrators	Division of Water (DOW) Water (SPDES) Program
1	Nassau and Suffolk	50 Circle Road Stony Brook, NY 11790 Tel. (631) 444-0365	50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0405
2	Bronx, Kings, New York, Queens and Richmond	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4997	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4933
3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester	21 South Putt Corners Road New Paltz, NY 12561-1696 Tel. (845) 256-3059	100 Hillside Avenue, Suite 1w White Plains, NY 10603 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1150 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2069	1130 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	1115 State Route 86, Po Box 296 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, NY 12885-1172 Tel. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Appendix E

Forms

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

STORM WATER POLLUTION PREVENTION PLAN
CONTRACTOR'S CERTIFICATION STATEMENT

Sawyer's Landing

CONTRACTOR'S CERTIFICATION:

"I certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP for the construction site identified in such SWPPP as a condition of authorization to discharge storm water. I also understand that the operator must comply with the terms and conditions of the New York State Pollutant Discharge Elimination System (SPDES) general permit for storm water discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards."

Note: The contractor shall have at least one NYSDEC trained individual onsite at all times when earthwork and other SWPPP associated work is being performed from each contractor(s) and subcontractor(s). Each contractor(s) and subcontractor(s) shall provide copies of these individuals' certifications to the Town of Amherst.

Name: _____
(Print)

Signature: _____

Title: _____

Company Name: _____

Address: _____

Telephone Number: _____

Date: _____

Scope of Services: _____

Trained Individual(s) Responsible for Implementation: _____

This form must be signed by a responsible corporate officer or other party meeting the "Signatory Requirements" of the NYSDEC SPDES General Permit

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

SWPPP Preparer Certification Form

SPDES General Permit for Stormwater Discharges From Construction Activity (GP-0-20-001)

Project Site Information

Project/Site Name

Sawyer's Landing

Owner/Operator Information

Owner/Operator (Company Name/Private Owner/Municipality Name)

Sawyer's Landing LLC

Certification Statement – SWPPP Preparer

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Christopher		Wood
First name	MI	Last Name

Signature

3/3/21
Date

Revised: January 2020

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Owner/Operator Certification Form

SPDES General Permit For Stormwater Discharges From Construction Activity (GP-0-20-001)

Project/Site Name: Sawyer's Landing

eNOI Submission Number: _____

eNOI Submitted by: ☐ Owner/Operator ☑ SWPPP Preparer ☐ Other

Certification Statement - Owner/Operator

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Owner/Operator First Name M.I. Last Name

William T Severyn

Signature

3/3/21

Date

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Appendix F

NYSDEC Notice of Termination (NOT)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505
(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ___ ___ ___ ___ ___ ___

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person: | 4a.Telephone:

4b. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. □ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP. ***Date final stabilization completed** (month/year): _____

9b. □ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ___ ___ ___ ___ ___ ___
(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. □ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? □ yes □ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? □ yes □ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

_____

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? □ yes □ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

□ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.

□ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).

□ For post-construction stormwater management practices that are privately owned, a mechanism is in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the owner or operator's deed of record.

□ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university or hospital), government agency or authority, or public utility; policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____ (acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? □ yes □ no

(If Yes, complete section VI - "MS4 Acceptance" statement

V. Additional Information/Explanation:

(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:

Title/Position:

Signature:	Date:

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

VII. Qualified Inspector Certification - Final Stabilization:	
I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:
VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):	
I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:
IX. Owner or Operator Certification	
I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2015)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Appendix G

Construction Documents

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York
SITE DEVELOPMENT DRAWINGS

AGENCIES

ENGINEERING DEPARTMENT
NAME/TITLE: JEFFERY BURROUGHS, P.E. – TOWN ENGINEER
COMPANY/DEPT: TOWN OF AMHERST ENGINEERING DEPARTMENT
ADDRESS: 1100 NORTH FOREST ROAD
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716-631-7154

PLANNING & ZONING DEPARTMENT
NAME/TITLE: DANIEL HOWARD – PLANNING DIRECTOR
COMPANY/DEPT: TOWN OF AMHERST PLANNING DEPARTMENT
ADDRESS: 5583 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716-631-7051

LAND SURVEYOR
NAME/TITLE:
COMPANY/DEPT: GPI ENGINEERING, LANDSCAPE ARCHITECTURE SURVEYING, LLP
ADDRESS: 4950 GENESEE STREET, SUITE 100
BUFFALO, NEW YORK 14225
TELEPHONE 716-633-4844

UTILITIES

NATURAL GAS
COMPANY/DEPT: NATIONAL FUEL GAS CORP.
ADDRESS: 6363 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716-857-7000

TELEPHONE COMPANY
COMPANY/DEPT: VERIZON
ADDRESS: 65 FRANKLIN STREET
BUFFALO, NEW YORK 14203
TELEPHONE 716-840-8748

CABLE COMPANY
COMPANY/DEPT: TIME WARNER
ADDRESS: 789 CHURCH ROAD
WEST SENECA, NEW YORK
TELEPHONE 716-558-8615

ELECTRIC COMPANY
COMPANY/DEPT: NATIONAL GRID
ADDRESS: 144 KENSINGTON AVENUE
BUFFALO, NEW YORK 14214
TELEPHONE 716-236-2738

WATER
COMPANY/DEPT: ERIE COUNTY WATER AUTHORITY
ADDRESS: 3030 UNION ROAD
CHEEKTOWAGA, NEW YORK 14227
TELEPHONE 716-684-1510

DIG SAFELY NEW YORK
TELEPHONE 1-800-962-7962

OWNER/DEVELOPER

NAME: Sawyer's Landing LLC
ADDRESS 43 Central Ave Suite #300
Lancaster, NY 14086

TELEPHONE 716 818-0207

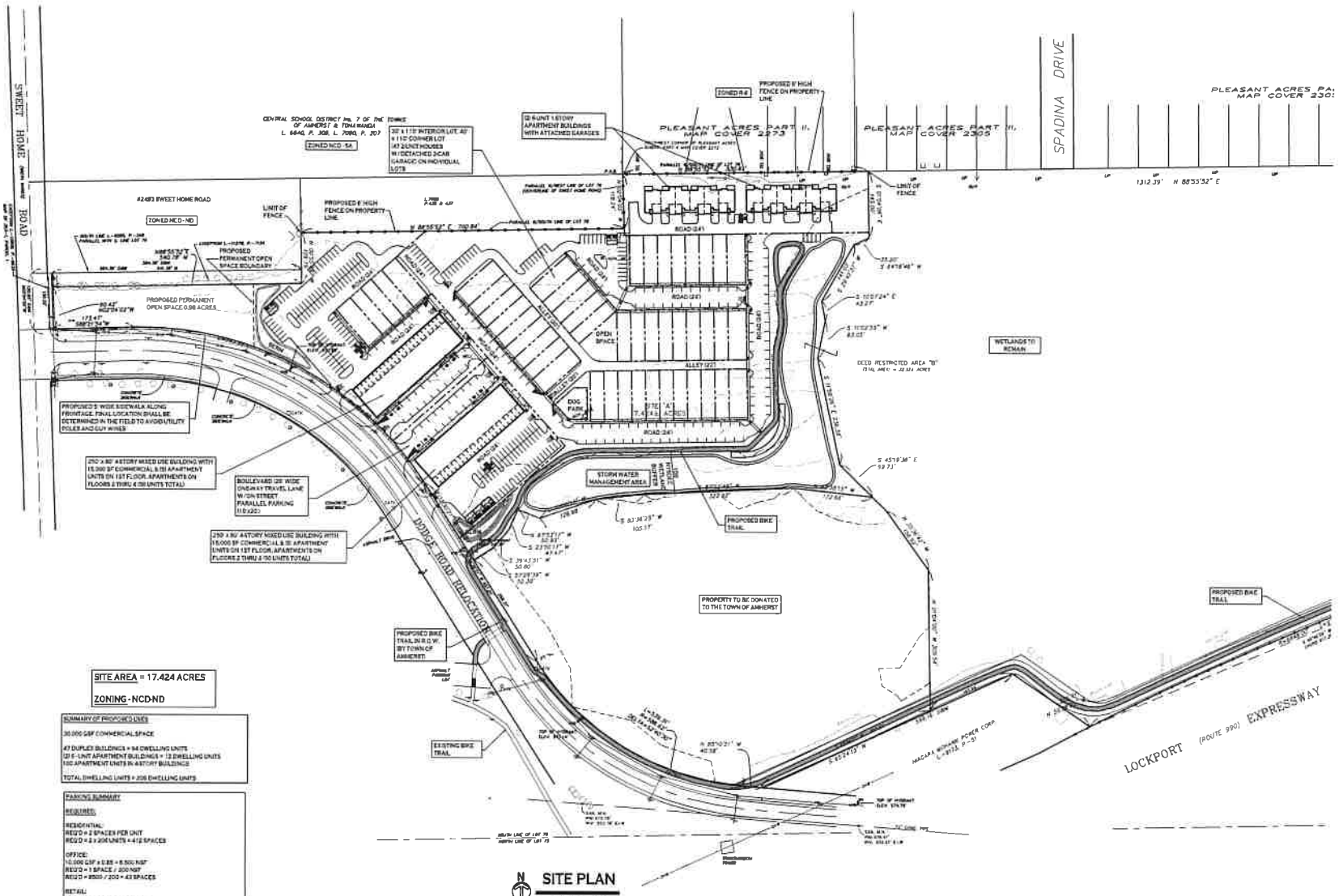
ENGINEER

Carmina • Wood • Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

FEBRUARY 2021

DWG NO.	DRAWING TITLE
–	COVER SHEET
–	TOPOGRAPHIC MAP
–	BOUNDARY SURVEY
C-001	DEMOLITION & EROSION CONTROL PLAN
C-002	DEMOLITION & EROSION CONTROL DETAILS
C-100	OVERALL SITE PLAN
C-101	SITE PLAN
C-102	PARCEL MAP
C-103	SITE DETAILS
C-104	SITE DETAILS
C-200	GRADING PLAN
C-300	STORM DRAINAGE PLAN
C-301	STORM DRAINAGE DETAILS
C-302	STORM DRAINAGE DETAILS
C-303	STORM DRAINAGE DETAILS
C-400	UTILITY PLAN
C-401	SANITARY SEWER DETAILS
C-402	SANITARY SEWER DETAILS
C-403	SANITARY SEWER GENERAL NOTES
C-404	SANITARY SEWER TESTING NOTES
C-405	WATER DETAILS
C-406	WATER DETAILS
C-407	WATER DETAILS & NOTES
C-408	INSULATED ENCLOSURE DETAIL
L-100	LANDSCAPE PLAN

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



SITE PLAN
SCALE: 1"=100'

© Carmina Wood Morris DPC

Carmina Wood Morris
487 Main Street Suite 300
Buffalo, New York 14203
P 716.842.2185
F 716.842.0761

REVISIONS:
No. Description Date
Nil.

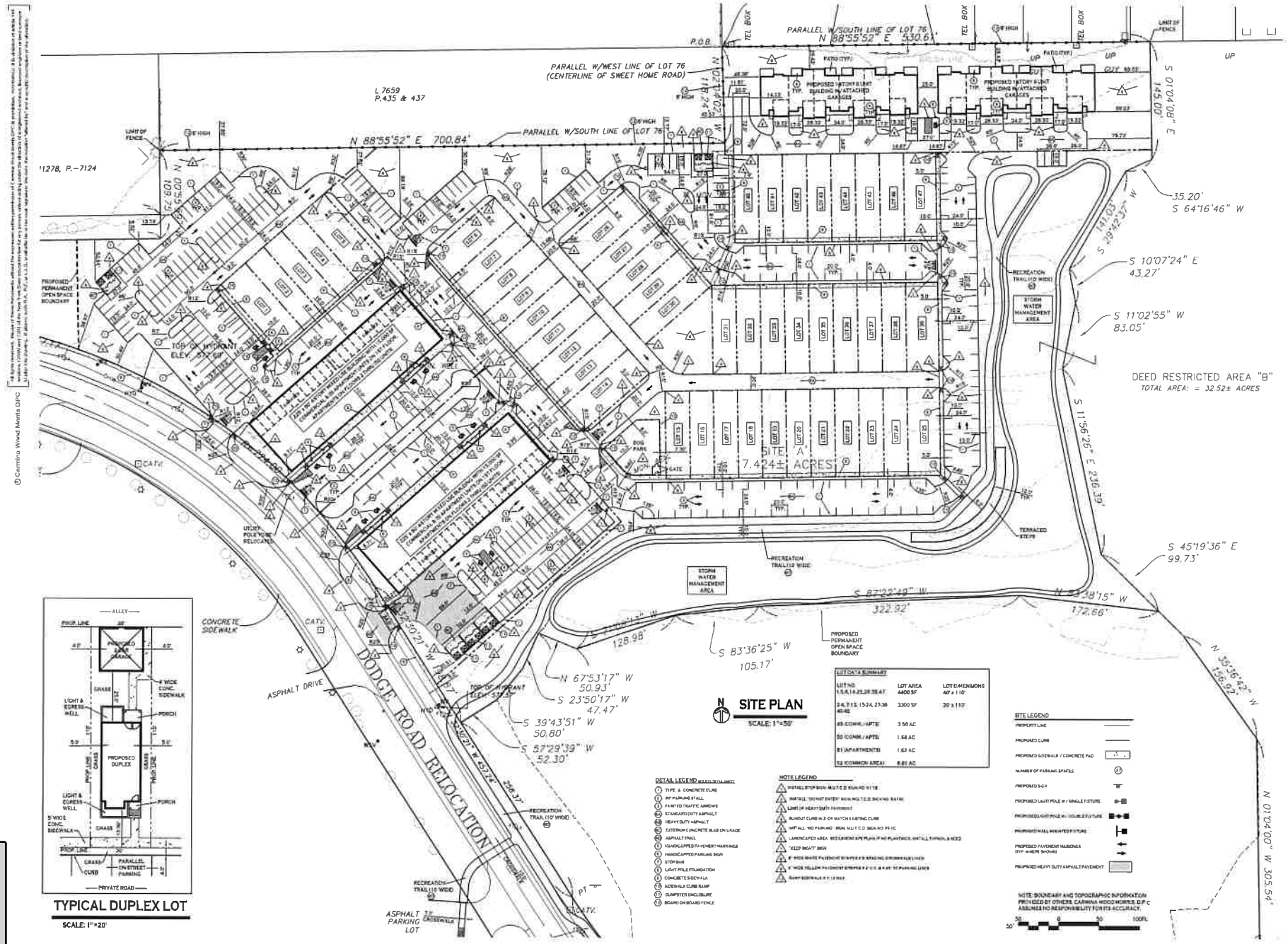
PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Overall Site Plan

DRAWING NO.
C-100
Project no.: 21.011

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



Carmina Wood Morris

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

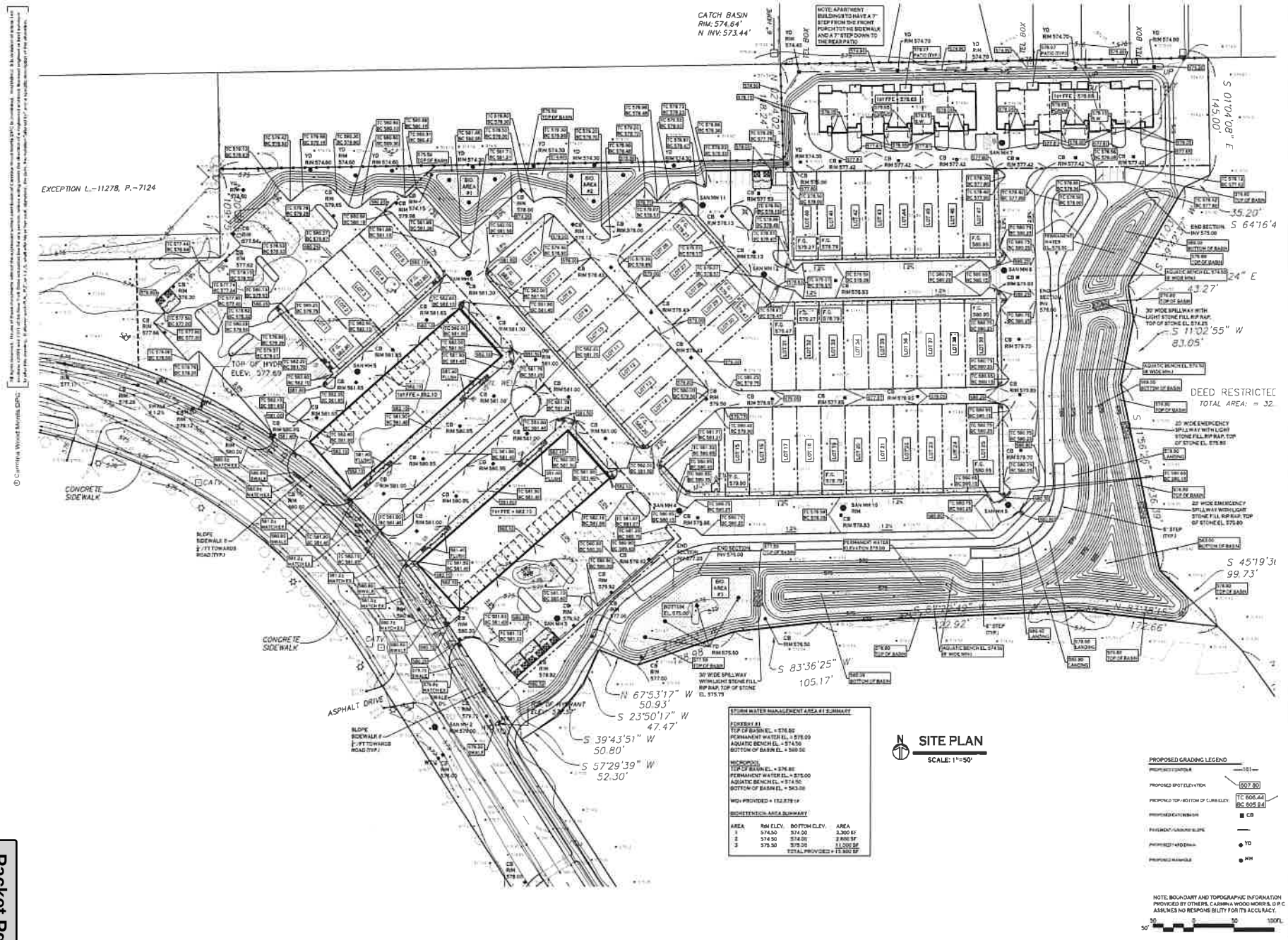
DRAWING NAME:
Site Plan

DRAWING NO.
C-101

Project no.: 21.01

1.h

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



Carmina Wood Morris

487 Main Street - Suite 500
Buffalo, New York 14203
P 716.842.3185
F 716.842.0961

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As noted

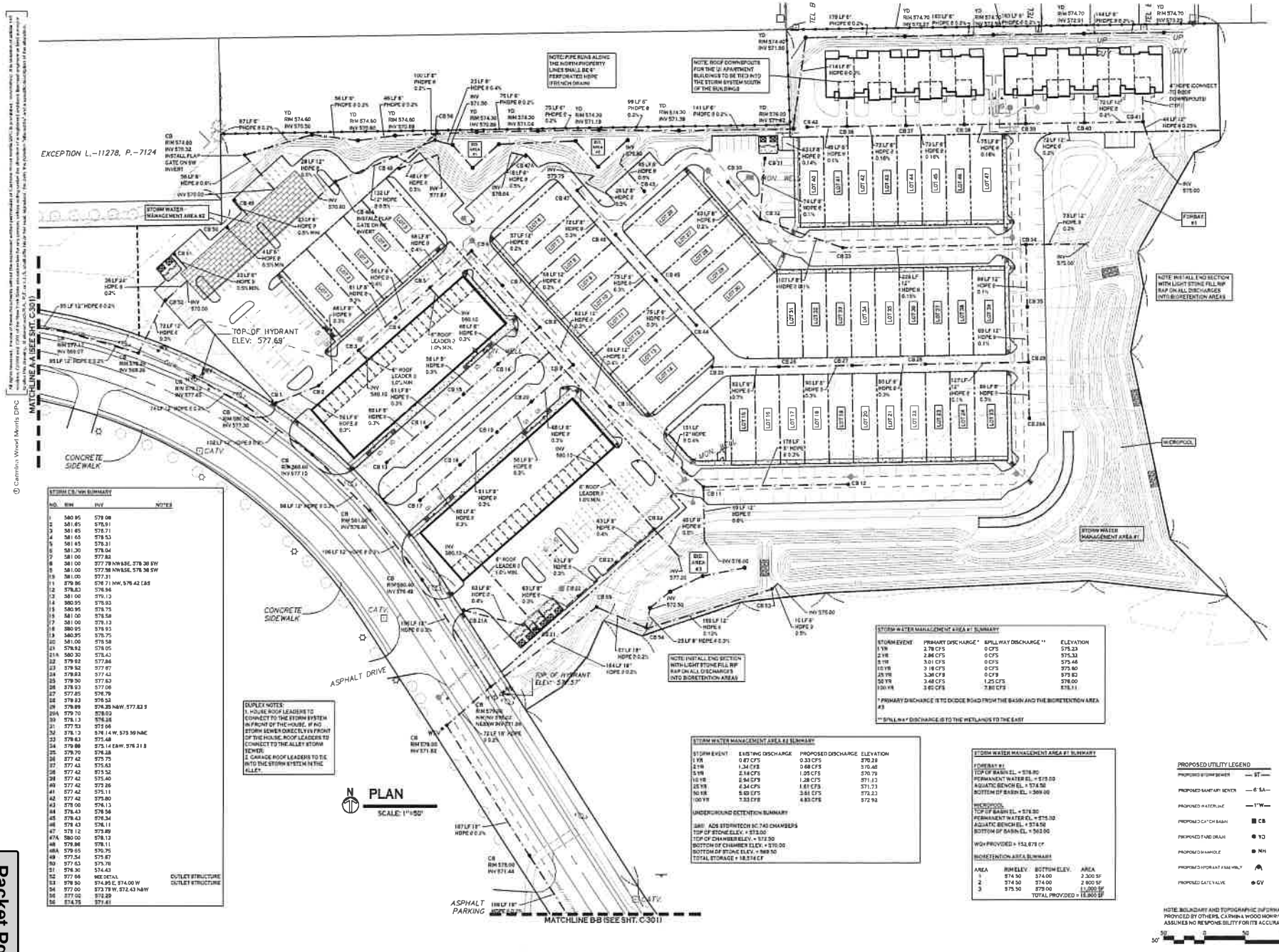
DRAWING NAME:
Grading Plan

DRAWING NO.
C-200

Project no.: 21.011

© Carmina Wood Morris, DPC

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



Carmina Wood Morris DPC

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3186
F 716.842.0761

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

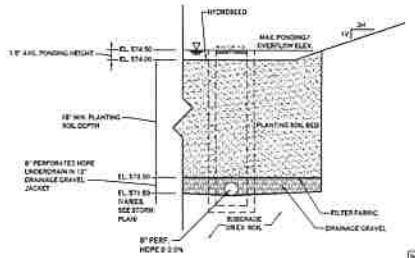
DRAWING NAME:
Storm Drainage Plan

DRAWING NO.
C-300

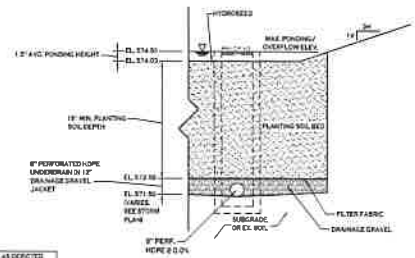
Project no.: 21.011

Packet Pg. 1815

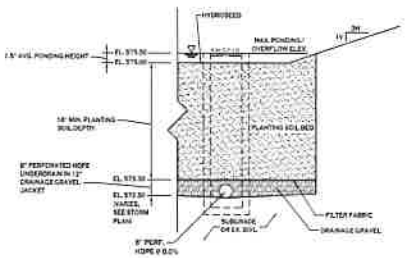
1.h



BIORETENTION AREA #1



BIORETENTION AREA #2



BIORETENTION AREA #3

NOTE: AS DEPICTED TYPICALLY IN BIORETENTION AREAS

BIORETENTION AREA - TYPICAL SECTIONS

NOT TO SCALE

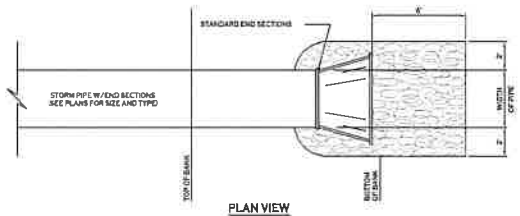
NOTES:
1. FILTER FABRIC TO BE NON-WOVEN CLASS 'C', MIRAFI 140 N OR APPROVED EQUIVALENT.
2. MULCH TO BE SHREDDED HARDWOOD, AGED 12 MONTHS MIN.
3. DRAINAGE GRAVEL TO MEET AASHTO M-43, NO.67, SIZE 0.25" TO 0.75"
4. CONTRACTOR TO PROVIDE PLANTING SOIL SUBMITTAL SPECIFICATION FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION

NOTE: PLANTING SOIL SHALL BE LOAM/SAND MIX CONTAINING A MINIMUM OF 35 TO 99% SAND BY VOLUME AND LESS THAN 25% CLAY. SOIL SHOULD FALL WITHIN USCS TYPES SM OR SL WITH PERMEABILITY OF AT LEAST 0.5 FEET PER DAY. SOIL SHOULD BE FREE FROM STONES, STUMPS, ROOTS OR OTHER WOODY MATERIAL OVER 1" IN DIAMETER. PLACEMENT OF THE PLANTING SOIL SHOULD BE IN LIFTS OF 12" TO 18", LOOSELY COMPACTED.

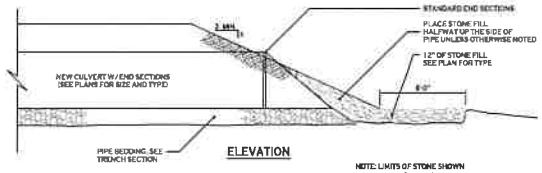
CHARACTERISTICS SHALL BE:
PH RANGE: 5.2 - 7.00
ORGANIC MATTER: 1.5 - 4.0%
MAGNESIUM: 35 LBS PER ACRE MIN.
PHOSPHERUS: 75 LBS PER ACRE MIN
POTASSIUM: 85LBS PER ACRE MIN.
SOLUBLE SALTS: 500 PPM
CLAY: 10 TO 25%
SILT: 30 TO 55%
SAND: 35 TO 60%

BIO-RETENTION AREA SEEDING SPEC (NORTHEAST WETLAND GRASS SEED MIX):

SEED MIXTURE	VARIETY	PERCENT BY NO. OF SEEDS
CALOPHIS BICOLOR	AGROSTIS STOLONIFERA	83.0
TALL BLUEGRASS	POA TRIVIALIS	17.0
MEADOW FOXTAIL	ALOPECURUS PRATENSIS	11.0
ANNUAL RYEGRASS	LOLIUM MULTIFLORUM	4.5
DEERTONGUE	PANICUM CLANDESTINUM	4.5



PLAN VIEW

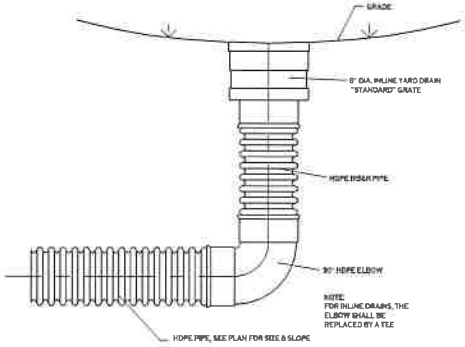


ELEVATION

NOTE: LIMITS OF STONE SHOWN ARE MINIMUMS. PLAN MAY INDICATE GREATER LIMITS

TYPICAL PIPE OUTLET W/ END SECTION & RIP RAP

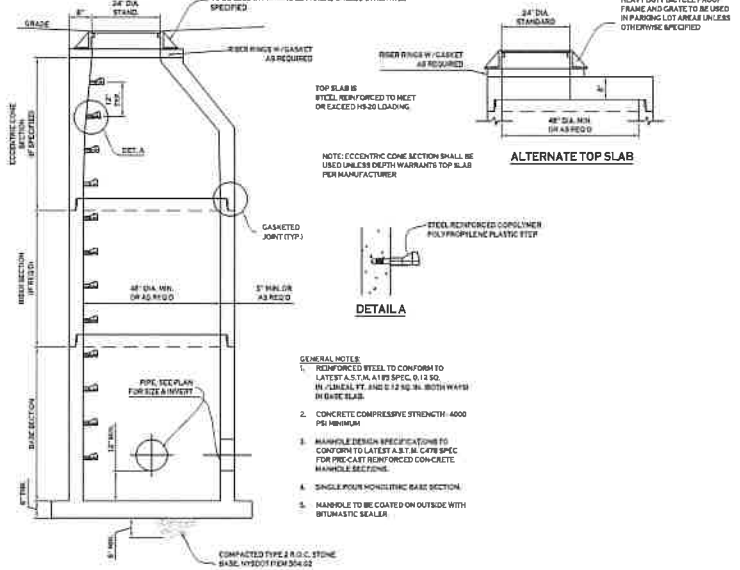
NOT TO SCALE



NOTE: FOR INLINE DRAINS, THE ELBOW SHALL BE REPLACED BY A TEE

NOTE: SEE TYPICAL TRENCH SECTION FOR BEDDING REQUIREMENTS

TYPICAL YARD DRAIN DETAIL



TOP SLAB IS 8"CEL REINFORCED TO MEET OR EXCEED H-20 LOADING

NOTE: ECCENTRIC CONE SECTION SHALL BE USED UNLESS DEPTH WARRANTS TOP SLAB PER MANUFACTURER

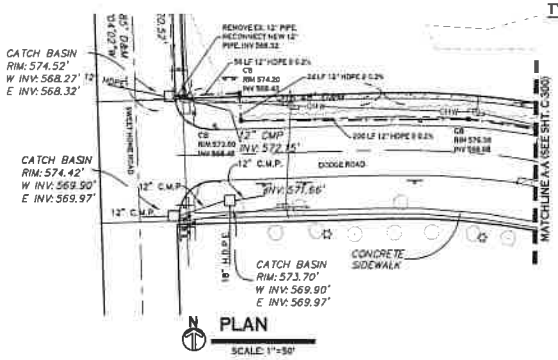
ALTERNATE TOP SLAB

DETAIL A

GENERAL NOTES:
1. REINFORCED STEEL TO CONFORM TO LATEST A.S.T.M. A185 SPEC., 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. BOTH WAYS IN BASE SLAB.
2. CONCRETE COMPRESSIVE STRENGTH: 4000 PSI MINIMUM
3. MANHOLE DESIGN SPECIFICATIONS TO CONFORM TO LATEST A.S.T.M. C478 SPEC FOR PRE-CAST REINFORCED CONCRETE MANHOLE SECTIONS.
4. SINGLE POUR MONOLITHIC BASE SECTION.
5. MANHOLE TO BE COATED ON OUTSIDE WITH BITUMASTIC SEALER

TYPICAL STORM MANHOLE DETAIL

NOT TO SCALE



N PLAN

SCALE: 1"=50'



N PLAN

SCALE: 1"=50'

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Buffalo, New York 14203
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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Storm Drainage Details

DRAWING NO.
C-301
Project no.: 21.011

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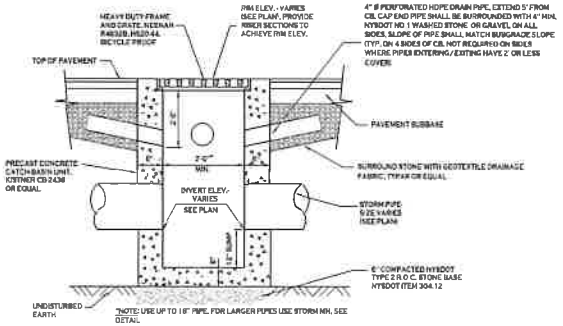
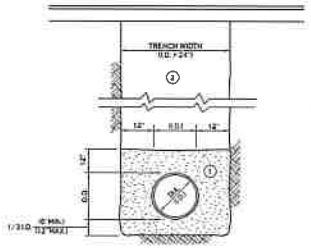
Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



TYPICAL PRECAST CATCH BASIN

NOT TO SCALE



NOTES:

A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.

C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT | 985 EDITION)

① NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703.02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

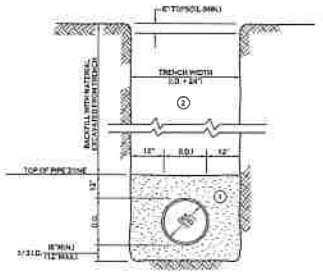
NO SLAG SHALL BE ALLOWED FOR MATERIAL ①

② TYPE 2 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYDOT SECTION 304.2.02 TYPE 2. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN TWO INCHES AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL ②

STORM SEWER TRENCH SECTION IN PAVED AREAS

NOT TO SCALE



NOTES:

A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.

C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT | 985 EDITION)

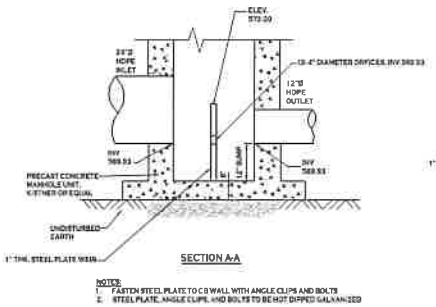
① NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703.02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL ①

② BACKFILL MATERIAL SHALL BE NATIVE SOIL CONTAINING NO UNSUITABLE MATERIAL COMPACTED IN 8" LIFTS.

STORM SEWER TRENCH SECTION IN UNPAVED AREAS

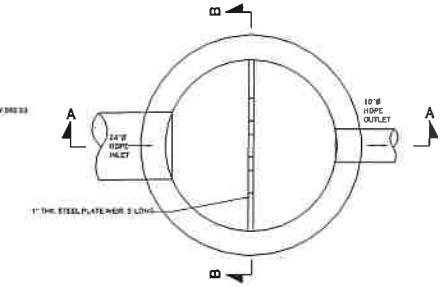
NOT TO SCALE



SECTION A-A

NOTES:

1. FASTEN STEEL PLATE TO CB WALL WITH ANGLE CLIPS AND BOLTS
2. STEEL PLATE, ANGLE CLIPS, AND BOLTS TO BE HOT DIPPED GALVANIZED

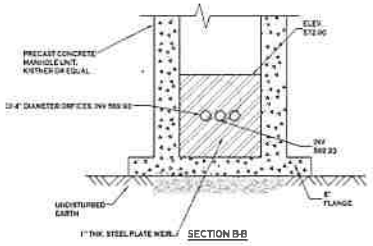


PLAN

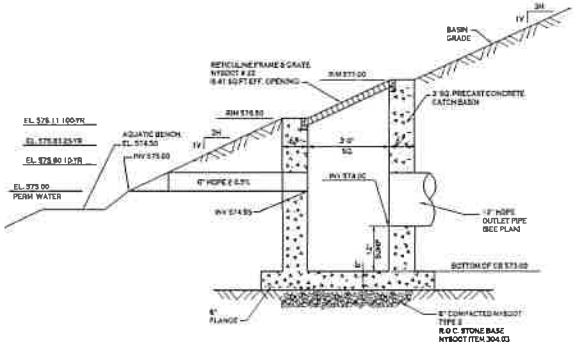
*NOTE: USE 5'-0" I.D. MANHOLE

OUTLET CONTROL STRUCTURE - CB 52

NOT TO SCALE



SECTION B-B



DETENTION BASIN OUTLET STRUCTURE - CB 53

N.T.S.

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road

Amherst, New York

Date: 3/3/21

Drawn by: C. Wood

Scale: As Noted

DRAWING NAME:

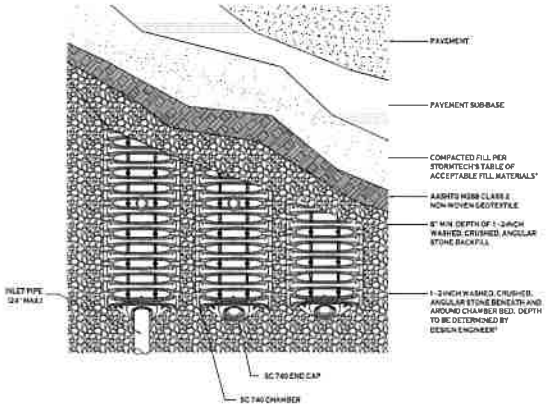
Storm Drainage Details

DRAWING NO.

C-302

Project no.: 21,011

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



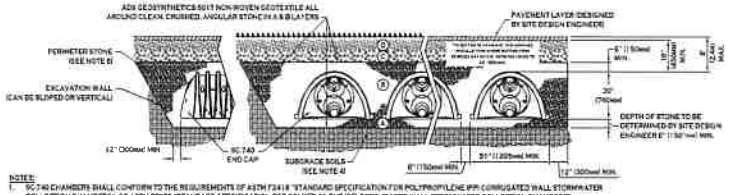
STORMTECH SC-740 CHAMBER SYSTEM PLAN VIEW DETAIL

NOT TO SCALE

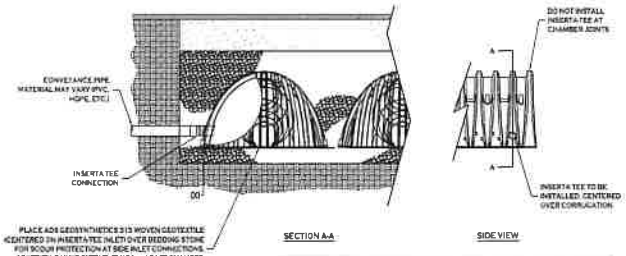
ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION/DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,500 lbs (89 kN).
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[4]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43 STONE)".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS



NOTES:
1. SC-740 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
6. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION



NOTE:
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
MC-3500	12" (300 mm)	6" (150 mm)
MC-4500	12" (300 mm)	8" (200 mm)

INSERTA TEE FITTINGS AVAILABLE FOR SOR-26, SOR-35, SCH-40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON

INSERTA TEE DETAIL

NOT TO SCALE

INSPECTION AND MAINTENANCE

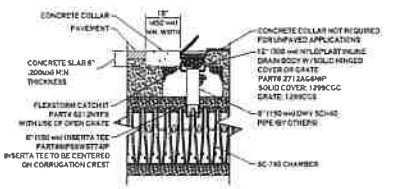
STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
  - () MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
  - () FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 rad) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES:
1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



SC-740 6" INSPECTION PORT DETAIL

NOT TO SCALE

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REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/15/21
Drawn by: 2/24/21
Scale: As Noted

DRAWING NAME:
Storm Drainage Details

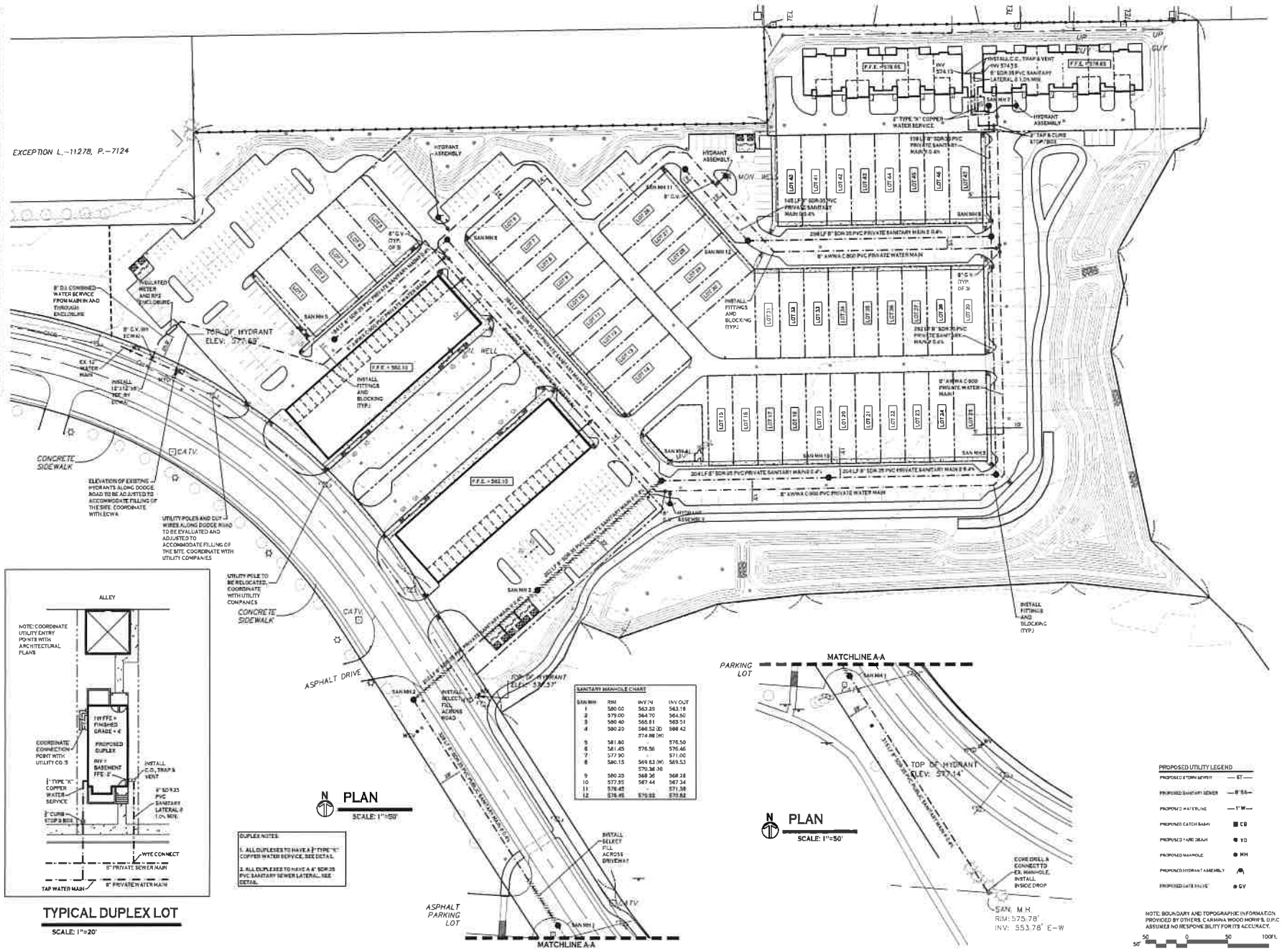
DRAWING NO.
C-303

Project no: 21.011

Packet Pg. 1818

1.h

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

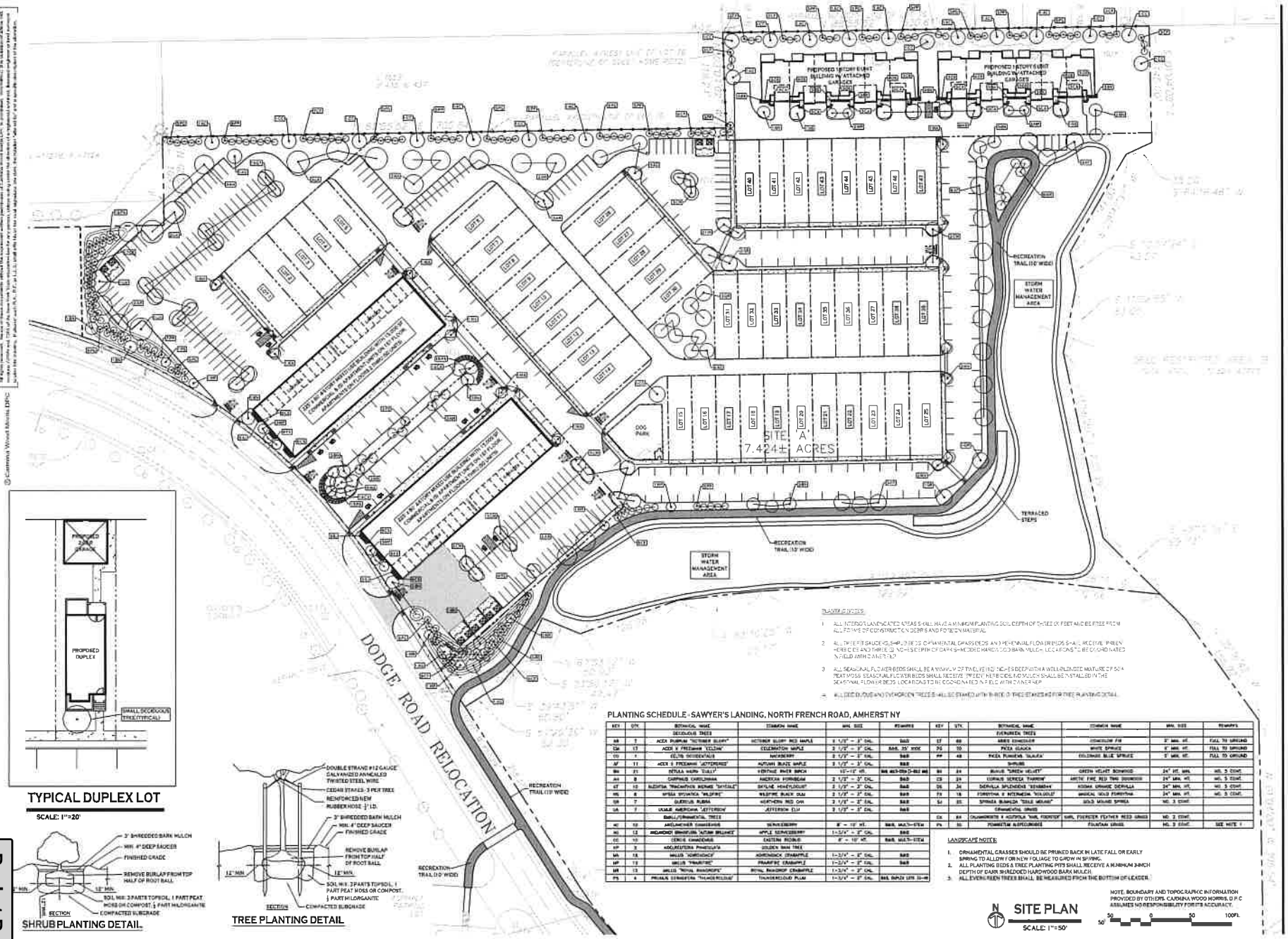
Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Utility Plan

DRAWING NO.
C-400

Project no.: 21,011

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



PLANTING NOTES:

1. ALL INTERIOR LANDSCAPED AREAS SHALL HAVE A MINIMUM PLANTING SOIL DEPTH OF THREE (3) FEET AND BE FREE FROM ALL FORMS OF CONSTRUCTION DEBRIS AND FOREIGN MATERIAL.
2. ALL TREE PITS AND SHRUB BEDS, ORNAMENTAL GRASS BEDS AND PERENNIAL FLOWER BEDS SHALL RECEIVE THREE (3) INCHES DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER.
3. ALL SEASONAL FLOWER BEDS SHALL BE A MINIMUM OF TWELVE (12) INCHES DEEP WITH A WELL-BLENDED MIXTURE OF 50% PEAT MOSS. SEASONAL FLOWER BEDS SHALL RECEIVE TWENTY HERBICIDES. NO MULCH SHALL BE INSTALLED IN THE SEASONAL FLOWER BEDS. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER.
4. ALL DECIDUOUS AND EVERGREEN TREES SHALL BE STAKED WITH THREE (3) TREE STAKES AND TREE PLANTING DETAIL.

PLANTING SCHEDULE - SAWYER'S LANDING, NORTH FRENCH ROAD, AMHERST NY

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		DECIDUOUS TREES			
AR	7	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	2 1/2" – 3" CAL.	B&B
CM	17	ACER X FREEMANII 'CELZAM'	CELEBRATION MAPLE	2 1/2" – 3" CAL.	B&B, 25' WIDE
CO	1	CELTIS OCCIDENTALIS	HACKBERRY	2 1/2" – 3" CAL.	B&B
AF	11	ACER X FREEMANII 'AUTUMN BLAZE'	AUTUMN BLAZE MAPLE	2 1/2" – 3" CAL.	B&B
BN	21	BETULA NIGRA 'DURA-1'	HERITAGE RIVER BIRCH	10'-12' HT.	B&B MULTI-STEM
AA	8	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2 1/2" – 3" CAL.	B&B
KT	10	KOELREUTERIA PANICULATA 'FIRECRACKER'	GOLDEN RAIN TREE	2 1/2" – 3" CAL.	B&B
HS	8	SYRINGA RETICULATA 'IVORY SILK'	IVORY SILK JAPANESE TREE LILAC	2 1/2" – 3" CAL.	B&B
UP	7	ULMUS PARVIFOLIA 'ALLEE'	ALLEE LACEBARK ELM	2 1/2" – 3" CAL.	B&B
UA	7	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2 1/2" – 3" CAL.	B&B
		EARLY/ORNAMENTAL TREES			
AC	12	AMELANCHIER CANADENSIS	SERVICEBERRY	8' – 10' HT.	B&B, MULTI-STEM
MS	13	MALUS SPECTACULAR 'AUTUMN BRILLIANCE'	APPLE SERVICEBERRY	1-3/4" – 2" CAL.	B&B
CC	10	CERCIS CANADENSIS	EASTERN REDBUD	6' – 10' HT.	B&B, MULTI-STEM
KP	3	KOELREUTERIA PANICULATA	GOLDEN RAIN TREE		
MA	18	MALUS 'ADIRONDACK'	ADIRONDACK CRABAPPLE	1-3/4" – 2" CAL.	B&B
MP	13	MALUS 'PRAIRIFIRE'	PRAIRIFIRE CRABAPPLE	1-3/4" – 2" CAL.	B&B
MR	13	MALUS 'ROYAL RAINDROPS'	ROYAL RAINDROP CRABAPPLE	1-3/4" – 2" CAL.	
PS	4	PRUNUS SERRULATA 'THUNDERCLOUD'	THUNDERCLOUD PLUM	1-3/4" – 2" CAL.	B&B, SAMPLE LOTS 33-44
		EVERGREEN TREES			
AB	69	ABIES CONCOLOR	CONCOLOR FIR	5' MIN. HT.	FULL TO GROUND
PG	10	PICEA GLAUCA	WHITE SPRUCE	6' MIN. HT.	FULL TO GROUND
PP	48	PICEA PUNGENS 'GLAUCA'	COLORADO BLUE SPRUCE	5' MIN. HT.	FULL TO GROUND
		SHRUBS			
BM	24	BUXUS 'GREEN VELVET'	GREEN VELVET BOXWOOD	24" HT. MIN.	MO. 3 CONT.
CS	24	CORNUS SERICEA 'FARROW'	ARCTIC FIRE RED TWIG DOGWOOD	24" MIN. HT.	MO. 3 CONT.
DS	24	DIERVILLA SPLENDENS 'SEIBERT4'	KODIAK ORANGE DIERVILLA	24" MIN. HT.	MO. 3 CONT.
FX	18	FORSYTHIA X INTERMEDIA 'BOUCLE'	MAGICAL GOLD FORSYTHIA	24" MIN. HT.	MO. 3 CONT.
SJ	35	SPIRAEA JAPONICA 'GOLD MOUND'	GOLD MOUND SPIREA	MO. 3 CONT.	
		ORNAMENTAL GRASS			
CK	84	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	MO. 2 CONT.	
PA	30	PENNISETUM ALOPECUROIDES	FOUNTAIN GRASS	MO. 3 CONT.	SEE NOTE 1

LANDSCAPE NOTES:

1. ORNAMENTAL GRASSES SHOULD BE PRUNED BACK IN LATE FALL OR EARLY SPRING TO ALLOW FOR NEW FOLIAGE TO GROW IN SPRING.
2. ALL PLANTING BEDS & TREE PLANTING PITS SHALL RECEIVE A MINIMUM 3-INCH DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH.
3. ALL EVERGREEN TREES SHALL BE MEASURED FROM THE BOTTOM OF LEADER.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS. CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR IT'S ACCURACY.

N SITE PLAN
SCALE: 1"=50'

50 0 50 100FT.

TYPICAL DUPLEX LOT
SCALE: 1"=20'

SHRUB PLANTING DETAIL

TREE PLANTING DETAIL

Carmina Wood Morris DPC
437 Main Street, Suite 500
Buffalo, New York 14203
P 716.842.3185
F 716.842.0263

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/9/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Landscape Plan

DRAWING NO.
L-100
Project no.: 21.011

© Carmina Wood Morris, DPC

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Appendix H

Soils Information

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Soil Map—Erie County, New York



Map Scale: 1:3,590 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Erie County, New York
Survey Area Data: Version 20, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 26, 2019—Oct 10, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ge	Getzville silt loam	27.2	87.5%
Ld	Lamson mucky very fine sandy loam	1.8	5.7%
Sw	Swormville clay loam	2.1	6.8%
Totals for Area of Interest		**31.1**	**100.0%**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Appendix I

SHPO Information

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189
518-237-8643

Bernadette Castro
Commissioner

October 10, 2001

Carolyn A. Pierce
CCRG
105 Robie Avenue
Buffalo, New York 14214

Dear Ms. Pierce:

Re: SEQRA
Muir Woods Mixed-Use Development
Amherst/Erie County
01PR0345

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Parks, Recreation and Historic Preservation Law, Section 14.09.

Based upon this review, it is the OPRHP's opinion that your project will have No Impact upon cultural resources in or eligible for inclusion in the State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Director

RLP:cmp

RECEIVED
OCT 16 2001
CIMINELLI DEVELOPMENT COMPANY, INC.

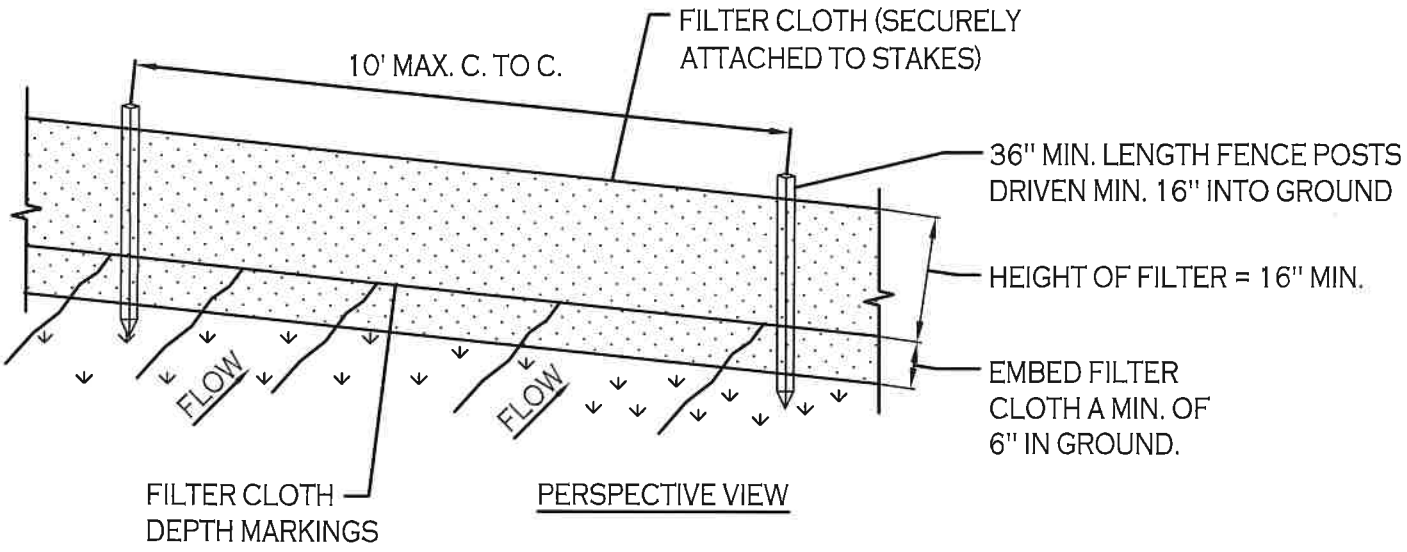
An Equal Opportunity/Affirmative Action Agency
printed on recycled paper

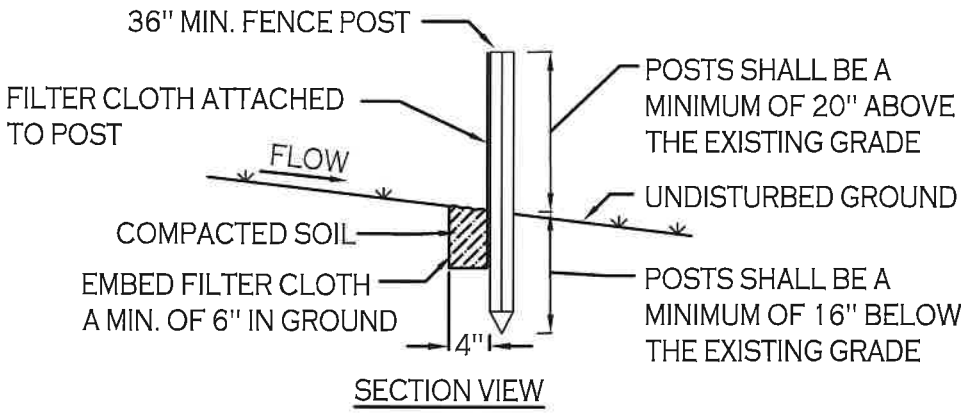
Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Appendix J

Standard Erosion Control Details

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)





CONSTRUCTION SPECIFICATIONS

1. WOVEN FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.

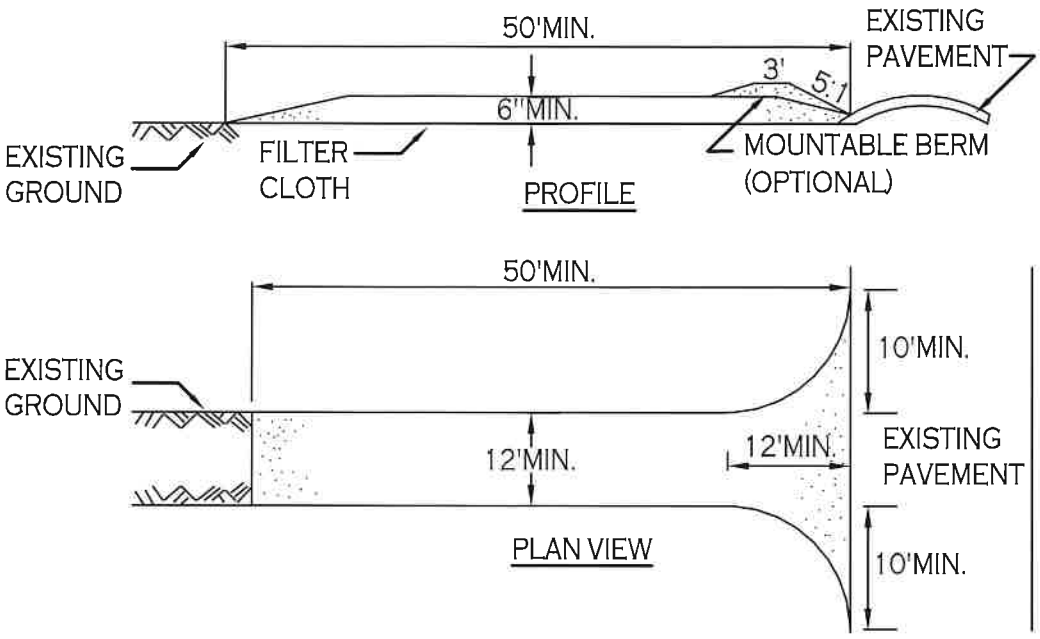
2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.

3. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

SILT FENCE DETAIL

NOT TO SCALE

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



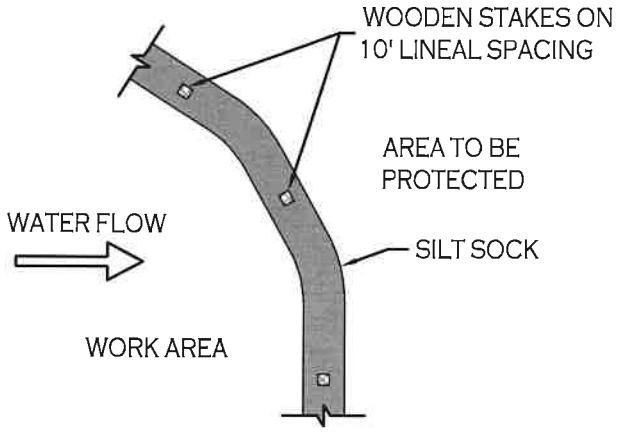
CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

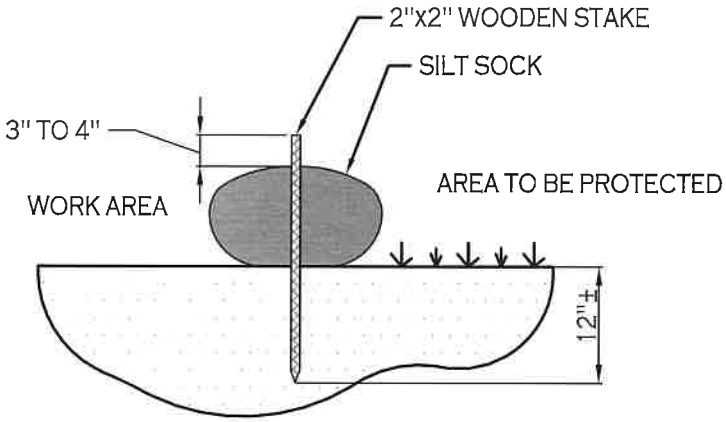
STABILIZED CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



PLAN VIEW



SECTION VIEW

NOTES:

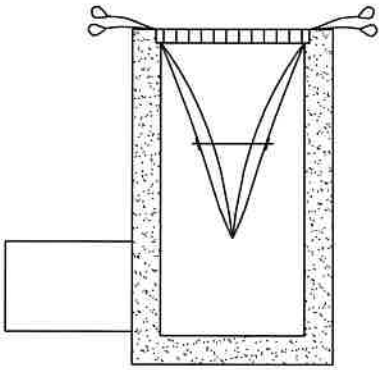
CONTRACTOR SHALL INSPECT AND MAINTAIN SILT SOCK AS NEEDED DURING THE DURATION OF CONSTRUCTION PROJECT.

CONTRACTOR SHALL REMOVE SEDIMENT COLLECTED AT THE BASE OF THE SILT SOCK WHEN IT HAS REACHED $\frac{1}{2}$ OF THE EXPOSED HEIGHT OF THE SILT SOCK. ALTERNATIVELY, RATHER THAN CREATE A SOIL DISTURBING ACTIVITY, THE ENGINEER MAY CALL FOR ADDITIONAL SILT SOCK TO BE ADDED AT AREAS OF HIGH SEDIMENTATION, PLACED IMMEDIATELY ON TOP OF THE EXISTING SEDIMENT LADEN SILT SOCK.

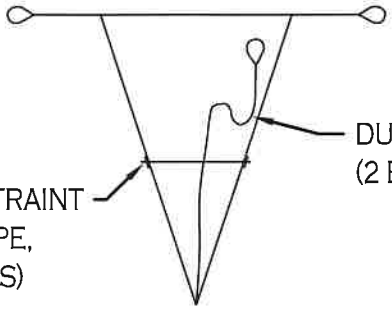
SILT SOCK DETAIL

NOT TO SCALE

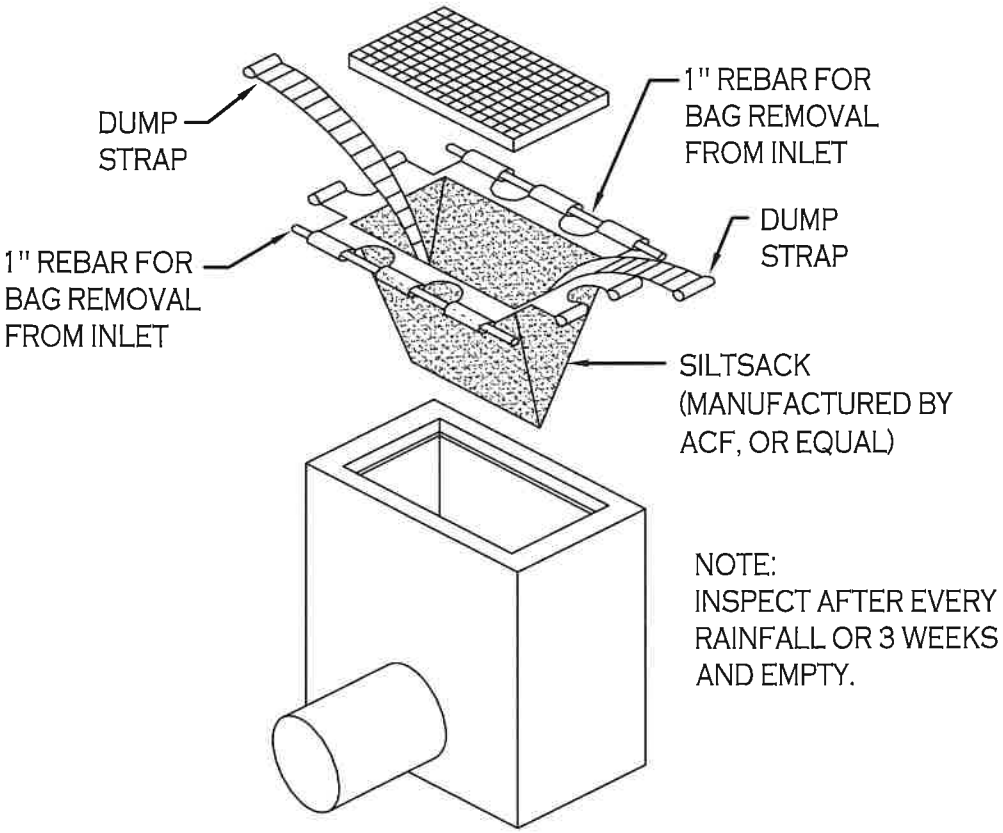
Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



INSTALLATION DETAIL



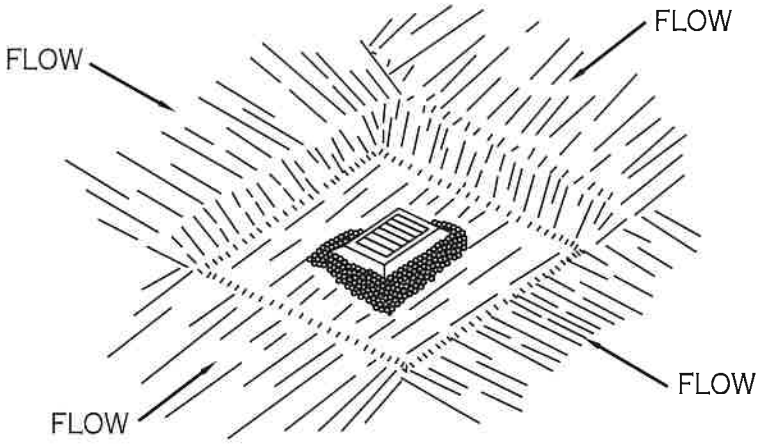
BAG DETAIL

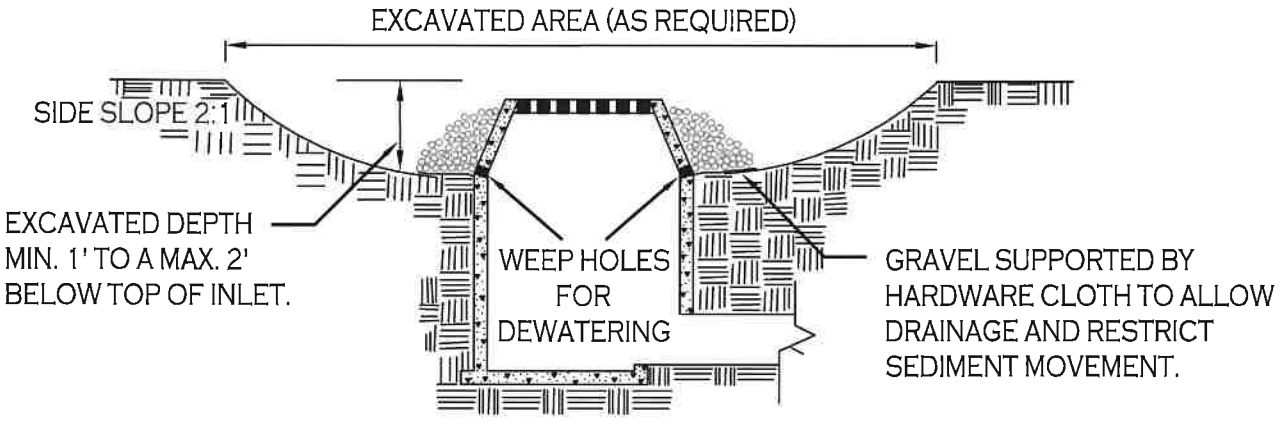


SILT SACK DETAIL

NOT TO SCALE

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)





CONSTRUCTION SPECIFICATIONS

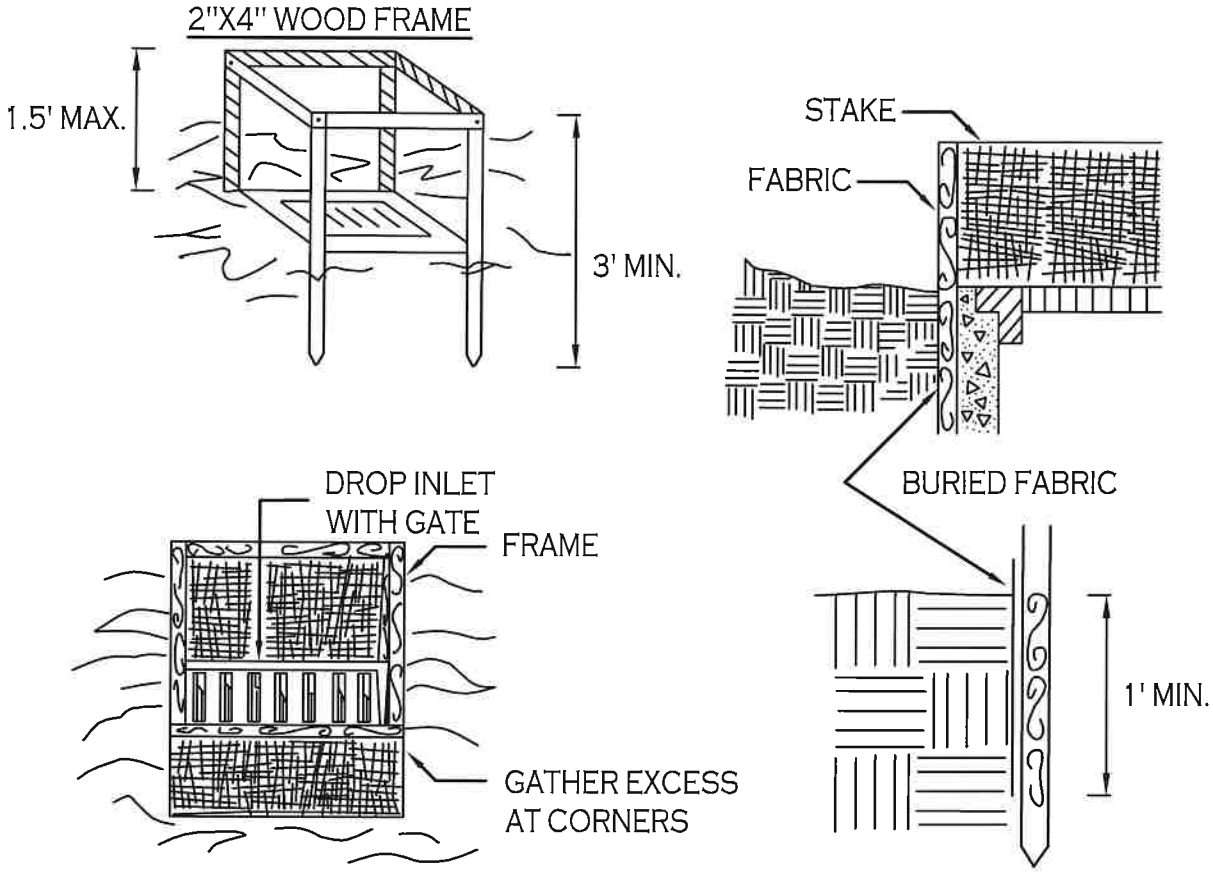
1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER EXCAVATION.
2. GRADE APPROACH TO THE INLET UNIFORMLY AROUND THE BASIN.
3. WEEP HOLES SHALL BE PROTECTED BY GRAVEL.
4. UPON STABILIZATION OF CONTRIBUTING DRAINAGE AREA, SEAL WEEP HOLES, FILL BASIN WITH STABLE SOIL TO FINAL GRADE, COMPACT IT PROPERLY AND STABILIZE WITH PERMANENT SEEDING.

MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 1

NOT TO SCALE

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.

2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.

3. STAKE MATERIALS WILL BE STANDARD 2" x 4" WOOD OR EQUIVALENT. METAL WITH A MINIMUM LENGTH OF 3 FEET.

4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.

5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.

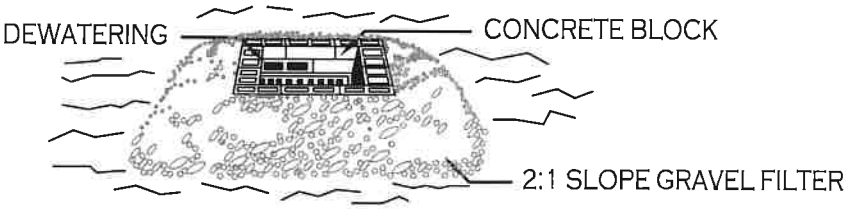
6. A 2" x 4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.

MAXIMUN DRAINAGE AREA 1 ACRE

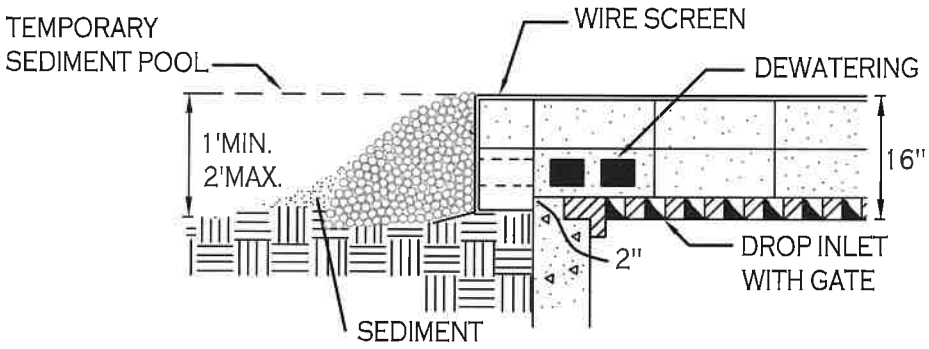
INLET PROTECTION DETAIL 2

NOT TO SCALE

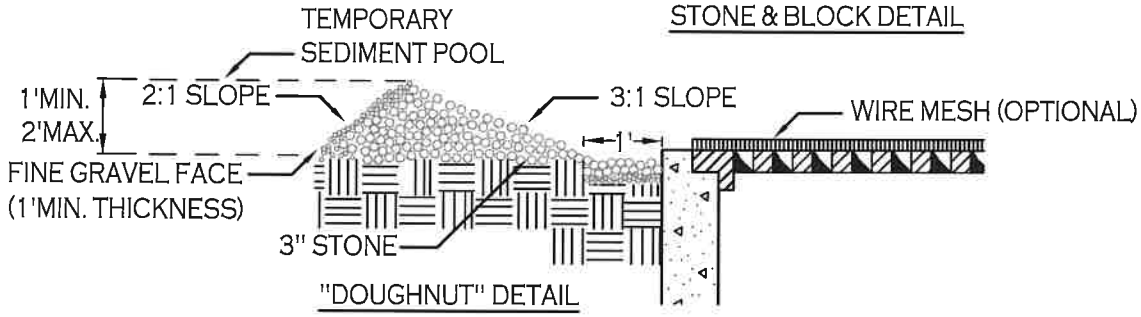
Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



STONE & BLOCK PLAN VIEW



STONE & BLOCK DETAIL



"DOUGHNUT" DETAIL

CONSTRUCTION SPECIFICATIONS

1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE FOR DEWATERING. FOUNDATION SHALL BE 2 INCHES MINIMUM BELOW REST OF INLET AND BLOCKS SHALL BE PLACED AGAINST INLET FOR SUPPORT.

2. HARDWARE CLOTH OR 1/2" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.

3. USE CLEAN STONE OR GRAVEL 1/2-3/4 INCH IN DIAMETER PLACED 2 INCHES BELOW TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER.

4. FOR STONE STRUCTURES ONLY, A 1 FOOT THICK LAYER OF THE FILTER STONE WILL BE PLACED AGAINST THE 3 INCH STONE AS SHOWN ON THE DRAWINGS.

MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 3

NOT TO SCALE

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Appendix K

Wetland Permits

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 9
270 Michigan Avenue, Buffalo, NY 14203-2915
P: (716) 851-7165 I F: (716) 851-7168
www.dec.ny.gov

December 24, 2020

Mr. Adam Faeth
Ciminelli Real Estate Corporation
50 Fountain Plaza, Suite 500
Buffalo, New York 14202

Muir Woods Development – "Site A"
Permit Transmittal Letter
Permit No. 9-1422-00398/00001

Dear Mr. Faeth:

Enclosed is your permit which was issued in accordance with applicable provisions of the Environmental Conservation Law. The permit is valid for only that project, activity or operation expressly authorized. If modifications are desired after permit issuance, you must submit the proposed revisions and receive written approval from the Permit Administrator prior to initiating any change. If the Department determines that the modification represents a material change in the scope of the authorized project, activity, operation or permit conditions, you will be required to submit a new application for permit.

Please review all permit conditions carefully. In particular, identify your initial responsibilities under this permit in order to assure timely action if required. Since failure to comply precisely with permit conditions may be treated as a violation of the environmental conservation law, you are requested to provide a copy of the permit to the project contractor, facility operator, and other persons directly responsible for permit implementation (if any).

If you have any questions, please contact this office at the above address.

Respectfully,
David S. Denk
Regional Permit Administrator

Enclosure
ecc: NYSDEC Law Enforcement
Maureen Brady, NYSDEC Office of General Counsel
Mr. Chuck Rosenburg, NYSDEC Division of Fish and Wildlife
Mr. Martin Crossen, USACOE
Sean Hopkins, Esq., Hopkins Sorgi & McCarthy PLLC

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

PERMIT
Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
Ciminelli Muir Woods LLC
50 Fountain Plaza, Suite 500
Buffalo, NY 14202
(716) 631-8000

Facility:
MUIR WOODS DEVELOPMENT
1121 N French Rd
Amherst, NY 14228

Facility Location: in AMHERST in ERIE COUNTY
Facility Principal Reference Point: NYTM-E: 191.586 NYTM-N: 4770.823
Latitude: 43°01'38.9" Longitude: 78°47'07.2"

Authorized Activity: Construction of a mixed-use project named "Muir Woods" consisting of approximately two 4-story mixed-use buildings consisting of commercial space and residential units, 90 two-family townhouses and 2 six-unit apartment buildings, approximately 133 detached single-family residential units and 515 cottage-style and apartment-style housing units with various amenities; and gas, electric, sanitary, potable water and storm water (the necessary infrastructure), while maintaining open space on approximately 224 acres in the Audubon New Community District. The Muir Woods project property is a 326 acre site bounded by the Lockport Expressway (Interstate Route 990) and Dodge Road on the south, Sweet Home Road on the west, North French Road on the north and Campbell Boulevard on the east. The project will result in permanent impacts to approximately 2.39 acres of State regulated wetlands (TE-22, TE-23 and TE-34), and 11.38 acres of State regulated 100 foot wide wetland adjacent area. As mitigation for those impacts the project includes creation of 19.58 acres of in-kind and out-of-kind wetlands on-site, in six areas, to replace the functions and benefits of the impacted wetlands. There will be 4.3 acres of stream channel enhancement on-site as mitigation for State wetland regulated adjacent area impacts. The project also includes construction at 520 Campbell Road property as detailed on plan sheets referenced in Natural Resource Condition No. 4.

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Permit Authorizations

Freshwater Wetlands - Under Article 24
Permit ID 9-1422-00398/00001

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

Water Quality Certification - Under Section 401 - Clean Water Act
Permit ID 9-1422-00398/00002

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: DAVID S DENK, Regional Permit Administrator
Address: NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY 14203 -2915

Authorized Signature: David S. Denk Digitally signed by David S. Denk DN: cn=David S. Denk, o=NYS DEC, ou=Div. of Env. Permits, email=david.denk@dec.ny.gov, c=US Date: 2020.12.24 10:29:47 -05'00' Date ___/___/___

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: FRESHWATER WETLANDS; WATER QUALITY CERTIFICATION

1. **No Work Prior to Approval of Legal Instrument for Preservation of Undeveloped Areas of Site** No work authorized by this permit may begin until the Department approves a legal instrument, such as a deed restriction and/or conservation easement, that will preserve in perpetuity the natural resource values of the undeveloped areas of the site. This condition does not apply to the 520 Campbell Boulevard property.

2. **Declaration of Restrictions 520 Campbell Boulevard Property** A Declaration of Restrictions permanently prohibiting any future development of the 6.88 acres of jurisdictional federal wetlands and portion of the upland area on 520 Campbell Boulevard as depicted on the Wetland Restriction Exhibit Map must be incorporated into the deeds for lots 1 – 12 and 21. By 60 days after Water Quality Certification issuance, the permittee shall file with the real property records of the Erie County Clerk`s Office, the deed for each applicable lot containing this notice. The permittee shall within two weeks following the filing of the deed(s) submit proof of filing from the County Clerk's Office

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showing the Liber and page number at which the deed notice was filed and the date of filing for one of the affected lots to: Regional Permit Administrator, NYSDEC Region 9 Headquarters, 270 Michigan Ave, Buffalo, NY 14203-2915.

3. **Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by Ciminelli Development Company, Inc. and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009.

4. **Conformance with Plans Site B** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include the "Concept Plan - Muir Woods" dated 08 November 2019 amended to show Conifer Planting Area (attached).

5. **Conformance with Plans - 520 Campbell Boulevard** All activities authorized by this permit for the 520 Campbell Boulevard property must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans include those sheets entitled: The Preserve at Muir Woods (DEC Planting Exhibit, DEC Earthwork Exhibit and the Wetland Restriction Exhibit) by Greenman-Pedersen, Inc. dated May 2018.

6. **Conformance with Plans Site A** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include Drawing C-100 dated July 20, 2020 and received by this Department on August 10, 2020.

7. **Future Phases** Prior to development of Muir Woods Sites A and B, the permittee must obtain specific approval of engineered plans for Sites A and B to ensure compliance with the terms and condition of this permit, the approved wetland mitigation plans and the most current Findings Statement for the overall Muir Woods Project issued pursuant to the State Environmental Quality Review Act. The permittee shall submit the engineered plans for the development of Sites A and B for review by the Department simultaneous with submission of such engineered plans to the Town of Amherst. If required by the Department, the permittee shall make any necessary modifications to the engineered plans to ensure compliance with the terms and conditions of this permit, the approved wetland mitigation plans and the most current Findings Statement.

8. **Permit Conditions Prevail over Plans** If any condition of this permit conflicts with the approved plans noted in Condition Number 1, the permit conditions shall prevail over the plans unless specific written approval for such a change is obtained from this Department prior to implementation.

9. **Pre-construction Meeting to Review Permit** Prior to commencing work at the project site, the permittee shall schedule a pre-construction meeting with Department staff (Contact: Mr. David Denk, Regional Permit Administrator, NYSDEC, Division of Environmental Permits, Telephone : 716/851- 7165 and/or Mr. Charles P. Rosenburg, NYSDEC, Division of Fish and Wildlife, Telephone: 716/851-7010) and selected contractors to review the conditions contained in this permit.

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10. Mark Areas of No Disturbance on the Muir Woods Site Grade stakes and/or other appropriate measures (substantial contractor fencing, perhaps in combination with necessary silt fencing) shall be used to ensure that no equipment enters identified areas of no disturbance within the immediate area under construction (i.e.- Site A, Site B, Site C or Site D) on the Muir Woods project site. Boundaries of the on-site mitigation areas shall likewise be marked to define the limits of that work.

11. Install Controls Along Limits of Disturbance Before any soil is disturbed within a specific Site Development Area, as detailed in Condition #6 above, the permittee shall install securely anchored silt fencing and/or continuous staked hay bales along the limits-of-disturbance as shown on the plans or drawings referenced in this permit. Such erosion and sedimentation controls shall be maintained until unpaved portions of the subject site are stabilized by a self-sustaining cover of vegetation that is adequate to prevent erosion and sedimentation on and off the site. Sediment which has accumulated at the controls shall be removed periodically as necessary during the construction period. Before the controls are removed, the permittee shall remove all sediment that has accumulated at the controls.

12. Work Within Ares Depicted on Plans All construction activity, including operation of machinery, excavation, filling, grading, clearing of vegetation, disposal of waste, street paving and stockpiling of material must take place within the Site Development Areas or mitigation areas as depicted on the project plans referenced by this permit. Construction activity is prohibited within areas to be left in a natural condition or locations on the property not within the Site Development Areas or mitigation areas designated by this permit. Disturbance to the wetlands and their regulated 100 foot wide adjacent areas shall be strictly limited to the work areas identified in the plans, and specifically the MAP SHOWING WETLAND IMPACT AREAS - NEW YORK STATE WETLANDS, and APPENDIX M - PROPOSED ON-SITE MITIGATION PLAN.

13. Invasive Species (Non-Native Vegetation) To prevent the unintentional introduction or spread of invasive species, the permittee must ensure that all construction equipment is cleaned of mud, seeds, vegetation and other debris before entering any approved Site Development Areas within State regulated wetlands or their 100 foot wide adjacent areas, as well as all on-site wetland mitigation areas.

14. Prevention of Invasive Species The permittee shall prevent the establishment of invasive species (purple loosestrife, Phragmites, reed canary-grass, Japanese knotweed, glossy buckthorn and common buckthorn) across all disturbed areas within the wetland mitigation area for five growing seasons. If any of these invasive species become established, monitoring and treatment may be extended for an additional 5 years at the Department's discretion.

15. Wetland Mitigation is Mandatory Completion of all freshwater wetland mitigation is mandatory regardless of whether or not construction proceeds to completion. The required mitigation must be completed by the expiration date of this permit. Mitigation will be subject to remediation, if necessary, pursuant to Condition #16 below. All mitigation areas shall be monitored for a period of ten (10) years or until the mitigation is deemed successful by this Department. Monitoring reports shall be prepared for the first four (4) years after construction of the mitigation areas and every other year (years 6, 8 and 10) thereafter. This Department may, at its discretion, modify the 10-year monitoring period and/or monitoring report requirement at any time. Monitoring reports shall be submitted to Mr. Charles P. Rosenburg, Habitat Manager, NYSDEC, Bureau of Ecosystem Health, 270 Michigan Avenue, Buffalo, NY 14203-2915 Telephone: 716/851-7024.

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

16. **On-Site Mitigation to be in Accordance with Mitigation Plan** The on-site mitigation shall be in accordance with Appendix M - Proposed On-Site Wetland Mitigation for Muir Woods prepared by Earth Dimensions, Inc. revised May 25, 2009 and with the modifications shown in Exhibit 22 of the July 20, 2020 application binder.

17. **Planting Row of Native Conifers** The permittee shall plant a row of native conifer trees in the location shown on the attached plan. The tree plantings must be a minimum of 6 feet tall, spaced 15 feet apart, and must be planted no later than October 15th following the completion of construction of the adjacent apartment units.

18. **Survival Rate for Mitigation Plantings** The permittee shall prepare a care, maintenance, inspection, and replacement schedule for the tree and shrub plantings described in the mitigation plan to ensure an 85% survival rate for five growing seasons. This condition includes all on-site landscape "buffer" plantings.

19. **Herbicides, Pesticides in Wetland or Adjacent Area** The use of herbicides and other pesticides in State regulated wetlands or their 100 foot wide adjacent areas is a regulated activity and may only be conducted pursuant to a valid Article 33 Pesticides Permit.

20. **Requirement for SPDES General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities** Since development of the Muir Woods site in the Town of Amherst will involve land disturbance of one (1) or more acres, the permittee is required to obtain coverage under State Pollutant Discharge Elimination System (SPDES) General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities. A Notice of Intent (NOI) is required to be sent to NYSDEC, Division of Water, 625 Broadway, 4th Floor, Albany, New York 12233-3505, Telephone: 518/402-8111 and approved before construction commences. Alternatively, an eNOI may be filed electronically as described on the Department's website. The General Permit GP-0-15-002 and NOI form are available on the Department's website at www.dec.state.ny.us.

21. **Visibly Turbid Discharges Prohibited** Visibly turbid discharges from project dewatering operations, excavation and grading activities are strictly prohibited to any "water body" (pond, wetland, stream or water course). Any such discharges shall be (1) retained in an appropriately maintained upland settling basin, filtered through crushed stone, sand, filter fabric fences, hay bales etc., or (2) directed to a grassy area sufficiently distant from any water body to preclude such entry.

22. **Stockpiling of Soil** Stockpiling of excavated soil is prohibited at locations within any portion of the TE-22, TE-23 and TE-34 Wetlands or their regulated 100 foot wide adjacent areas, or within any mapped 100-year floodplain beyond the Site Development Areas or mitigation areas identified in the plans.

23. **Stabilize Disturbed Areas** All areas of soil disturbance resulting from this project shall be seeded with an appropriate perennial grass seed and mulched with straw, or hydro-seeded. Mulch shall be maintained until suitable vegetative cover is established.

24. **Temporary Mulch, Final Seeding** If seeding is impracticable due to the time of year, a temporary mulch shall be applied and final seeding shall be performed at the earliest opportunity when weather conditions favor germination and growth.

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25. **Disposal of Material** Any non-merchantable tree and brush debris, demolition debris, excess construction materials, and/or excess excavated materials shall be immediately and completely disposed of on an approved upland site more than 100 feet from any regulated freshwater wetland. These materials shall be suitably stabilized so as not to re-enter any water body, wetland, or wetland adjacent area; and must be disposed of in accordance with all local, state, and federal statutes, regulations, or ordinances.

26. **Placement of Interpretive Signs Required** Permanent interpretive signs shall be placed at various wetland boundary locations throughout the Muir Woods project site . The permittee shall submit a proposal for the signs to the Department for approval. The interpretive signs shall be a minimum of 12 inches by 12 inches and shall be placed on permanent posts.

27. **Annual Project Inspection / Meeting** The permittee shall schedule an annual inspection/meeting to update Department staff on project progress and compliance with conditions of this permit for the on-site wetland mitigation area.

28. **Wetland Monuments** Monuments shall be placed every 200 feet along the outer edge of the wetland preservation areas. The monuments shall be 30" long, 5/8" rebar and cap embedded flush and in the center of the top exposed surface of concrete in a minimum 4 inch diameter, 4.5 foot long section of PVC Schedule 40 drain pipe filled with concrete, extending vertically1.5 to 2 feet above existing grade at each location. The caps shall say "Conservation Area Marker, Do Not Disturb". These monuments are to be permanently maintained.

29. **Wetland Boundaries** The boundaries of the TE-22, TE-23 and TE-34 Wetlands shall be fixed for the period of this permit (expires November 30, 2024). At that time, new boundary delineations for those wetlands will be required by this Department (to be performed or confirmed by a Department Biologist). Since project activities will be subject to the updated wetland boundary delineations and pertinent regulations at that time, any future permit modification (if necessary) would be reviewed based on the updated delineations and pertinent regulations. As such, modifications to the current project plan may be necessary depending upon the updated wetland delineations and permit regulations in effect at that time.

30. **State Not Liable for Damage** The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

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31. **State May Order Removal or Alteration of Work** If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

32. **State May Require Site Restoration** If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may lawfully require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.

33. **Precautions Against Contamination of Waters** All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. **Water Quality Certification** The authorized project, as conditioned pursuant to the Certificate, complies with Section 301, 302, 303, 306, and 307 of the Federal Water Pollution Control Act, as amended and as implemented by the limitations, standards, and criteria of state statutory and regulatory requirements set forth in 6 NYCRR Section 608.9(a). The authorized project, as conditioned, will also comply with applicable New York State water quality standards, including but not limited to effluent limitations, best usages and thermal discharge criteria, as applicable, as set forth in 6 NYCRR Parts 701, 702, 703, and 704.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. **Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. **Relationship of this Permit to Other Department Orders and Determinations** Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. **Applications For Permit Renewals, Modifications or Transfers** The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY14203 -2915

4. **Submission of Renewal Application** The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Freshwater Wetlands, Water Quality Certification.

5. **Permit Modifications, Suspensions and Revocations by the Department** The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

a. materially false or inaccurate statements in the permit application or supporting papers;

b. failure by the permittee to comply with any terms or conditions of the permit;

c. exceeding the scope of the project as described in the permit application;

d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;

e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. **Permit Transfer** Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification
The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit
The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits
The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights
This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

DEPARTMENT OF THE ARMY
BUFFALO DISTRICT, CORPS OF ENGINEERS
1776 NIAGARA STREET
BUFFALO, NEW YORK 14207-3199

February 25, 2021

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

Mr. Adam Faeth
Development Manager
Ciminelli Muir Woods LLC
350 Essjay Road Suite 101
Williamsville, NY 14221

Dear Mr. Faeth:

This is in reply to your submittal dated July 20, 2020 in which you requested a modification of Department of the Army Permit No. LRB-2001-00067. The project is located on a 326-acre parcel in the Town of Amherst, Erie County, New York. Specifically, you seek authorization to change the proposed use of an area identified as Site A from research and development and flex office space to a mixed-use commercial and residential development. This includes two 4-story mixed-use buildings, two-family townhouses, 6-unit apartment buildings, and a recreational trail to connect Site A with Site B. Wetland impacts have been reduced from 13.01 acres to 6.089 acres in Site A. A reduction of 6.921 acres. In addition, because of the reconfigured project including the significant reduction of wetland impacts, you have requested that the requirement of off-site compensatory mitigation be removed. Lastly, you have requested that 134 acres of the overall Muir Woods site located northeast of Site B, is donated to the Town of Amherst. This area will remain as open space in perpetuity. Permit compliance with mitigation requirements will remain as it currently is on the 134-acre site as a responsibility of Ciminelli Muir Woods LLC.

A Public Notice was published and coordinated with agencies and adjacent property owners using standard procedures. No comments were received as a result of the Public Notice. Based upon our evaluation, I concluded your request will not result in any unacceptable environmental or navigational impacts. Therefore, I am modifying Department of the Army permit No. LRB-2001-00067 to reflect the changes outlined in your request and identified on the attached drawings. All other terms and conditions of Permit No. LRB-2001-00067 remain in full force and effect.

Sheets 1, 2, and 3 of 3 are hereby made part of Permit No. LRB-2001-00067. Sheet 1 of 3 of this modification is an update to Sheets 2, 3, and 5 of 6 of the original permit. Sheet 2 and 3 of 3 of this modification are updates to Sheet 5 of 6 of the original permit. In addition, the following Special Conditions No. 6 and 8 of Permit No. LRB-2001-00067 are modified so that they no

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

longer include the requirement of off-site compensatory mitigation, as indicated below with the original and the following modified condition:

1. Special Condition Number 6: As mitigation to compensate for unavoidable and permanent impacts to 17.83 acres of Federal wetlands and 1.29 acres of Federal tributaries (approximately 5227 linear feet), the permittee shall create, at a minimum; 26.91 acres of wetland on-site, and 27.37 acres of wetland off-site. In addition, the permittee shall enhance 4.3 acres of tributary (approximately 2630 linear feet) on-site, all in accordance with the approved on-site and off-site mitigation plan that is made part of this permit. The mitigation area must be constructed in accordance with the approved plan as well as all permit conditions.

   Modified Special Condition Number 6: As mitigation to compensate for unavoidable and permanent impacts to 10.91 acres of Federal wetlands and 1.29 acres of Federal tributaries (approximately 5227 linear feet), the permittee shall create, at a minimum; 26.91 acres of wetland on-site. In addition, the permittee shall enhance 4.3 acres of tributary (approximately 2630 linear feet) on-site, all in accordance with the approved on-site mitigation plan that is made part of this permit. The mitigation area must be constructed in accordance with the approved plan as well as all permit conditions.

2. Special Condition Number 8: The approved compensatory mitigation must be in strict conformance with the plans approved by the Corps of Engineers. Such approved plans were prepared by Ciminelli Development Company, Incorporated and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009, including the Proposed On-Site Wetland Mitigation Plan, and the Proposed Off-Site Wetland Mitigation Plan dated November 16, 2009. The stated mitigation plans are hereby incorporated into and made part of the permit as Attachments 1 and 2. The permittee shall implement the mitigation in accordance with the plans and all permit conditions. Where permit conditions differ from the mitigation plan, the permit conditions shall be the ruling condition.

   Modified Special Condition Number 8: The approved compensatory mitigation must be in strict conformance with the plans approved by the Corps of Engineers. Such approved plans were prepared by Ciminelli Development Company, Incorporated and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009, including the Proposed On-Site Wetland Mitigation Plan dated November 16, 2009. The stated on-site mitigation plan is hereby incorporated into and made part of the permit as Attachments 1. The permittee shall implement the mitigation in accordance with the plans and all permit conditions. Where permit conditions differ from the mitigation plan, the permit conditions shall be the ruling condition.

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Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

Questions pertaining to this matter should be directed to Martin Crosson at 716-879-4346, by writing to the following address: U.S. Army Corps of Engineers, 1776 Niagara Street, Buffalo, New York 14207 or by E-mail at: martin.h.crosson@usace.army.mil

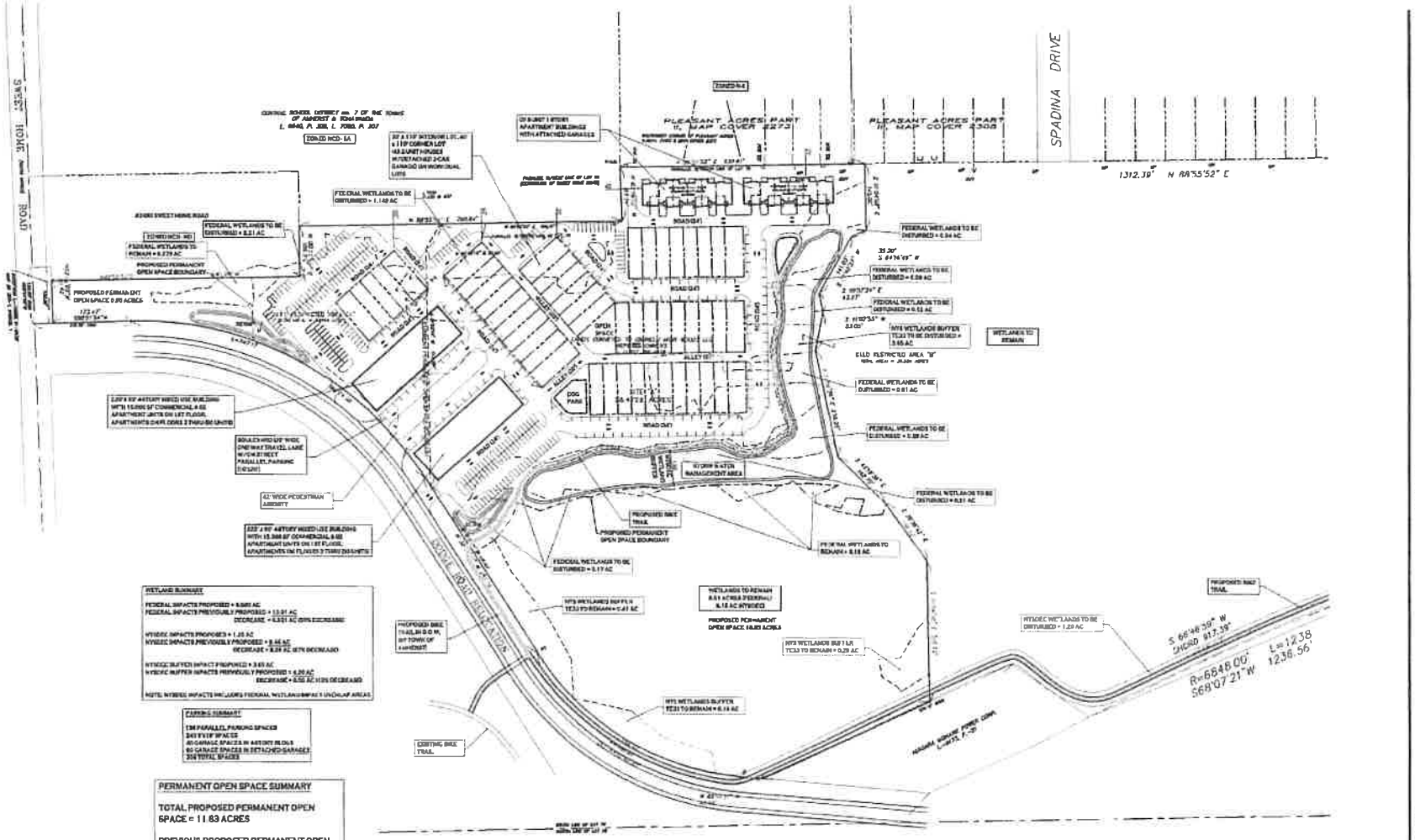
BY AUTHORITY OF THE SECRETARY OF THE ARMY

Steven V. Metivier

For: Mark Scalabrino
Acting Chief, Regulatory Branch

Enclosures

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



SITE PLAN
SCALE: 1"=100'

Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 1 of 3

Camina Wood Morris

PROJECT NAME:
Site Development plans for:
Muir Woods Site "A"
Sweet Home & Dodge Road
Amherst, New York

Date: 11/20
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Concept Site Plan

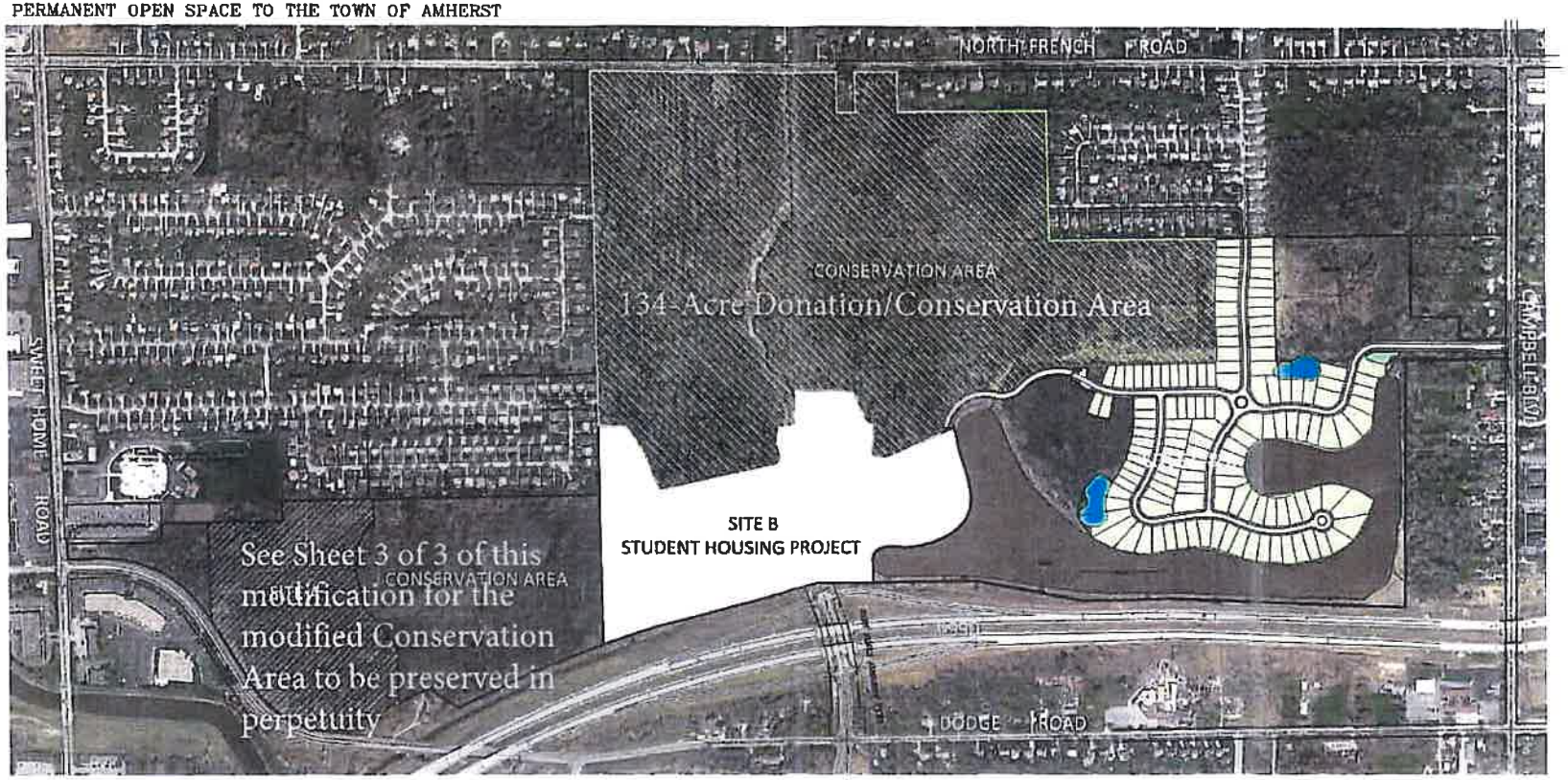
DRAWING NO.
C-100

Project no.: 19.192

© Camina Wood Morris D.P.C.

MUIR WOODS OVERALL PROJECT AREA

PROPOSED DONATION OF APPROXIMATELY 134 ACRES OF PERMANENT OPEN SPACE TO THE TOWN OF AMHERST

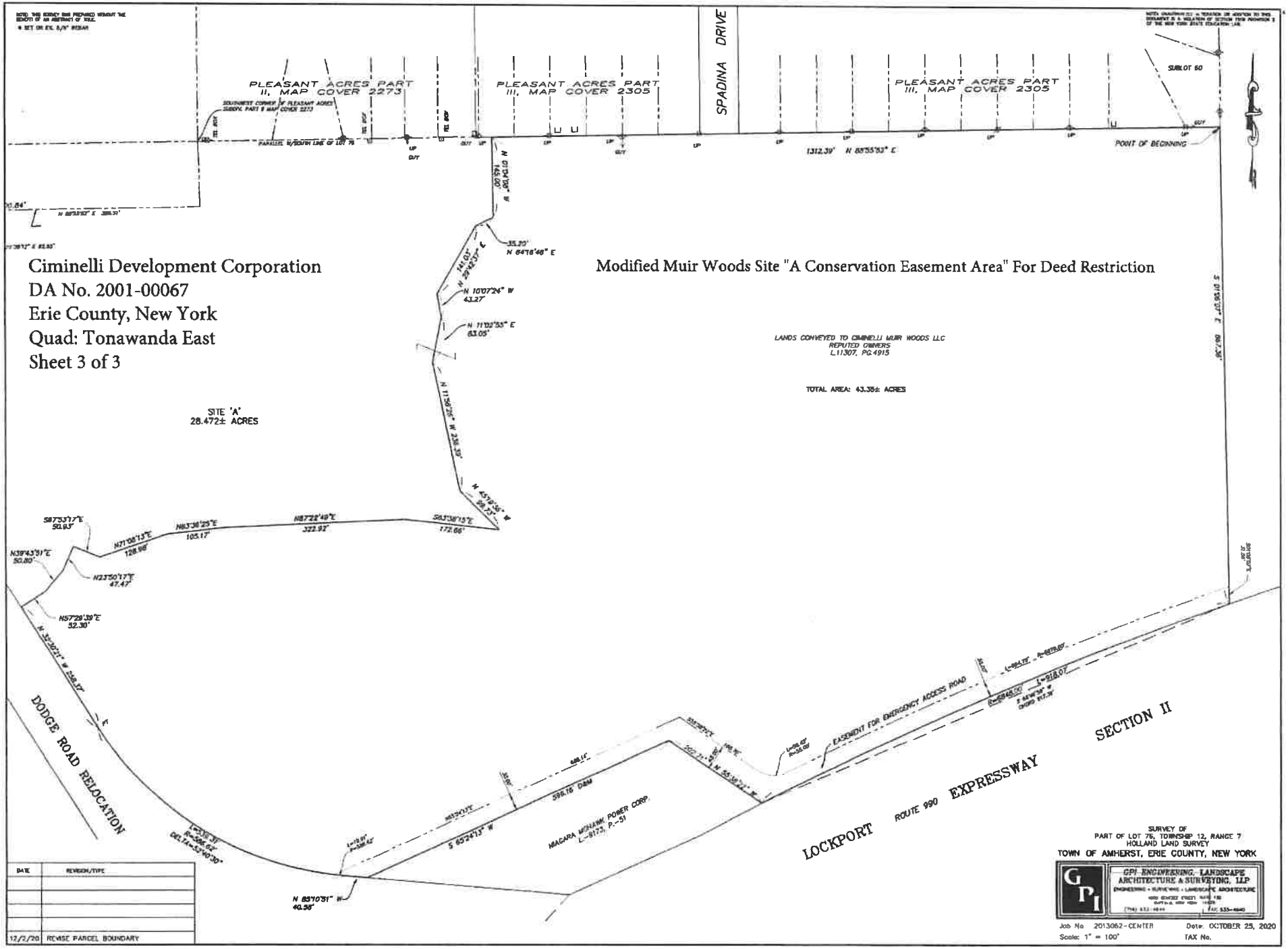


CONSERVATION AREA TO BE DONATED

Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 2 of 3

GPI GREENMAN-PEDERSEN, INC. CONSULTING ENGINEERS

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)


Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 3 of 3
Modified Muir Woods Site "A Conservation Easement Area" For Deed Restriction
PLEASANT ACRES PART II, MAP COVER 2273
PLEASANT ACRES PART III, MAP COVER 2305
PLEASANT ACRES PART III, MAP COVER 2305
SPADINA DRIVE
SUBLOT 60
POINT OF BEGINNING
1312.39' N 88°55'52" E
LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC
REPUTED OWNERS
L.11307, PG.4915
TOTAL AREA: 43.35± ACRES
SITE 'A'
28.472± ACRES
DODGE ROAD RELOCATION
LOCKPORT ROUTE 990 EXPRESSWAY
SECTION II
EASEMENT FOR EMERGENCY ACCESS ROAD
NIAGARA MOHAWK POWER CORP.
L.-8173, P.-51
SURVEY OF
PART OF LOT 76, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK
GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
Job No. 2013062-CENTER
Date: OCTOBER 25, 2020
Scale: 1" = 100'
TAX No.
DATE
REVISION/TYPE
12/2/20
REVISE PARCEL BOUNDARY

Appendix L

NYSDEC Letter of Acknowledgement

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Appendix M

5 Acre Disturbance Letter

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Carmina · Wood · Morris DPC

487 Main Street Suite 600 Buffalo, New York 14203 P: 716.842.3165 F: 716.842.0263 W: cwm-ae.com

March 4, 2021

Vaishali Reberholt, PE, CPESC
Town of Amherst Engineering Department
1100 North Forest Road
Amherst, NY 14221

Re: **Sawyer's Landing**
Amherst, NY

Dear Vaishali:

This letter shall serve as our request to have a total of 5 acres disturbed at one time at the above site. Per the NYSDEC General Permit, our site inspections will increase to 2 times per week when 5 acres is reached and will continue until the time the total disturbance is under 5 acres.

If you have any questions regarding the above, please feel free to contact me at 842-3165 [Ext 103] or via e-mail at cwood@cwm-ae.com.

Sincerely,
Carmina Wood Morris, D.P.C.

Christopher Wood, PE

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Appendix N

Engineer's Report

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Carmina · Wood · Morris DPC

487 Main Street Suite 600 Buffalo, New York 14203 P: 716.842.3165 F: 716.842.0263 W: cwm-ae.com

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

ENGINEER'S REPORT

for

Sawyer's Landing

Dodge & Sweet Home Road
Town of Amherst, Erie County, New York

Prepared for

Sawyer's Landing LLC

c/o Severyn Development
43 Central Ave Suite #300
Lancaster, NY 14086

Prepared by

Carmina Wood Morris, D.P.C.

487 Main Street, Suite 500
Buffalo, NY 14203

Telephone: (716) 842-3165
Fax: (716) 842-0263

February 2021



Table of Contents

Written Engineer's Report

Section 1 - Location & Description
Section 2 - Water Service
Section 3 - Sanitary Sewer Service
Section 4 - Storm Sewer Service

Appendices

Appendix A Sanitary Sewer and Water Demand Calculations

Appendix B Storm Sewer System Drainage Calculations

- Existing Runoff
- Proposed Runoff – East
- Proposed Runoff - West
- Green Infrastructure & Water Quality Calculations

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Section 1 - Location & Description

This project is a development of a 17.4 acre site located on the north side of Dodge Road, west of Sweet Home Road in the Town of Amherst. Both Dodge Road and Sweet Home Road are Erie County roads. Proposed is the construction of a mixed use development to include (2) 4-story buildings with a total of 30,000 sf of commercial and 100 apartments, (47) duplex lots and (2) 1-story apartment buildings with a total of 12 units. A bike trail will be constructed on site, this trail will connect to the existing Town of Amherst bike trail on the south side of Dodge Road. The approximately 1 acre westerly portion will remain undisturbed and be deed restricted as permanent open space. The site is currently undeveloped consisting of woods and overgrown brush/grass. NYSDEC and Federal wetlands were delineated on site by Earth Dimensions, Inc. Approximately 6.1 acres of Federal and 1.2 acres of NYSDEC wetlands have been permitted to be impacted. The proposed site development area to be disturbed for this project is approximately 16.4 acres.

Section 2 - Water Service

A new 8" D.I. combined service will be tapped off the existing 24" D.I.P. ECWA water main along the north side of Dodge Road. Following the tap, the 8" D.I. service will continue north into the site where it will enter into a Hot-Box enclosure. Within the Hot-Box enclosure an 8" meter (by ECWA) and an 8" Watts 957 RPZ will be installed. The service will exit the Hot-Box enclosure and then transition into 8" AWWA C-900 PVC. The service will run throughout the site to provide both domestic and fire service to the proposed buildings. Heat & light for testing will be provided in the area of the meter & RPZ to prevent freezing. Drainage due to testing or failure will be to the exterior through a drain, drainage will be away from the enclosure. The owner will be responsible for keeping the drainage ports clear of snow and debris. A total of 4 (four) proposed fire hydrants shall be installed around the site to provide fire protection coverage. There are no existing water services to this site, and therefor none to be killed/abandoned per ECWA requirements.

Domestic Summary:

Peak Operating Demand:	140.6 gpm
Water Main:	24" on Dodge Road
Static Pressure:	105 psi (per ECWA, 98 psi residual)
Friction Loss:	0.0 psi
Loss through meter/RPZ:	13.0 psi
Elevation Loss:	0.0 psi
Pressure after RPZ & Meter:	92 psi
Pressure at 4th floor:	77 psi

Repairs to all devices will be made during off hours, dual backflow preventers are not required. The site is not located in a 100-year flood plain. Disinfection of the

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

water service following installation will be continuous feed, according to AWWA C-651, latest revision.

Section 3 - Sanitary Sewer Service

The proposed sanitary sewer service will connect to the existing 60" sanitary sewer (peanut line) located on the south side of Dodge Road. In order to connect to this sewer, a public sewer extension along the south side of Dodge Road will be required. This public extension will consist of a total of 643 LF of 8" SDR-35 PVC at a minimum slope of 0.4%.

The proposed private on site sewer mains will consist of 8" SDR-35 PVC at a minimum slope of 0.4%. Each of the proposed commercial buildings and apartment buildings will have a 6" SDR-35 PVC sanitary sewer lateral at a minimum slope of 1.0% tied into the private main. The duplex units will have a 4" SDR-35 PVC sanitary sewer lateral at a minimum slope of 1.0% tied into the private main. The 8" private main will tie into the proposed public extension on the south side of Dodge Road across from the SE portion of the project site.

A downstream sanitary sewer capacity analysis (DSCA) is required to be prepared for the site given the flows will exceed 2,500 gpd. This report is included in Appendix A.

Design Parameters

Housing: use 110/gpd/bedroom
Q = 412 bedrooms x 110 gpd/bed = 45,320 gpd

Commercial: use 0.1 gpd/sf
Q = 20,000 sf x 0.1 gpd/sf = 2,000 gpd

use 15 gpd/employee
Q = 20 employees x 15 gpd/emp = 300 gpd

Restaurant: use 35 gpd/seat
Q = 100 seats x 35 gpd/seat = 3,500 gpd

Total = 51,120 gpd (average)

using a 3.97 PF (see appendix A for calc)

Total = 51,120 x 3.97 = 202,908 gpd = 140.91 gpm = 0.314 cfs

The hydraulic loading rates per "Design Standard for Wastewater Treatment Works" 2014, NYSDEC. See attached Sanitary Sewer & Water Calculations for additional information.

I/I Mitigation:

Peak Flow = 140.91 gpm

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

4:1 offset = 140.91 x 4 = 563.63 gpm
Mitigation Credit = $250/gpm
I/I Mitigation = 563.63 gpm x $250/gpm = $140,908.66
Refer to Appendix A for additional information.

Section 4 - Storm Sewer Service

The existing site is generally flat and slopes west with portions sloping east. The portion that slopes west settles in a low area and once the capacity of that area is exceeded, sheet flow continues towards Sweet Home Road and is collected by an existing 12" pipe on the north side of Dodge Road. This pipe flows to the Erie County system on Sweet Home Road. The portion that flows east flows to the offsite wetlands.

Currently Dodge Road does not have a drainage system. A series of catch basins and pipes will be installed in the green area on the north side of Dodge Road to collect the road drainage. The west portion of this system will connect to the existing closed drainage system on Sweet Home Road. The east portion will discharge to the Ellicott Creek diversion channel using and existing discharge point. This new system will also convey the proposed discharge from the site as described below.

The proposed onsite storm sewer system consists of smooth interior and perforated HDPE pipes connected by a series of catch basins, manholes and yard drains. The site is split into a storm water management area on the east and west sides.

West Side

The west side of the site has (2) bioretention areas which portions of the westerly area will discharge to. These bioretention areas along with the remainder of the west portion of the site will discharge to the underground detention area. Note that the yard drains installed along the north property line discharge to the underground detention area. An outlet structure in the SW portion of this area will control runoff to at or below existing runoff flow rates. The discharge from the outlet control structure will discharge to the new system on Dodge Road which flows to the Sweet Home Road system.

Underground Detention Summary

(286) ADS Stormtech SC-740 chambers
Top of stone elev. = 573.00
Top of chamber elev. = 572.50
Bottom of chamber elev. = 570.00
Bottom of stone elev. = 569.50
Total storage = 18,574 CF

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Sawyer's Landing
3/4/2021
4 of 5

Event	Ex. Discharge	Pro. Discharge	Elev.
1 yr	0.87 cfs	0.33 cfs	570.29
2 yr	1.34 cfs	0.68 cfs	570.46
5 yr	2.14 cfs	1.05 cfs	570.79
10 yr	2.94 cfs	1.28 cfs	571.13
25 yr	4.34 cfs	1.61 cfs	571.73
50 yr	5.69 cfs	3.61 cfs	572.23
100 yr	7.33 cfs	4.83 cfs	572.92

East Side

The east side of the site has a bioretention area and wet detention pond which this portion of the site discharges to. The NE portion of the site discharges to a forebay which spills into the main micropool portion of the wet detention basin. The SE portion of the site discharges to the bioretention area which also spills into the main micropool portion of the site. An outlet control structure is located in the SE portion of the micropool and controls the discharge from this storm water management area. Spillways are also located on the east portion of the micropool which will discharge to the existing wetlands to the east in order to not cut off all flow from this site into this area. The discharge from the outlet control structure will discharge to the new system on Dodge Road which flows to the Ellicott Creek diversion channel.

The bioretention areas and wet detention pond for the project area are sized to provide 100% of the required Runoff Reduction Volume (RRv) and Water Quality Volume (WQv) treatment for the overall site in accordance with Chapter 4 of the NYSDEC Stormwater design manual. The soils in the vicinity of the bioretention areas are mainly USDA hydrologic group 'D' and therefore the system will be installed with underdrains per NYSDEC requirements. The bioretention areas will consist of 6" and 8" perforated HDPE underdrains in 12" of drainage gravel, followed by filter fabric and 18" minimum of planting soil. Overflow yard drains will be installed to allow 6" maximum temporary ponding for RRv treatment. The east bioretention area (area #3) spills into the wet detention pond and the underdrain pipe ties together with the pond discharge and flows to Dodge Road. The east bioretention areas (areas #1 & #2) have a catch basin to act as the spillway and this catch basin and the underdrain pipes discharge to the underground detention area.

Storm Water Management Area Summary

Forebay
Top of basin elev. = 576.80
Permanent water elev. = 575.00
Aquatic bench elev. = 574.50
Bottom of basin elev. = 569.00

Micropool
Top of basin elev. = 576.80
Permanent water elev. = 575.00
Aquatic bench elev. = 574.50
Bottom of basin elev. = 563.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Sawyer's Landing
3/4/2021
5 of 5

Overall Storm Water Summary

WQv Provided = 152,678 cf (pond)
WQv Provided = 6,948 cf (bioretention)
WQv Provided = 159,626 cf (total)

Bioretention Area Summary:

Area	Rim Elev.	Bottom Elev.	Area
1	574.50	574.00	2,300 sf
2	574.50	574.00	2,600 sf
3	575.50	575.00	11,000 sf
		Total Provided =	15,900 sf

Water Quality Summary:
WQv req'd = 28,804 cf (0.661 ac-ft)
RRv min. req'd = 5,518 cf (0.127 ac-ft)
RRv provided = 8,662 cf (0.199 ac-ft)
WQv provided = 159,626 cf (3.665 ac-ft)
Total RRv + WQv provided = 8,662 cf + 159,626 cf = 168,287 cf (3.868 ac-ft)

Detention: Comparison of the existing 1-year vs. the proposed 1-year runoff
Comparison of the existing 10-year vs. the proposed 10-year runoff
Comparison of the existing 100-year vs. the proposed 100-year runoff

Storm pipes: 10-year storm

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Appendix A

Sanitary Sewer and Water Demand Calculations

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

CARMINA WOOD MORRIS, D.P.C.
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 21.011 Date: 2/19/2021
Project Name: Sawyer's Landing
Project Address: Sweet Home Road and Dodge Road - Amherst, NY
Subject: Sanitary Sewer Demand Calcs
Sheet: 1 of 1

1.h

Sanitary Sewage Demand Calculations:

West - Mixed Use Buildings							
0.1	gal/d/sf	x 20,000	sf	=	2,000	gpd	*use 0.1 gallons per day per square foot
35.0	gal/d/seat	x 100	seats	=	3,500	gpd	*use 35 gallons per day per seat (fast food)
15	gal/d/employee	x 20	employees	=	300	gpd	*use 15 gallons per day per employee
West - Apartments							
220	gal/d/unit	x 100	units	=	22,000	gpd	*use 220 gallons per day per 2-bedroom unit
North - Apartments and Duplex Buildings							
220	gal/d/unit	x 94	units	=	20,680	gpd	*use 220 gallons per day per 2-bedroom unit
220	gal/d/unit	x 12	units	=	2,640	gpd	*use 220 gallons per day per 2-bedroom unit
Total Site Sanitary Demand:				=	51,120	gpd	
				=	0.051	MGD	
Find Peak Sanitary Demand:				=	0.079	cfs	

Peaking Factor based on Population:
Total demand: 51,120 gpd / 100 gpcd = 511 per capita

Population (P) = 511 people

Peaking Factor : $(18 + \sqrt{P}) / (4 + \sqrt{P})$ where P is in thousands

Peaking Factor = 3.97

Peak Sanitary Demand = 51,120 x 3.97 = 202,908 gpd
= 0.203 MGD
= 0.314 cfs

Required Infiltration and Inflow Mitigation:

Peak Sanitary Flow	=	202,908 gpd	=	140.91 gpm
4:1 offset flow per NYSDEC requirements	=	140.9 x 4	=	563.63 gpm req'd
Mitigation Credit	=	$250 / gpm		
Mitigation Agreement Amount	=	**$140,908.66**		

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

CARMINA WOOD MORRIS, D.P.C.
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 21.011 Date: 2/19/2021
Project Name: Sawyer's Landing
Project Address: Sweet Home Road and Dodge Road - Amherst, NY
Subject: Sanitary Sewer & Water Demand Calcs
Sheet: 2 of 2

Water Demand Calculations (domestic):

Site

51,120 gpd x 1.1 = 56,232 gpd *use 110% of sewage demand

*use 1.8 peaking factor and assume a 12 hour day

56,232 gpm x 1day/12hr x 1hr/60min = 78.10 gpm

78.10 gpm x 1.8 = 140.58 gpm Q_{peak}

Headlosses:

Q_{peak} = 140.58 gpm
Pipe = 8 inch Ductile Iron C = 140
Length = 20 LF (approx. distance from tap to RPZ)

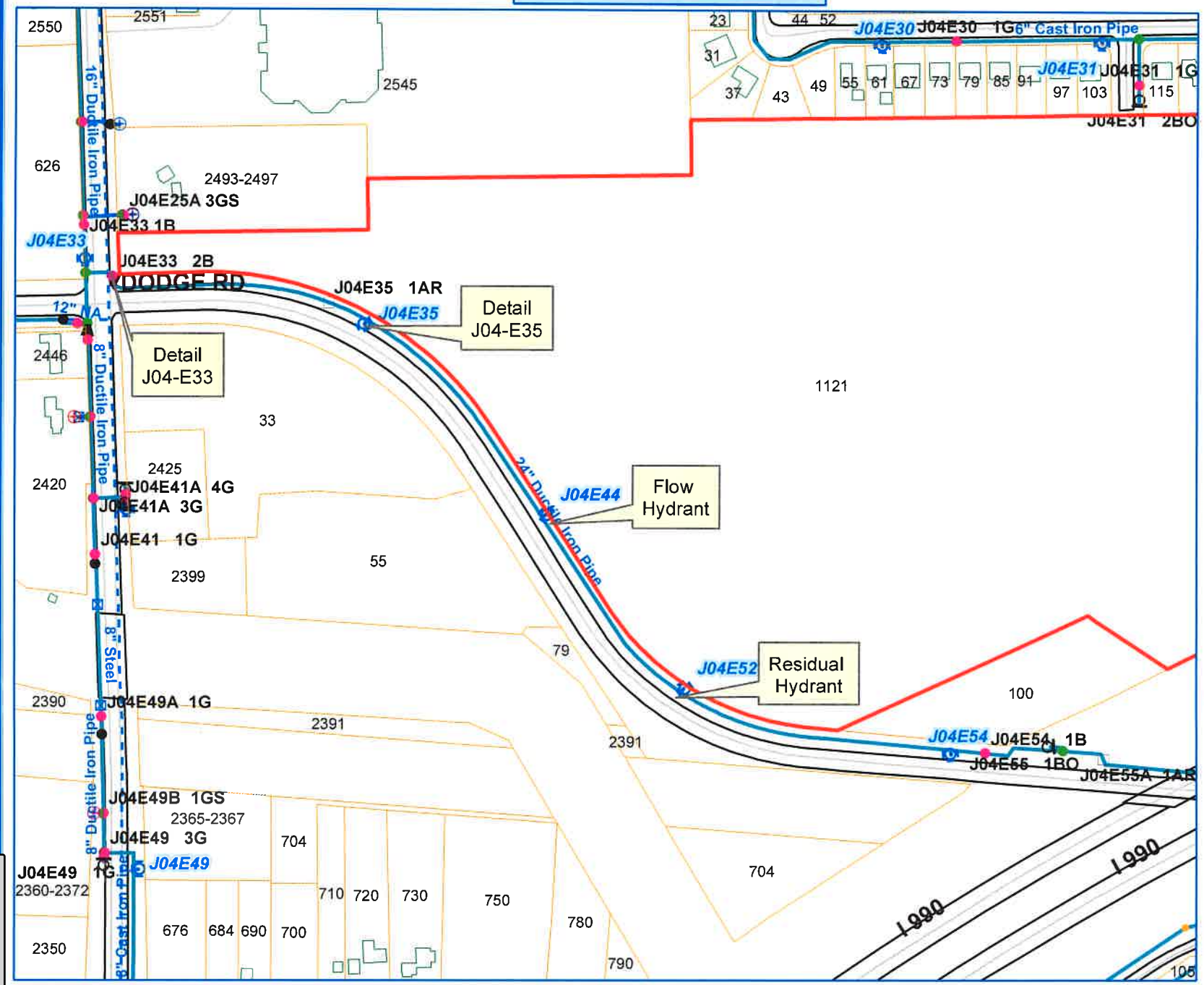
$$H_L = \frac{10.44\, L\, Q^{1.85}}{C^{1.85}\, D^{4.866}} = \frac{10.44(20)(21.51)^{1.85}}{(140)^{1.85}\,(6)^{4.866}} = 0.01 \text{ ft} = 0.00 \text{ psi}$$

Δ elev = 0 ft = 0.00 psi
Loss through meter = 1 psi
Loss through RPZ = 12 psi
Total Losses = 13.0 psi
Static Pressure = 105 psi (per ECWA - residual pressure 98 psi)
Residual Pressure Following RPZ = 105 - 13.0 = 92.0 psi (available after rpz & meter)

Residual Pressure 30" above 4th Floor
Δ elev = 35 ft = 15.16 psi
Residual Pressure 30" above 4th Floor = 76.8 psi

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

1121 Dodge Rd., AMTN



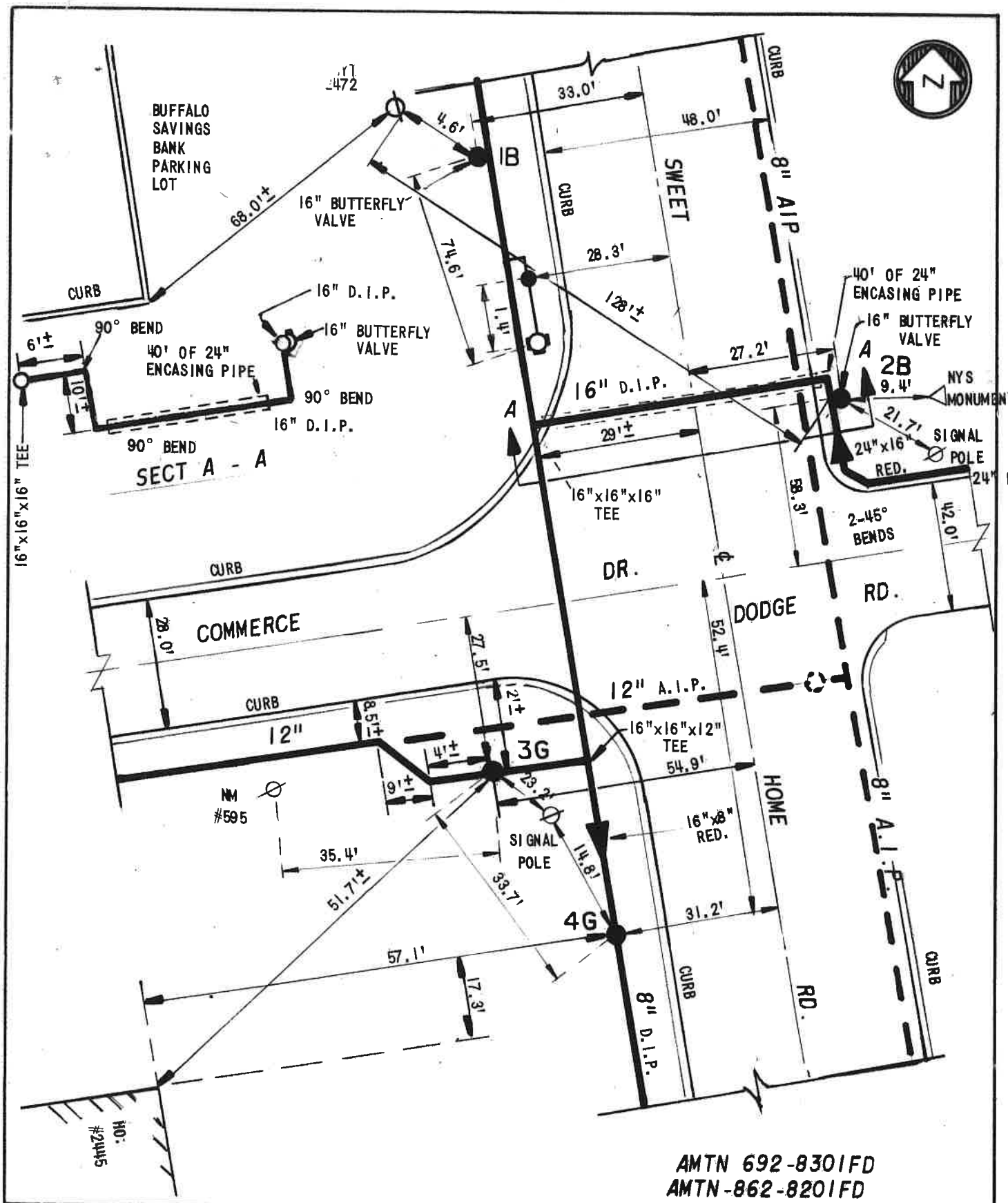
N

1 inch = 300 feet

Legend:

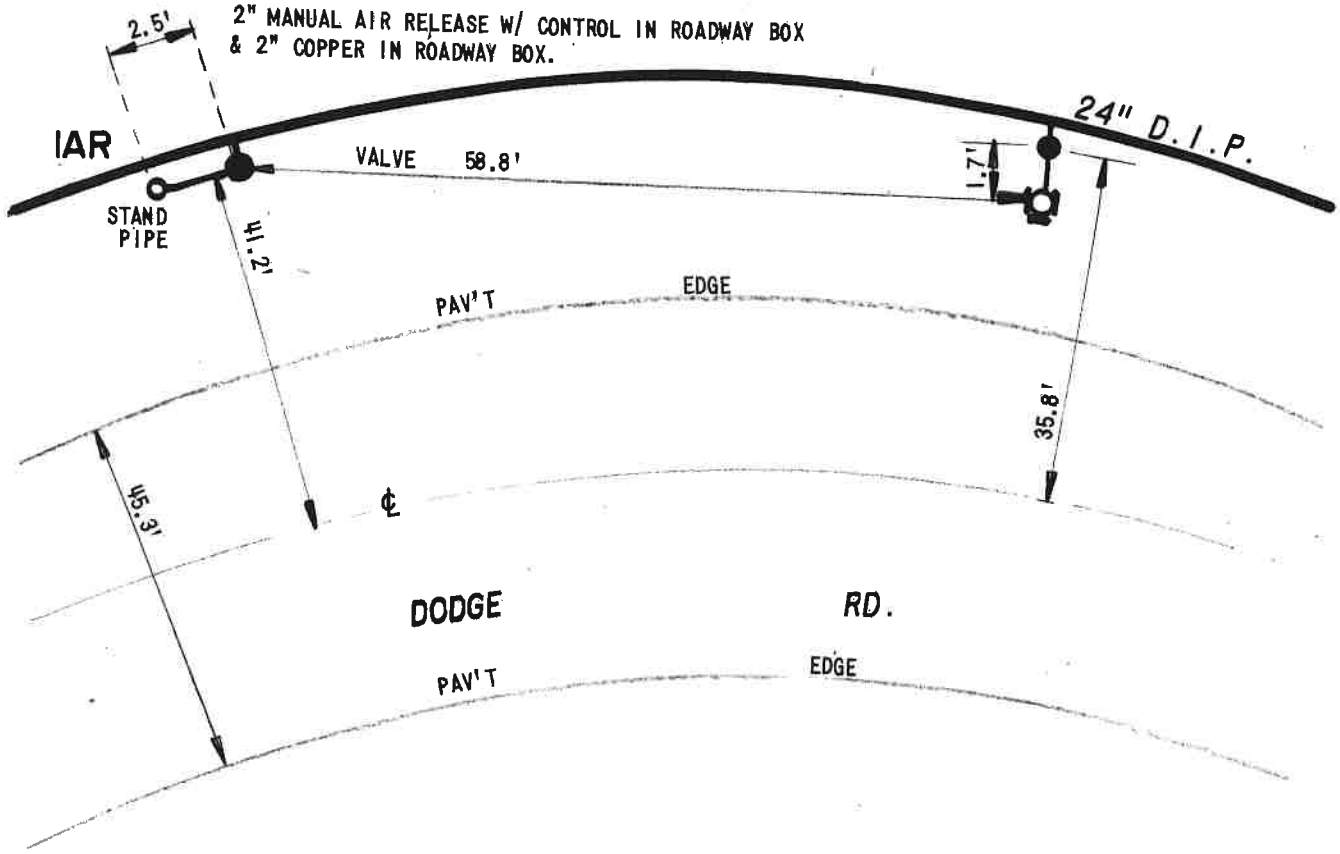
Parcels





ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	REVISED DR. BY: RLS DATE: 6-30-06 NOT TO SCALE	TOWN OF AMHERST W.D 15C	J04-E33 DETAIL SHEET NO.

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



AMTN-692-8301-FD

SHEET 1

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	REVISED DR. BY: RLS DATE: 6-30-06 NOT TO SCALE	TOWN OF AMHERST W.D. 15C	J04-E35 DETAIL SHEET NO.

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

AMHERST
Size of Main/Branch: 24"/6" Fire District: 22028 GETZVILLE FD 11 Water District: 315 AMHERST DISTRICT 15C

Performed By: JRS & DPZ

Comments: HYDRANT FLOW TEST REQUESTED BY BILL GROFF
PRATT & HUTH, PHONE: 633-4844, FAX: 633-4940

Dischrge Coef: .90 Elvtn Usgs(ft): Static(psi): 105 Residual(psi): 98 Required Residual Pressure(psi): 20
Gallons Used..: 7,680 Total Flow(gpm): 2,558 Flow at Reqd Resid Pressure: 9,850

Flow Hydrants:

C	Flow Hyd	Flow Hydrant Address	Main/Brnch	Nzle	Size	Pitot	Flow	Comments
_	J04 E44	DODGE RD	24"/6"	1:	2.50	58.0	1,279	
		2ND HYD E/O SWEET HOME RD		2:	2.50	58.0	1,279	
				3:			Tot Flow:	2,558

Bottom

I=Flow Hydrant Inquiry
ENTER=Continue F3=Exit F6=Maintain Test F7=Test Hydrant Inquiry F15=Print Test Information

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Downstream Sewer Capacity Analysis

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Muir Woods Site

Sweet Home & Dodge Road, Amherst New York

Downstream Sewer Capacity Analysis Report

Project Description

This new site development project will consist of the construction of apartment buildings, duplexes, office, restaurant, and retail space. Construction will also include on-site utility, landscaping improvements, and associated roads and parking. The overall acreage of the site is 28.47 acres. The site is located at Sweet Home Road and Dodge Road on a western portion of parcel 40.08-3-13.1 in the Town of Amherst.

The proposed sewer for this project will tie into the existing 60" RCP Peanut line along Dodge Road. Sewage will then be conveyed west and then eventually north through the 84" West Side Interceptor to the Town of Amherst Wastewater Treatment Facility #16.

Node 1 – Dodge Road (60"):

Existing Peak Flow measured (wet weather event)	=	40.602 cfs (21.851 mgd)*
Proposed Muir Woods Peak Flow	=	0.337 cfs **
Proposed Peak Flow	=	40.939 cfs

Theoretical capacity of existing 60" RCP pipe @ 0.07% = 81.366 cfs

Conclusion: The proposed peak flow is less than the capacity of the 60" pipe, therefore there is sufficient capacity. At no time during the monitoring did the flow depth exceed the pipe diameter at Node 1 of the downstream monitoring points during the rain events monitored.

Node 2 – North Ellicott Creek Rd (60")

Existing Peak Flow measured (wet weather event)	=	99.524 cfs (53.561 mgd)*
Proposed Muir Woods Peak Flow	=	0.337 cfs **
Proposed Peak Flow	=	99.861 cfs

Theoretical capacity of existing 60" pipe = 82.873 cfs (44.60 mgd)

Conclusion: Current flows the day following the 1.21" rainfall event exceeded the capacity of the existing 60" sewer pipe, but at no time during the monitoring period did the flow at any point slow or stall which would have caused a backup or flooding at the manhole. In addition, Sanitary Sewer Overflow (SSD) did not occur. I/I mitigation shall be required for the contribution proposed for this project.

Notes:

Pipe slopes, sizes and materials provided by Town of Amherst Engineering Department Sewer Maintenance Division

* Converted from measurements in TECSmith report dated 8/12/20

** See Sanitary Sewage Demand Calculations

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Node 3 – Sweet Home (66")

Existing Peak Flow measured (overall)	=	69.058 cfs (39.601 mgd)*
Proposed Muir Woods Peak Flow	=	0.337 cfs **
Proposed Peak Flow	=	69.395 cfs

Capacity of existing 66" pipe = 106.657 cfs (57.40 mgd)

Conclusion: The proposed peak flow is less than the capacity of the 66" pipe, therefore there is sufficient capacity. At no time during the monitoring did the flow depth exceed the pipe diameter at Node 3 of the downstream monitoring points during the rain events monitored.

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Notes:

Pipe slopes, sizes and materials provided by Town of Amherst Engineering Department Sewer Maintenance Division

* Converted from measurements in TECSmith report dated 8/12/20

** See Sanitary Sewage Demand Calculations

Location Map

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Muir Woods Site - Sweet Home and Dodge Rd



8/18/2020, 8:51:26 AM

Parcels

Municipal Boundaries

1:9,028

0 300 600 1,200 ft

0 90 180 360 m

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, :GIS .gov

Sanitary Demand Calculations

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

CARMINA WOOD MORRIS, D.P.C.
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 19.192 Date: 8/24/2020
Project Name: Muir Woods
Project Address: Sweet Home Road and Dodge Road - Amherst, NY
Subject: Sanitary Sewer Demand Calcs
Sheet: 1 of 1

1.h

Sanitary Sewage Demand Calculations:

West - Mixed Use Buildings							
0.1 gal/d/sf	x	15,000	sf	=	1,500	gpd	*use 0.1 gallons per day per square foot
35.0 gal/d/seat	x	200	seats	=	7,000	gpd	*use 35 gallons per day per seat (fast food)
15 gal/d/employee	x	20	employees	=	300	gpd	*use 15 gallons per day per employee
West - Apartments							
220 gal/d/unit	x	110	units	=	24,200	gpd	*use 220 gallons per day per 2-bedroom unit
North - Apartments and Duplex Buildings							
220 gal/d/unit	x	90	units	=	19,800	gpd	*use 220 gallons per day per 2-bedroom unit
220 gal/d/unit	x	12	units	=	2,640	gpd	*use 220 gallons per day per 2-bedroom unit

Total Site Sanitary Demand: = 55,440 gpd
= 0.055 MGD
Find Peak Sanitary Demand: = 0.086 cfs

Peaking Factor based on Population:
Total demand: 55,440 gpd / 100 gpcd = 554 per capita

Population (P) = 554 people

Peaking Factor : $(18 + \sqrt{P}) / (4 + \sqrt{P})$ where P is in thousands

Peaking Factor = 3.95

Peak Sanitary Demand = 55,440 x 3.95 = 219,029 gpd
= 0.219 MGD
= 0.339 cfs

Required Infiltration and Inflow Mitigation:

Peak Sanitary Flow	=	219,029 gpd	=	152.10 gpm	
4:1 offset flow per NYSDEC requirements	=	152.1 x 4	=	608.41 gpm req'd	
Mitigation Credit	=	$250 / gpm			
Mitigation Agreement Amount	=	**$152,103.30**			

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

TECSmith Monitoring Report

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Date	Node 1			Node 2			Node 3			Rain:
	Dodge Rd 60" (60")			North Ellicott Creek Rd. (60")			Sweethome 66 (66")			
	FLOW (GAL x 1,000)	PEAK FLOW (MGD)	PEAK LEVEL (IN)	FLOW (GAL x 1,000)	PEAK FLOW (MDG)	PEAK LEVEL (IN)	FLOW (GAL x 1	PEAK FLOW (MDG)	PEAK LEVEL (IN)	(inches)
7/8/2020	4186.283	8.161	14.473	7265.409	8.598	16.319	4800986323.2	8.025	19.770	0
7/9/2020	6195.964	8.253	14.556	7387.504	8.661	16.273	6645115872.8	8.044	19.590	0
7/10/2020	6231.790	8.143	14.521	7625.321	9.362	16.873	6667623530.3	8.079	19.790	0
7/11/2020	10033.769	21.851	39.526	20780.607	53.561	76.701	10540796680.3	28.096	66.000	1.21
7/12/2020	9184.078	14.374	22.474	11292.759	17.205	23.420	9306202243.7	13.750	25.810	0
7/13/2020	7070.585	9.115	15.714	11243.925	29.525	33.420	7609650153.8	9.108	20.730	0.47
7/14/2020	6974.494	9.101	15.869	9685.896	13.288	20.168	7274548275.2	9.280	20.720	0
7/15/2020	6591.385	8.845	15.512	8174.879	9.503	17.013	6975378581.5	8.831	20.460	0
7/16/2020	9916.241	20.532	27.213	18886.012	44.070	43.892	12067803314.2	39.601	32.990	0.86
7/17/2020	10096.644	16.639	23.493	12451.728	18.137	24.043	10307997546.4	14.224	26.250	0.03
7/18/2020	8256.593	10.757	17.307	9766.538	11.556	18.960	8664937727.1	10.772	22.350	0
7/19/2020	7589.558	11.382	18.060	10166.964	17.245	24.128	8331695207.5	24.048	23.030	0.21
7/20/2020	7269.757	9.235	16.144	8853.911	10.160	18.118	7730113857.4	9.669	20.890	0
7/21/2020	6681.658	8.895	15.365	8179.097	9.991	17.880	1603593925.8	9.197	20.330	0
7/22/2020	8633.887	15.390	22.402	15950.443	42.105	43.300	16326027301.0	29.736	27.790	0.42
7/23/2020	7327.211	9.216	16.027	9664.310	11.130	18.508	6916249204.1	19.172	20.800	0
7/24/2020	6764.464	8.779	15.317	8434.117	9.760	17.405	8296938032.2	15.723	20.360	0
7/25/2020	6426.122	8.861	15.407	8159.333	9.969	17.608	6871634377.4	12.359	20.320	0
7/26/2020	6409.255	8.667	15.297	8027.060	9.774	17.372	6816880470.0	9.106	20.360	0
7/27/2020	6487.339	8.269	15.107	7871.954	9.244	16.902	6854655651.9	8.336	20.100	0.03
7/28/2020	6298.427	8.016	14.780	7696.223	9.134	16.757	6692447010.5	8.080	19.740	0.01
7/29/2020	8340.302	16.584	23.592	12134.192	36.728	39.530	9170179156.5	20.222	29.310	0.18
7/30/2020	6969.955	8.785	15.769	8383.294	9.650	17.268	7523641190.2	9.272	20.460	0
7/31/2020	6450.443	8.415	15.050	7762.583	9.287	16.964	7145517425.5	9.079	20.020	0
8/1/2020	6190.340	8.162	14.979	7900.808	9.762	17.305	6954528215.3	13.188	20.010	0
8/2/2020	7093.727	10.270	17.033	9801.968	15.922	22.240	7827565960.7	17.585	22.270	0.29
8/3/2020	6767.967	8.538	15.346	8117.853	9.663	17.172	7374180322.3	9.104	20.460	0
8/4/2020	6796.062	10.365	17.180	8920.731	24.649	28.896	7717920498.0	19.489	24.920	0.9
8/5/2020	4464.403	13.072	20.203	5583.196	26.407	31.097	3896577334.0	14.011	25.600	0
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Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

Date: August 12, 2020

SANITARY SEWER FLOW CAPACITY STUDY – Summary Review

Prepared For: Muir Woods Capacity Analysis

Christopher Wood
487 Main Street, Suite 600
Buffalo, New York 14203
P: (716) 842-3165
F: (716) 842-0263

Project Name: Muir Woods Capacity Analysis

Flow Monitoring Period: July 8, 2020 to August 5, 2020

Rain Events (> 0.5-inches) Monitored: July 11 (1.21"), July 16 (0.86"), and August (0.90")

Number of Monitoring Nodes: Three (3) downstream manholes

Node Locations and Descriptions:

- Node 1 Dodge Rd 60" (60")
- Node 2 North Ellicott Creek Rd. (60")
- Node 3 Sweethome 66 (66")

Summary Conclusion:

Based on the data presented in this report, specifically the flow depth measurements recorded (see graphs below)

- At no time did the flow depth exceed pipe diameter at Node 1 and Node3 of the downstream monitoring points during the rain events monitored.
- One time the flow depth exceed pipe diameter at Node 2 of the downstream monitoring points during the rain events monitored.
- At no time during the monitoring period did the flow at any point slow or stall which would have caused a backup or flooding at the manhole.

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

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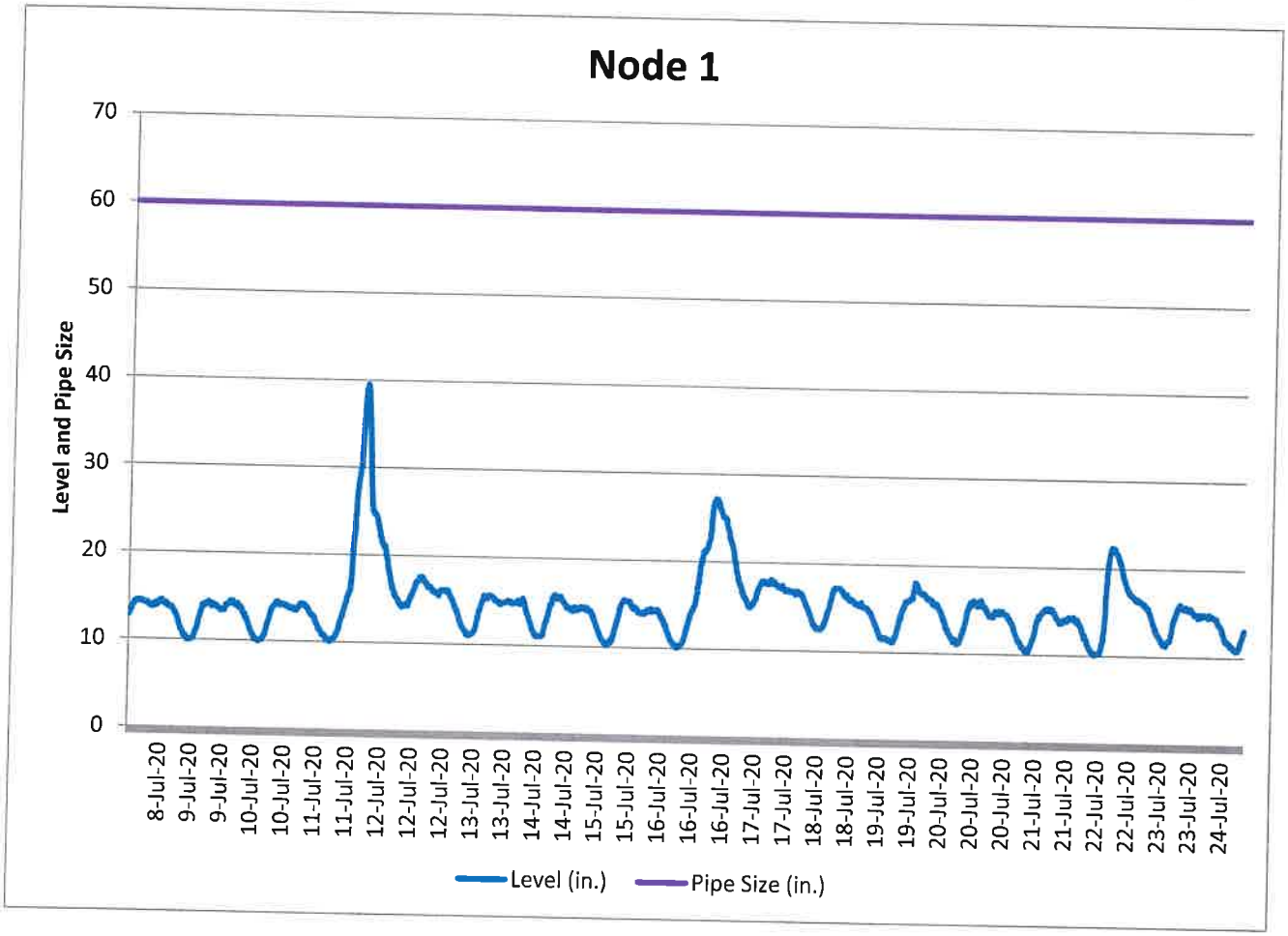
Fax: 716-687-1418

Depth of Flow Capacity Summary:

Depth of flow capacity is based on diameter of pipe. See graphs below.

- At no time during the monitoring period did depth of flow exceed pipe diameter at Node 1.



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

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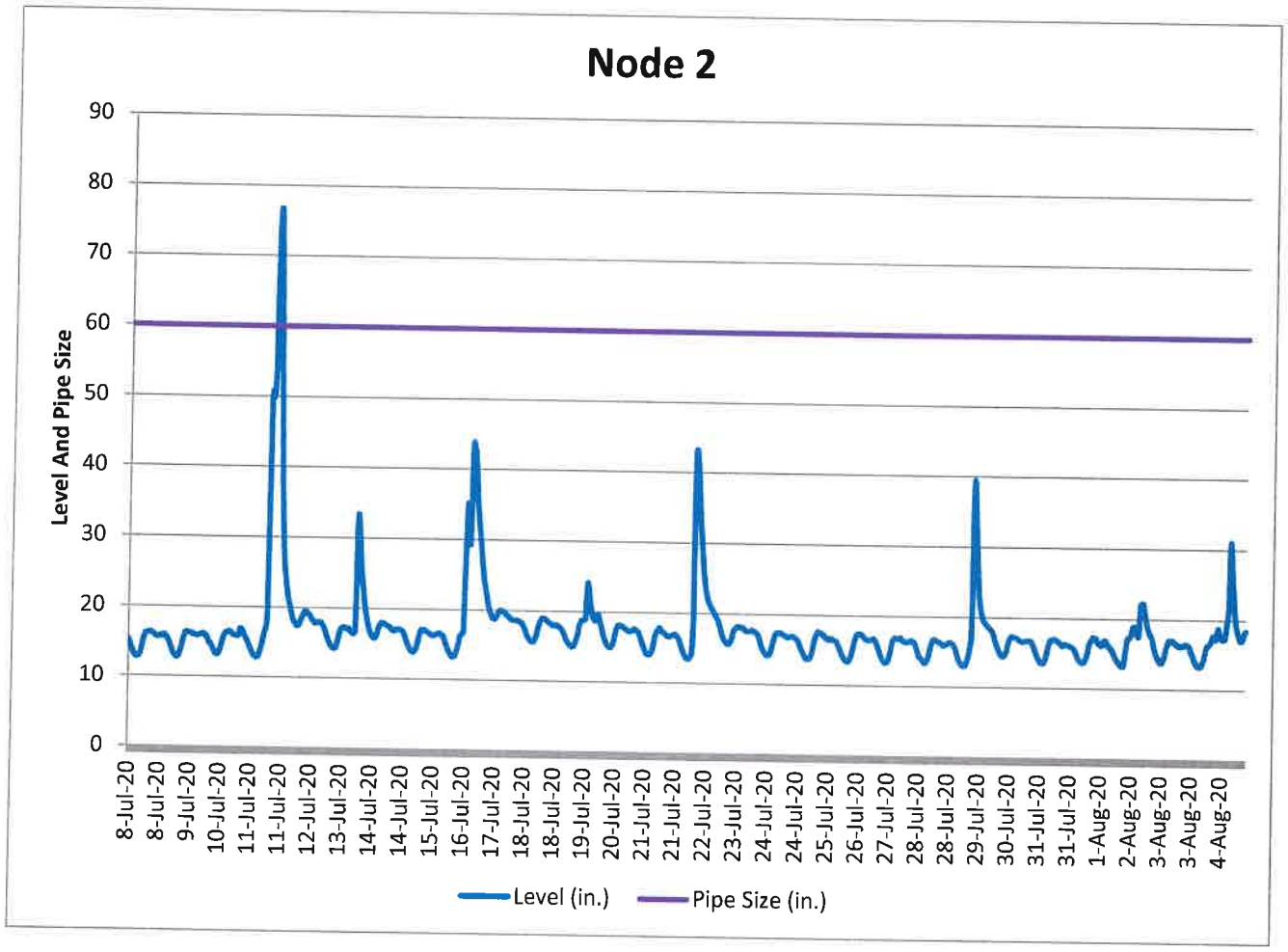
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

- One time during the monitoring period did depth of flow exceed pipe diameter at Node 2.

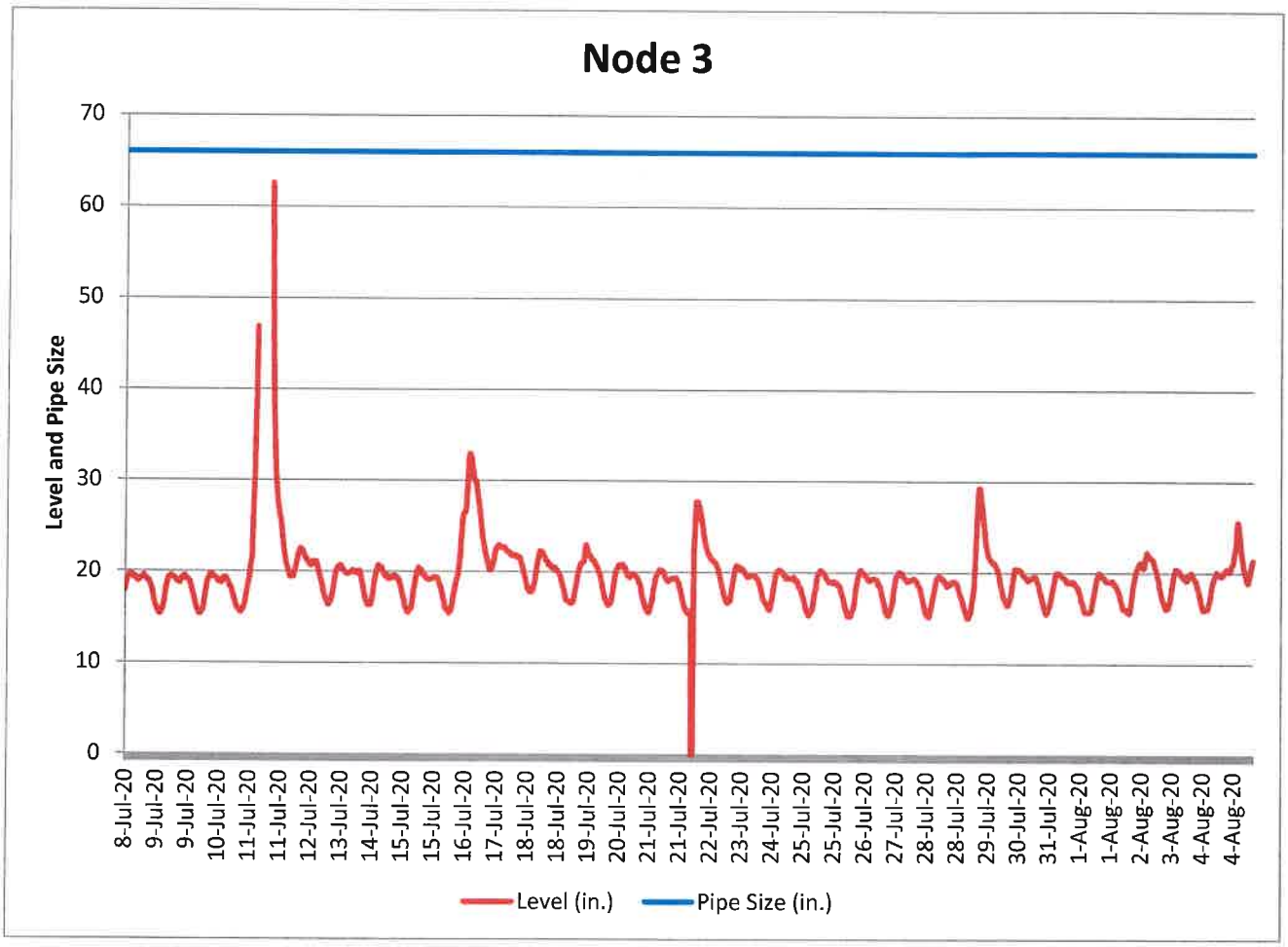


Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

- At no time during the monitoring period did depth of flow exceed pipe diameter at Node 3.



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

(T) Amherst Engineering Department Sewer Maintenance Division Downstream Routing Map

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Town of Amherst Engineering Department
Sewer Maintenance Division

Main Sanitary Sewer Interceptors

DOWNSTREAM SEWER

AMHERST PEANUT LINE & WEST SIDE INTERCEPTOR

460 Dodge Road - Proposed 26 Unit Apartment Building - Amherst Consolidated Sewer District

Project Location

Sanitary Routing

May 2020

FLOW LOCATION POINT

Flows Updated: 1/18/19

84-Inch West Side Interceptor
Capacity: 104.10 mgd
21.1 mgd Avg. Daily Flow
26.85 mgd Daily Peak Flow
92.00 mgd 2 yr.-6 hr. Flow

66-Inch Peanut Line
Capacity: 57.4 mgd
8.37 mgd Avg. Daily Flow
11.55 mgd Daily Peak Flow
36.50 mgd 2 yr.-6 hr. Flow

54-Inch Peanut Line
Capacity: 36.0 mgd
3.55 mgd Avg. Daily Flow
5.06 mgd Daily Peak Flow
19.15 mgd 2 yr.-6 hr. Flow

48-Inch Peanut Line
Capacity: 24.6 mgd
1.90 mgd Avg. Daily Flow
2.82 mgd Daily Peak Flow
5.98 mgd 2 yr.-6 hr. Flow

18-Inch Peanut Line
Capacity: 2.84 mgd
0.62 mgd Avg. Daily Flow
0.95 mgd Daily Peak Flow
1.55 mgd 2 yr.-6 hr. Flow

Project Location
460 Dodge Rd.

60-Inch Peanut Line
Capacity: 44.6 mgd
6.71 mgd Avg. Daily Flow
9.10 mgd Daily Peak Flow
26.45 mgd 2 yr.-6 hr. Flow

60-Inch West Side Interceptor
Capacity: 49.1 mgd
12.64 mgd Avg. Daily Flow
15.33 mgd Daily Peak Flow
54.10 mgd 2 yr.-6 hr. Flow
Chestnut Ridge B.P. 5.0 mgd

54-Inch Peanut Line
Capacity: 36.0 mgd
3.01 mgd Avg. Daily Flow
4.35 mgd Daily Peak Flow
18.50 mgd 2 yr.-6 hr. Flow

30-Inch Peanut Line
Capacity: 8.71 mgd
1.25 mgd Avg. Daily Flow
1.83 mgd Daily Peak Flow
3.72 mgd 2 yr.-6 hr. Flow

30-Inch Stahl Road Trunk
Capacity: 7.35 mgd
3.65 mgd Avg. Daily Flow
4.55 mgd Daily Peak Flow
7.30 mgd 2 yr.-6 hr. Flow

State University of New York at Buffalo

18-Inch Tonawanda Road
Capacity: 2.02 mgd
0.55 mgd Avg. Daily Flow
0.90 mgd Daily Peak Flow
2.20 mgd 2 yr.-6 hr. Flow

54-Inch West Side Interceptor
Capacity: 38.5 mgd
11.27 mgd Avg. Daily Flow
13.88 mgd Daily Peak Flow
56.65 mgd 2 yr.-6 hr. Flow

48-Inch West Side Interceptor
Capacity: 24.6 mgd
3.10 mgd Avg. Daily Flow
4.15 mgd Daily Peak Flow
19.75 mgd 2 yr.-6 hr. Flow

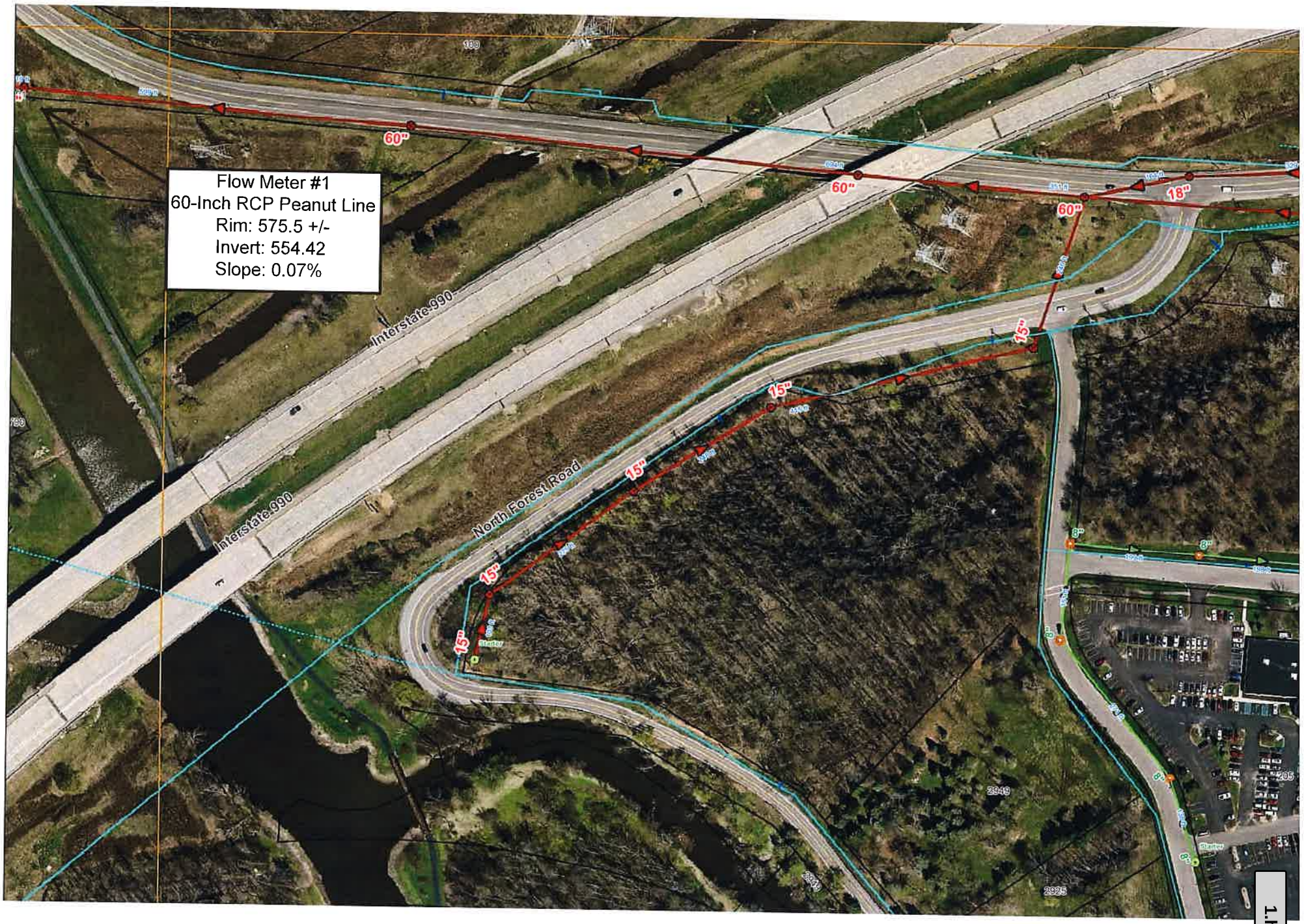
54-Inch West Side Interceptor
Capacity: 36.5 mgd
8.05 mgd Avg. Daily Flow
9.55 mgd Daily Peak Flow
36.50 mgd 2 yr.-6 hr. Flow

30-Inch Reist Street Trunk
Capacity: 7.55 mgd
1.55 mgd Avg. Daily Flow
2.05 mgd Daily Peak Flow
6.50 mgd 2 yr.-6 hr. Flow
6.95 mgd 5 yr.-6 hr. Flow

Village of Williamsville

1 0 1 Miles

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)


Flow Meter #1
60-Inch RCP Peanut Line
Rim: 575.5 +/-
Invert: 554.42
Slope: 0.07%
Interstate 990
Interstate 990
North Forest Road
60"
60"
60"
18"
15"
15"
15"
15"
15"


348 N Ellicott Creek Rd
Buffalo, New York
Google
Street View
Flow Meter #2

Flow Meter #3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Appendix B

Storm Sewer System Drainage Calculations

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Existing Runoff

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

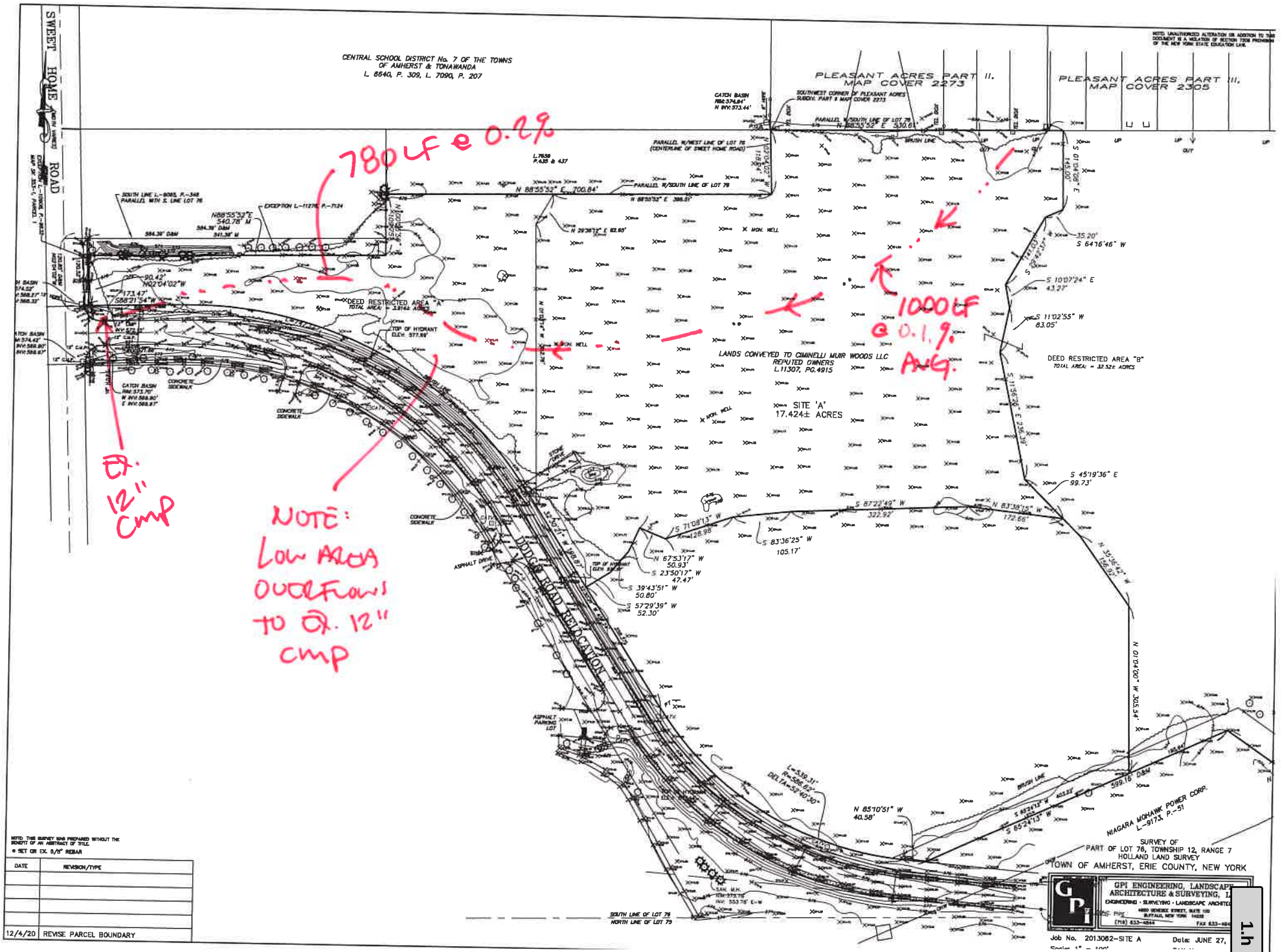


Existing

Subcat Reach Pond Link

Routing Diagram for 21.011 Existing
Prepared by Hewlett-Packard Company, Printed 3/1/2021
HydroCAD® 10.00-18 s/n 05019 © 2016 HydroCAD Software Solutions LLC

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)


780 LF @ 0.2%
1000 LF @ 0.1% AVG.
EX. 12" CMP
NOTE: LOW AREA OVERFLOWS TO EX. 12" CMP
SWEET HOME ROAD
CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA
L. 8640, P. 309, L. 7090, P. 207
PLEASANT ACRES PART II. MAP COVER 2273
PLEASANT ACRES PART III. MAP COVER 2305
LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC REPUTED OWNERS L.11307, PG.4915
SITE 'A' 17.424± ACRES
DEED RESTRICTED AREA "A" TOTAL AREA: = 3.8144 ACRES
DEED RESTRICTED AREA "B" TOTAL AREA: = 32.52± ACRES
DODGE ROAD RELOCATION
NIAGARA MOHAWK POWER CORP. L.-9173, P.-51
SURVEY OF PART OF LOT 78, TOWNSHIP 12, RANGE 7 HOLLAND LAND SURVEY TOWN OF AMHERST, ERIE COUNTY, NEW YORK
GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, L
Job No. 2013082-SITE A
Date: JUNE 27,
DATE | REVISION/TYPE
12/4/20 | REVISE PARCEL BOUNDARY

Events for Subcatchment 1S: Existing

Event	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-Year	0.87	0.578	0.41
2-Year	1.34	0.851	0.60
5-Year	2.14	1.304	0.92
10-Year	2.94	1.752	1.24
25-Year	4.34	2.527	1.78
50-Year	5.69	3.272	2.31
100-Year	**7.33**	**4.181**	**2.95**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.830	77	Brush, Fair, HSG D (1S)
12.170	79	Woods, Fair, HSG D (1S)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
17.000	HSG D	1S
0.000	Other	

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	4.830	0.000	4.830	Brush, Fair	1S
0.000	0.000	0.000	12.170	0.000	12.170	Woods, Fair	1S

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

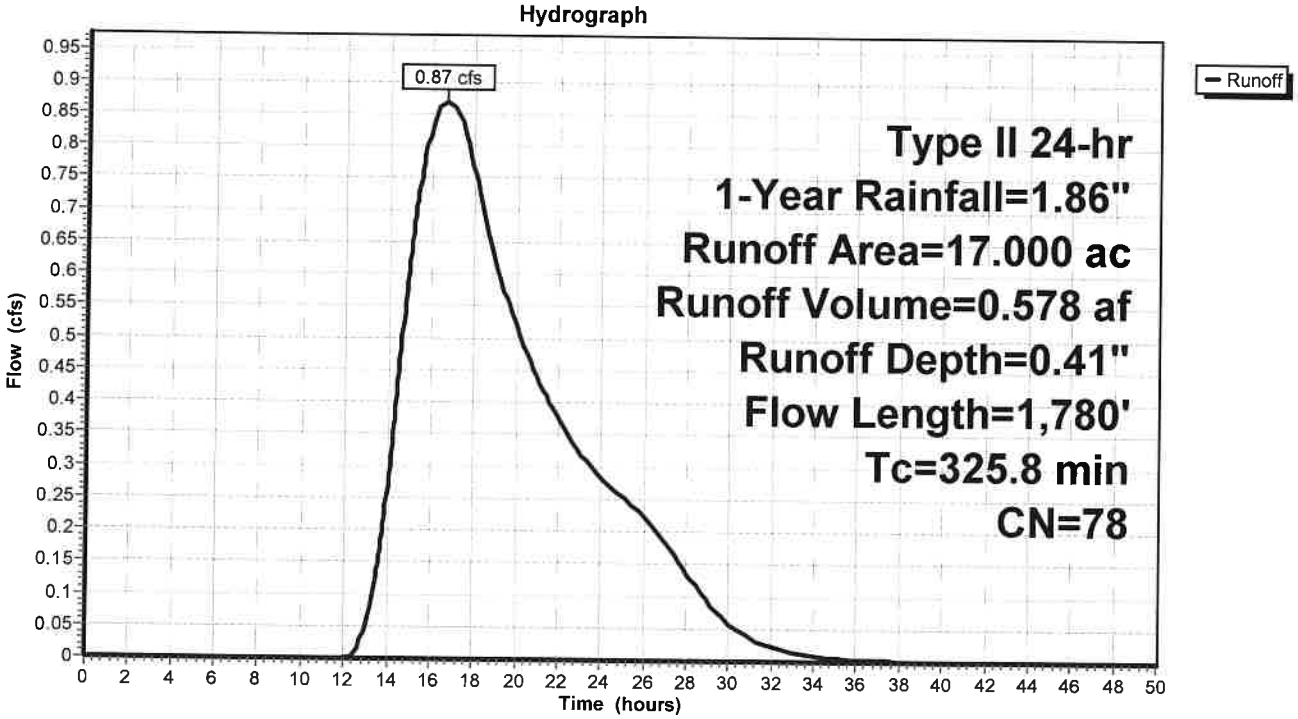
Runoff = 0.87 cfs @ 16.65 hrs, Volume= 0.578 af, Depth= 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

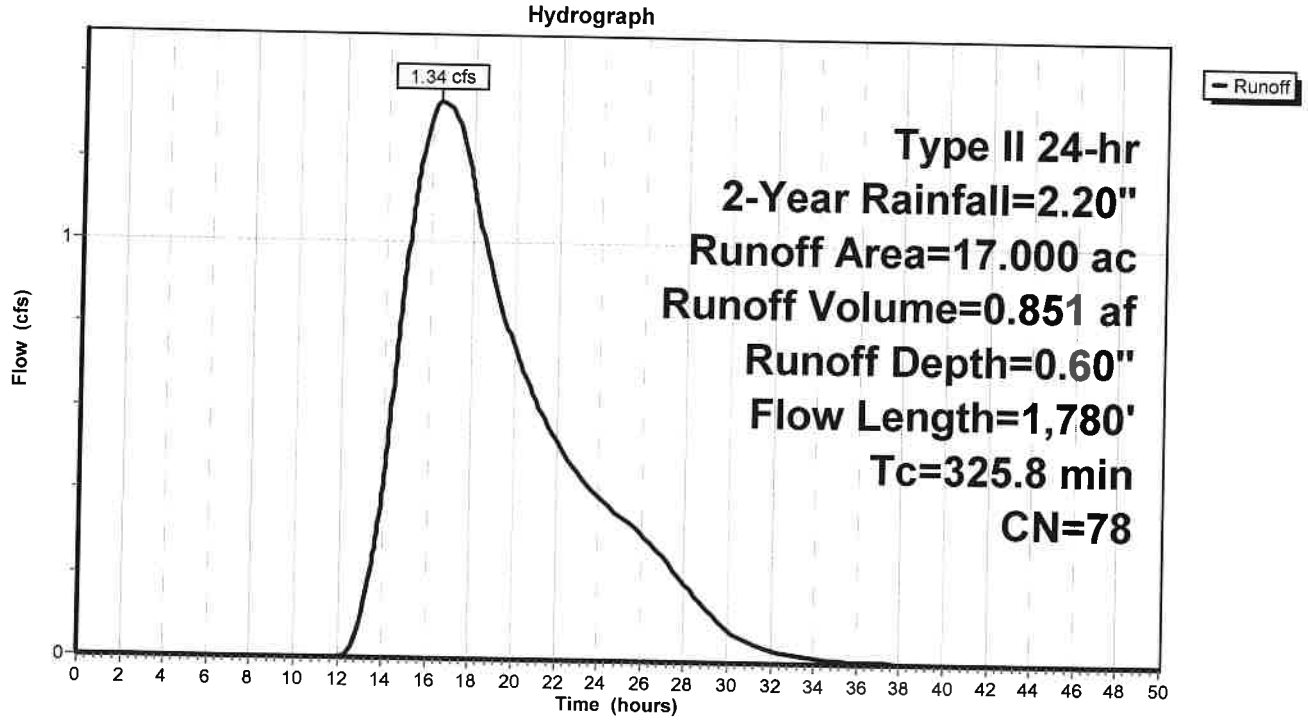
Runoff = 1.34 cfs @ 16.35 hrs, Volume= 0.851 af, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

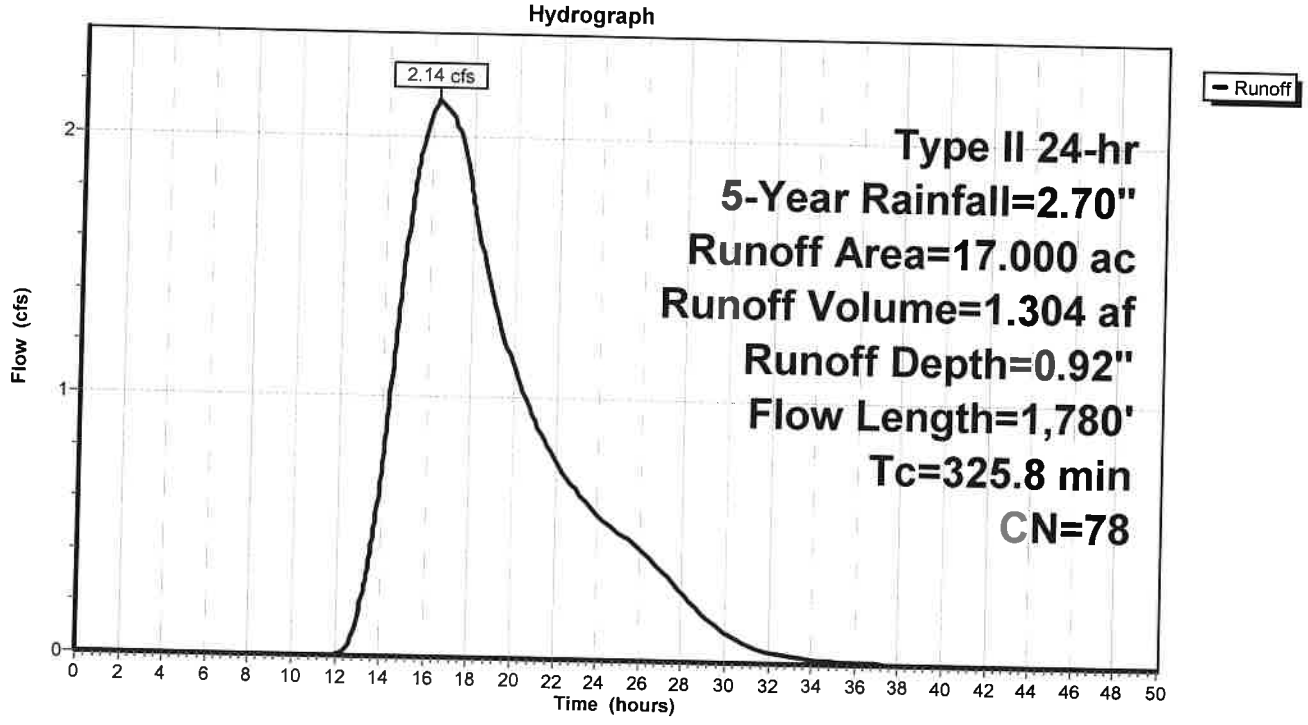
Runoff = 2.14 cfs @ 16.31 hrs, Volume= 1.304 af, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

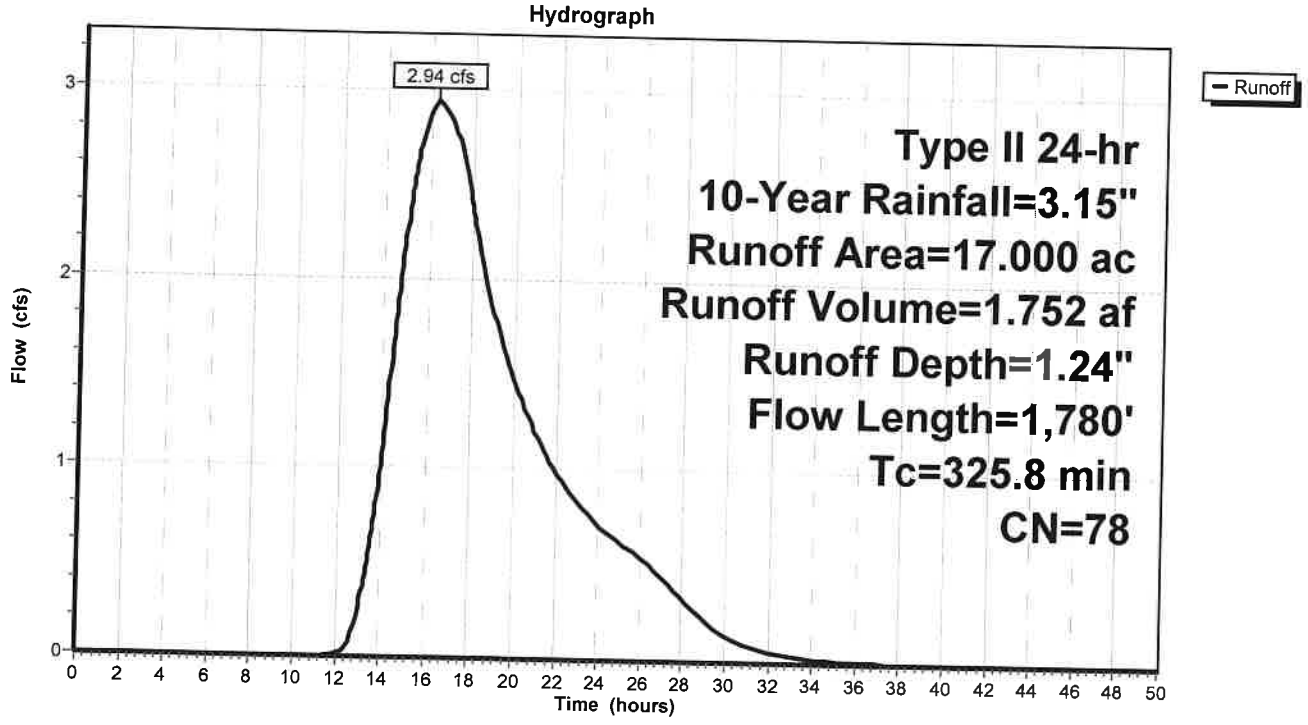
Runoff = 2.94 cfs @ 16.31 hrs, Volume= 1.752 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

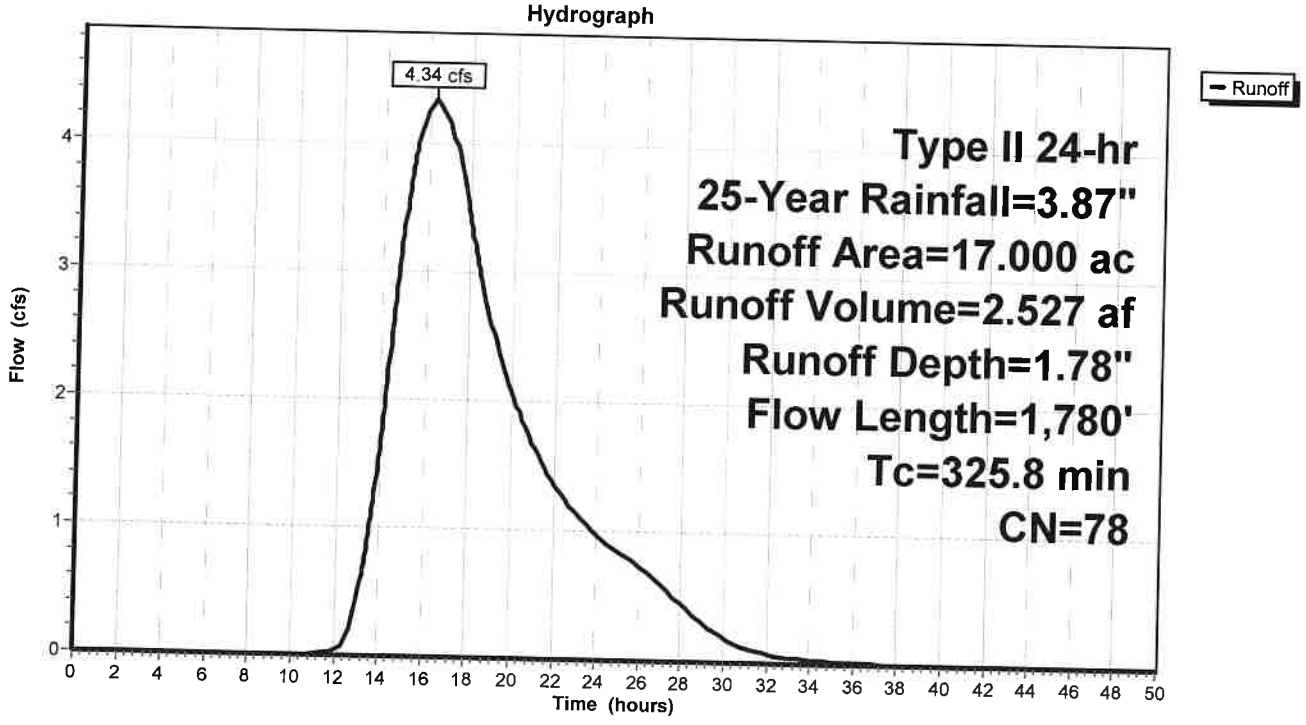
Runoff = 4.34 cfs @ 16.30 hrs, Volume= 2.527 af, Depth= 1.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

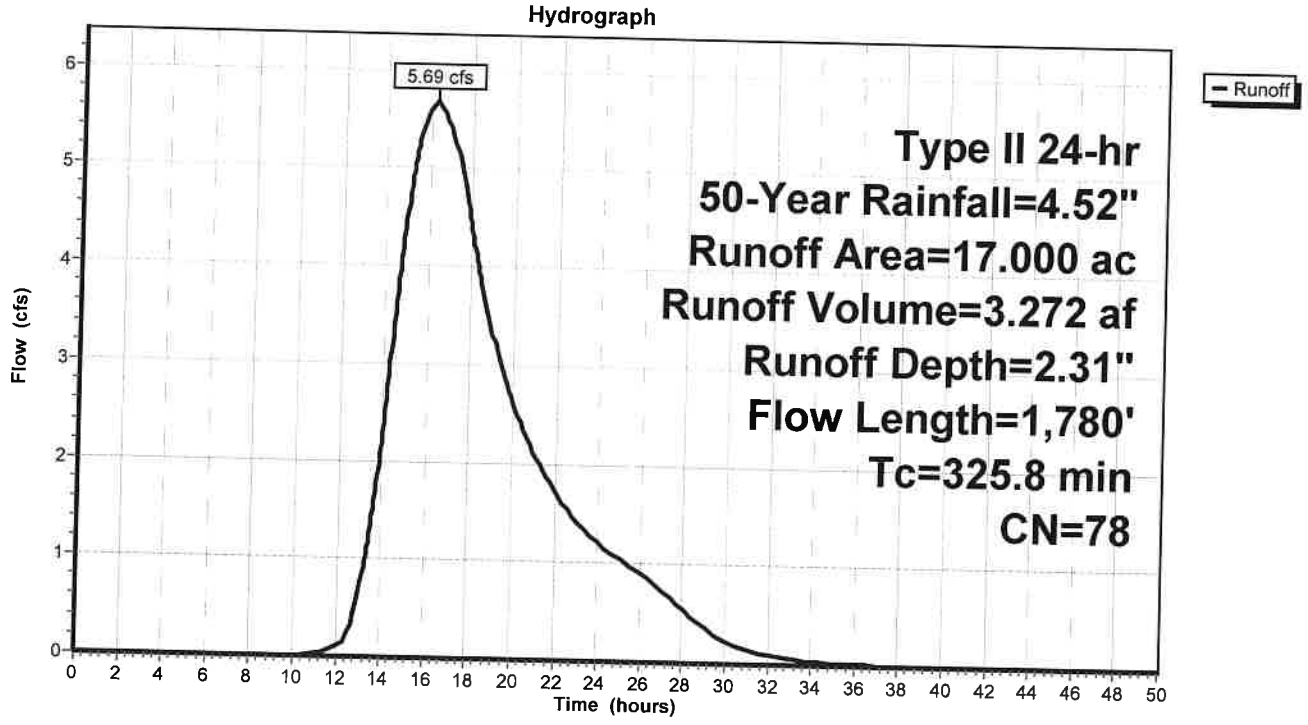
Runoff = 5.69 cfs @ 16.29 hrs, Volume= 3.272 af, Depth= 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

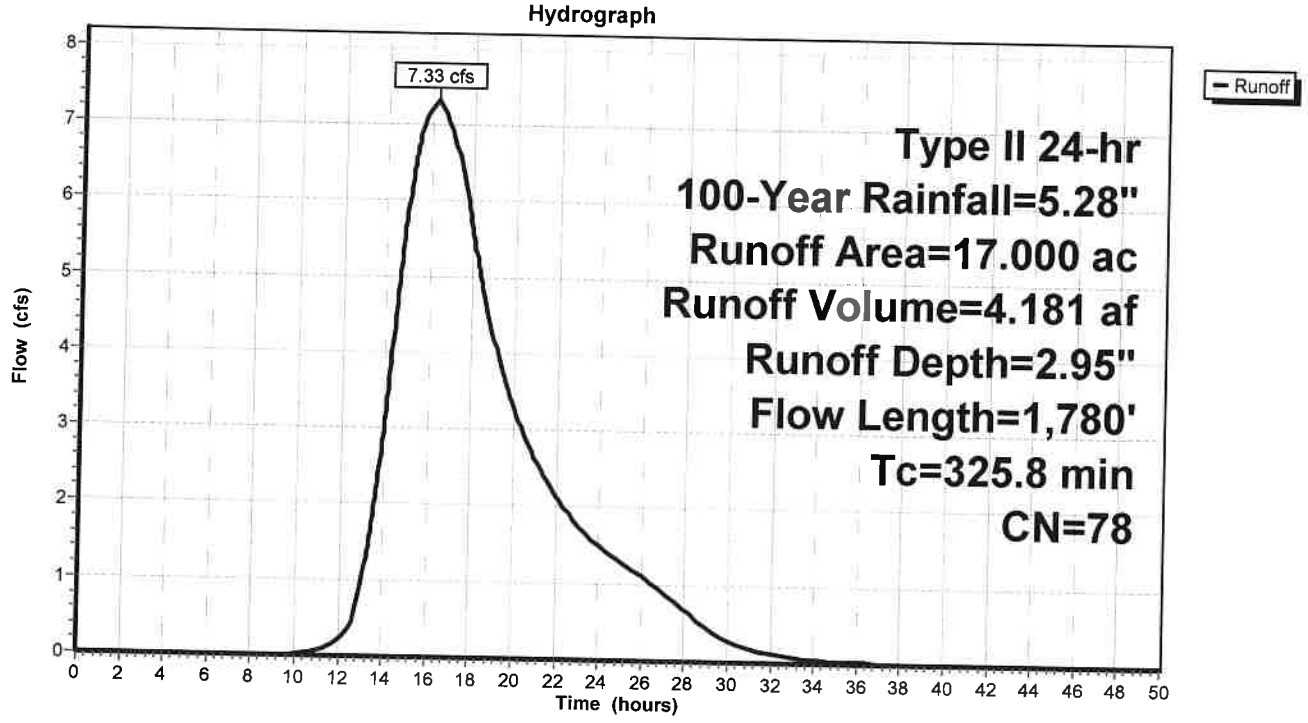
Runoff = 7.33 cfs @ 16.29 hrs, Volume= 4.181 af, Depth= 2.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



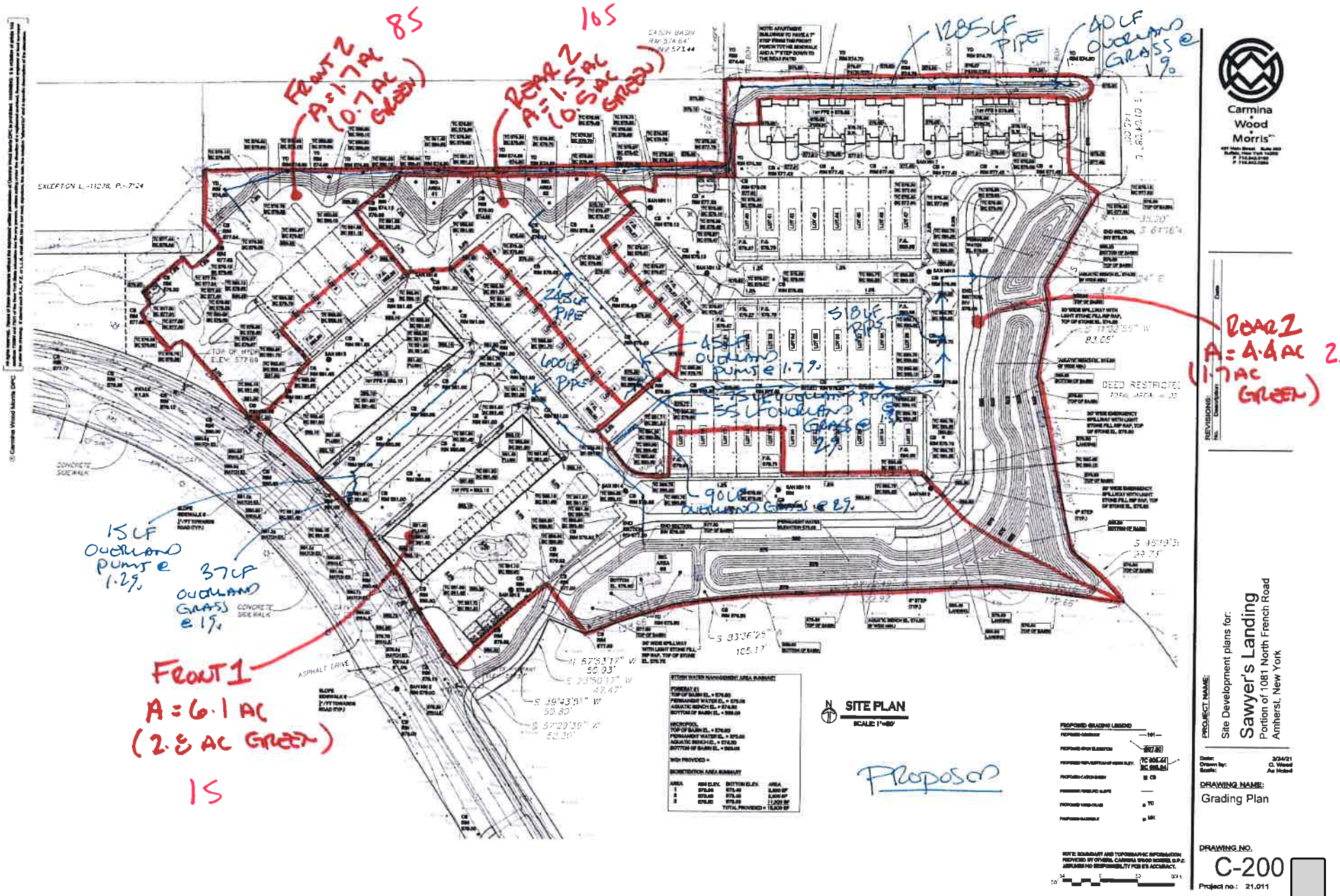
Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Proposed Runoff

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Proposed Runoff - East

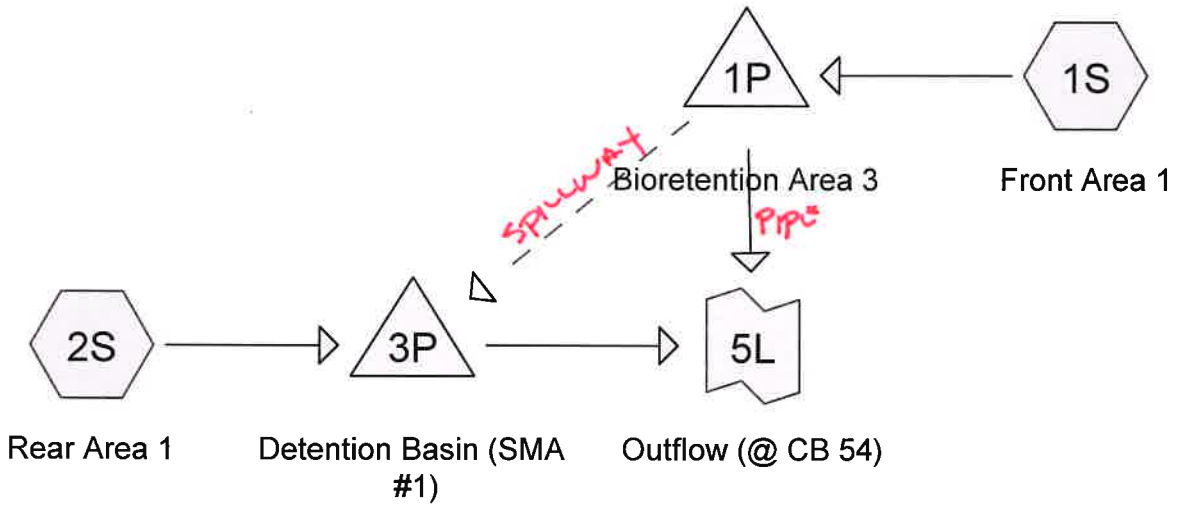
Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Packet Pg. 1905

1.h



Subcat Reach Pond Link

Routing Diagram for 21.011 Proposed
Prepared by Hewlett-Packard Company, Printed 3/4/2021
HydroCAD® 10.00-18 s/n 05019 © 2016 HydroCAD Software Solutions LLC

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Events for Link 5L: Outflow (@ CB 54)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
1-Year	2.78	2.78	**0.00**
2-Year	2.86	2.86	0.00
5-Year	3.01	3.01	0.00
10-Year	3.16	3.16	0.00
25-Year	3.36	3.36	0.00
50-Year	3.48	3.48	0.00
100-Year	**3.60**	**3.60**	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Events for Pond 3P: Detention Basin (SMA #1)

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	6.05	0.10	0.10	0.00	575.23	13,685
2-Year	12.29	0.18	0.18	0.00	575.32	19,129
5-Year	20.08	0.33	0.33	0.00	575.46	28,218
10-Year	26.01	0.47	0.47	0.00	575.60	37,117
25-Year	34.94	0.64	0.64	0.00	575.83	51,964
50-Year	42.93	1.97	0.72	1.25	576.00	62,935
100-Year	**52.24**	**8.57**	**0.78**	**7.80**	**576.11**	**70,722**

TO DUDLEE RD

TO WETLANDS

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Events for Pond 1P: Bioretention Area 3

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	8.17	4.38	2.74	1.63	575.82	7,520
2-Year	10.57	8.19	2.79	5.41	575.91	8,359
5-Year	14.18	12.91	2.83	10.09	575.99	9,153
10-Year	17.46	16.45	2.85	13.60	576.04	9,672
25-Year	22.74	21.73	2.89	18.84	576.11	10,375
50-Year	27.50	26.43	2.91	23.52	576.17	10,954
100-Year	**33.05**	**31.92**	**2.94**	**28.98**	**576.23**	**11,585**

↑ TO DOUGE RD

↑ TO BASIN

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.500	80	>75% Grass cover, Good, HSG D (1S, 2S)
3.200	98	Paved parking, HSG D (1S, 2S)
2.800	98	Roofs, HSG D (1S, 2S)
10.500	**90**	**TOTAL AREA**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
10.500	HSG D	1S, 2S
0.000	Other	
10.500		**TOTAL AREA**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	4.500	0.000	4.500	>75% Grass cover, Good	1S, 2S
0.000	0.000	0.000	3.200	0.000	3.200	Paved parking	1S, 2S
0.000	0.000	0.000	2.800	0.000	2.800	Roofs	1S, 2S
0.000	**0.000**	**0.000**	**10.500**	**0.000**	**10.500**	**TOTAL AREA**	

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=0.98"
Flow Length=652' Tc=13.3 min CN=90 Runoff=8.17 cfs 0.496 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=1.04"
Flow Length=683' Tc=14.4 min CN=91 Runoff=6.05 cfs 0.382 af

Pond 1P: Bioretention Area 3 Peak Elev=575.82' Storage=7,520 cf Inflow=8.17 cfs 0.496 af
Primary=2.74 cfs 0.475 af Secondary=1.63 cfs 0.021 af Outflow=4.38 cfs 0.496 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.23' Storage=13,685 cf Inflow=6.05 cfs 0.403 af
Primary=0.10 cfs 0.249 af Secondary=0.00 cfs 0.000 af Outflow=0.10 cfs 0.249 af

Link 5L: Outflow (@ CB 54) Inflow=2.78 cfs 0.724 af
Primary=2.78 cfs 0.724 af

Total Runoff Area = 10.500 ac Runoff Volume = 0.878 af Average Runoff Depth = 1.00"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

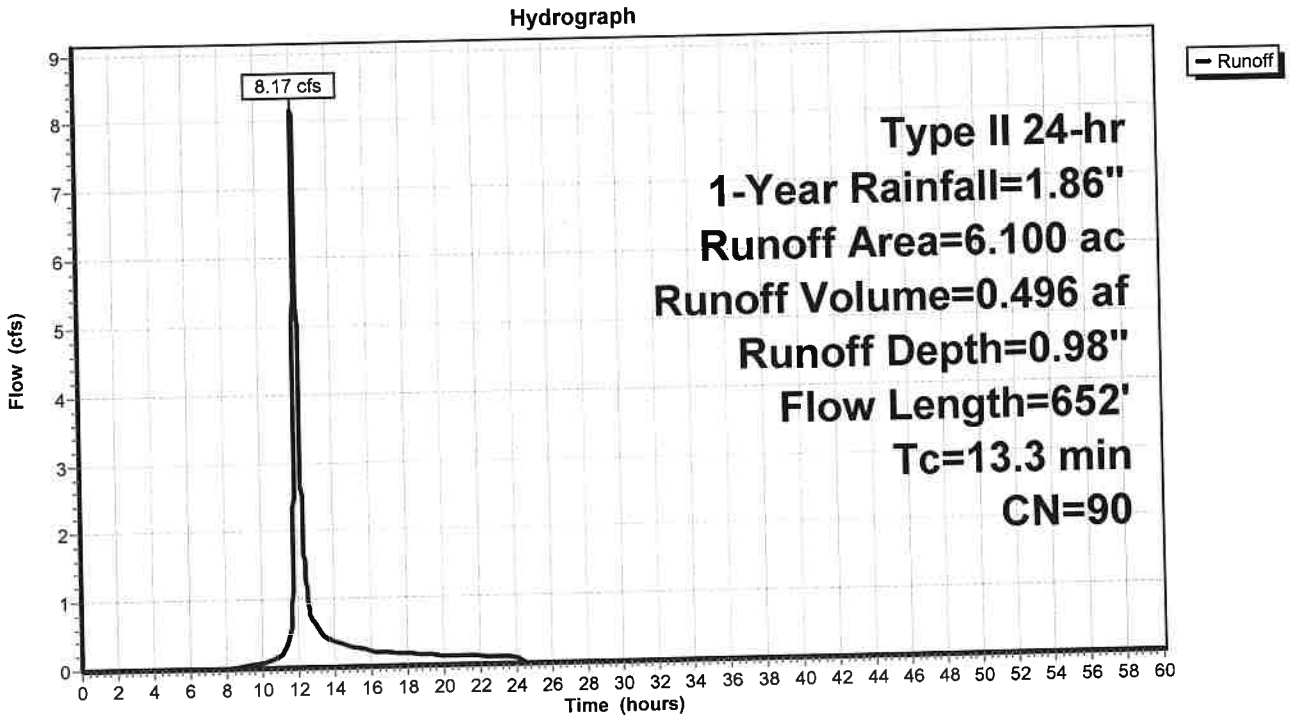
Runoff = 8.17 cfs @ 12.05 hrs, Volume= 0.496 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.00
9.00	0.27	0.00	0.02
10.00	0.34	0.01	0.07
11.00	0.44	0.03	0.20
12.00	1.23	0.48	**7.23**
13.00	1.44	0.63	**0.63**
14.00	1.53	0.70	0.37
15.00	1.59	0.75	0.29
16.00	1.64	0.79	0.23
17.00	1.68	0.83	0.20
18.00	1.71	0.85	0.17
19.00	1.74	0.88	0.15
20.00	1.77	0.90	0.13
21.00	1.79	0.92	0.12
22.00	1.82	0.94	0.12
23.00	1.84	0.96	0.11
24.00	**1.86**	**0.98**	0.11
25.00	1.86	0.98	0.00
26.00	1.86	0.98	0.00
27.00	1.86	0.98	0.00
28.00	1.86	0.98	0.00
29.00	1.86	0.98	0.00
30.00	1.86	0.98	0.00
31.00	1.86	0.98	0.00
32.00	1.86	0.98	0.00
33.00	1.86	0.98	0.00
34.00	1.86	0.98	0.00
35.00	1.86	0.98	0.00
36.00	1.86	0.98	0.00
37.00	1.86	0.98	0.00
38.00	1.86	0.98	0.00
39.00	1.86	0.98	0.00
40.00	1.86	0.98	0.00
41.00	1.86	0.98	0.00
42.00	1.86	0.98	0.00
43.00	1.86	0.98	0.00
44.00	1.86	0.98	0.00
45.00	1.86	0.98	0.00
46.00	1.86	0.98	0.00
47.00	1.86	0.98	0.00
48.00	1.86	0.98	0.00
49.00	1.86	0.98	0.00
50.00	1.86	0.98	0.00
51.00	1.86	0.98	0.00
52.00	1.86	0.98	0.00
53.00	1.86	0.98	0.00
54.00	1.86	0.98	0.00
55.00	1.86	0.98	0.00
56.00	1.86	0.98	0.00
57.00	1.86	0.98	0.00
58.00	1.86	0.98	0.00
59.00	1.86	0.98	0.00
60.00	1.86	0.98	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

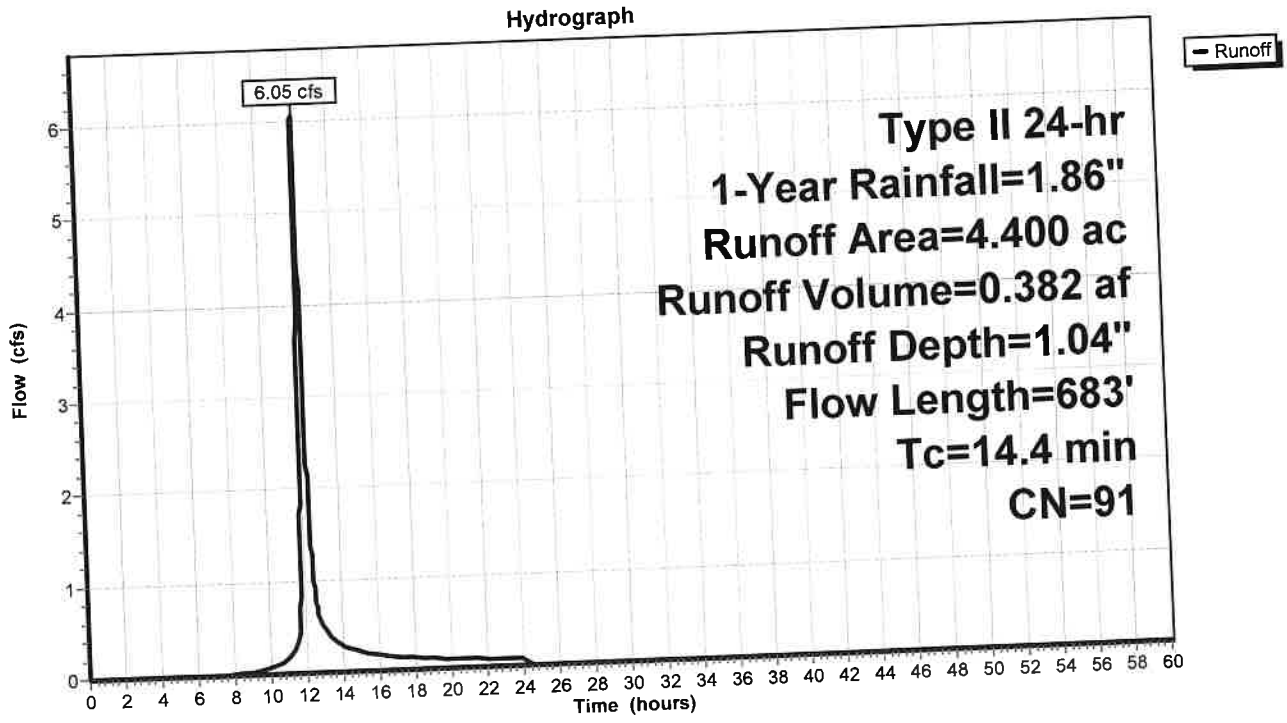
Runoff = 6.05 cfs @ 12.06 hrs, Volume= 0.382 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.01
9.00	0.27	0.01	0.03
10.00	0.34	0.02	0.06
11.00	0.44	0.05	0.17
12.00	1.23	0.53	**5.18**
13.00	1.44	0.69	**0.48**
14.00	1.53	0.76	0.28
15.00	1.59	0.81	0.21
16.00	1.64	0.85	0.17
17.00	1.68	0.89	0.15
18.00	1.71	0.92	0.13
19.00	1.74	0.94	0.11
20.00	1.77	0.97	0.10
21.00	1.79	0.99	0.09
22.00	1.82	1.01	0.09
23.00	1.84	1.02	0.08
24.00	**1.86**	**1.04**	0.08
25.00	1.86	1.04	0.00
26.00	1.86	1.04	0.00
27.00	1.86	1.04	0.00
28.00	1.86	1.04	0.00
29.00	1.86	1.04	0.00
30.00	1.86	1.04	0.00
31.00	1.86	1.04	0.00
32.00	1.86	1.04	0.00
33.00	1.86	1.04	0.00
34.00	1.86	1.04	0.00
35.00	1.86	1.04	0.00
36.00	1.86	1.04	0.00
37.00	1.86	1.04	0.00
38.00	1.86	1.04	0.00
39.00	1.86	1.04	0.00
40.00	1.86	1.04	0.00
41.00	1.86	1.04	0.00
42.00	1.86	1.04	0.00
43.00	1.86	1.04	0.00
44.00	1.86	1.04	0.00
45.00	1.86	1.04	0.00
46.00	1.86	1.04	0.00
47.00	1.86	1.04	0.00
48.00	1.86	1.04	0.00
49.00	1.86	1.04	0.00
50.00	1.86	1.04	0.00
51.00	1.86	1.04	0.00
52.00	1.86	1.04	0.00
53.00	1.86	1.04	0.00
54.00	1.86	1.04	0.00
55.00	1.86	1.04	0.00
56.00	1.86	1.04	0.00
57.00	1.86	1.04	0.00
58.00	1.86	1.04	0.00
59.00	1.86	1.04	0.00
60.00	1.86	1.04	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 0.98" for 1-Year event
Inflow = 8.17 cfs @ 12.05 hrs, Volume= 0.496 af
Outflow = 4.38 cfs @ 12.19 hrs, Volume= 0.496 af, Atten= 46%, Lag= 8.2 min
Primary = 2.74 cfs @ 12.19 hrs, Volume= 0.475 af
Secondary = 1.63 cfs @ 12.19 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.82' @ 12.19 hrs Surf.Area= 9,695 sf Storage= 7,520 cf

Plug-Flow detention time= 319.4 min calculated for 0.496 af (100% of inflow)
Center-of-Mass det. time= 319.4 min (1,152.7 - 833.3)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

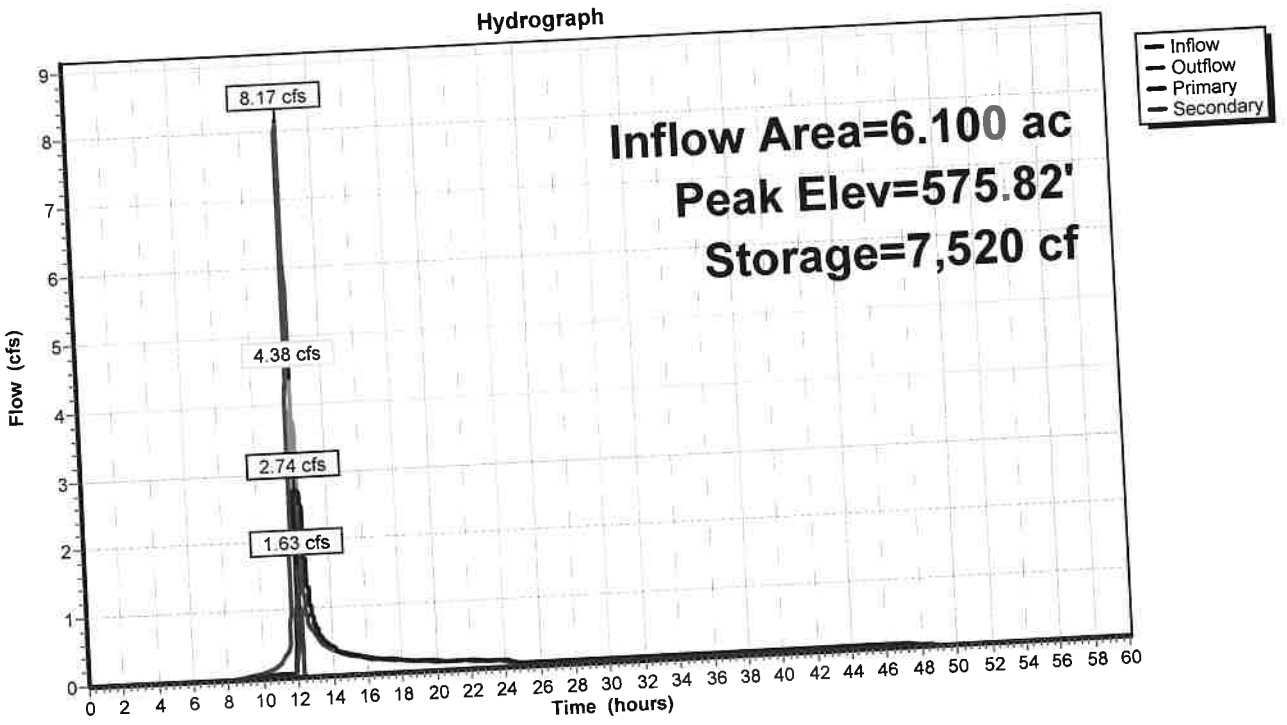
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.74 cfs @ 12.19 hrs HW=575.82' (Free Discharge)
↑—**1=8" pipe** (Barrel Controls 2.74 cfs @ 7.86 fps)
↑—**2=Grate** (Passes < 3.80 cfs potential flow)
└—**3=Exfiltration** (Passes < 0.06 cfs potential flow)

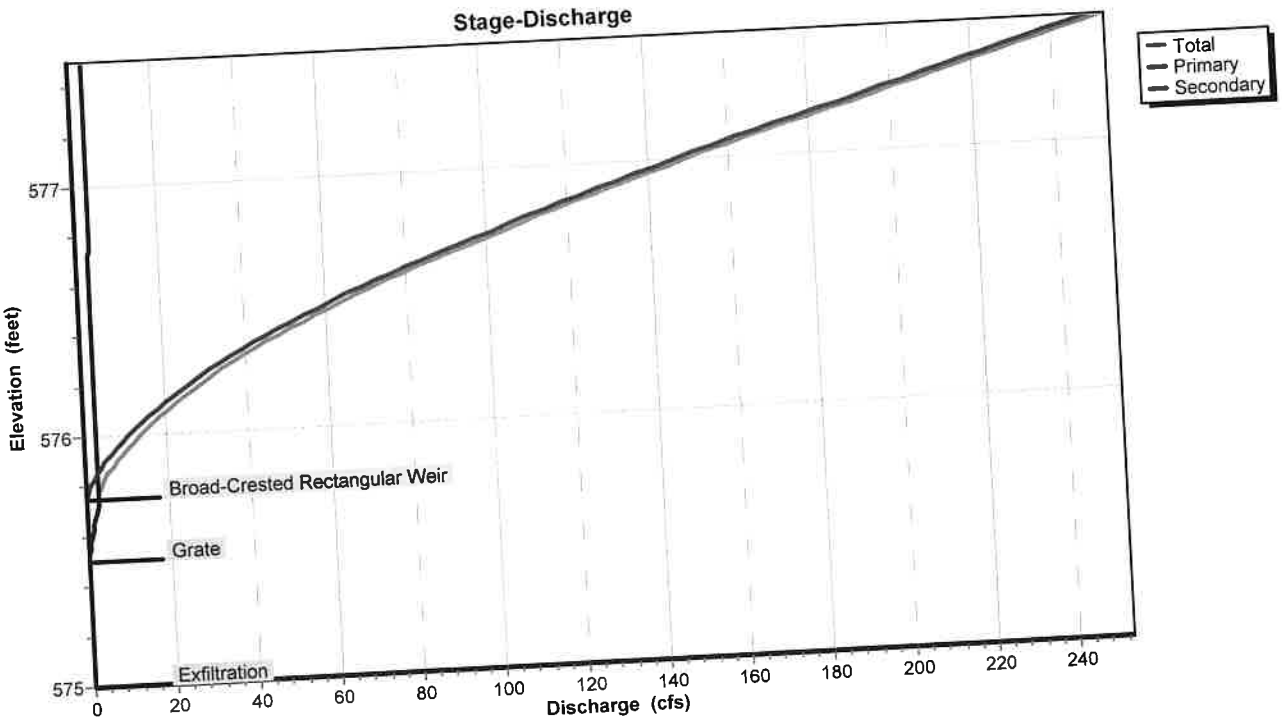
Secondary OutFlow Max=1.62 cfs @ 12.19 hrs HW=575.82' (Free Discharge)
↑—**4=Broad-Crested Rectangular Weir** (Weir Controls 1.62 cfs @ 0.77 fps)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Pond 1P: Bioretention Area 3



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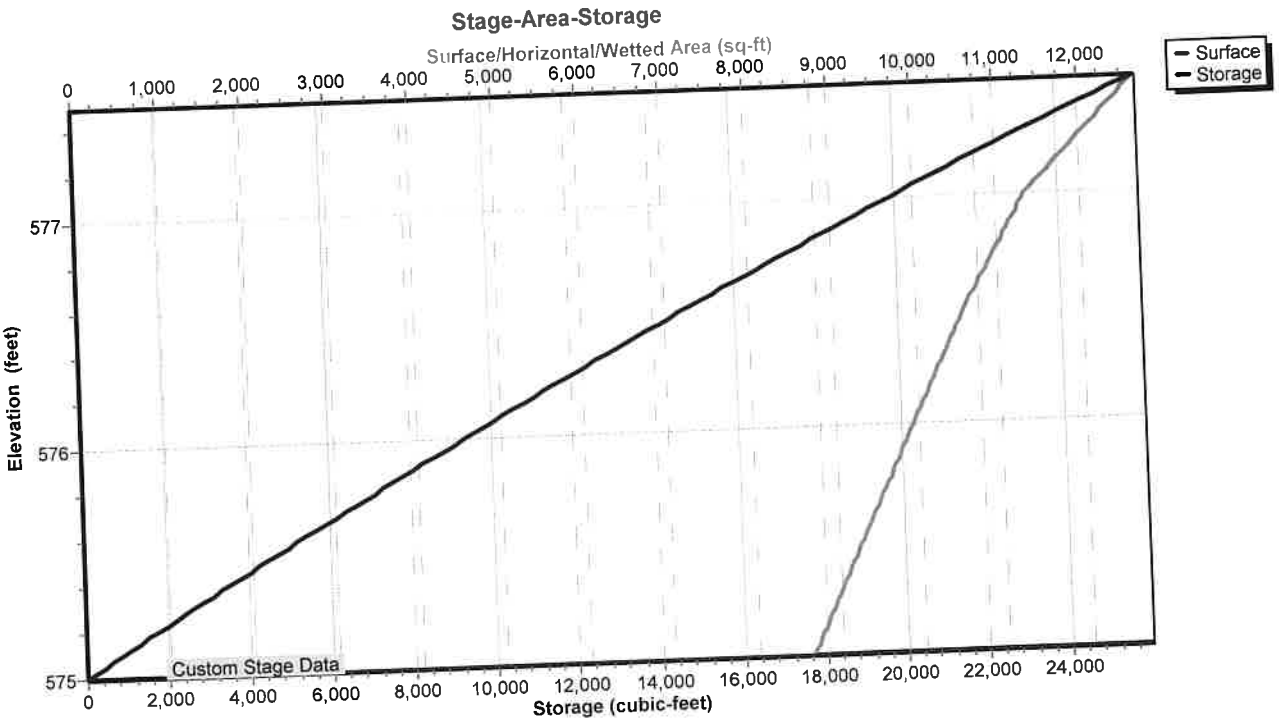
Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.00	0	575.00	0.00	0.00	0.00
10.00	0.07	121	575.01	0.03	0.03	0.00
12.00	**7.23**	**4,533**	**575.51**	**0.08**	**0.08**	**0.00**
14.00	**0.37**	**5,004**	**575.56**	**0.42**	**0.42**	**0.00**
16.00	0.23	4,812	575.54	0.25	0.25	0.00
18.00	0.17	4,735	575.53	0.18	0.18	0.00
20.00	0.13	4,666	575.52	0.14	0.14	0.00
22.00	0.12	4,618	575.51	0.12	0.12	0.00
24.00	0.11	4,598	575.51	0.11	0.11	0.00
26.00	0.00	4,207	575.47	0.06	0.06	0.00
28.00	0.00	3,812	575.43	0.05	0.05	0.00
30.00	0.00	3,420	575.38	0.05	0.05	0.00
32.00	0.00	3,031	575.34	0.05	0.05	0.00
34.00	0.00	2,646	575.30	0.05	0.05	0.00
36.00	0.00	2,264	575.26	0.05	0.05	0.00
38.00	0.00	1,885	575.21	0.05	0.05	0.00
40.00	0.00	1,510	575.17	0.05	0.05	0.00
42.00	0.00	1,138	575.13	0.05	0.05	0.00
44.00	0.00	769	575.09	0.05	0.05	0.00
46.00	0.00	404	575.05	0.05	0.05	0.00
48.00	0.00	96	575.01	0.02	0.02	0.00
50.00	0.00	18	575.00	0.00	0.00	0.00
52.00	0.00	3	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 1.10" for 1-Year event
Inflow = 6.05 cfs @ 12.06 hrs, Volume= 0.403 af
Outflow = 0.10 cfs @ 19.66 hrs, Volume= 0.249 af, Atten= 98%, Lag= 455.7 min
Primary = 0.10 cfs @ 19.66 hrs, Volume= 0.249 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.23' @ 19.66 hrs Surf.Area= 60,952 sf Storage= 13,685 cf

Plug-Flow detention time= 1,134.7 min calculated for 0.249 af (62% of inflow)
Center-of-Mass det. time= 1,028.3 min (1,852.6 - 824.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

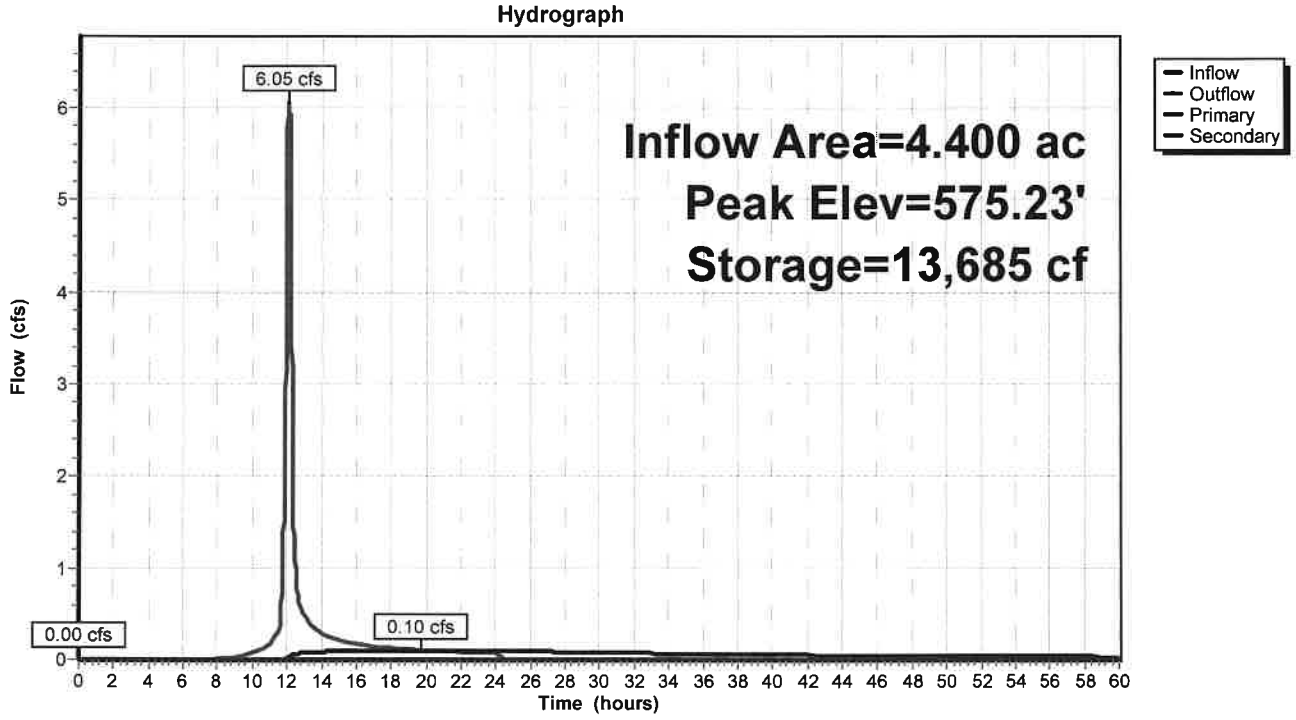
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.10 cfs @ 19.66 hrs HW=575.23' (Free Discharge)
└**1=12" outlet pipe** (Passes 0.10 cfs of 1.85 cfs potential flow)
  ├**2=low flow outlet pipe** (Barrel Controls 0.10 cfs @ 1.70 fps)
  └**3=Grate** (Controls 0.00 cfs)

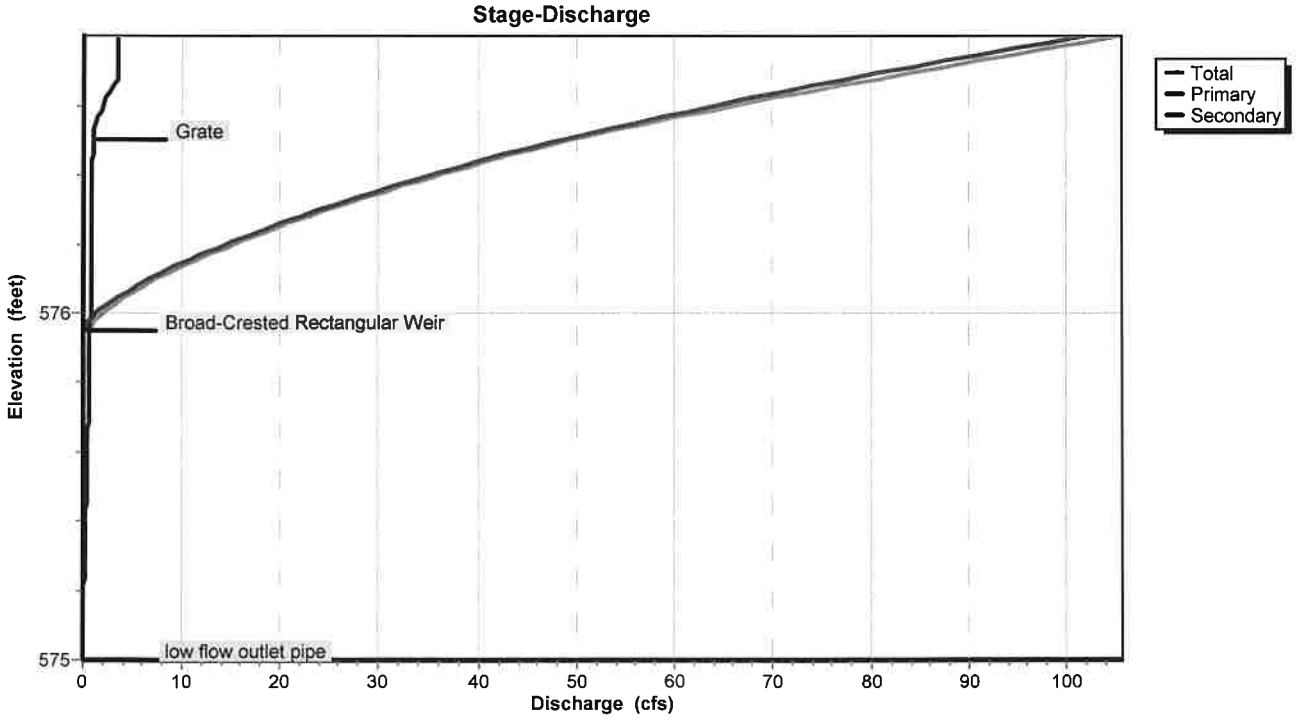
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

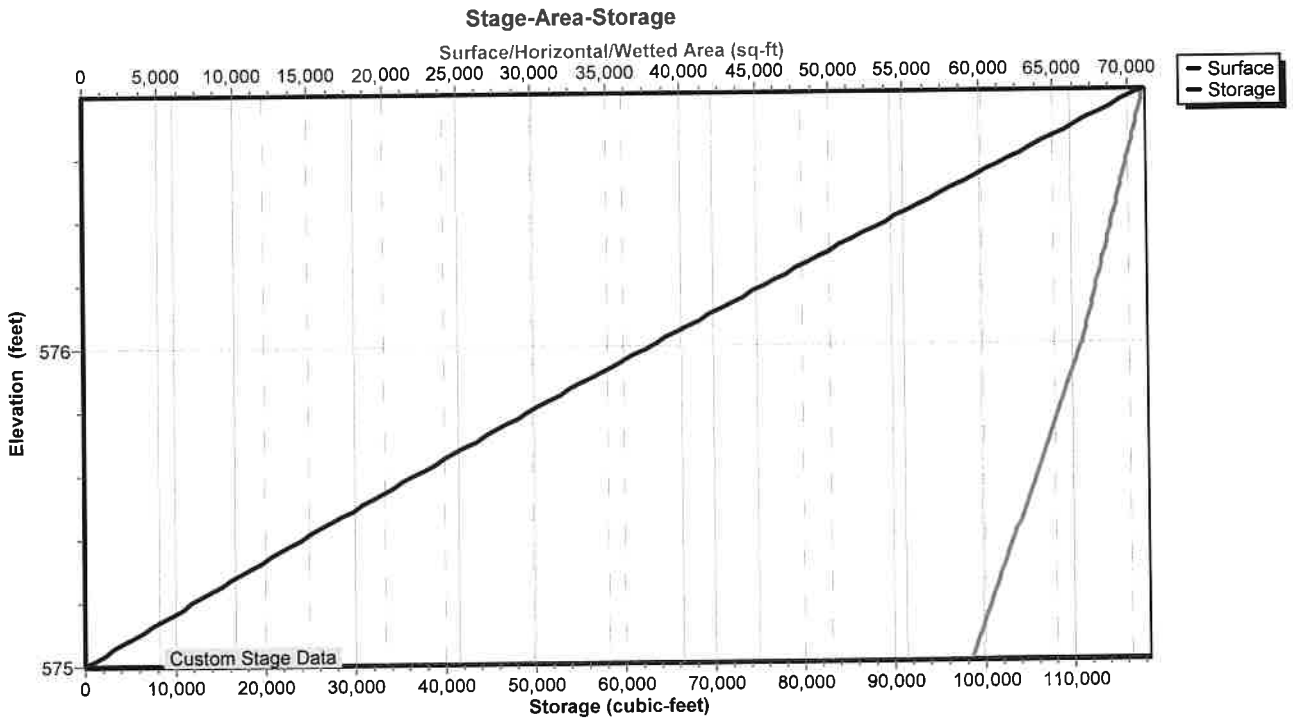


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.01	5	575.00	0.00	0.00	0.00
10.00	0.06	218	575.00	0.00	0.00	0.00
12.00	**5.18**	3,798	575.06	0.01	0.01	0.00
14.00	**0.28**	12,350	575.21	0.08	0.08	0.00
16.00	0.17	13,252	575.22	0.10	0.10	0.00
18.00	0.13	**13,599**	**575.23**	**0.10**	**0.10**	0.00
20.00	0.10	**13,682**	**575.23**	**0.10**	**0.10**	0.00
22.00	0.09	13,599	575.23	0.10	0.10	0.00
24.00	0.08	13,477	575.22	0.10	0.10	0.00
26.00	0.00	12,859	575.21	0.09	0.09	0.00
28.00	0.00	12,236	575.20	0.08	0.08	0.00
30.00	0.00	11,664	575.19	0.08	0.08	0.00
32.00	0.00	11,139	575.19	0.07	0.07	0.00
34.00	0.00	10,655	575.18	0.06	0.06	0.00
36.00	0.00	10,207	575.17	0.06	0.06	0.00
38.00	0.00	9,792	575.16	0.06	0.06	0.00
40.00	0.00	9,408	575.16	0.05	0.05	0.00
42.00	0.00	9,050	575.15	0.05	0.05	0.00
44.00	0.00	8,716	575.15	0.04	0.04	0.00
46.00	0.00	8,404	575.14	0.04	0.04	0.00
48.00	0.00	8,113	575.14	0.04	0.04	0.00
50.00	0.00	7,839	575.13	0.04	0.04	0.00
52.00	0.00	7,582	575.13	0.03	0.03	0.00
54.00	0.00	7,341	575.12	0.03	0.03	0.00
56.00	0.00	7,114	575.12	0.03	0.03	0.00
58.00	0.00	6,899	575.12	0.03	0.03	0.00
60.00	0.00	6,696	575.11	0.03	0.03	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

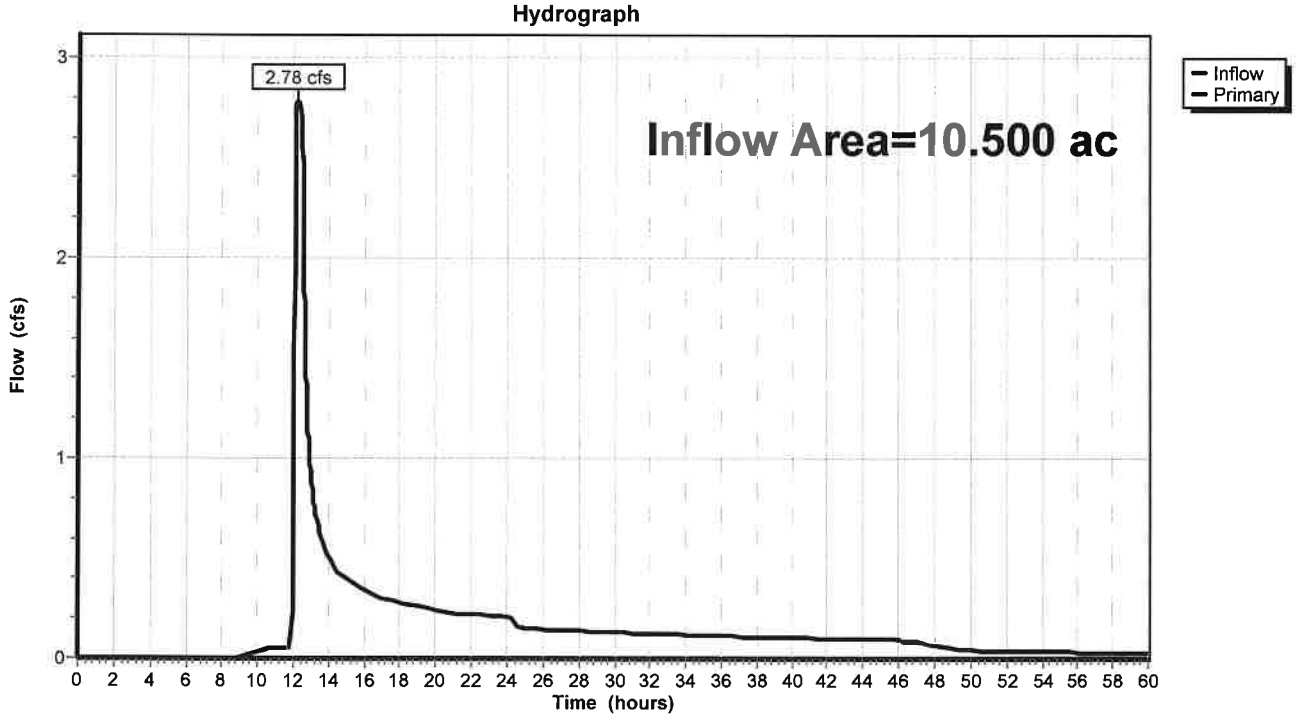
Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 0.83" for 1-Year event
Inflow = 2.78 cfs @ 12.22 hrs, Volume= 0.724 af
Primary = 2.78 cfs @ 12.22 hrs, Volume= 0.724 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.04	0.00	0.04
1.00	0.00	0.00	0.00	53.00	0.03	0.00	0.03
2.00	0.00	0.00	0.00	54.00	0.03	0.00	0.03
3.00	0.00	0.00	0.00	55.00	0.03	0.00	0.03
4.00	0.00	0.00	0.00	56.00	0.03	0.00	0.03
5.00	0.00	0.00	0.00	57.00	0.03	0.00	0.03
6.00	0.00	0.00	0.00	58.00	0.03	0.00	0.03
7.00	0.00	0.00	0.00	59.00	0.03	0.00	0.03
8.00	0.00	0.00	0.00	60.00	0.03	0.00	0.03
9.00	0.01	0.00	0.01				
10.00	0.03	0.00	0.03				
11.00	0.05	0.00	0.05				
12.00	**0.09**	0.00	**0.09**				
13.00	**0.91**	0.00	**0.91**				
14.00	0.51	0.00	0.51				
15.00	0.40	0.00	0.40				
16.00	0.34	0.00	0.34				
17.00	0.30	0.00	0.30				
18.00	0.28	0.00	0.28				
19.00	0.26	0.00	0.26				
20.00	0.24	0.00	0.24				
21.00	0.23	0.00	0.23				
22.00	0.22	0.00	0.22				
23.00	0.21	0.00	0.21				
24.00	0.21	0.00	0.21				
25.00	0.15	0.00	0.15				
26.00	0.15	0.00	0.15				
27.00	0.14	0.00	0.14				
28.00	0.14	0.00	0.14				
29.00	0.13	0.00	0.13				
30.00	0.13	0.00	0.13				
31.00	0.13	0.00	0.13				
32.00	0.12	0.00	0.12				
33.00	0.12	0.00	0.12				
34.00	0.12	0.00	0.12				
35.00	0.12	0.00	0.12				
36.00	0.11	0.00	0.11				
37.00	0.11	0.00	0.11				
38.00	0.11	0.00	0.11				
39.00	0.11	0.00	0.11				
40.00	0.10	0.00	0.10				
41.00	0.10	0.00	0.10				
42.00	0.10	0.00	0.10				
43.00	0.10	0.00	0.10				
44.00	0.10	0.00	0.10				
45.00	0.09	0.00	0.09				
46.00	0.09	0.00	0.09				
47.00	0.09	0.00	0.09				
48.00	0.06	0.00	0.06				
49.00	0.05	0.00	0.05				
50.00	0.04	0.00	0.04				
51.00	0.04	0.00	0.04				

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=1.27"
Flow Length=652' Tc=13.3 min CN=90 Runoff=10.57 cfs 0.644 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=1.34"
Flow Length=683' Tc=14.4 min CN=91 Runoff=7.75 cfs 0.491 af

Pond 1P: Bioretention Area 3 Peak Elev=575.91' Storage=8,359 cf Inflow=10.57 cfs 0.644 af
Primary=2.79 cfs 0.556 af Secondary=5.41 cfs 0.088 af Outflow=8.19 cfs 0.644 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.32' Storage=19,128 cf Inflow=12.29 cfs 0.579 af
Primary=0.18 cfs 0.400 af Secondary=0.00 cfs 0.000 af Outflow=0.18 cfs 0.400 af

Link 5L: Outflow (@ CB 54) Inflow=2.86 cfs 0.956 af
Primary=2.86 cfs 0.956 af

Total Runoff Area = 10.500 ac Runoff Volume = 1.135 af Average Runoff Depth = 1.30"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

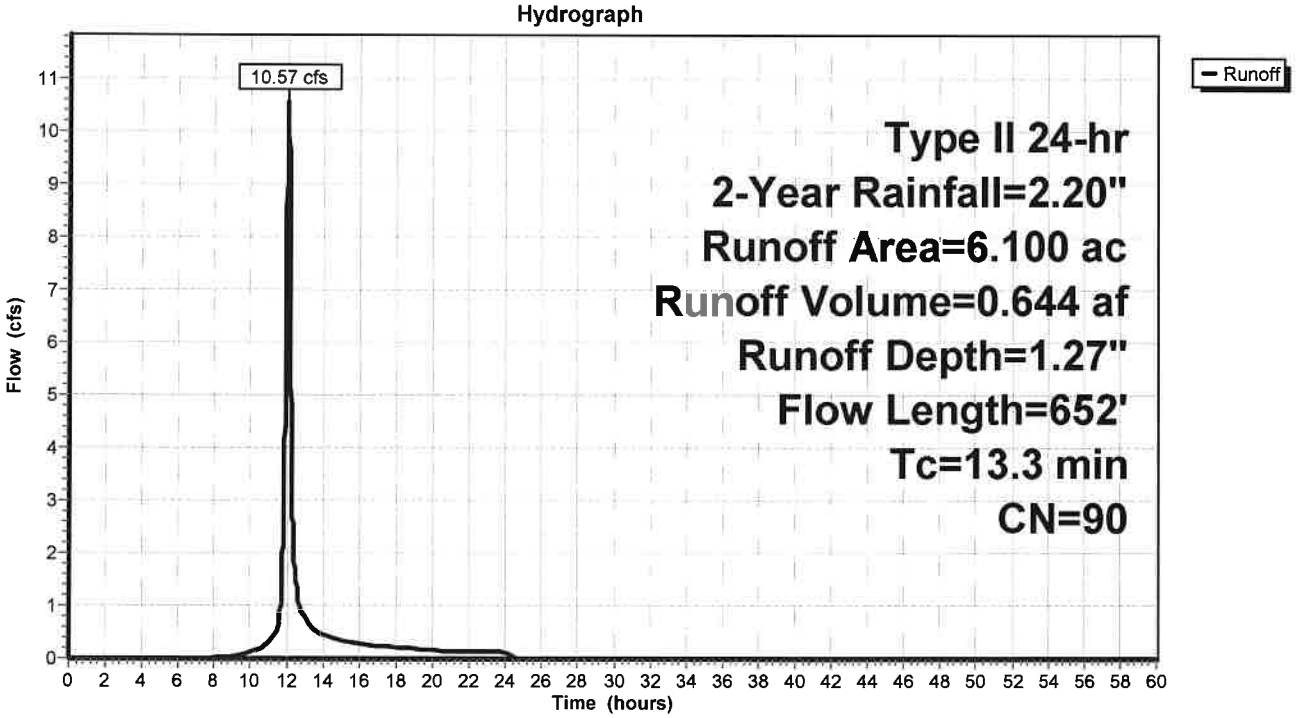
Runoff = 10.57 cfs @ 12.05 hrs, Volume= 0.644 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.05	0.00	0.00
3.00	0.08	0.00	0.00
4.00	0.11	0.00	0.00
5.00	0.14	0.00	0.00
6.00	0.18	0.00	0.00
7.00	0.22	0.00	0.00
8.00	0.26	0.00	0.02
9.00	0.32	0.01	0.06
10.00	0.40	0.02	0.12
11.00	0.52	0.06	0.30
12.00	1.46	0.65	**9.45**
13.00	1.70	0.84	**0.79**
14.00	1.80	0.93	0.46
15.00	1.88	0.99	0.36
16.00	1.94	1.04	0.28
17.00	1.98	1.08	0.24
18.00	2.03	1.12	0.21
19.00	2.06	1.15	0.19
20.00	2.09	1.17	0.16
21.00	2.12	1.20	0.15
22.00	2.15	1.22	0.14
23.00	2.18	1.24	0.14
24.00	**2.20**	**1.27**	0.13
25.00	2.20	1.27	0.00
26.00	2.20	1.27	0.00
27.00	2.20	1.27	0.00
28.00	2.20	1.27	0.00
29.00	2.20	1.27	0.00
30.00	2.20	1.27	0.00
31.00	2.20	1.27	0.00
32.00	2.20	1.27	0.00
33.00	2.20	1.27	0.00
34.00	2.20	1.27	0.00
35.00	2.20	1.27	0.00
36.00	2.20	1.27	0.00
37.00	2.20	1.27	0.00
38.00	2.20	1.27	0.00
39.00	2.20	1.27	0.00
40.00	2.20	1.27	0.00
41.00	2.20	1.27	0.00
42.00	2.20	1.27	0.00
43.00	2.20	1.27	0.00
44.00	2.20	1.27	0.00
45.00	2.20	1.27	0.00
46.00	2.20	1.27	0.00
47.00	2.20	1.27	0.00
48.00	2.20	1.27	0.00
49.00	2.20	1.27	0.00
50.00	2.20	1.27	0.00
51.00	2.20	1.27	0.00
52.00	2.20	1.27	0.00
53.00	2.20	1.27	0.00
54.00	2.20	1.27	0.00
55.00	2.20	1.27	0.00
56.00	2.20	1.27	0.00
57.00	2.20	1.27	0.00
58.00	2.20	1.27	0.00
59.00	2.20	1.27	0.00
60.00	2.20	1.27	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

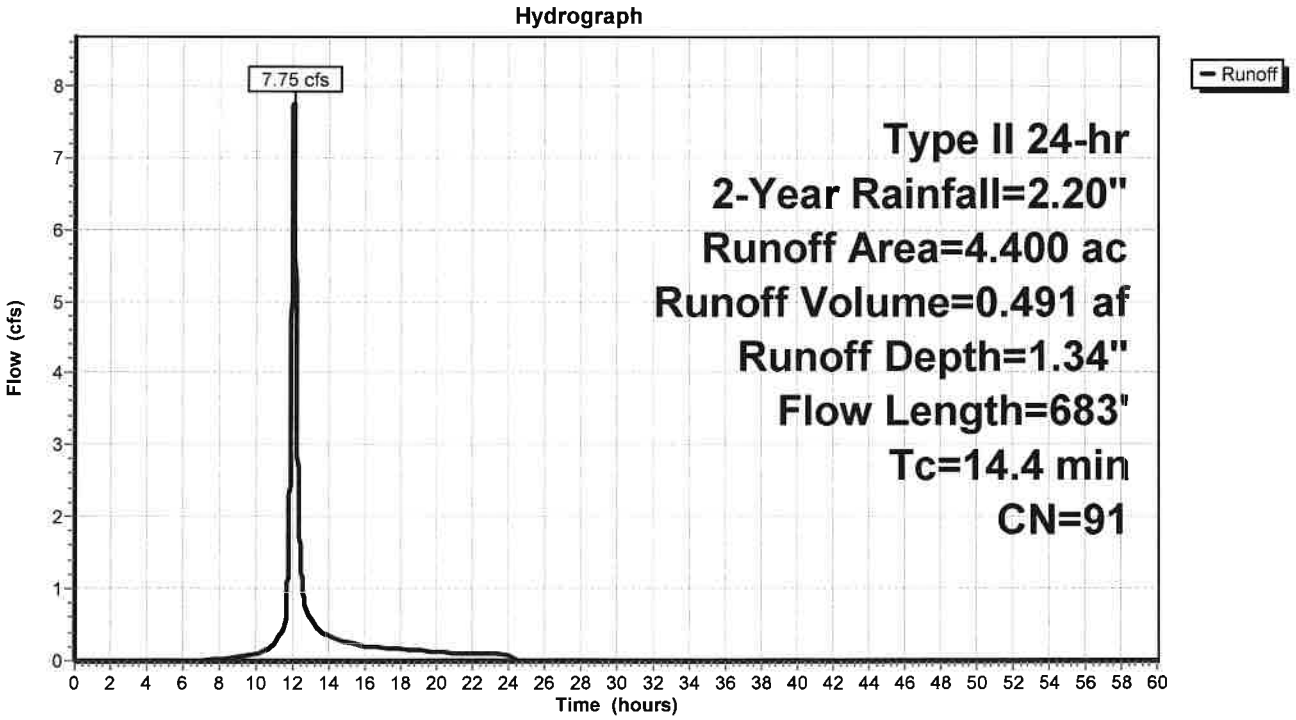
Runoff = 7.75 cfs @ 12.06 hrs, Volume= 0.491 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.05	0.00	0.00
3.00	0.08	0.00	0.00
4.00	0.11	0.00	0.00
5.00	0.14	0.00	0.00
6.00	0.18	0.00	0.00
7.00	0.22	0.00	0.00
8.00	0.26	0.00	0.02
9.00	0.32	0.01	0.06
10.00	0.40	0.03	0.10
11.00	0.52	0.08	0.25
12.00	1.46	0.71	**6.69**
13.00	1.70	0.90	**0.60**
14.00	1.80	0.99	0.35
15.00	1.88	1.06	0.27
16.00	1.94	1.11	0.21
17.00	1.98	1.15	0.18
18.00	2.03	1.19	0.16
19.00	2.06	1.22	0.14
20.00	2.09	1.25	0.12
21.00	2.12	1.27	0.11
22.00	2.15	1.30	0.10
23.00	2.18	1.32	0.10
24.00	**2.20**	**1.34**	0.10
25.00	2.20	1.34	0.00
26.00	2.20	1.34	0.00
27.00	2.20	1.34	0.00
28.00	2.20	1.34	0.00
29.00	2.20	1.34	0.00
30.00	2.20	1.34	0.00
31.00	2.20	1.34	0.00
32.00	2.20	1.34	0.00
33.00	2.20	1.34	0.00
34.00	2.20	1.34	0.00
35.00	2.20	1.34	0.00
36.00	2.20	1.34	0.00
37.00	2.20	1.34	0.00
38.00	2.20	1.34	0.00
39.00	2.20	1.34	0.00
40.00	2.20	1.34	0.00
41.00	2.20	1.34	0.00
42.00	2.20	1.34	0.00
43.00	2.20	1.34	0.00
44.00	2.20	1.34	0.00
45.00	2.20	1.34	0.00
46.00	2.20	1.34	0.00
47.00	2.20	1.34	0.00
48.00	2.20	1.34	0.00
49.00	2.20	1.34	0.00
50.00	2.20	1.34	0.00
51.00	2.20	1.34	0.00
52.00	2.20	1.34	0.00
53.00	2.20	1.34	0.00
54.00	2.20	1.34	0.00
55.00	2.20	1.34	0.00
56.00	2.20	1.34	0.00
57.00	2.20	1.34	0.00
58.00	2.20	1.34	0.00
59.00	2.20	1.34	0.00
60.00	2.20	1.34	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 1.27" for 2-Year event
Inflow = 10.57 cfs @ 12.05 hrs, Volume= 0.644 af
Outflow = 8.19 cfs @ 12.13 hrs, Volume= 0.644 af, Atten= 22%, Lag= 4.9 min
Primary = 2.79 cfs @ 12.13 hrs, Volume= 0.556 af
Secondary = 5.41 cfs @ 12.13 hrs, Volume= 0.088 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.91' @ 12.13 hrs Surf.Area= 9,805 sf Storage= 8,359 cf

Plug-Flow detention time= 252.3 min calculated for 0.644 af (100% of inflow)
Center-of-Mass det. time= 252.2 min (1,078.1 - 825.9)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

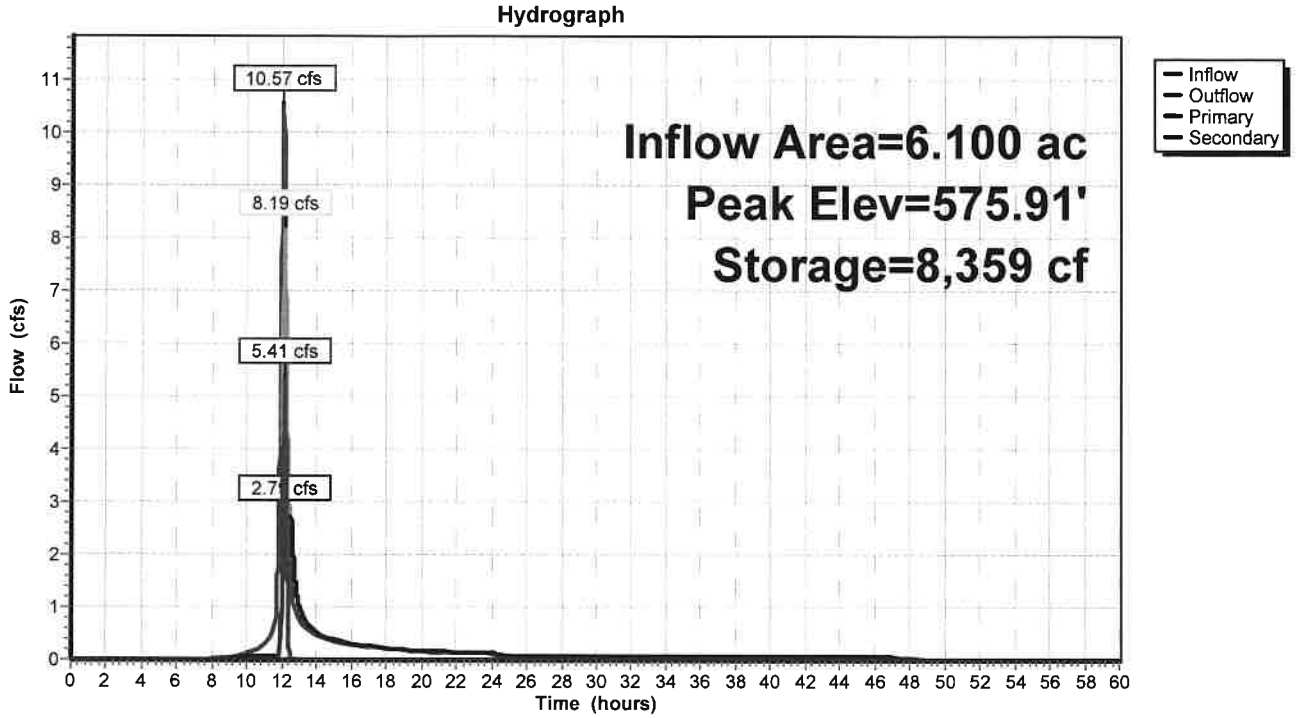
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.79 cfs @ 12.13 hrs HW=575.91' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.79 cfs @ 7.98 fps)
└**2=Grate** (Passes < 4.28 cfs potential flow)
└**3=Exfiltration** (Passes < 0.06 cfs potential flow)

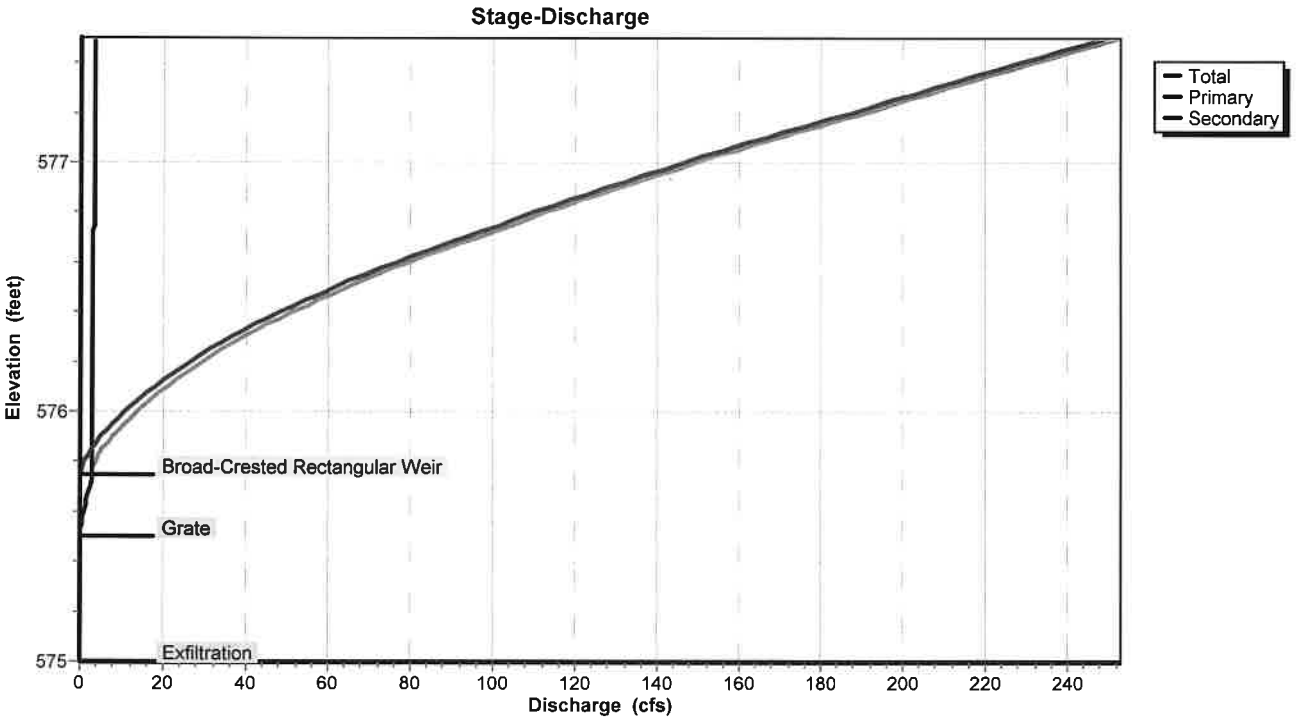
Secondary OutFlow Max=5.39 cfs @ 12.13 hrs HW=575.91' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 5.39 cfs @ 1.15 fps)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

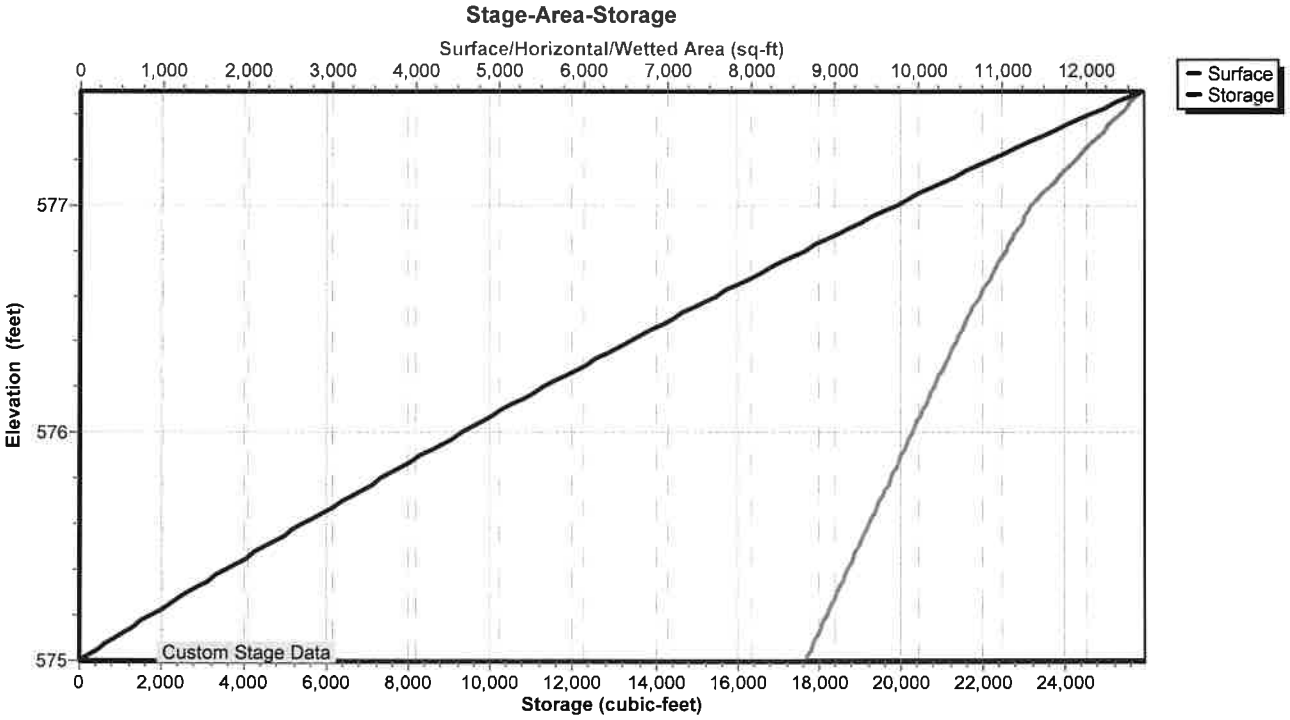


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.02	17	575.00	0.00	0.00	0.00
10.00	0.12	257	575.03	0.05	0.05	0.00
12.00	**9.45**	**6,253**	**575.69**	**2.30**	**2.30**	**0.00**
14.00	**0.46**	**5,096**	**575.57**	**0.52**	**0.52**	**0.00**
16.00	0.28	4,881	575.54	0.30	0.30	0.00
18.00	0.21	4,786	575.53	0.22	0.22	0.00
20.00	0.16	4,719	575.53	0.17	0.17	0.00
22.00	0.14	4,676	575.52	0.15	0.15	0.00
24.00	0.13	4,652	575.52	0.13	0.13	0.00
26.00	0.00	4,232	575.47	0.06	0.06	0.00
28.00	0.00	3,836	575.43	0.05	0.05	0.00
30.00	0.00	3,444	575.39	0.05	0.05	0.00
32.00	0.00	3,055	575.34	0.05	0.05	0.00
34.00	0.00	2,670	575.30	0.05	0.05	0.00
36.00	0.00	2,287	575.26	0.05	0.05	0.00
38.00	0.00	1,909	575.22	0.05	0.05	0.00
40.00	0.00	1,533	575.18	0.05	0.05	0.00
42.00	0.00	1,161	575.13	0.05	0.05	0.00
44.00	0.00	792	575.09	0.05	0.05	0.00
46.00	0.00	426	575.05	0.05	0.05	0.00
48.00	0.00	107	575.01	0.02	0.02	0.00
50.00	0.00	20	575.00	0.00	0.00	0.00
52.00	0.00	4	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 1.58" for 2-Year event
Inflow = 12.29 cfs @ 12.11 hrs, Volume= 0.579 af
Outflow = 0.18 cfs @ 17.01 hrs, Volume= 0.400 af, Atten= 99%, Lag= 293.7 min
Primary = 0.18 cfs @ 17.01 hrs, Volume= 0.400 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.32' @ 17.01 hrs Surf.Area= 61,630 sf Storage= 19,128 cf

Plug-Flow detention time= 1,051.7 min calculated for 0.400 af (69% of inflow)
Center-of-Mass det. time= 962.0 min (1,770.2 - 808.1)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

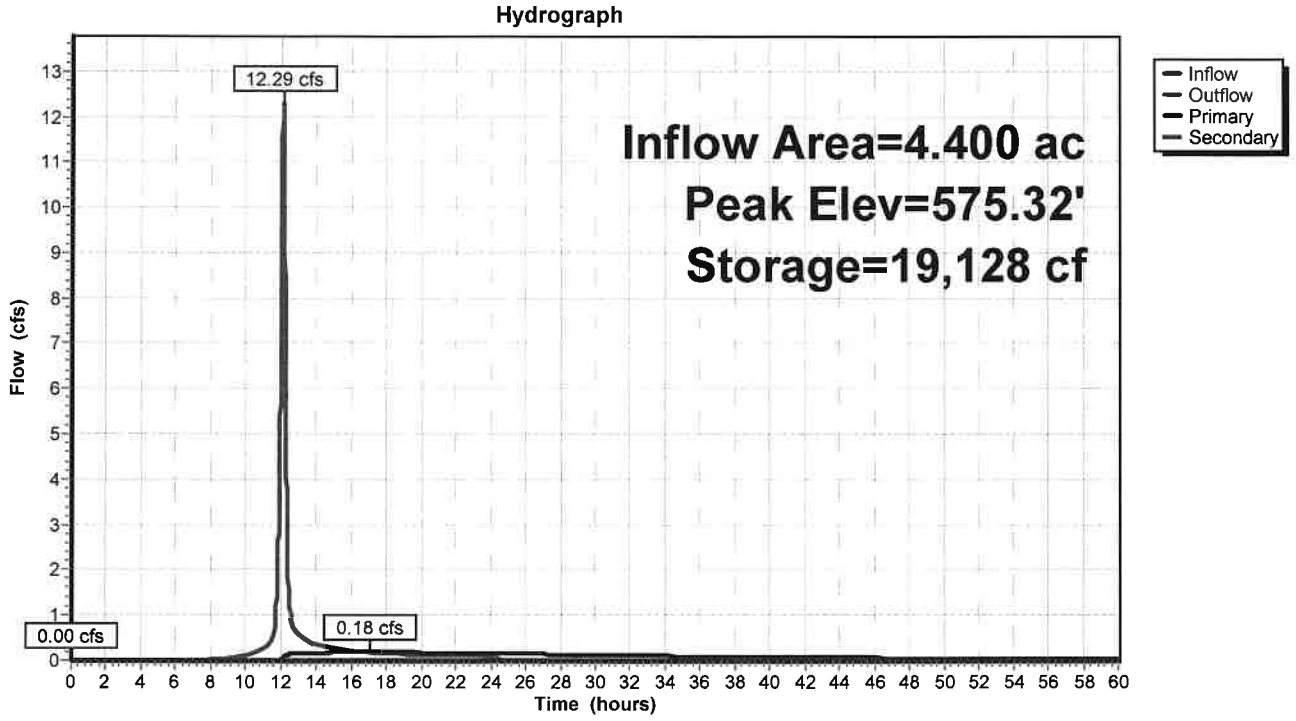
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.18 cfs @ 17.01 hrs HW=575.32' (Free Discharge)
└─**1=12" outlet pipe** (Passes 0.18 cfs of 1.87 cfs potential flow)
  ├─**2=low flow outlet pipe** (Barrel Controls 0.18 cfs @ 1.95 fps)
  └─**3=Grate** (Controls 0.00 cfs)

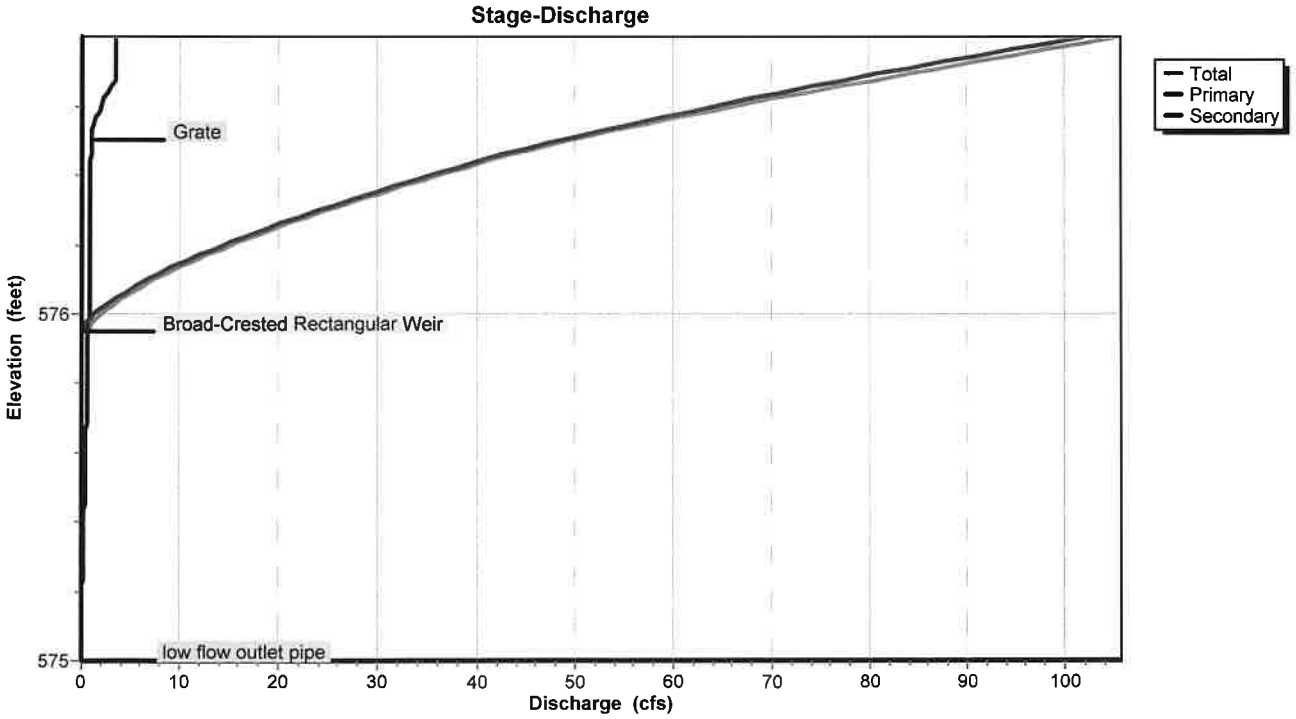
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

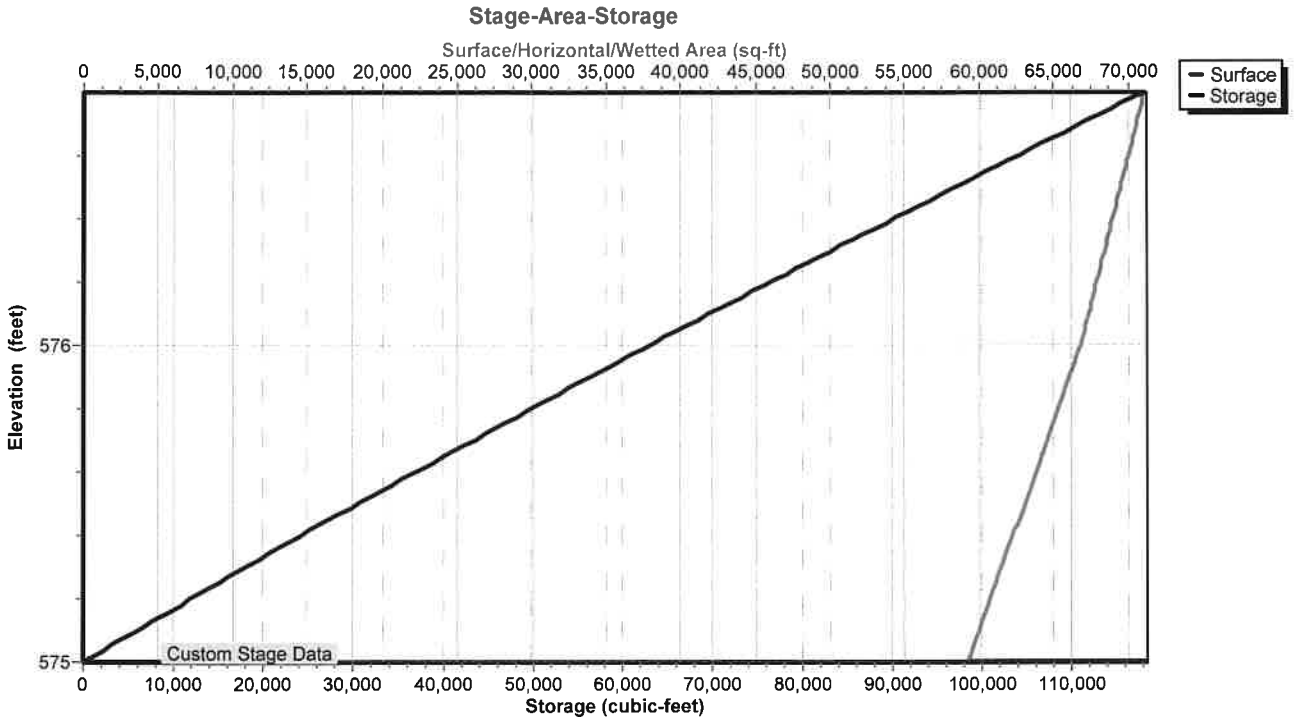


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.02	48	575.00	0.00	0.00	0.00
10.00	0.10	451	575.01	0.00	0.00	0.00
12.00	**6.69**	5,327	575.09	0.02	0.02	0.00
14.00	**0.35**	18,425	575.31	0.17	0.17	0.00
16.00	0.21	**19,087**	**575.32**	**0.18**	**0.18**	0.00
18.00	0.16	**19,093**	**575.32**	**0.18**	**0.18**	0.00
20.00	0.12	18,812	575.31	0.17	0.17	0.00
22.00	0.10	18,367	575.30	0.17	0.17	0.00
24.00	0.10	17,912	575.30	0.16	0.16	0.00
26.00	0.00	16,886	575.28	0.15	0.15	0.00
28.00	0.00	15,893	575.26	0.13	0.13	0.00
30.00	0.00	14,996	575.25	0.12	0.12	0.00
32.00	0.00	14,184	575.24	0.11	0.11	0.00
34.00	0.00	13,445	575.22	0.10	0.10	0.00
36.00	0.00	12,772	575.21	0.09	0.09	0.00
38.00	0.00	12,156	575.20	0.08	0.08	0.00
40.00	0.00	11,591	575.19	0.08	0.08	0.00
42.00	0.00	11,071	575.18	0.07	0.07	0.00
44.00	0.00	10,592	575.18	0.06	0.06	0.00
46.00	0.00	10,149	575.17	0.06	0.06	0.00
48.00	0.00	9,739	575.16	0.05	0.05	0.00
50.00	0.00	9,358	575.16	0.05	0.05	0.00
52.00	0.00	9,003	575.15	0.05	0.05	0.00
54.00	0.00	8,673	575.15	0.04	0.04	0.00
56.00	0.00	8,364	575.14	0.04	0.04	0.00
58.00	0.00	8,075	575.14	0.04	0.04	0.00
60.00	0.00	7,803	575.13	0.04	0.04	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

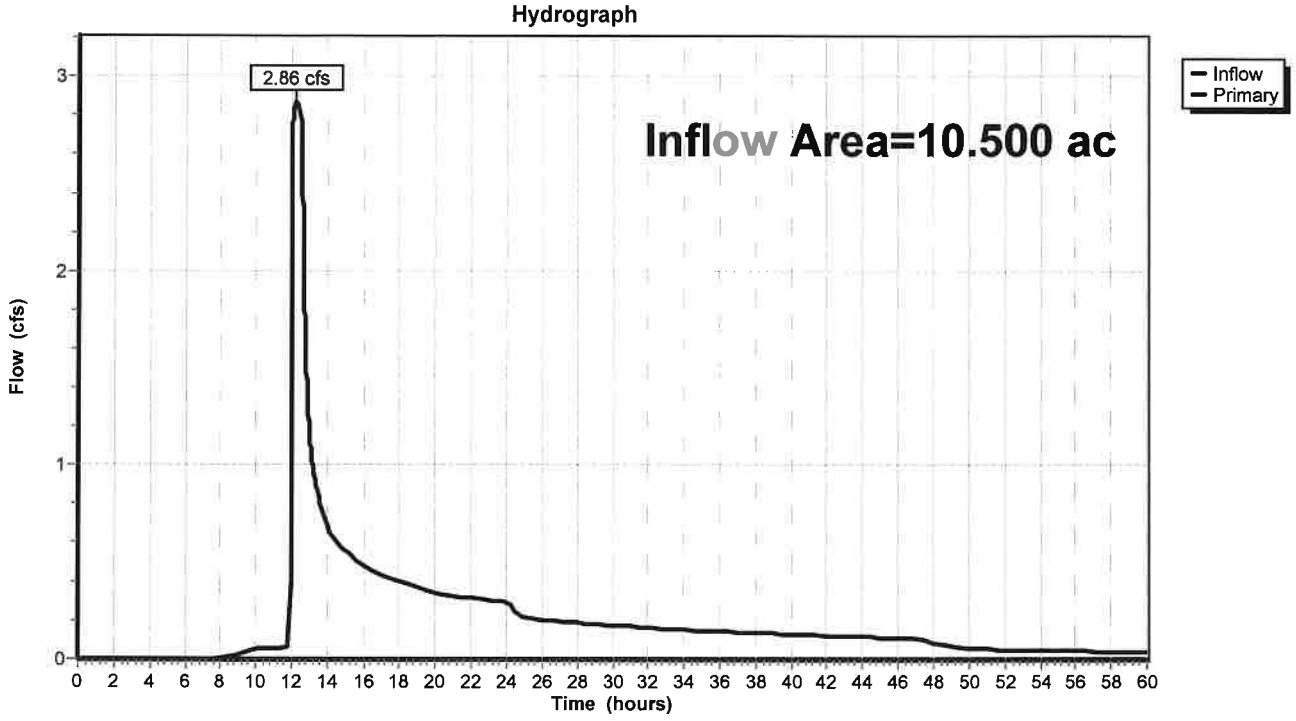
Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 1.09" for 2-Year event
Inflow = 2.86 cfs @ 12.23 hrs, Volume= 0.956 af
Primary = 2.86 cfs @ 12.23 hrs, Volume= 0.956 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.05	0.00	0.05
1.00	0.00	0.00	0.00	53.00	0.05	0.00	0.05
2.00	0.00	0.00	0.00	54.00	0.04	0.00	0.04
3.00	0.00	0.00	0.00	55.00	0.04	0.00	0.04
4.00	0.00	0.00	0.00	56.00	0.04	0.00	0.04
5.00	0.00	0.00	0.00	57.00	0.04	0.00	0.04
6.00	0.00	0.00	0.00	58.00	0.04	0.00	0.04
7.00	0.00	0.00	0.00	59.00	0.04	0.00	0.04
8.00	0.00	0.00	0.00	60.00	0.04	0.00	0.04
9.00	0.02	0.00	0.02				
10.00	0.05	0.00	0.05				
11.00	0.05	0.00	0.05				
12.00	**2.31**	0.00	**2.31**				
13.00	**1.18**	0.00	**1.18**				
14.00	0.69	0.00	0.69				
15.00	0.55	0.00	0.55				
16.00	0.48	0.00	0.48				
17.00	0.43	0.00	0.43				
18.00	0.40	0.00	0.40				
19.00	0.37	0.00	0.37				
20.00	0.34	0.00	0.34				
21.00	0.32	0.00	0.32				
22.00	0.31	0.00	0.31				
23.00	0.30	0.00	0.30				
24.00	0.29	0.00	0.29				
25.00	0.21	0.00	0.21				
26.00	0.20	0.00	0.20				
27.00	0.19	0.00	0.19				
28.00	0.19	0.00	0.19				
29.00	0.18	0.00	0.18				
30.00	0.17	0.00	0.17				
31.00	0.17	0.00	0.17				
32.00	0.16	0.00	0.16				
33.00	0.16	0.00	0.16				
34.00	0.15	0.00	0.15				
35.00	0.15	0.00	0.15				
36.00	0.14	0.00	0.14				
37.00	0.14	0.00	0.14				
38.00	0.13	0.00	0.13				
39.00	0.13	0.00	0.13				
40.00	0.13	0.00	0.13				
41.00	0.12	0.00	0.12				
42.00	0.12	0.00	0.12				
43.00	0.12	0.00	0.12				
44.00	0.11	0.00	0.11				
45.00	0.11	0.00	0.11				
46.00	0.11	0.00	0.11				
47.00	0.11	0.00	0.11				
48.00	0.08	0.00	0.08				
49.00	0.06	0.00	0.06				
50.00	0.06	0.00	0.06				
51.00	0.05	0.00	0.05				

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=1.71"
Flow Length=652' Tc=13.3 min CN=90 Runoff=14.18 cfs 0.870 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=1.79"
Flow Length=683' Tc=14.4 min CN=91 Runoff=10.29 cfs 0.658 af

Pond 1P: Bioretention Area 3 Peak Elev=575.99' Storage=9,153 cf Inflow=14.18 cfs 0.870 af
Primary=2.83 cfs 0.666 af Secondary=10.09 cfs 0.203 af Outflow=12.91 cfs 0.870 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.46' Storage=28,218 cf Inflow=20.08 cfs 0.861 af
Primary=0.33 cfs 0.652 af Secondary=0.00 cfs 0.000 af Outflow=0.33 cfs 0.652 af

Link 5L: Outflow (@ CB 54) Inflow=3.01 cfs 1.318 af
Primary=3.01 cfs 1.318 af

Total Runoff Area = 10.500 ac Runoff Volume = 1.527 af Average Runoff Depth = 1.75"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

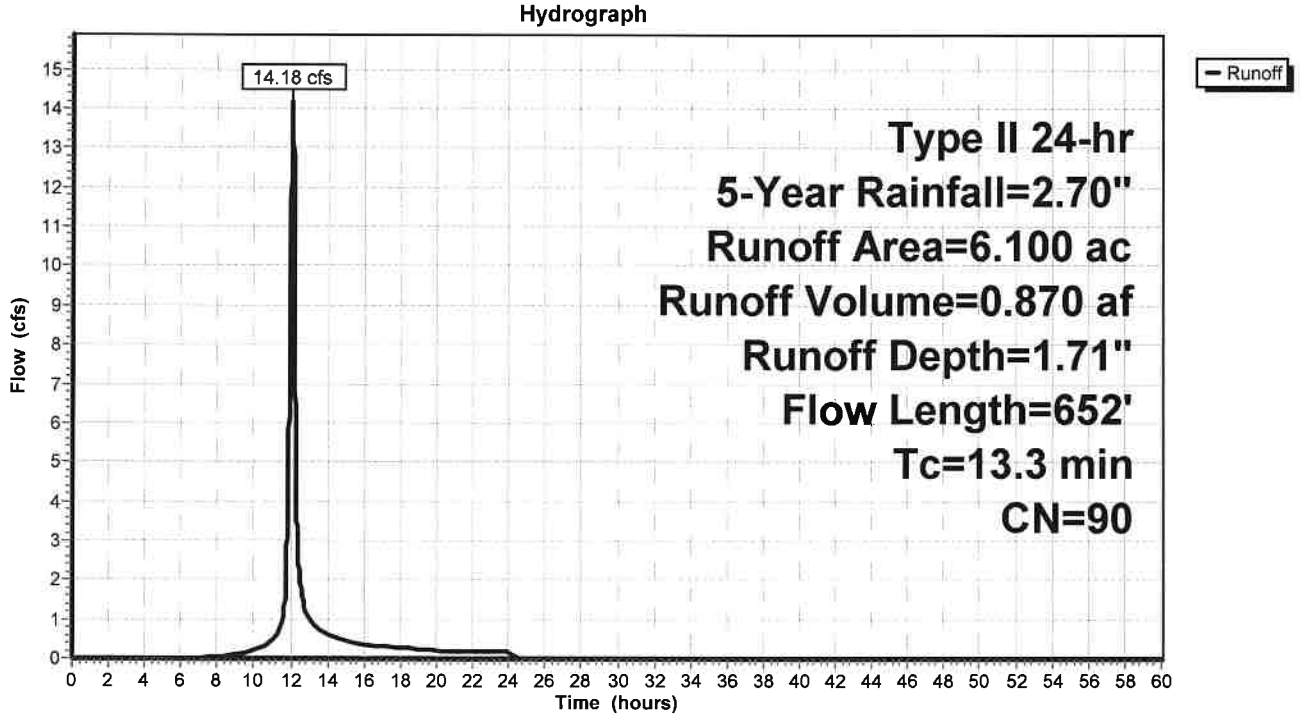
Runoff = 14.18 cfs @ 12.05 hrs, Volume= 0.870 af, Depth= 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.00
7.00	0.27	0.00	0.02
8.00	0.32	0.01	0.05
9.00	0.40	0.02	0.12
10.00	0.49	0.05	0.20
11.00	0.63	0.11	0.47
12.00	1.79	0.92	**12.79**
13.00	2.08	1.17	**1.02**
14.00	2.21	1.28	0.59
15.00	2.30	1.36	0.46
16.00	2.38	1.42	0.36
17.00	2.43	1.47	0.31
18.00	2.49	1.52	0.27
19.00	2.53	1.56	0.24
20.00	2.57	1.59	0.20
21.00	2.60	1.62	0.19
22.00	2.64	1.65	0.18
23.00	2.67	1.68	0.17
24.00	**2.70**	**1.71**	0.17
25.00	2.70	1.71	0.00
26.00	2.70	1.71	0.00
27.00	2.70	1.71	0.00
28.00	2.70	1.71	0.00
29.00	2.70	1.71	0.00
30.00	2.70	1.71	0.00
31.00	2.70	1.71	0.00
32.00	2.70	1.71	0.00
33.00	2.70	1.71	0.00
34.00	2.70	1.71	0.00
35.00	2.70	1.71	0.00
36.00	2.70	1.71	0.00
37.00	2.70	1.71	0.00
38.00	2.70	1.71	0.00
39.00	2.70	1.71	0.00
40.00	2.70	1.71	0.00
41.00	2.70	1.71	0.00
42.00	2.70	1.71	0.00
43.00	2.70	1.71	0.00
44.00	2.70	1.71	0.00
45.00	2.70	1.71	0.00
46.00	2.70	1.71	0.00
47.00	2.70	1.71	0.00
48.00	2.70	1.71	0.00
49.00	2.70	1.71	0.00
50.00	2.70	1.71	0.00
51.00	2.70	1.71	0.00
52.00	2.70	1.71	0.00
53.00	2.70	1.71	0.00
54.00	2.70	1.71	0.00
55.00	2.70	1.71	0.00
56.00	2.70	1.71	0.00
57.00	2.70	1.71	0.00
58.00	2.70	1.71	0.00
59.00	2.70	1.71	0.00
60.00	2.70	1.71	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

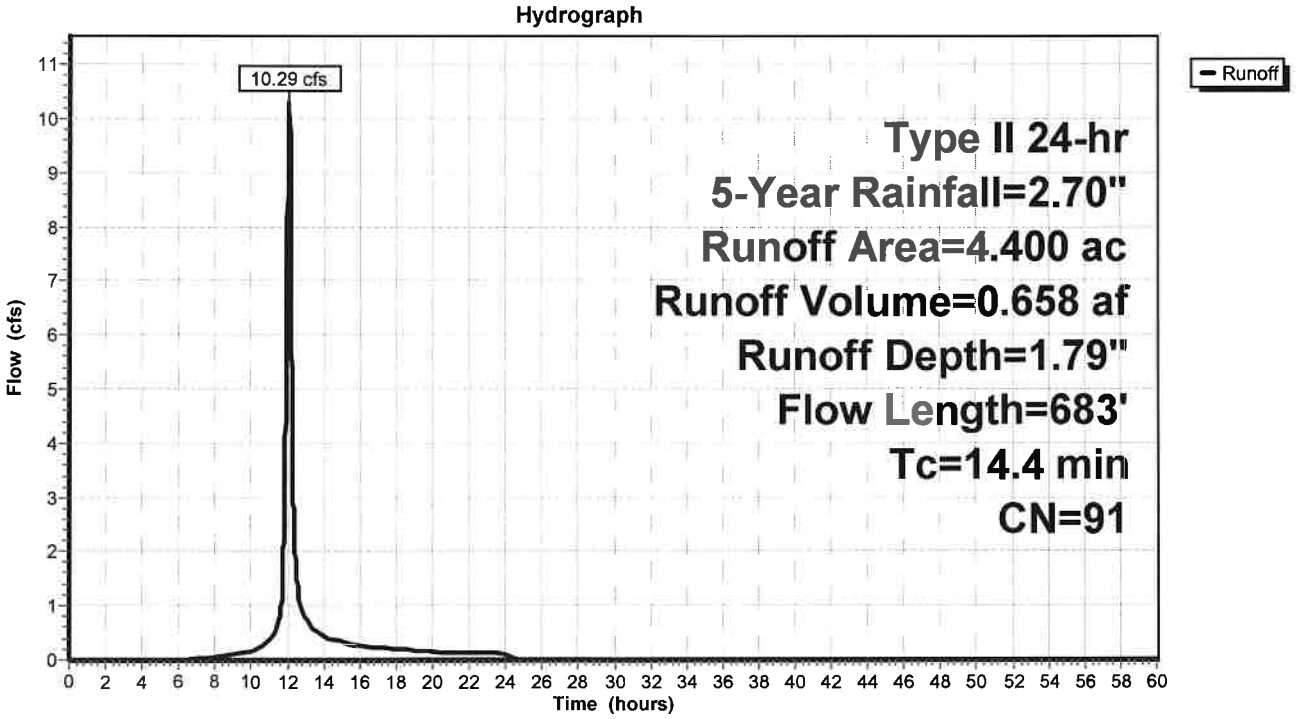
Runoff = 10.29 cfs @ 12.06 hrs, Volume= 0.658 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.00
7.00	0.27	0.00	0.03
8.00	0.32	0.01	0.05
9.00	0.40	0.03	0.10
10.00	0.49	0.07	0.17
11.00	0.63	0.13	0.37
12.00	1.79	0.98	**8.97**
13.00	2.08	1.24	**0.77**
14.00	2.21	1.35	0.44
15.00	2.30	1.43	0.34
16.00	2.38	1.50	0.27
17.00	2.43	1.55	0.23
18.00	2.49	1.60	0.20
19.00	2.53	1.64	0.18
20.00	2.57	1.67	0.15
21.00	2.60	1.71	0.14
22.00	2.64	1.74	0.13
23.00	2.67	1.77	0.13
24.00	**2.70**	**1.79**	0.12
25.00	2.70	1.79	0.00
26.00	2.70	1.79	0.00
27.00	2.70	1.79	0.00
28.00	2.70	1.79	0.00
29.00	2.70	1.79	0.00
30.00	2.70	1.79	0.00
31.00	2.70	1.79	0.00
32.00	2.70	1.79	0.00
33.00	2.70	1.79	0.00
34.00	2.70	1.79	0.00
35.00	2.70	1.79	0.00
36.00	2.70	1.79	0.00
37.00	2.70	1.79	0.00
38.00	2.70	1.79	0.00
39.00	2.70	1.79	0.00
40.00	2.70	1.79	0.00
41.00	2.70	1.79	0.00
42.00	2.70	1.79	0.00
43.00	2.70	1.79	0.00
44.00	2.70	1.79	0.00
45.00	2.70	1.79	0.00
46.00	2.70	1.79	0.00
47.00	2.70	1.79	0.00
48.00	2.70	1.79	0.00
49.00	2.70	1.79	0.00
50.00	2.70	1.79	0.00
51.00	2.70	1.79	0.00
52.00	2.70	1.79	0.00
53.00	2.70	1.79	0.00
54.00	2.70	1.79	0.00
55.00	2.70	1.79	0.00
56.00	2.70	1.79	0.00
57.00	2.70	1.79	0.00
58.00	2.70	1.79	0.00
59.00	2.70	1.79	0.00
60.00	2.70	1.79	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 1.71" for 5-Year event
Inflow = 14.18 cfs @ 12.05 hrs, Volume= 0.870 af
Outflow = 12.91 cfs @ 12.10 hrs, Volume= 0.870 af, Atten= 9%, Lag= 2.9 min
Primary = 2.83 cfs @ 12.10 hrs, Volume= 0.666 af
Secondary = 10.09 cfs @ 12.10 hrs, Volume= 0.203 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.99' @ 12.10 hrs Surf.Area= 9,908 sf Storage= 9,153 cf

Plug-Flow detention time= 193.1 min calculated for 0.869 af (100% of inflow)
Center-of-Mass det. time= 193.4 min (1,010.7 - 817.3)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

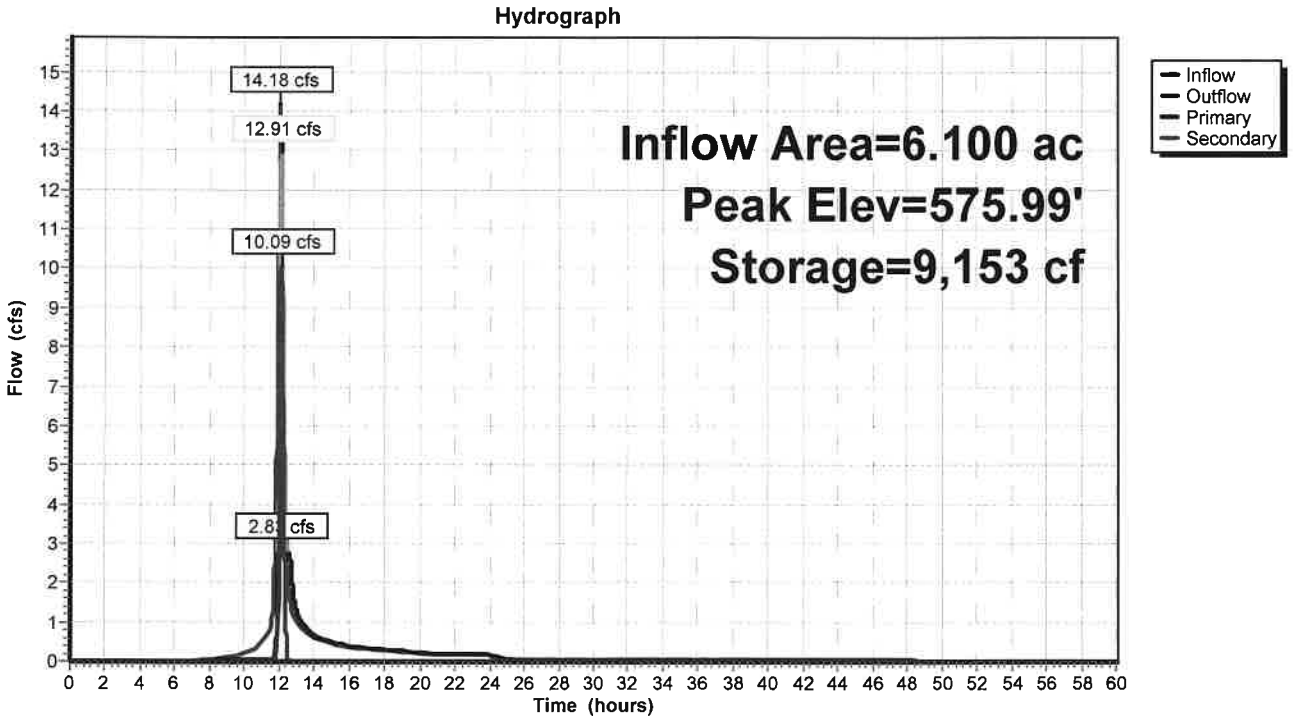
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.83 cfs @ 12.10 hrs HW=575.99' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.83 cfs @ 8.10 fps)
  ├**2=Grate** (Passes < 4.69 cfs potential flow)
  └**3=Exfiltration** (Passes < 0.06 cfs potential flow)

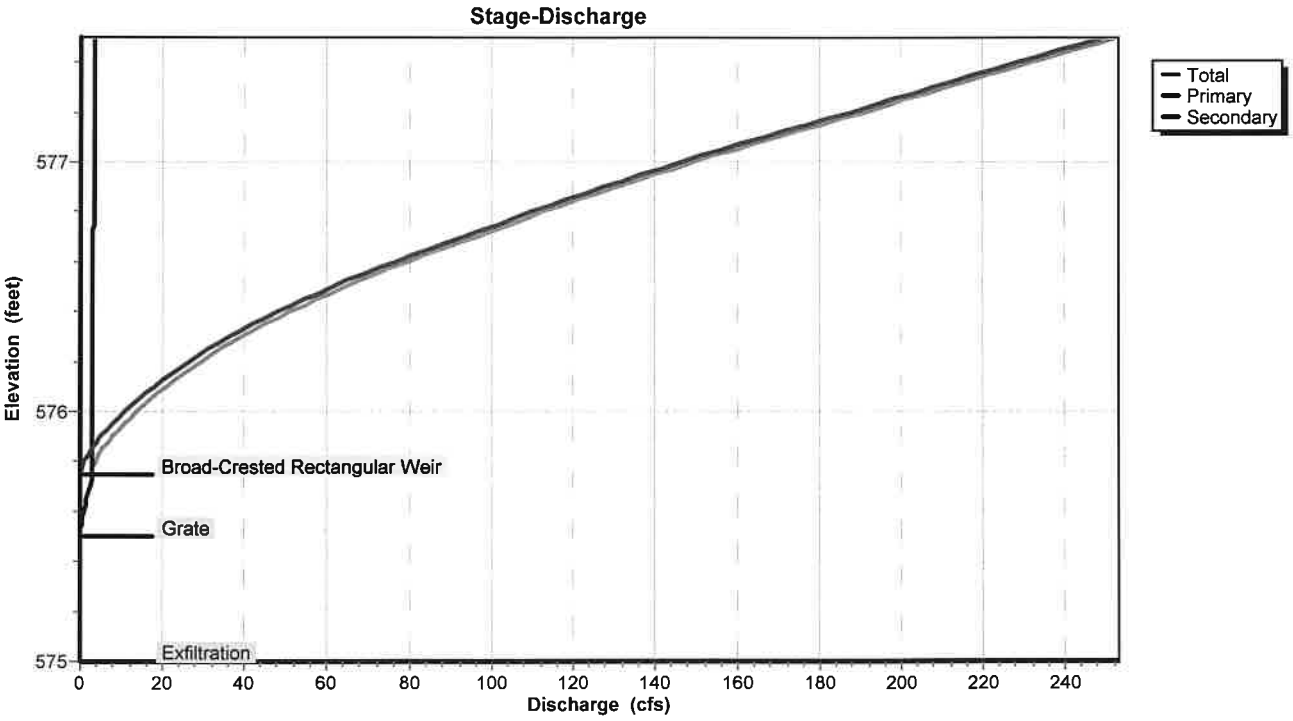
Secondary OutFlow Max=10.07 cfs @ 12.10 hrs HW=575.99' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 10.07 cfs @ 1.42 fps)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

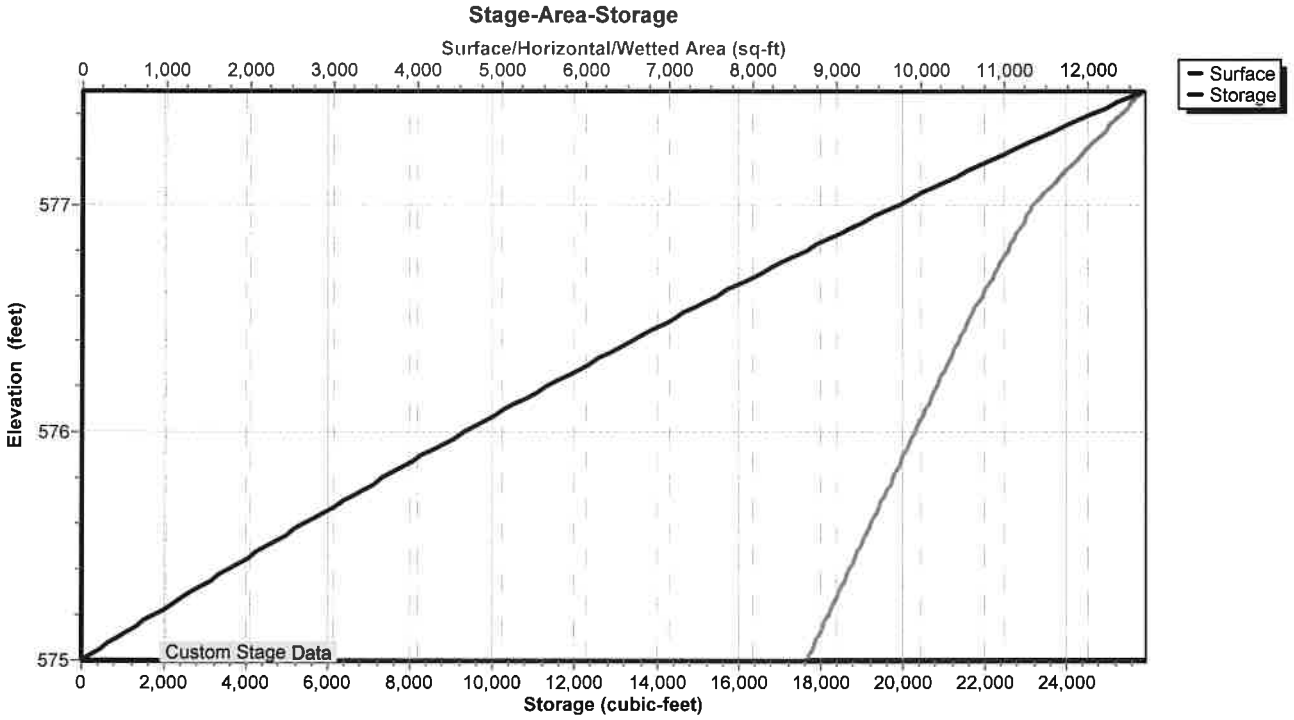


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.05	99	575.01	0.02	0.02	0.00
10.00	0.20	617	575.07	0.05	0.05	0.00
12.00	**12.79**	**8,183**	**575.89**	**7.28**	**2.78**	**4.50**
14.00	**0.59**	**5,218**	**575.58**	**0.66**	**0.66**	**0.00**
16.00	0.36	4,969	575.55	0.38	0.38	0.00
18.00	0.27	4,859	575.54	0.29	0.29	0.00
20.00	0.20	4,774	575.53	0.21	0.21	0.00
22.00	0.18	4,739	575.53	0.18	0.18	0.00
24.00	0.17	4,722	575.53	0.17	0.17	0.00
26.00	0.00	4,258	575.48	0.06	0.06	0.00
28.00	0.00	3,862	575.43	0.05	0.05	0.00
30.00	0.00	3,470	575.39	0.05	0.05	0.00
32.00	0.00	3,081	575.35	0.05	0.05	0.00
34.00	0.00	2,695	575.30	0.05	0.05	0.00
36.00	0.00	2,313	575.26	0.05	0.05	0.00
38.00	0.00	1,934	575.22	0.05	0.05	0.00
40.00	0.00	1,558	575.18	0.05	0.05	0.00
42.00	0.00	1,186	575.14	0.05	0.05	0.00
44.00	0.00	816	575.09	0.05	0.05	0.00
46.00	0.00	450	575.05	0.05	0.05	0.00
48.00	0.00	119	575.01	0.03	0.03	0.00
50.00	0.00	22	575.00	0.01	0.01	0.00
52.00	0.00	4	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 2.35" for 5-Year event
Inflow = 20.08 cfs @ 12.08 hrs, Volume= 0.861 af
Outflow = 0.33 cfs @ 15.13 hrs, Volume= 0.652 af, Atten= 98%, Lag= 182.5 min
Primary = 0.33 cfs @ 15.13 hrs, Volume= 0.652 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.46' @ 15.13 hrs Surf.Area= 62,747 sf Storage= 28,218 cf

Plug-Flow detention time= 974.3 min calculated for 0.652 af (76% of inflow)
Center-of-Mass det. time= 898.6 min (1,692.2 - 793.6)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

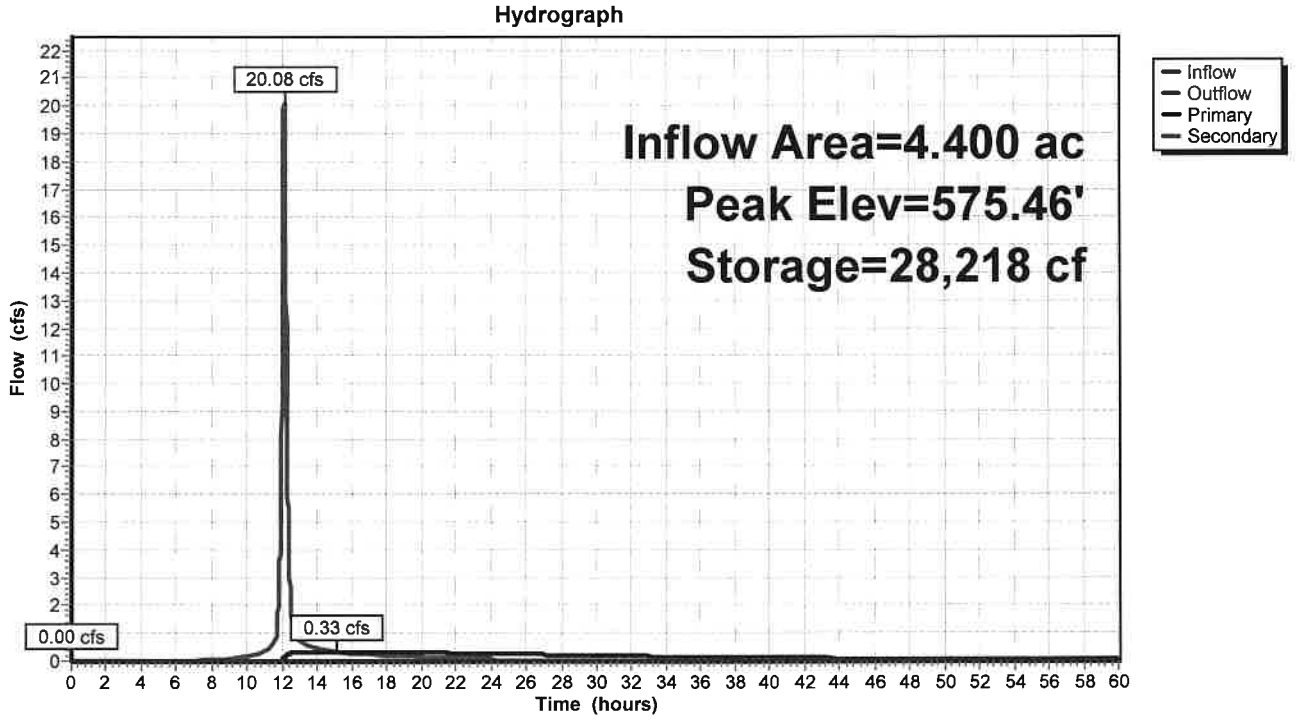
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.33 cfs @ 15.13 hrs HW=575.46' (Free Discharge)
└**1=12" outlet pipe** (Passes 0.33 cfs of 2.02 cfs potential flow)
  └**2=low flow outlet pipe** (Barrel Controls 0.33 cfs @ 2.27 fps)
  └**3=Grate** (Controls 0.00 cfs)

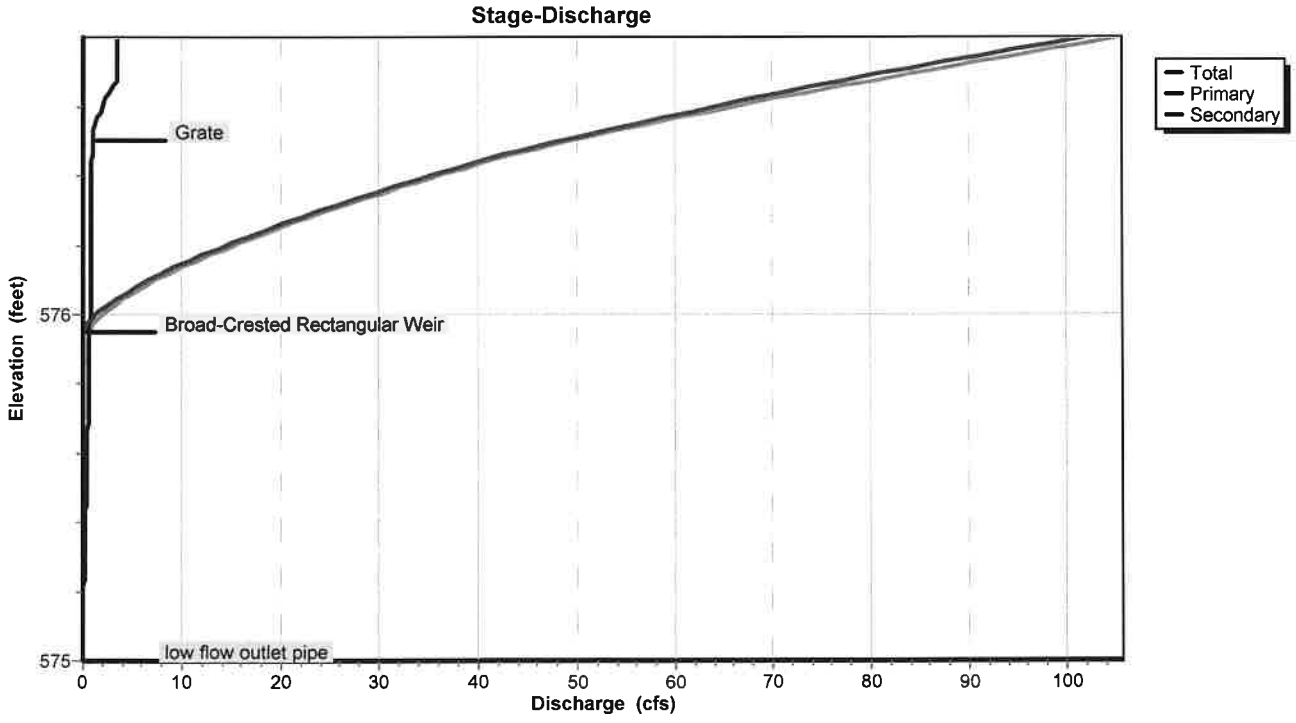
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

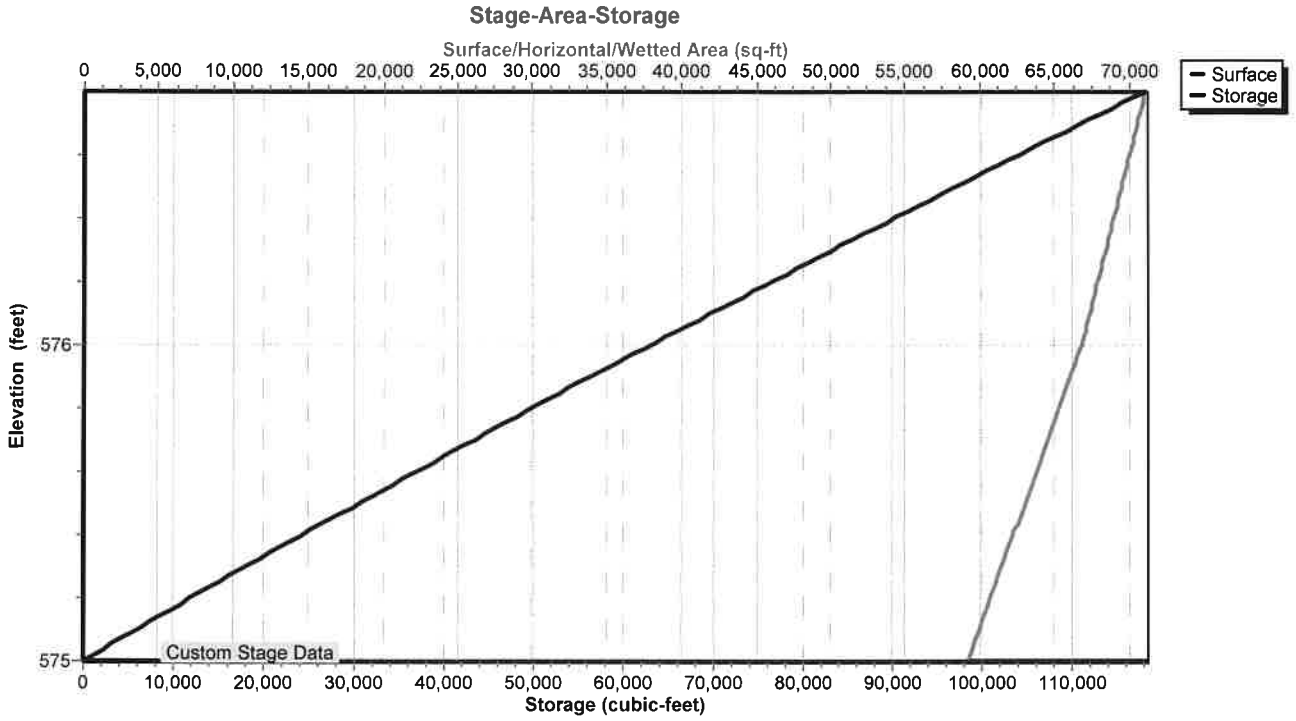


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	1	575.00	0.00	0.00	0.00
8.00	0.05	186	575.00	0.00	0.00	0.00
10.00	0.17	912	575.02	0.00	0.00	0.00
12.00	**13.47**	8,186	575.14	0.04	0.04	0.00
14.00	**0.44**	**28,034**	**575.46**	**0.33**	**0.33**	0.00
16.00	0.27	**28,118**	**575.46**	**0.33**	**0.33**	0.00
18.00	0.20	27,442	575.45	0.32	0.32	0.00
20.00	0.15	26,479	575.43	0.30	0.30	0.00
22.00	0.13	25,382	575.42	0.28	0.28	0.00
24.00	0.12	24,337	575.40	0.26	0.26	0.00
26.00	0.00	22,633	575.37	0.24	0.24	0.00
28.00	0.00	21,033	575.35	0.21	0.21	0.00
30.00	0.00	19,609	575.32	0.19	0.19	0.00
32.00	0.00	18,338	575.30	0.17	0.17	0.00
34.00	0.00	17,199	575.29	0.15	0.15	0.00
36.00	0.00	16,175	575.27	0.13	0.13	0.00
38.00	0.00	15,251	575.25	0.12	0.12	0.00
40.00	0.00	14,415	575.24	0.11	0.11	0.00
42.00	0.00	13,655	575.23	0.10	0.10	0.00
44.00	0.00	12,964	575.22	0.09	0.09	0.00
46.00	0.00	12,331	575.21	0.08	0.08	0.00
48.00	0.00	11,752	575.20	0.08	0.08	0.00
50.00	0.00	11,220	575.19	0.07	0.07	0.00
52.00	0.00	10,729	575.18	0.07	0.07	0.00
54.00	0.00	10,276	575.17	0.06	0.06	0.00
56.00	0.00	9,856	575.16	0.06	0.06	0.00
58.00	0.00	9,467	575.16	0.05	0.05	0.00
60.00	0.00	9,105	575.15	0.05	0.05	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

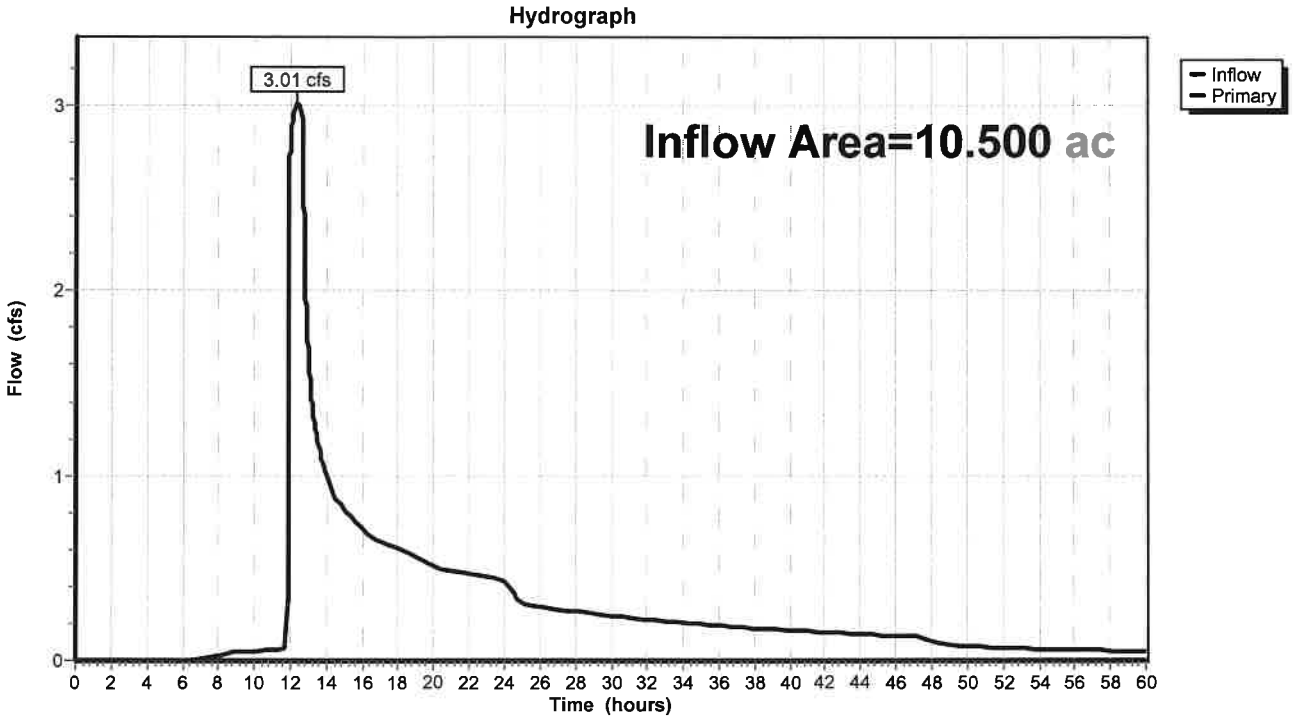
Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 1.51" for 5-Year event
Inflow = 3.01 cfs @ 12.34 hrs, Volume= 1.318 af
Primary = 3.01 cfs @ 12.34 hrs, Volume= 1.318 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.07	0.00	0.07
1.00	0.00	0.00	0.00	53.00	0.06	0.00	0.06
2.00	0.00	0.00	0.00	54.00	0.06	0.00	0.06
3.00	0.00	0.00	0.00	55.00	0.06	0.00	0.06
4.00	0.00	0.00	0.00	56.00	0.06	0.00	0.06
5.00	0.00	0.00	0.00	57.00	0.05	0.00	0.05
6.00	0.00	0.00	0.00	58.00	0.05	0.00	0.05
7.00	0.00	0.00	0.00	59.00	0.05	0.00	0.05
8.00	0.02	0.00	0.02	60.00	0.05	0.00	0.05
9.00	0.05	0.00	0.05				
10.00	0.05	0.00	0.05				
11.00	0.05	0.00	0.05				
12.00	**2.82**	0.00	**2.82**				
13.00	**1.62**	0.00	**1.62**				
14.00	0.99	0.00	0.99				
15.00	0.81	0.00	0.81				
16.00	0.71	0.00	0.71				
17.00	0.65	0.00	0.65				
18.00	0.60	0.00	0.60				
19.00	0.56	0.00	0.56				
20.00	0.51	0.00	0.51				
21.00	0.48	0.00	0.48				
22.00	0.47	0.00	0.47				
23.00	0.45	0.00	0.45				
24.00	0.43	0.00	0.43				
25.00	0.31	0.00	0.31				
26.00	0.29	0.00	0.29				
27.00	0.28	0.00	0.28				
28.00	0.26	0.00	0.26				
29.00	0.25	0.00	0.25				
30.00	0.24	0.00	0.24				
31.00	0.23	0.00	0.23				
32.00	0.22	0.00	0.22				
33.00	0.21	0.00	0.21				
34.00	0.20	0.00	0.20				
35.00	0.20	0.00	0.20				
36.00	0.19	0.00	0.19				
37.00	0.18	0.00	0.18				
38.00	0.17	0.00	0.17				
39.00	0.17	0.00	0.17				
40.00	0.16	0.00	0.16				
41.00	0.16	0.00	0.16				
42.00	0.15	0.00	0.15				
43.00	0.15	0.00	0.15				
44.00	0.14	0.00	0.14				
45.00	0.14	0.00	0.14				
46.00	0.13	0.00	0.13				
47.00	0.13	0.00	0.13				
48.00	0.10	0.00	0.10				
49.00	0.09	0.00	0.09				
50.00	0.08	0.00	0.08				
51.00	0.07	0.00	0.07				

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=2.12"
Flow Length=652' Tc=13.3 min CN=90 Runoff=17.46 cfs 1.079 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=2.21"
Flow Length=683' Tc=14.4 min CN=91 Runoff=12.59 cfs 0.811 af

Pond 1P: Bioretention Area 3 Peak Elev=576.04' Storage=9,672 cf Inflow=17.46 cfs 1.079 af
Primary=2.85 cfs 0.765 af Secondary=13.60 cfs 0.314 af Outflow=16.45 cfs 1.079 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.60' Storage=37,117 cf Inflow=26.01 cfs 1.125 af
Primary=0.47 cfs 0.892 af Secondary=0.00 cfs 0.000 af Outflow=0.47 cfs 0.892 af

Link 5L: Outflow (@ CB 54) Inflow=3.16 cfs 1.657 af
Primary=3.16 cfs 1.657 af

Total Runoff Area = 10.500 ac Runoff Volume = 1.890 af Average Runoff Depth = 2.16"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

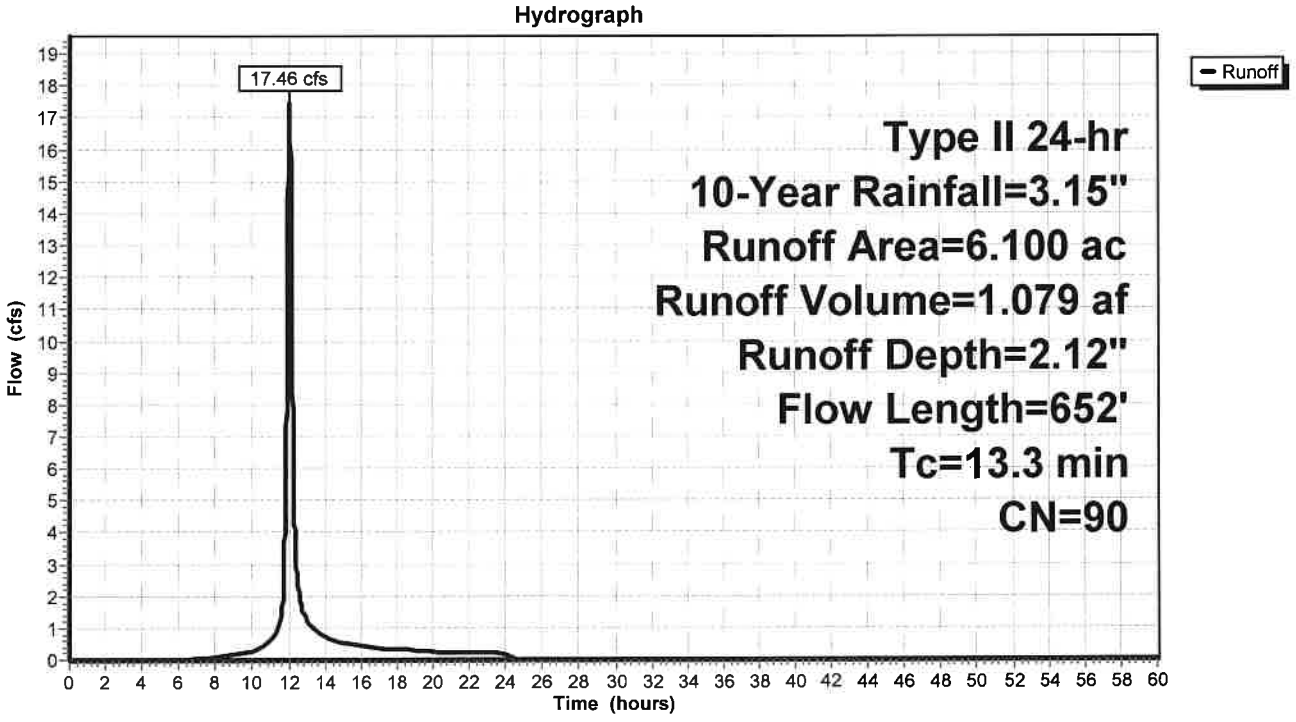
Runoff = 17.46 cfs @ 12.05 hrs, Volume= 1.079 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.07	0.00	0.00
3.00	0.11	0.00	0.00
4.00	0.15	0.00	0.00
5.00	0.20	0.00	0.00
6.00	0.25	0.00	0.01
7.00	0.31	0.01	0.05
8.00	0.38	0.02	0.09
9.00	0.46	0.04	0.18
10.00	0.57	0.08	0.28
11.00	0.74	0.16	0.63
12.00	2.09	1.17	**15.84**
13.00	2.43	1.47	**1.23**
14.00	2.58	1.61	0.71
15.00	2.69	1.70	0.55
16.00	2.77	1.78	0.43
17.00	2.84	1.84	0.37
18.00	2.90	1.89	0.33
19.00	2.95	1.94	0.28
20.00	3.00	1.98	0.24
21.00	3.04	2.02	0.22
22.00	3.08	2.06	0.22
23.00	3.11	2.09	0.21
24.00	**3.15**	**2.12**	0.20
25.00	3.15	2.12	0.00
26.00	3.15	2.12	0.00
27.00	3.15	2.12	0.00
28.00	3.15	2.12	0.00
29.00	3.15	2.12	0.00
30.00	3.15	2.12	0.00
31.00	3.15	2.12	0.00
32.00	3.15	2.12	0.00
33.00	3.15	2.12	0.00
34.00	3.15	2.12	0.00
35.00	3.15	2.12	0.00
36.00	3.15	2.12	0.00
37.00	3.15	2.12	0.00
38.00	3.15	2.12	0.00
39.00	3.15	2.12	0.00
40.00	3.15	2.12	0.00
41.00	3.15	2.12	0.00
42.00	3.15	2.12	0.00
43.00	3.15	2.12	0.00
44.00	3.15	2.12	0.00
45.00	3.15	2.12	0.00
46.00	3.15	2.12	0.00
47.00	3.15	2.12	0.00
48.00	3.15	2.12	0.00
49.00	3.15	2.12	0.00
50.00	3.15	2.12	0.00
51.00	3.15	2.12	0.00
52.00	3.15	2.12	0.00
53.00	3.15	2.12	0.00
54.00	3.15	2.12	0.00
55.00	3.15	2.12	0.00
56.00	3.15	2.12	0.00
57.00	3.15	2.12	0.00
58.00	3.15	2.12	0.00
59.00	3.15	2.12	0.00
60.00	3.15	2.12	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

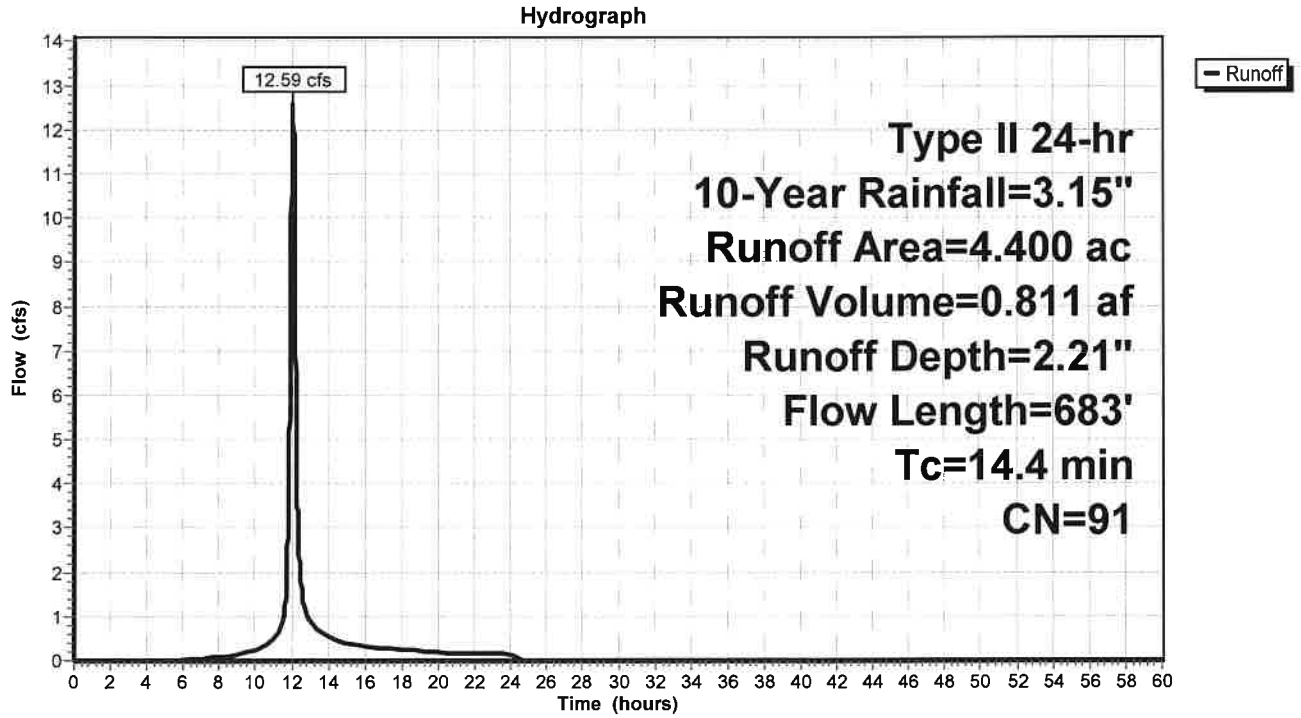
Runoff = 12.59 cfs @ 12.06 hrs, Volume= 0.811 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.07	0.00	0.00
3.00	0.11	0.00	0.00
4.00	0.15	0.00	0.00
5.00	0.20	0.00	0.00
6.00	0.25	0.00	0.02
7.00	0.31	0.01	0.05
8.00	0.38	0.03	0.08
9.00	0.46	0.06	0.15
10.00	0.57	0.10	0.23
11.00	0.74	0.19	0.49
12.00	2.09	1.24	**11.04**
13.00	2.43	1.55	**0.92**
14.00	2.58	1.69	0.53
15.00	2.69	1.78	0.40
16.00	2.77	1.86	0.32
17.00	2.84	1.92	0.27
18.00	2.90	1.98	0.24
19.00	2.95	2.03	0.21
20.00	3.00	2.07	0.18
21.00	3.04	2.11	0.16
22.00	3.08	2.14	0.16
23.00	3.11	2.18	0.15
24.00	**3.15**	**2.21**	0.15
25.00	3.15	2.21	0.00
26.00	3.15	2.21	0.00
27.00	3.15	2.21	0.00
28.00	3.15	2.21	0.00
29.00	3.15	2.21	0.00
30.00	3.15	2.21	0.00
31.00	3.15	2.21	0.00
32.00	3.15	2.21	0.00
33.00	3.15	2.21	0.00
34.00	3.15	2.21	0.00
35.00	3.15	2.21	0.00
36.00	3.15	2.21	0.00
37.00	3.15	2.21	0.00
38.00	3.15	2.21	0.00
39.00	3.15	2.21	0.00
40.00	3.15	2.21	0.00
41.00	3.15	2.21	0.00
42.00	3.15	2.21	0.00
43.00	3.15	2.21	0.00
44.00	3.15	2.21	0.00
45.00	3.15	2.21	0.00
46.00	3.15	2.21	0.00
47.00	3.15	2.21	0.00
48.00	3.15	2.21	0.00
49.00	3.15	2.21	0.00
50.00	3.15	2.21	0.00
51.00	3.15	2.21	0.00
52.00	3.15	2.21	0.00
53.00	3.15	2.21	0.00
54.00	3.15	2.21	0.00
55.00	3.15	2.21	0.00
56.00	3.15	2.21	0.00
57.00	3.15	2.21	0.00
58.00	3.15	2.21	0.00
59.00	3.15	2.21	0.00
60.00	3.15	2.21	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 2.12" for 10-Year event
Inflow = 17.46 cfs @ 12.05 hrs, Volume= 1.079 af
Outflow = 16.45 cfs @ 12.09 hrs, Volume= 1.079 af, Atten= 6%, Lag= 2.3 min
Primary = 2.85 cfs @ 12.09 hrs, Volume= 0.765 af
Secondary = 13.60 cfs @ 12.09 hrs, Volume= 0.314 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.04' @ 12.09 hrs Surf.Area= 9,976 sf Storage= 9,672 cf

Plug-Flow detention time= 160.8 min calculated for 1.079 af (100% of inflow)
Center-of-Mass det. time= 160.7 min (971.9 - 811.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

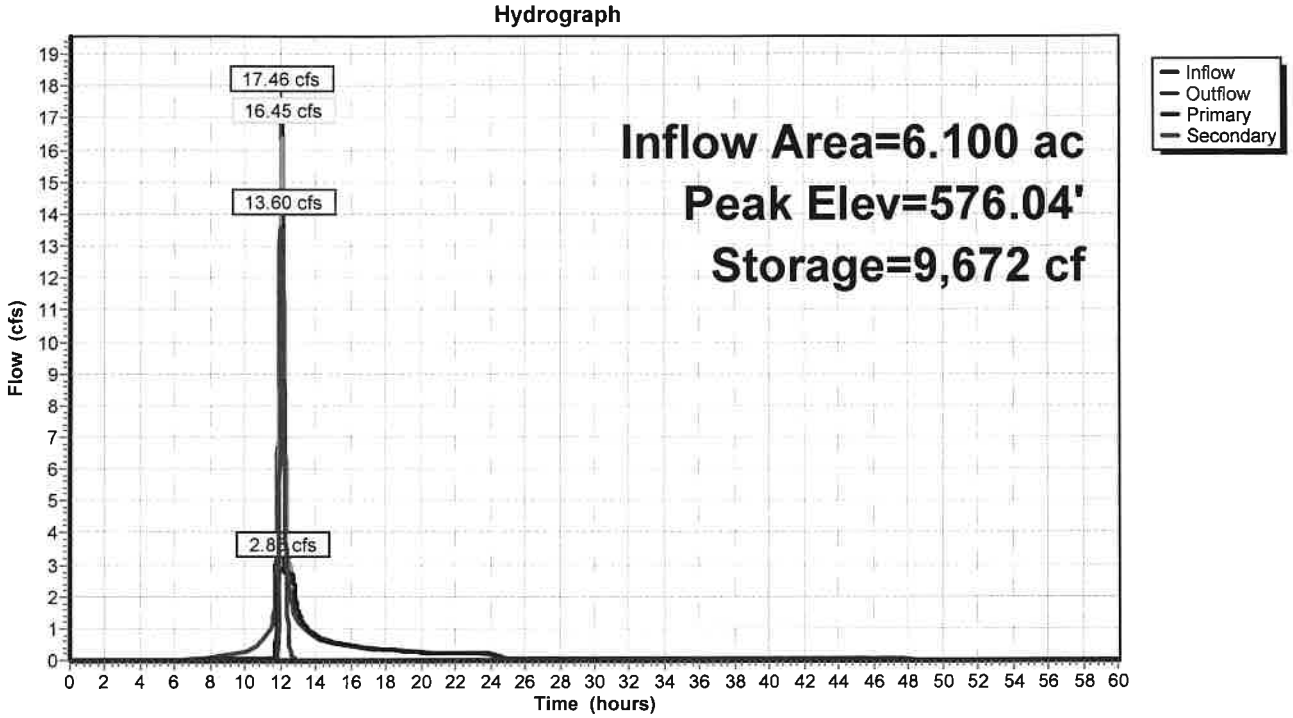
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.85 cfs @ 12.09 hrs HW=576.04' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.85 cfs @ 8.17 fps)
  ├**2=Grate** (Passes < 4.93 cfs potential flow)
  └**3=Exfiltration** (Passes < 0.06 cfs potential flow)

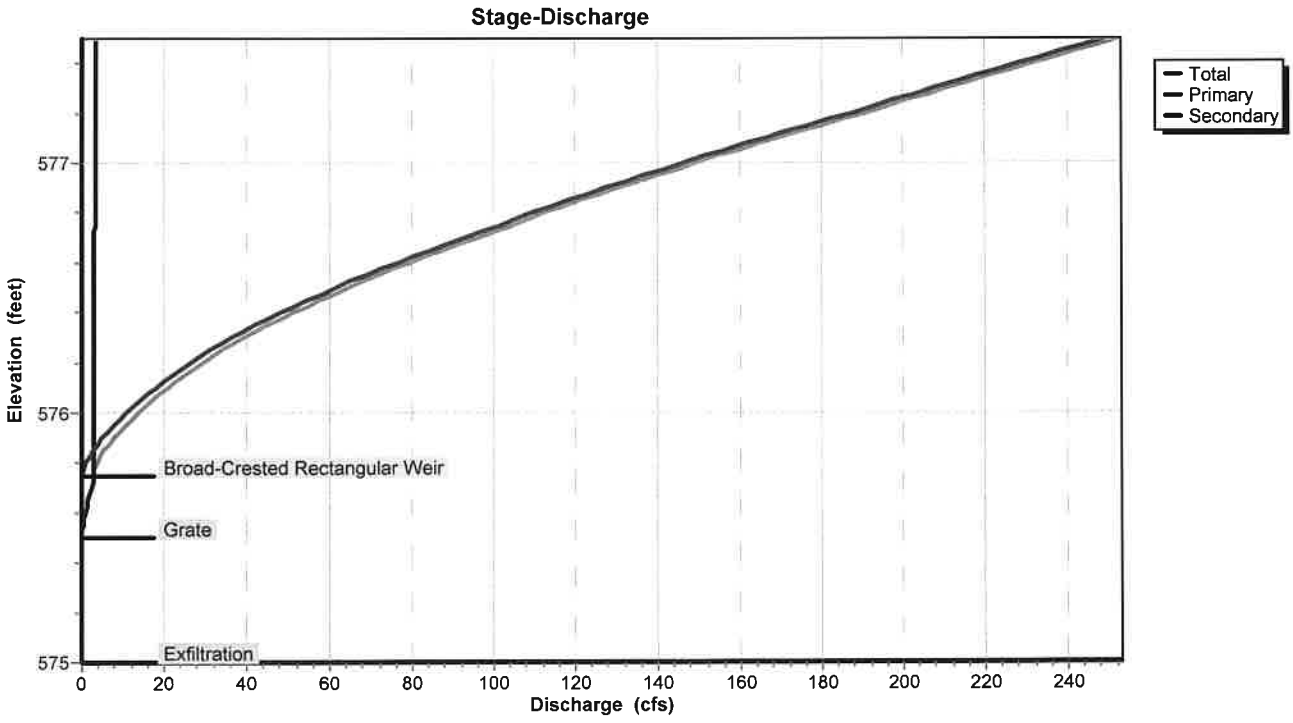
Secondary OutFlow Max=13.58 cfs @ 12.09 hrs HW=576.04' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 13.58 cfs @ 1.57 fps)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

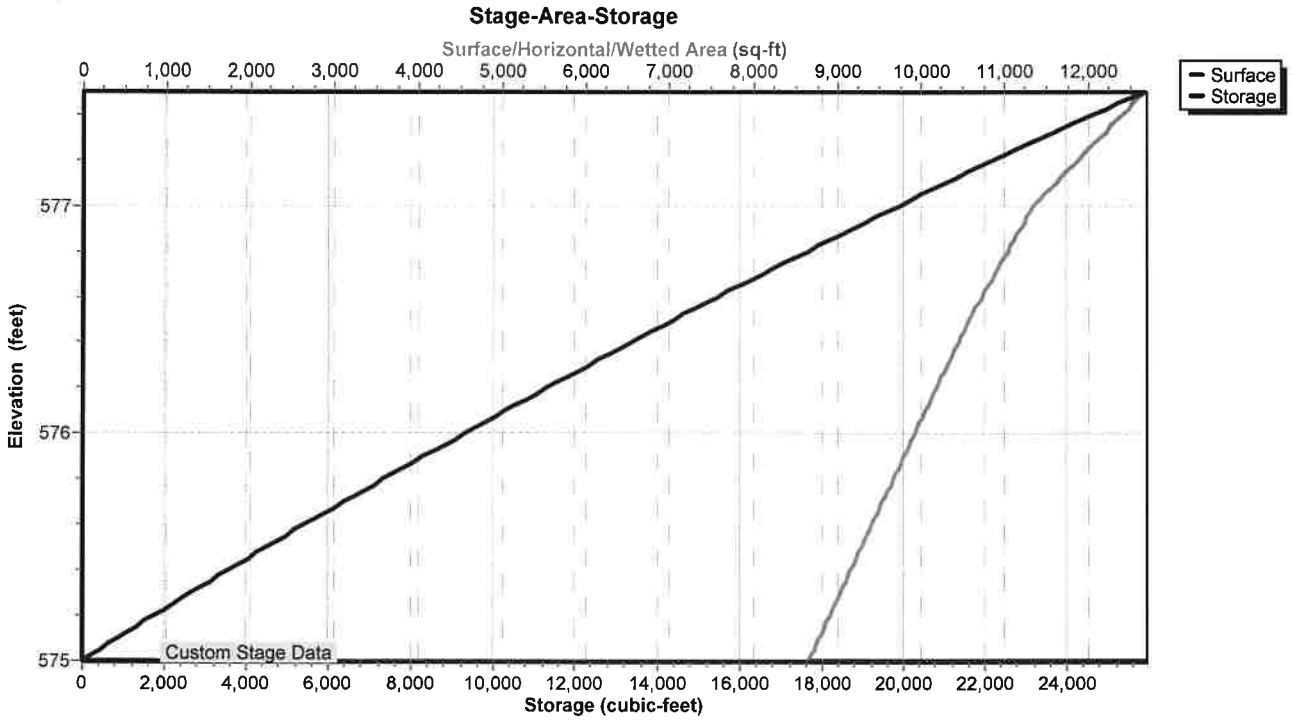


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.01	6	575.00	0.00	0.00	0.00
8.00	0.09	207	575.02	0.05	0.05	0.00
10.00	0.28	1,102	575.13	0.05	0.05	0.00
12.00	**15.84**	**9,006**	**575.97**	**11.97**	**2.82**	**9.15**
14.00	**0.71**	**5,320**	**575.59**	**0.79**	**0.79**	**0.00**
16.00	0.43	5,039	575.56	0.46	0.46	0.00
18.00	0.33	4,925	575.55	0.34	0.34	0.00
20.00	0.24	4,823	575.54	0.25	0.25	0.00
22.00	0.22	4,781	575.53	0.22	0.22	0.00
24.00	0.20	4,760	575.53	0.20	0.20	0.00
26.00	0.00	4,270	575.48	0.06	0.06	0.00
28.00	0.00	3,874	575.43	0.05	0.05	0.00
30.00	0.00	3,482	575.39	0.05	0.05	0.00
32.00	0.00	3,093	575.35	0.05	0.05	0.00
34.00	0.00	2,707	575.31	0.05	0.05	0.00
36.00	0.00	2,324	575.26	0.05	0.05	0.00
38.00	0.00	1,945	575.22	0.05	0.05	0.00
40.00	0.00	1,569	575.18	0.05	0.05	0.00
42.00	0.00	1,197	575.14	0.05	0.05	0.00
44.00	0.00	828	575.10	0.05	0.05	0.00
46.00	0.00	461	575.05	0.05	0.05	0.00
48.00	0.00	126	575.01	0.03	0.03	0.00
50.00	0.00	24	575.00	0.01	0.01	0.00
52.00	0.00	4	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 3.07" for 10-Year event
Inflow = 26.01 cfs @ 12.08 hrs, Volume= 1.125 af
Outflow = 0.47 cfs @ 14.32 hrs, Volume= 0.892 af, Atten= 98%, Lag= 134.6 min
Primary = 0.47 cfs @ 14.32 hrs, Volume= 0.892 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.60' @ 14.32 hrs Surf.Area= 63,820 sf Storage= 37,117 cf

Plug-Flow detention time= 942.6 min calculated for 0.892 af (79% of inflow)
Center-of-Mass det. time= 874.9 min (1,660.4 - 785.4)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

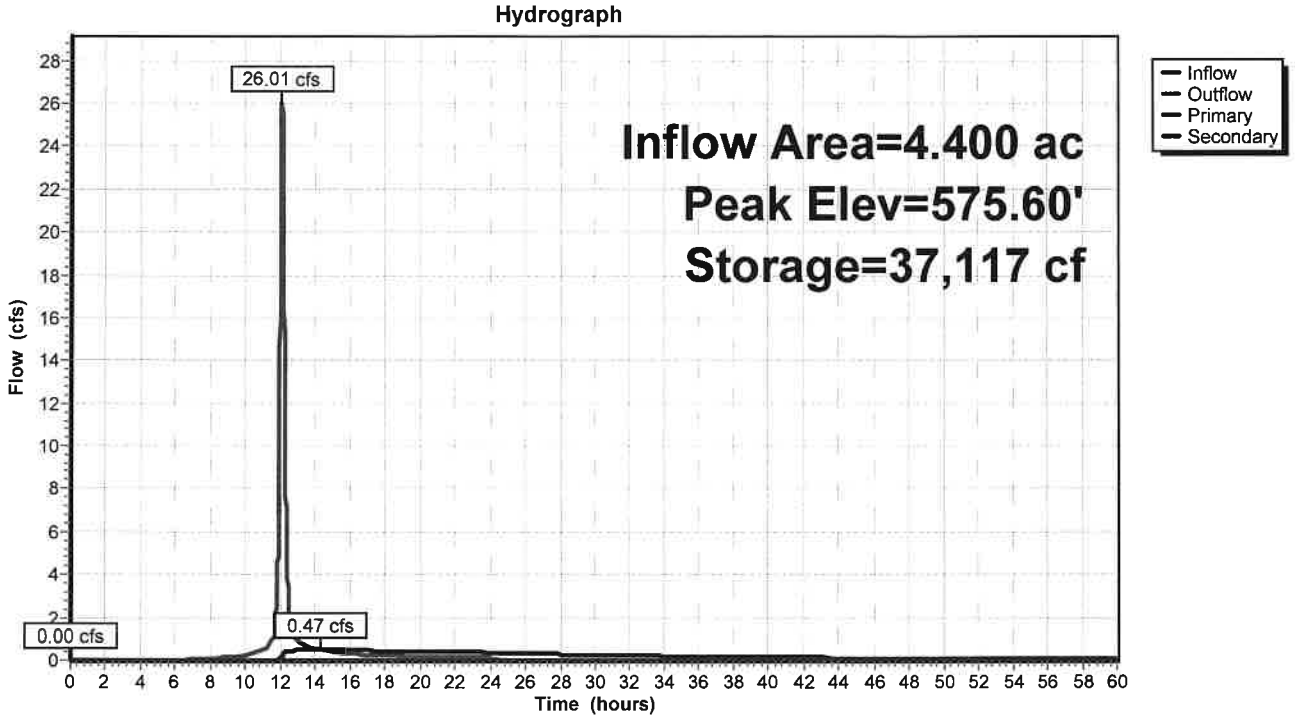
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.47 cfs @ 14.32 hrs HW=575.60' (Free Discharge)
└**1=12" outlet pipe** (Passes 0.47 cfs of 2.23 cfs potential flow)
  ├**2=low flow outlet pipe** (Barrel Controls 0.47 cfs @ 2.50 fps)
  └**3=Grate** (Controls 0.00 cfs)

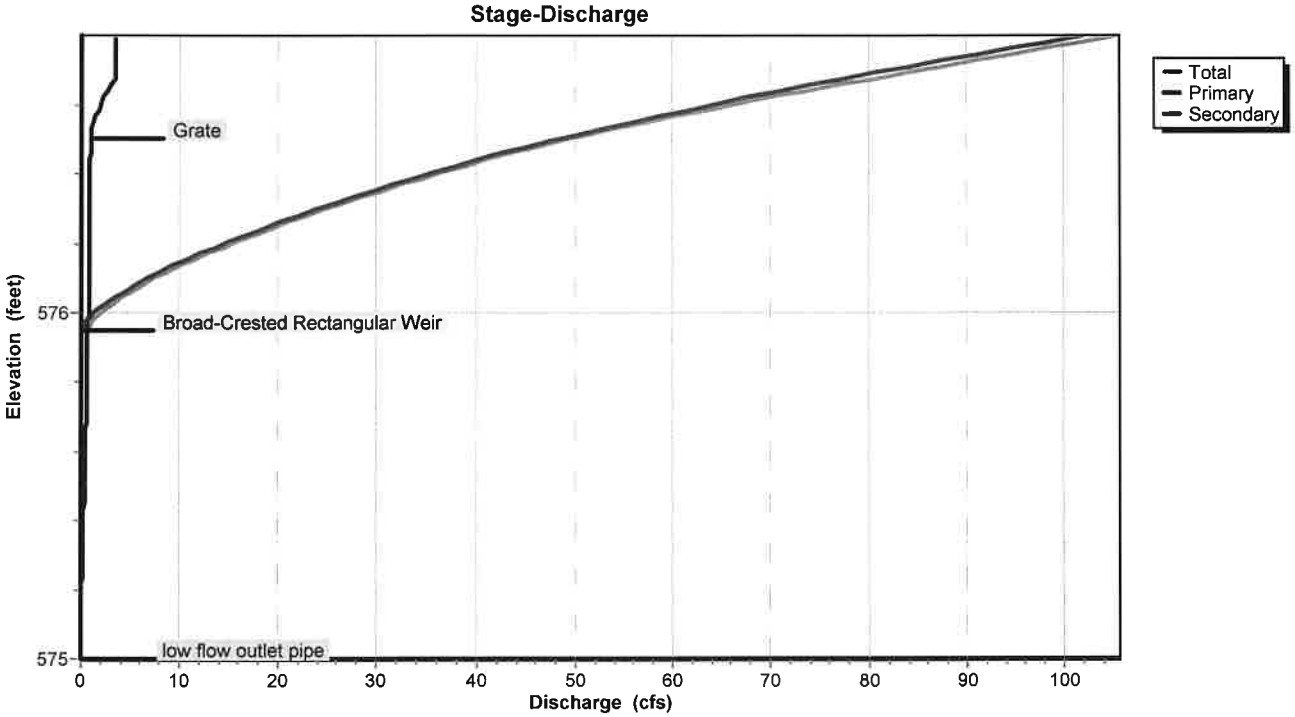
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

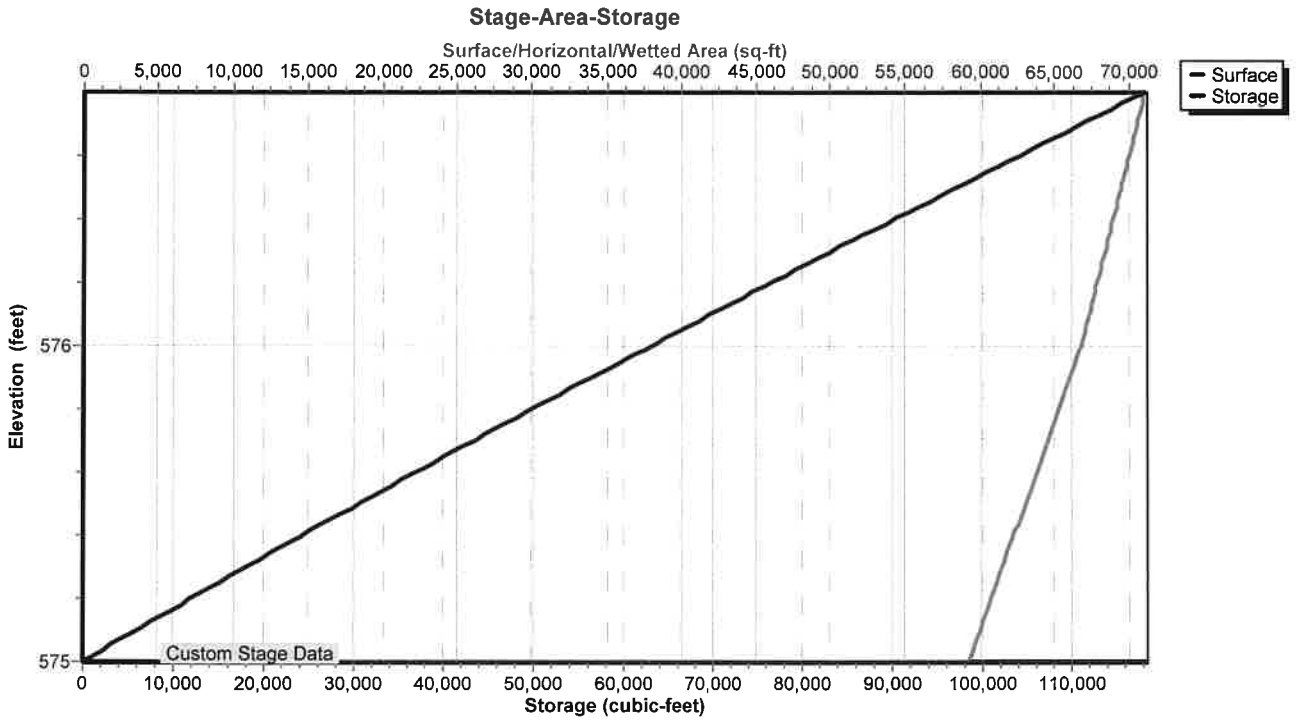


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.02	28	575.00	0.00	0.00	0.00
8.00	0.08	376	575.01	0.00	0.00	0.00
10.00	0.23	1,427	575.02	0.00	0.00	0.00
12.00	**20.19**	11,922	575.20	0.08	0.08	0.00
14.00	**0.53**	**37,087**	**575.60**	**0.47**	**0.47**	0.00
16.00	0.32	**36,669**	**575.60**	**0.46**	**0.46**	0.00
18.00	0.24	35,374	575.58	0.44	0.44	0.00
20.00	0.18	33,764	575.55	0.42	0.42	0.00
22.00	0.16	32,024	575.52	0.39	0.39	0.00
24.00	0.15	30,385	575.50	0.37	0.37	0.00
26.00	0.00	28,005	575.46	0.33	0.33	0.00
28.00	0.00	25,794	575.42	0.29	0.29	0.00
30.00	0.00	23,836	575.39	0.26	0.26	0.00
32.00	0.00	22,102	575.36	0.23	0.23	0.00
34.00	0.00	20,561	575.34	0.20	0.20	0.00
36.00	0.00	19,188	575.32	0.18	0.18	0.00
38.00	0.00	17,961	575.30	0.16	0.16	0.00
40.00	0.00	16,860	575.28	0.14	0.14	0.00
42.00	0.00	15,870	575.26	0.13	0.13	0.00
44.00	0.00	14,975	575.25	0.12	0.12	0.00
46.00	0.00	14,165	575.24	0.11	0.11	0.00
48.00	0.00	13,428	575.22	0.10	0.10	0.00
50.00	0.00	12,756	575.21	0.09	0.09	0.00
52.00	0.00	12,141	575.20	0.08	0.08	0.00
54.00	0.00	11,578	575.19	0.08	0.08	0.00
56.00	0.00	11,059	575.18	0.07	0.07	0.00
58.00	0.00	10,581	575.18	0.06	0.06	0.00
60.00	0.00	10,139	575.17	0.06	0.06	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

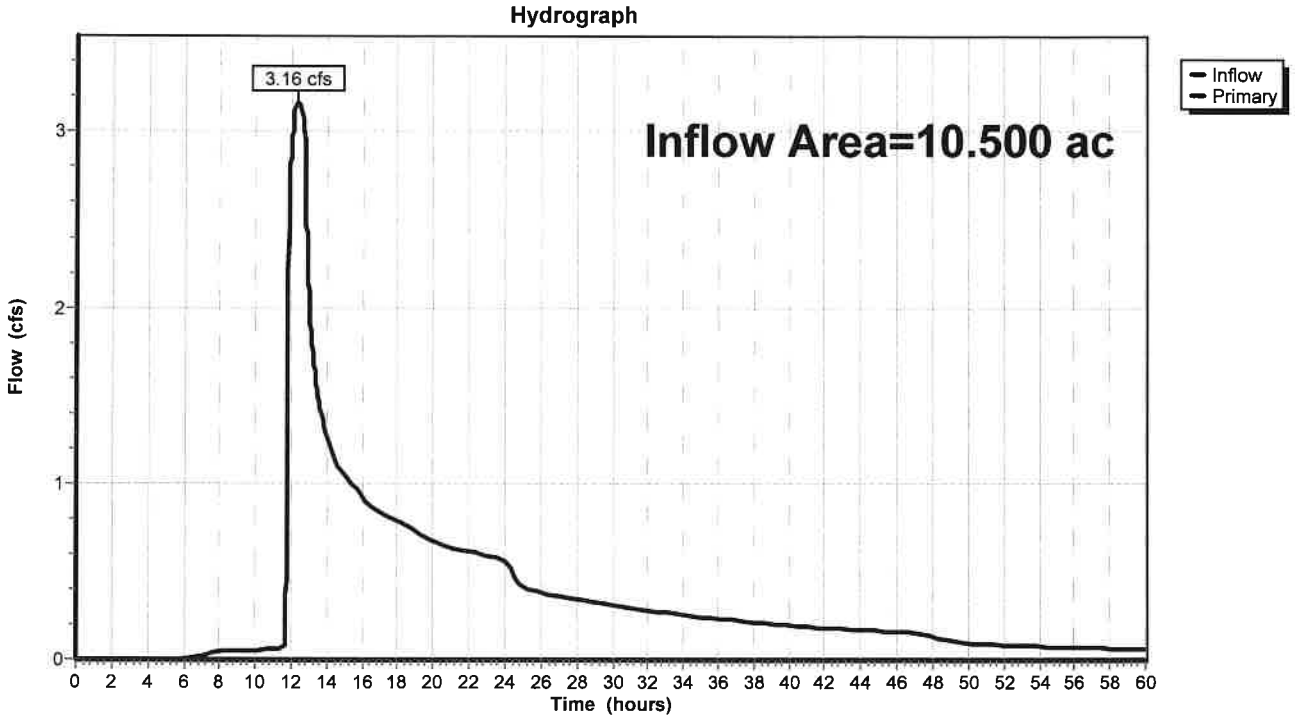
Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 1.89" for 10-Year event
Inflow = 3.16 cfs @ 12.39 hrs, Volume= 1.657 af
Primary = 3.16 cfs @ 12.39 hrs, Volume= 1.657 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.08	0.00	0.08
1.00	0.00	0.00	0.00	53.00	0.08	0.00	0.08
2.00	0.00	0.00	0.00	54.00	0.08	0.00	0.08
3.00	0.00	0.00	0.00	55.00	0.07	0.00	0.07
4.00	0.00	0.00	0.00	56.00	0.07	0.00	0.07
5.00	0.00	0.00	0.00	57.00	0.07	0.00	0.07
6.00	0.00	0.00	0.00	58.00	0.06	0.00	0.06
7.00	0.02	0.00	0.02	59.00	0.06	0.00	0.06
8.00	0.05	0.00	0.05	60.00	0.06	0.00	0.06
9.00	0.05	0.00	0.05				
10.00	0.05	0.00	0.05				
11.00	0.06	0.00	0.06				
12.00	**2.90**	0.00	**2.90**				
13.00	**2.02**	0.00	**2.02**				
14.00	1.26	0.00	1.26				
15.00	1.05	0.00	1.05				
16.00	0.92	0.00	0.92				
17.00	0.84	0.00	0.84				
18.00	0.78	0.00	0.78				
19.00	0.73	0.00	0.73				
20.00	0.67	0.00	0.67				
21.00	0.63	0.00	0.63				
22.00	0.61	0.00	0.61				
23.00	0.59	0.00	0.59				
24.00	0.57	0.00	0.57				
25.00	0.40	0.00	0.40				
26.00	0.38	0.00	0.38				
27.00	0.36	0.00	0.36				
28.00	0.34	0.00	0.34				
29.00	0.33	0.00	0.33				
30.00	0.31	0.00	0.31				
31.00	0.29	0.00	0.29				
32.00	0.28	0.00	0.28				
33.00	0.27	0.00	0.27				
34.00	0.26	0.00	0.26				
35.00	0.24	0.00	0.24				
36.00	0.23	0.00	0.23				
37.00	0.22	0.00	0.22				
38.00	0.21	0.00	0.21				
39.00	0.20	0.00	0.20				
40.00	0.20	0.00	0.20				
41.00	0.19	0.00	0.19				
42.00	0.18	0.00	0.18				
43.00	0.18	0.00	0.18				
44.00	0.17	0.00	0.17				
45.00	0.16	0.00	0.16				
46.00	0.16	0.00	0.16				
47.00	0.15	0.00	0.15				
48.00	0.13	0.00	0.13				
49.00	0.11	0.00	0.11				
50.00	0.09	0.00	0.09				
51.00	0.09	0.00	0.09				

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=2.80"
Flow Length=652' Tc=13.3 min CN=90 Runoff=22.74 cfs 1.421 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=2.89"
Flow Length=683' Tc=14.4 min CN=91 Runoff=16.27 cfs 1.061 af

Pond 1P: Bioretention Area 3 Peak Elev=576.11' Storage=10,375 cf Inflow=22.74 cfs 1.421 af
Primary=2.89 cfs 0.934 af Secondary=18.84 cfs 0.487 af Outflow=21.73 cfs 1.421 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.83' Storage=51,963 cf Inflow=34.94 cfs 1.548 af
Primary=0.64 cfs 1.276 af Secondary=0.00 cfs 0.000 af Outflow=0.64 cfs 1.276 af

Link 5L: Outflow (@ CB 54) Inflow=3.36 cfs 2.210 af
Primary=3.36 cfs 2.210 af

Total Runoff Area = 10.500 ac Runoff Volume = 2.482 af Average Runoff Depth = 2.84"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

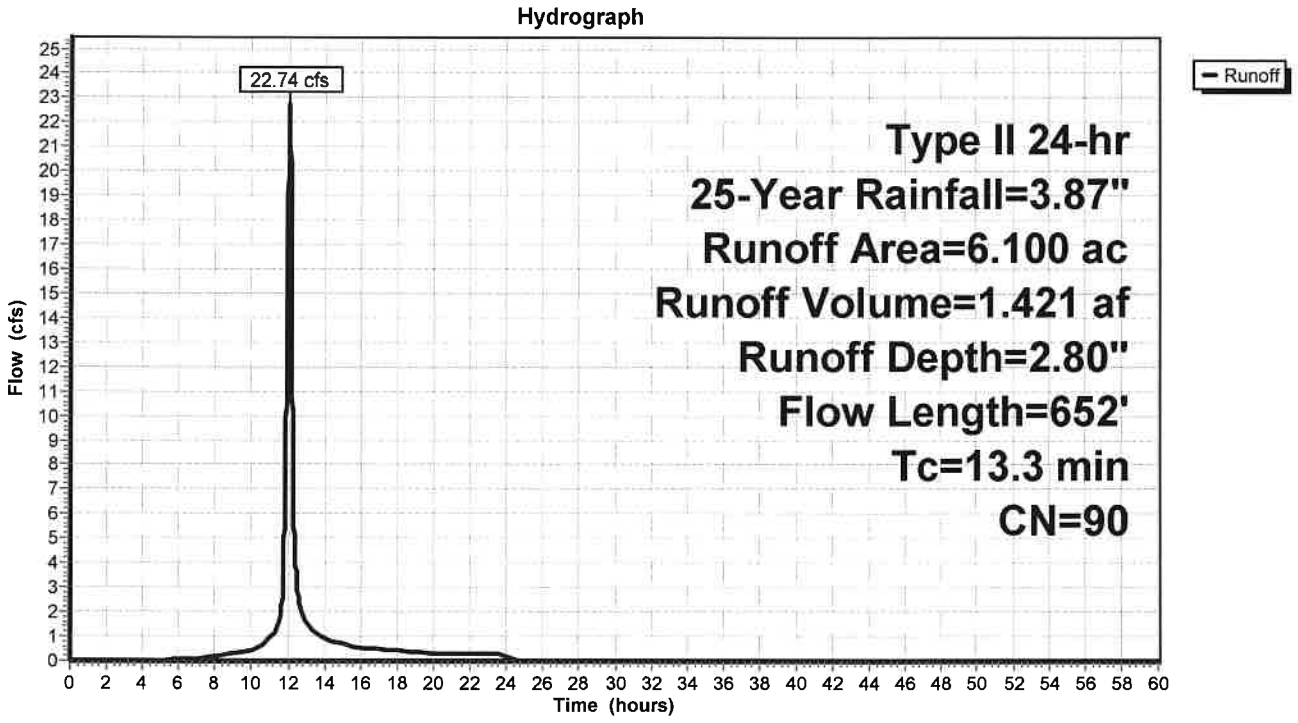
Runoff = 22.74 cfs @ 12.05 hrs, Volume= 1.421 af, Depth= 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.87	2.80	0.00
1.00	0.04	0.00	0.00	53.00	3.87	2.80	0.00
2.00	0.09	0.00	0.00	54.00	3.87	2.80	0.00
3.00	0.13	0.00	0.00	55.00	3.87	2.80	0.00
4.00	0.19	0.00	0.00	56.00	3.87	2.80	0.00
5.00	0.24	0.00	0.01	57.00	3.87	2.80	0.00
6.00	0.31	0.01	0.05	58.00	3.87	2.80	0.00
7.00	0.38	0.02	0.10	59.00	3.87	2.80	0.00
8.00	0.46	0.04	0.16	60.00	3.87	2.80	0.00
9.00	0.57	0.08	0.28				
10.00	0.70	0.14	0.43				
11.00	0.91	0.26	0.90				
12.00	2.57	1.59	**20.75**				
13.00	2.99	1.97	**1.57**				
14.00	3.17	2.14	0.90				
15.00	3.30	2.26	0.70				
16.00	3.41	2.36	0.54				
17.00	3.49	2.44	0.47				
18.00	3.56	2.51	0.41				
19.00	3.63	2.57	0.36				
20.00	3.68	2.62	0.30				
21.00	3.73	2.67	0.28				
22.00	3.78	2.71	0.27				
23.00	3.83	2.75	0.26				
24.00	**3.87**	**2.80**	0.25				
25.00	3.87	2.80	0.00				
26.00	3.87	2.80	0.00				
27.00	3.87	2.80	0.00				
28.00	3.87	2.80	0.00				
29.00	3.87	2.80	0.00				
30.00	3.87	2.80	0.00				
31.00	3.87	2.80	0.00				
32.00	3.87	2.80	0.00				
33.00	3.87	2.80	0.00				
34.00	3.87	2.80	0.00				
35.00	3.87	2.80	0.00				
36.00	3.87	2.80	0.00				
37.00	3.87	2.80	0.00				
38.00	3.87	2.80	0.00				
39.00	3.87	2.80	0.00				
40.00	3.87	2.80	0.00				
41.00	3.87	2.80	0.00				
42.00	3.87	2.80	0.00				
43.00	3.87	2.80	0.00				
44.00	3.87	2.80	0.00				
45.00	3.87	2.80	0.00				
46.00	3.87	2.80	0.00				
47.00	3.87	2.80	0.00				
48.00	3.87	2.80	0.00				
49.00	3.87	2.80	0.00				
50.00	3.87	2.80	0.00				
51.00	3.87	2.80	0.00				

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

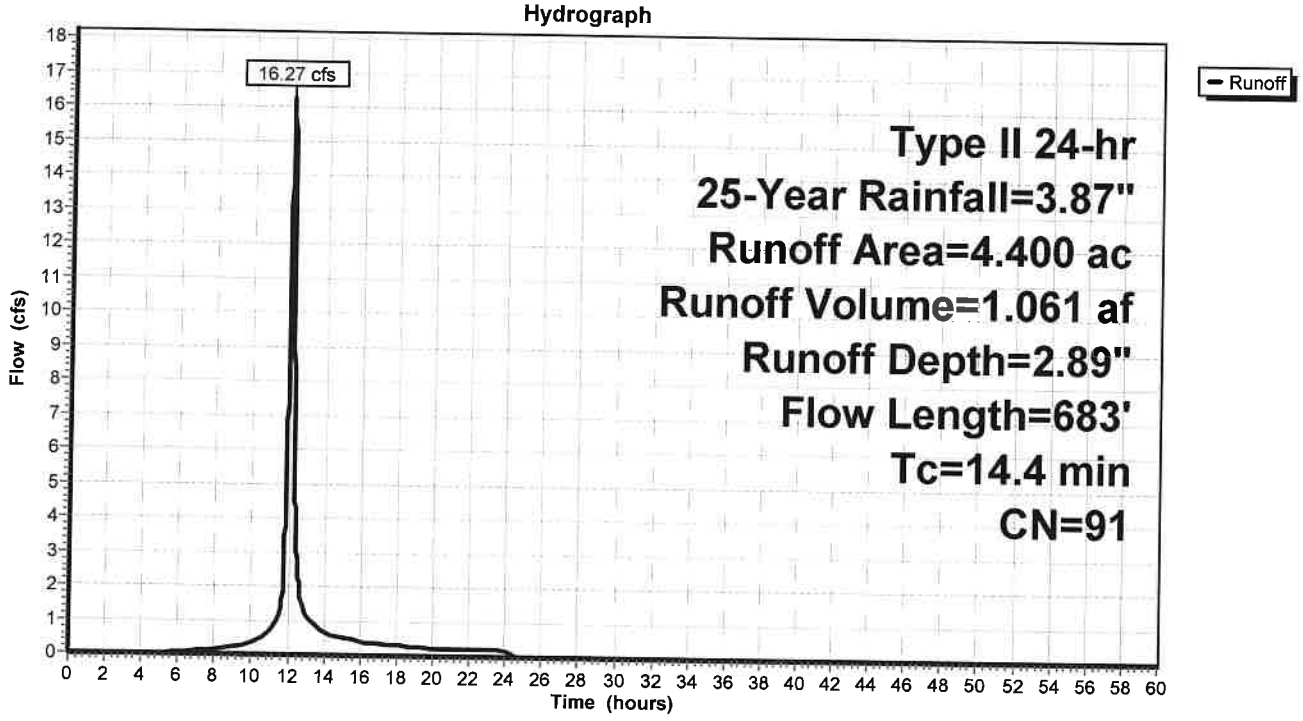
Runoff = 16.27 cfs @ 12.06 hrs, Volume= 1.061 af, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.04	0.00	0.00
2.00	0.09	0.00	0.00
3.00	0.13	0.00	0.00
4.00	0.19	0.00	0.00
5.00	0.24	0.00	0.02
6.00	0.31	0.01	0.05
7.00	0.38	0.03	0.09
8.00	0.46	0.06	0.13
9.00	0.57	0.10	0.23
10.00	0.70	0.17	0.34
11.00	0.91	0.30	0.69
12.00	2.57	1.67	**14.36**
13.00	2.99	2.06	**1.16**
14.00	3.17	2.23	0.67
15.00	3.30	2.36	0.51
16.00	3.41	2.45	0.40
17.00	3.49	2.53	0.34
18.00	3.56	2.60	0.30
19.00	3.63	2.66	0.26
20.00	3.68	2.72	0.22
21.00	3.73	2.76	0.21
22.00	3.78	2.81	0.20
23.00	3.83	2.85	0.19
24.00	**3.87**	**2.89**	0.18
25.00	3.87	2.89	0.00
26.00	3.87	2.89	0.00
27.00	3.87	2.89	0.00
28.00	3.87	2.89	0.00
29.00	3.87	2.89	0.00
30.00	3.87	2.89	0.00
31.00	3.87	2.89	0.00
32.00	3.87	2.89	0.00
33.00	3.87	2.89	0.00
34.00	3.87	2.89	0.00
35.00	3.87	2.89	0.00
36.00	3.87	2.89	0.00
37.00	3.87	2.89	0.00
38.00	3.87	2.89	0.00
39.00	3.87	2.89	0.00
40.00	3.87	2.89	0.00
41.00	3.87	2.89	0.00
42.00	3.87	2.89	0.00
43.00	3.87	2.89	0.00
44.00	3.87	2.89	0.00
45.00	3.87	2.89	0.00
46.00	3.87	2.89	0.00
47.00	3.87	2.89	0.00
48.00	3.87	2.89	0.00
49.00	3.87	2.89	0.00
50.00	3.87	2.89	0.00
51.00	3.87	2.89	0.00
52.00	3.87	2.89	0.00
53.00	3.87	2.89	0.00
54.00	3.87	2.89	0.00
55.00	3.87	2.89	0.00
56.00	3.87	2.89	0.00
57.00	3.87	2.89	0.00
58.00	3.87	2.89	0.00
59.00	3.87	2.89	0.00
60.00	3.87	2.89	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 2.80" for 25-Year event
Inflow = 22.74 cfs @ 12.05 hrs, Volume= 1.421 af
Outflow = 21.73 cfs @ 12.08 hrs, Volume= 1.421 af, Atten= 4%, Lag= 2.0 min
Primary = 2.89 cfs @ 12.08 hrs, Volume= 0.934 af
Secondary = 18.84 cfs @ 12.08 hrs, Volume= 0.487 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.11' @ 12.08 hrs Surf.Area= 10,069 sf Storage= 10,375 cf

Plug-Flow detention time= 127.9 min calculated for 1.421 af (100% of inflow)
Center-of-Mass det. time= 128.1 min (931.5 - 803.4)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

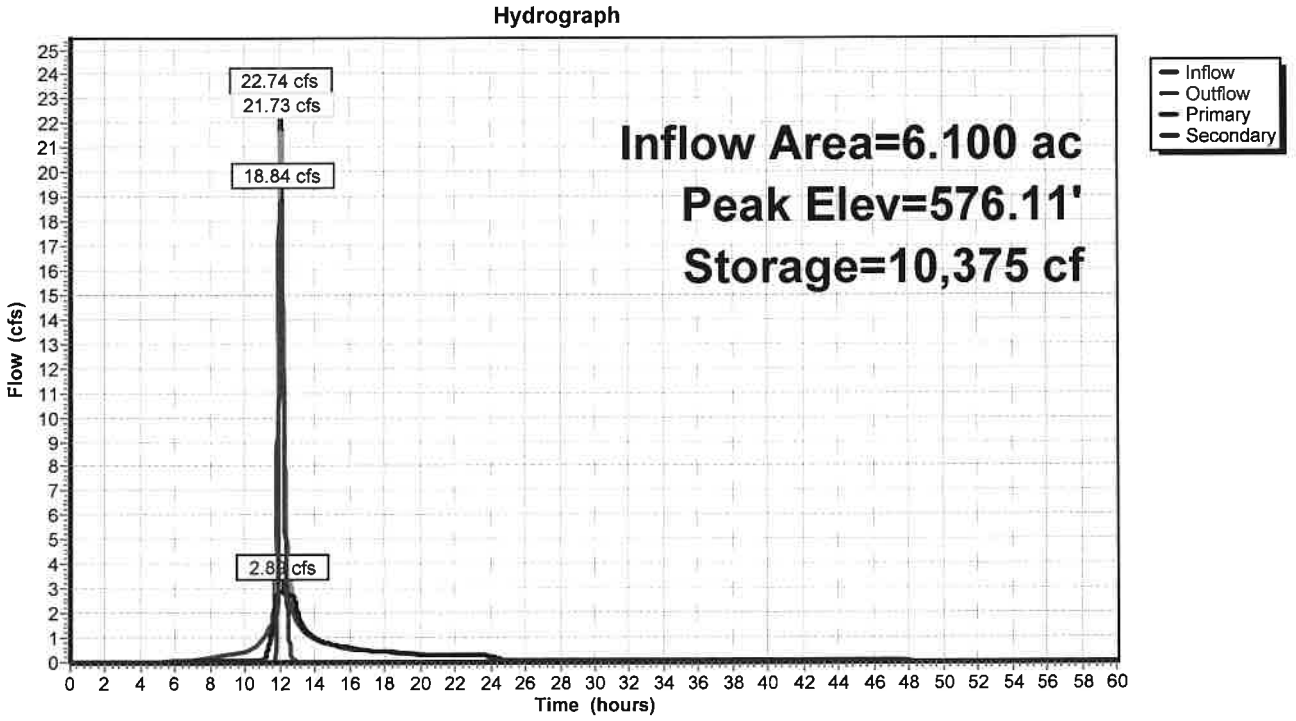
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.89 cfs @ 12.08 hrs HW=576.11' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.89 cfs @ 8.27 fps)
  └**2=Grate** (Passes < 5.25 cfs potential flow)
  └**3=Exfiltration** (Passes < 0.06 cfs potential flow)

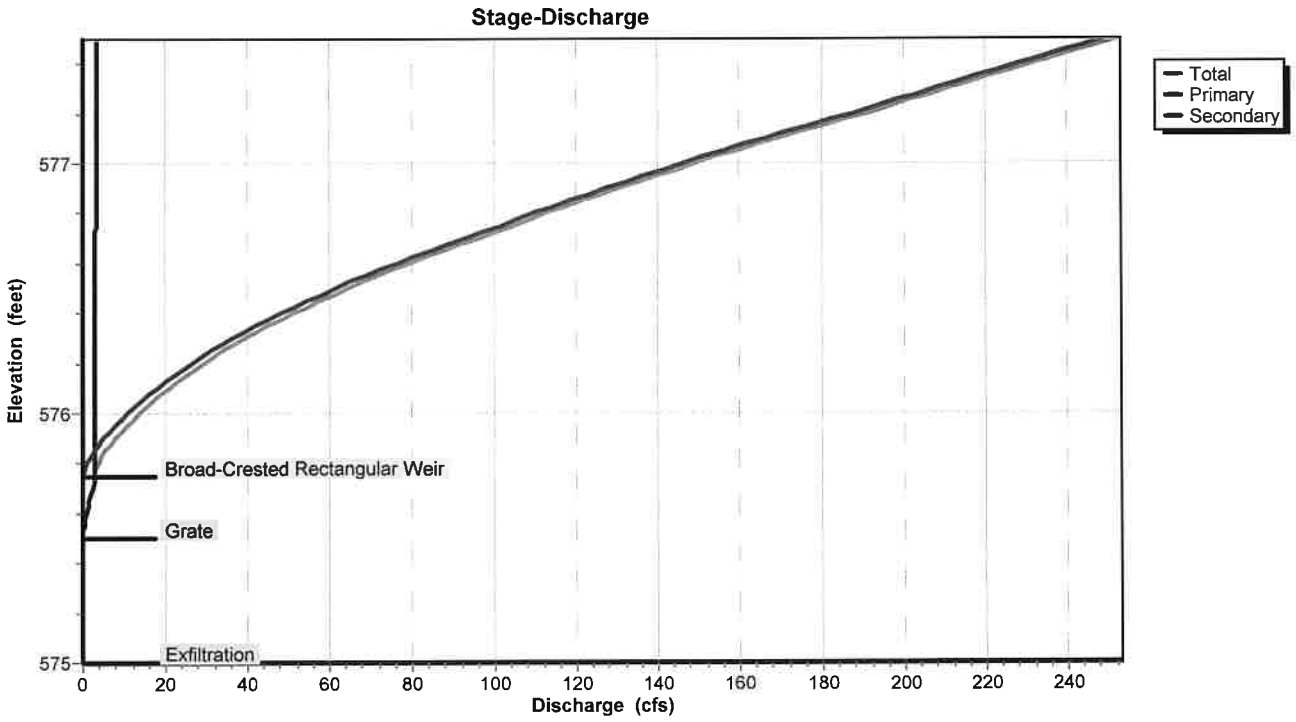
Secondary OutFlow Max=18.83 cfs @ 12.08 hrs HW=576.11' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 18.83 cfs @ 1.75 fps)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

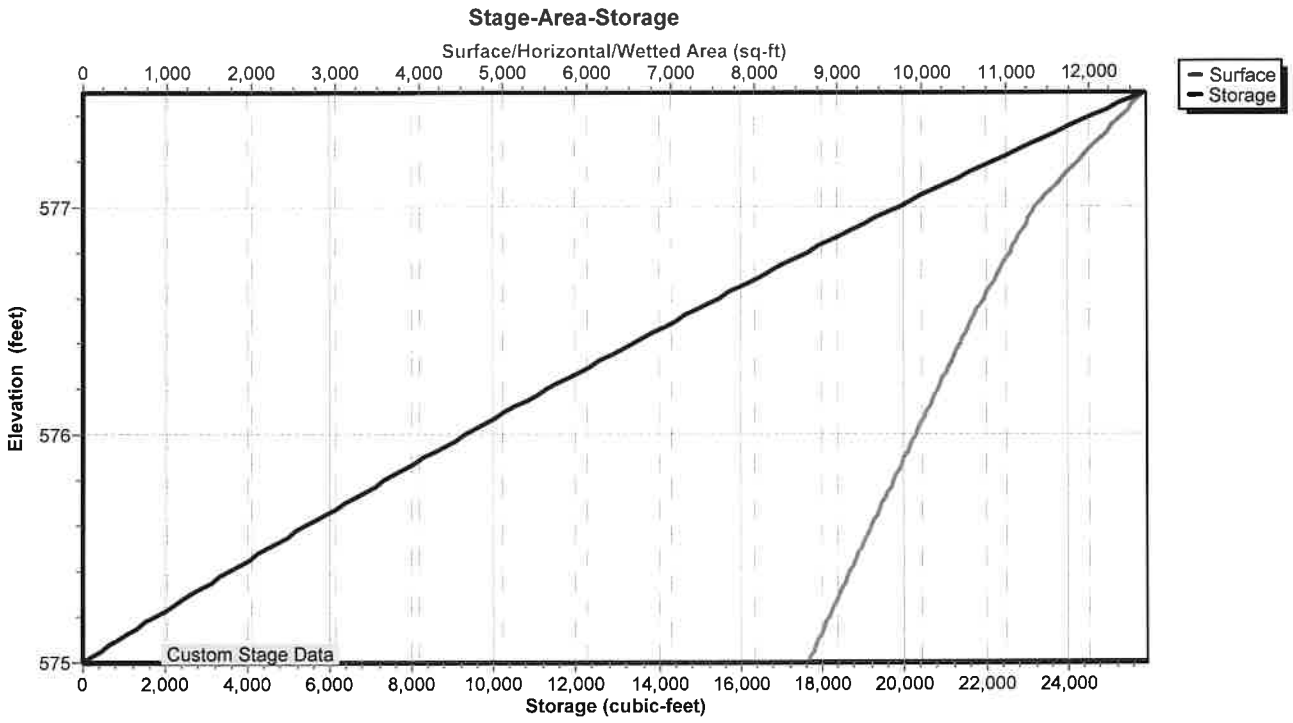


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.05	75	575.01	0.02	0.02	0.00
8.00	0.16	510	575.06	0.05	0.05	0.00
10.00	0.43	2,153	575.24	0.05	0.05	0.00
12.00	**20.75**	**9,748**	**576.05**	**16.99**	**2.86**	**14.14**
14.00	**0.90**	**5,469**	**575.61**	**1.00**	**1.00**	**0.00**
16.00	0.54	5,148	575.57	0.58	0.58	0.00
18.00	0.41	5,009	575.56	0.43	0.43	0.00
20.00	0.30	4,900	575.54	0.32	0.32	0.00
22.00	0.27	4,847	575.54	0.28	0.28	0.00
24.00	0.25	4,821	575.54	0.25	0.25	0.00
26.00	0.00	4,285	575.48	0.06	0.06	0.00
28.00	0.00	3,889	575.44	0.05	0.05	0.00
30.00	0.00	3,497	575.39	0.05	0.05	0.00
32.00	0.00	3,108	575.35	0.05	0.05	0.00
34.00	0.00	2,722	575.31	0.05	0.05	0.00
36.00	0.00	2,339	575.27	0.05	0.05	0.00
38.00	0.00	1,960	575.22	0.05	0.05	0.00
40.00	0.00	1,584	575.18	0.05	0.05	0.00
42.00	0.00	1,211	575.14	0.05	0.05	0.00
44.00	0.00	842	575.10	0.05	0.05	0.00
46.00	0.00	475	575.05	0.05	0.05	0.00
48.00	0.00	134	575.02	0.03	0.03	0.00
50.00	0.00	25	575.00	0.01	0.01	0.00
52.00	0.00	5	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 4.22" for 25-Year event
Inflow = 34.94 cfs @ 12.07 hrs, Volume= 1.548 af
Outflow = 0.64 cfs @ 14.10 hrs, Volume= 1.276 af, Atten= 98%, Lag= 121.4 min
Primary = 0.64 cfs @ 14.10 hrs, Volume= 1.276 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.83' @ 14.10 hrs Surf.Area= 65,573 sf Storage= 51,963 cf

Plug-Flow detention time= 951.6 min calculated for 1.276 af (82% of inflow)
Center-of-Mass det. time= 890.6 min (1,667.8 - 777.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

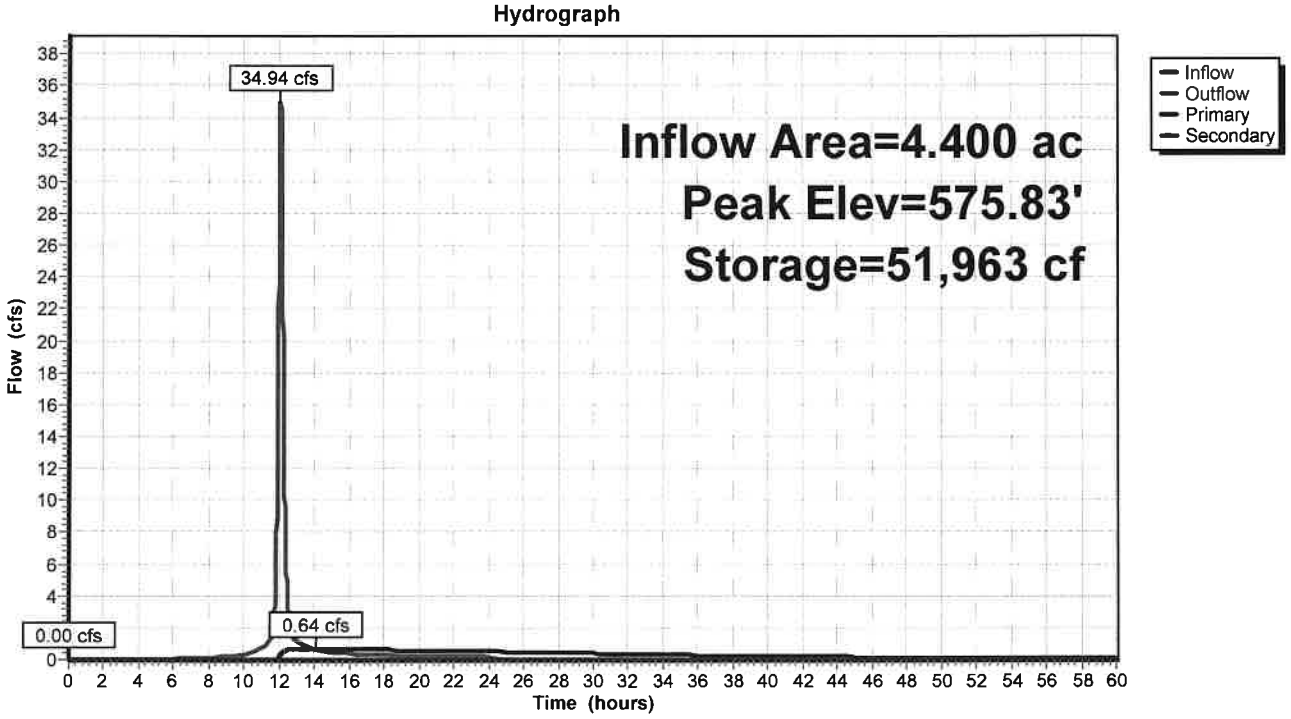
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.64 cfs @ 14.10 hrs HW=575.83' (Free Discharge)
↑—**1=12" outlet pipe** (Passes 0.64 cfs of 2.52 cfs potential flow)
↑—**2=low flow outlet pipe** (Inlet Controls 0.64 cfs @ 3.24 fps)
—**3=Grate** (Controls 0.00 cfs)

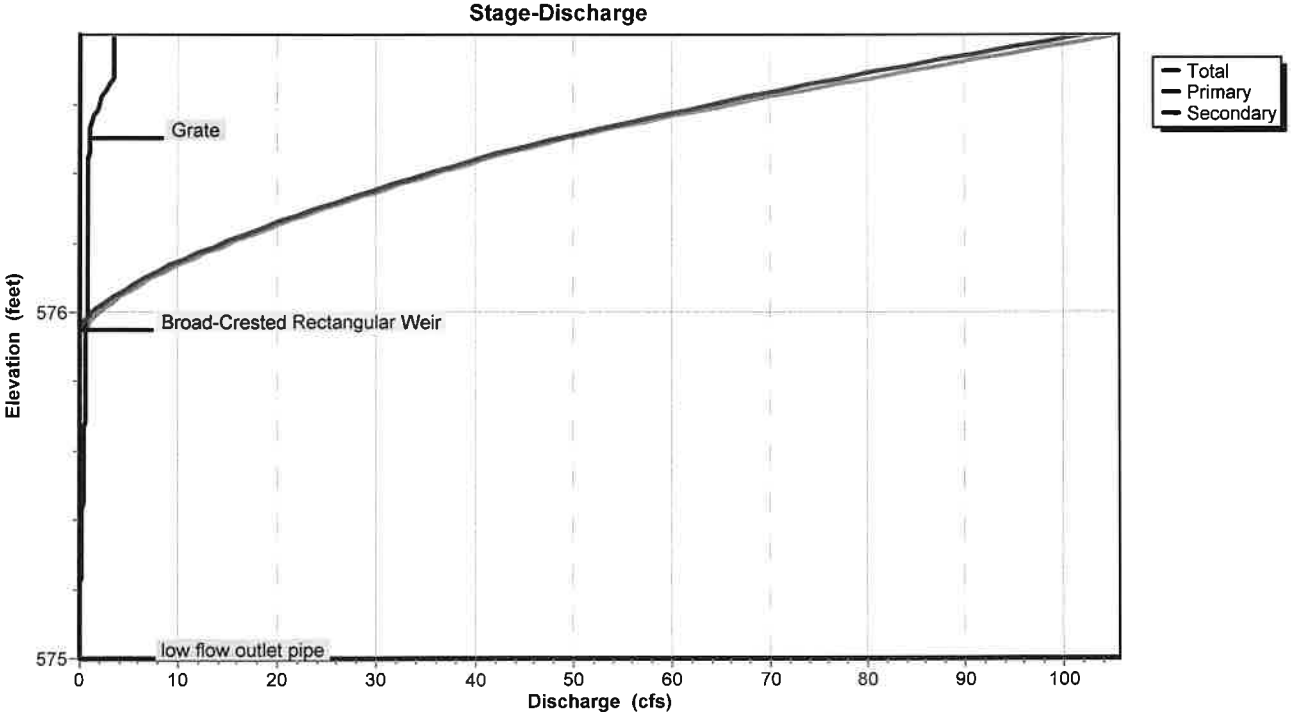
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
↑—**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

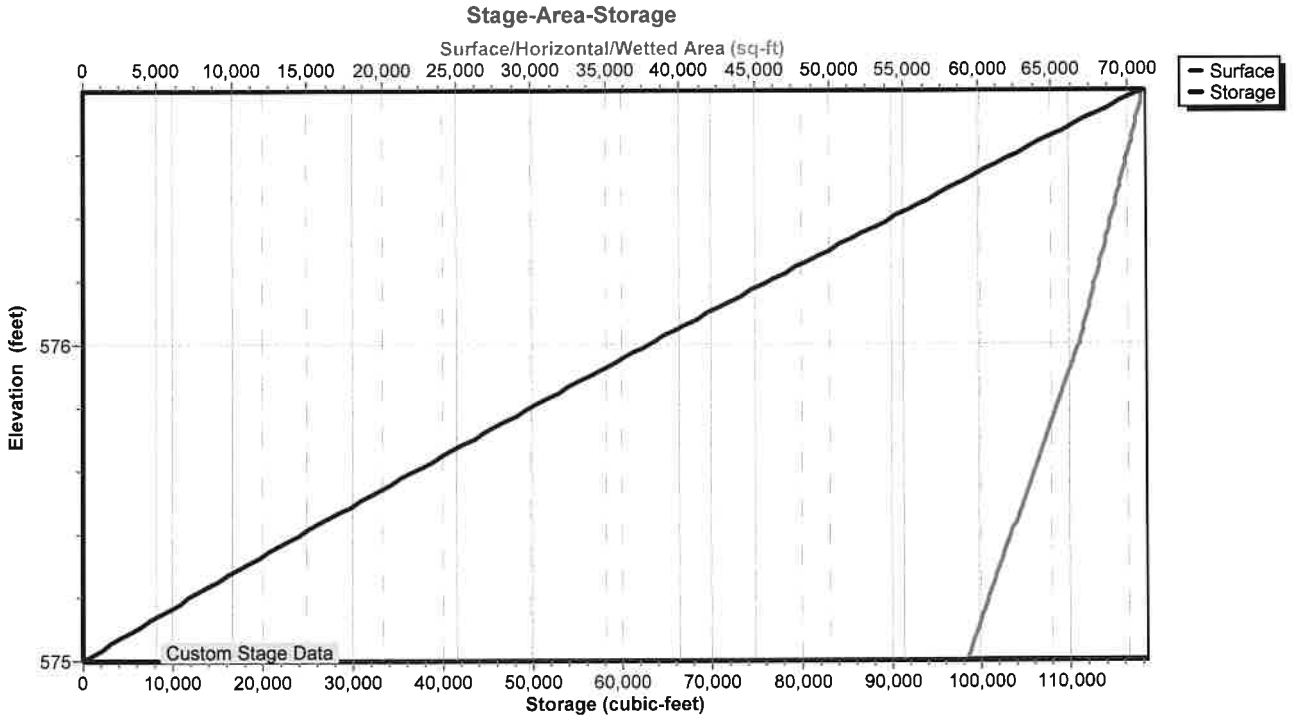


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.05	138	575.00	0.00	0.00	0.00
8.00	0.13	792	575.01	0.00	0.00	0.00
10.00	0.34	2,407	575.04	0.00	0.00	0.00
12.00	**28.50**	18,305	575.30	0.17	0.17	0.00
14.00	**0.67**	**51,959**	**575.83**	**0.64**	**0.64**	0.00
16.00	0.40	**51,083**	**575.82**	**0.63**	**0.63**	0.00
18.00	0.30	49,081	575.79	0.61	0.61	0.00
20.00	0.22	46,637	575.75	0.59	0.59	0.00
22.00	0.20	44,041	575.71	0.55	0.55	0.00
24.00	0.18	41,619	575.67	0.51	0.51	0.00
26.00	0.00	38,209	575.62	0.48	0.48	0.00
28.00	0.00	34,905	575.57	0.44	0.44	0.00
30.00	0.00	31,923	575.52	0.39	0.39	0.00
32.00	0.00	29,266	575.48	0.35	0.35	0.00
34.00	0.00	26,910	575.44	0.31	0.31	0.00
36.00	0.00	24,824	575.41	0.27	0.27	0.00
38.00	0.00	22,978	575.38	0.24	0.24	0.00
40.00	0.00	21,340	575.35	0.21	0.21	0.00
42.00	0.00	19,882	575.33	0.19	0.19	0.00
44.00	0.00	18,582	575.31	0.17	0.17	0.00
46.00	0.00	17,418	575.29	0.15	0.15	0.00
48.00	0.00	16,372	575.27	0.14	0.14	0.00
50.00	0.00	15,429	575.26	0.12	0.12	0.00
52.00	0.00	14,576	575.24	0.11	0.11	0.00
54.00	0.00	13,802	575.23	0.10	0.10	0.00
56.00	0.00	13,098	575.22	0.09	0.09	0.00
58.00	0.00	12,454	575.21	0.09	0.09	0.00
60.00	0.00	11,865	575.20	0.08	0.08	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

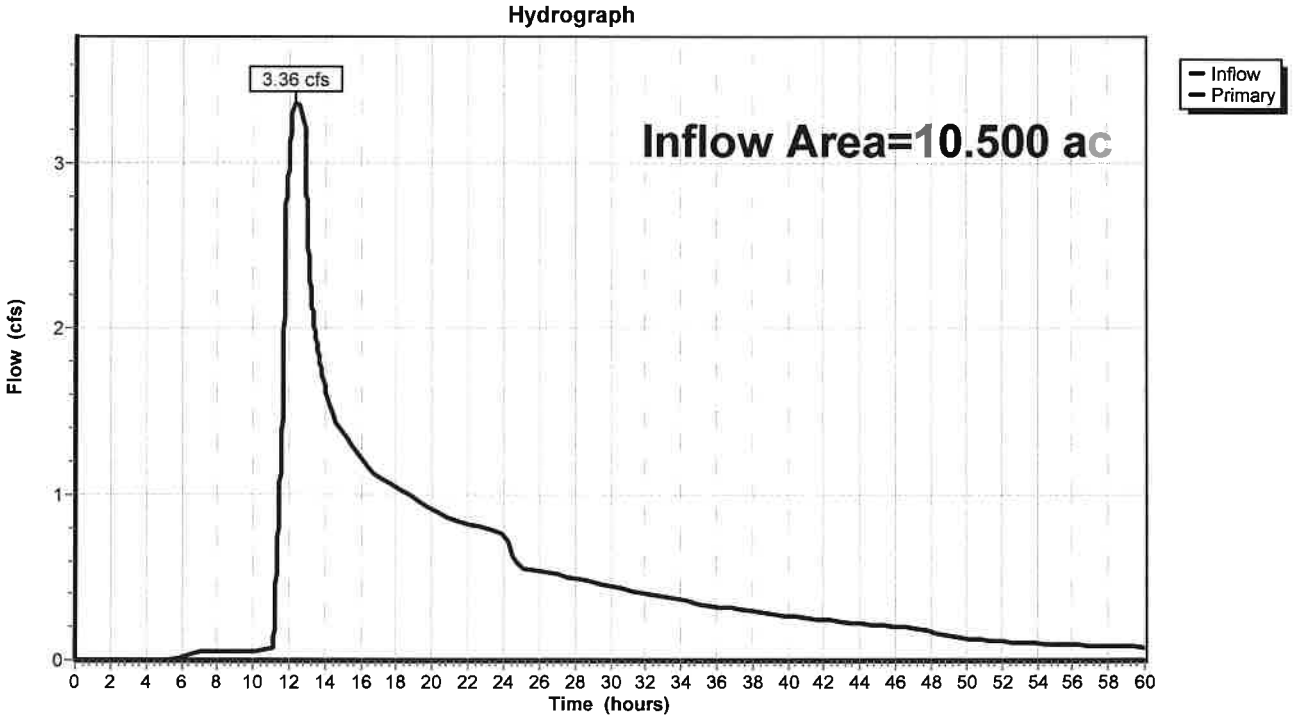
Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 2.53" for 25-Year event
Inflow = 3.36 cfs @ 12.37 hrs, Volume= 2.210 af
Primary = 3.36 cfs @ 12.37 hrs, Volume= 2.210 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.11	0.00	0.11
1.00	0.00	0.00	0.00	53.00	0.11	0.00	0.11
2.00	0.00	0.00	0.00	54.00	0.10	0.00	0.10
3.00	0.00	0.00	0.00	55.00	0.10	0.00	0.10
4.00	0.00	0.00	0.00	56.00	0.09	0.00	0.09
5.00	0.00	0.00	0.00	57.00	0.09	0.00	0.09
6.00	0.02	0.00	0.02	58.00	0.09	0.00	0.09
7.00	0.05	0.00	0.05	59.00	0.08	0.00	0.08
8.00	0.05	0.00	0.05	60.00	0.08	0.00	0.08
9.00	0.05	0.00	0.05				
10.00	0.06	0.00	0.06				
11.00	0.07	0.00	0.07				
12.00	**3.02**	0.00	**3.02**				
13.00	**2.64**	0.00	**2.64**				
14.00	1.63	0.00	1.63				
15.00	1.36	0.00	1.36				
16.00	1.21	0.00	1.21				
17.00	1.10	0.00	1.10				
18.00	1.04	0.00	1.04				
19.00	0.97	0.00	0.97				
20.00	0.91	0.00	0.91				
21.00	0.85	0.00	0.85				
22.00	0.82	0.00	0.82				
23.00	0.79	0.00	0.79				
24.00	0.76	0.00	0.76				
25.00	0.55	0.00	0.55				
26.00	0.53	0.00	0.53				
27.00	0.51	0.00	0.51				
28.00	0.49	0.00	0.49				
29.00	0.47	0.00	0.47				
30.00	0.45	0.00	0.45				
31.00	0.42	0.00	0.42				
32.00	0.40	0.00	0.40				
33.00	0.38	0.00	0.38				
34.00	0.36	0.00	0.36				
35.00	0.34	0.00	0.34				
36.00	0.33	0.00	0.33				
37.00	0.31	0.00	0.31				
38.00	0.29	0.00	0.29				
39.00	0.28	0.00	0.28				
40.00	0.27	0.00	0.27				
41.00	0.25	0.00	0.25				
42.00	0.24	0.00	0.24				
43.00	0.23	0.00	0.23				
44.00	0.22	0.00	0.22				
45.00	0.21	0.00	0.21				
46.00	0.20	0.00	0.20				
47.00	0.20	0.00	0.20				
48.00	0.17	0.00	0.17				
49.00	0.14	0.00	0.14				
50.00	0.13	0.00	0.13				
51.00	0.12	0.00	0.12				

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=3.41"
Flow Length=652' Tc=13.3 min CN=90 Runoff=27.50 cfs 1.736 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=3.52"
Flow Length=683' Tc=14.4 min CN=91 Runoff=19.58 cfs 1.290 af

Pond 1P: Bioretention Area 3 Peak Elev=576.17' Storage=10,953 cf Inflow=27.50 cfs 1.736 af
Primary=2.91 cfs 1.092 af Secondary=23.52 cfs 0.644 af Outflow=26.43 cfs 1.736 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=576.00' Storage=62,935 cf Inflow=42.93 cfs 1.933 af
Primary=0.72 cfs 1.504 af Secondary=1.25 cfs 0.131 af Outflow=1.97 cfs 1.635 af

Link 5L: Outflow (@ CB 54) Inflow=3.48 cfs 2.596 af
Primary=3.48 cfs 2.596 af

Total Runoff Area = 10.500 ac Runoff Volume = 3.026 af Average Runoff Depth = 3.46"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

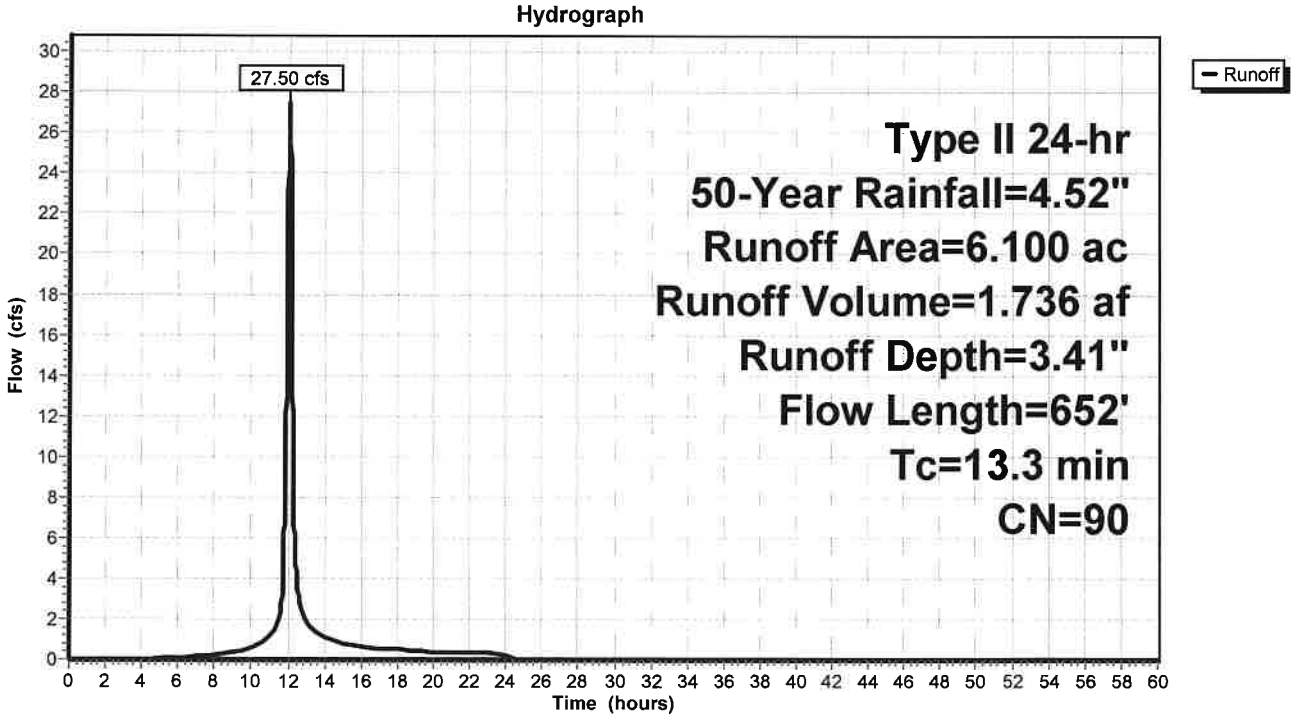
Runoff = 27.50 cfs @ 12.05 hrs, Volume= 1.736 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	4.52	3.41	0.00
1.00	0.05	0.00	0.00	53.00	4.52	3.41	0.00
2.00	0.10	0.00	0.00	54.00	4.52	3.41	0.00
3.00	0.16	0.00	0.00	55.00	4.52	3.41	0.00
4.00	0.22	0.00	0.00	56.00	4.52	3.41	0.00
5.00	0.28	0.00	0.04	57.00	4.52	3.41	0.00
6.00	0.36	0.02	0.09	58.00	4.52	3.41	0.00
7.00	0.45	0.04	0.16	59.00	4.52	3.41	0.00
8.00	0.54	0.07	0.23	60.00	4.52	3.41	0.00
9.00	0.66	0.13	0.39				
10.00	0.82	0.21	0.57				
11.00	1.06	0.36	1.16				
12.00	3.00	1.98	**25.18**				
13.00	3.49	2.44	**1.87**				
14.00	3.71	2.64	1.08				
15.00	3.86	2.78	0.83				
16.00	3.98	2.90	0.64				
17.00	4.08	2.99	0.55				
18.00	4.16	3.07	0.49				
19.00	4.24	3.15	0.42				
20.00	4.30	3.21	0.36				
21.00	4.36	3.26	0.33				
22.00	4.42	3.32	0.32				
23.00	4.47	3.37	0.31				
24.00	**4.52**	**3.41**	0.30				
25.00	4.52	3.41	0.00				
26.00	4.52	3.41	0.00				
27.00	4.52	3.41	0.00				
28.00	4.52	3.41	0.00				
29.00	4.52	3.41	0.00				
30.00	4.52	3.41	0.00				
31.00	4.52	3.41	0.00				
32.00	4.52	3.41	0.00				
33.00	4.52	3.41	0.00				
34.00	4.52	3.41	0.00				
35.00	4.52	3.41	0.00				
36.00	4.52	3.41	0.00				
37.00	4.52	3.41	0.00				
38.00	4.52	3.41	0.00				
39.00	4.52	3.41	0.00				
40.00	4.52	3.41	0.00				
41.00	4.52	3.41	0.00				
42.00	4.52	3.41	0.00				
43.00	4.52	3.41	0.00				
44.00	4.52	3.41	0.00				
45.00	4.52	3.41	0.00				
46.00	4.52	3.41	0.00				
47.00	4.52	3.41	0.00				
48.00	4.52	3.41	0.00				
49.00	4.52	3.41	0.00				
50.00	4.52	3.41	0.00				
51.00	4.52	3.41	0.00				

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

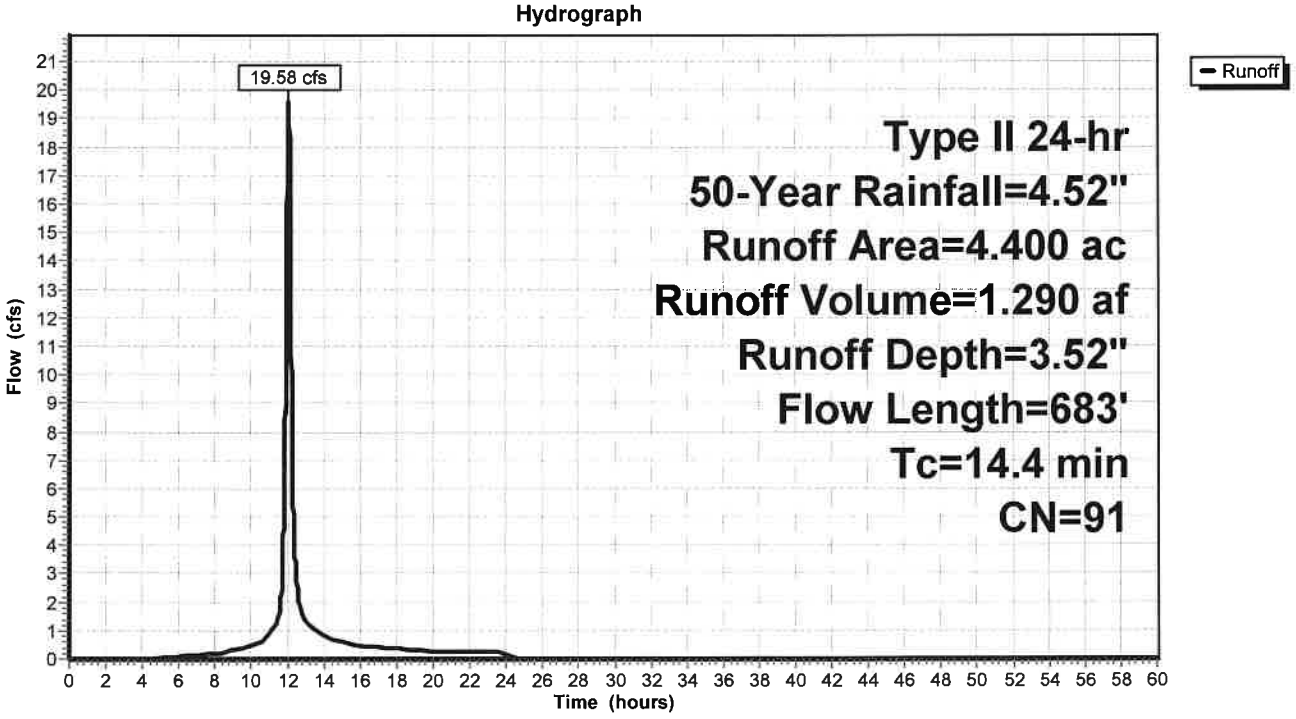
Runoff = 19.58 cfs @ 12.06 hrs, Volume= 1.290 af, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.10	0.00	0.00
3.00	0.16	0.00	0.00
4.00	0.22	0.00	0.00
5.00	0.28	0.01	0.04
6.00	0.36	0.02	0.08
7.00	0.45	0.05	0.13
8.00	0.54	0.09	0.19
9.00	0.66	0.15	0.31
10.00	0.82	0.24	0.44
11.00	1.06	0.40	0.88
12.00	3.00	2.07	**17.36**
13.00	3.49	2.53	**1.38**
14.00	3.71	2.74	0.79
15.00	3.86	2.88	0.60
16.00	3.98	3.00	0.47
17.00	4.08	3.09	0.40
18.00	4.16	3.17	0.36
19.00	4.24	3.25	0.31
20.00	4.30	3.31	0.26
21.00	4.36	3.36	0.24
22.00	4.42	3.42	0.23
23.00	4.47	3.47	0.22
24.00	**4.52**	**3.52**	0.21
25.00	4.52	3.52	0.00
26.00	4.52	3.52	0.00
27.00	4.52	3.52	0.00
28.00	4.52	3.52	0.00
29.00	4.52	3.52	0.00
30.00	4.52	3.52	0.00
31.00	4.52	3.52	0.00
32.00	4.52	3.52	0.00
33.00	4.52	3.52	0.00
34.00	4.52	3.52	0.00
35.00	4.52	3.52	0.00
36.00	4.52	3.52	0.00
37.00	4.52	3.52	0.00
38.00	4.52	3.52	0.00
39.00	4.52	3.52	0.00
40.00	4.52	3.52	0.00
41.00	4.52	3.52	0.00
42.00	4.52	3.52	0.00
43.00	4.52	3.52	0.00
44.00	4.52	3.52	0.00
45.00	4.52	3.52	0.00
46.00	4.52	3.52	0.00
47.00	4.52	3.52	0.00
48.00	4.52	3.52	0.00
49.00	4.52	3.52	0.00
50.00	4.52	3.52	0.00
51.00	4.52	3.52	0.00
52.00	4.52	3.52	0.00
53.00	4.52	3.52	0.00
54.00	4.52	3.52	0.00
55.00	4.52	3.52	0.00
56.00	4.52	3.52	0.00
57.00	4.52	3.52	0.00
58.00	4.52	3.52	0.00
59.00	4.52	3.52	0.00
60.00	4.52	3.52	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 3.41" for 50-Year event
Inflow = 27.50 cfs @ 12.05 hrs, Volume= 1.736 af
Outflow = 26.43 cfs @ 12.08 hrs, Volume= 1.736 af, Atten= 4%, Lag= 1.9 min
Primary = 2.91 cfs @ 12.08 hrs, Volume= 1.092 af
Secondary = 23.52 cfs @ 12.08 hrs, Volume= 0.644 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.17' @ 12.08 hrs Surf.Area= 10,144 sf Storage= 10,953 cf

Plug-Flow detention time= 109.3 min calculated for 1.736 af (100% of inflow)
Center-of-Mass det. time= 109.3 min (907.1 - 797.8)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

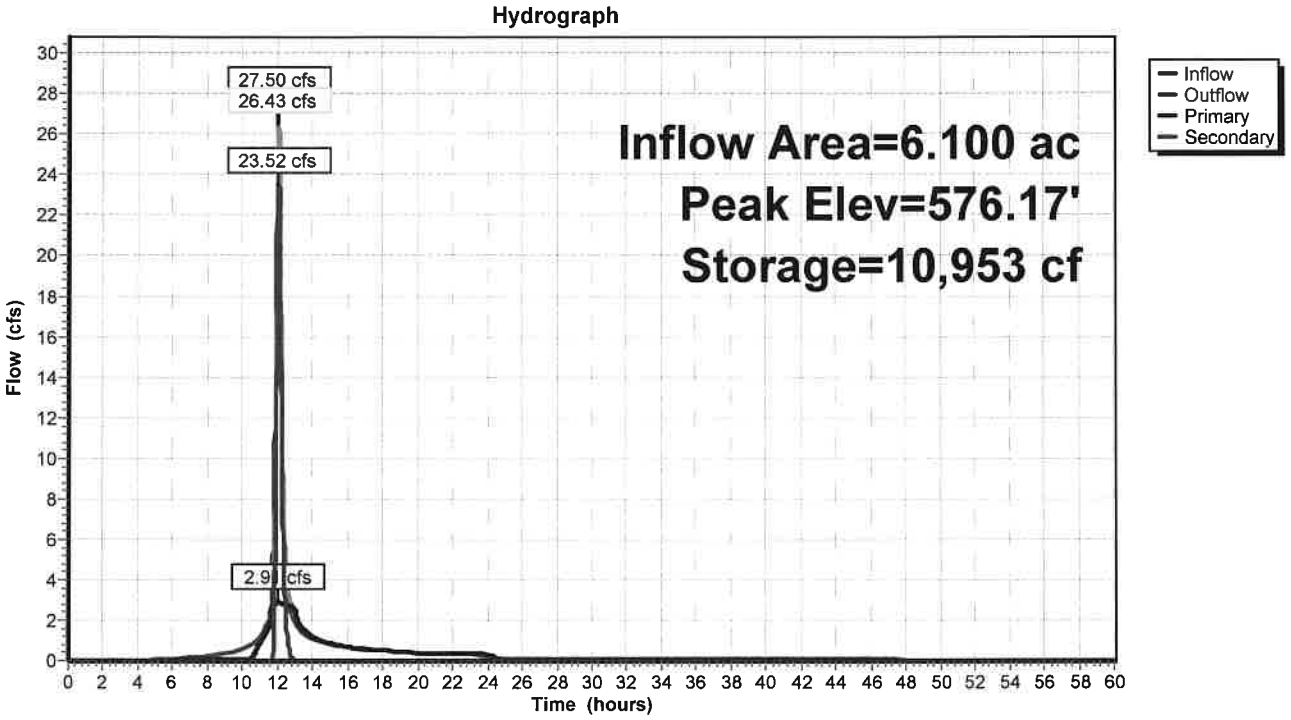
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.91 cfs @ 12.08 hrs HW=576.17' (Free Discharge)
└─**1=8" pipe** (Barrel Controls 2.91 cfs @ 8.34 fps)
  ├─**2=Grate** (Passes < 5.49 cfs potential flow)
  └─**3=Exfiltration** (Passes < 0.06 cfs potential flow)

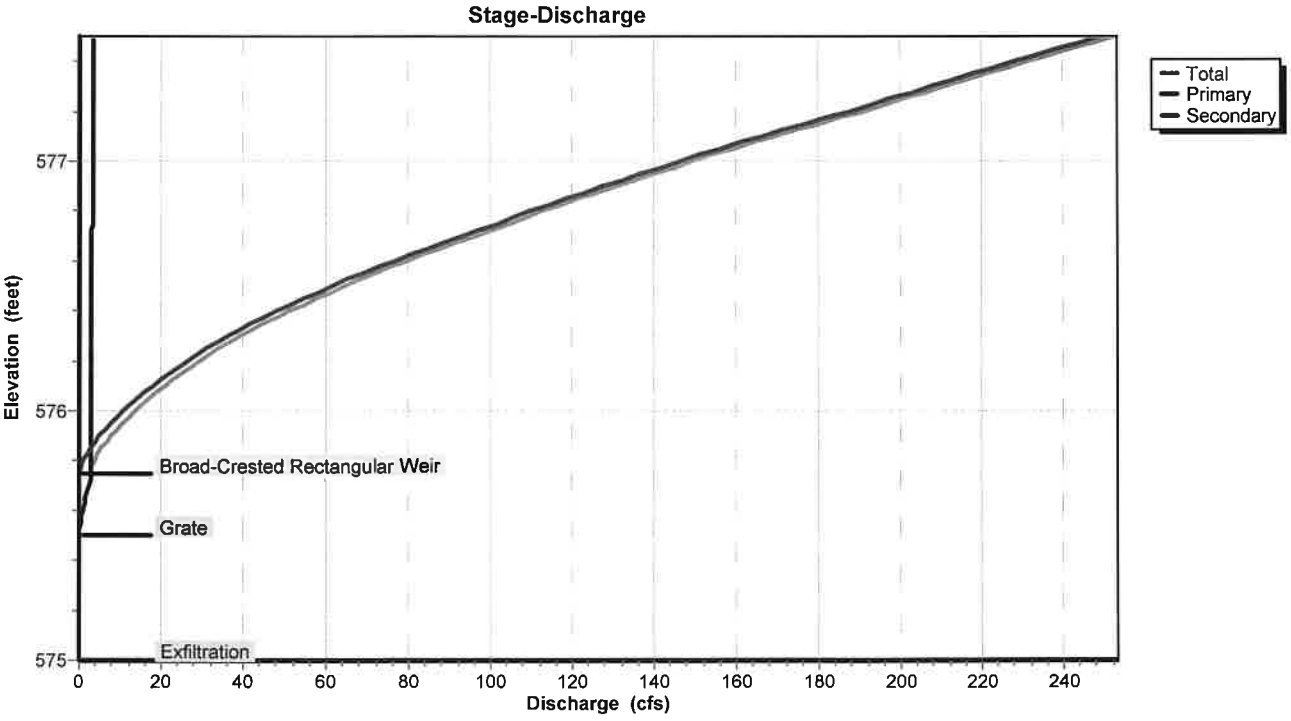
Secondary OutFlow Max=23.50 cfs @ 12.08 hrs HW=576.17' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 23.50 cfs @ 1.88 fps)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

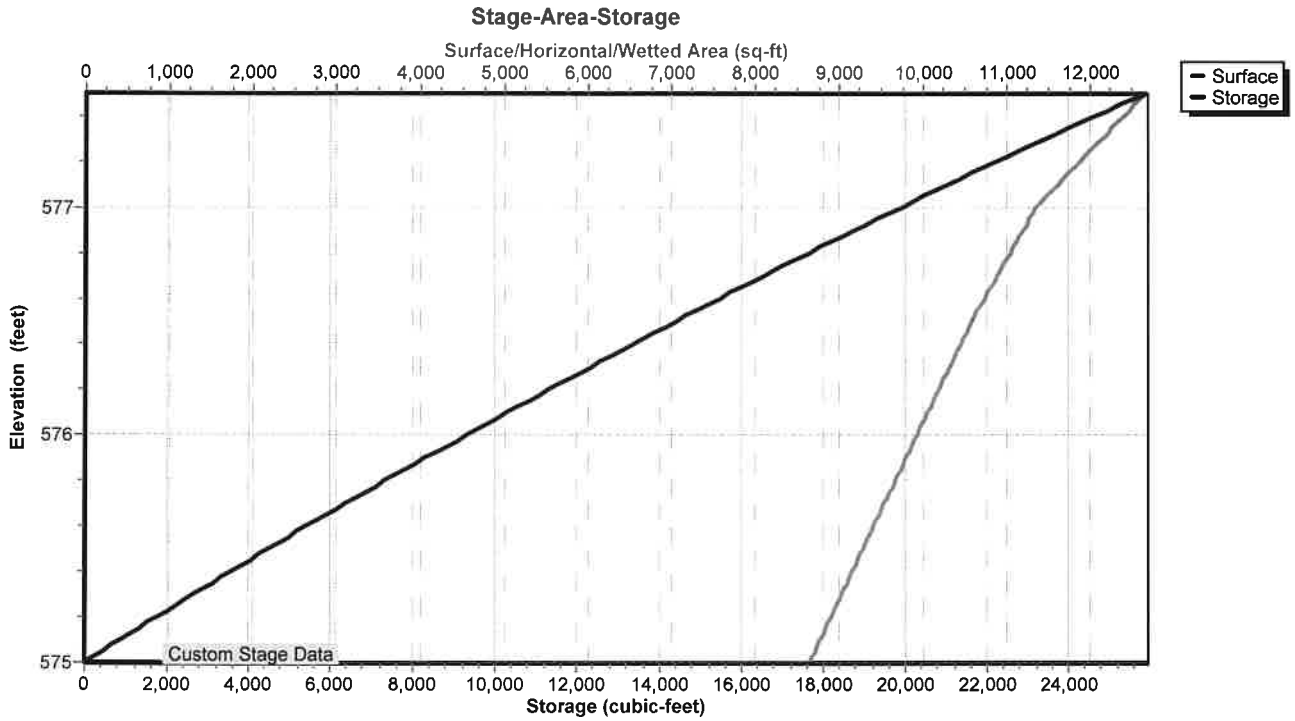


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.09	180	575.02	0.04	0.04	0.00
8.00	0.23	959	575.11	0.05	0.05	0.00
10.00	0.57	3,333	575.38	0.05	0.05	0.00
12.00	**25.18**	**10,302**	**576.10**	**21.15**	**2.88**	**18.27**
14.00	**1.08**	**5,594**	**575.62**	**1.18**	**1.18**	**0.00**
16.00	0.64	5,233	575.58	0.68	0.68	0.00
18.00	0.49	5,081	575.56	0.51	0.51	0.00
20.00	0.36	4,961	575.55	0.38	0.38	0.00
22.00	0.32	4,907	575.55	0.33	0.33	0.00
24.00	0.30	4,876	575.54	0.30	0.30	0.00
26.00	0.00	4,297	575.48	0.06	0.06	0.00
28.00	0.00	3,900	575.44	0.05	0.05	0.00
30.00	0.00	3,508	575.39	0.05	0.05	0.00
32.00	0.00	3,118	575.35	0.05	0.05	0.00
34.00	0.00	2,732	575.31	0.05	0.05	0.00
36.00	0.00	2,350	575.27	0.05	0.05	0.00
38.00	0.00	1,970	575.22	0.05	0.05	0.00
40.00	0.00	1,594	575.18	0.05	0.05	0.00
42.00	0.00	1,221	575.14	0.05	0.05	0.00
44.00	0.00	852	575.10	0.05	0.05	0.00
46.00	0.00	486	575.06	0.05	0.05	0.00
48.00	0.00	140	575.02	0.03	0.03	0.00
50.00	0.00	26	575.00	0.01	0.01	0.00
52.00	0.00	5	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 5.27" for 50-Year event
Inflow = 42.93 cfs @ 12.07 hrs, Volume= 1.933 af
Outflow = 1.97 cfs @ 12.73 hrs, Volume= 1.635 af, Atten= 95%, Lag= 39.8 min
Primary = 0.72 cfs @ 12.73 hrs, Volume= 1.504 af
Secondary = 1.25 cfs @ 12.73 hrs, Volume= 0.131 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.00' @ 12.73 hrs Surf.Area= 66,838 sf Storage= 62,935 cf

Plug-Flow detention time= 900.4 min calculated for 1.635 af (85% of inflow)
Center-of-Mass det. time= 844.0 min (1,616.3 - 772.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

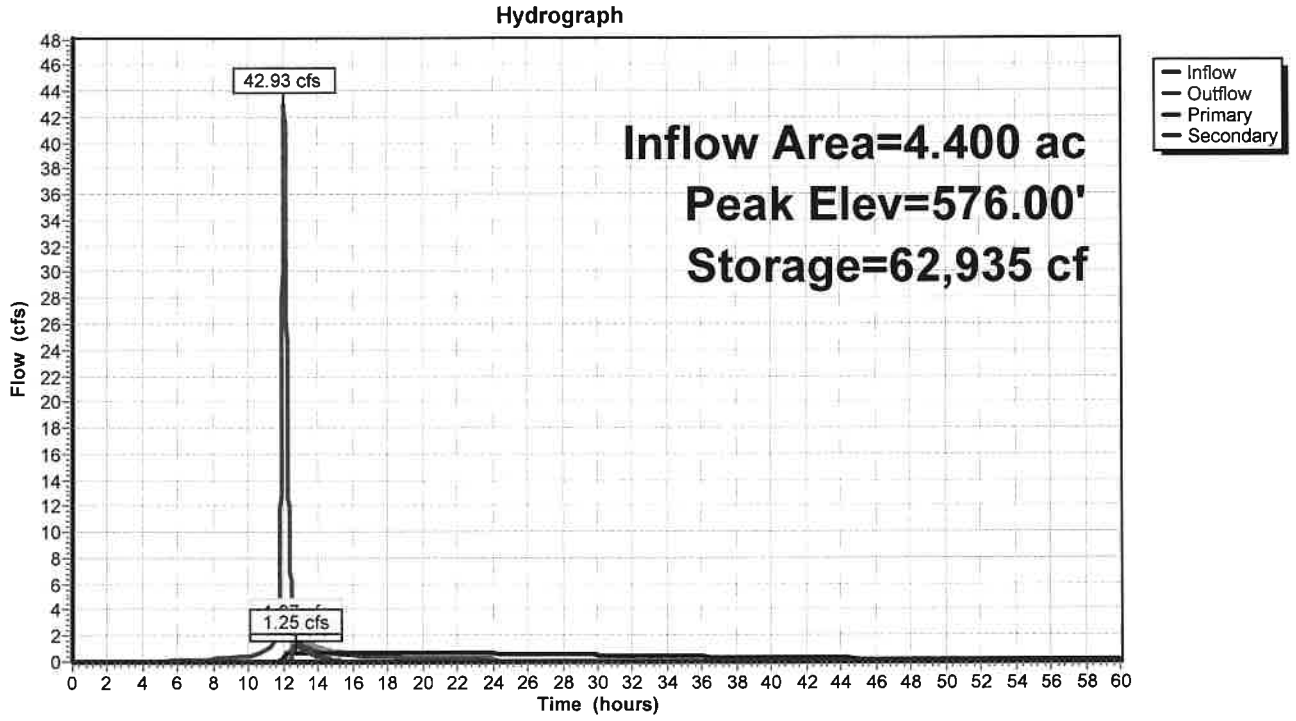
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.72 cfs @ 12.73 hrs HW=576.00' (Free Discharge)
↑—**1=12" outlet pipe** (Passes 0.72 cfs of 2.71 cfs potential flow)
↑—**2=low flow outlet pipe** (Inlet Controls 0.72 cfs @ 3.68 fps)
—**3=Grate** (Controls 0.00 cfs)

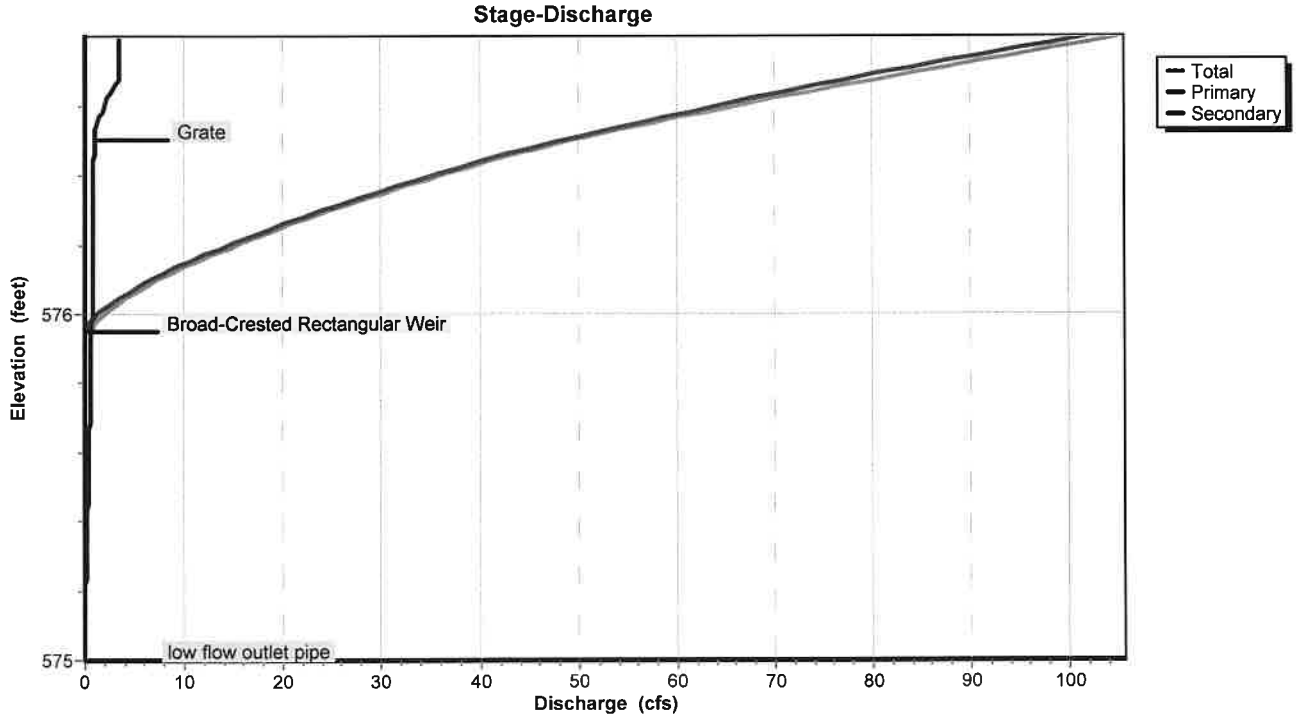
Secondary OutFlow Max=1.25 cfs @ 12.73 hrs HW=576.00' (Free Discharge)
↑—**4=Broad-Crested Rectangular Weir** (Weir Controls 1.25 cfs @ 0.64 fps)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

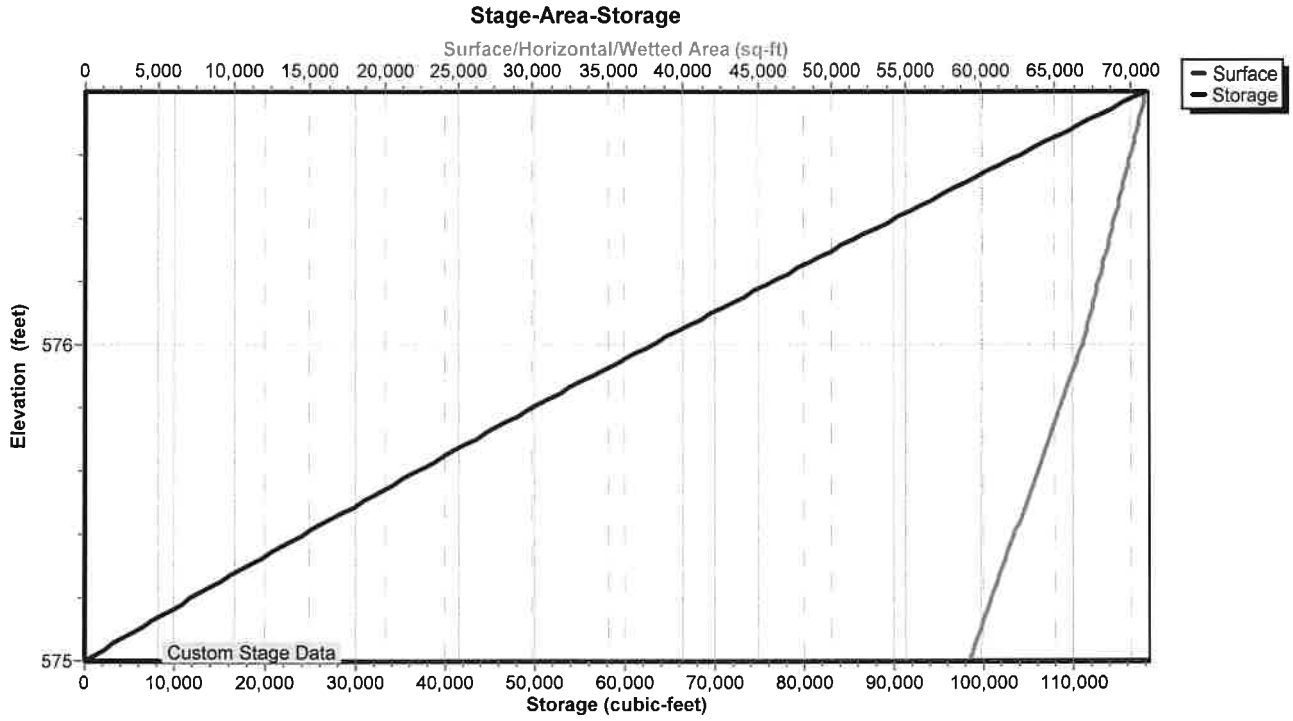


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	1	575.00	0.00	0.00	0.00
6.00	0.08	300	575.01	0.00	0.00	0.00
8.00	0.19	1,265	575.02	0.00	0.00	0.00
10.00	0.44	3,420	575.06	0.01	0.01	0.00
12.00	**35.63**	**24,163**	**575.40**	**0.26**	**0.26**	**0.00**
14.00	**0.79**	**61,204**	**575.97**	**1.11**	**0.71**	**0.40**
16.00	0.47	59,536	575.95	0.70	0.70	0.00
18.00	0.36	57,495	575.92	0.68	0.68	0.00
20.00	0.26	54,889	575.88	0.66	0.66	0.00
22.00	0.23	51,975	575.83	0.64	0.64	0.00
24.00	0.21	49,094	575.79	0.61	0.61	0.00
26.00	0.00	45,010	575.73	0.56	0.56	0.00
28.00	0.00	41,189	575.67	0.50	0.50	0.00
30.00	0.00	37,665	575.61	0.47	0.47	0.00
32.00	0.00	34,410	575.56	0.43	0.43	0.00
34.00	0.00	31,481	575.51	0.38	0.38	0.00
36.00	0.00	28,873	575.47	0.34	0.34	0.00
38.00	0.00	26,562	575.44	0.30	0.30	0.00
40.00	0.00	24,517	575.40	0.27	0.27	0.00
42.00	0.00	22,705	575.37	0.24	0.24	0.00
44.00	0.00	21,097	575.35	0.21	0.21	0.00
46.00	0.00	19,666	575.33	0.19	0.19	0.00
48.00	0.00	18,389	575.30	0.17	0.17	0.00
50.00	0.00	17,245	575.29	0.15	0.15	0.00
52.00	0.00	16,216	575.27	0.14	0.14	0.00
54.00	0.00	15,288	575.25	0.12	0.12	0.00
56.00	0.00	14,449	575.24	0.11	0.11	0.00
58.00	0.00	13,686	575.23	0.10	0.10	0.00
60.00	0.00	12,992	575.22	0.09	0.09	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

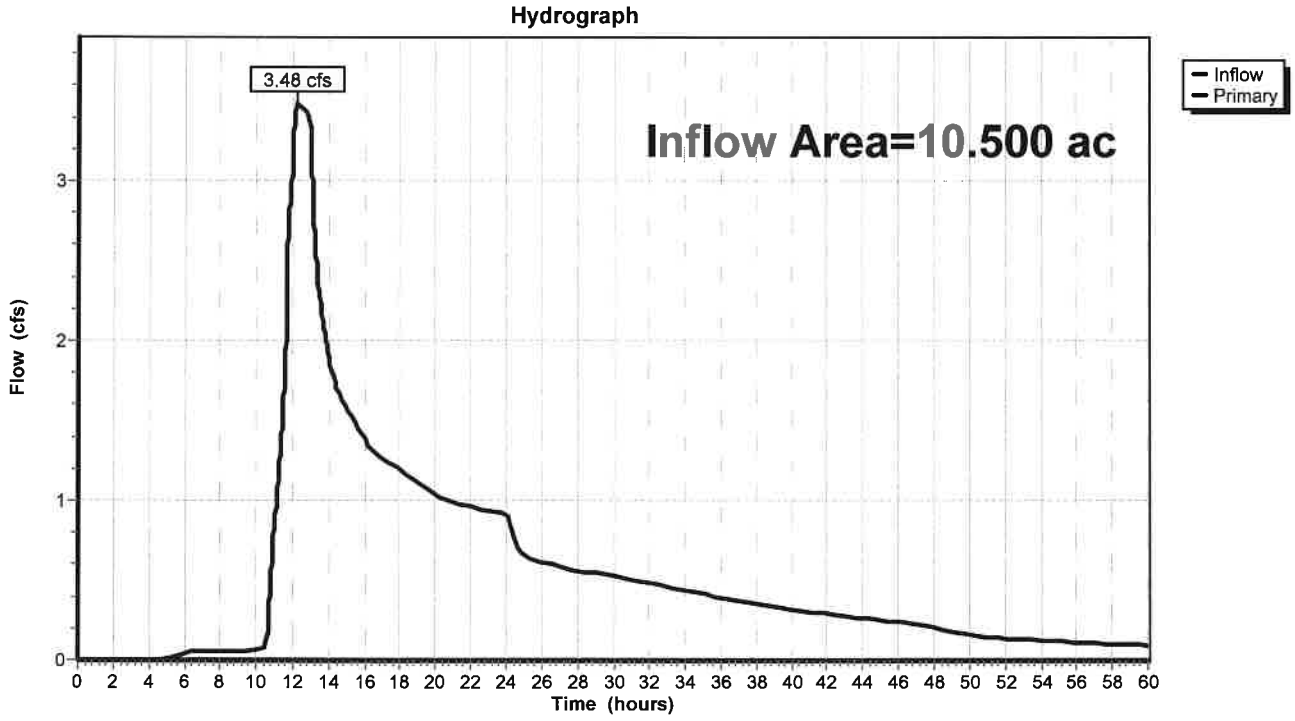
Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 2.97" for 50-Year event
Inflow = 3.48 cfs @ 12.21 hrs, Volume= 2.596 af
Primary = 3.48 cfs @ 12.21 hrs, Volume= 2.596 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.14	0.00	0.14
1.00	0.00	0.00	0.00	53.00	0.13	0.00	0.13
2.00	0.00	0.00	0.00	54.00	0.12	0.00	0.12
3.00	0.00	0.00	0.00	55.00	0.12	0.00	0.12
4.00	0.00	0.00	0.00	56.00	0.11	0.00	0.11
5.00	0.01	0.00	0.01	57.00	0.11	0.00	0.11
6.00	0.04	0.00	0.04	58.00	0.10	0.00	0.10
7.00	0.05	0.00	0.05	59.00	0.10	0.00	0.10
8.00	0.05	0.00	0.05	60.00	0.09	0.00	0.09
9.00	0.06	0.00	0.06				
10.00	0.06	0.00	0.06				
11.00	0.88	0.00	0.88				
12.00	**3.14**	0.00	**3.14**				
13.00	**3.25**	0.00	**3.25**				
14.00	1.89	0.00	1.89				
15.00	1.57	0.00	1.57				
16.00	1.38	0.00	1.38				
17.00	1.26	0.00	1.26				
18.00	1.19	0.00	1.19				
19.00	1.11	0.00	1.11				
20.00	1.04	0.00	1.04				
21.00	0.99	0.00	0.99				
22.00	0.96	0.00	0.96				
23.00	0.94	0.00	0.94				
24.00	0.91	0.00	0.91				
25.00	0.65	0.00	0.65				
26.00	0.62	0.00	0.62				
27.00	0.59	0.00	0.59				
28.00	0.56	0.00	0.56				
29.00	0.55	0.00	0.55				
30.00	0.53	0.00	0.53				
31.00	0.51	0.00	0.51				
32.00	0.48	0.00	0.48				
33.00	0.46	0.00	0.46				
34.00	0.44	0.00	0.44				
35.00	0.42	0.00	0.42				
36.00	0.39	0.00	0.39				
37.00	0.37	0.00	0.37				
38.00	0.35	0.00	0.35				
39.00	0.34	0.00	0.34				
40.00	0.32	0.00	0.32				
41.00	0.30	0.00	0.30				
42.00	0.29	0.00	0.29				
43.00	0.27	0.00	0.27				
44.00	0.26	0.00	0.26				
45.00	0.25	0.00	0.25				
46.00	0.24	0.00	0.24				
47.00	0.23	0.00	0.23				
48.00	0.20	0.00	0.20				
49.00	0.17	0.00	0.17				
50.00	0.16	0.00	0.16				
51.00	0.15	0.00	0.15				

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=4.15"
Flow Length=652' Tc=13.3 min CN=90 Runoff=33.05 cfs 2.108 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=4.25"
Flow Length=683' Tc=14.4 min CN=91 Runoff=23.44 cfs 1.560 af

Pond 1P: Bioretention Area 3 Peak Elev=576.23' Storage=11,585 cf Inflow=33.05 cfs 2.108 af
Primary=2.94 cfs 1.275 af Secondary=28.98 cfs 0.833 af Outflow=31.92 cfs 2.108 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=576.11' Storage=70,722 cf Inflow=52.24 cfs 2.392 af
Primary=0.78 cfs 1.554 af Secondary=7.80 cfs 0.534 af Outflow=8.57 cfs 2.088 af

Link 5L: Outflow (@ CB 54) Inflow=3.60 cfs 2.829 af
Primary=3.60 cfs 2.829 af

Total Runoff Area = 10.500 ac Runoff Volume = 3.668 af Average Runoff Depth = 4.19"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

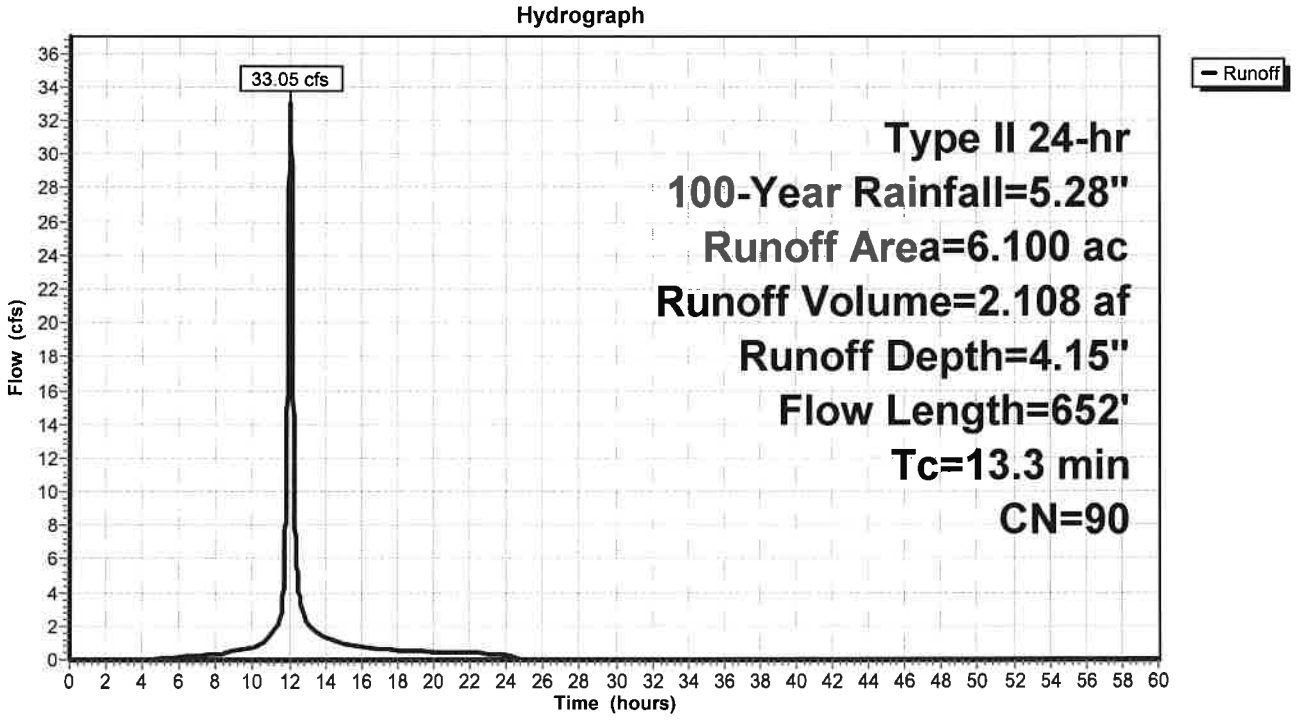
Runoff = 33.05 cfs @ 12.05 hrs, Volume= 2.108 af, Depth= 4.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.18	0.00	0.00
4.00	0.25	0.00	0.01
5.00	0.33	0.01	0.08
6.00	0.42	0.03	0.15
7.00	0.52	0.06	0.23
8.00	0.63	0.11	0.32
9.00	0.78	0.18	0.52
10.00	0.96	0.29	0.74
11.00	1.24	0.49	1.47
12.00	3.50	2.45	**30.36**
13.00	4.08	2.99	**2.21**
14.00	4.33	3.23	1.27
15.00	4.51	3.40	0.98
16.00	4.65	3.54	0.76
17.00	4.76	3.65	0.66
18.00	4.86	3.74	0.58
19.00	4.95	3.83	0.50
20.00	5.03	3.90	0.42
21.00	5.09	3.97	0.40
22.00	5.16	4.03	0.38
23.00	5.22	4.09	0.36
24.00	**5.28**	**4.15**	0.35
25.00	5.28	4.15	0.00
26.00	5.28	4.15	0.00
27.00	5.28	4.15	0.00
28.00	5.28	4.15	0.00
29.00	5.28	4.15	0.00
30.00	5.28	4.15	0.00
31.00	5.28	4.15	0.00
32.00	5.28	4.15	0.00
33.00	5.28	4.15	0.00
34.00	5.28	4.15	0.00
35.00	5.28	4.15	0.00
36.00	5.28	4.15	0.00
37.00	5.28	4.15	0.00
38.00	5.28	4.15	0.00
39.00	5.28	4.15	0.00
40.00	5.28	4.15	0.00
41.00	5.28	4.15	0.00
42.00	5.28	4.15	0.00
43.00	5.28	4.15	0.00
44.00	5.28	4.15	0.00
45.00	5.28	4.15	0.00
46.00	5.28	4.15	0.00
47.00	5.28	4.15	0.00
48.00	5.28	4.15	0.00
49.00	5.28	4.15	0.00
50.00	5.28	4.15	0.00
51.00	5.28	4.15	0.00
52.00	5.28	4.15	0.00
53.00	5.28	4.15	0.00
54.00	5.28	4.15	0.00
55.00	5.28	4.15	0.00
56.00	5.28	4.15	0.00
57.00	5.28	4.15	0.00
58.00	5.28	4.15	0.00
59.00	5.28	4.15	0.00
60.00	5.28	4.15	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

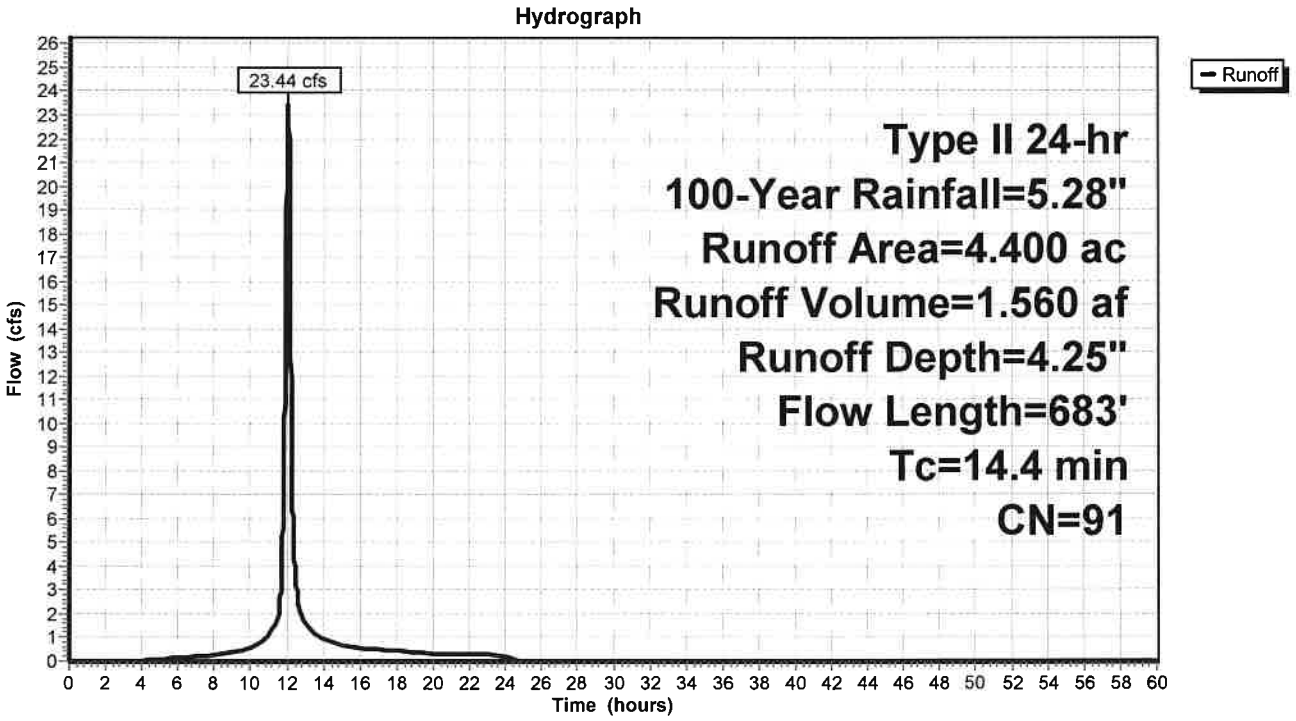
Runoff = 23.44 cfs @ 12.06 hrs, Volume= 1.560 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.18	0.00	0.00
4.00	0.25	0.00	0.02
5.00	0.33	0.02	0.07
6.00	0.42	0.04	0.13
7.00	0.52	0.08	0.19
8.00	0.63	0.13	0.25
9.00	0.78	0.21	0.41
10.00	0.96	0.33	0.57
11.00	1.24	0.54	1.10
12.00	3.50	2.54	**20.85**
13.00	4.08	3.09	**1.64**
14.00	4.33	3.33	0.94
15.00	4.51	3.50	0.71
16.00	4.65	3.64	0.56
17.00	4.76	3.75	0.48
18.00	4.86	3.85	0.42
19.00	4.95	3.93	0.36
20.00	5.03	4.01	0.31
21.00	5.09	4.07	0.29
22.00	5.16	4.14	0.28
23.00	5.22	4.20	0.26
24.00	**5.28**	**4.25**	0.25
25.00	5.28	4.25	0.00
26.00	5.28	4.25	0.00
27.00	5.28	4.25	0.00
28.00	5.28	4.25	0.00
29.00	5.28	4.25	0.00
30.00	5.28	4.25	0.00
31.00	5.28	4.25	0.00
32.00	5.28	4.25	0.00
33.00	5.28	4.25	0.00
34.00	5.28	4.25	0.00
35.00	5.28	4.25	0.00
36.00	5.28	4.25	0.00
37.00	5.28	4.25	0.00
38.00	5.28	4.25	0.00
39.00	5.28	4.25	0.00
40.00	5.28	4.25	0.00
41.00	5.28	4.25	0.00
42.00	5.28	4.25	0.00
43.00	5.28	4.25	0.00
44.00	5.28	4.25	0.00
45.00	5.28	4.25	0.00
46.00	5.28	4.25	0.00
47.00	5.28	4.25	0.00
48.00	5.28	4.25	0.00
49.00	5.28	4.25	0.00
50.00	5.28	4.25	0.00
51.00	5.28	4.25	0.00
52.00	5.28	4.25	0.00
53.00	5.28	4.25	0.00
54.00	5.28	4.25	0.00
55.00	5.28	4.25	0.00
56.00	5.28	4.25	0.00
57.00	5.28	4.25	0.00
58.00	5.28	4.25	0.00
59.00	5.28	4.25	0.00
60.00	5.28	4.25	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 4.15" for 100-Year event
Inflow = 33.05 cfs @ 12.05 hrs, Volume= 2.108 af
Outflow = 31.92 cfs @ 12.08 hrs, Volume= 2.108 af, Atten= 3%, Lag= 1.8 min
Primary = 2.94 cfs @ 12.08 hrs, Volume= 1.275 af
Secondary = 28.98 cfs @ 12.08 hrs, Volume= 0.833 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.23' @ 12.08 hrs Surf.Area= 10,226 sf Storage= 11,585 cf

Plug-Flow detention time= 93.7 min calculated for 2.108 af (100% of inflow)
Center-of-Mass det. time= 93.9 min (886.3 - 792.4)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

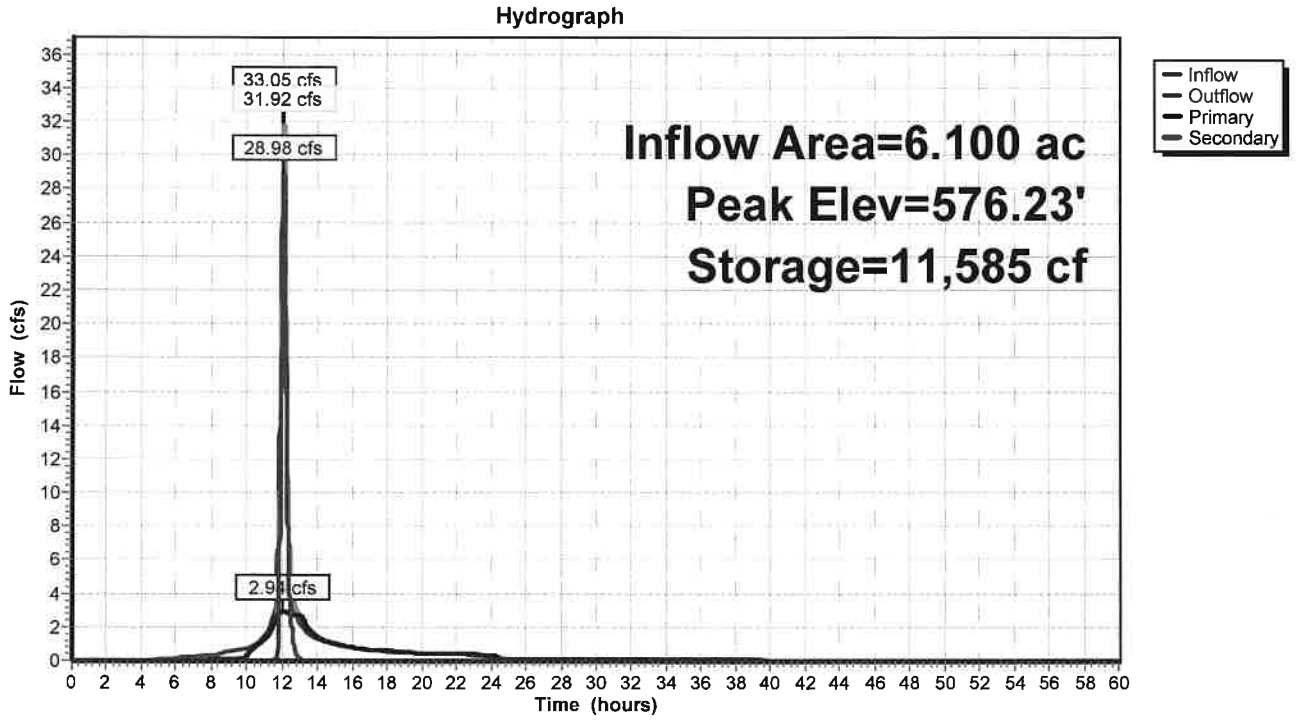
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.94 cfs @ 12.08 hrs HW=576.23' (Free Discharge)
└─**1=8" pipe** (Barrel Controls 2.94 cfs @ 8.43 fps)
  ├─**2=Grate** (Passes < 5.74 cfs potential flow)
  └─**3=Exfiltration** (Passes < 0.06 cfs potential flow)

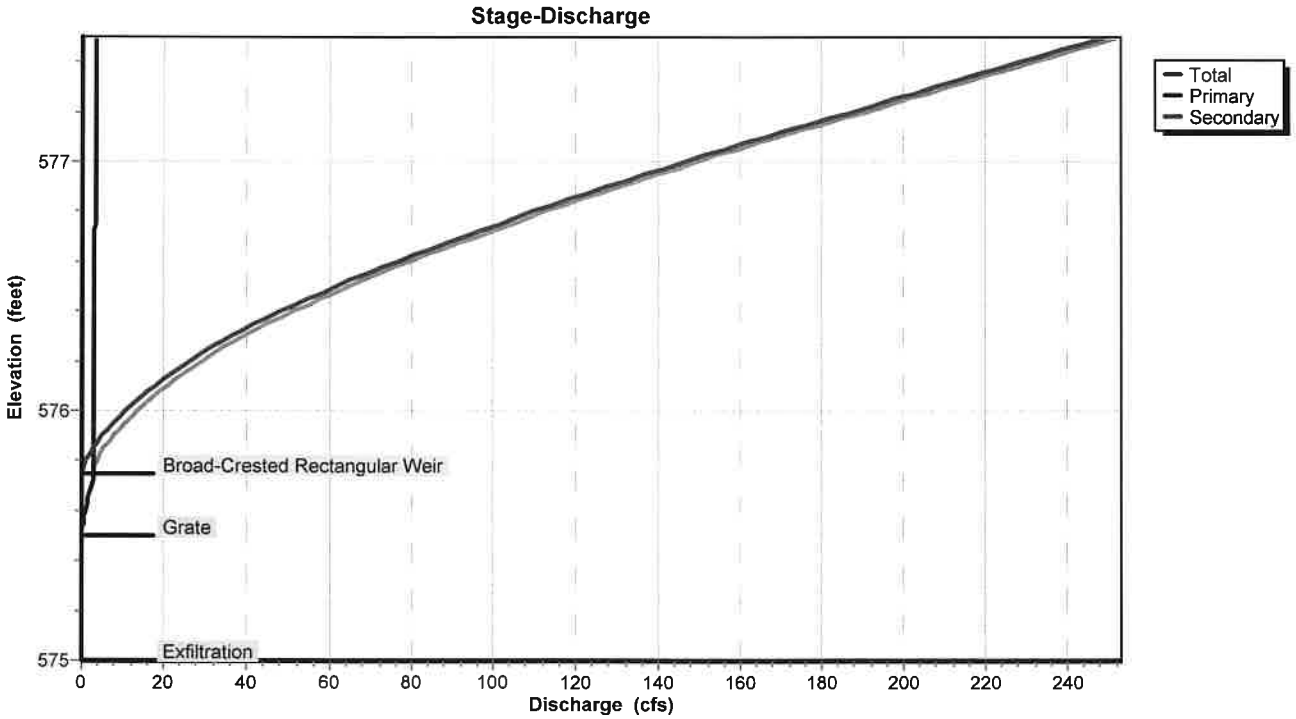
Secondary OutFlow Max=28.93 cfs @ 12.08 hrs HW=576.23' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 28.93 cfs @ 2.02 fps)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

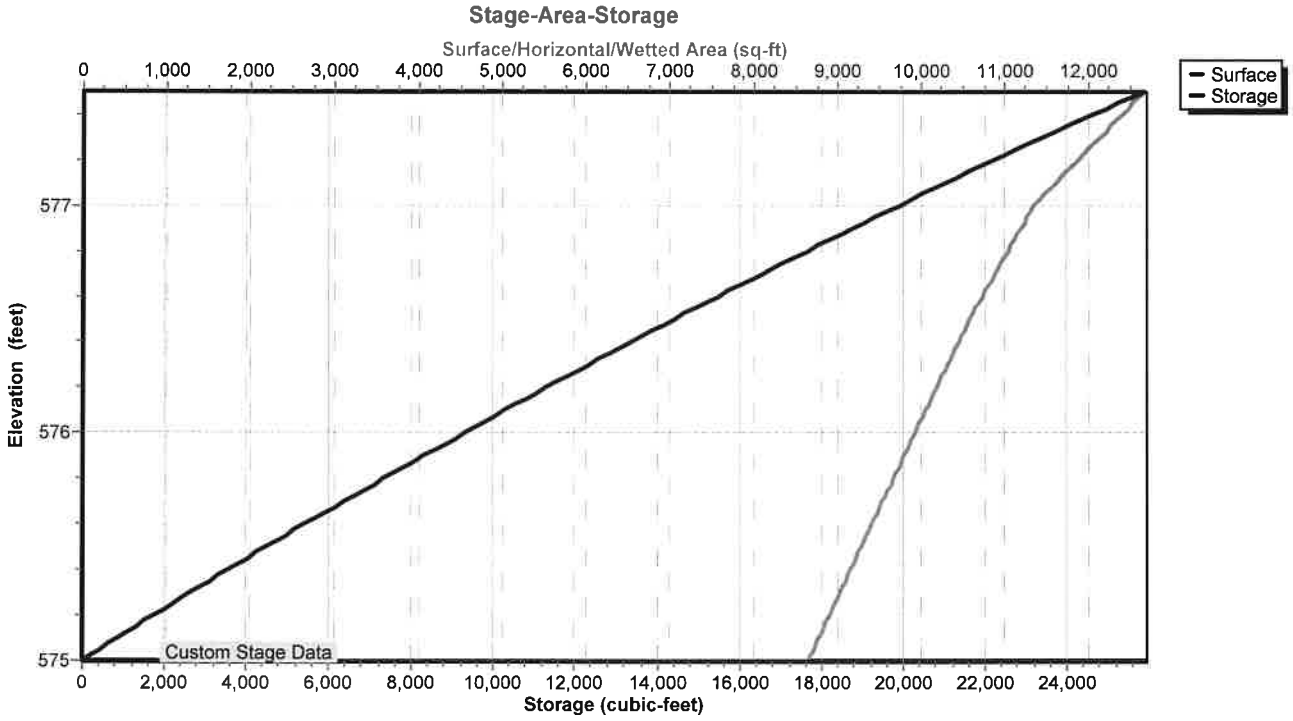


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.01	6	575.00	0.00	0.00	0.00
6.00	0.15	359	575.04	0.05	0.05	0.00
8.00	0.32	1,651	575.19	0.05	0.05	0.00
10.00	0.74	4,857	575.54	0.28	0.28	0.00
12.00	**30.36**	**10,896**	**576.16**	**25.95**	**2.91**	**23.04**
14.00	**1.27**	**5,731**	**575.63**	**1.39**	**1.39**	**0.00**
16.00	0.76	5,329	575.59	0.81	0.81	0.00
18.00	0.58	5,164	575.57	0.60	0.60	0.00
20.00	0.42	5,023	575.56	0.44	0.44	0.00
22.00	0.38	4,969	575.55	0.38	0.38	0.00
24.00	0.35	4,939	575.55	0.35	0.35	0.00
26.00	0.00	4,307	575.48	0.06	0.06	0.00
28.00	0.00	3,911	575.44	0.05	0.05	0.00
30.00	0.00	3,518	575.40	0.05	0.05	0.00
32.00	0.00	3,129	575.35	0.05	0.05	0.00
34.00	0.00	2,743	575.31	0.05	0.05	0.00
36.00	0.00	2,360	575.27	0.05	0.05	0.00
38.00	0.00	1,981	575.23	0.05	0.05	0.00
40.00	0.00	1,604	575.18	0.05	0.05	0.00
42.00	0.00	1,232	575.14	0.05	0.05	0.00
44.00	0.00	862	575.10	0.05	0.05	0.00
46.00	0.00	496	575.06	0.05	0.05	0.00
48.00	0.00	147	575.02	0.03	0.03	0.00
50.00	0.00	28	575.00	0.01	0.01	0.00
52.00	0.00	5	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 6.52" for 100-Year event
Inflow = 52.24 cfs @ 12.07 hrs, Volume= 2.392 af
Outflow = 8.57 cfs @ 12.41 hrs, Volume= 2.088 af, Atten= 84%, Lag= 20.7 min
Primary = 0.78 cfs @ 12.41 hrs, Volume= 1.554 af
Secondary = 7.80 cfs @ 12.41 hrs, Volume= 0.534 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.11' @ 12.41 hrs Surf.Area= 67,462 sf Storage= 70,722 cf

Plug-Flow detention time= 739.0 min calculated for 2.088 af (87% of inflow)
Center-of-Mass det. time= 688.7 min (1,456.5 - 767.8)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

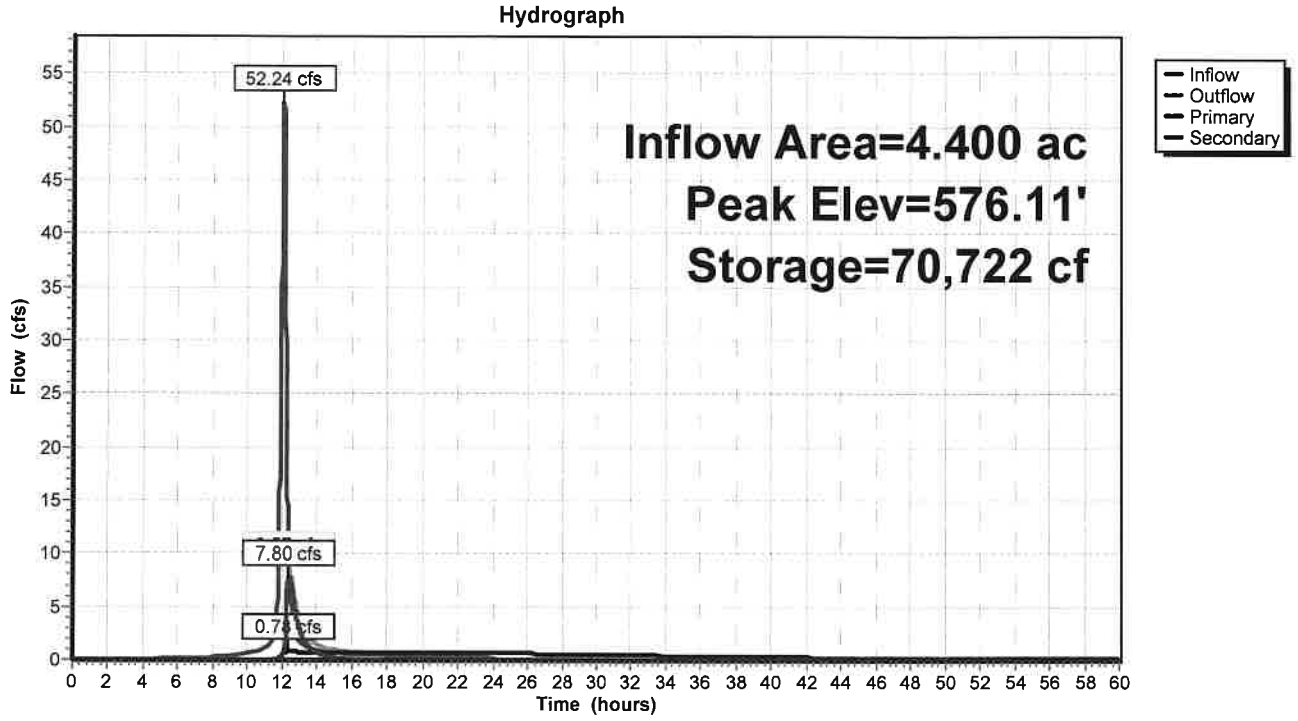
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.78 cfs @ 12.41 hrs HW=576.11' (Free Discharge)
└─**1=12" outlet pipe** (Passes 0.78 cfs of 2.84 cfs potential flow)
  ├─**2=low flow outlet pipe** (Inlet Controls 0.78 cfs @ 3.95 fps)
  └─**3=Grate** (Controls 0.00 cfs)

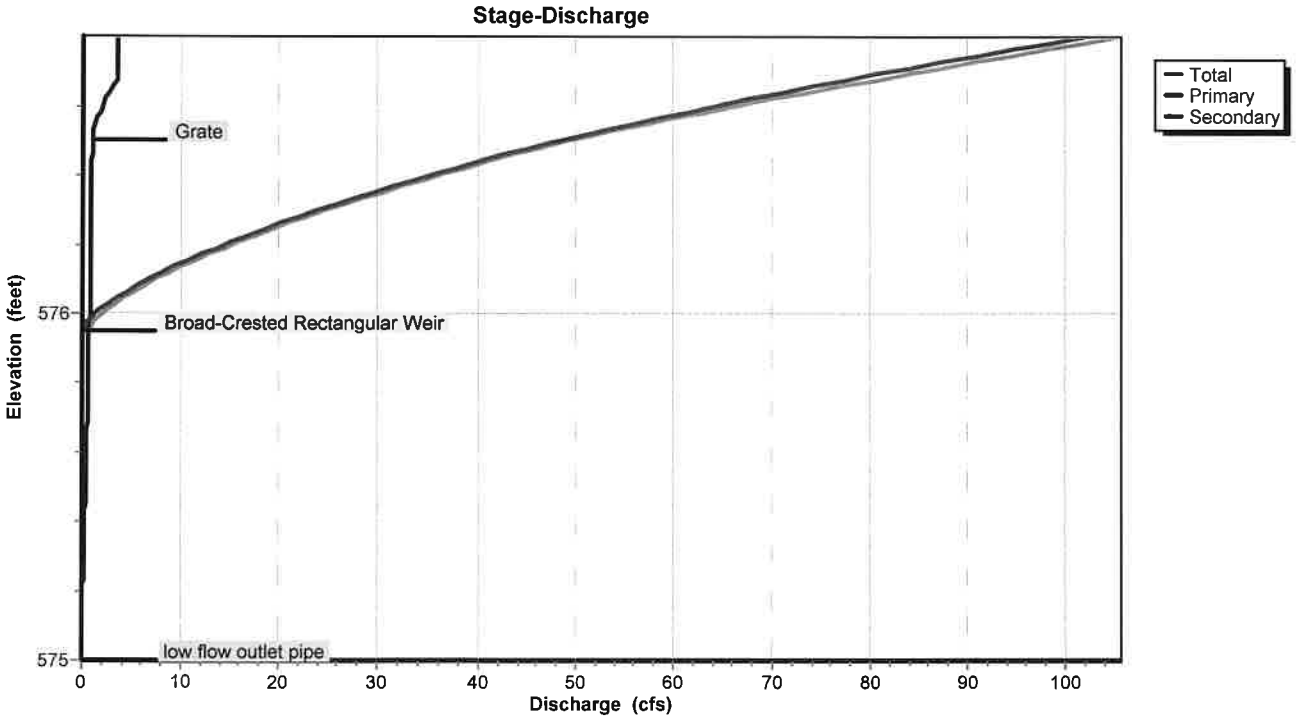
Secondary OutFlow Max=7.79 cfs @ 12.41 hrs HW=576.11' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 7.79 cfs @ 1.18 fps)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

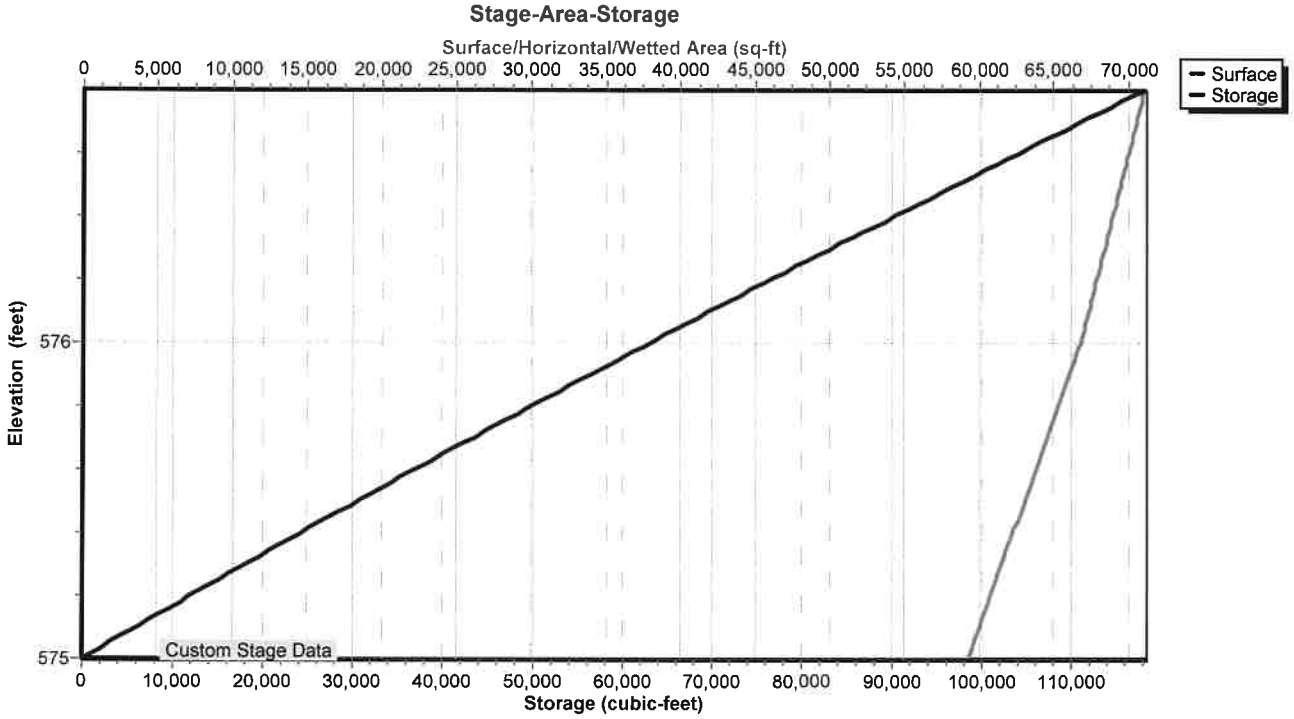


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.02	25	575.00	0.00	0.00	0.00
6.00	0.13	556	575.01	0.00	0.00	0.00
8.00	0.25	1,914	575.03	0.00	0.00	0.00
10.00	0.57	4,720	575.08	0.01	0.01	0.00
12.00	**43.89**	**31,253**	**575.51**	**0.38**	**0.38**	**0.00**
14.00	**0.94**	**61,894**	**575.98**	**1.43**	**0.71**	**0.72**
16.00	0.56	59,972	575.95	0.73	0.70	0.03
18.00	0.42	58,398	575.93	0.69	0.69	0.00
20.00	0.31	56,130	575.90	0.67	0.67	0.00
22.00	0.28	53,450	575.86	0.65	0.65	0.00
24.00	0.25	50,762	575.81	0.63	0.63	0.00
26.00	0.00	46,581	575.75	0.59	0.59	0.00
28.00	0.00	42,588	575.69	0.52	0.52	0.00
30.00	0.00	38,979	575.63	0.49	0.49	0.00
32.00	0.00	35,609	575.58	0.45	0.45	0.00
34.00	0.00	32,555	575.53	0.40	0.40	0.00
36.00	0.00	29,827	575.49	0.36	0.36	0.00
38.00	0.00	27,407	575.45	0.32	0.32	0.00
40.00	0.00	25,264	575.42	0.28	0.28	0.00
42.00	0.00	23,368	575.39	0.25	0.25	0.00
44.00	0.00	21,686	575.36	0.22	0.22	0.00
46.00	0.00	20,191	575.33	0.20	0.20	0.00
48.00	0.00	18,858	575.31	0.17	0.17	0.00
50.00	0.00	17,665	575.29	0.16	0.16	0.00
52.00	0.00	16,594	575.28	0.14	0.14	0.00
54.00	0.00	15,630	575.26	0.13	0.13	0.00
56.00	0.00	14,758	575.25	0.12	0.12	0.00
58.00	0.00	13,967	575.23	0.10	0.10	0.00
60.00	0.00	13,248	575.22	0.10	0.10	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

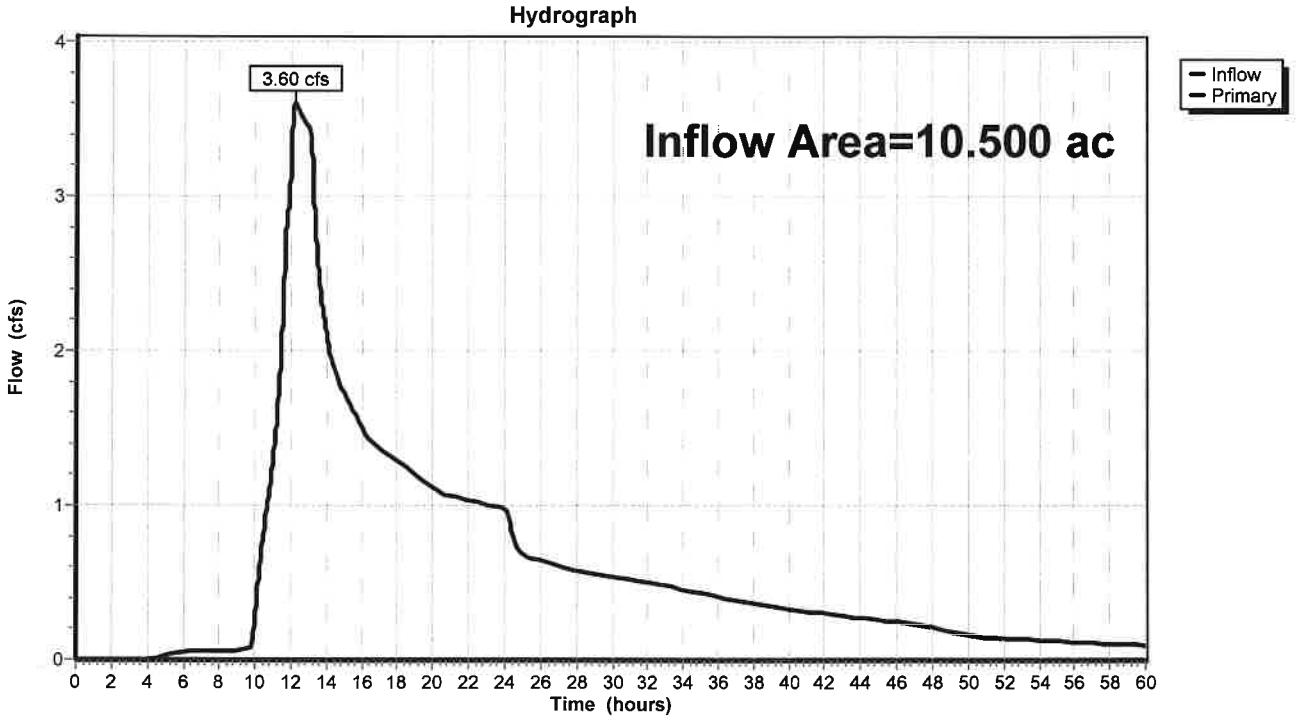
Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 3.23" for 100-Year event
Inflow = 3.60 cfs @ 12.19 hrs, Volume= 2.829 af
Primary = 3.60 cfs @ 12.19 hrs, Volume= 2.829 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

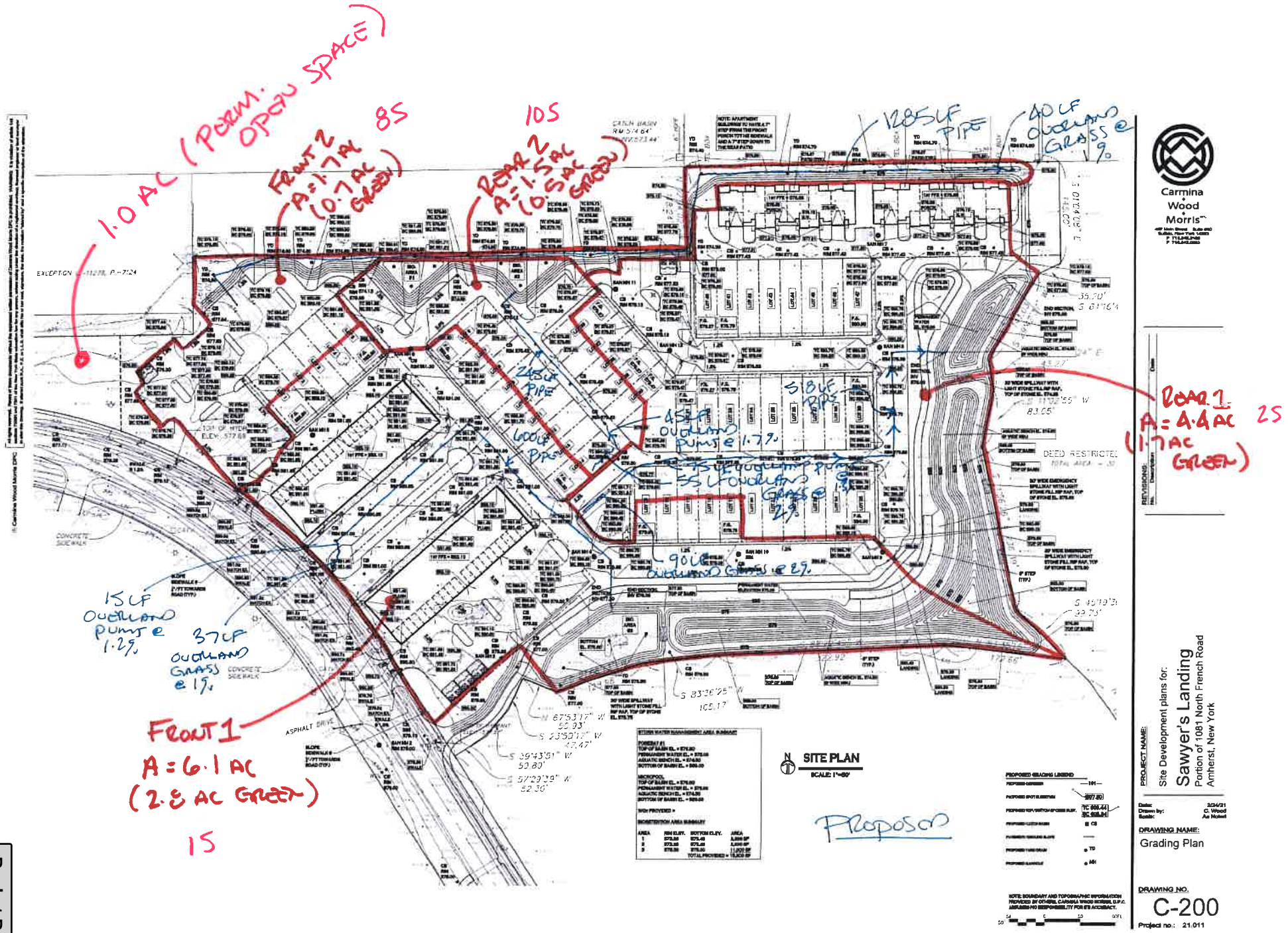
Hydrograph for Link 5L: Outflow (@ CB 54)

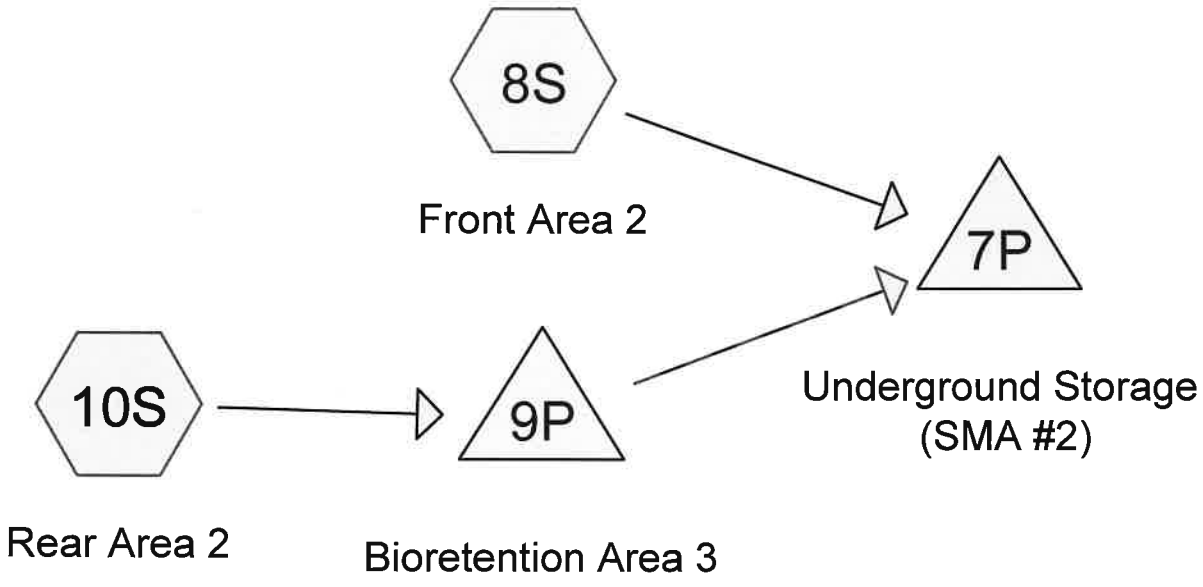
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.14	0.00	0.14
1.00	0.00	0.00	0.00	53.00	0.13	0.00	0.13
2.00	0.00	0.00	0.00	54.00	0.13	0.00	0.13
3.00	0.00	0.00	0.00	55.00	0.12	0.00	0.12
4.00	0.00	0.00	0.00	56.00	0.12	0.00	0.12
5.00	0.03	0.00	0.03	57.00	0.11	0.00	0.11
6.00	0.05	0.00	0.05	58.00	0.10	0.00	0.10
7.00	0.05	0.00	0.05	59.00	0.10	0.00	0.10
8.00	0.05	0.00	0.05	60.00	0.10	0.00	0.10
9.00	0.06	0.00	0.06				
10.00	0.30	0.00	0.30				
11.00	1.31	0.00	1.31				
12.00	**3.29**	0.00	**3.29**				
13.00	**3.44**	0.00	**3.44**				
14.00	2.10	0.00	2.10				
15.00	1.72	0.00	1.72				
16.00	1.51	0.00	1.51				
17.00	1.37	0.00	1.37				
18.00	1.29	0.00	1.29				
19.00	1.20	0.00	1.20				
20.00	1.11	0.00	1.11				
21.00	1.06	0.00	1.06				
22.00	1.03	0.00	1.03				
23.00	1.01	0.00	1.01				
24.00	0.98	0.00	0.98				
25.00	0.68	0.00	0.68				
26.00	0.64	0.00	0.64				
27.00	0.61	0.00	0.61				
28.00	0.58	0.00	0.58				
29.00	0.55	0.00	0.55				
30.00	0.54	0.00	0.54				
31.00	0.52	0.00	0.52				
32.00	0.50	0.00	0.50				
33.00	0.48	0.00	0.48				
34.00	0.45	0.00	0.45				
35.00	0.43	0.00	0.43				
36.00	0.41	0.00	0.41				
37.00	0.39	0.00	0.39				
38.00	0.37	0.00	0.37				
39.00	0.35	0.00	0.35				
40.00	0.33	0.00	0.33				
41.00	0.32	0.00	0.32				
42.00	0.30	0.00	0.30				
43.00	0.28	0.00	0.28				
44.00	0.27	0.00	0.27				
45.00	0.26	0.00	0.26				
46.00	0.25	0.00	0.25				
47.00	0.24	0.00	0.24				
48.00	0.21	0.00	0.21				
49.00	0.18	0.00	0.18				
50.00	0.16	0.00	0.16				
51.00	0.15	0.00	0.15				

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Proposed Runoff - West

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)


1.0 AC (PERM. OPEN SPACE)
FRONT 2
A=1.7AC
(0.7AC GREEN)
85
REAR 2
A=1.5AC
(0.5AC GREEN)
105
1285LF PIPE
40LF OVERLAND GRASS @ 1%
245LF PIPE
600LF PIPE
45LF OVERLAND PUMP @ 1.7%
518LF PIPE
35LF OVERLAND PUMP
35LF OVERLAND GRASS @ 1.5%
90LF OVERLAND GRASS @ 2%
REAR 1
A=4.4AC
(1.7AC GREEN)
25
15LF OVERLAND PUMP @ 1.2%
37LF OVERLAND GRASS @ 1%
FRONT 1
A=6.1AC
(2.8AC GREEN)
15
SITE PLAN
SCALE: 1"=80'
PROPOSED
Carmina Wood Morris
PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York
DRAWING NAME:
Grading Plan
DRAWING NO.
C-200
Project no.: 21.011



Subcat Reach Pond Link

Routing Diagram for 21.011 Proposed
Prepared by Hewlett-Packard Company, Printed 3/4/2021
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Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Events for Pond 7P: Underground Storage

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	2.40	0.33	570.29	4,537
2-Year	4.15	0.68	570.46	5,990
5-Year	7.03	1.05	570.79	8,639
10-Year	9.17	1.28	571.13	11,342
25-Year	11.11	1.61	571.73	15,804
50-Year	12.80	3.61	572.23	18,836
100-Year	**14.92**	**4.83**	**572.92**	**21,772**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.200	80	>75% Grass cover, Good, HSG D (8S, 10S)
1.200	98	Paved parking, HSG D (8S, 10S)
0.800	98	Roofs, HSG D (8S, 10S)
3.200	**91**	**TOTAL AREA**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
3.200	HSG D	8S, 10S
0.000	Other	
3.200		**TOTAL AREA**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchmer Numbers
0.000	0.000	0.000	1.200	0.000	1.200	>75% Grass cover, Good	8S, 10S
0.000	0.000	0.000	1.200	0.000	1.200	Paved parking	8S, 10S
0.000	0.000	0.000	0.800	0.000	0.800	Roofs	8S, 10S
0.000	**0.000**	**0.000**	**3.200**	**0.000**	**3.200**	**TOTAL AREA**	

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=1.04"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=2.36 cfs 0.148 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=1.11"
Flow Length=345' Tc=9.1 min CN=92 Runoff=2.63 cfs 0.139 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=570.29' Storage=4,537 cf Inflow=2.40 cfs 0.287 af
Outflow=0.33 cfs 0.243 af

Pond 9P: Bioretention Area 3 Peak Elev=574.54' Storage=2,922 cf Inflow=2.63 cfs 0.139 af
Outflow=0.43 cfs 0.139 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.287 af Average Runoff Depth = 1.08"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

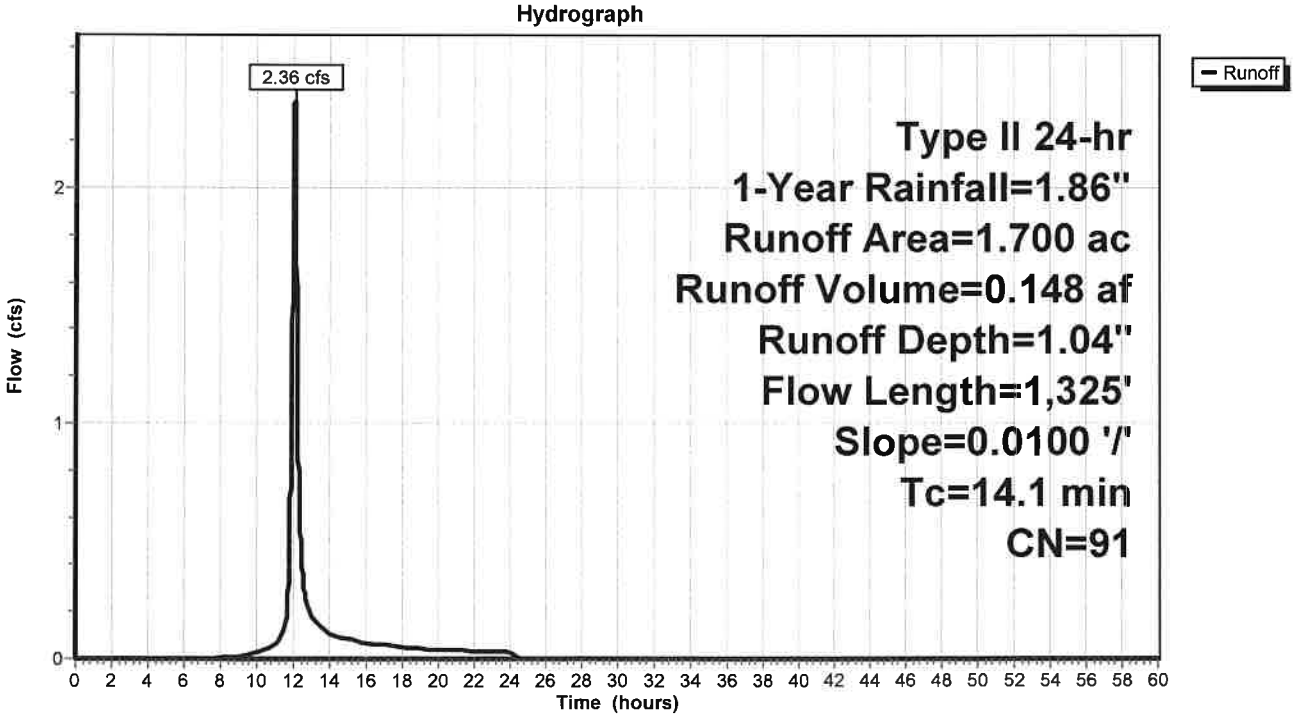
Runoff = 2.36 cfs @ 12.06 hrs, Volume= 0.148 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.00
9.00	0.27	0.01	0.01
10.00	0.34	0.02	0.02
11.00	0.44	0.05	0.07
12.00	1.23	0.53	**2.04**
13.00	1.44	0.69	**0.18**
14.00	1.53	0.76	0.11
15.00	1.59	0.81	0.08
16.00	1.64	0.85	0.07
17.00	1.68	0.89	0.06
18.00	1.71	0.92	0.05
19.00	1.74	0.94	0.04
20.00	1.77	0.97	0.04
21.00	1.79	0.99	0.03
22.00	1.82	1.01	0.03
23.00	1.84	1.02	0.03
24.00	**1.86**	**1.04**	0.03
25.00	1.86	1.04	0.00
26.00	1.86	1.04	0.00
27.00	1.86	1.04	0.00
28.00	1.86	1.04	0.00
29.00	1.86	1.04	0.00
30.00	1.86	1.04	0.00
31.00	1.86	1.04	0.00
32.00	1.86	1.04	0.00
33.00	1.86	1.04	0.00
34.00	1.86	1.04	0.00
35.00	1.86	1.04	0.00
36.00	1.86	1.04	0.00
37.00	1.86	1.04	0.00
38.00	1.86	1.04	0.00
39.00	1.86	1.04	0.00
40.00	1.86	1.04	0.00
41.00	1.86	1.04	0.00
42.00	1.86	1.04	0.00
43.00	1.86	1.04	0.00
44.00	1.86	1.04	0.00
45.00	1.86	1.04	0.00
46.00	1.86	1.04	0.00
47.00	1.86	1.04	0.00
48.00	1.86	1.04	0.00
49.00	1.86	1.04	0.00
50.00	1.86	1.04	0.00
51.00	1.86	1.04	0.00
52.00	1.86	1.04	0.00
53.00	1.86	1.04	0.00
54.00	1.86	1.04	0.00
55.00	1.86	1.04	0.00
56.00	1.86	1.04	0.00
57.00	1.86	1.04	0.00
58.00	1.86	1.04	0.00
59.00	1.86	1.04	0.00
60.00	1.86	1.04	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

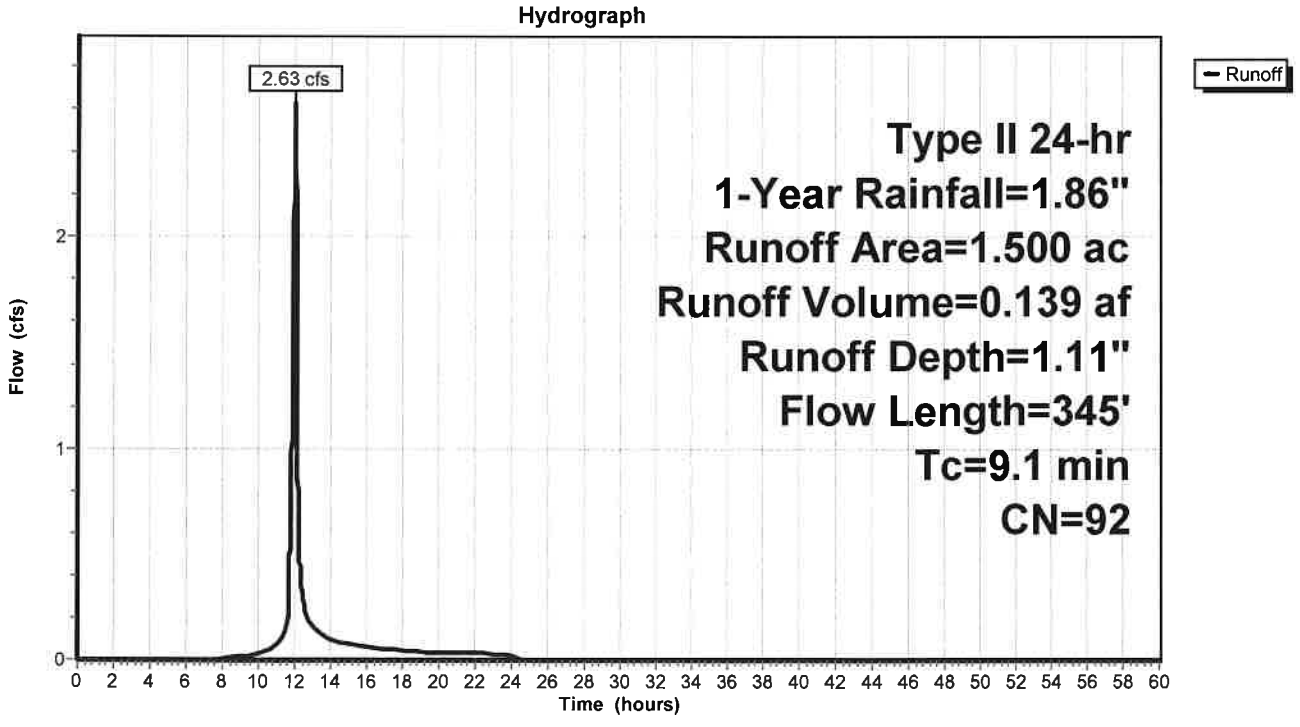
Runoff = 2.63 cfs @ 12.01 hrs, Volume= 0.139 af, Depth= 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.01
9.00	0.27	0.01	0.02
10.00	0.34	0.03	0.03
11.00	0.44	0.06	0.07
12.00	1.23	0.58	**2.63**
13.00	1.44	0.75	**0.16**
14.00	1.53	0.82	0.09
15.00	1.59	0.88	0.07
16.00	1.64	0.92	0.06
17.00	1.68	0.95	0.05
18.00	1.71	0.98	0.04
19.00	1.74	1.01	0.04
20.00	1.77	1.03	0.03
21.00	1.79	1.05	0.03
22.00	1.82	1.07	0.03
23.00	1.84	1.09	0.03
24.00	**1.86**	**1.11**	0.03
25.00	1.86	1.11	0.00
26.00	1.86	1.11	0.00
27.00	1.86	1.11	0.00
28.00	1.86	1.11	0.00
29.00	1.86	1.11	0.00
30.00	1.86	1.11	0.00
31.00	1.86	1.11	0.00
32.00	1.86	1.11	0.00
33.00	1.86	1.11	0.00
34.00	1.86	1.11	0.00
35.00	1.86	1.11	0.00
36.00	1.86	1.11	0.00
37.00	1.86	1.11	0.00
38.00	1.86	1.11	0.00
39.00	1.86	1.11	0.00
40.00	1.86	1.11	0.00
41.00	1.86	1.11	0.00
42.00	1.86	1.11	0.00
43.00	1.86	1.11	0.00
44.00	1.86	1.11	0.00
45.00	1.86	1.11	0.00
46.00	1.86	1.11	0.00
47.00	1.86	1.11	0.00
48.00	1.86	1.11	0.00
49.00	1.86	1.11	0.00
50.00	1.86	1.11	0.00
51.00	1.86	1.11	0.00
52.00	1.86	1.11	0.00
53.00	1.86	1.11	0.00
54.00	1.86	1.11	0.00
55.00	1.86	1.11	0.00
56.00	1.86	1.11	0.00
57.00	1.86	1.11	0.00
58.00	1.86	1.11	0.00
59.00	1.86	1.11	0.00
60.00	1.86	1.11	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 1.08" for 1-Year event
Inflow = 2.40 cfs @ 12.06 hrs, Volume= 0.287 af
Outflow = 0.33 cfs @ 13.18 hrs, Volume= 0.243 af, Atten= 86%, Lag= 67.2 min
Primary = 0.33 cfs @ 13.18 hrs, Volume= 0.243 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 570.29' @ 13.18 hrs Surf.Area= 10,145 sf Storage= 4,537 cf

Plug-Flow detention time= 493.3 min calculated for 0.243 af (85% of inflow)
Center-of-Mass det. time= 283.3 min (1,405.6 - 1,122.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

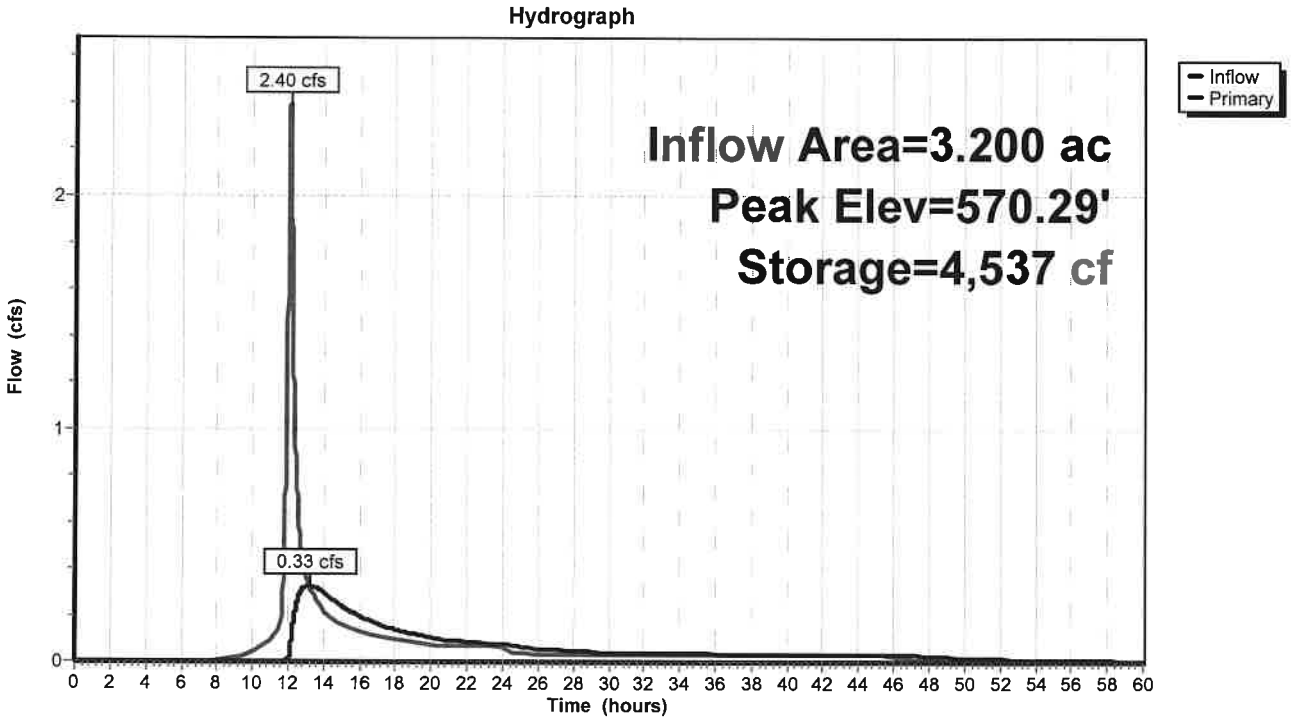
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

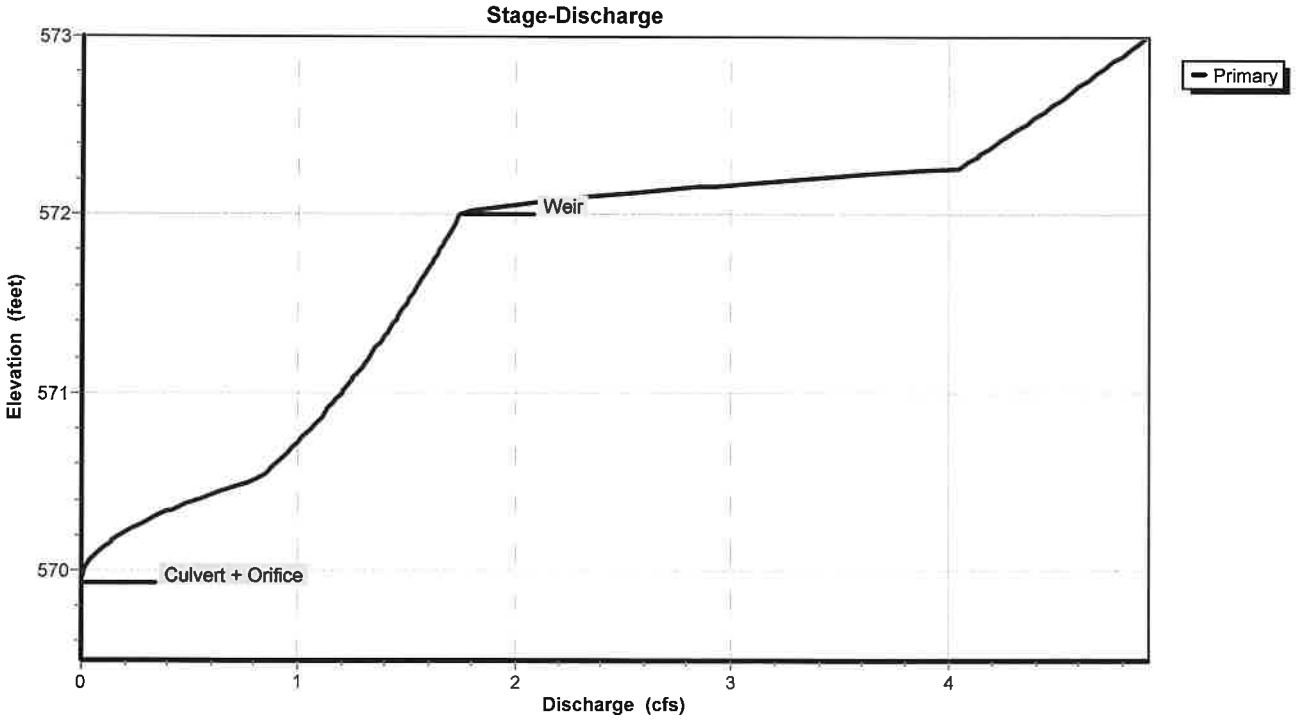
Primary OutFlow Max=0.32 cfs @ 13.18 hrs HW=570.29' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.32 cfs @ 1.88 fps)
  ├**2=Orifice** (Passes 0.32 cfs of 0.56 cfs potential flow)
  └**3=Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

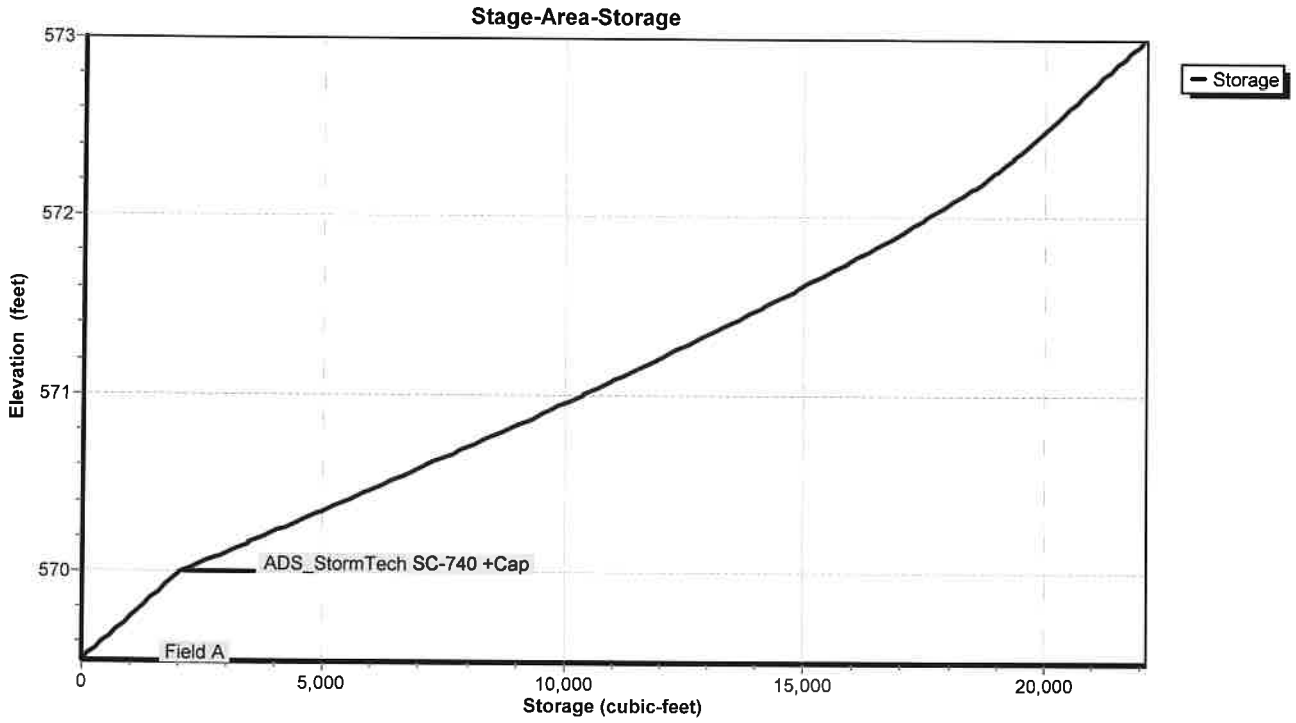


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.00	0	569.50	0.00
8.00	0.00	4	569.50	0.00
10.00	0.04	139	569.53	0.00
12.00	**2.08**	**1,735**	**569.93**	**0.00**
14.00	**0.22**	**4,393**	**570.28**	**0.30**
16.00	0.13	3,835	570.21	0.20
18.00	0.10	3,452	570.17	0.14
20.00	0.07	3,194	570.14	0.10
22.00	0.07	3,023	570.12	0.08
24.00	0.06	2,931	570.10	0.07
26.00	0.03	2,737	570.08	0.06
28.00	0.03	2,618	570.07	0.05
30.00	0.03	2,550	570.06	0.04
32.00	0.03	2,506	570.06	0.04
34.00	0.03	2,476	570.05	0.04
36.00	0.03	2,453	570.05	0.03
38.00	0.03	2,436	570.05	0.03
40.00	0.03	2,422	570.05	0.03
42.00	0.03	2,410	570.04	0.03
44.00	0.03	2,399	570.04	0.03
46.00	0.03	2,388	570.04	0.03
48.00	0.01	2,288	570.03	0.02
50.00	0.00	2,166	570.02	0.02
52.00	0.00	2,066	570.00	0.01
54.00	0.00	1,993	569.99	0.01
56.00	0.00	1,945	569.98	0.01
58.00	0.00	1,910	569.97	0.00
60.00	0.00	1,885	569.96	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)
569.50	0
569.55	203
569.60	406
569.65	609
569.70	812
569.75	1,014
569.80	1,217
569.85	1,420
569.90	1,623
569.95	1,826
570.00	2,029
570.05	2,459
570.10	2,889
570.15	3,318
570.20	3,746
570.25	4,173
570.30	4,598
570.35	5,022
570.40	5,444
570.45	5,865
570.50	6,284
570.55	6,701
570.60	7,116
570.65	7,529
570.70	7,940
570.75	8,349
570.80	8,756
570.85	9,160
570.90	9,562
570.95	9,962
571.00	10,359
571.05	10,754
571.10	11,145
571.15	11,534
571.20	11,919
571.25	12,301
571.30	12,680
571.35	13,056
571.40	13,428
571.45	13,797
571.50	14,161
571.55	14,522
571.60	14,879
571.65	15,230
571.70	15,577
571.75	15,917
571.80	16,252
571.85	16,582
571.90	16,906
571.95	17,224
572.00	17,535
572.05	17,838
572.10	18,133
572.15	18,417
572.20	18,690
572.25	18,946
572.30	19,188
572.35	19,417
572.40	19,637
572.45	19,850
572.50	20,057
572.55	20,260
572.60	20,463
572.65	20,665
572.70	20,868
572.75	21,071
572.80	21,274
572.85	21,477
572.90	21,680
572.95	21,883
573.00	**22,086**

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 1.11" for 1-Year event
Inflow = 2.63 cfs @ 12.01 hrs, Volume= 0.139 af
Outflow = 0.43 cfs @ 12.29 hrs, Volume= 0.139 af, Atten= 84%, Lag= 17.0 min
Primary = 0.43 cfs @ 12.29 hrs, Volume= 0.139 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.54' @ 12.29 hrs Surf.Area= 5,881 sf Storage= 2,922 cf

Plug-Flow detention time= 615.0 min calculated for 0.139 af (100% of inflow)
Center-of-Mass det. time= 615.0 min (1,433.7 - 818.7)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

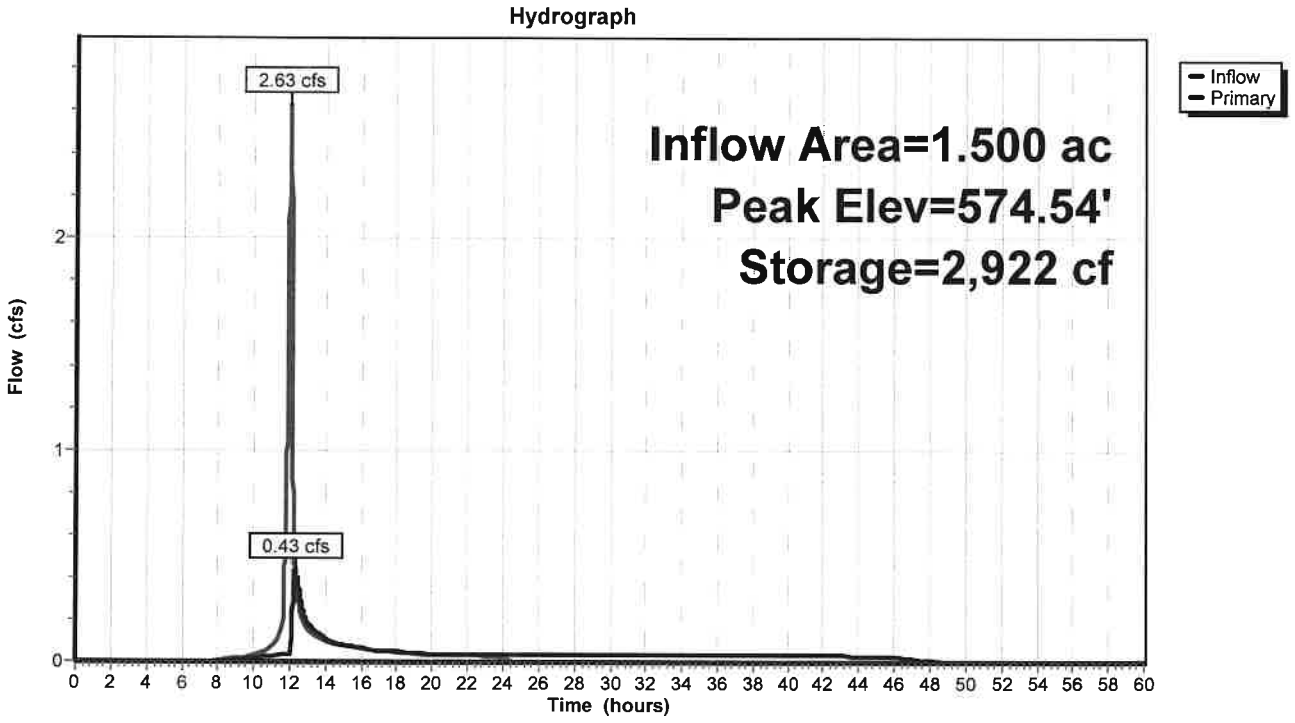
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

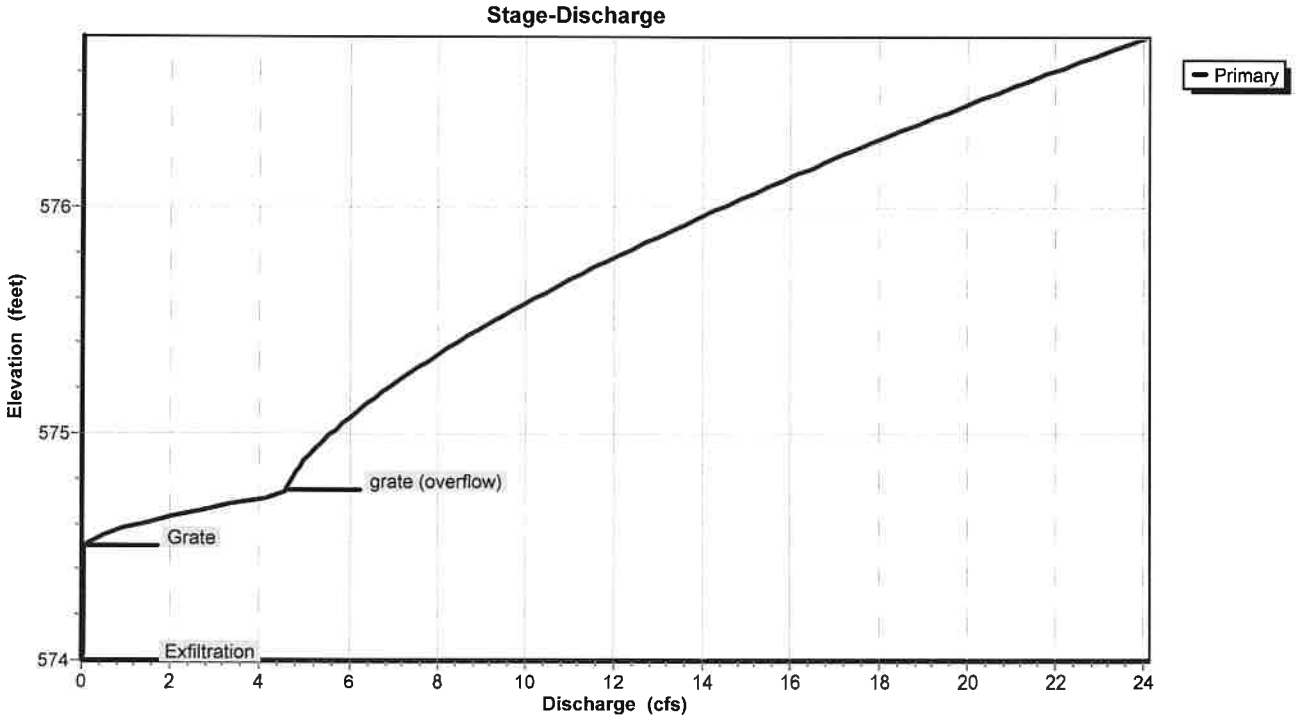
Primary OutFlow Max=0.42 cfs @ 12.29 hrs HW=574.54' (Free Discharge)
- **1=8" pipe** (Passes 0.42 cfs of 4.43 cfs potential flow)
  - **2=Grate** (Weir Controls 0.39 cfs @ 0.69 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

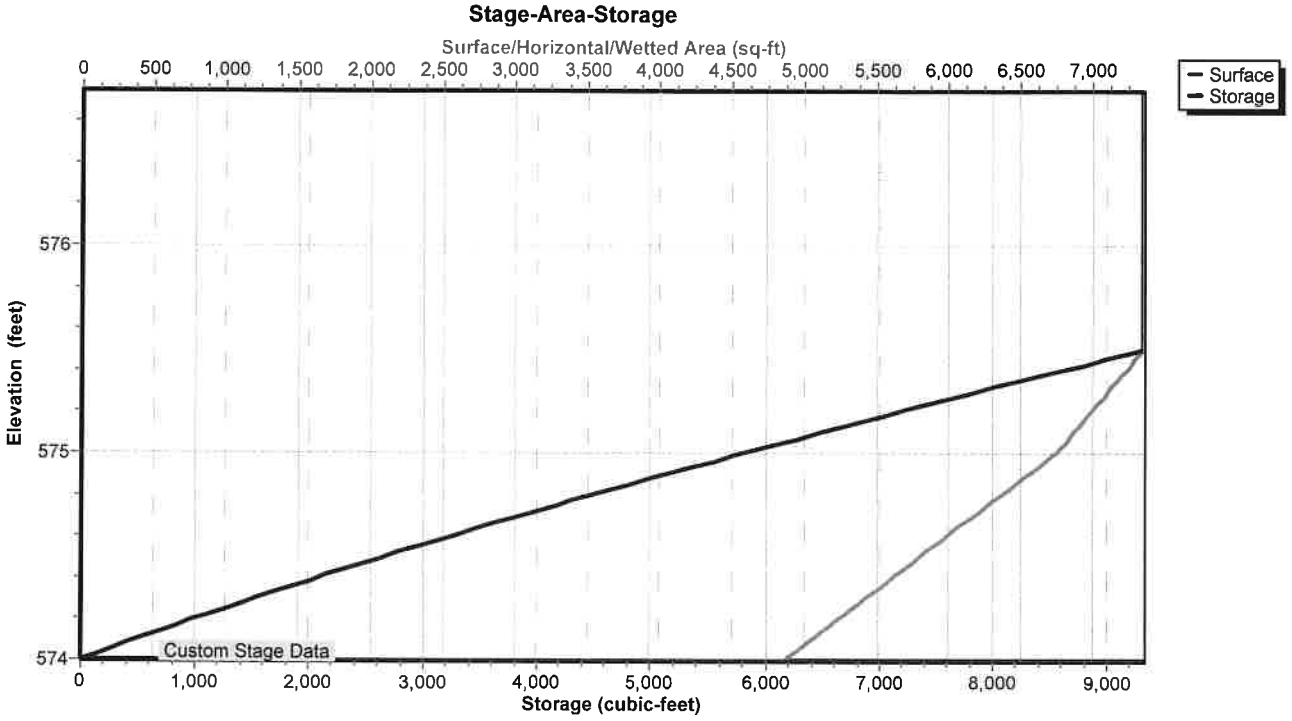


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.00	0	574.00	0.00
8.00	0.01	9	574.00	0.00
10.00	0.03	70	574.01	0.01
12.00	**2.63**	**1,806**	**574.35**	**0.03**
14.00	**0.09**	**2,731**	**574.51**	**0.11**
16.00	0.06	2,688	574.50	0.06
18.00	0.04	2,673	574.50	0.05
20.00	0.03	2,662	574.50	0.03
22.00	0.03	2,636	574.50	0.03
24.00	0.03	2,594	574.49	0.03
26.00	0.00	2,362	574.45	0.03
28.00	0.00	2,119	574.40	0.03
30.00	0.00	1,881	574.36	0.03
32.00	0.00	1,647	574.32	0.03
34.00	0.00	1,417	574.28	0.03
36.00	0.00	1,190	574.23	0.03
38.00	0.00	968	574.19	0.03
40.00	0.00	750	574.15	0.03
42.00	0.00	536	574.11	0.03
44.00	0.00	326	574.07	0.03
46.00	0.00	120	574.02	0.03
48.00	0.00	26	574.01	0.01
50.00	0.00	6	574.00	0.00
52.00	0.00	1	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=1.34"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=3.03 cfs 0.190 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=1.42"
Flow Length=345' Tc=9.1 min CN=92 Runoff=3.32 cfs 0.177 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=570.46' Storage=5,990 cf Inflow=4.15 cfs 0.367 af
Outflow=0.68 cfs 0.324 af

Pond 9P: Bioretention Area 3 Peak Elev=574.60' Storage=3,274 cf Inflow=3.32 cfs 0.177 af
Outflow=1.41 cfs 0.177 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.367 af Average Runoff Depth = 1.38"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

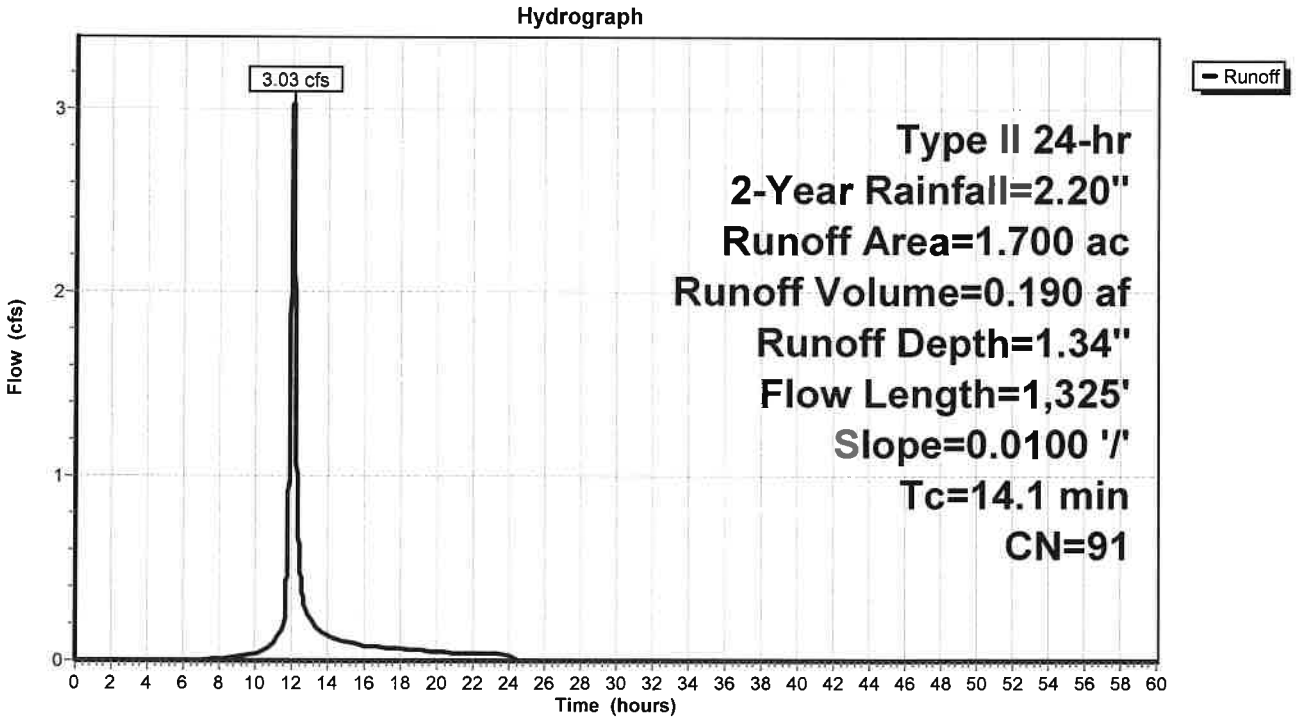
Runoff = 3.03 cfs @ 12.06 hrs, Volume= 0.190 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass**
					Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.05	0.00	0.00
3.00	0.08	0.00	0.00
4.00	0.11	0.00	0.00
5.00	0.14	0.00	0.00
6.00	0.18	0.00	0.00
7.00	0.22	0.00	0.00
8.00	0.26	0.00	0.01
9.00	0.32	0.01	0.02
10.00	0.40	0.03	0.04
11.00	0.52	0.08	0.10
12.00	1.46	0.71	**2.64**
13.00	1.70	0.90	**0.23**
14.00	1.80	0.99	0.13
15.00	1.88	1.06	0.10
16.00	1.94	1.11	0.08
17.00	1.98	1.15	0.07
18.00	2.03	1.19	0.06
19.00	2.06	1.22	0.05
20.00	2.09	1.25	0.05
21.00	2.12	1.27	0.04
22.00	2.15	1.30	0.04
23.00	2.18	1.32	0.04
24.00	**2.20**	**1.34**	0.04
25.00	2.20	1.34	0.00
26.00	2.20	1.34	0.00
27.00	2.20	1.34	0.00
28.00	2.20	1.34	0.00
29.00	2.20	1.34	0.00
30.00	2.20	1.34	0.00
31.00	2.20	1.34	0.00
32.00	2.20	1.34	0.00
33.00	2.20	1.34	0.00
34.00	2.20	1.34	0.00
35.00	2.20	1.34	0.00
36.00	2.20	1.34	0.00
37.00	2.20	1.34	0.00
38.00	2.20	1.34	0.00
39.00	2.20	1.34	0.00
40.00	2.20	1.34	0.00
41.00	2.20	1.34	0.00
42.00	2.20	1.34	0.00
43.00	2.20	1.34	0.00
44.00	2.20	1.34	0.00
45.00	2.20	1.34	0.00
46.00	2.20	1.34	0.00
47.00	2.20	1.34	0.00
48.00	2.20	1.34	0.00
49.00	2.20	1.34	0.00
50.00	2.20	1.34	0.00
51.00	2.20	1.34	0.00
52.00	2.20	1.34	0.00
53.00	2.20	1.34	0.00
54.00	2.20	1.34	0.00
55.00	2.20	1.34	0.00
56.00	2.20	1.34	0.00
57.00	2.20	1.34	0.00
58.00	2.20	1.34	0.00
59.00	2.20	1.34	0.00
60.00	2.20	1.34	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

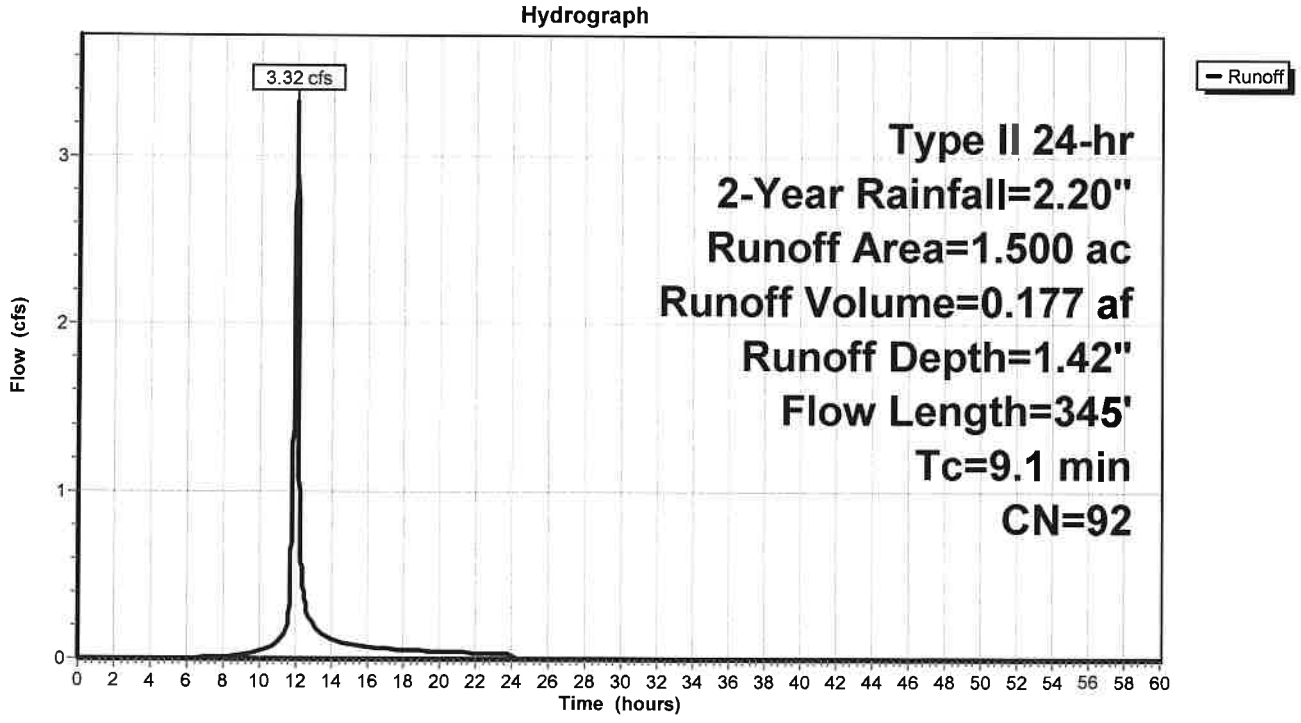
Runoff = 3.32 cfs @ 12.00 hrs, Volume= 0.177 af, Depth= 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	2.20	1.42	0.00
1.00	0.02	0.00	0.00	53.00	2.20	1.42	0.00
2.00	0.05	0.00	0.00	54.00	2.20	1.42	0.00
3.00	0.08	0.00	0.00	55.00	2.20	1.42	0.00
4.00	0.11	0.00	0.00	56.00	2.20	1.42	0.00
5.00	0.14	0.00	0.00	57.00	2.20	1.42	0.00
6.00	0.18	0.00	0.00	58.00	2.20	1.42	0.00
7.00	0.22	0.00	0.01	59.00	2.20	1.42	0.00
8.00	0.26	0.01	0.01	60.00	2.20	1.42	0.00
9.00	0.32	0.02	0.03				
10.00	0.40	0.05	0.04				
11.00	0.52	0.10	0.10				
12.00	1.46	0.77	**3.32**				
13.00	1.70	0.97	0.20				
14.00	1.80	1.06	0.12				
15.00	1.88	1.13	0.09				
16.00	1.94	1.18	0.07				
17.00	1.98	1.22	0.06				
18.00	2.03	1.26	0.05				
19.00	2.06	1.29	0.05				
20.00	2.09	1.32	0.04				
21.00	2.12	1.35	0.04				
22.00	2.15	1.37	0.04				
23.00	2.18	1.40	0.03				
24.00	**2.20**	**1.42**	0.03				
25.00	2.20	1.42	0.00				
26.00	2.20	1.42	0.00				
27.00	2.20	1.42	0.00				
28.00	2.20	1.42	0.00				
29.00	2.20	1.42	0.00				
30.00	2.20	1.42	0.00				
31.00	2.20	1.42	0.00				
32.00	2.20	1.42	0.00				
33.00	2.20	1.42	0.00				
34.00	2.20	1.42	0.00				
35.00	2.20	1.42	0.00				
36.00	2.20	1.42	0.00				
37.00	2.20	1.42	0.00				
38.00	2.20	1.42	0.00				
39.00	2.20	1.42	0.00				
40.00	2.20	1.42	0.00				
41.00	2.20	1.42	0.00				
42.00	2.20	1.42	0.00				
43.00	2.20	1.42	0.00				
44.00	2.20	1.42	0.00				
45.00	2.20	1.42	0.00				
46.00	2.20	1.42	0.00				
47.00	2.20	1.42	0.00				
48.00	2.20	1.42	0.00				
49.00	2.20	1.42	0.00				
50.00	2.20	1.42	0.00				
51.00	2.20	1.42	0.00				

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 1.38" for 2-Year event
Inflow = 4.15 cfs @ 12.10 hrs, Volume= 0.367 af
Outflow = 0.68 cfs @ 12.65 hrs, Volume= 0.324 af, Atten= 84%, Lag= 33.2 min
Primary = 0.68 cfs @ 12.65 hrs, Volume= 0.324 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 570.46' @ 12.65 hrs Surf.Area= 10,145 sf Storage= 5,990 cf

Plug-Flow detention time= 401.0 min calculated for 0.324 af (88% of inflow)
Center-of-Mass det. time= 229.7 min (1,287.9 - 1,058.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

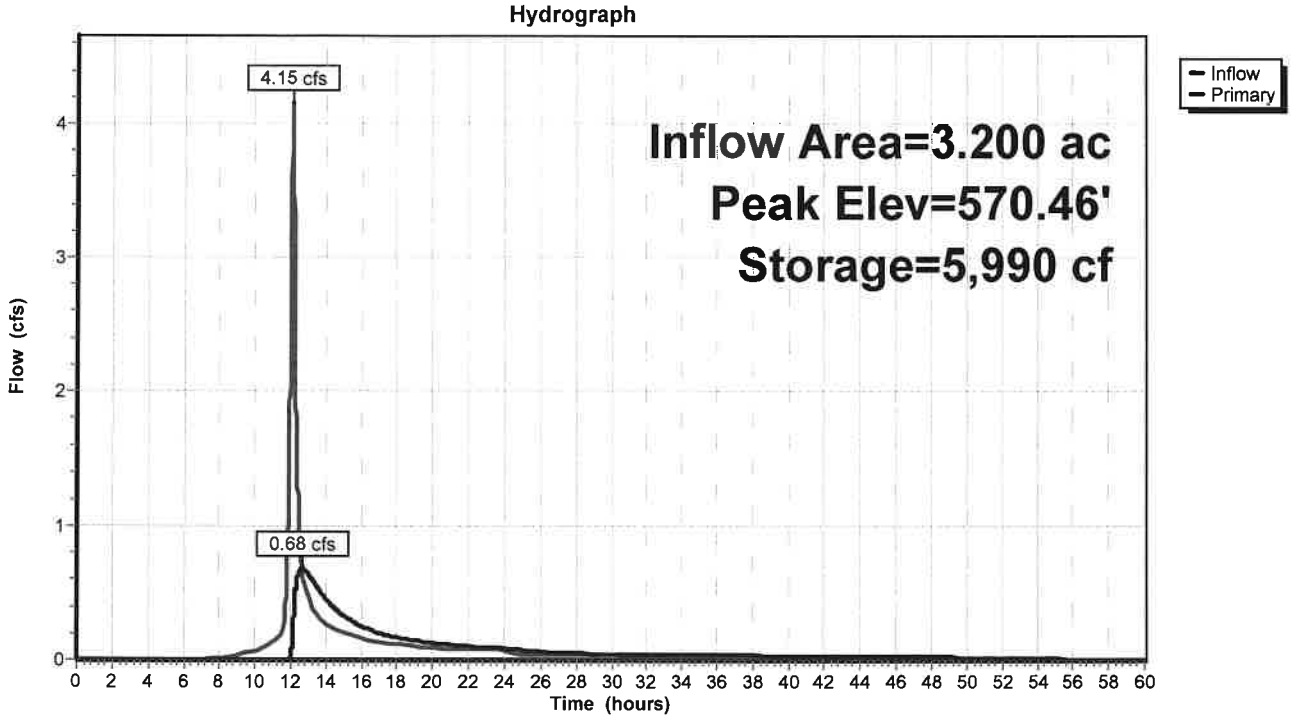
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

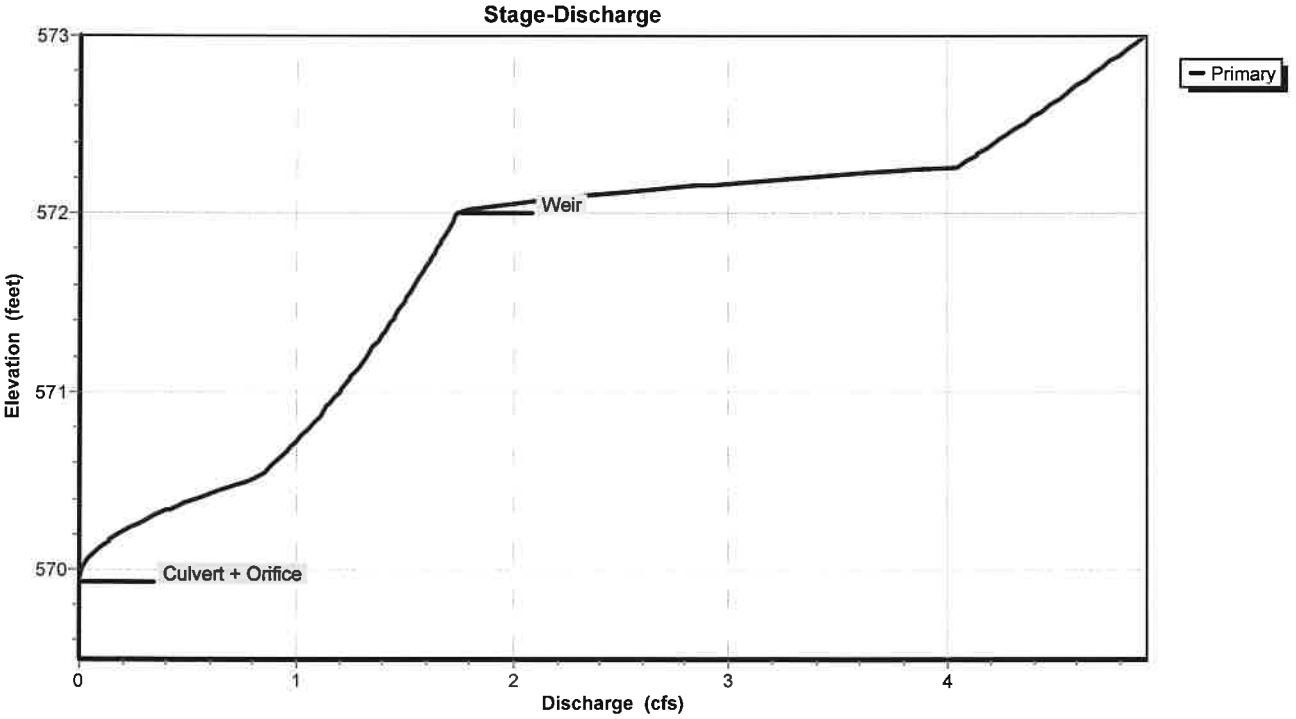
Primary OutFlow Max=0.68 cfs @ 12.65 hrs HW=570.46' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.68 cfs @ 2.31 fps)
└**2=Orifice** (Passes 0.68 cfs of 0.76 cfs potential flow)
└**3=Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

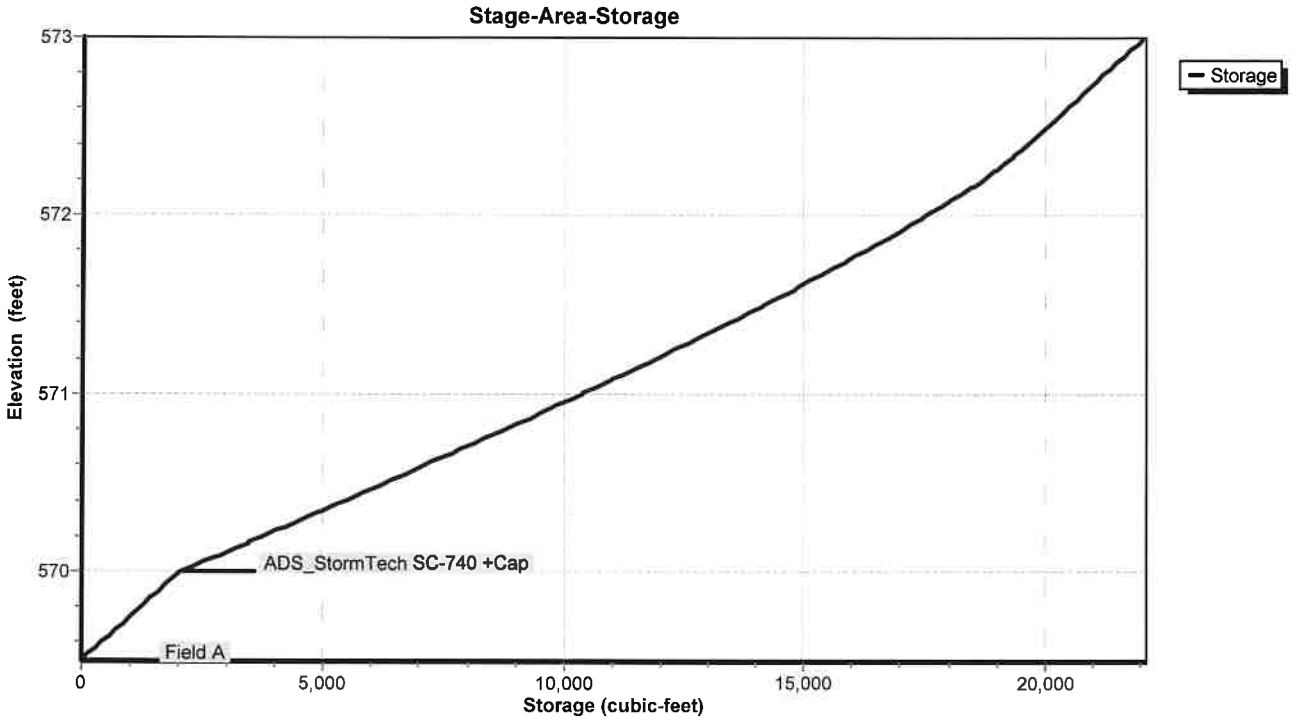


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.00	0	569.50	0.00
8.00	0.01	32	569.51	0.00
10.00	0.06	286	569.57	0.00
12.00	**2.68**	**2,414**	**570.04**	**0.03**
14.00	**0.27**	**5,111**	**570.36**	**0.45**
16.00	0.16	4,155	570.25	0.25
18.00	0.12	3,660	570.19	0.17
20.00	0.09	3,359	570.15	0.12
22.00	0.08	3,149	570.13	0.10
24.00	0.07	3,029	570.12	0.09
26.00	0.03	2,788	570.09	0.06
28.00	0.03	2,647	570.07	0.05
30.00	0.03	2,566	570.06	0.04
32.00	0.03	2,517	570.06	0.04
34.00	0.03	2,484	570.05	0.04
36.00	0.03	2,459	570.05	0.03
38.00	0.03	2,441	570.05	0.03
40.00	0.03	2,426	570.05	0.03
42.00	0.03	2,413	570.04	0.03
44.00	0.03	2,402	570.04	0.03
46.00	0.03	2,392	570.04	0.03
48.00	0.01	2,323	570.03	0.03
50.00	0.00	2,199	570.02	0.02
52.00	0.00	2,091	570.01	0.01
54.00	0.00	2,010	570.00	0.01
56.00	0.00	1,957	569.98	0.01
58.00	0.00	1,919	569.97	0.00
60.00	0.00	1,891	569.97	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 1.42" for 2-Year event
Inflow = 3.32 cfs @ 12.00 hrs, Volume= 0.177 af
Outflow = 1.41 cfs @ 12.13 hrs, Volume= 0.177 af, Atten= 58%, Lag= 7.6 min
Primary = 1.41 cfs @ 12.13 hrs, Volume= 0.177 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.60' @ 12.13 hrs Surf.Area= 5,993 sf Storage= 3,274 cf

Plug-Flow detention time= 499.6 min calculated for 0.177 af (100% of inflow)
Center-of-Mass det. time= 499.8 min (1,311.6 - 811.8)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

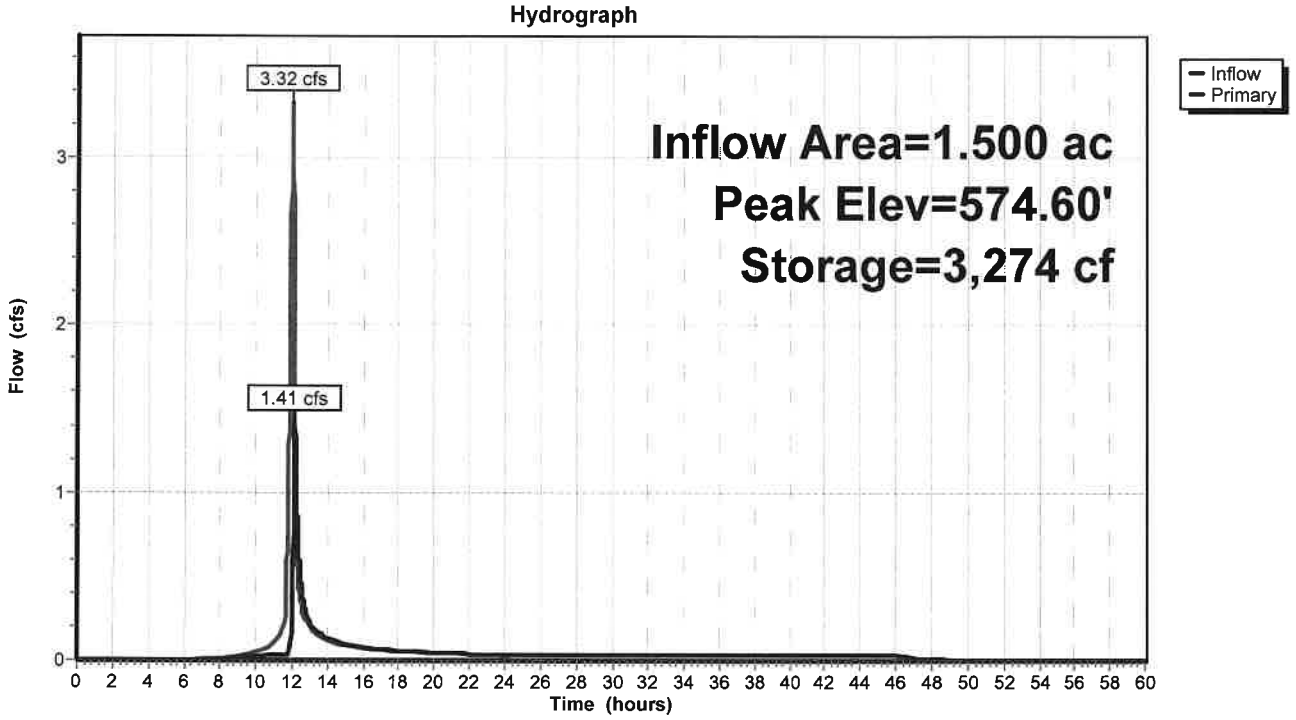
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

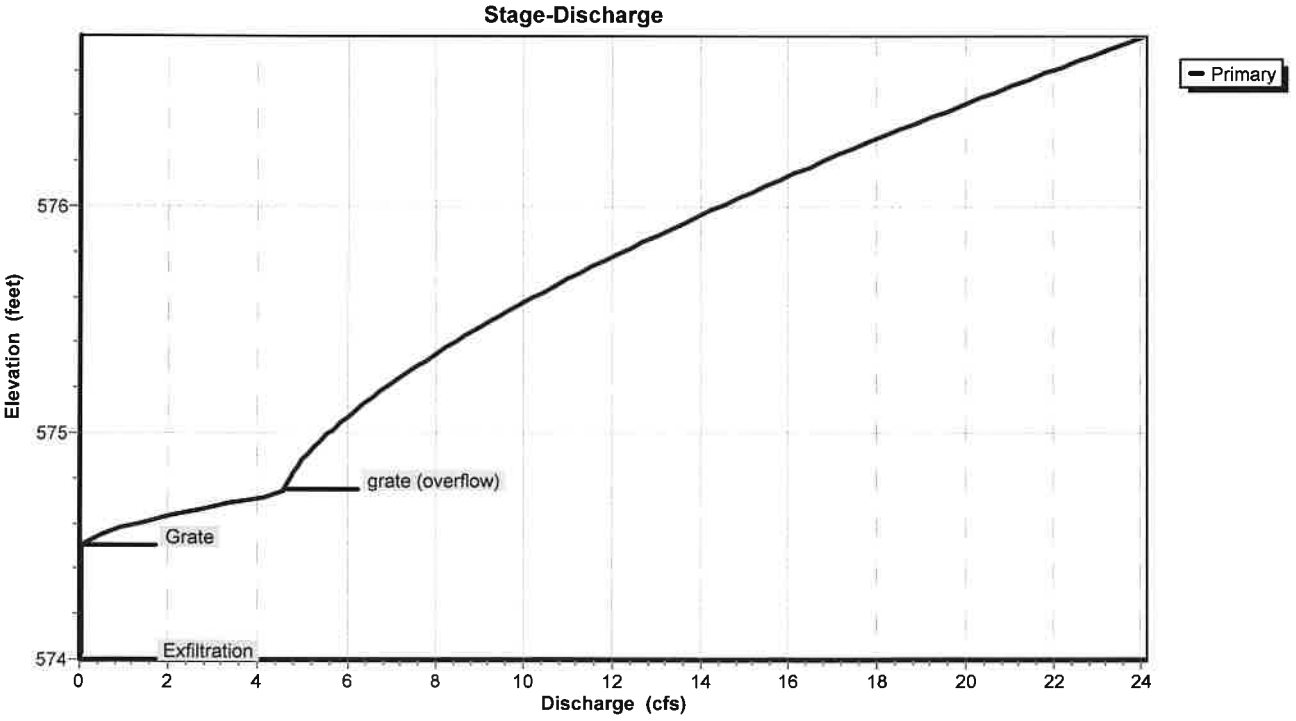
Primary OutFlow Max=1.41 cfs @ 12.13 hrs HW=574.60' (Free Discharge)
- **1=8" pipe** (Passes 1.41 cfs of 4.48 cfs potential flow)
  - **2=Grate** (Weir Controls 1.37 cfs @ 1.05 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

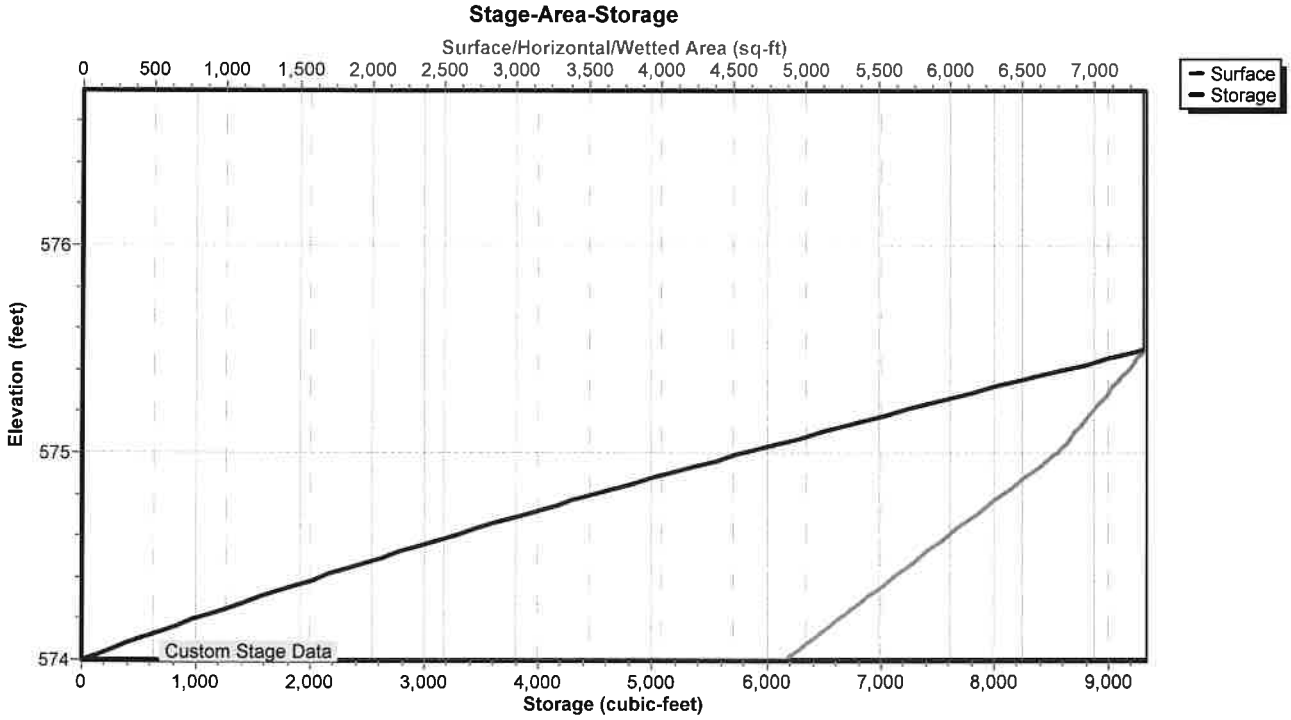


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.00	0	574.00	0.00
8.00	0.01	26	574.01	0.01
10.00	0.04	116	574.02	0.02
12.00	**3.32**	**2,442**	**574.46**	**0.03**
14.00	0.12	**2,754**	**574.52**	**0.13**
16.00	0.07	2,701	574.51	0.08
18.00	0.05	2,683	574.50	0.06
20.00	0.04	2,669	574.50	0.04
22.00	0.04	2,664	574.50	0.04
24.00	0.03	2,661	574.50	0.03
26.00	0.00	2,430	574.46	0.03
28.00	0.00	2,186	574.42	0.03
30.00	0.00	1,947	574.37	0.03
32.00	0.00	1,712	574.33	0.03
34.00	0.00	1,480	574.29	0.03
36.00	0.00	1,253	574.25	0.03
38.00	0.00	1,030	574.20	0.03
40.00	0.00	810	574.16	0.03
42.00	0.00	595	574.12	0.03
44.00	0.00	384	574.08	0.03
46.00	0.00	176	574.04	0.03
48.00	0.00	40	574.01	0.01
50.00	0.00	9	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=1.79"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=4.02 cfs 0.254 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=1.88"
Flow Length=345' Tc=9.1 min CN=92 Runoff=4.35 cfs 0.235 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=570.79' Storage=8,639 cf Inflow=7.03 cfs 0.489 af
Outflow=1.05 cfs 0.446 af

Pond 9P: Bioretention Area 3 Peak Elev=574.68' Storage=3,708 cf Inflow=4.35 cfs 0.235 af
Outflow=3.06 cfs 0.235 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.489 af Average Runoff Depth = 1.83"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

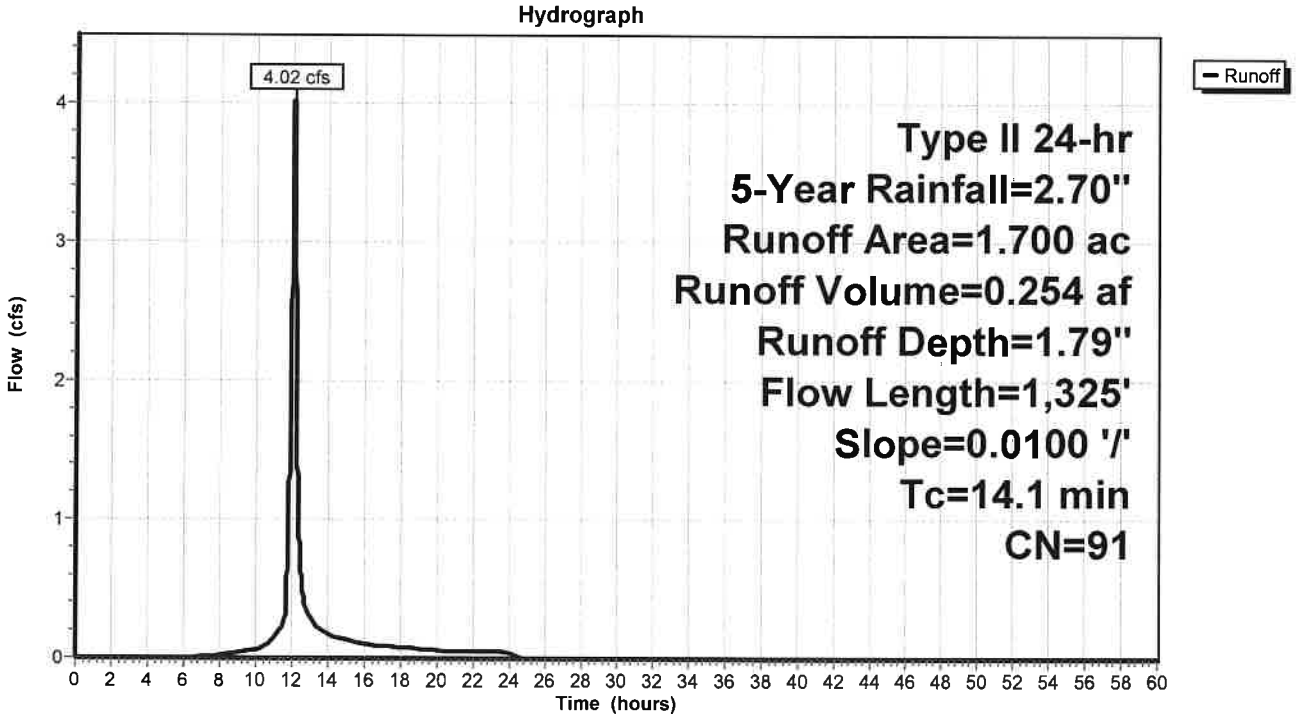
Runoff = 4.02 cfs @ 12.06 hrs, Volume= 0.254 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass**
					Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.00
7.00	0.27	0.00	0.01
8.00	0.32	0.01	0.02
9.00	0.40	0.03	0.04
10.00	0.49	0.07	0.06
11.00	0.63	0.13	0.14
12.00	1.79	0.98	**3.54**
13.00	2.08	1.24	**0.30**
14.00	2.21	1.35	0.17
15.00	2.30	1.43	0.13
16.00	2.38	1.50	0.10
17.00	2.43	1.55	0.09
18.00	2.49	1.60	0.08
19.00	2.53	1.64	0.07
20.00	2.57	1.67	0.06
21.00	2.60	1.71	0.05
22.00	2.64	1.74	0.05
23.00	2.67	1.77	0.05
24.00	**2.70**	**1.79**	0.05
25.00	2.70	1.79	0.00
26.00	2.70	1.79	0.00
27.00	2.70	1.79	0.00
28.00	2.70	1.79	0.00
29.00	2.70	1.79	0.00
30.00	2.70	1.79	0.00
31.00	2.70	1.79	0.00
32.00	2.70	1.79	0.00
33.00	2.70	1.79	0.00
34.00	2.70	1.79	0.00
35.00	2.70	1.79	0.00
36.00	2.70	1.79	0.00
37.00	2.70	1.79	0.00
38.00	2.70	1.79	0.00
39.00	2.70	1.79	0.00
40.00	2.70	1.79	0.00
41.00	2.70	1.79	0.00
42.00	2.70	1.79	0.00
43.00	2.70	1.79	0.00
44.00	2.70	1.79	0.00
45.00	2.70	1.79	0.00
46.00	2.70	1.79	0.00
47.00	2.70	1.79	0.00
48.00	2.70	1.79	0.00
49.00	2.70	1.79	0.00
50.00	2.70	1.79	0.00
51.00	2.70	1.79	0.00
52.00	2.70	1.79	0.00
53.00	2.70	1.79	0.00
54.00	2.70	1.79	0.00
55.00	2.70	1.79	0.00
56.00	2.70	1.79	0.00
57.00	2.70	1.79	0.00
58.00	2.70	1.79	0.00
59.00	2.70	1.79	0.00
60.00	2.70	1.79	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

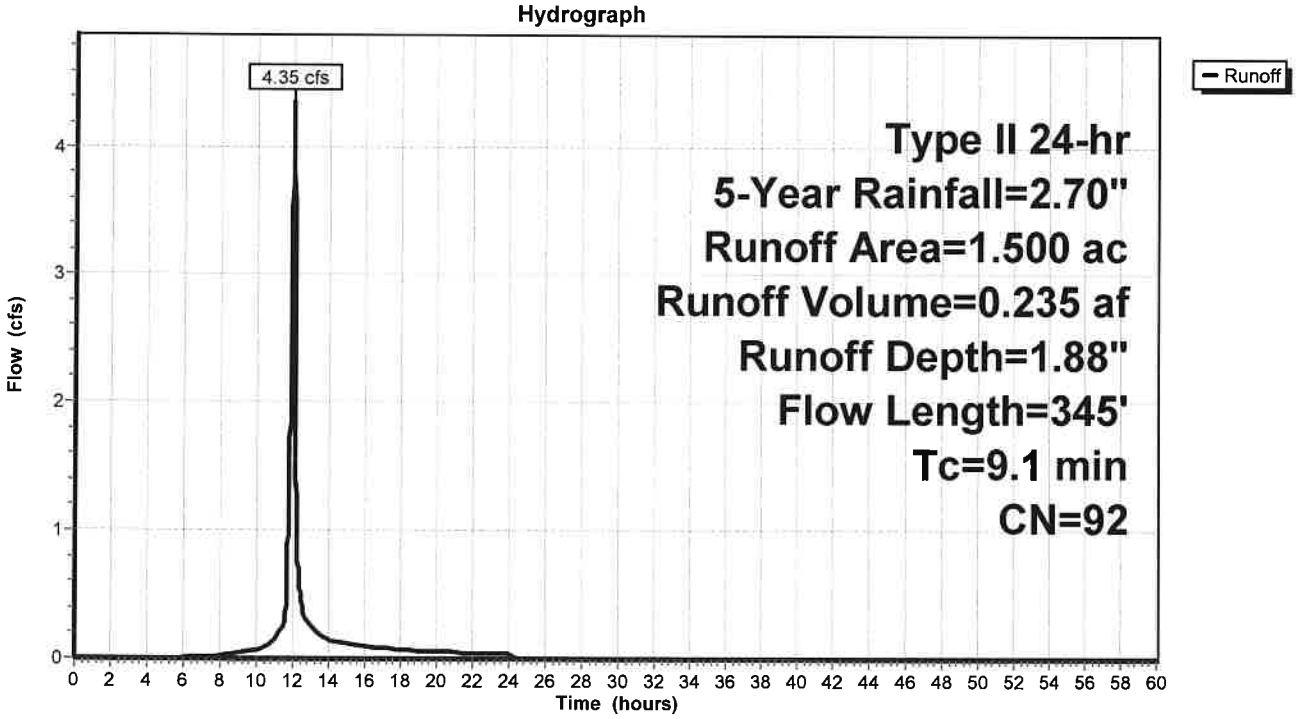
Runoff = 4.35 cfs @ 12.00 hrs, Volume= 0.235 af, Depth= 1.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.01
7.00	0.27	0.01	0.01
8.00	0.32	0.02	0.02
9.00	0.40	0.05	0.04
10.00	0.49	0.08	0.07
11.00	0.63	0.16	0.15
12.00	1.79	1.05	**4.35**
13.00	2.08	1.31	0.25
14.00	2.21	1.43	0.15
15.00	2.30	1.51	0.12
16.00	2.38	1.58	0.09
17.00	2.43	1.63	0.08
18.00	2.49	1.68	0.07
19.00	2.53	1.72	0.06
20.00	2.57	1.76	0.05
21.00	2.60	1.79	0.05
22.00	2.64	1.82	0.05
23.00	2.67	1.85	0.04
24.00	**2.70**	**1.88**	0.04
25.00	2.70	1.88	0.00
26.00	2.70	1.88	0.00
27.00	2.70	1.88	0.00
28.00	2.70	1.88	0.00
29.00	2.70	1.88	0.00
30.00	2.70	1.88	0.00
31.00	2.70	1.88	0.00
32.00	2.70	1.88	0.00
33.00	2.70	1.88	0.00
34.00	2.70	1.88	0.00
35.00	2.70	1.88	0.00
36.00	2.70	1.88	0.00
37.00	2.70	1.88	0.00
38.00	2.70	1.88	0.00
39.00	2.70	1.88	0.00
40.00	2.70	1.88	0.00
41.00	2.70	1.88	0.00
42.00	2.70	1.88	0.00
43.00	2.70	1.88	0.00
44.00	2.70	1.88	0.00
45.00	2.70	1.88	0.00
46.00	2.70	1.88	0.00
47.00	2.70	1.88	0.00
48.00	2.70	1.88	0.00
49.00	2.70	1.88	0.00
50.00	2.70	1.88	0.00
51.00	2.70	1.88	0.00
52.00	2.70	1.88	0.00
53.00	2.70	1.88	0.00
54.00	2.70	1.88	0.00
55.00	2.70	1.88	0.00
56.00	2.70	1.88	0.00
57.00	2.70	1.88	0.00
58.00	2.70	1.88	0.00
59.00	2.70	1.88	0.00
60.00	2.70	1.88	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 1.83" for 5-Year event
Inflow = 7.03 cfs @ 12.07 hrs, Volume= 0.489 af
Outflow = 1.05 cfs @ 12.55 hrs, Volume= 0.446 af, Atten= 85%, Lag= 29.0 min
Primary = 1.05 cfs @ 12.55 hrs, Volume= 0.446 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 570.79' @ 12.55 hrs Surf.Area= 10,145 sf Storage= 8,639 cf

Plug-Flow detention time= 321.6 min calculated for 0.446 af (91% of inflow)
Center-of-Mass det. time= 190.4 min (1,183.7 - 993.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

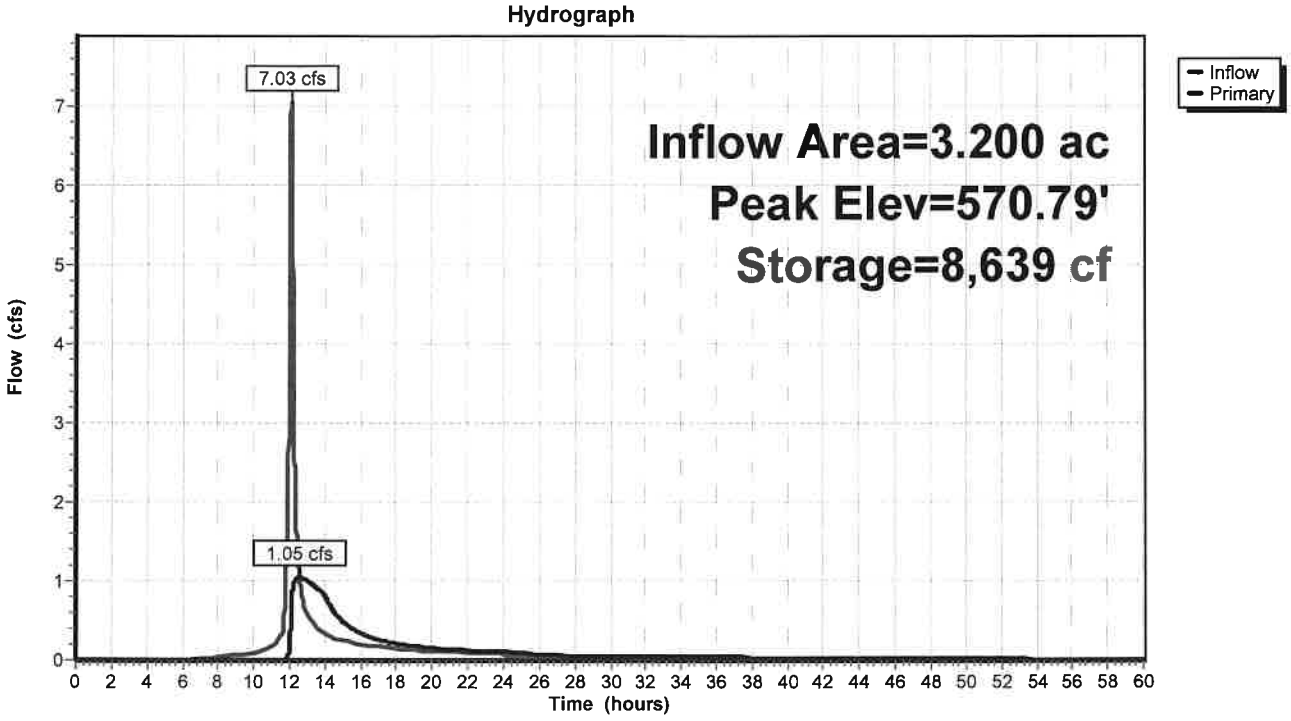
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

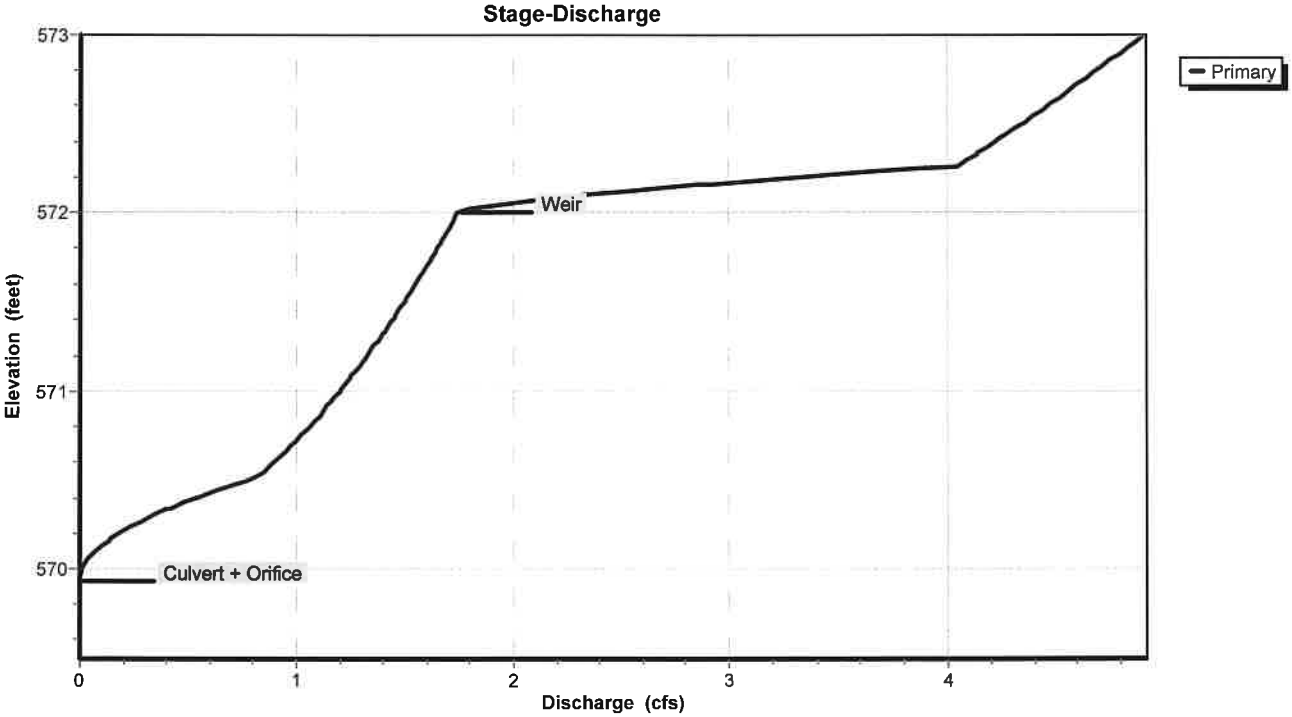
Primary OutFlow Max=1.05 cfs @ 12.55 hrs HW=570.79' (Free Discharge)
└**1=Culvert** (Passes 1.05 cfs of 1.53 cfs potential flow)
└**2=Orifice** (Orifice Controls 1.05 cfs @ 4.00 fps)
└**3=Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

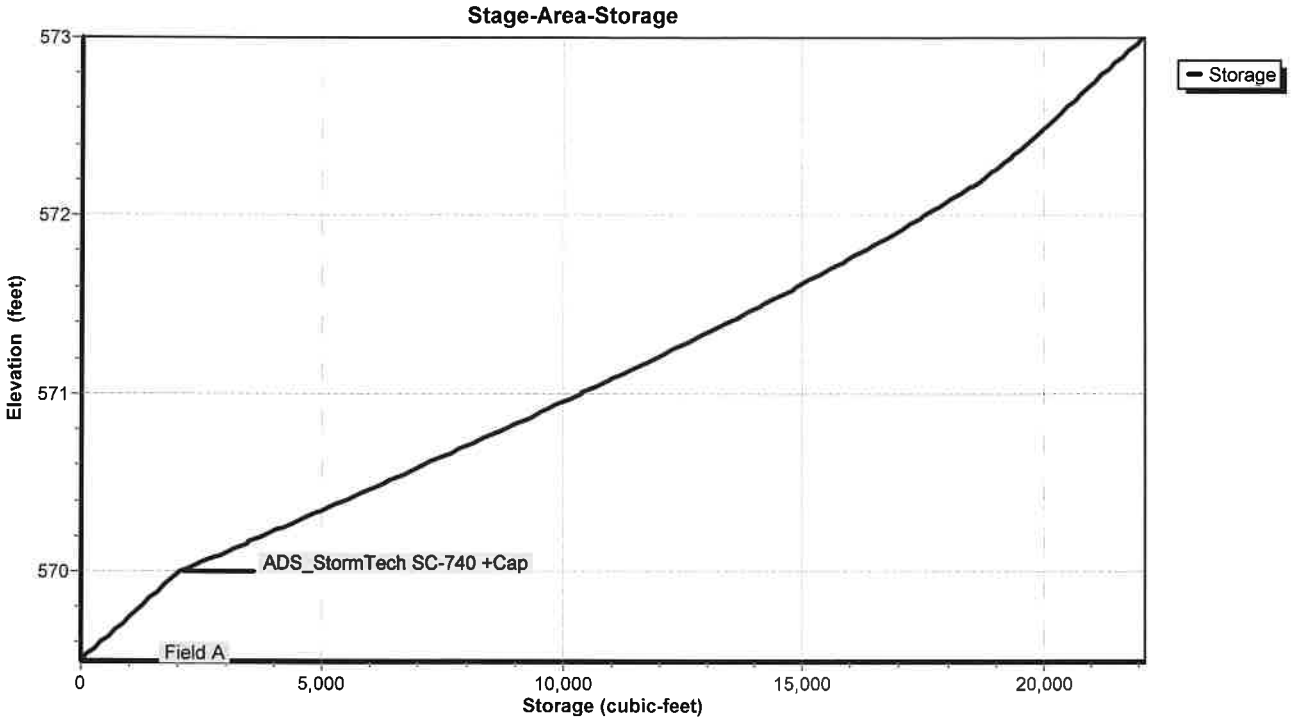


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.00	2	569.50	0.00
8.00	0.03	119	569.53	0.00
10.00	0.09	566	569.64	0.00
12.00	**5.13**	**3,593**	**570.18**	**0.16**
14.00	**0.33**	**6,444**	**570.52**	**0.81**
16.00	0.20	4,602	570.30	0.34
18.00	0.15	3,932	570.22	0.21
20.00	0.11	3,570	570.18	0.15
22.00	0.10	3,332	570.15	0.12
24.00	0.09	3,200	570.14	0.10
26.00	0.03	2,873	570.10	0.07
28.00	0.03	2,693	570.08	0.05
30.00	0.03	2,592	570.07	0.04
32.00	0.03	2,532	570.06	0.04
34.00	0.03	2,493	570.05	0.04
36.00	0.03	2,465	570.05	0.03
38.00	0.03	2,445	570.05	0.03
40.00	0.03	2,428	570.05	0.03
42.00	0.03	2,415	570.04	0.03
44.00	0.03	2,403	570.04	0.03
46.00	0.03	2,393	570.04	0.03
48.00	0.01	2,328	570.03	0.03
50.00	0.00	2,203	570.02	0.02
52.00	0.00	2,095	570.01	0.01
54.00	0.00	2,013	570.00	0.01
56.00	0.00	1,959	569.98	0.01
58.00	0.00	1,920	569.97	0.00
60.00	0.00	1,892	569.97	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 1.88" for 5-Year event
Inflow = 4.35 cfs @ 12.00 hrs, Volume= 0.235 af
Outflow = 3.06 cfs @ 12.08 hrs, Volume= 0.235 af, Atten= 30%, Lag= 4.6 min
Primary = 3.06 cfs @ 12.08 hrs, Volume= 0.235 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.68' @ 12.08 hrs Surf.Area= 6,129 sf Storage= 3,708 cf

Plug-Flow detention time= 384.2 min calculated for 0.235 af (100% of inflow)
Center-of-Mass det. time= 384.1 min (1,187.9 - 803.8)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

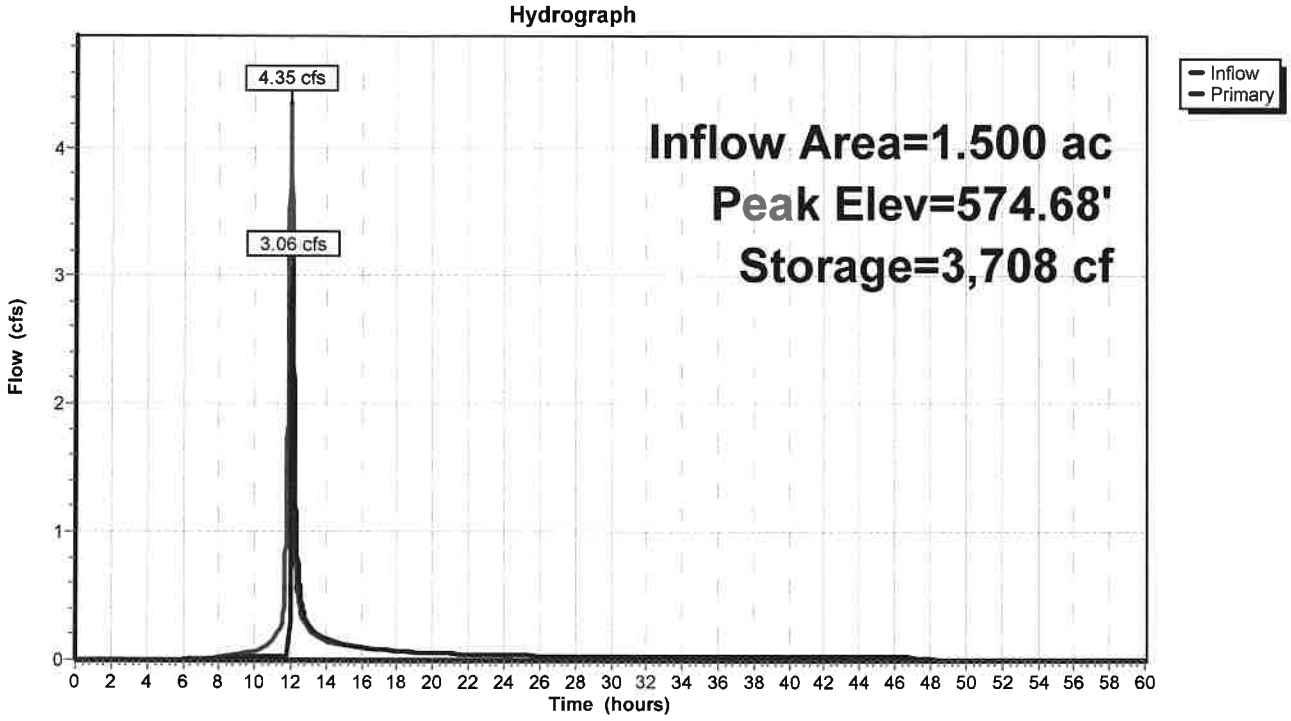
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

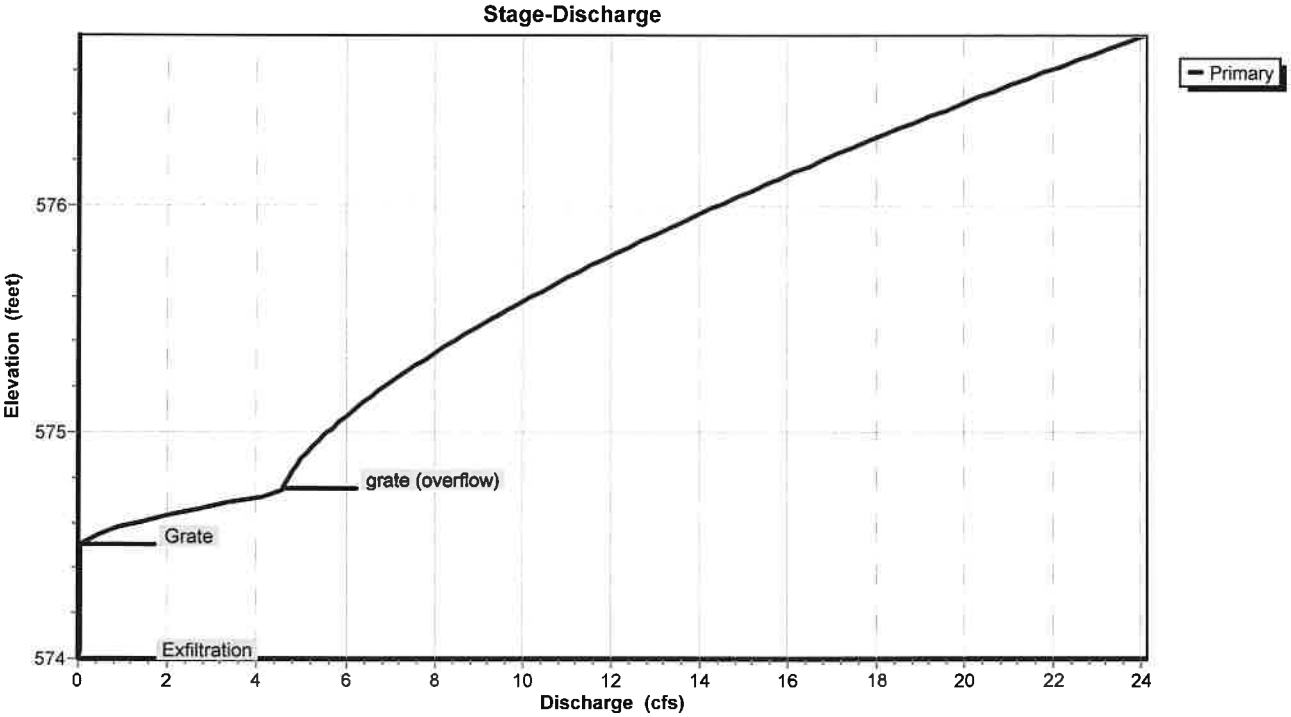
Primary OutFlow Max=3.05 cfs @ 12.08 hrs HW=574.68' (Free Discharge)
- **1=8" pipe** (Passes 3.05 cfs of 4.54 cfs potential flow)
  - **2=Grate** (Weir Controls 3.02 cfs @ 1.37 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

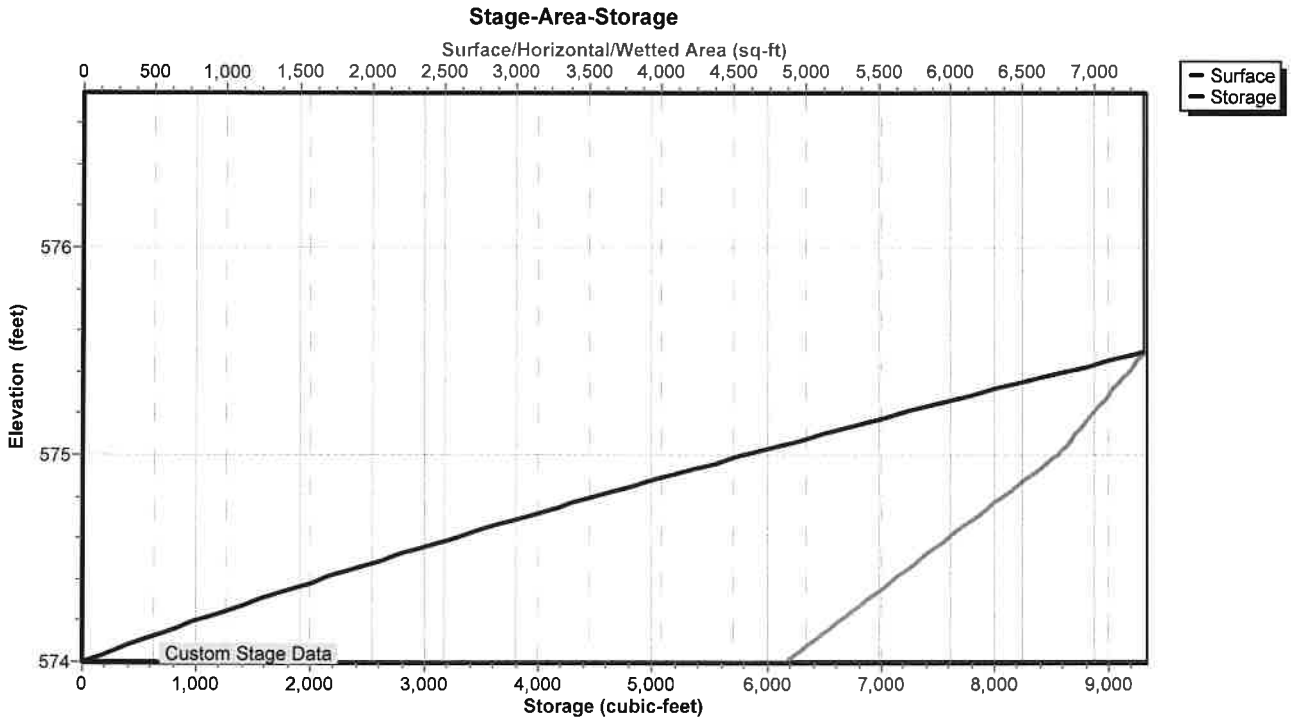


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.01	6	574.00	0.00
8.00	0.02	61	574.01	0.01
10.00	0.07	208	574.04	0.03
12.00	**4.35**	**3,326**	**574.61**	**1.59**
14.00	0.15	**2,783**	**574.52**	**0.16**
16.00	0.09	2,721	574.51	0.10
18.00	0.07	2,697	574.51	0.07
20.00	0.05	2,679	574.50	0.05
22.00	0.05	2,673	574.50	0.05
24.00	0.04	2,670	574.50	0.04
26.00	0.00	2,439	574.46	0.03
28.00	0.00	2,196	574.42	0.03
30.00	0.00	1,956	574.38	0.03
32.00	0.00	1,720	574.33	0.03
34.00	0.00	1,489	574.29	0.03
36.00	0.00	1,262	574.25	0.03
38.00	0.00	1,038	574.21	0.03
40.00	0.00	819	574.16	0.03
42.00	0.00	603	574.12	0.03
44.00	0.00	392	574.08	0.03
46.00	0.00	184	574.04	0.03
48.00	0.00	42	574.01	0.01
50.00	0.00	9	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=2.21"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=4.91 cfs 0.313 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=2.30"
Flow Length=345' Tc=9.1 min CN=92 Runoff=5.28 cfs 0.288 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=571.13' Storage=11,342 cf Inflow=9.17 cfs 0.601 af
Outflow=1.28 cfs 0.558 af

Pond 9P: Bioretention Area 3 Peak Elev=574.72' Storage=4,001 cf Inflow=5.28 cfs 0.288 af
Outflow=4.27 cfs 0.288 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.601 af Average Runoff Depth = 2.25"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

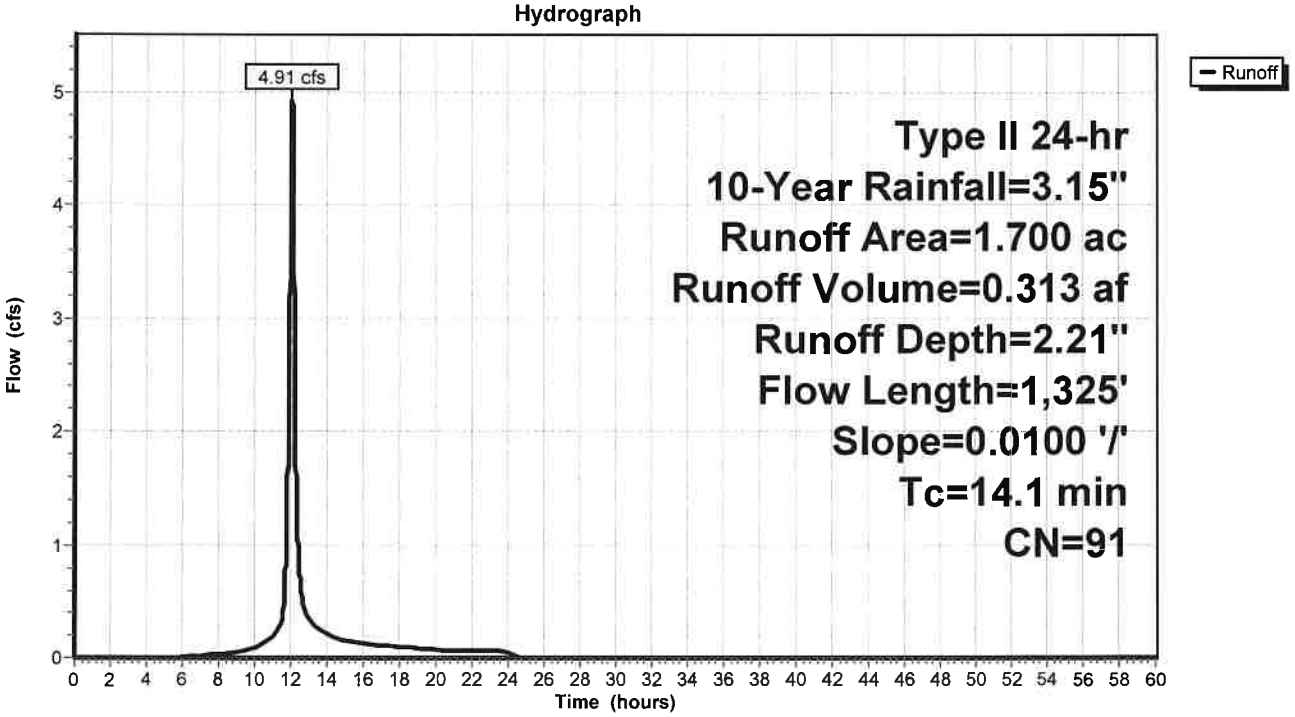
Runoff = 4.91 cfs @ 12.05 hrs, Volume= 0.313 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.15	2.21	0.00
1.00	0.03	0.00	0.00	53.00	3.15	2.21	0.00
2.00	0.07	0.00	0.00	54.00	3.15	2.21	0.00
3.00	0.11	0.00	0.00	55.00	3.15	2.21	0.00
4.00	0.15	0.00	0.00	56.00	3.15	2.21	0.00
5.00	0.20	0.00	0.00	57.00	3.15	2.21	0.00
6.00	0.25	0.00	0.01	58.00	3.15	2.21	0.00
7.00	0.31	0.01	0.02	59.00	3.15	2.21	0.00
8.00	0.38	0.03	0.03	60.00	3.15	2.21	0.00
9.00	0.46	0.06	0.06				
10.00	0.57	0.10	0.09				
11.00	0.74	0.19	0.19				
12.00	2.09	1.24	**4.35**				
13.00	2.43	1.55	**0.35**				
14.00	2.58	1.69	0.20				
15.00	2.69	1.78	0.16				
16.00	2.77	1.86	0.12				
17.00	2.84	1.92	0.11				
18.00	2.90	1.98	0.09				
19.00	2.95	2.03	0.08				
20.00	3.00	2.07	0.07				
21.00	3.04	2.11	0.06				
22.00	3.08	2.14	0.06				
23.00	3.11	2.18	0.06				
24.00	**3.15**	**2.21**	0.06				
25.00	3.15	2.21	0.00				
26.00	3.15	2.21	0.00				
27.00	3.15	2.21	0.00				
28.00	3.15	2.21	0.00				
29.00	3.15	2.21	0.00				
30.00	3.15	2.21	0.00				
31.00	3.15	2.21	0.00				
32.00	3.15	2.21	0.00				
33.00	3.15	2.21	0.00				
34.00	3.15	2.21	0.00				
35.00	3.15	2.21	0.00				
36.00	3.15	2.21	0.00				
37.00	3.15	2.21	0.00				
38.00	3.15	2.21	0.00				
39.00	3.15	2.21	0.00				
40.00	3.15	2.21	0.00				
41.00	3.15	2.21	0.00				
42.00	3.15	2.21	0.00				
43.00	3.15	2.21	0.00				
44.00	3.15	2.21	0.00				
45.00	3.15	2.21	0.00				
46.00	3.15	2.21	0.00				
47.00	3.15	2.21	0.00				
48.00	3.15	2.21	0.00				
49.00	3.15	2.21	0.00				
50.00	3.15	2.21	0.00				
51.00	3.15	2.21	0.00				

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

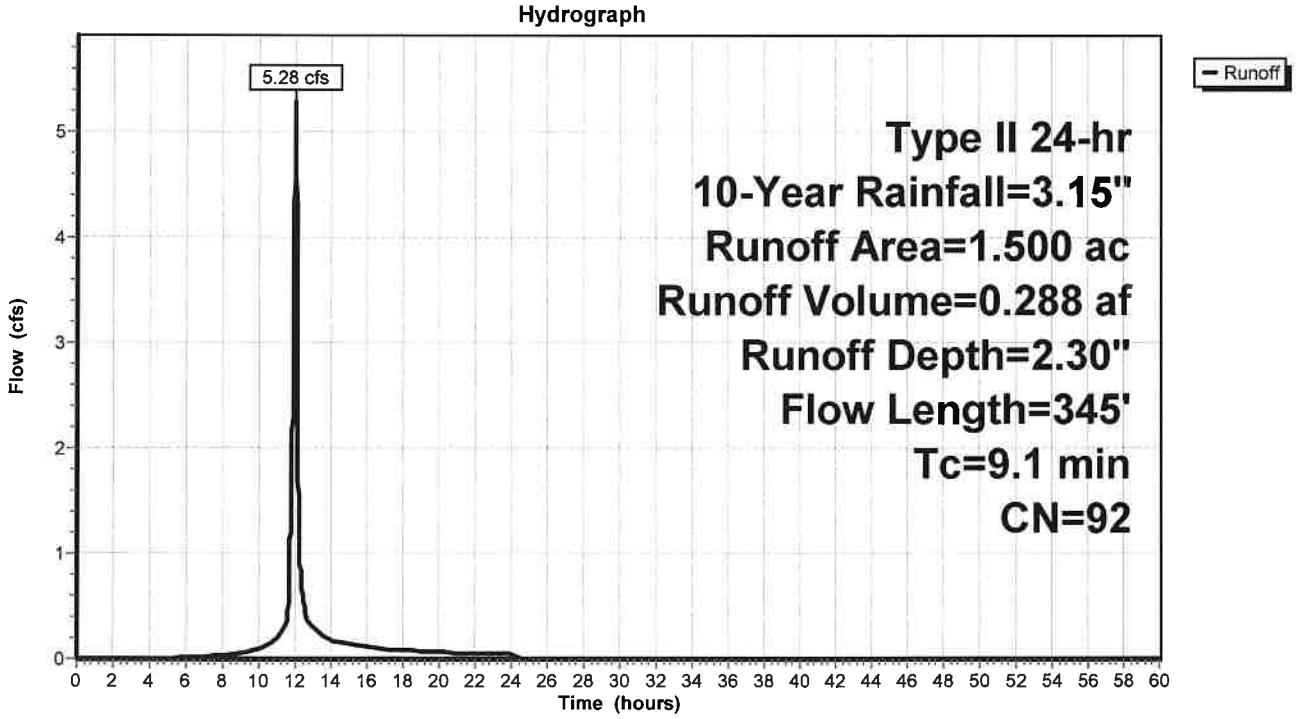
Runoff = 5.28 cfs @ 12.00 hrs, Volume= 0.288 af, Depth= 2.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.15	2.30	0.00
1.00	0.03	0.00	0.00	53.00	3.15	2.30	0.00
2.00	0.07	0.00	0.00	54.00	3.15	2.30	0.00
3.00	0.11	0.00	0.00	55.00	3.15	2.30	0.00
4.00	0.15	0.00	0.00	56.00	3.15	2.30	0.00
5.00	0.20	0.00	0.00	57.00	3.15	2.30	0.00
6.00	0.25	0.01	0.01	58.00	3.15	2.30	0.00
7.00	0.31	0.02	0.02	59.00	3.15	2.30	0.00
8.00	0.38	0.04	0.03	60.00	3.15	2.30	0.00
9.00	0.46	0.07	0.06				
10.00	0.57	0.12	0.09				
11.00	0.74	0.22	0.20				
12.00	2.09	1.32	**5.27**				
13.00	2.43	1.63	0.30				
14.00	2.58	1.77	0.18				
15.00	2.69	1.87	0.14				
16.00	2.77	1.95	0.11				
17.00	2.84	2.01	0.09				
18.00	2.90	2.07	0.08				
19.00	2.95	2.12	0.07				
20.00	3.00	2.16	0.06				
21.00	3.04	2.20	0.06				
22.00	3.08	2.23	0.05				
23.00	3.11	2.27	0.05				
24.00	**3.15**	**2.30**	0.05				
25.00	3.15	2.30	0.00				
26.00	3.15	2.30	0.00				
27.00	3.15	2.30	0.00				
28.00	3.15	2.30	0.00				
29.00	3.15	2.30	0.00				
30.00	3.15	2.30	0.00				
31.00	3.15	2.30	0.00				
32.00	3.15	2.30	0.00				
33.00	3.15	2.30	0.00				
34.00	3.15	2.30	0.00				
35.00	3.15	2.30	0.00				
36.00	3.15	2.30	0.00				
37.00	3.15	2.30	0.00				
38.00	3.15	2.30	0.00				
39.00	3.15	2.30	0.00				
40.00	3.15	2.30	0.00				
41.00	3.15	2.30	0.00				
42.00	3.15	2.30	0.00				
43.00	3.15	2.30	0.00				
44.00	3.15	2.30	0.00				
45.00	3.15	2.30	0.00				
46.00	3.15	2.30	0.00				
47.00	3.15	2.30	0.00				
48.00	3.15	2.30	0.00				
49.00	3.15	2.30	0.00				
50.00	3.15	2.30	0.00				
51.00	3.15	2.30	0.00				

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 2.25" for 10-Year event
Inflow = 9.17 cfs @ 12.06 hrs, Volume= 0.601 af
Outflow = 1.28 cfs @ 12.54 hrs, Volume= 0.558 af, Atten= 86%, Lag= 29.2 min
Primary = 1.28 cfs @ 12.54 hrs, Volume= 0.558 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 571.13' @ 12.54 hrs Surf.Area= 10,145 sf Storage= 11,342 cf

Plug-Flow detention time= 284.1 min calculated for 0.558 af (93% of inflow)
Center-of-Mass det. time= 176.3 min (1,132.0 - 955.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

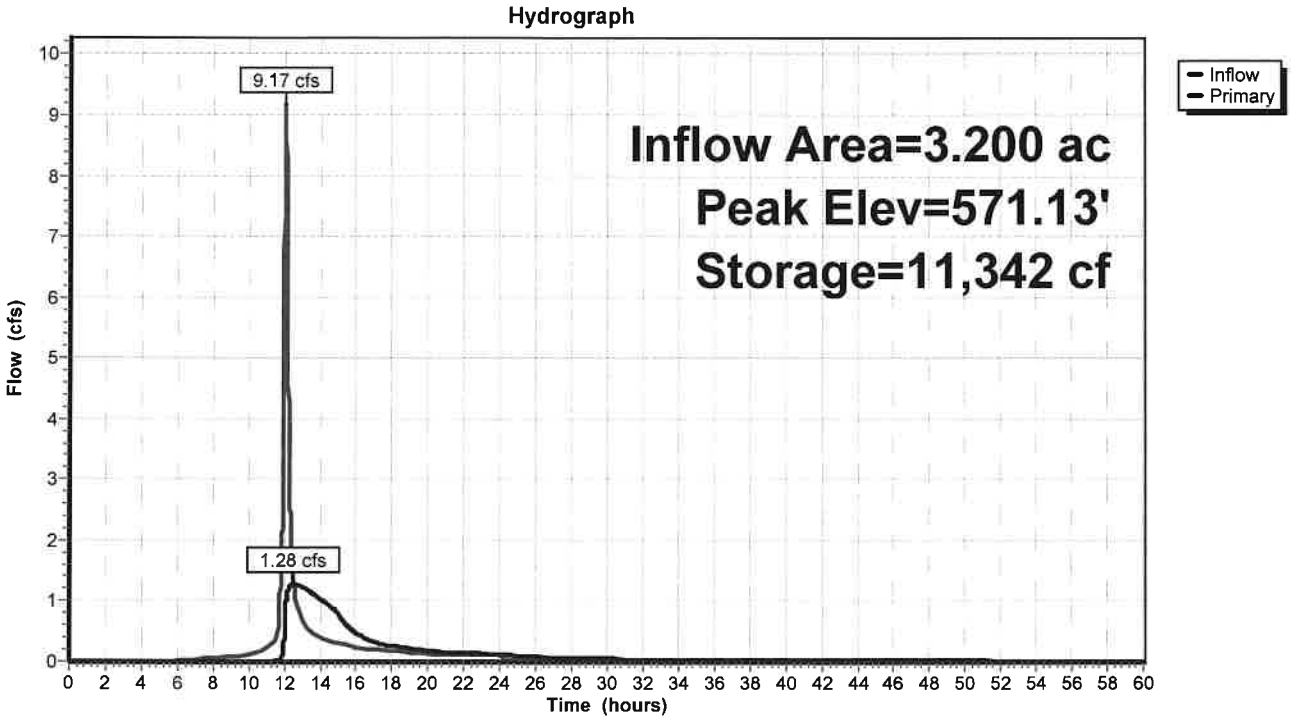
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

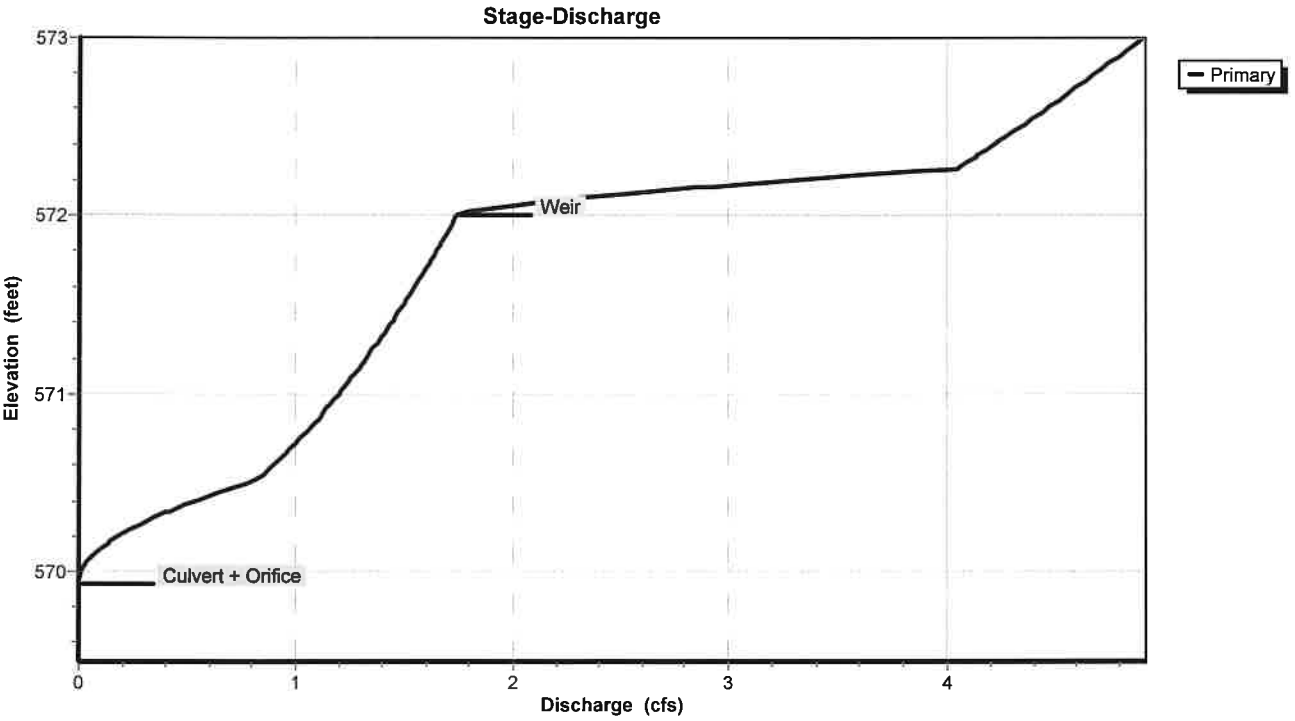
Primary OutFlow Max=1.28 cfs @ 12.54 hrs HW=571.13' (Free Discharge)
└─**1=Culvert** (Passes 1.28 cfs of 2.37 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 1.28 cfs @ 4.88 fps)
  └─**3=Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

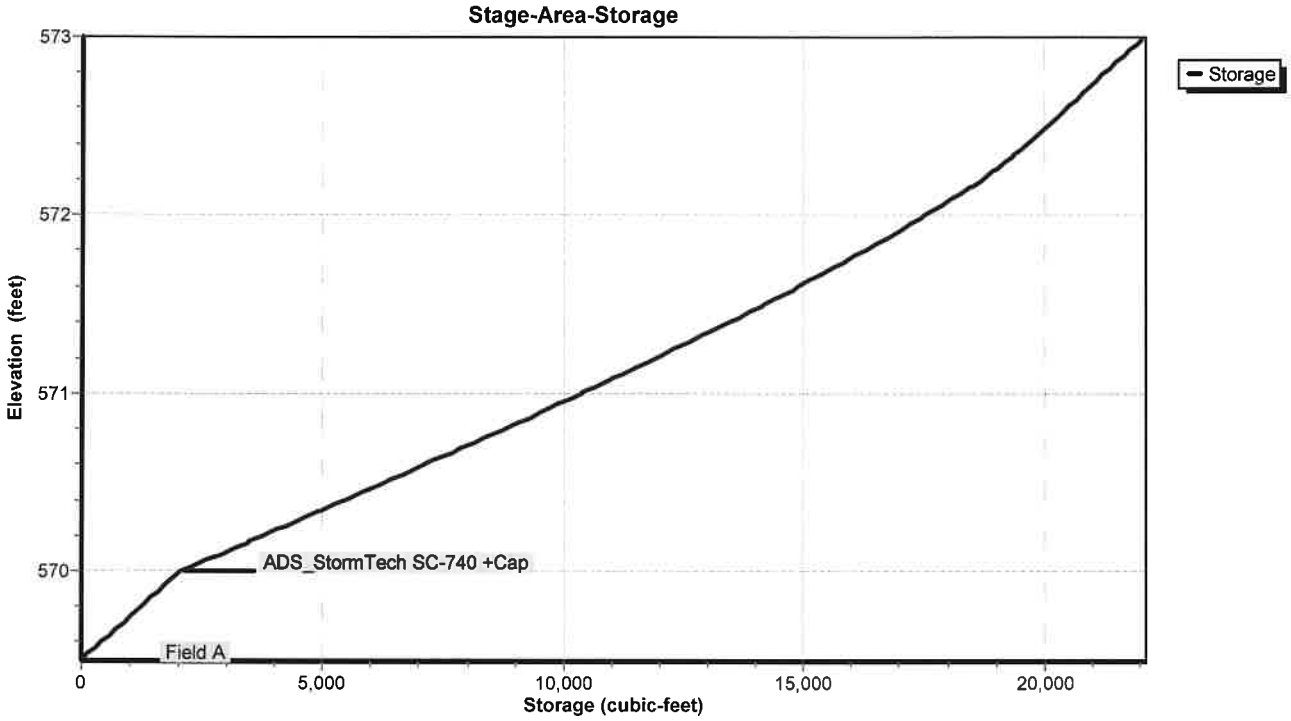


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.01	18	569.50	0.00
8.00	0.05	241	569.56	0.00
10.00	0.12	846	569.71	0.00
12.00	**7.80**	**5,030**	**570.35**	**0.43**
14.00	**0.39**	**8,504**	**570.77**	**1.03**
16.00	0.24	5,183	570.37	0.47
18.00	0.18	4,195	570.25	0.26
20.00	0.13	3,754	570.20	0.18
22.00	0.12	3,484	570.17	0.14
24.00	0.11	3,343	570.15	0.12
26.00	0.03	2,942	570.11	0.08
28.00	0.03	2,728	570.08	0.05
30.00	0.03	2,611	570.07	0.05
32.00	0.03	2,544	570.06	0.04
34.00	0.03	2,500	570.05	0.04
36.00	0.03	2,470	570.05	0.03
38.00	0.03	2,448	570.05	0.03
40.00	0.03	2,430	570.05	0.03
42.00	0.03	2,416	570.05	0.03
44.00	0.03	2,404	570.04	0.03
46.00	0.03	2,393	570.04	0.03
48.00	0.01	2,331	570.04	0.03
50.00	0.00	2,206	570.02	0.02
52.00	0.00	2,098	570.01	0.01
54.00	0.00	2,015	570.00	0.01
56.00	0.00	1,960	569.98	0.01
58.00	0.00	1,921	569.97	0.00
60.00	0.00	1,893	569.97	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 2.30" for 10-Year event
Inflow = 5.28 cfs @ 12.00 hrs, Volume= 0.288 af
Outflow = 4.27 cfs @ 12.06 hrs, Volume= 0.288 af, Atten= 19%, Lag= 3.5 min
Primary = 4.27 cfs @ 12.06 hrs, Volume= 0.288 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.72' @ 12.06 hrs Surf.Area= 6,219 sf Storage= 4,001 cf

Plug-Flow detention time= 318.6 min calculated for 0.288 af (100% of inflow)
Center-of-Mass det. time= 318.8 min (1,116.8 - 798.1)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

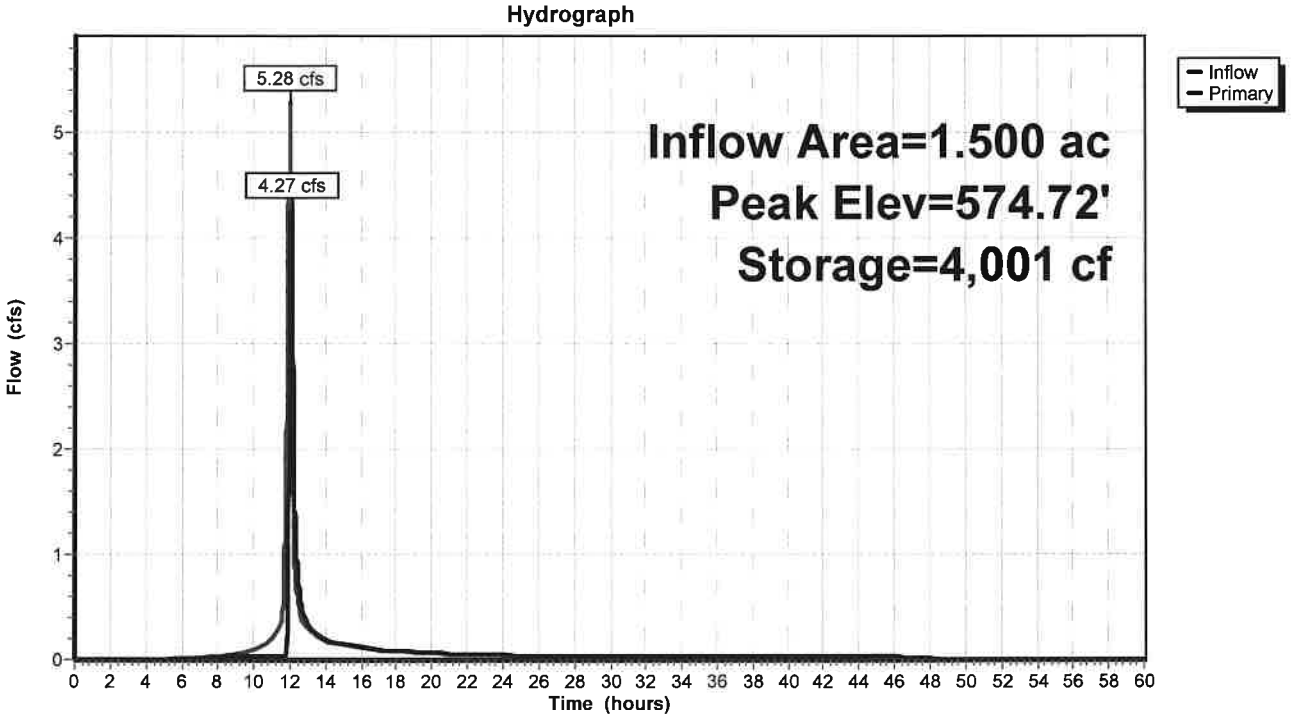
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

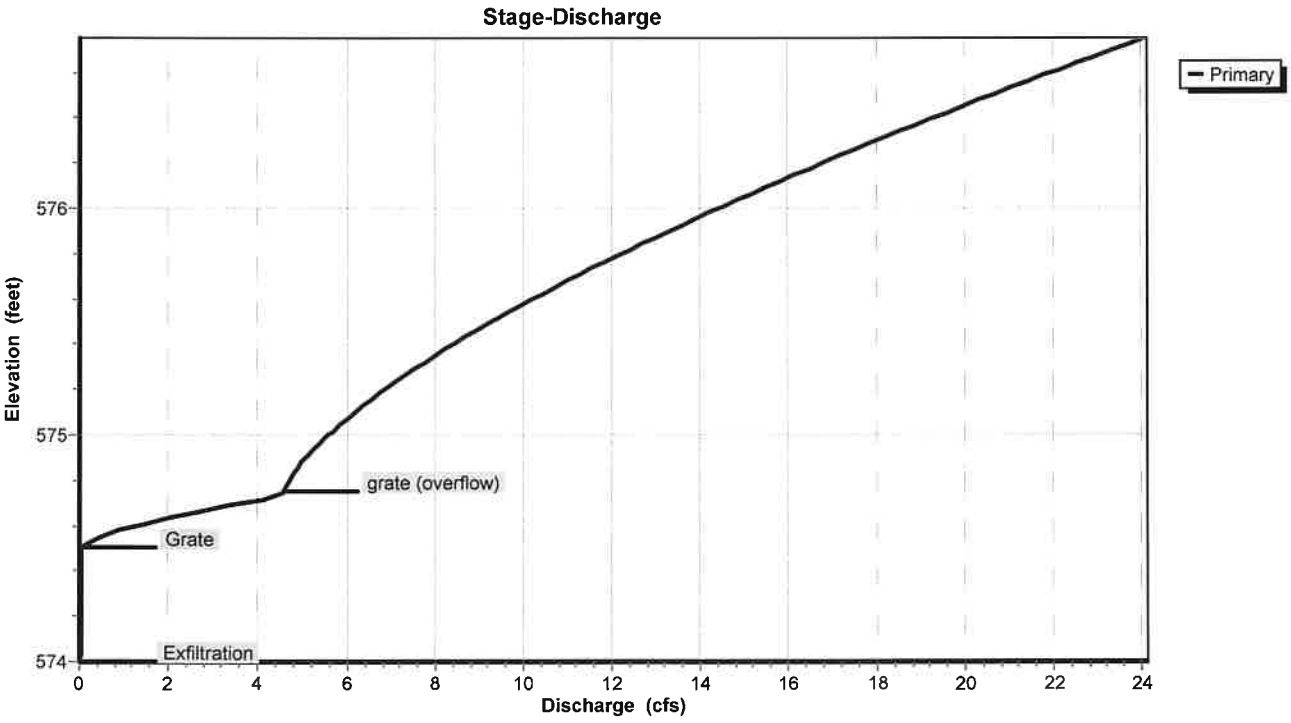
Primary OutFlow Max=4.36 cfs @ 12.06 hrs HW=574.72' (Free Discharge)
- **1=8" pipe** (Passes 4.36 cfs of 4.57 cfs potential flow)
  - **2=Grate** (Weir Controls 4.32 cfs @ 1.54 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

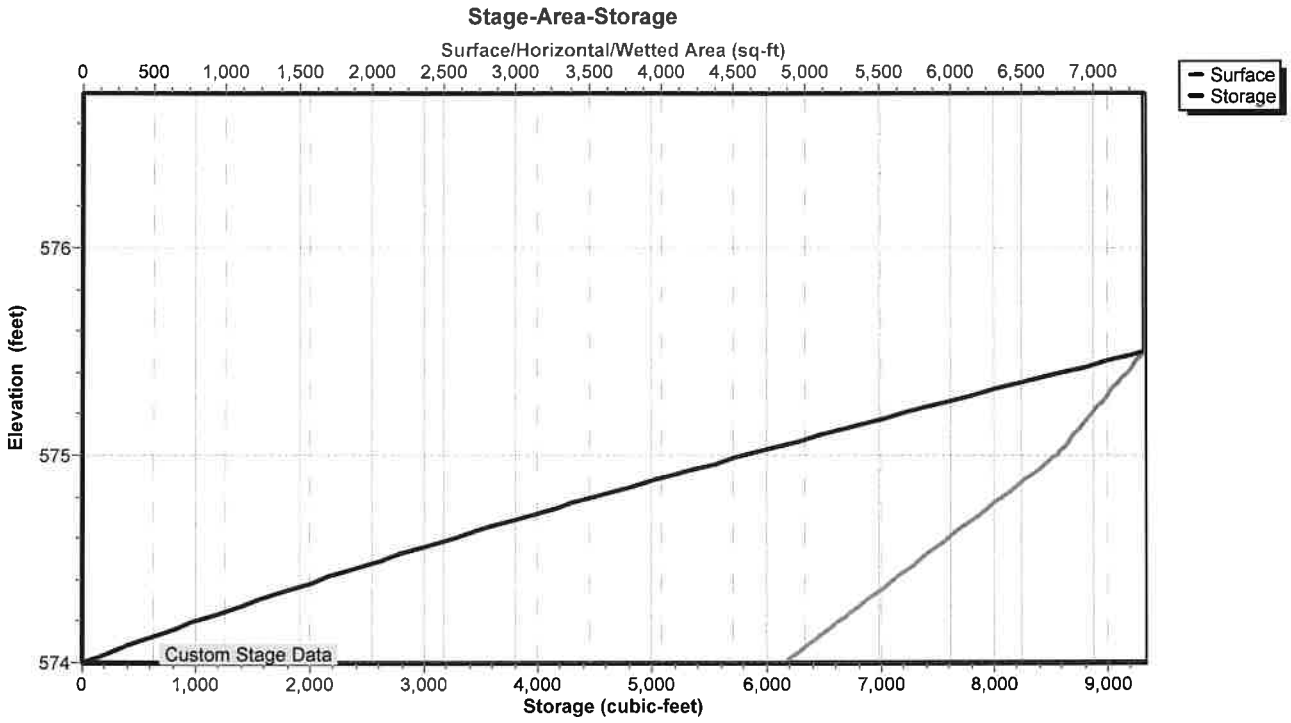


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.01	21	574.00	0.00
8.00	0.03	99	574.02	0.02
10.00	0.09	335	574.07	0.03
12.00	**5.27**	**3,799**	**574.69**	**3.45**
14.00	0.18	**2,801**	**574.52**	**0.19**
16.00	0.11	2,738	574.51	0.12
18.00	0.08	2,710	574.51	0.09
20.00	0.06	2,689	574.50	0.06
22.00	0.05	2,681	574.50	0.06
24.00	0.05	2,677	574.50	0.05
26.00	0.00	2,445	574.46	0.03
28.00	0.00	2,201	574.42	0.03
30.00	0.00	1,961	574.38	0.03
32.00	0.00	1,726	574.33	0.03
34.00	0.00	1,494	574.29	0.03
36.00	0.00	1,267	574.25	0.03
38.00	0.00	1,043	574.21	0.03
40.00	0.00	824	574.16	0.03
42.00	0.00	608	574.12	0.03
44.00	0.00	397	574.08	0.03
46.00	0.00	189	574.04	0.03
48.00	0.00	44	574.01	0.01
50.00	0.00	10	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=2.89"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=6.35 cfs 0.410 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=2.99"
Flow Length=345' Tc=9.1 min CN=92 Runoff=6.75 cfs 0.374 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=571.73' Storage=15,804 cf Inflow=11.11 cfs 0.784 af
Outflow=1.61 cfs 0.740 af

Pond 9P: Bioretention Area 3 Peak Elev=574.82' Storage=4,638 cf Inflow=6.75 cfs 0.374 af
Outflow=4.78 cfs 0.374 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.784 af Average Runoff Depth = 2.94"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

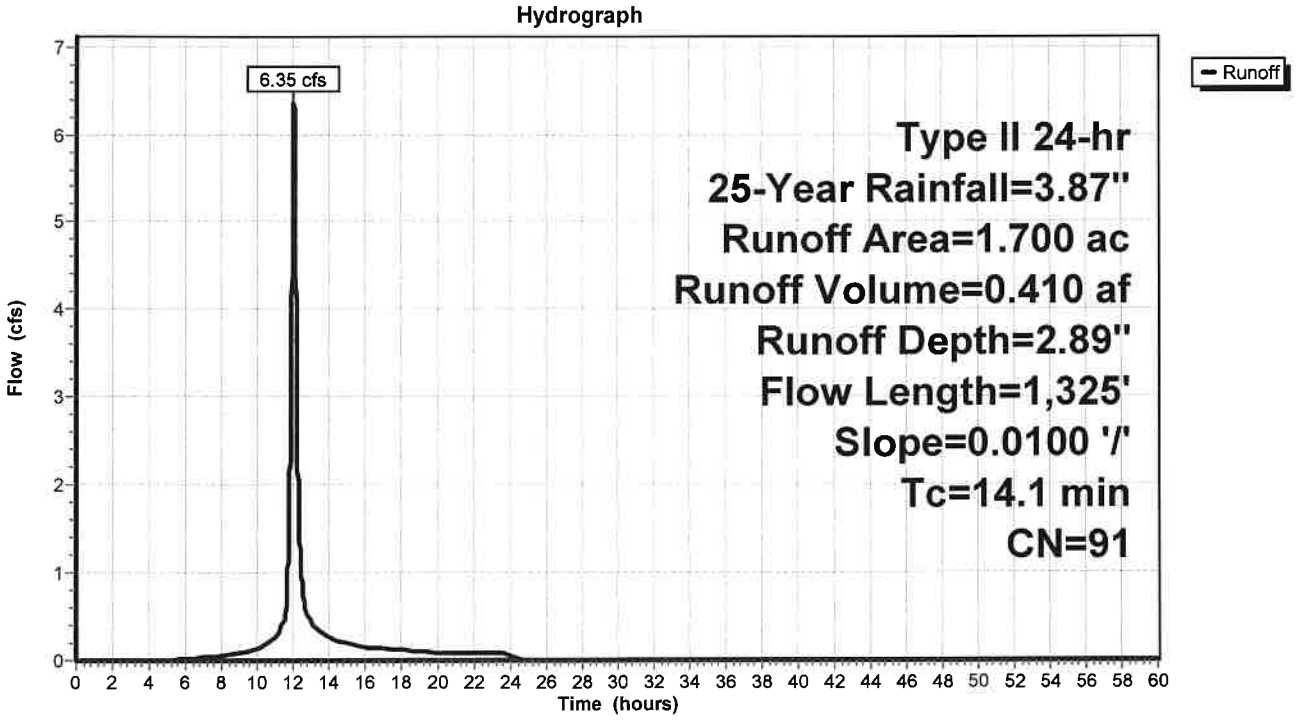
Runoff = 6.35 cfs @ 12.05 hrs, Volume= 0.410 af, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.04	0.00	0.00
2.00	0.09	0.00	0.00
3.00	0.13	0.00	0.00
4.00	0.19	0.00	0.00
5.00	0.24	0.00	0.01
6.00	0.31	0.01	0.02
7.00	0.38	0.03	0.04
8.00	0.46	0.06	0.05
9.00	0.57	0.10	0.09
10.00	0.70	0.17	0.13
11.00	0.91	0.30	0.27
12.00	2.57	1.67	**5.66**
13.00	2.99	2.06	**0.45**
14.00	3.17	2.23	0.26
15.00	3.30	2.36	0.20
16.00	3.41	2.45	0.15
17.00	3.49	2.53	0.13
18.00	3.56	2.60	0.12
19.00	3.63	2.66	0.10
20.00	3.68	2.72	0.09
21.00	3.73	2.76	0.08
22.00	3.78	2.81	0.08
23.00	3.83	2.85	0.07
24.00	**3.87**	**2.89**	0.07
25.00	3.87	2.89	0.00
26.00	3.87	2.89	0.00
27.00	3.87	2.89	0.00
28.00	3.87	2.89	0.00
29.00	3.87	2.89	0.00
30.00	3.87	2.89	0.00
31.00	3.87	2.89	0.00
32.00	3.87	2.89	0.00
33.00	3.87	2.89	0.00
34.00	3.87	2.89	0.00
35.00	3.87	2.89	0.00
36.00	3.87	2.89	0.00
37.00	3.87	2.89	0.00
38.00	3.87	2.89	0.00
39.00	3.87	2.89	0.00
40.00	3.87	2.89	0.00
41.00	3.87	2.89	0.00
42.00	3.87	2.89	0.00
43.00	3.87	2.89	0.00
44.00	3.87	2.89	0.00
45.00	3.87	2.89	0.00
46.00	3.87	2.89	0.00
47.00	3.87	2.89	0.00
48.00	3.87	2.89	0.00
49.00	3.87	2.89	0.00
50.00	3.87	2.89	0.00
51.00	3.87	2.89	0.00
52.00	3.87	2.89	0.00
53.00	3.87	2.89	0.00
54.00	3.87	2.89	0.00
55.00	3.87	2.89	0.00
56.00	3.87	2.89	0.00
57.00	3.87	2.89	0.00
58.00	3.87	2.89	0.00
59.00	3.87	2.89	0.00
60.00	3.87	2.89	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

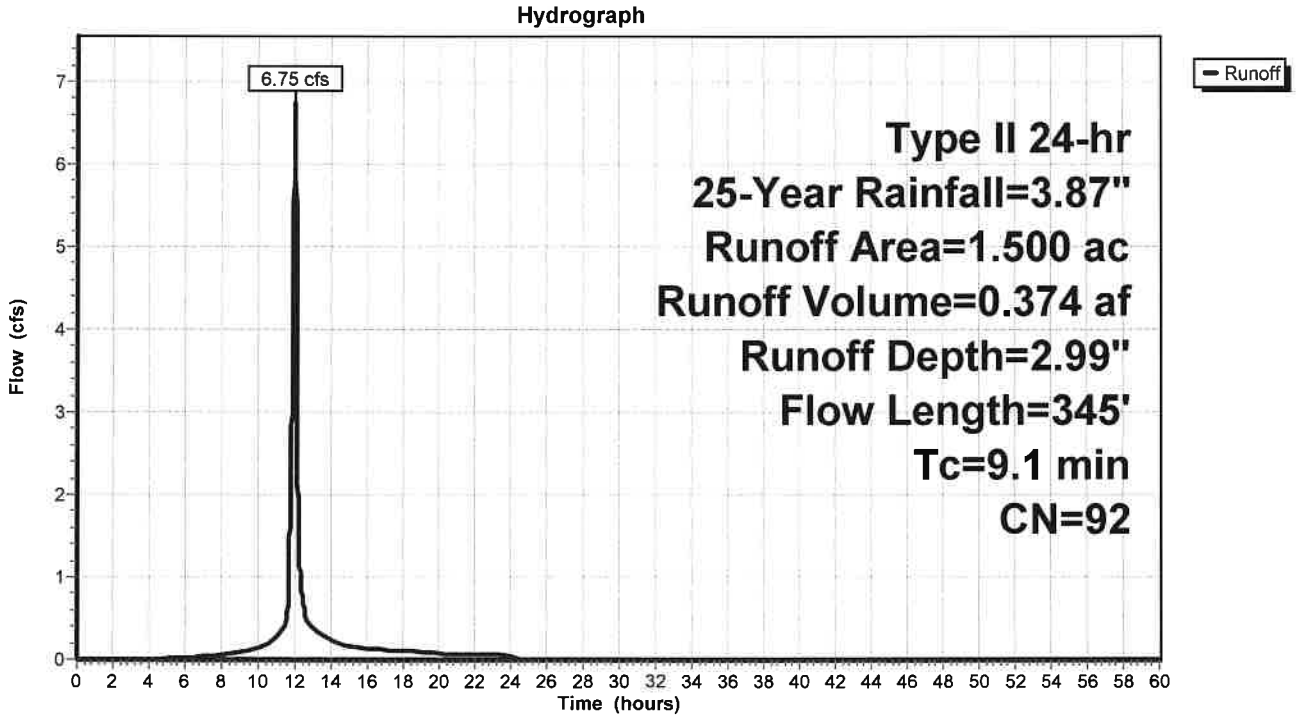
Runoff = 6.75 cfs @ 12.00 hrs, Volume= 0.374 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.87	2.99	0.00
1.00	0.04	0.00	0.00	53.00	3.87	2.99	0.00
2.00	0.09	0.00	0.00	54.00	3.87	2.99	0.00
3.00	0.13	0.00	0.00	55.00	3.87	2.99	0.00
4.00	0.19	0.00	0.00	56.00	3.87	2.99	0.00
5.00	0.24	0.01	0.01	57.00	3.87	2.99	0.00
6.00	0.31	0.02	0.02	58.00	3.87	2.99	0.00
7.00	0.38	0.04	0.04	59.00	3.87	2.99	0.00
8.00	0.46	0.07	0.05	60.00	3.87	2.99	0.00
9.00	0.57	0.12	0.09				
10.00	0.70	0.20	0.13				
11.00	0.91	0.34	0.27				
12.00	2.57	1.75	**6.75**				
13.00	2.99	2.15	0.38				
14.00	3.17	2.33	0.22				
15.00	3.30	2.45	0.17				
16.00	3.41	2.55	0.13				
17.00	3.49	2.63	0.12				
18.00	3.56	2.70	0.10				
19.00	3.63	2.76	0.09				
20.00	3.68	2.81	0.08				
21.00	3.73	2.86	0.07				
22.00	3.78	2.91	0.07				
23.00	3.83	2.95	0.07				
24.00	**3.87**	**2.99**	0.06				
25.00	3.87	2.99	0.00				
26.00	3.87	2.99	0.00				
27.00	3.87	2.99	0.00				
28.00	3.87	2.99	0.00				
29.00	3.87	2.99	0.00				
30.00	3.87	2.99	0.00				
31.00	3.87	2.99	0.00				
32.00	3.87	2.99	0.00				
33.00	3.87	2.99	0.00				
34.00	3.87	2.99	0.00				
35.00	3.87	2.99	0.00				
36.00	3.87	2.99	0.00				
37.00	3.87	2.99	0.00				
38.00	3.87	2.99	0.00				
39.00	3.87	2.99	0.00				
40.00	3.87	2.99	0.00				
41.00	3.87	2.99	0.00				
42.00	3.87	2.99	0.00				
43.00	3.87	2.99	0.00				
44.00	3.87	2.99	0.00				
45.00	3.87	2.99	0.00				
46.00	3.87	2.99	0.00				
47.00	3.87	2.99	0.00				
48.00	3.87	2.99	0.00				
49.00	3.87	2.99	0.00				
50.00	3.87	2.99	0.00				
51.00	3.87	2.99	0.00				

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 2.94" for 25-Year event
Inflow = 11.11 cfs @ 12.06 hrs, Volume= 0.784 af
Outflow = 1.61 cfs @ 12.54 hrs, Volume= 0.740 af, Atten= 85%, Lag= 29.2 min
Primary = 1.61 cfs @ 12.54 hrs, Volume= 0.740 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 571.73' @ 12.54 hrs Surf.Area= 10,145 sf Storage= 15,804 cf

Plug-Flow detention time= 252.2 min calculated for 0.740 af (94% of inflow)
Center-of-Mass det. time= 168.6 min (1,084.7 - 916.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

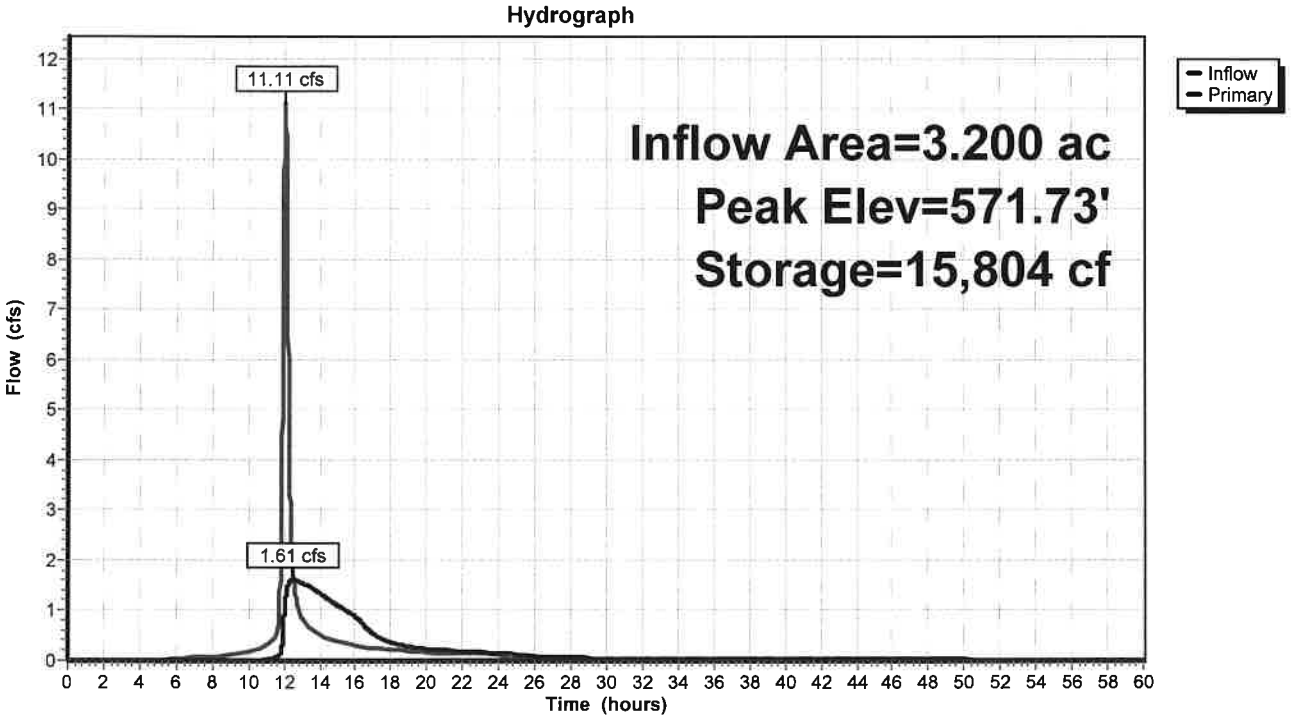
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

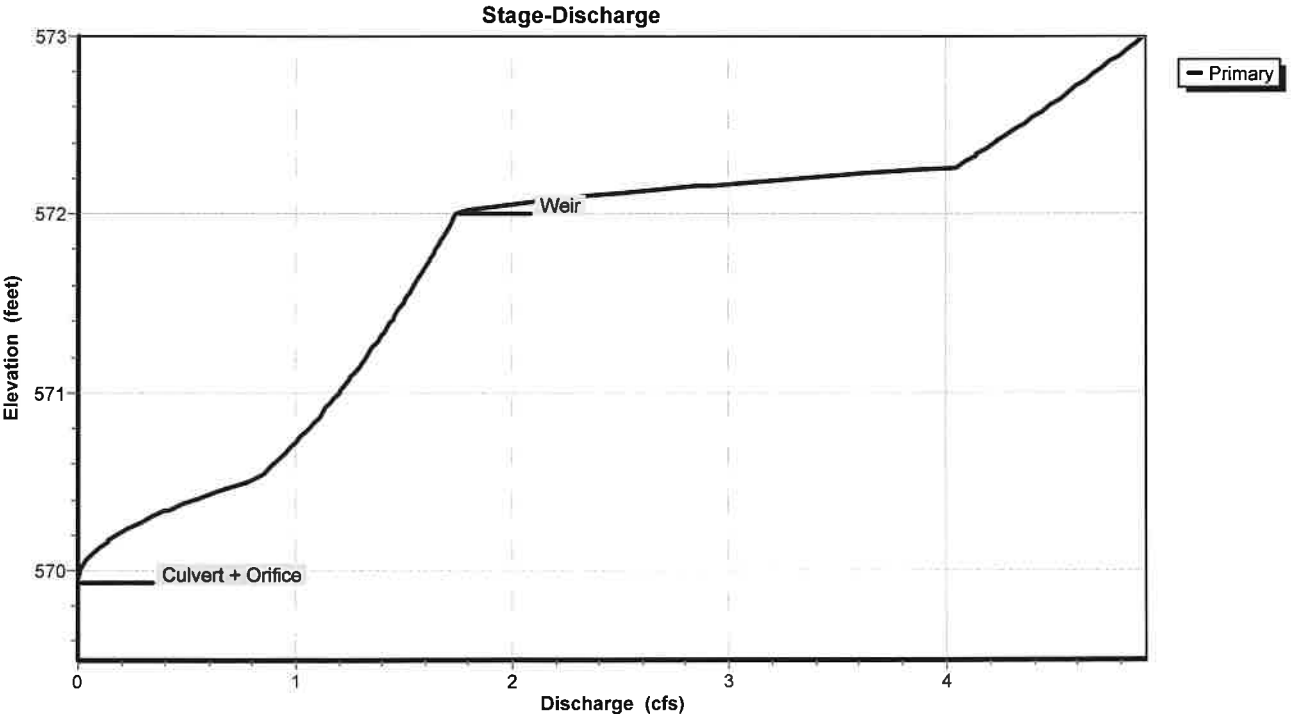
Primary OutFlow Max=1.61 cfs @ 12.54 hrs HW=571.73' (Free Discharge)
└**1=Culvert** (Passes 1.61 cfs of 3.29 cfs potential flow)
  ├**2=Orifice** (Orifice Controls 1.61 cfs @ 6.16 fps)
  └**3=Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

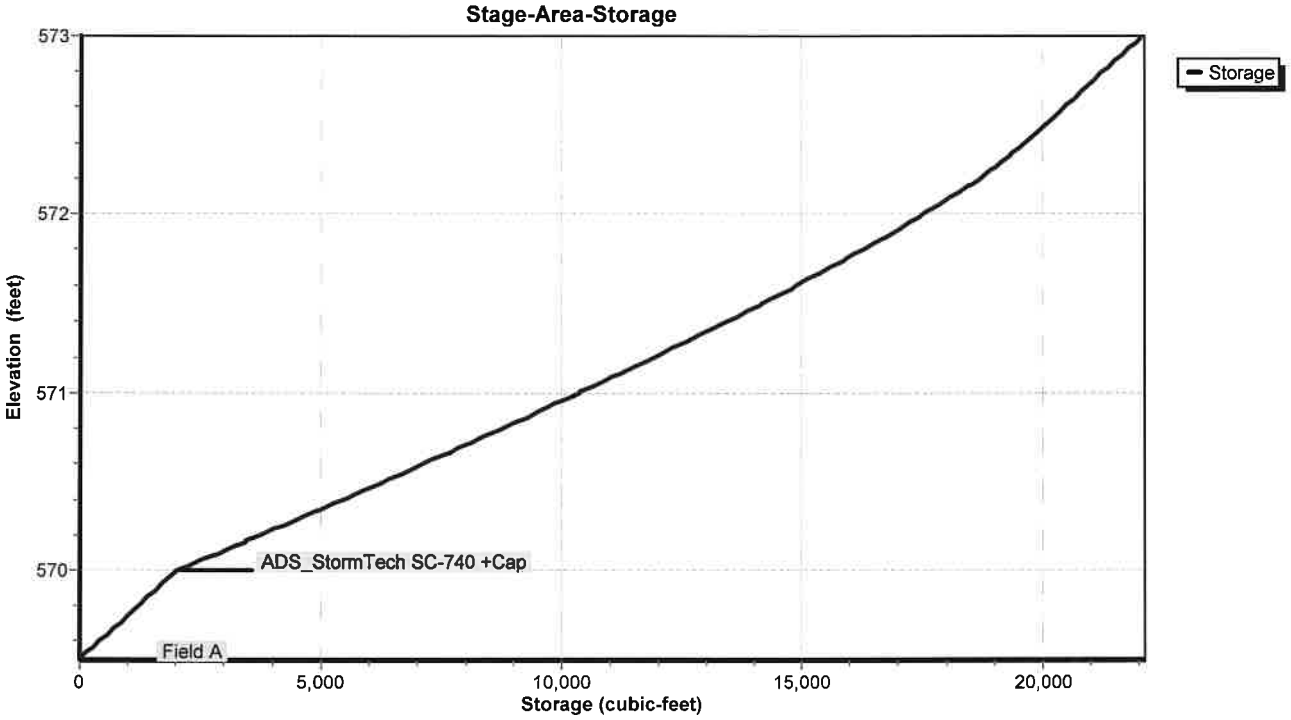


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.03	85	569.52	0.00
8.00	0.08	499	569.62	0.00
10.00	0.16	1,337	569.83	0.00
12.00	**10.28**	**7,562**	**570.65**	**0.94**
14.00	**0.49**	**12,132**	**571.23**	**1.34**
16.00	0.30	6,914	570.58	0.87
18.00	0.22	4,703	570.31	0.36
20.00	0.16	4,045	570.24	0.23
22.00	0.15	3,711	570.20	0.17
24.00	0.13	3,549	570.18	0.15
26.00	0.03	3,038	570.12	0.09
28.00	0.03	2,775	570.09	0.06
30.00	0.03	2,637	570.07	0.05
32.00	0.03	2,558	570.06	0.04
34.00	0.03	2,510	570.06	0.04
36.00	0.03	2,476	570.05	0.04
38.00	0.03	2,451	570.05	0.03
40.00	0.03	2,433	570.05	0.03
42.00	0.03	2,418	570.05	0.03
44.00	0.03	2,405	570.04	0.03
46.00	0.03	2,394	570.04	0.03
48.00	0.01	2,335	570.04	0.03
50.00	0.00	2,210	570.02	0.02
52.00	0.00	2,101	570.01	0.01
54.00	0.00	2,017	570.00	0.01
56.00	0.00	1,961	569.98	0.01
58.00	0.00	1,922	569.97	0.00
60.00	0.00	1,894	569.97	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 2.99" for 25-Year event
Inflow = 6.75 cfs @ 12.00 hrs, Volume= 0.374 af
Outflow = 4.78 cfs @ 12.08 hrs, Volume= 0.374 af, Atten= 29%, Lag= 4.5 min
Primary = 4.78 cfs @ 12.08 hrs, Volume= 0.374 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.82' @ 12.08 hrs Surf.Area= 6,409 sf Storage= 4,638 cf

Plug-Flow detention time= 252.6 min calculated for 0.374 af (100% of inflow)
Center-of-Mass det. time= 252.8 min (1,043.6 - 790.7)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

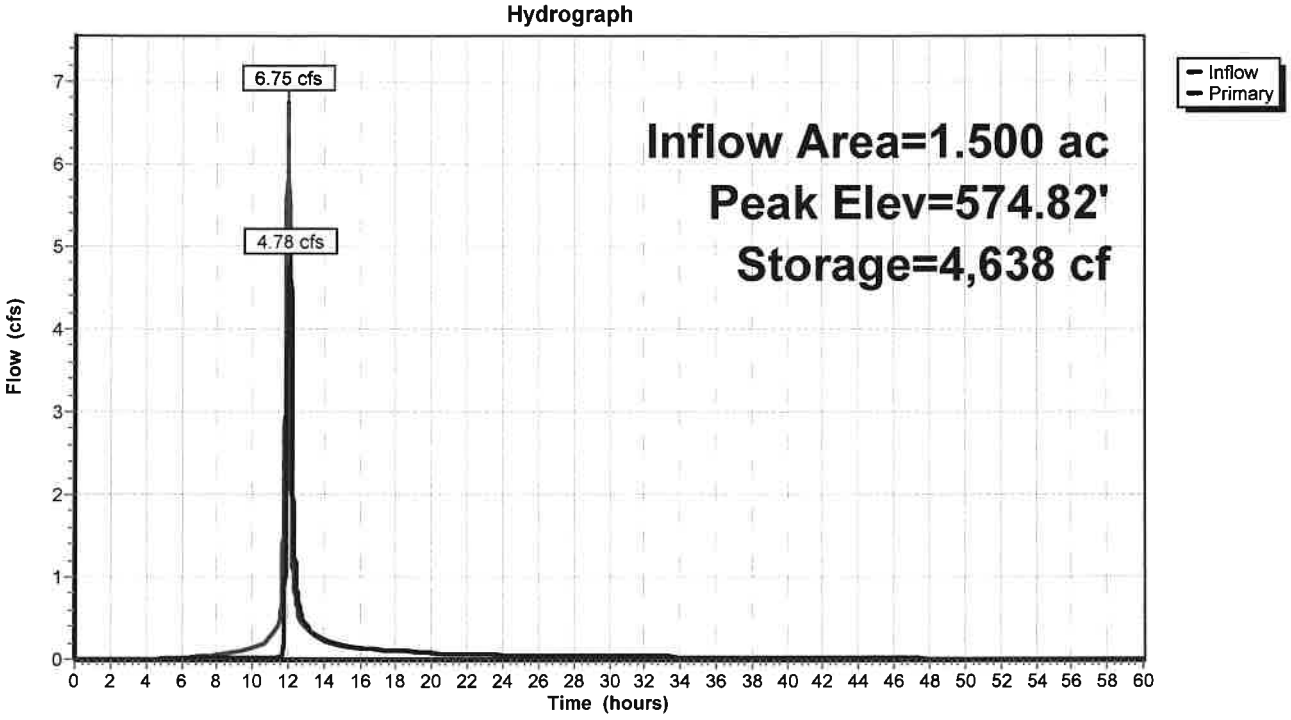
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

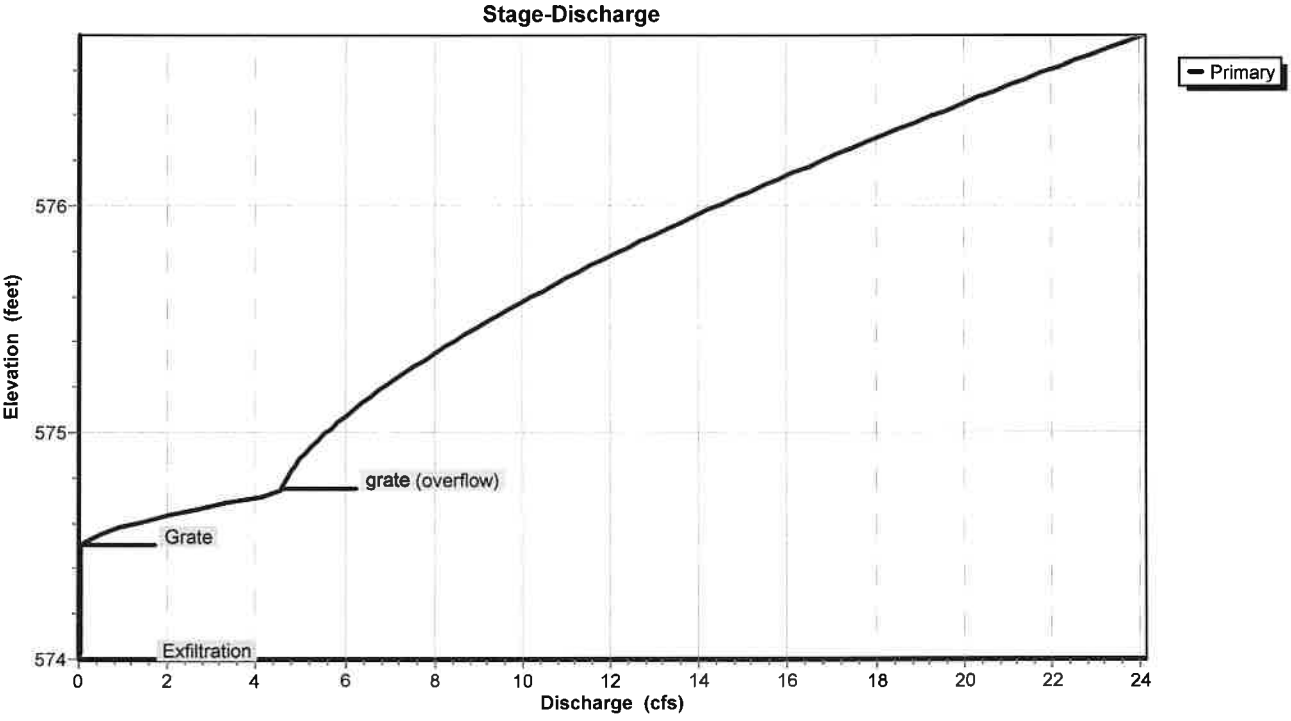
Primary OutFlow Max=4.78 cfs @ 12.08 hrs HW=574.82' (Free Discharge)
- **1=8" pipe** (Barrel Controls 4.65 cfs @ 5.92 fps)
  - **2=Grate** (Passes < 5.74 cfs potential flow)
  - **3=Exfiltration** (Passes < 0.04 cfs potential flow)
- **4=grate (overflow)** (Orifice Controls 0.13 cfs @ 0.87 fps)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

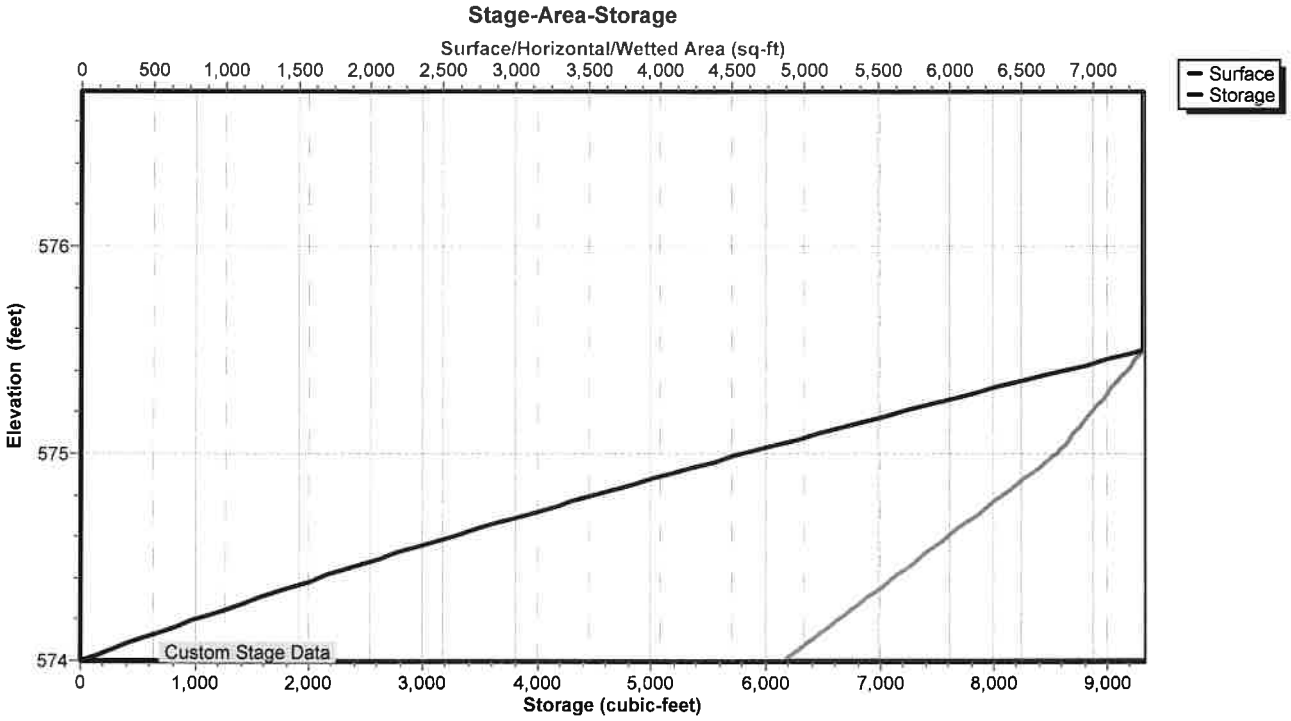


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.02	55	574.01	0.01
8.00	0.05	177	574.04	0.03
10.00	0.13	612	574.12	0.03
12.00	**6.75**	**4,265**	**574.77**	**4.62**
14.00	0.22	**2,825**	**574.53**	**0.24**
16.00	0.13	2,765	574.52	0.14
18.00	0.10	2,730	574.51	0.11
20.00	0.08	2,704	574.51	0.08
22.00	0.07	2,694	574.51	0.07
24.00	0.06	2,689	574.50	0.06
26.00	0.00	2,452	574.46	0.03
28.00	0.00	2,208	574.42	0.03
30.00	0.00	1,968	574.38	0.03
32.00	0.00	1,733	574.34	0.03
34.00	0.00	1,501	574.29	0.03
36.00	0.00	1,273	574.25	0.03
38.00	0.00	1,050	574.21	0.03
40.00	0.00	830	574.17	0.03
42.00	0.00	614	574.12	0.03
44.00	0.00	403	574.08	0.03
46.00	0.00	195	574.04	0.03
48.00	0.00	46	574.01	0.01
50.00	0.00	10	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=3.52"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=7.64 cfs 0.498 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=3.62"
Flow Length=345' Tc=9.1 min CN=92 Runoff=8.07 cfs 0.453 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=572.23' Storage=18,837 cf Inflow=12.80 cfs 0.951 af
Outflow=3.61 cfs 0.907 af

Pond 9P: Bioretention Area 3 Peak Elev=574.93' Storage=5,333 cf Inflow=8.07 cfs 0.453 af
Outflow=5.22 cfs 0.453 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.951 af Average Runoff Depth = 3.57"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

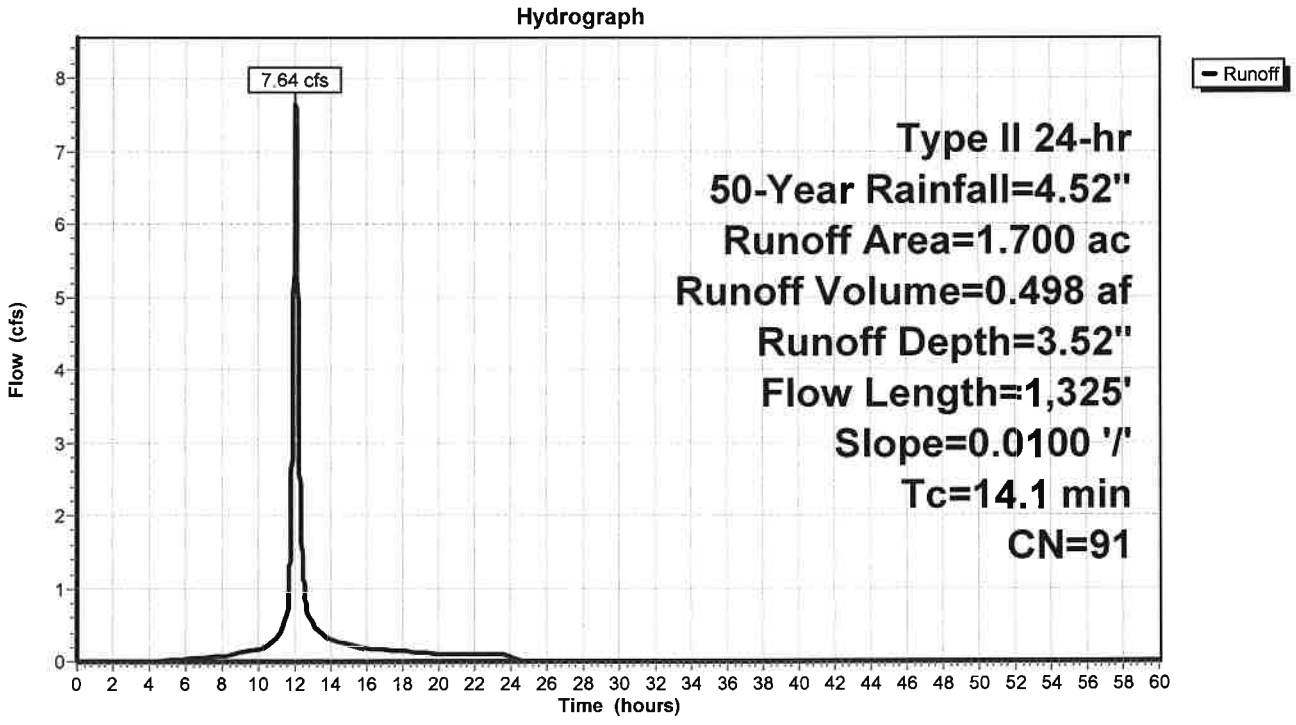
Runoff = 7.64 cfs @ 12.05 hrs, Volume= 0.498 af, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.10	0.00	0.00
3.00	0.16	0.00	0.00
4.00	0.22	0.00	0.00
5.00	0.28	0.01	0.02
6.00	0.36	0.02	0.03
7.00	0.45	0.05	0.05
8.00	0.54	0.09	0.07
9.00	0.66	0.15	0.12
10.00	0.82	0.24	0.17
11.00	1.06	0.40	0.34
12.00	3.00	2.07	**6.84**
13.00	3.49	2.53	**0.53**
14.00	3.71	2.74	0.30
15.00	3.86	2.88	0.23
16.00	3.98	3.00	0.18
17.00	4.08	3.09	0.16
18.00	4.16	3.17	0.14
19.00	4.24	3.25	0.12
20.00	4.30	3.31	0.10
21.00	4.36	3.36	0.09
22.00	4.42	3.42	0.09
23.00	4.47	3.47	0.09
24.00	**4.52**	**3.52**	0.08
25.00	4.52	3.52	0.00
26.00	4.52	3.52	0.00
27.00	4.52	3.52	0.00
28.00	4.52	3.52	0.00
29.00	4.52	3.52	0.00
30.00	4.52	3.52	0.00
31.00	4.52	3.52	0.00
32.00	4.52	3.52	0.00
33.00	4.52	3.52	0.00
34.00	4.52	3.52	0.00
35.00	4.52	3.52	0.00
36.00	4.52	3.52	0.00
37.00	4.52	3.52	0.00
38.00	4.52	3.52	0.00
39.00	4.52	3.52	0.00
40.00	4.52	3.52	0.00
41.00	4.52	3.52	0.00
42.00	4.52	3.52	0.00
43.00	4.52	3.52	0.00
44.00	4.52	3.52	0.00
45.00	4.52	3.52	0.00
46.00	4.52	3.52	0.00
47.00	4.52	3.52	0.00
48.00	4.52	3.52	0.00
49.00	4.52	3.52	0.00
50.00	4.52	3.52	0.00
51.00	4.52	3.52	0.00
52.00	4.52	3.52	0.00
53.00	4.52	3.52	0.00
54.00	4.52	3.52	0.00
55.00	4.52	3.52	0.00
56.00	4.52	3.52	0.00
57.00	4.52	3.52	0.00
58.00	4.52	3.52	0.00
59.00	4.52	3.52	0.00
60.00	4.52	3.52	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

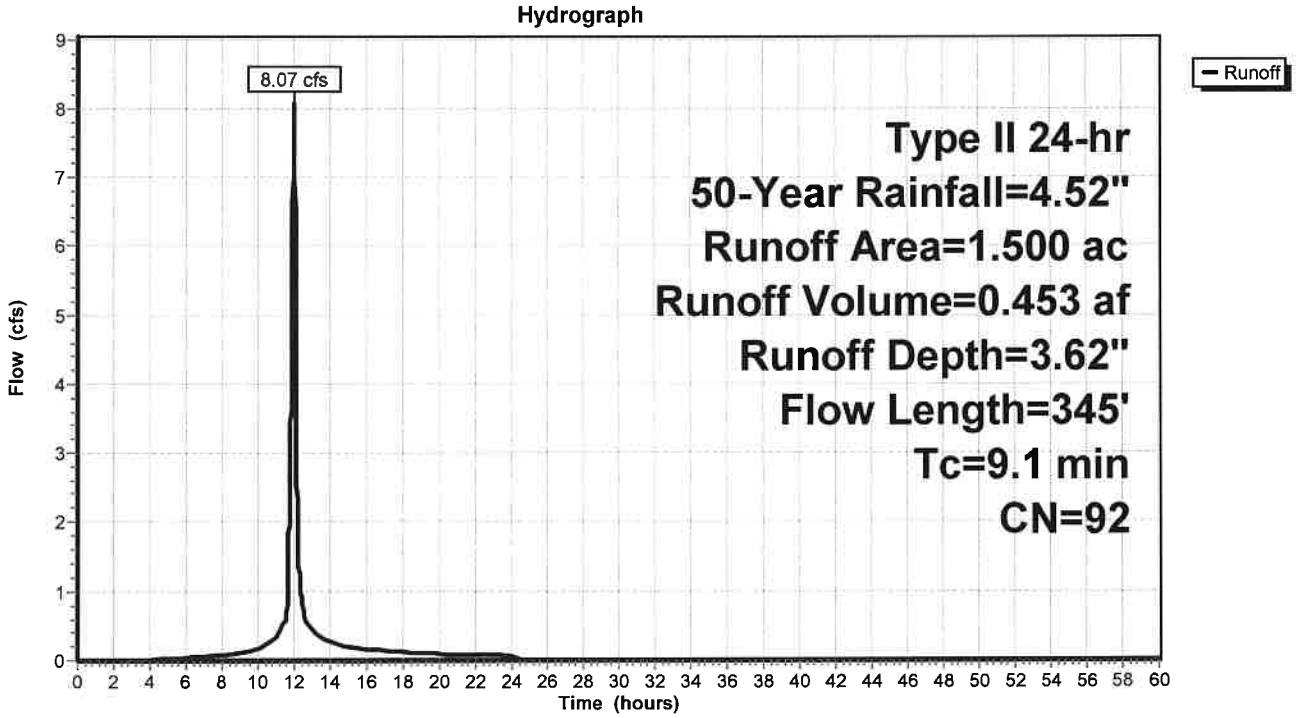
Runoff = 8.07 cfs @ 12.00 hrs, Volume= 0.453 af, Depth= 3.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.10	0.00	0.00
3.00	0.16	0.00	0.00
4.00	0.22	0.00	0.01
5.00	0.28	0.01	0.02
6.00	0.36	0.03	0.04
7.00	0.45	0.07	0.06
8.00	0.54	0.11	0.07
9.00	0.66	0.18	0.12
10.00	0.82	0.27	0.17
11.00	1.06	0.45	0.34
12.00	3.00	2.16	**8.07**
13.00	3.49	2.63	0.45
14.00	3.71	2.83	0.26
15.00	3.86	2.98	0.20
16.00	3.98	3.10	0.16
17.00	4.08	3.19	0.14
18.00	4.16	3.28	0.12
19.00	4.24	3.35	0.11
20.00	4.30	3.41	0.09
21.00	4.36	3.47	0.08
22.00	4.42	3.52	0.08
23.00	4.47	3.57	0.08
24.00	**4.52**	**3.62**	0.07
25.00	4.52	3.62	0.00
26.00	4.52	3.62	0.00
27.00	4.52	3.62	0.00
28.00	4.52	3.62	0.00
29.00	4.52	3.62	0.00
30.00	4.52	3.62	0.00
31.00	4.52	3.62	0.00
32.00	4.52	3.62	0.00
33.00	4.52	3.62	0.00
34.00	4.52	3.62	0.00
35.00	4.52	3.62	0.00
36.00	4.52	3.62	0.00
37.00	4.52	3.62	0.00
38.00	4.52	3.62	0.00
39.00	4.52	3.62	0.00
40.00	4.52	3.62	0.00
41.00	4.52	3.62	0.00
42.00	4.52	3.62	0.00
43.00	4.52	3.62	0.00
44.00	4.52	3.62	0.00
45.00	4.52	3.62	0.00
46.00	4.52	3.62	0.00
47.00	4.52	3.62	0.00
48.00	4.52	3.62	0.00
49.00	4.52	3.62	0.00
50.00	4.52	3.62	0.00
51.00	4.52	3.62	0.00
52.00	4.52	3.62	0.00
53.00	4.52	3.62	0.00
54.00	4.52	3.62	0.00
55.00	4.52	3.62	0.00
56.00	4.52	3.62	0.00
57.00	4.52	3.62	0.00
58.00	4.52	3.62	0.00
59.00	4.52	3.62	0.00
60.00	4.52	3.62	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 3.57" for 50-Year event
Inflow = 12.80 cfs @ 12.06 hrs, Volume= 0.951 af
Outflow = 3.61 cfs @ 12.36 hrs, Volume= 0.907 af, Atten= 72%, Lag= 17.7 min
Primary = 3.61 cfs @ 12.36 hrs, Volume= 0.907 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 572.23' @ 12.36 hrs Surf.Area= 10,145 sf Storage= 18,837 cf

Plug-Flow detention time= 228.3 min calculated for 0.907 af (95% of inflow)
Center-of-Mass det. time= 158.8 min (1,051.4 - 892.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

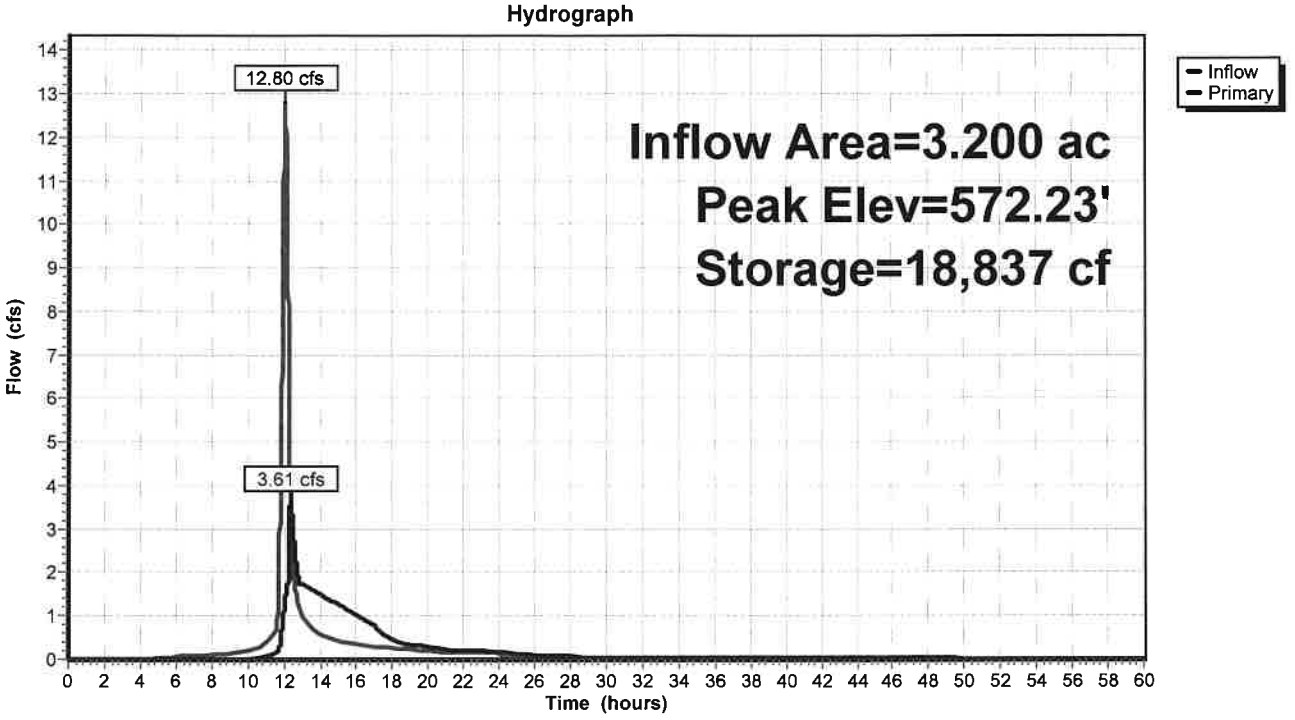
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

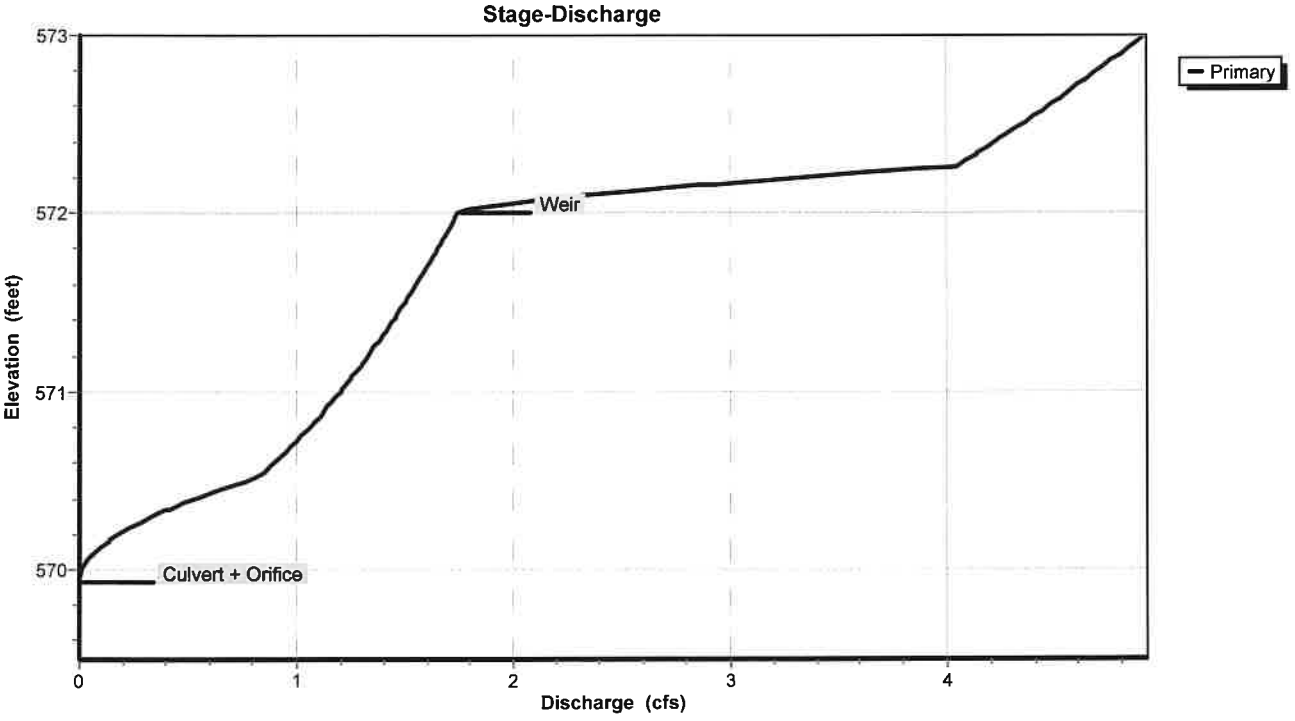
Primary OutFlow Max=3.60 cfs @ 12.36 hrs HW=572.23' (Free Discharge)
└**1=Culvert** (Passes 3.60 cfs of 4.00 cfs potential flow)
  ├**2=Orifice** (Orifice Controls 1.84 cfs @ 7.03 fps)
  └**3=Weir** (Weir Controls 1.76 cfs @ 1.56 fps)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

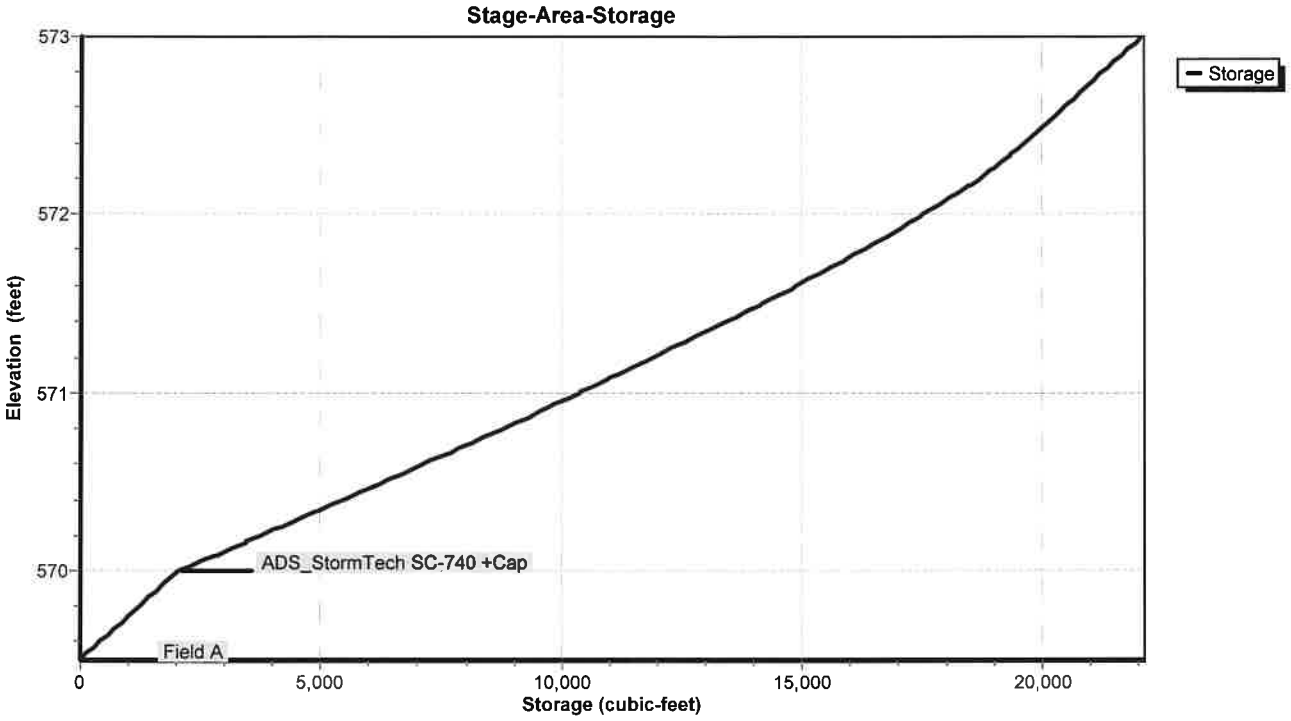


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	1	569.50	0.00
6.00	0.05	184	569.55	0.00
8.00	0.10	755	569.69	0.00
10.00	0.20	1,811	569.95	0.00
12.00	**11.66**	**9,752**	**570.92**	**1.15**
14.00	**0.59**	**14,219**	**571.51**	**1.50**
16.00	0.35	8,385	570.75	1.02
18.00	0.26	5,166	570.37	0.47
20.00	0.19	4,282	570.26	0.27
22.00	0.17	3,893	570.22	0.20
24.00	0.16	3,718	570.20	0.18
26.00	0.03	3,113	570.13	0.09
28.00	0.03	2,810	570.09	0.06
30.00	0.03	2,657	570.07	0.05
32.00	0.03	2,569	570.06	0.04
34.00	0.03	2,516	570.06	0.04
36.00	0.03	2,480	570.05	0.04
38.00	0.03	2,454	570.05	0.03
40.00	0.03	2,435	570.05	0.03
42.00	0.03	2,419	570.05	0.03
44.00	0.03	2,406	570.04	0.03
46.00	0.03	2,395	570.04	0.03
48.00	0.01	2,338	570.04	0.03
50.00	0.00	2,213	570.02	0.02
52.00	0.00	2,103	570.01	0.01
54.00	0.00	2,018	570.00	0.01
56.00	0.00	1,962	569.98	0.01
58.00	0.00	1,923	569.97	0.00
60.00	0.00	1,894	569.97	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 3.62" for 50-Year event
Inflow = 8.07 cfs @ 12.00 hrs, Volume= 0.453 af
Outflow = 5.22 cfs @ 12.09 hrs, Volume= 0.453 af, Atten= 35%, Lag= 5.1 min
Primary = 5.22 cfs @ 12.09 hrs, Volume= 0.453 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.93' @ 12.09 hrs Surf.Area= 6,611 sf Storage= 5,333 cf

Plug-Flow detention time= 214.9 min calculated for 0.453 af (100% of inflow)
Center-of-Mass det. time= 215.2 min (1,000.7 - 785.5)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

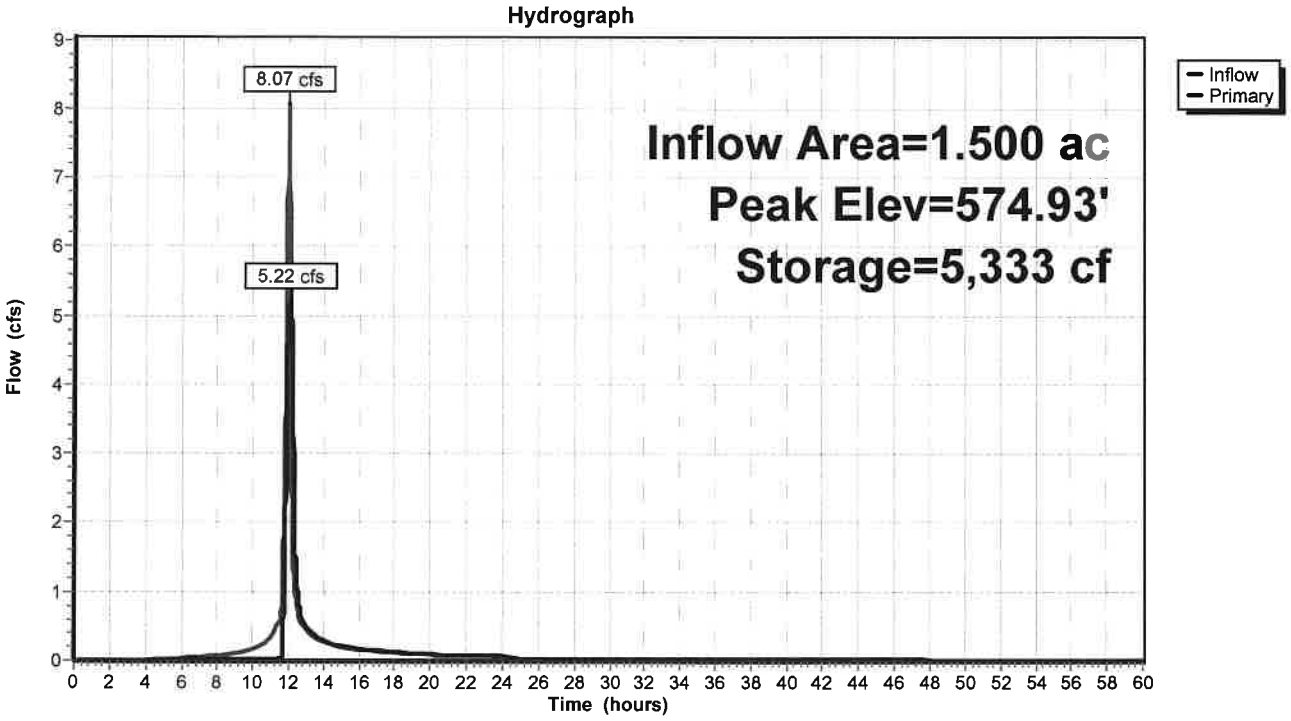
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

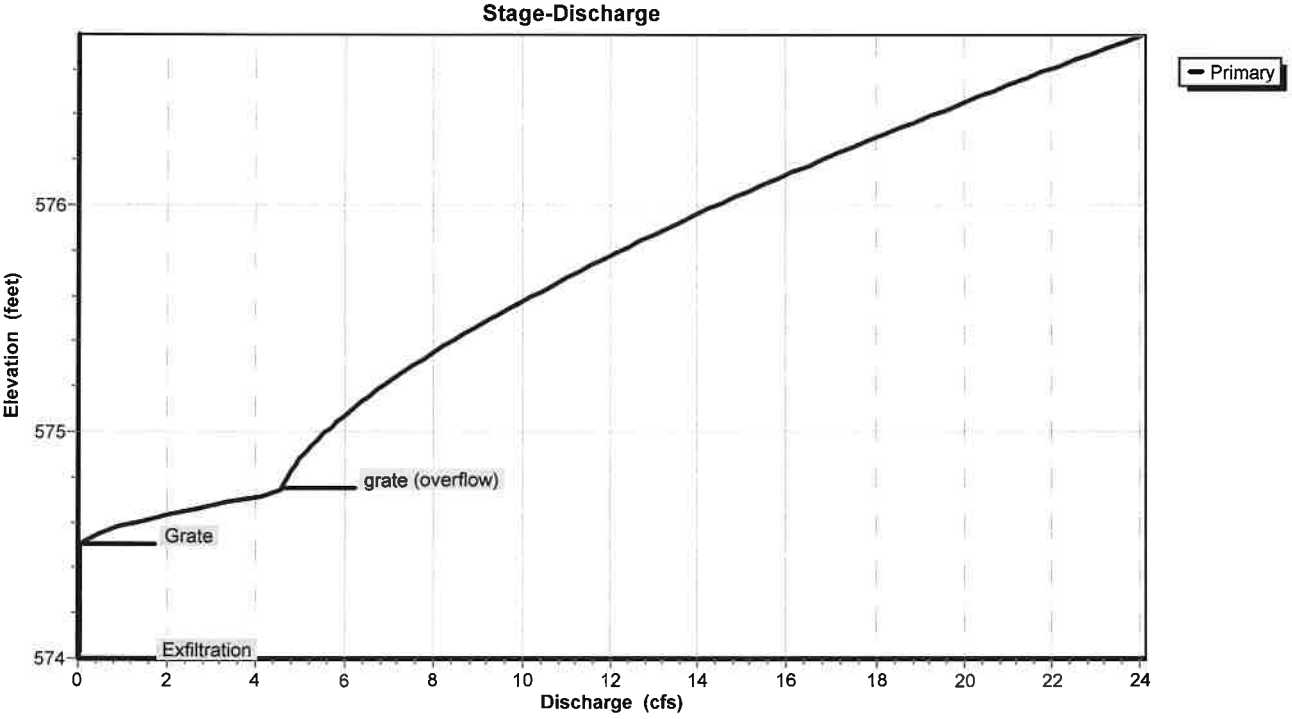
Primary OutFlow Max=5.22 cfs @ 12.09 hrs HW=574.93' (Free Discharge)
- **1=8" pipe** (Barrel Controls 4.73 cfs @ 6.02 fps)
  - **2=Grate** (Passes < 6.61 cfs potential flow)
  - **3=Exfiltration** (Passes < 0.04 cfs potential flow)
- **4=grate (overflow)** (Orifice Controls 0.49 cfs @ 1.36 fps)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

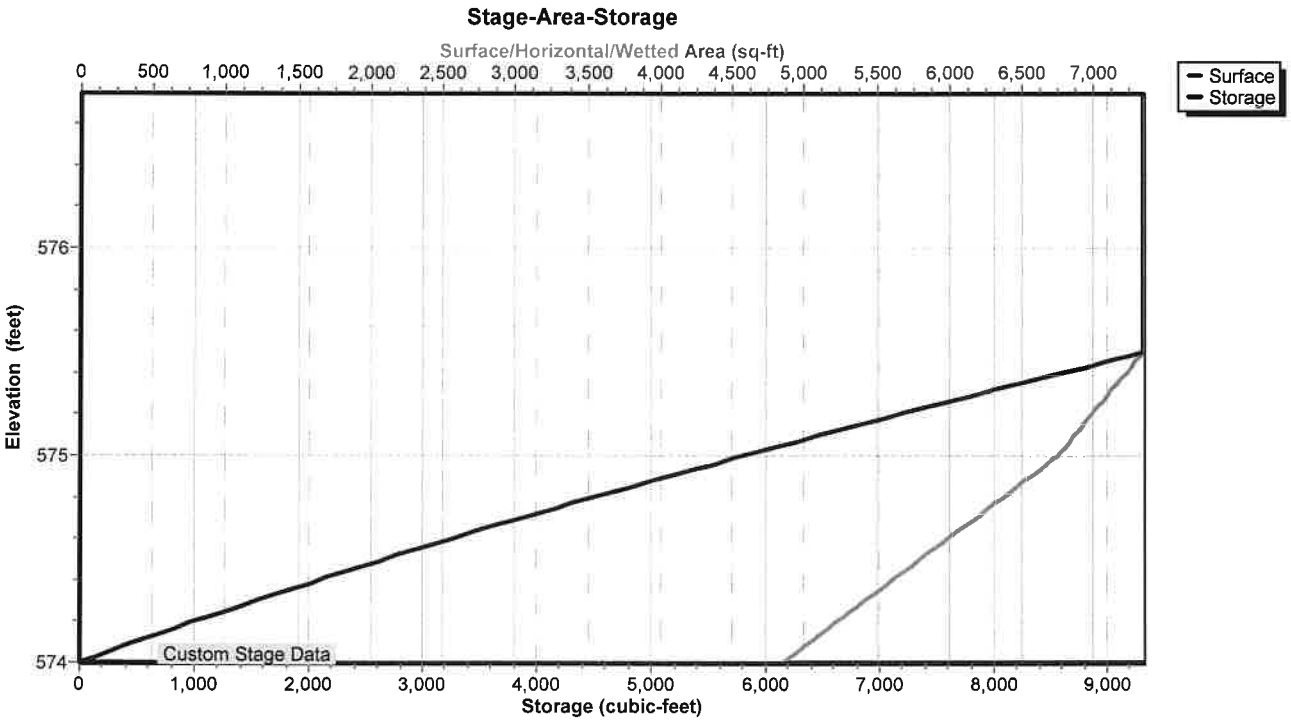


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.01	6	574.00	0.00
6.00	0.04	95	574.02	0.02
8.00	0.07	296	574.06	0.03
10.00	0.17	928	574.18	0.03
12.00	**8.07**	**4,720**	**574.84**	**4.83**
14.00	0.26	**2,846**	**574.53**	**0.28**
16.00	0.16	2,787	574.52	0.17
18.00	0.12	2,748	574.51	0.13
20.00	0.09	2,717	574.51	0.09
22.00	0.08	2,706	574.51	0.08
24.00	0.07	2,699	574.51	0.07
26.00	0.00	2,457	574.46	0.03
28.00	0.00	2,213	574.42	0.03
30.00	0.00	1,974	574.38	0.03
32.00	0.00	1,738	574.34	0.03
34.00	0.00	1,506	574.29	0.03
36.00	0.00	1,278	574.25	0.03
38.00	0.00	1,055	574.21	0.03
40.00	0.00	835	574.17	0.03
42.00	0.00	619	574.12	0.03
44.00	0.00	407	574.08	0.03
46.00	0.00	199	574.04	0.03
48.00	0.00	47	574.01	0.01
50.00	0.00	10	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=4.25"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=9.15 cfs 0.603 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=4.36"
Flow Length=345' Tc=9.1 min CN=92 Runoff=9.61 cfs 0.545 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=572.92' Storage=21,772 cf Inflow=14.92 cfs 1.148 af
Outflow=4.83 cfs 1.105 af

Pond 9P: Bioretention Area 3 Peak Elev=575.05' Storage=6,150 cf Inflow=9.61 cfs 0.545 af
Outflow=5.89 cfs 0.545 af

Total Runoff Area = 3.200 ac Runoff Volume = 1.148 af Average Runoff Depth = 4.31"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

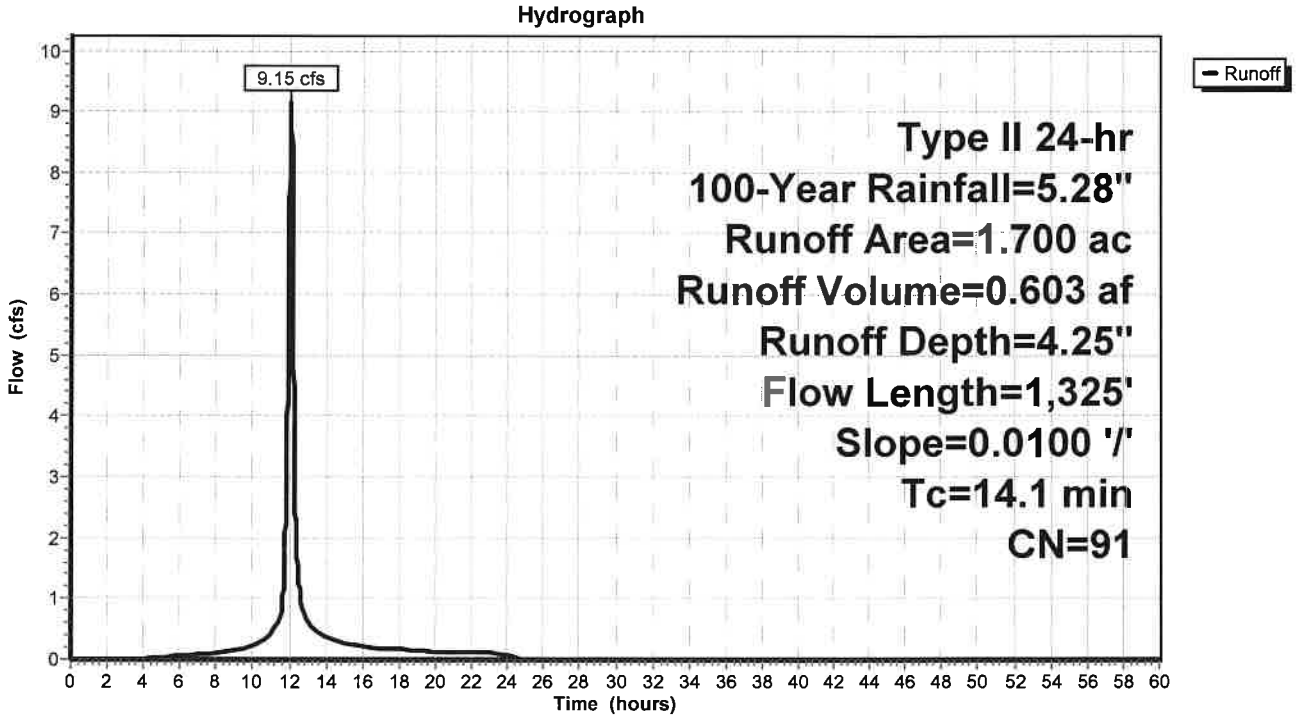
Runoff = 9.15 cfs @ 12.05 hrs, Volume= 0.603 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.28	4.25	0.00
1.00	0.06	0.00	0.00	53.00	5.28	4.25	0.00
2.00	0.12	0.00	0.00	54.00	5.28	4.25	0.00
3.00	0.18	0.00	0.00	55.00	5.28	4.25	0.00
4.00	0.25	0.00	0.01	56.00	5.28	4.25	0.00
5.00	0.33	0.02	0.03	57.00	5.28	4.25	0.00
6.00	0.42	0.04	0.05	58.00	5.28	4.25	0.00
7.00	0.52	0.08	0.07	59.00	5.28	4.25	0.00
8.00	0.63	0.13	0.10	60.00	5.28	4.25	0.00
9.00	0.78	0.21	0.16				
10.00	0.96	0.33	0.22				
11.00	1.24	0.54	0.43				
12.00	3.50	2.54	**8.21**				
13.00	4.08	3.09	**0.63**				
14.00	4.33	3.33	0.36				
15.00	4.51	3.50	0.28				
16.00	4.65	3.64	0.21				
17.00	4.76	3.75	0.18				
18.00	4.86	3.85	0.16				
19.00	4.95	3.93	0.14				
20.00	5.03	4.01	0.12				
21.00	5.09	4.07	0.11				
22.00	5.16	4.14	0.11				
23.00	5.22	4.20	0.10				
24.00	**5.28**	**4.25**	0.10				
25.00	5.28	4.25	0.00				
26.00	5.28	4.25	0.00				
27.00	5.28	4.25	0.00				
28.00	5.28	4.25	0.00				
29.00	5.28	4.25	0.00				
30.00	5.28	4.25	0.00				
31.00	5.28	4.25	0.00				
32.00	5.28	4.25	0.00				
33.00	5.28	4.25	0.00				
34.00	5.28	4.25	0.00				
35.00	5.28	4.25	0.00				
36.00	5.28	4.25	0.00				
37.00	5.28	4.25	0.00				
38.00	5.28	4.25	0.00				
39.00	5.28	4.25	0.00				
40.00	5.28	4.25	0.00				
41.00	5.28	4.25	0.00				
42.00	5.28	4.25	0.00				
43.00	5.28	4.25	0.00				
44.00	5.28	4.25	0.00				
45.00	5.28	4.25	0.00				
46.00	5.28	4.25	0.00				
47.00	5.28	4.25	0.00				
48.00	5.28	4.25	0.00				
49.00	5.28	4.25	0.00				
50.00	5.28	4.25	0.00				
51.00	5.28	4.25	0.00				

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

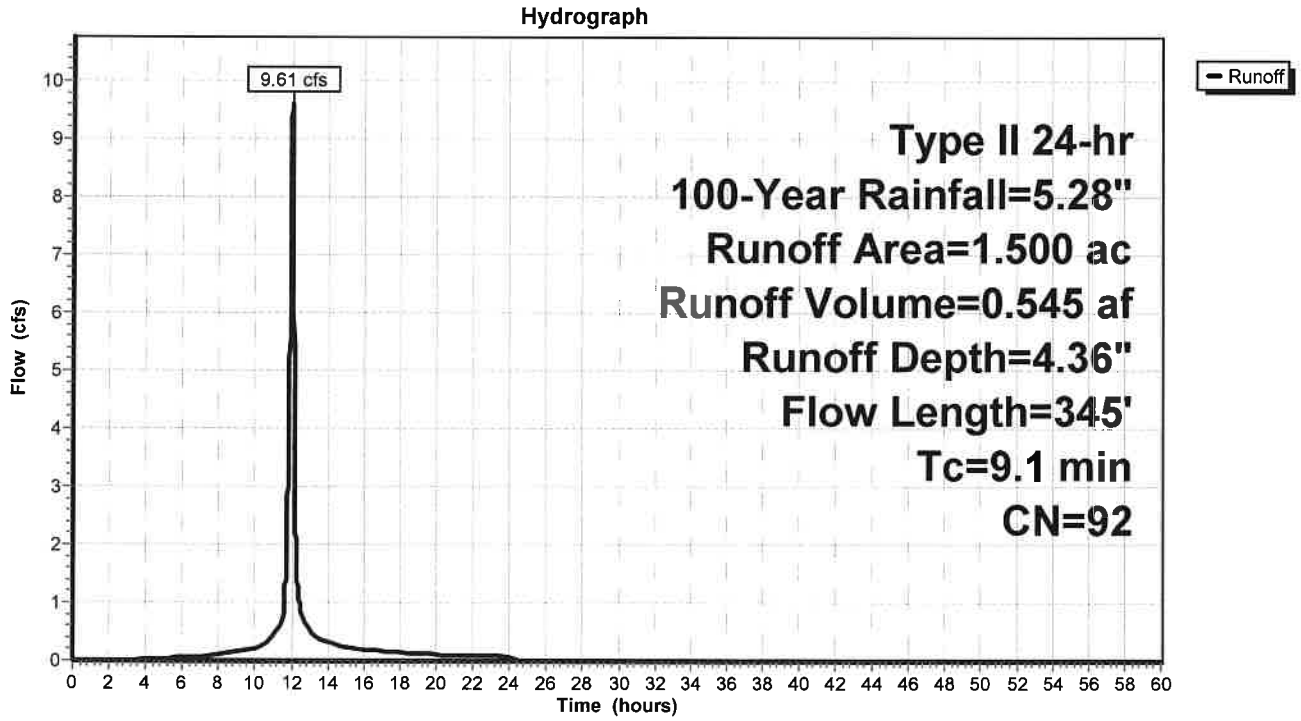
Runoff = 9.61 cfs @ 12.00 hrs, Volume= 0.545 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.18	0.00	0.00
4.00	0.25	0.01	0.02
5.00	0.33	0.02	0.03
6.00	0.42	0.06	0.05
7.00	0.52	0.10	0.08
8.00	0.63	0.16	0.10
9.00	0.78	0.25	0.16
10.00	0.96	0.37	0.22
11.00	1.24	0.59	0.42
12.00	3.50	2.64	**9.61**
13.00	4.08	3.19	0.53
14.00	4.33	3.44	0.31
15.00	4.51	3.61	0.24
16.00	4.65	3.74	0.19
17.00	4.76	3.86	0.16
18.00	4.86	3.96	0.14
19.00	4.95	4.04	0.12
20.00	5.03	4.12	0.10
21.00	5.09	4.18	0.10
22.00	5.16	4.24	0.09
23.00	5.22	4.30	0.09
24.00	**5.28**	**4.36**	0.09
25.00	5.28	4.36	0.00
26.00	5.28	4.36	0.00
27.00	5.28	4.36	0.00
28.00	5.28	4.36	0.00
29.00	5.28	4.36	0.00
30.00	5.28	4.36	0.00
31.00	5.28	4.36	0.00
32.00	5.28	4.36	0.00
33.00	5.28	4.36	0.00
34.00	5.28	4.36	0.00
35.00	5.28	4.36	0.00
36.00	5.28	4.36	0.00
37.00	5.28	4.36	0.00
38.00	5.28	4.36	0.00
39.00	5.28	4.36	0.00
40.00	5.28	4.36	0.00
41.00	5.28	4.36	0.00
42.00	5.28	4.36	0.00
43.00	5.28	4.36	0.00
44.00	5.28	4.36	0.00
45.00	5.28	4.36	0.00
46.00	5.28	4.36	0.00
47.00	5.28	4.36	0.00
48.00	5.28	4.36	0.00
49.00	5.28	4.36	0.00
50.00	5.28	4.36	0.00
51.00	5.28	4.36	0.00
52.00	5.28	4.36	0.00
53.00	5.28	4.36	0.00
54.00	5.28	4.36	0.00
55.00	5.28	4.36	0.00
56.00	5.28	4.36	0.00
57.00	5.28	4.36	0.00
58.00	5.28	4.36	0.00
59.00	5.28	4.36	0.00
60.00	5.28	4.36	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 4.31" for 100-Year event
Inflow = 14.92 cfs @ 12.06 hrs, Volume= 1.148 af
Outflow = 4.83 cfs @ 12.36 hrs, Volume= 1.105 af, Atten= 68%, Lag= 18.1 min
Primary = 4.83 cfs @ 12.36 hrs, Volume= 1.105 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 572.92' @ 12.36 hrs Surf.Area= 10,145 sf Storage= 21,772 cf

Plug-Flow detention time= 201.7 min calculated for 1.105 af (96% of inflow)
Center-of-Mass det. time= 143.6 min (1,016.5 - 873.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

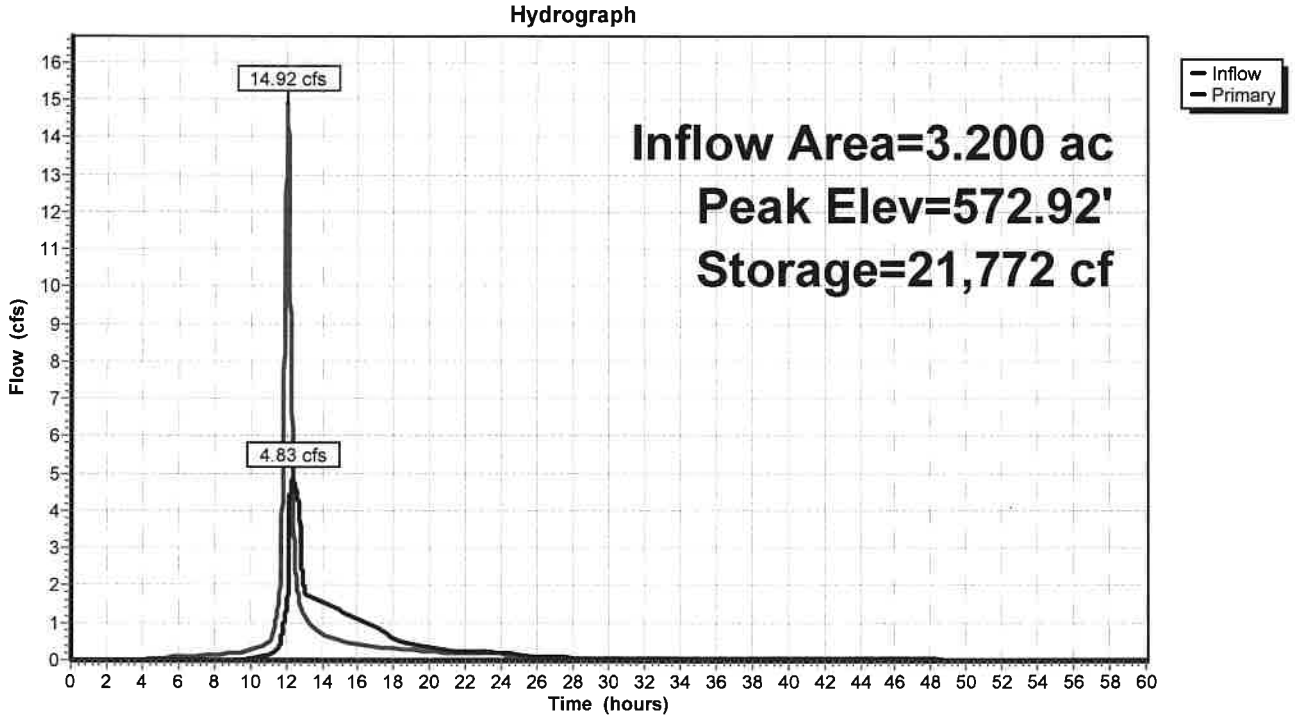
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

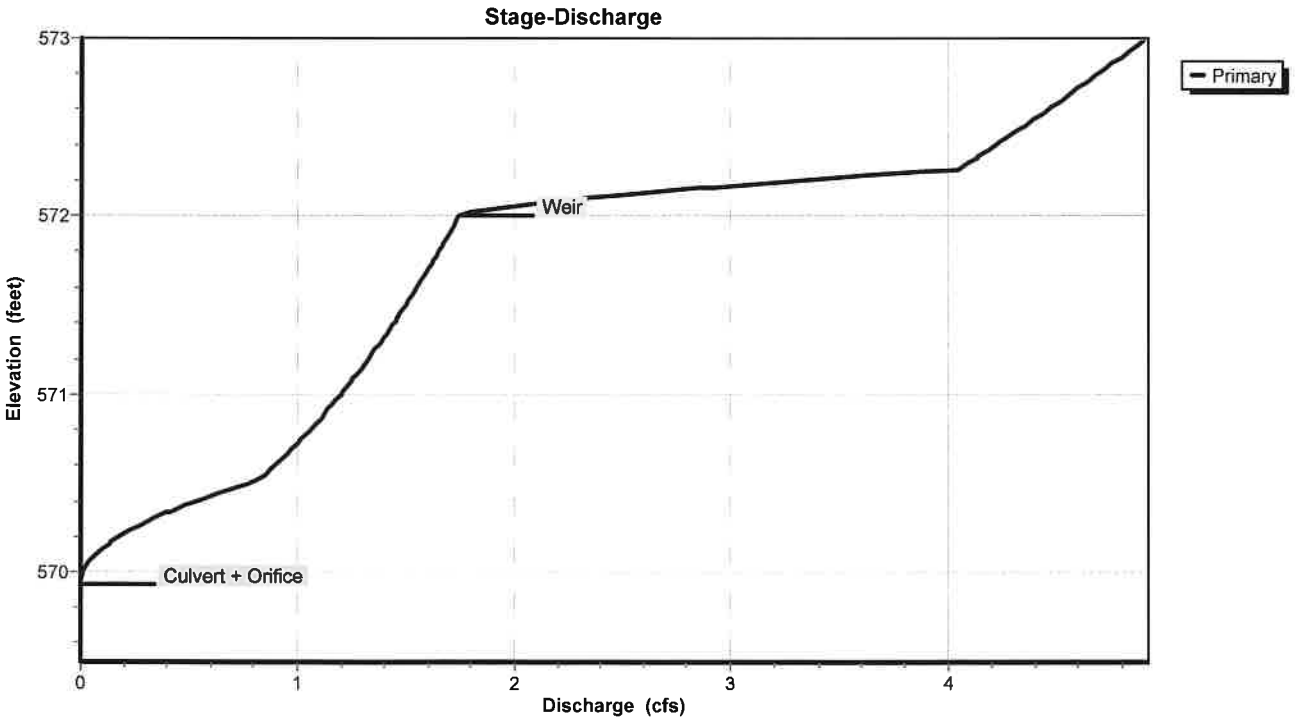
Primary OutFlow Max=4.83 cfs @ 12.36 hrs HW=572.92' (Free Discharge)
↑**1=Culvert** (Barrel Controls 4.83 cfs @ 6.16 fps)
↑**2=Orifice** (Passes < 2.12 cfs potential flow)
3=Weir (Passes < 13.95 cfs potential flow)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

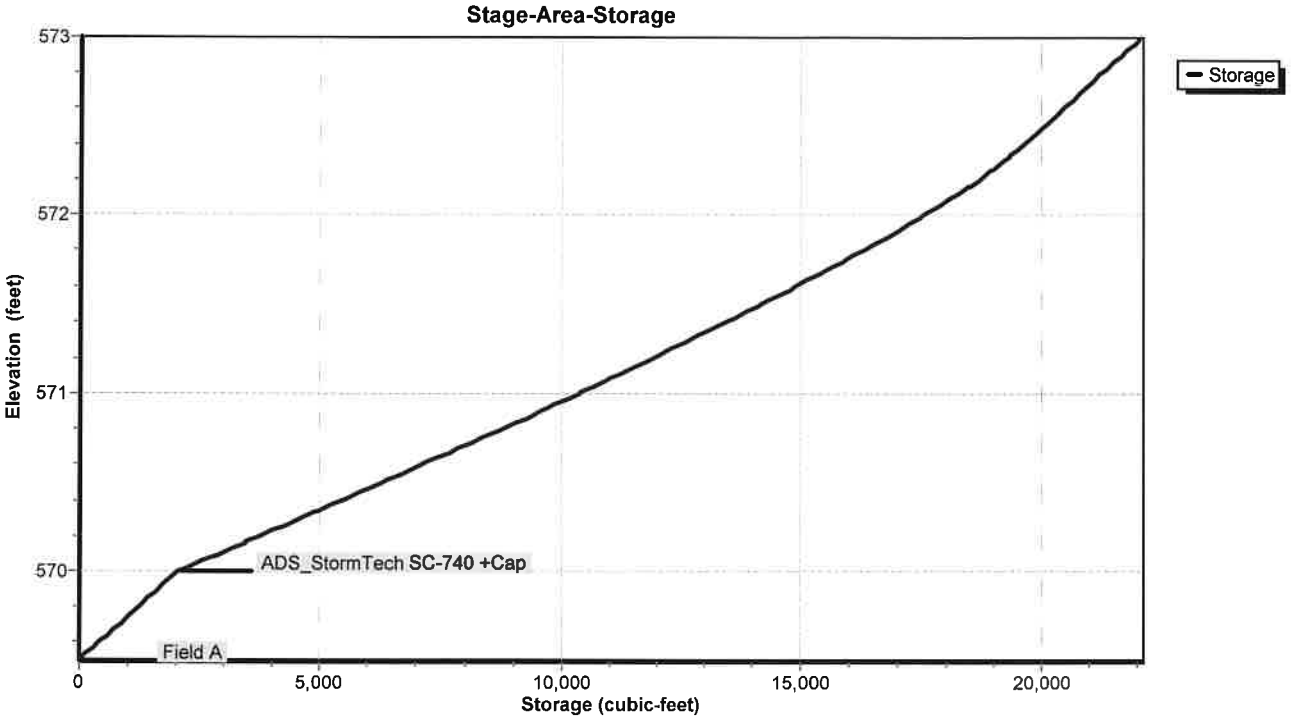


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.01	16	569.50	0.00
6.00	0.08	340	569.58	0.00
8.00	0.13	1,076	569.77	0.00
10.00	0.25	2,364	570.04	0.03
12.00	**13.40**	**12,150**	**571.23**	**1.34**
14.00	**0.69**	**15,059**	**571.63**	**1.56**
16.00	0.41	9,280	570.86	1.10
18.00	0.31	5,592	570.42	0.57
20.00	0.23	4,514	570.29	0.32
22.00	0.20	4,084	570.24	0.24
24.00	0.19	3,896	570.22	0.21
26.00	0.03	3,188	570.13	0.10
28.00	0.03	2,846	570.09	0.07
30.00	0.03	2,675	570.08	0.05
32.00	0.03	2,579	570.06	0.04
34.00	0.03	2,522	570.06	0.04
36.00	0.03	2,484	570.05	0.04
38.00	0.03	2,457	570.05	0.03
40.00	0.03	2,436	570.05	0.03
42.00	0.03	2,420	570.05	0.03
44.00	0.03	2,407	570.04	0.03
46.00	0.03	2,395	570.04	0.03
48.00	0.01	2,341	570.04	0.03
50.00	0.00	2,216	570.02	0.02
52.00	0.00	2,105	570.01	0.01
54.00	0.00	2,020	570.00	0.01
56.00	0.00	1,963	569.98	0.01
58.00	0.00	1,923	569.97	0.00
60.00	0.00	1,895	569.97	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 4.36" for 100-Year event
Inflow = 9.61 cfs @ 12.00 hrs, Volume= 0.545 af
Outflow = 5.89 cfs @ 12.09 hrs, Volume= 0.545 af, Atten= 39%, Lag= 5.5 min
Primary = 5.89 cfs @ 12.09 hrs, Volume= 0.545 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.05' @ 12.09 hrs Surf.Area= 6,805 sf Storage= 6,150 cf

Plug-Flow detention time= 184.7 min calculated for 0.545 af (100% of inflow)
Center-of-Mass det. time= 185.0 min (965.5 - 780.5)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

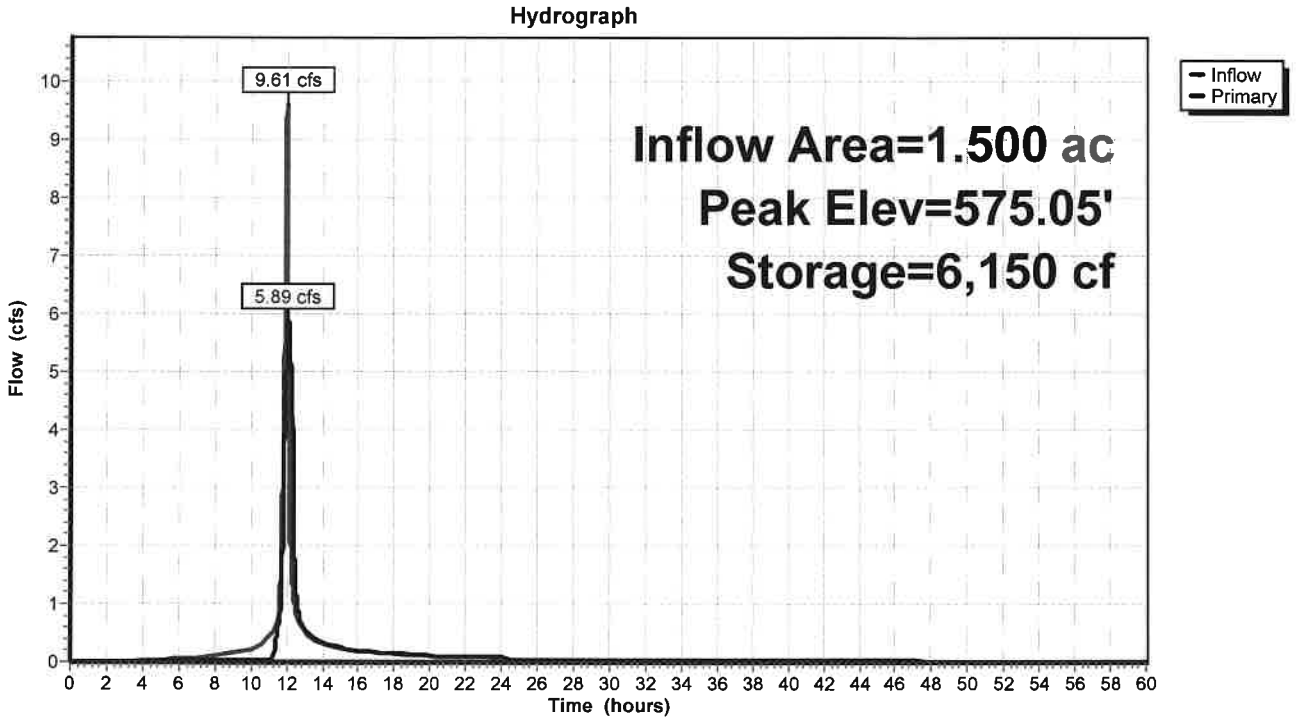
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

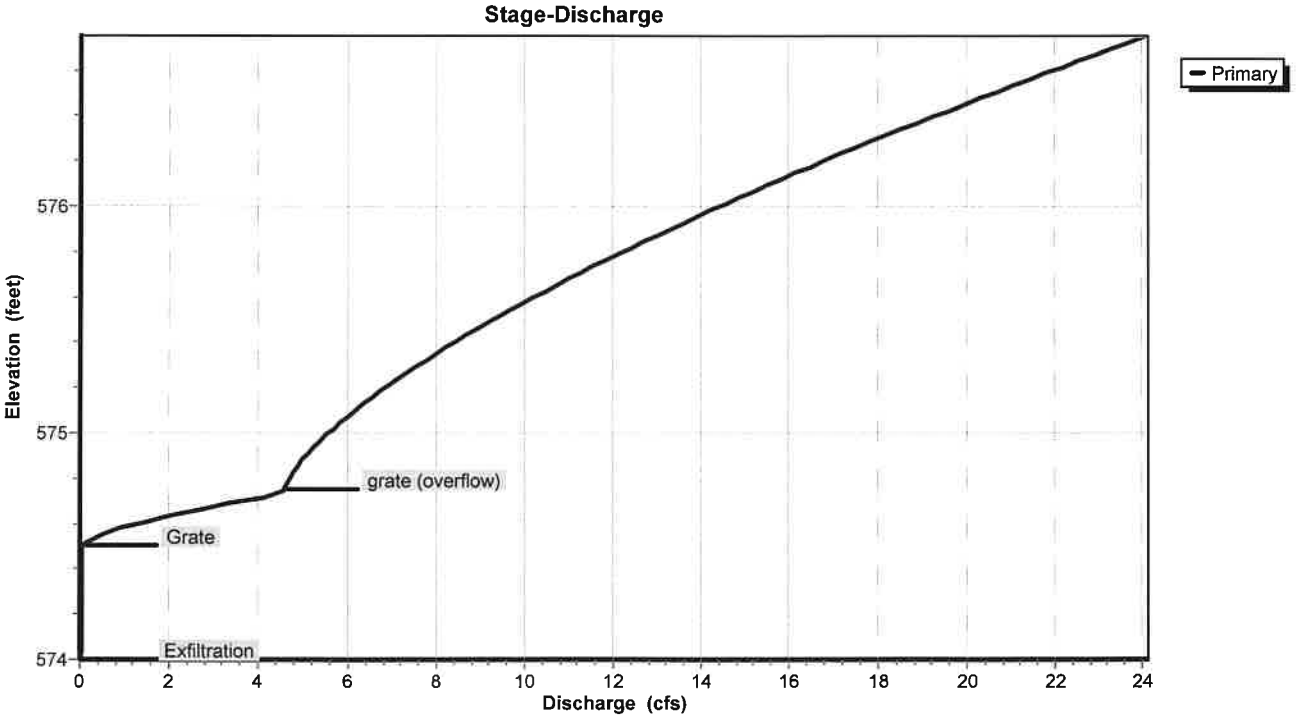
Primary OutFlow Max=5.88 cfs @ 12.09 hrs HW=575.05' (Free Discharge)
- **1=8" pipe** (Barrel Controls 4.82 cfs @ 6.14 fps)
  - **2=Grate** (Passes < 7.49 cfs potential flow)
  - **3=Exfiltration** (Passes < 0.04 cfs potential flow)
- **4=grate (overflow)** (Orifice Controls 1.06 cfs @ 1.76 fps)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

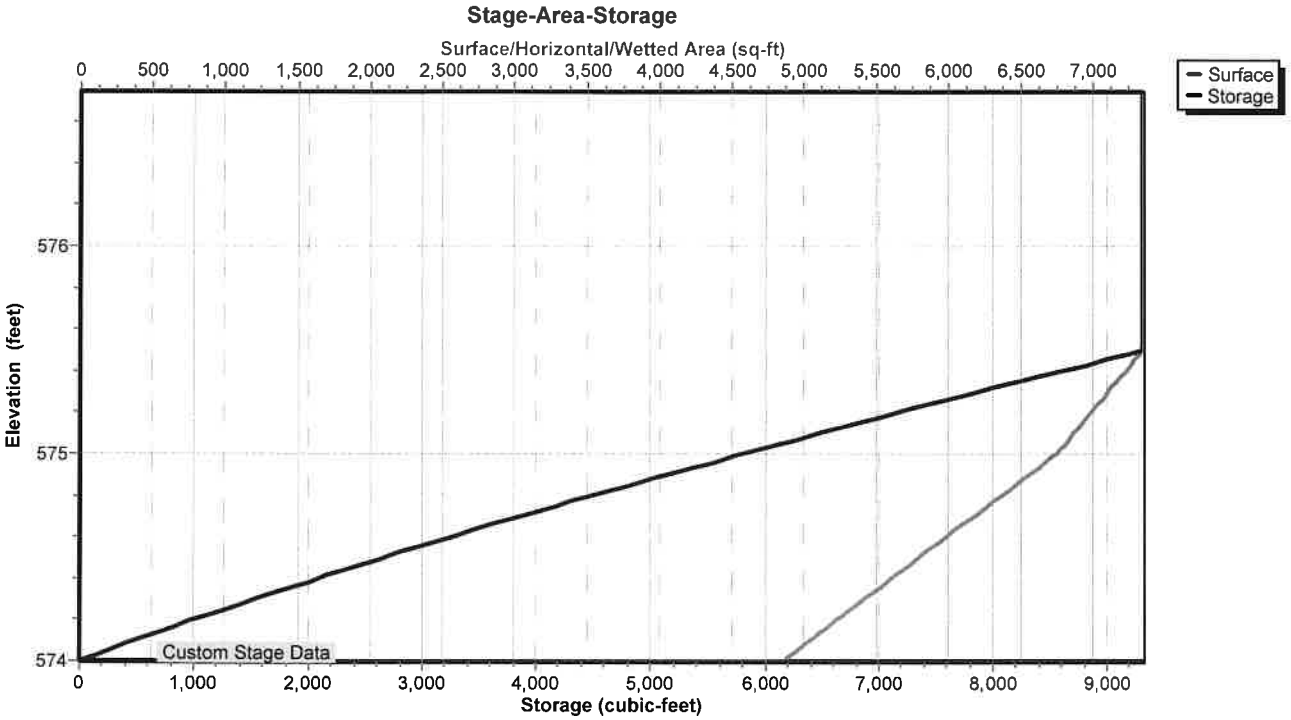


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.02	22	574.00	0.00
6.00	0.05	149	574.03	0.03
8.00	0.10	484	574.10	0.03
10.00	0.22	1,353	574.27	0.03
12.00	**9.61**	**5,288**	**574.92**	**5.19**
14.00	0.31	**2,872**	**574.54**	**0.33**
16.00	0.19	2,803	574.52	0.19
18.00	0.14	2,769	574.52	0.15
20.00	0.10	2,732	574.51	0.11
22.00	0.09	2,719	574.51	0.10
24.00	0.09	2,712	574.51	0.09
26.00	0.00	2,463	574.47	0.03
28.00	0.00	2,219	574.42	0.03
30.00	0.00	1,979	574.38	0.03
32.00	0.00	1,743	574.34	0.03
34.00	0.00	1,511	574.29	0.03
36.00	0.00	1,283	574.25	0.03
38.00	0.00	1,059	574.21	0.03
40.00	0.00	839	574.17	0.03
42.00	0.00	624	574.13	0.03
44.00	0.00	412	574.08	0.03
46.00	0.00	204	574.04	0.03
48.00	0.00	49	574.01	0.01
50.00	0.00	11	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	1	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Green Infrastructure & Water Quality Calculations

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Version 1.7
Last Updated: 2/22/21

Total Water Quality Volume Calculation
WQv(acre-feet) = [(P)(Rv)(A)] /12

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?.....	

Design Point:	1	
P=	1.00	*inch*

Breakdown of Subcatchments

Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Rv	WQv *(ft^3)*	Description
1	6.10	3.30	54%	0.54	11,888	
2	1.00	0.00	0%	0.05	182	
3	4.40	2.70	61%	0.60	9,620	
4	1.70	1.00	59%	0.58	3,576	
5	1.50	1.00	67%	0.65	3,539	
6						
7						
8						
9						
10						
Subtotal (1-30)	14.70	8.00	54%	0.54	**28,804**	**Subtotal 1**
Total	14.70	8.00	54%	0.54	**28,804**	**Initial WQv**

Identify Runoff Reduction Techniques By Area

Technique	Total Contributing Area *(Acre)*	Contributing Impervious Area *(Acre)*	Notes
Conservation of Natural Areas	1.00	0.00	*minimum 10,000 sf*
Riparian Buffers	0.00	0.00	*maximum contributing length 75 feet to 150 feet*
Filter Strips	0.00	0.00	
Tree Planting	0.00	0.00	*Up to 100 sf directly connected impervious area may be subtracted per tree*
Total	**1.00**	**0.00**	

Recalculate WQv after application of Area Reduction Techniques

	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Runoff Coefficient Rv	WQv *(ft^3)*
"<<Initial WQv"	14.70	8.00	54%	0.54	28,804
Subtract Area	-1.00	0.00			
WQv adjusted after Area Reductions	**13.70**	**8.00**	58%	0.58	28,623
Disconnection of Rooftops		0.00			
Adjusted WQv after Area Reduction and Rooftop Disconnect	13.70	8.00	58%	0.58	**28,623**
WQv reduced by Area Reduction techniques					182

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Total Water Quality Volume Calculation

WQv(acre-feet) = [(P)(Rv)(A)] /12

All Subcatchments						
Catchment	**Total Area** *(Acres)*	**Impervious Cover** *(Acres)*	**Percent Impervious** *%*	**Runoff Coefficient** *Rv*	**WQv** *(ft^3)*	**Description**
1	6.10	3.30	0.54	0.54	11888.25	
2	1.00	0.00	0.00	0.05	182	
3	4.40	2.70	0.61	0.60	9619.50	
4	1.70	1.00	0.59	0.58	3575.55	
5	1.50	1.00	0.67	0.65	3539.25	
6						
7						
8						
9						
10						
11						
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Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor &

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
1	6.10	3.30	0.54	0.54	11888.25	1.00	
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	54%	0.54	11,888	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information			
Soil Group	D		
Soil Infiltration Rate	0.00	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		11,888	*ft^3*	
Enter Depth of Soil Media	*df*	1.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**8916**	***ft^2***	

Determine Actual Bio-Retention Area			
Filter Width	100	*ft*	
Filter Length	110	*ft*	
Filter Area	11000	*ft^2*	
Actual Volume Provided	14667	*ft^3*	

Determine Runoff Reduction				
Is the Bioretention contributing flow to another practice?			Select Practice	
RRv	5,867			
RRv applied	**5,867**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	6,022	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	
Volume Directed	0	*ft^3*	This volume is directed another practice	
Sizing √	OK		*Check to be sure Area provided ≥ Af*	

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Bioretention Worksheet

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor & Schueler, 1996)

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
5	1.50	1.00	0.67	0.65	3539.25	1.00	
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	67%	0.65	3,539	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information			
Soil Group	D		
Soil Infiltration Rate	0.00	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		3,539	*ft^3*	
Enter Depth of Soil Media	*df*	1.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**2654**	***ft^2***	

Determine Actual Bio-Retention Area			
Filter Width	49	*ft*	
Filter Length	100	*ft*	
Filter Area	4900	*ft^2*	
Actual Volume Provided	6533	*ft^3*	

Determine Runoff Reduction				
Is the Bioretention contributing flow to another practice?		No	Select Practice	
RRv	2,613			
RRv applied	**2,613**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	926	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	
Volume Directed	0	*ft^3*	This volume is directed another practice	
Sizing √	OK		*Check to be sure Area provided ≥ Af*	

(For use on HSG C or D Soils with underdrains)

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Conservation of Natural Areas

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice

Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (ft^3)	Precipitation (in)	Description
2	1.00	0.00	0.00	0.05	181.50	1.00	

Design Elements

Is Contiguous Area ≥ 10,000 ft2?	*Yes*
Will limits of disturbance be clearly shown on all construction drawings and marked in field/project development site with structural barriers?	*Yes*
Is the Conservation area located in an acceptable conservation easement instrument that ensures perpetual protection of proposed area?	*Yes*
Does the easement specify how the natural area vegetation will be managed and boundaries will be marked?	*Yes*
Does the conservation area receive runoff from other contributing areas?	*No*
Does Conservation Area drain to a Design Point?	*No*
Is Sheet Flow to Riparian Buffer or another area based practice already being Used for this area?	*No*

Are All Criteria in Section 5.3.1 Met?	*Yes*

Area Reduction Adjustments

Subtract	***1.00***	***Acres from Total Area***
Subtract	***0.00***	***Acres from Total Impervious Area***

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Minimum RRv

Enter the Soils Data for the site		
Soil Group	Acres	S
A		55%
B		40%
C		30%
D	**17.40**	20%
Total Area	17.4	
Calculate the Minimum RRv		
S =	**0.20**	
Impervious =	8.00	*acre*
Precipitation	1	*in*
Rv	0.95	
Minimum RRv	**5,518**	***ft3***
	0.13	af

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

NOI QUESTIONS

#	NOI Question	Reported Value	
		cf	af
28	Total Water Quality Volume (WQv) Required	28804	*0.661*
30	Total RRV Provided	8662	*0.199*
31	Is RRv Provided ≥WQv Required?	No	
32	Minimum RRv	5518	*0.127*
32a	Is RRv Provided ≥ Minimum RRv Required?	Yes	
33a	Total WQv Treated	159626	*3.664*
34	Sum of Volume Reduced & Treated	168287	*3.863*
34	Sum of Volume Reduced and Treated	168287	*3.863*
35	Is Sum RRv Provided and WQv Provided ≥WQv Required?	Yes	

Apply Peak Flow Attenuation			
36	Channel Protection	*Cpv*	
37	Overbank	*Qp*	
37	Extreme Flood Control	*Qf*	
	Are Quantity Control requirements met?		

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Runoff Reduction Volume and Treated volumes						
	Runoff Reduction Techiques/Standard SMPs		Total Contributing Area	Total Contributing Impervious Area	WQv Reduced (RRv)	WQv Treated
			(acres)	(acres)	cf	cf
Area/Volume Reduction	Conservation of Natural Areas	RR-1	1.00	0.00		
	Sheetflow to Riparian Buffers/Filter Strips	RR-2	0.00	0.00		
	Tree Planting/Tree Pit	RR-3	0.00	0.00		
	Disconnection of Rooftop Runoff	RR-4		0.00		
	Vegetated Swale	RR-5	0.00	0.00	0	
	Rain Garden	RR-6	0.00	0.00	0	
	Stormwater Planter	RR-7	0.00	0.00	0	
	Rain Barrel/Cistern	RR-8	0.00	0.00	0	
	Porous Pavement	RR-9	0.00	0.00	0	
	Green Roof (Intensive & Extensive)	RR-10	0.00	0.00	0	
Standard SMPs w/RRv Capacity	Infiltration Trench	I-1	0.00	0.00	0	0
	Infiltration Basin	I-2	0.00	0.00	0	0
	Dry Well	I-3	0.00	0.00	0	0
	Underground Infiltration System	I-4	0.00			
	Bioretention & Infiltration Bioretention	F-5	7.60	4.30	8480	6948
	Dry swale	O-1	0.00	0.00	0	0
Standard SMPs	Micropool Extended Detention (P-1)	P-1				
	Wet Pond (P-2)	P-2				
	Wet Extended Detention (P-3)	P-3				
	Multiple Pond system (P-4)	P-4				
	Pocket Pond (p-5)	P-5	9.8	3.40		152678.000
	Surface Sand filter (F-1)	F-1				
	Underground Sand filter (F-2)	F-2				
	Perimeter Sand Filter (F-3)	F-3				
	Organic Filter (F-4	F-4				
	Shallow Wetland (W-1)	W-1				
	Extended Detention Wetland (W-2	W-2				
	Pond/Wetland System (W-3)	W-3				
	Pocket Wetland (W-4)	W-4				
	Wet Swale (O-2)	O-2				
Totals by Area Reduction →			1.00	0.00	182	
Totals by Volume Reduction →			0.00	0.00	0	
Totals by Standard SMP w/RRV →			7.60	4.30	8480	6948
Totals by Standard SMP →			9.80	3.40		152678
Totals (Area + Volume + all SMPs) →			18.40	7.70	8,662	159,626
	Impervious Cover √	error				

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Stage-Area-Storage for Pond 6P: WQv

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
563.00	710	0
563.15	776	111
563.30	843	233
563.45	909	364
563.60	975	506
563.75	1,042	657
563.90	1,108	818
564.05	1,181	989
564.20	1,267	1,173
564.35	1,353	1,369
564.50	1,439	1,579
564.65	1,524	1,801
564.80	1,610	2,036
564.95	1,696	2,284
565.10	1,796	2,546
565.25	1,901	2,823
565.40	2,007	3,116
565.55	2,113	3,425
565.70	2,219	3,750
565.85	2,324	4,090
566.00	2,430	4,447
566.15	2,561	4,821
566.30	2,692	5,215
566.45	2,822	5,629
566.60	2,953	6,062
566.75	3,084	6,515
566.90	3,215	6,987
567.05	3,356	7,479
567.20	3,519	7,995
567.35	3,681	8,535
567.50	3,844	9,100
567.65	4,007	9,688
567.80	4,169	10,301
567.95	4,332	10,939
568.10	4,731	11,613
568.25	5,249	12,361
568.40	5,767	13,188
568.55	6,285	14,091
568.70	6,802	15,073
568.85	7,320	16,132
569.00	7,838	17,269
569.15	8,402	18,487
569.30	8,965	19,790
569.45	9,529	21,177
569.60	10,093	22,648
569.75	10,657	24,204
569.90	11,220	25,845
570.05	11,796	27,571
570.20	12,398	29,385
570.35	13,000	31,290
570.50	13,601	33,285
570.65	14,202	35,371
570.80	14,804	37,546
570.95	15,406	39,812
571.10	16,056	42,170
571.25	16,731	44,629
571.40	17,406	47,189
571.55	18,081	49,851
571.70	18,756	52,614
571.85	19,431	55,478
572.00	20,106	58,443
572.15	20,820	61,512
572.30	21,534	64,689
572.45	22,248	67,973
572.60	22,961	71,363
572.75	23,675	74,861
572.90	24,389	78,466
573.05	25,107	82,178
573.20	25,834	85,998
573.35	26,561	89,928
573.50	27,288	93,967
573.65	28,014	98,114
573.80	28,741	102,371
573.95	29,468	106,737
574.10	32,660	111,335
574.25	37,086	116,565
574.40	41,511	122,460
574.55	45,937	129,019
574.70	50,362	136,241
574.85	54,788	144,127
575.00	**59,213**	**152,678**

WQv

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Appendix O

NYSDEC Stormwater Management Inspection Lists

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Bioretetion Areas (F-5)



Description: Shallow stormwater basin or landscaped area which utilizes engineered soils and vegetation to capture and treat runoff. The practice is often located in parking lot islands, and can also be used to treat residential areas.

KEY CONSIDERATIONS

CONVEYANCE

- Provide overflow for the 10-year storm to the conveyance system.
- Conveyance to the system is typically overland flow delivered to the surface of the system, typically through curb cuts or over a concrete lip.

PRETREATMENT

- Pretreatment consists of a grass channel or grass filter strip, a gravel diaphragm, and a mulch layer, sized based on the methodologies described in Section 6.4.2.

TREATMENT

- Treatment area should have a four foot deep planting soil bed, a surface mulch layer, and a 6" ponding layer.
- Size the treatment area using equations provided in Chapter 6.

LANDSCAPING

- Detailed landscaping plan required.

MAINTENANCE

- Inspect and repair/replace treatment area components
- Stone drop (at least 6") provided at the inlet
- Remulch annually

STORMWATER MANAGEMENT SUITABILITY

- [X] Water Quality
- [ ] Channel Protection
- [ ] Overbank Flood Protection
- [ ] Extreme Flood Protection

Accepts Hotspot Runoff: *Yes*
(requires impermeable liner)

IMPLEMENTATION CONSIDERATIONS

- [M] Capital Cost
- [M] Maintenance Burden

Residential
Subdivision Use: *Yes*

High Density/Ultra-Urban: *Yes*

Drainage Area: *5 acres max.*

Soils: *Planting soils must meet specified criteria; No restrictions on surrounding soils*

Other Considerations:

- *Use of native plants is recommended*

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	Key: **L**=Low **M**=Medium **H**=High **POLLUTANT REMOVAL** **G** Phosphorus **G** Nitrogen **G** Metals - Cadmium, Copper, Lead, and Zinc removal **F** Pathogens – Coliform, Streptococci, E.Coli removal Key: **G**=Good **F**=Fair **P**=Poor

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Bioretention Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
1. Pre-Construction		
Pre-construction meeting		
Runoff diverted		
Facility area cleared		
If designed as exfilter, soil testing for permeability		
Facility location staked out		
2. Excavation		
Size and location		
Lateral slopes completely level		
If designed as exfilter, ensure that excavation does not compact susoils.		
Longitudinal slopes within design range		

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CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
3. Structural Components		
Stone diaphragm installed correctly		
Outlets installed correctly		
Underdrain		
Pretreatment devices installed		
Soil bed composition and texture		
4. Vegetation		
Complies with planting specs		
Topsoil adequate in composition and placement		
Adequate erosion control measures in place		
5. Final Inspection		
Dimensions		
Proper stone diaphragm		
Proper outlet		
Soil/ filter bed permeability testing		
Effective stand of vegetation and stabilization		
Construction generated sediments removed		
Contributing watershed stabilized before flow is diverted to the practice		

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Comments:

Actions to be Taken:

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Bioretention Operation, Maintenance and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Bioretention and contributing areas clean of debris		
No dumping of yard wastes into practice		
Litter (branches, etc.) have been removed		
2. Vegetation (Monthly)		
Plant height not less than design water depth		
Fertilized per specifications		
Plant composition according to approved plans		
No placement of inappropriate plants		
Grass height not greater than 6 inches		
No evidence of erosion		
3. Check Dams/Energy Dissipaters/Sumps (Annual, After Major Storms)		
No evidence of sediment buildup		

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MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
Sumps should not be more than 50% full of sediment		
No evidence of erosion at downstream toe of drop structure		
4. Dewatering (Monthly)		
Dewaters between storms		
No evidence of standing water		
5. Sediment Deposition (Annual)		
Swale clean of sediments		
Sediments should not be > 20% of swale design depth		
6. Outlet/Overflow Spillway (Annual, After Major Storms)		
Good condition, no need for repair		
No evidence of erosion		
No evidence of any blockages		
7. Integrity of Filter Bed (Annual)		
Filter bed has not been blocked or filled inappropriately		

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Comments:

Actions to be Taken:

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Amended Part 1 of Full EAF - Site Plan Application - Mixed-Use Project - Site "A" of Muir Woods
Date: December 1, 2021

Full Environmental Assessment Form Part 1 - Project and Setting

Prepared By: Sean Hopkins, Esq. Hopkins Sorgi & McCarthy PLLC 5500 Main Street, Suite 343 Williamsville, NY 14221
Tel: 716.510-4338
E-mail: shopkins@hsmlegal.com

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project: Proposed Mixed-Use Project - Site A of Muir Woods		
Project Location (describe, and attach a general location map): Portion of 1081 North French Road - Town of Amherst - Erie County		
Brief Description of Proposed Action (include purpose or need): The proposed action consists of an amendment of the Findings Statement issued by the Town of Amherst Town Board ("Town Board") on October 19, 2020 pursuant to the State Environmental Quality Review Act ("SEQRA") to accommodate the updated layout for the proposed mixed-use project to be on Site "A" of the overall Muir Woods Project Site. The layout of the mixed-use project is depicted on the Overall Site Plan [Drawing C-100] prepared by Carmina Wood Morris DPC. The residential density of the project has been increased from 204 units to 258 units. The action has been defined broadly to include all required discretionary approvals and permits as well as all site improvements including the proposed mixed-use and residential buildings, driveway connections to Dodge Road, access aisles, parking spaces, driveways, wetland impacts, lighting, landscaping, an on-site storm water management improvements, sanitary sewer and water lines and connections and all other required utility improvements. The project purpose is to develop Site "A" of overall Muir Woods Project Site as a mixed-use project in a manner consistent with the Overall Site Plan for the project prepared by Carmina Wood Morris DPC prepared by Carmina Wood Morris DPC. The project is a Type I action pursuant to SEQRA and the Town Board issued an Amended Findings Statement pursuant to SEQRA on September 27, 2021 based on the increase of the number of residential units from		
Name of Applicant/Sponsor: Sawyers Landing LLC c/o Sean Hopkins, Esq.	Telephone: 716.510-4338 E-Mail: shopkins@hsmlegal.com	
Address: 5500 Main Street, Suite 343		
City/PO: Williamsville, NY	State: NY	Zip Code: 14221
Project Contact (if not same as sponsor; give name and title/role):	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:
Property Owner (if not same as sponsor): Ciminelli Muir Woods, LLC c/o Adam Faeth, Esq.	Telephone: 716.631-8000 E-Mail: afaeth@ciminelli.com	
Address: 50 Fountain Plaza, Suite 500		
City/PO: Buffalo	State: NY	Zip Code: 14202

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B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees ☑Yes ☐No	Town Board - Amended Findings Statement	Approved on September 27, 2021
b. City, Town or Village Planning Board or Commission ☑Yes ☐No	Planning Board - Site Plan Approval and Subdivision Approval	February 22, 2021
c. City, Town or Village Zoning Board of Appeals ☐Yes ☑No		
d. Other local agencies ☑Yes ☐No	Building Department - Building Permits; Town of Amherst IDA [PILOT, etc.	To be determined
e. County agencies ☑Yes ☐No	Highway Work Permit - ECDPW; Water - ECWA	To be determined
f. Regional agencies ☐Yes ☑No		
g. State agencies ☑Yes ☐No	NYSDEC - Amended Wetland Permit; DSCA Approval and SPDES Permit	Amended wetland permit issued on 12/24/20 - DSCA & SPDES - To be determined
h. Federal agencies ☑Yes ☐No	USACE - Amended Wetland Permit	Issued on 02/25/21

i. Coastal Resources.
i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐Yes ☑No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☑Yes ☐No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☑Yes ☐No

If Yes, identify the plan(s):
NYS Heritage Areas:West Erie Canal Corridor [Note: The project will not have any impacts on the West Erie Canal Corridor.]

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes ☑No

If Yes, identify the plan(s):

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C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
Site "A" of the Muir Woods property is zoned New Community District - Neighborhood District ("NCD-ND") pursuant to the Town of Amherst Zoning Map.

b. Is the use permitted or allowed by a special or conditional use permit? ☐ Yes ☑ No

c. Is a zoning change requested as part of the proposed action? ☐ Yes ☑ No
If Yes,
i. What is the proposed new zoning for the site?

C.4. Existing community services.

a. In what school district is the project site located? Sweet Home Central School District

b. What police or other public protection forces serve the project site?
Town of Amherst Police Department

c. Which fire protection and emergency medical services serve the project site?
Volunteer Fire Department

d. What parks serve the project site?
Various Town Parks including Nature View Park

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)? Mixed-use project consisting of commercial space and various residential unit types.

b. a. Total acreage of the site of the proposed action? 17.424 acres
b. Total acreage to be physically disturbed? 17 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 326 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % Units:

d. Is the proposed action a subdivision, or does it include a subdivision? ☑ Yes ☐ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
33 lots
ii. Is a cluster/conservation layout proposed? ☐ Yes ☐ No
iii. Number of lots proposed? 33 lots
iv. Minimum and maximum proposed lot sizes? Minimum 3300 sf Maximum 7.25 acres

e. Will the proposed action be constructed in multiple phases? ☑ Yes ☐ No
i. If No, anticipated period of construction: _____ months
ii. If Yes:
- Total number of phases anticipated 3-4
- Anticipated commencement date of phase 1 (including demolition) May month 2022 year
- Anticipated completion date of final phase Oct month 2025 year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases:
The infrastructure necessary for each phase will be installed to ensure compliance with applicable technical standards including those for stormwater management.

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f. Does the project include new residential uses? ☑ Yes ☐ No

If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase		49		100
At completion of all phases		49		209

The build-out of the residential components will be based on market conditions.

g. Does the proposed action include new non-residential construction (including expansions)? ☑ Yes ☐ No

If Yes, There will be 15,000 sq. ft. of commercial space in each of the two mixed-use buildings.

i. Total number of structures 2

ii. Dimensions (in feet) of largest proposed structure: 55' height; 80' width; and 225' length

iii. Approximate extent of building space to be heated or cooled: 30,000 square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☑ Yes ☐ No

If Yes,

i. Purpose of the impoundment: Storm water management

ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☑ Other specify: Storm water runoff from impervious surfaces.

iii. If other than water, identify the type of impounded/contained liquids and their source.

N/A

iv. Approximate size of the proposed impoundment. Volume: _____ million gallons; surface area: 1.5 acres

v. Dimensions of the proposed dam or impounding structure: N/A height; _____ length

vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):

Impoundment area is an excavation consisting of earth fill.

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐ Yes ☑ No

If Yes:

i .What is the purpose of the excavation or dredging?

ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?

- Volume (specify tons or cubic yards):
- Over what duration of time?

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.

iv. Will there be onsite dewatering or processing of excavated materials? ☐ Yes ☐ No

If yes, describe.

v. What is the total area to be dredged or excavated? _____ acres

vi. What is the maximum area to be worked at any one time? _____ acres

vii. What would be the maximum depth of excavation or dredging? _____ feet

viii. Will the excavation require blasting? ☐ Yes ☐ No

ix. Summarize site reclamation goals and plan:

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☑ Yes ☐ No

If Yes:

i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): The proposed mixed-use project will result in 4.89 acres of impacts to federal wetlands (reduction of 7.87 acres), 1.20 acres of impacts to NYSDEC Freshwater Wetlands (reduction of 8.26 acres) and 3.65 acres of impacts to regulated 100 ft. Adjacent Areas of of the NYSDEC Freshwater Wetlands (reduction of .55 acres).

[Note: Copies of the Amended Wetland Permit Issued by the United States Army Corps of Engineers ("USACE") dated February 25, 2021 and the Amended Wetland Permit Issued by the New York State Department of Environmental Conservation ("NYSDEC") dated December 24, 2020 have previously been submitted to the Planning Department.]

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ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

iii. Will the proposed action cause or result in disturbance to bottom sediments? ☐Yes ☑No
If Yes, describe:

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☑No
If Yes:

- acres of aquatic vegetation proposed to be removed:
- expected acreage of aquatic vegetation remaining after project completion:
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access):
- proposed method of plant removal:
- if chemical/herbicide treatment will be used, specify product(s):

v. Describe any proposed reclamation/mitigation following disturbance:

c. Will the proposed action use, or create a new demand for water? ☑Yes ☐No
If Yes:

i. Total anticipated water usage/demand per day: 56,760 gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑Yes ☐No
If Yes:

- Name of district or service area: ECWA Consolidated Water District
- Does the existing public water supply have capacity to serve the proposal? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No
- Do existing lines serve the project site? ☑Yes ☐No

iii. Will line extension within an existing district be necessary to supply the project? ☐Yes ☑No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project:
- Source(s) of supply for the district:

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐Yes ☐No
If, Yes:

- Applicant/sponsor for new district:
- Date application submitted or anticipated:
- Proposed source(s) of supply for new district:

v. If a public water supply will not be used, describe plans to provide water supply for the project:

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑Yes ☐No
If Yes:

i. Total anticipated liquid waste generation per day: 56,760 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each):
Sanitary wastewater

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑Yes ☐No
If Yes:

- Name of wastewater treatment plant to be used: Tonawanda Creek Wastewater Treatment Plant
- Name of district: Town of Amherst Consolidated Sanitary Sewer District
- Does the existing wastewater treatment plant have capacity to serve the project? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No

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- Do existing sewer lines serve the project site? ☑Yes ☐No
- Will a line extension within an existing district be necessary to serve the project? ☐Yes ☑No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☑No

If Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑Yes ☐No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or 8.0 acres (impervious surface)

_____ Square feet or 17.42 acres (parcel size)

ii. Describe types of new point sources. Parking lots and roof tops

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

Stormwater runoff will be conveyed into the on-site stormwater management system to be installed per the applicable stringent stormwater quality and quantity standards of the NYS Department of Environmental Conservation ("NYSDEC")

- If to surface waters, identify receiving water bodies or wetlands: NYSDEC & Federal wetlands on the east portion of the site
- Will stormwater runoff flow to adjacent properties? ☐Yes ☑No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☑Yes ☐No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☑No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:

- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

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h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? ☐Yes ☑No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐Morning ☐Evening ☐Weekend ☐Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): _____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☑Yes ☐No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: To be determined

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other): National Grid

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐Yes ☑No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 7:00 to 7:00
- Saturday: 8:00 to 6:00
- Sunday: As needed
- Holidays: Not Applicable

ii. During Operations:

- Monday - Friday: 8:00 to 11:00
- Saturday: 8:00 to 11:00
- Sunday: 8:00 to 10:00
- Holidays: 8:00 to 10:00

The hours of operation during "During Operations" as listed above apply to the first floor commercial space in the two mixed-use buildings. The hours are estimates since the tenants that will lease the first floor commercial space including both office and retail tenants have not yet been identified.

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m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

Construction activities will include the use of construction equipment during daytime hours that will exceed ambient background noise levels. The construction related noise impacts are a temporary unavoidable impact.

ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☑ No

Describe:

n. Will the proposed action have outdoor lighting? ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

Lighting will be installed in compliance with the lighting standards contained in the Town of Amherst Zoning Code. There will not be any lighting spillover onto contiguous properties. A Photometric Plan [Drawing LP-100] has been included with the updated engineered plans.

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☑ No

Describe:

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures:

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally, describe the proposed storage facilities:

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☑ Yes ☐ No

If Yes:

i. Describe proposed treatment(s):

Potential use of lawn fertilizer and pesticides on maintained portions of property in accordance with applicable standards for application and use of lawn fertilizer and pesticides.

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☑ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☑ Yes ☐ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: 2 tons per week (unit of time)
- Operation : 2 tons per week (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: wood and metal waste may be recycled by the contract at their discretion
- Operation: Town of Amherst recycling program will be followed

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: approved NYSDEC landfill via contractor or private disposal company
- Operation: approved NYSDEC landfill via private disposal company

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s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☑ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)
☑ Forest ☐ Agriculture ☐ Aquatic ☑ Other (specify): Wetlands

ii. If mix of uses, generally describe:

There are mixture of uses in the vicinity of the Project Site including residential uses to the north in the Bucyrus Heights Subdivision, an elementary school, apartments and office buildings on Sweet Home Road and permanent open space to the east of Site "A".

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	0	8.0	+ 8.0
• Forested	12.17	1.87	-10.3
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	0	0	0
• Agricultural (includes active orchards, field, greenhouse etc.)	0	0	0
• Surface water features (lakes, ponds, streams, rivers, etc.)	0	0	0
• Wetlands (freshwater or tidal)	16.3	10.2	- 6.1
• Non-vegetated (bare rock, earth or fill)	0	0	0
• Other Describe: Greenspace, Landscaping, Pond	0	8.4	+8.4

The chart above includes Permanent Open to be donated to the Town of Amherst consisting of approximately 9.6 acres.]

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c. Is the project site presently used by members of the community for public recreation? ☐Yes ☑No
i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☑Yes ☐No
If Yes,
i. Identify Facilities:
1. Heritage Heights Elementary School (Sweet Home School District- 2545 Sweet Home Road); 2. Creative Play Learning Center (Private Day Care Facility- 647 Dodge Road); and 3. Four Seasons Child Care & Preschool (Private Day Care Facility- 1639 North French Road).

e. Does the project site contain an existing dam? ☐Yes ☑No
If Yes:
i. Dimensions of the dam and impoundment:
- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____
iii. Provide date and summarize results of last inspection:
_____
_____

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐Yes ☑No
If Yes:
i. Has the facility been formally closed? ☐Yes ☐No
- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:
_____
_____
iii. Describe any development constraints due to the prior solid waste activities: _____
_____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐Yes ☑No
If Yes:
i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:
_____
_____

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐Yes ☑No
If Yes:
i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐Yes ☐No
☐ Yes – Spills Incidents database — Provide DEC ID number(s): _____
☐ Yes – Environmental Site Remediation database — Provide DEC ID number(s): _____
☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures: _____
_____
_____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐Yes ☑No
If yes, provide DEC ID number(s): _____

iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):
_____
_____

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v. Is the project site subject to an institutional control limiting property uses? ☐ Yes ☑ No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐ Yes ☐ No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? >5 feet

b. Are there bedrock outcroppings on the project site? ☐ Yes ☑ No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____ %

c. Predominant soil type(s) present on project site:

Getzville silt loam	94 %
Swormville clay loam	6 %
	%

d. What is the average depth to the water table on the project site? Average: >5 feet

e. Drainage status of project site soils:
☐ Well Drained: _____ % of site
☐ Moderately Well Drained: _____ % of site
☑ Poorly Drained 100 % of site

f. Approximate proportion of proposed action site with slopes:
☑ 0-10%: 100 % of site
☐ 10-15%: _____ % of site
☐ 15% or greater: _____ % of site

g. Are there any unique geologic features on the project site? ☐ Yes ☑ No
If Yes, describe: _____

h. Surface water features.
i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☑ Yes ☐ No
ii. Do any wetlands or other waterbodies adjoin the project site? ☑ Yes ☐ No
If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.
iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑ Yes ☐ No
iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name Federal Waters, NYS Wetland Approximate Size NYS Wetland (in a...
- Wetland No. (if regulated by DEC) TE-33

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐ Yes ☑ No
If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐ Yes ☑ No

j. Is the project site in the 100-year Floodplain? ☐ Yes ☑ No

k. Is the project site in the 500-year Floodplain? ☑ Yes ☐ No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐ Yes ☑ No
If Yes:
i. Name of aquifer: _____

The proposed mixed-use project will result in 4.89 acres of impacts to federal wetlands (reduction of 7.87 acres), 1.20 acres of impacts to NYSDEC Freshwater Wetlands (reduction of 8.26 acres) and 3.65 acres of impacts to regulated 100 ft. Adjacent Areas of NYSDEC Freshwater Wetlands (reduction of .55 acres).

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m. Identify the predominant wildlife species that occupy or use the project site:
Typical suburban species

n. Does the project site contain a designated significant natural community? ☐Yes ☑No
If Yes:
i. Describe the habitat/community (composition, function, and basis for designation):
ii. Source(s) of description or evaluation:
iii. Extent of community/habitat:
- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐Yes ☑No
If Yes:
i. Species and listing (endangered or threatened):

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☑Yes ☐No
If Yes:
i. Species and listing:
Spiny Softshell - The Project Sponsor does not believe that Spiny Softshell is present on Site A of the Muir Woods property.

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐Yes ☑No
If yes, give a brief description of how the proposed action may affect that use:

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐Yes ☑No
If Yes, provide county plus district name/number:

b. Are agricultural lands consisting of highly productive soils present? ☐Yes ☑No
i. If Yes: acreage(s) on project site?
ii. Source(s) of soil rating(s):

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐Yes ☑No
If Yes:
i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature
ii. Provide brief description of landmark, including values behind designation and approximate size/extent:

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐Yes ☑No
If Yes:
i. CEA name:
ii. Basis for designation:
iii. Designating agency and date:

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e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? ☑ Yes ☐ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: Eligible property:Heritage Heights Elementary School

iii. Brief description of attributes on which listing is based:

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☑ Yes ☐ No [No impact letter issued by SHPO on October 10, 2001.]

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s):

ii. Basis for identification:

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☐ Yes ☑ No

If Yes:

i. Identify resource:

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.):

iii. Distance between project and resource: _____ miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation:

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

No impact letter issued by SHPO on October 10, 2001 provided at Attachment "A" of this Amended Part 1 of the Full EAF.

G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name Sawyers Landing LLC Date December 1, 2021

Signature _____ Title Attorney for Project Sponsor

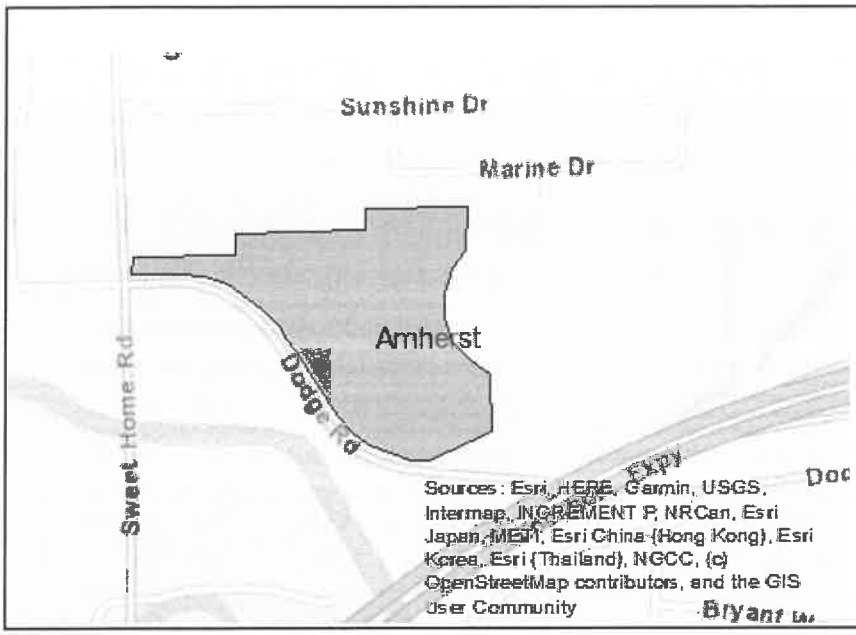
Sean W. Hopkins, Esq.

PRINT FORM

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

EAF Mapper Summary Report

Thursday, June 18, 2020 8:50 AM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.



B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Yes - Digital mapping data are not available for all Special Planning Districts. Refer to EAF Workbook.
C.2.b. [Special Planning District - Name]	NYS Heritage Areas:West Erie Canal Corridor
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	Yes
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.iv [Surface Water Features - Wetlands Name]	Federal Waters, NYS Wetland
E.2.h.iv [Surface Water Features - Wetlands Size]	NYS Wetland (in acres):34.6
E.2.h.iv [Surface Water Features - DEC Wetlands Number]	TE-33
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	No

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E.2.k. [500 Year Floodplain]	Yes
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	No
E.2.o. [Endangered or Threatened Species]	No
E.2.p. [Rare Plants or Animals]	Yes
E.2.p. [Rare Plants or Animals - Name]	Spiny Softshell
E.3.a. [Agricultural District]	No
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Yes - Digital mapping data for archaeological site boundaries are not available. Refer to EAF Workbook.
E.3.e.ii [National or State Register of Historic Places or State Eligible Sites - Name]	Eligible property:Heritage Heights Elementary School
E.3.f. [Archeological Sites]	Yes
E.3.i. [Designated River Corridor]	No

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

TOWN OF AMHERST ATTACHMENT
State Environmental Quality Review
ENVIRONMENTAL ASSESSMENT FORM
Proposed Mixed-Use Project - Portion of 1081 North French Road

1. For each applicable category of proposed new structures, including additions to existing structures, provide the following information for all soil types on the project site (*according to Soil Survey of Erie County, NY; Table 11, Building Site Development, pp 294-305):*

Soil Name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Getzville Silt Loam	Severe	Severe	Severe	Severe	Moderate
Swormville Clay Loam	Severe	Severe	Severe	Severe	Severe

2. If the Soil survey indicates either "severe" or "moderate" suitability for the proposed types of construction, a geotechnical and hydrological analysis based on one test per 3.5 acres of project area must be provided (per Town Board resolution, 3/17/03, amended 6/16/03).

   _____ Geotechnical report attached _____ Not applicable

   [Note: 3 copies of the comprehensive Geotechnical Report for the entire overall Muir Woods Property previously submitted.

3. Is your property located: On Youngs Road between Dodge and Klein Roads? □ Yes x No
   On Wehrle Dr. between Spindrift Dr. and Oakwood Rd? □ Yes x No

   If so, the property may be within an area of the Town that is affected by a moratorium on connections to the sanitary sewer system.

4. Are there alternative locations on the site for this project? □ Yes x No

5. Location and size of real property owned by petitioner within one (1) mile of subject proposal:
   __Not Applicable

6. Are you aware of current or future plans or intentions by others in the Town of Amherst to develop property within 1000± ft. of the present project request: ☒ Yes ☒ No

   Describe A student housing community is proposed on property to the east of the Project Site commonly referred to as Site "B" of Muir Woods.

   (Potential environmental impacts from adjacent or nearby projects undergoing the approval process will receive a coordinated environmental review to determine cumulative effects on common receivers (e.g. traffic and drainage corridors) and other relevant environmental concerns.)

7. Maximum number of vehicular trips to be generated per peak hour upon completion of project 120-130
   Source: Copies of the Traffic Impact Study prepared by SRF Associates DPC dated August 3, 2020 were previously submitted.

8. Will blasting occur during construction? □ Yes ☒ No

9. Does the project propose to connect and be tributary to the public sanitary sewer system? ☒ Yes □ No

10. Proposed net additional gallons per day (gpd) of sanitary sewer discharge upon completion of project:
    56,760 average flow 227,040 peak flow.
    (Average flows of 2,500 gpd or greater will require an Engineer's Report that includes a detailed downstream sewer capacity analysis and the identification of and commitment to required I/I offset work during peak wastewater flow conditions.)

11. Based on the Town's *2011 Reconnaissance Level Survey of Historic Resources,* is your property 'blue-rated' for historic significance? x Yes □ No
    [There are not any buildings located on the Project Site.]
    [Note: A copy of the No Impact Determination letter issued by SHPO has previously been submitted.]

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Attachment "A" of Part 1 of Full Environmental Assessment Form - No Impact Determination Letter Issued by Ruth Pierpont, Director, New York State Office of Parks, Recreation and Historic Preservation, dated October 10, 2001

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189
518-237-8643

NEW YORK STATE
Bernadette Castro
Commissioner

October 10, 2001

Carolyn A. Pierce
CCRG
105 Robie Avenue
Buffalo, New York 14214

Dear Ms. Pierce:

Re: SEQRA
Muir Woods Mixed-Use Development
Amherst/Erie County
01PR0345

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Parks, Recreation and Historic Preservation Law, Section 14.09.

Based upon this review, it is the OPRHP's opinion that your project will have No Impact upon cultural resources in or eligible for inclusion in the State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Director

RLP:cmp

RECEIVED
OCT 16 2001
CIMINELLI DEVELOPMENT
COMPANY, INC.

Attachment: SP-2021-05_application_011322 (23057 : Sp-2021-05)

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York
SITE DEVELOPMENT DRAWINGS

AGENCIES

ENGINEERING DEPARTMENT
NAME/TITLE: JEFFERY BURROUGHS, P.E. – TOWN ENGINEER
COMPANY/DEPT: TOWN OF AMHERST ENGINEERING DEPARTMENT
ADDRESS: 1100 NORTH FOREST ROAD
WILLIAMSVILLE, NEW YORK 14221

TELEPHONE 716–631–7154

PLANNING & ZONING DEPARTMENT
NAME/TITLE: DANIEL HOWARD – PLANNING DIRECTOR
COMPANY/DEPT: TOWN OF AMHERST PLANNING DEPARTMENT
ADDRESS: 5583 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221

TELEPHONE 716–631–7051

LAND SURVEYOR
NAME/TITLE: GPI ENGINEERING, LANDSCAPE ARCHITECTURE SURVEYING, LLP
COMPANY/DEPT: 4950 GENESEE STREET, SUITE 100
ADDRESS: BUFFALO, NEW YORK 14225

TELEPHONE 716–633–4844

UTILITIES

NATURAL GAS
COMPANY/DEPT:. NATIONAL FUEL GAS CORP.
ADDRESS: 6363 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221

TELEPHONE 716–857–7000

TELEPHONE COMPANY
COMPANY/DEPT: VERIZON
ADDRESS: 65 FRANKLIN STREET
BUFFALO, NEW YORK 14203

TELEPHONE 716–840–8748

CABLE COMPANY
COMPANY/DEPT: TIME WARNER
ADDRESS: 789 CHURCH ROAD
WEST SENECA, NEW YORK

TELEPHONE 716–558–8615

ELECTRIC COMPANY
COMPANY/DEPT: NATIONAL GRID
ADDRESS: 144 KENSINGTON AVENUE
BUFFALO, NEW YORK 14214

TELEPHONE 716–236–2738

WATER
COMPANY/DEPT:. ERIE COUNTY WATER AUTHORITY
ADDRESS: 3030 UNION ROAD
CHEEKTOWAGA, NEW YORK 14227

TELEPHONE 716–684–1510

DIG SAFELY NEW YORK

TELEPHONE 1–800–962–7962

OWNER/DEVELOPER

NAME: Sawyer's Landing LLC
ADDRESS 43 Central Ave Suite #300
Lancaster, NY 14086

TELEPHONE 716 818-0207

ENGINEER

Carmina • Wood • Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

December 2021

DWG NO.	DRAWING TITLE
–	COVER SHEET
–	TOPOGRAPHIC MAP
–	BOUNDARY SURVEY
C–001	DEMOLITION & EROSION CONTROL PLAN
C–002	DEMOLITION & EROSION CONTROL DETAILS
C–100	OVERALL SITE PLAN
C–101	SITE PLAN
C–102	PARCEL MAP
C–103	SITE DETAILS
C–104	SITE DETAILS
C–200	GRADING PLAN
C–300	STORM DRAINAGE PLAN
C–301	STORM DRAINAGE DETAILS
C–302	STORM DRAINAGE DETAILS
C–303	STORM DRAINAGE DETAILS
C–400	UTILITY PLAN
C–401	SANITARY SEWER DETAILS
C–402	SANITARY SEWER DETAILS
C–403	SANITARY SEWER GENERAL NOTES
C–404	WATER DETAILS
C–405	WATER DETAILS
C–406	WATER DETAILS & NOTES
C–407	INSULATED ENCLOSURE DETAIL
L–100	LANDSCAPE PLAN
LP–100	PHOTOMETRIC PLAN
TT–100	FIRE TRUCK PLAN

Attachment: SP-2021-05_drawings_011322 (23057 : Sp-2021-05)

NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE.

● SET OR EX. 5/8" REBAR

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MAP COVER 2305

SWEET HOME (NORTH VARIES) ROAD

SPADINA DRIVE

PLEASANT ACRES PART III, MAP COVER 2305

CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA
L. 6640, P. 309, L. 7090, P. 207

PLEASANT ACRES PART II, MAP COVER 2273

PLEASANT ACRES PART III, MAP COVER 2305

SOUTHWEST CORNER OF PLEASANT ACRES SUBDIV. PART II MAP COVER 2273

PARALLEL W/SOUTH LINE OF LOT 76
N 88°55'52" E 530.61'

PARALLEL W/WEST LINE OF LOT 76 (CENTERLINE OF SWEET HOME ROAD)

L.7659 P.435 & 437

N 88°55'52" E 700.84'

N 88°55'52" E 396.51'

PARALLEL W/SOUTH LINE OF LOT 76

N 29°36'17" E 62.65'

MON. WELL

N 20°40'08" W 1187.24'

1312.39' N 88°55'52" E

POINT OF BEGINNING
AREA "B"
LAT: 43°01'40.40785"
LON: -78°47'14.98366"

S 80°10'01" E 145.00'

S 64°16'46" W 35.20'

S 10°07'24" E 43.27'

S 11°02'55" W 83.05'

S 17°56'26" E 236.39'

S 45°19'36" E 99.73'

DEED RESTRICTED AREA "B"
TOTAL AREA: = 32.52± ACRES

SOUTH LINE L.-9095, P.-348
PARALLEL WITH S. LINE LOT 76

EXCEPTION L.-11278, P.-7124

EXCEPTION L.-10908, P.-362
MAP 36 353-1 PARCEL 1

N88°55'52"E 540.78' M
584.39' D&M
541.38' M

N02°04'02"W 90.42'

N02°04'02"W 120.85' D&M
N02°04'02"W 120.85' M

S88°21'54"W 173.47'
S88°21'54"W 205.48' D&M

DEED RESTRICTED AREA "A"
TOTAL AREA: = 3.9146 ACRES

TOP OF HYDRANT ELEV: 577.69'

LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC
REPUTED OWNERS
L.11307, PG.4915

SITE 'A'
17.424± ACRES

CATCH BASIN RIM:574.64' N INV:573.44'

CATCH BASIN RIM:574.52' W INV:568.27' 12" E INV:568.32'

CATCH BASIN RIM:574.42' W INV:569.90' E INV:569.97'

CATCH BASIN RIM:573.70' W INV:569.90' E INV:569.97'

12" CMP INV:572.14'

12" CMP

CONCRETE SIDEWALK

ASPHALT DRIVE

DOUGH ROAD RELOCATION

N 67°53'17" W 50.93'

S 71°08'13" W 128.98'

S 39°43'51" W 50.80'

S 23°50'17" W 47.47'

S 57°29'39" W 52.30'

S 87°22'49" W 322.92'

N 83°38'15" W 172.66'

S 83°36'25" W 105.17'

N 35°56'42" W 159.92'

N 10°10'00" W 305.54'

L=539.31'
R=598.60'
DELTA=52°00'30"

N 85°10'51" W 40.58'

S 85°24'13" W 405.22'

599.16' D&M

NIAGARA MOHAWK POWER CORP.
L.-9173, P.-51

202.71'
N 85°38'22" W

L=1145.94'
R=6848.00'
S 85°48'39" W
CHORD 917.39

TOP OF HYDRANT ELEV: 574.70'

SAN. M.H. RIM: 575.78' INV: 553.78' E-W

SAN. M.H. RIM:576.41' INV: 554.21' E-W

72" CONC. PIPE

SOUTH LINE OF LOT 76
NORTH LINE OF LOT 75

TRANSMISSION TOWER

LOCKPORT (ROUTE 990) EXPRESSWAY

SECTION II

BRUSH LINE

STONE DRIVE

ASPHALT PARKING LOT

CONCRETE SIDEWALK

TOP OF HYDRANT ELEV: 577.37

TOP OF HYDRANT ELEV: 575.69

TOP OF HYDRANT ELEV: 574.70'

UP

GUY

CATCH BASIN
CONIFEROUS TREE
DECIDUOUS SHRUB
DECIDUOUS TREE
GAS VALVE
GUY WIRE
WATER SERVICE VALVE
WATER VALVE

COMMUNICATIONS BOX
HYDRANT
LIGHT POLE
SANITARY SEWER MANHOLE
SIGN (SINGLE POLE)
SIGN (DOUBLE POLE)
UTILITY POLE

STATE OF NEW YORK
LICENSED LAND SURVEYOR

DATE	REVISION/TYPE

TOPOGRAPHIC SURVEY
PART OF LOT 76, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK

GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE
4950 GENESEE STREET, SUITE 100
BUFFALO, NEW YORK 14225
(716) 633-4844 FAX 633-4940

Job No. 2013062-SITE A Date: DECEMBER 22, 2020
Scale: 1" = 100' TAX No. 40.08-3-13.1 (PART OF)

Attachment: SP-2021-05_drawings_011322 (23057 : Sp-2021-05)

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SWEET HOME (WIDTH VARIES) ROAD

CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA
L. 6640, P. 309, L. 7090, P. 207

PLEASANT ACRES PART II, MAP COVER 2273

PLEASANT ACRES PART III, MAP COVER 2305

SOUTHWEST CORNER OF PLEASANT ACRES SUBDIV. PART II MAP COVER 2273

P.O.B.

TEL BOX

UP

GUY

N 88°55'52" E 530.61'
PARALLEL W/SOUTH LINE OF LOT 76

PARALLEL W/WEST LINE OF LOT 76
(CENTERLINE OF SWEET HOME ROAD)

N 02°04'02" W
118.24'

L.7659
P.435 & 437

N 88°55'52" E 700.84'

N 88°55'52" E 396.51'
PARALLEL W/SOUTH LINE OF LOT 76

N 29°36'12" E 62.65'

S 01°04'08" E
145.00'

35.20'
S 64°16'46" W

141.03'
S 29°42'37" W

S 10°07'24" E
43.27'

S 11°02'55" W
83.05'

S 11°56'26" E 236.39'

S 45°19'36" E
99.73'

N 83°38'15" W
172.66'

S 87°22'49" W
322.92'

S 83°36'25" W
105.17'

S 71°08'13" W
128.98'

N 67°53'17" W
50.93'

S 39°43'51" W
50.80'

S 23°50'17" W
47.47'

N 32°30'21" W 198.87'

N 32°30'21" W 457.24'

S 57°29'39" W
52.30'

258.37'

PT

N 35°36'42" W
156.92'

N 01°04'00" W 305.54'

195.94'

599.16' D&M

S 65°24'13" W 403.22'

S 65°24'13" W

L=539.31'
R=586.62'
DELTA=52°40'30"

N 85°10'51" W
40.58'

SOUTH LINE OF LOT 76
NORTH LINE OF LOT 75

SOUTH LINE L.-9095, P.-348
PARALLEL WITH S. LINE LOT 76

EXCEPTION L.-11278, P.-7124

584.39' D&M
541.38' M

N88°55'52"E
540.78' M

N 00°55'59" W
109.75'

EXCEPTION L.-10808, P.-9632
MAP SK 353-1, PARCEL 1

120.85' D&M
N02°04'02"W

120.52'

N02°04'02"W
90.42'

173.47'
S88°21'54"W
216.48' D&M

DEED RESTRICTED AREA "A"
TOTAL AREA: = 3.914± ACRES

N 01°03'14" W 512.76'

LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC
REPUTED OWNERS
L.11307, PG.4915

SITE 'A'
17.424± ACRES

DEED RESTRICTED AREA "B"
TOTAL AREA: = 32.52± ACRES

L=747.17

R=724.00

DODGE ROAD RELOCATION

NIAGARA MOHAWK POWER CORP.
L.-9173, P.-51

STATE OF NEW YORK
MARK J. ANDREWS
LICENSED LAND SURVEYOR
050455

DATE	REVISION/TYPE
12/4/20	REVISE PARCEL BOUNDARY

NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE.

● SET OR EX. 5/8" REBAR

SURVEY OF
PART OF LOT 76, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK

GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE
4950 GENESEE STREET, SUITE 100
BUFFALO, NEW YORK 14225
(716) 633-4844 FAX 633-4940

Job No. 2013062-SITE A Date: JUNE 27, 2019
Scale: 1" = 100' TAX No.

Attachment: SP-2021-05 drawings_011322 (23057 : Sp-2021-05)

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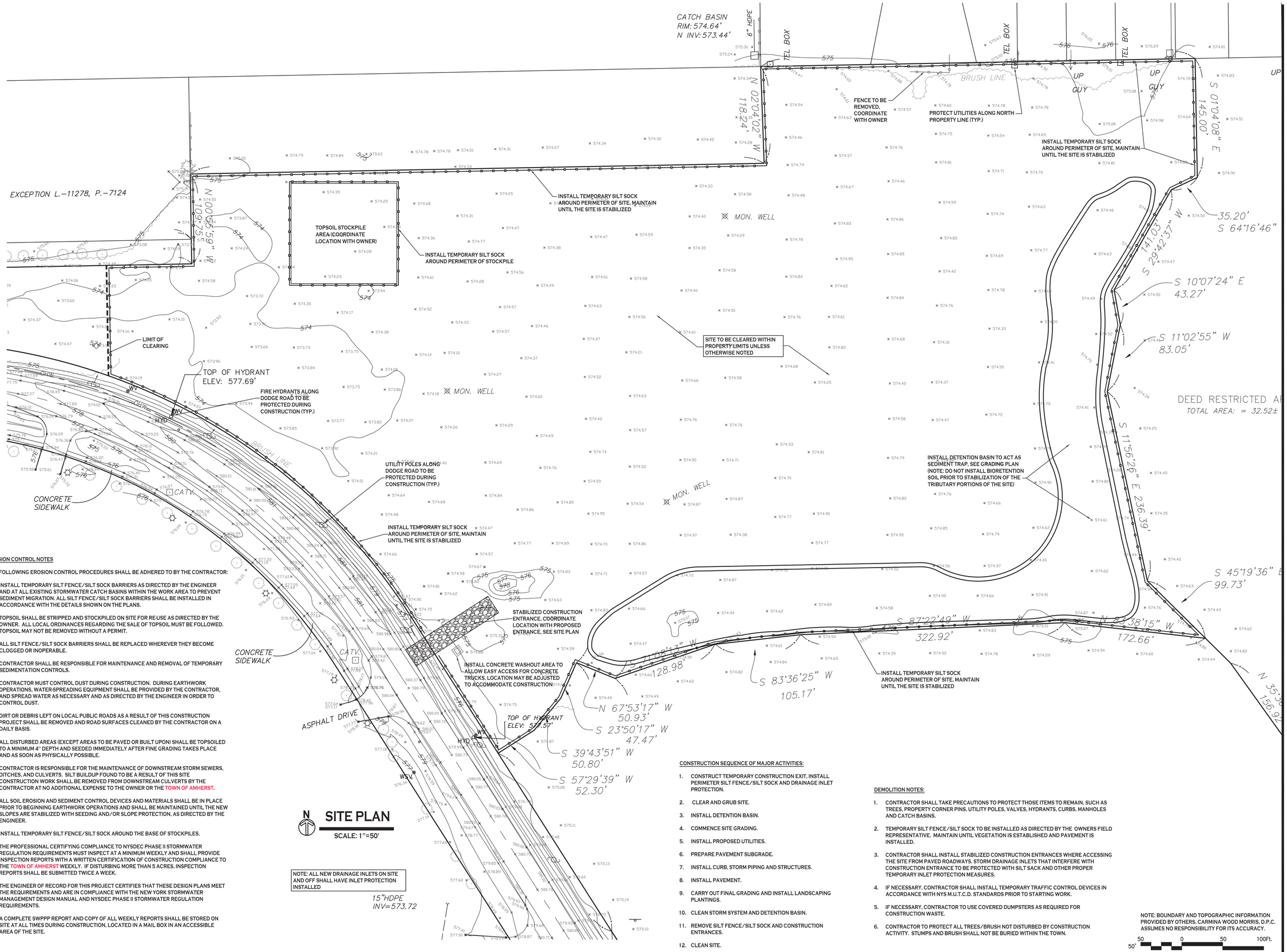

SITE PLAN

SCALE: 1"=50'

NOTE: ALL NEW DRAINAGE INLETS ON SITE AND OFF SHALL HAVE INLET PROTECTION INSTALLED

15"HDPE INV=573.72

EROSION CONTROL NOTES

THE FOLLOWING EROSION CONTROL PROCEDURES SHALL BE ADHERED TO BY THE CONTRACTOR:

1. INSTALL TEMPORARY SILT FENCE/SILT SOCK BARRIERS AS DIRECTED BY THE ENGINEER AND AT ALL EXISTING STORMWATER CATCH BASINS WITHIN THE WORK AREA TO PREVENT SEDIMENT MIGRATION. ALL SILT FENCE/SILT SOCK BARRIERS SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS SHOWN ON THE PLANS.
2. TOPSOIL SHALL BE STRIPPED AND STOCKPILED ON SITE FOR RE-USE AS DIRECTED BY THE OWNER. ALL LOCAL ORDINANCES REGARDING THE SALE OF TOPSOIL MUST BE FOLLOWED. TOPSOIL MAY NOT BE REMOVED WITHOUT A PERMIT.
3. ALL SILT FENCE/SILT SOCK BARRIERS SHALL BE REPLACED WHEREVER THEY BECOME CLOGGED OR INOPERABLE.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE AND REMOVAL OF TEMPORARY SEDIMENTATION CONTROLS.
5. CONTRACTOR MUST CONTROL DUST DURING CONSTRUCTION. DURING EARTHWORK OPERATIONS, WATER-SPREADING EQUIPMENT SHALL BE PROVIDED BY THE CONTRACTOR, AND SPREAD WATER AS NECESSARY AND AS DIRECTED BY THE ENGINEER IN ORDER TO CONTROL DUST.
6. DIRT OR DEBRIS LEFT ON LOCAL PUBLIC ROADS AS A RESULT OF THIS CONSTRUCTION PROJECT SHALL BE REMOVED AND ROAD SURFACES CLEANED BY THE CONTRACTOR ON A DAILY BASIS.
7. ALL DISTURBED AREAS (EXCEPT AREAS TO BE PAVED OR BUILT UPON) SHALL BE TOPSOILED TO A MINIMUM 4" DEPTH AND SEEDED IMMEDIATELY AFTER FINE GRADING TAKES PLACE AND AS SOON AS PHYSICALLY POSSIBLE.
8. CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE OF DOWNSTREAM STORM SEWERS, DITCHES, AND CULVERTS. SILT BUILDUP FOUND TO BE A RESULT OF THIS SITE CONSTRUCTION WORK SHALL BE REMOVED FROM DOWNSTREAM CULVERTS BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER OR THE TOWN OF AMHERST.
9. ALL SOIL EROSION AND SEDIMENT CONTROL DEVICES AND MATERIALS SHALL BE IN PLACE PRIOR TO BEGINNING EARTHWORK OPERATIONS AND SHALL BE MAINTAINED UNTIL THE NEW SLOPES ARE STABILIZED WITH SEEDING AND/OR SLOPE PROTECTION, AS DIRECTED BY THE ENGINEER.
10. INSTALL TEMPORARY SILT FENCE/SILT SOCK AROUND THE BASE OF STOCKPILES.
11. THE PROFESSIONAL CERTIFYING COMPLIANCE TO NYSDEC PHASE II STORMWATER REGULATION REQUIREMENTS MUST INSPECT AT A MINIMUM WEEKLY AND SHALL PROVIDE INSPECTION REPORTS WITH A WRITTEN CERTIFICATION OF CONSTRUCTION COMPLIANCE TO THE TOWN OF AMHERST WEEKLY. IF DISTURBING MORE THAN 5 ACRES, INSPECTION REPORTS SHALL BE SUBMITTED TWICE A WEEK.
12. THE ENGINEER OF RECORD FOR THIS PROJECT CERTIFIES THAT THESE DESIGN PLANS MEET THE REQUIREMENTS AND ARE IN COMPLIANCE WITH THE NEW YORK STORMWATER MANAGEMENT DESIGN MANUAL AND NYSDEC PHASE II STORMWATER REGULATION REQUIREMENTS.
13. A COMPLETE SWPPP REPORT AND COPY OF ALL WEEKLY REPORTS SHALL BE STORED ON SITE AT ALL TIMES DURING CONSTRUCTION, LOCATED IN A MAIL BOX IN AN ACCESSIBLE AREA OF THE SITE.

CONSTRUCTION SEQUENCE OF MAJOR ACTIVITIES:

1. CONSTRUCT TEMPORARY CONSTRUCTION EXIT, INSTALL PERIMETER SILT FENCE/SILT SOCK AND DRAINAGE INLET PROTECTION.
2. CLEAR AND GRUB SITE.
3. INSTALL DETENTION BASIN.
4. COMMENCE SITE GRADING.
5. INSTALL PROPOSED UTILITIES.
6. PREPARE PAVEMENT SUBGRADE.
7. INSTALL CURB, STORM PIPING AND STRUCTURES.
8. INSTALL PAVEMENT.
9. CARRY OUT FINAL GRADING AND INSTALL LANDSCAPING PLANTINGS.
10. CLEAN STORM SYSTEM AND DETENTION BASIN.
11. REMOVE SILT FENCE/SILT SOCK AND CONSTRUCTION ENTRANCES.
12. CLEAN SITE.

DEMOLITION NOTES:

1. CONTRACTOR SHALL TAKE PRECAUTIONS TO PROTECT THOSE ITEMS TO REMAIN, SUCH AS TREES, PROPERTY CORNER PINS, UTILITY POLES, VALVES, HYDRANTS, CURBS, MANHOLES AND CATCH BASINS.
2. TEMPORARY SILT FENCE/SILT SOCK TO BE INSTALLED AS DIRECTED BY THE OWNERS FIELD REPRESENTATIVE. MAINTAIN UNTIL VEGETATION IS ESTABLISHED AND PAVEMENT IS INSTALLED.
3. CONTRACTOR SHALL INSTALL STABILIZED CONSTRUCTION ENTRANCES WHERE ACCESSING THE SITE FROM PAVED ROADWAYS. STORM DRAINAGE INLETS THAT INTERFERE WITH CONSTRUCTION ENTRANCE TO BE PROTECTED WITH SILT SACK AND OTHER PROPER TEMPORARY INLET PROTECTION MEASURES.
4. IF NECESSARY, CONTRACTOR SHALL INSTALL TEMPORARY TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH NYS M.U.T.C.D. STANDARDS PRIOR TO STARTING WORK.
5. IF NECESSARY, CONTRACTOR TO USE COVERED DUMPSTERS AS REQUIRED FOR CONSTRUCTION WASTE.
6. CONTRACTOR TO PROTECT ALL TREES/BRUSH NOT DISTURBED BY CONSTRUCTION ACTIVITY. STUMPS AND BRUSH SHALL NOT BE BURIED WITHIN THE TOWN.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS. CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 0 50 100Ft.

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P 716.842.3165
F 716.842.0263

STATE OF NEW YORK · CHRISTOPHER WOOD · 076394 · LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Demolition & Erosion Control Plan

DRAWING NO.

C-001

Project no.: 21.011

Attachment: SP-2021-05_drawings_011322 (23057 : Sp-2021-05)

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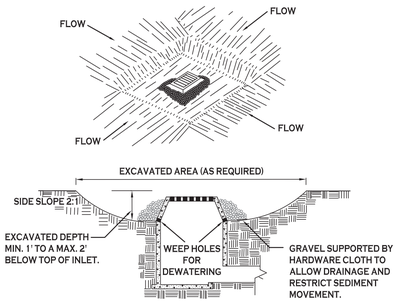


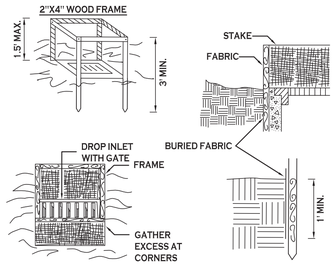
CONSTRUCTION SPECIFICATIONS

1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER EXCAVATION.
2. GRADE APPROACH TO THE INLET UNIFORMLY AROUND THE BASIN.
3. WEEP HOLES SHALL BE PROTECTED BY GRAVEL.
4. UPON STABILIZATION OF CONTRIBUTING DRAINAGE AREA, SEAL WEEP HOLES, FILL BASIN WITH STABLE SOIL TO FINAL GRADE, COMPACT IT PROPERLY AND STABILIZE WITH PERMANENT SEEDING.

   MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 1

NOT TO SCALE



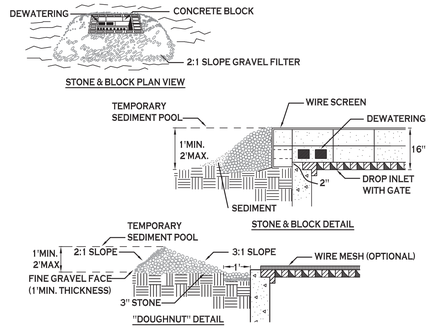
CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2" x 4" WOOD OR EQUIVALENT. METAL WITH A MINIMUM LENGTH OF 3 FEET.
4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2" x 4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.

   MAXIMUN DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 2

NOT TO SCALE



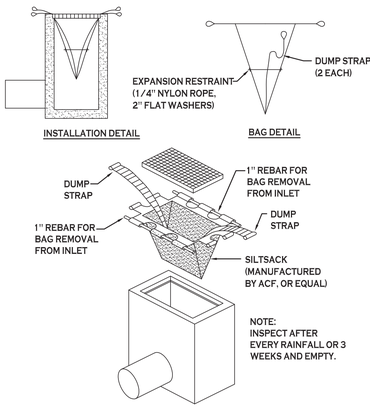
CONSTRUCTION SPECIFICATIONS

1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE FOR DEWATERING. FOUNDATION SHALL BE 2 INCHES MINIMUM BELOW REST OF INLET AND BLOCKS SHALL BE PLACED AGAINST INLET FOR SUPPORT.
2. HARDWARE CLOTH OR 1/2" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.
3. USE CLEAN STONE OR GRAVEL 1/2-3/4 INCH IN DIAMETER PLACED 2 INCHES BELOW TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER.
4. FOR STONE STRUCTURES ONLY, A 1 FOOT THICK LAYER OF THE FILTER STONE WILL BE PLACED AGAINST THE 3 INCH STONE AS SHOWN ON THE DRAWINGS.

   MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 3

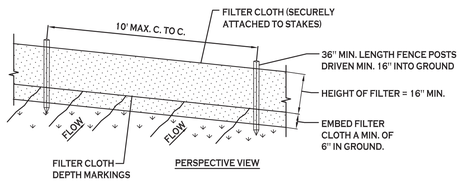
NOT TO SCALE



SILT SACK DETAIL

NOT TO SCALE

NOTE: INSTALL ONE OF THE INLET PROTECTION OPTIONS SHOWN PRIOR TO CONSTRUCTION

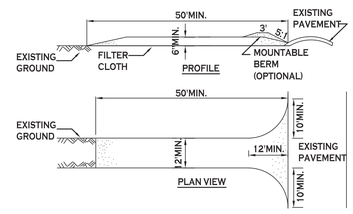


CONSTRUCTION SPECIFICATIONS

1. WOVEN FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
3. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

SILT FENCE DETAIL

NOT TO SCALE

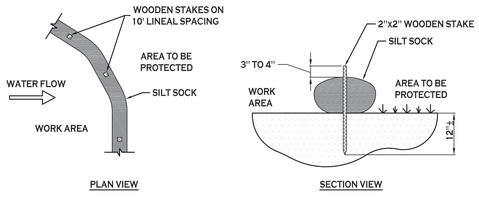


CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

STABILIZED CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE



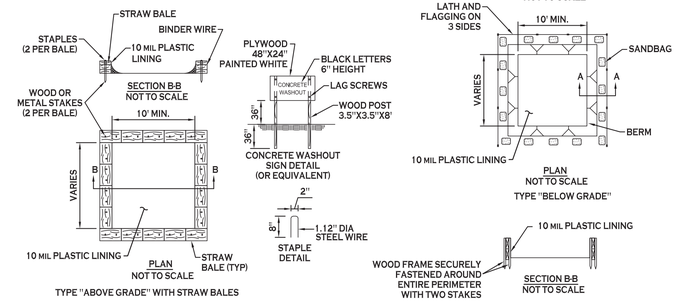
NOTES:

CONTRACTOR SHALL INSPECT AND MAINTAIN SILT SOCK AS NEEDED DURING THE DURATION OF CONSTRUCTION PROJECT.

CONTRACTOR SHALL REMOVE SEDIMENT COLLECTED AT THE BASE OF THE SILT SOCK WHEN IT HAS REACHED ½ OF THE EXPOSED HEIGHT OF THE SILT SOCK. ALTERNATIVELY, RATHER THAN CREATE A SOIL DISTURBING ACTIVITY, THE ENGINEER MAY CALL FOR ADDITIONAL SILT SOCK TO BE ADDED AT AREAS OF HIGH SEDIMENTATION, PLACED IMMEDIATELY ON TOP OF THE EXISTING SEDIMENT LADEN SILT SOCK.

SILT SOCK DETAIL

NOT TO SCALE



NOTES

1. ACTUAL LAYOUT TO BE DETERMINED IN THE FIELD.
2. A CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30' OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
3. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF OR RECYCLED.
4. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE BACKFILLED, REPAIRED, AND STABILIZED TO PREVENT EROSION.

CONCRETE WASHOUT DETAIL

NOT TO SCALE

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STATE OF NEW YORK CHRISTOPHER WOOD 076394 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Demolition & Erosion Control Details

DRAWING NO.

C-002

Project no.: 21-011

Attachment: SP-2021-05_drawings_011322 (23057 : Sp-2021-05)

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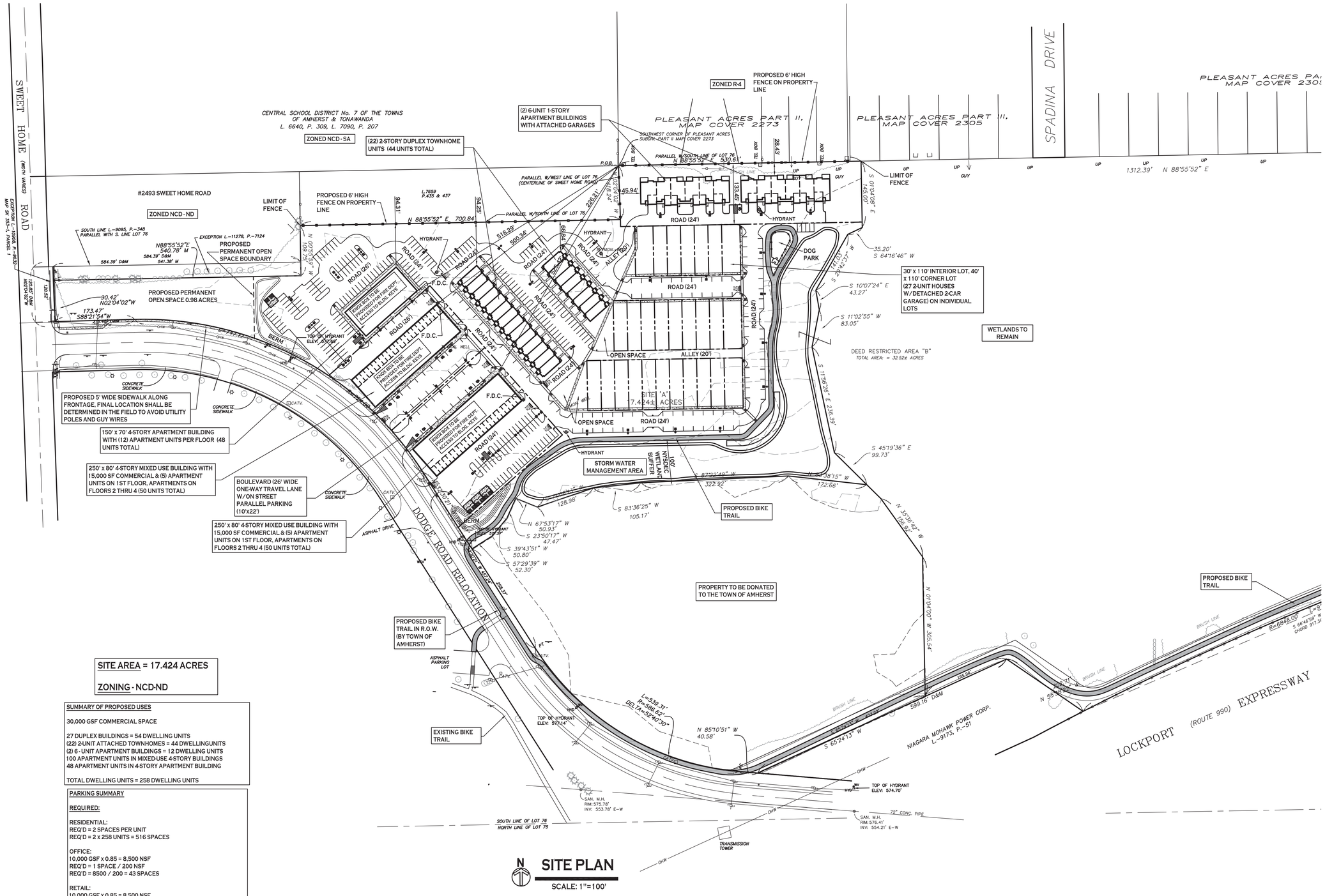

SITE AREA = 17.424 ACRES

ZONING - NCD-ND

SUMMARY OF PROPOSED USES

30,000 GSF COMMERCIAL SPACE

27 DUPLEX BUILDINGS = 54 DWELLING UNITS
(22) 2-UNIT ATTACHED TOWNHOMES = 44 DWELLINGUNITS
(2) 6 - UNIT APARTMENT BUILDINGS = 12 DWELLING UNITS
100 APARTMENT UNITS IN MIXED-USE 4-STORY BUILDINGS
48 APARTMENT UNITS IN 4-STORY APARTMENT BUILDING

TOTAL DWELLING UNITS = 258 DWELLING UNITS

PARKING SUMMARY

REQUIRED:

RESIDENTIAL:
REQ'D = 2 SPACES PER UNIT
REQ'D = 2 x 258 UNITS = 516 SPACES

OFFICE:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 1 SPACE / 200 NSF
REQ'D = 8500 / 200 = 43 SPACES

RETAIL:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 5.5 SPACES / 1,000 NSF
REQ'D = 8500 / 1000 x 5.5 = 47 SPACES

RESTAURANT:
REQ'D = 1 SPACE / 3 SEATS + 1 SPACE / 100 SF TAKE OUT AREA
REQ'D = 100 SEAT / 3 + 500 SF / 100 = 38 SPACES

TOTAL REQ'D = 644 SPACES

PROVIDED:

134 PARALLEL PARKING SPACES
256 9'x19' SPACES *
40 GARAGE SPACES IN 4-STORY BLDGS
64 GARAGE SPACES IN DETACHED GARAGES
494 TOTAL SPACES

* INCLUDES SPACES IN FRONT OF APARTMENT GARAGES

WETLAND SUMMARY

FEDERAL IMPACTS PROPOSED = 6.089 AC
FEDERAL IMPACTS PREVIOUSLY PROPOSED = 13.01 AC
DECREASE = 6.921 AC (53% DECREASE)

NYSDEC IMPACTS PROPOSED = 1.20 AC
NYSDEC IMPACTS PREVIOUSLY PROPOSED = 9.46 AC
DECREASE = 8.26 AC (87% DECREASE)

NYSDEC BUFFER IMPACT PROPOSED = 3.65 AC
NYSDEC BUFFER IMPACTS PREVIOUSLY PROPOSED = 4.20 AC
DECREASE = 0.55 AC (13% DECREASE)

NOTE: NYSDEC IMPACTS INCLUDES FEDERAL WETLAND IMPACT OVERLAP AREAS

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

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STATE OF NEW YORK CHRISTOPHER WOOD 076394 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Overall Site Plan

DRAWING NO.

C-100

Project no.: 21 011

Attachment: SP-2021-05_drawings_011322 (23057 : Sp-2021-05)

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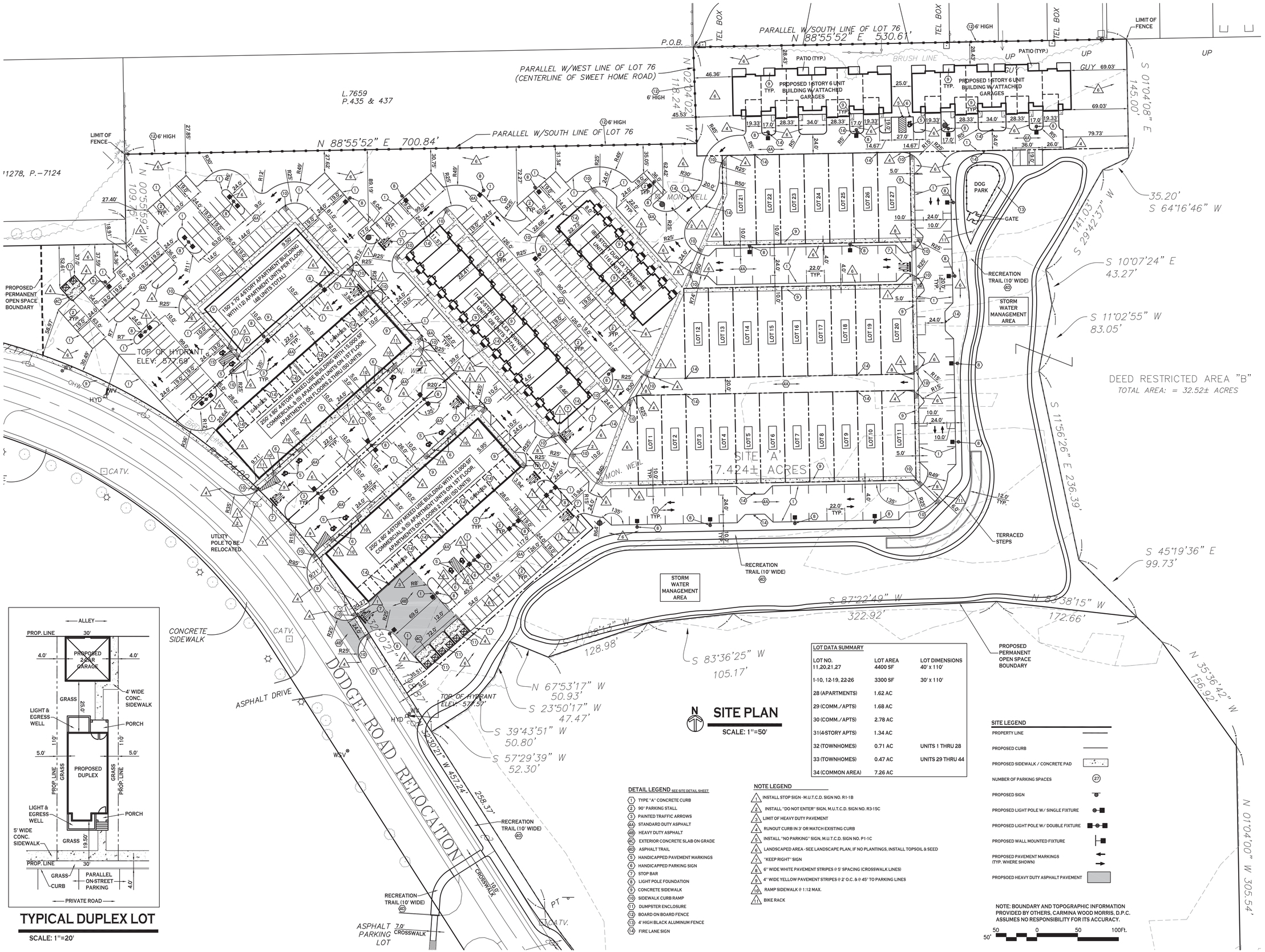

SITE PLAN

SCALE: 1"=50'

LOT DATA SUMMARY		
LOT NO. 11,20,21,27	LOT AREA 4400 SF	LOT DIMENSIONS 40' x 110'
1-10, 12-19, 22-26	3300 SF	30' x 110'
28 (APARTMENTS)	1.62 AC	
29 (COMM./APTS)	1.68 AC	
30 (COMM./APTS)	2.78 AC	
31(4-STORY APTS)	1.34 AC	
32 (TOWNHOMES)	0.71 AC	UNITS 1 THRU 28
33 (TOWNHOMES)	0.47 AC	UNITS 29 THRU 44
34 (COMMON AREA)	7.26 AC	

DETAIL LEGEND SEE SITE DETAIL SHEET

1. TYPE "A" CONCRETE CURB
2. 90° PARKING STALL
3. PAINTED TRAFFIC ARROWS
4A. STANDARD DUTY ASPHALT
4B. HEAVY DUTY ASPHALT
4C. EXTERIOR CONCRETE SLAB ON GRADE
4D. ASPHALT TRAIL
5. HANDICAPPED PAVEMENT MARKINGS
6. HANDICAPPED PARKING SIGN
7. STOP BAR
8. LIGHT POLE FOUNDATION
9. CONCRETE SIDEWALK
10. SIDEWALK CURB RAMP
11. DUMPSTER ENCLOSURE
12. BOARD ON BOARD FENCE
13. 4' HIGH BLACK ALUMINUM FENCE
14. FIRE LANE SIGN

NOTE LEGEND

1. INSTALL STOP SIGN - M.U.T.C.D. SIGN NO. R1-1 B
2. INSTALL "DO NOT ENTER" SIGN, M.U.T.C.D. SIGN NO. R3-15C
3. LIMIT OF HEAVY DUTY PAVEMENT
4. RUNOUT CURB IN 3' OR MATCH EXISTING CURB
5. INSTALL "NO PARKING" SIGN, M.U.T.C.D. SIGN NO. P1-1C
6. LANDSCAPED AREA - SEE LANDSCAPE PLAN, IF NO PLANTINGS, INSTALL TOPSOIL & SEED
7. "KEEP RIGHT" SIGN
8. 6" WIDE WHITE PAVEMENT STRIPES @ 5' SPACING (CROSSWALK LINES)
9. 4" WIDE YELLOW PAVEMENT STRIPES @ 2' O.C. & @ 45° TO PARKING LINES
10. RAMP SIDEWALK @ 1:12 MAX.
11. BIKE RACK

SITE LEGEND

- PROPERTY LINE
- PROPOSED CURB
- PROPOSED SIDEWALK / CONCRETE PAD
- NUMBER OF PARKING SPACES (27)
- PROPOSED SIGN
- PROPOSED LIGHT POLE W/ SINGLE FIXTURE
- PROPOSED LIGHT POLE W/ DOUBLE FIXTURE
- PROPOSED WALL MOUNTED FIXTURE
- PROPOSED PAVEMENT MARKINGS (TYP. WHERE SHOWN)
- PROPSOED HEAVY DUTY ASPHALT PAVEMENT

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

TYPICAL DUPLEX LOT

SCALE: 1"=20'

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STATE OF NEW YORK CHRISTOPHER WOOD 076394 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Site Plan

DRAWING NO.

C-101

Project no.: 21-011

Attachment: SP-2021-05_011322 (23057 : Sp-2021-05)

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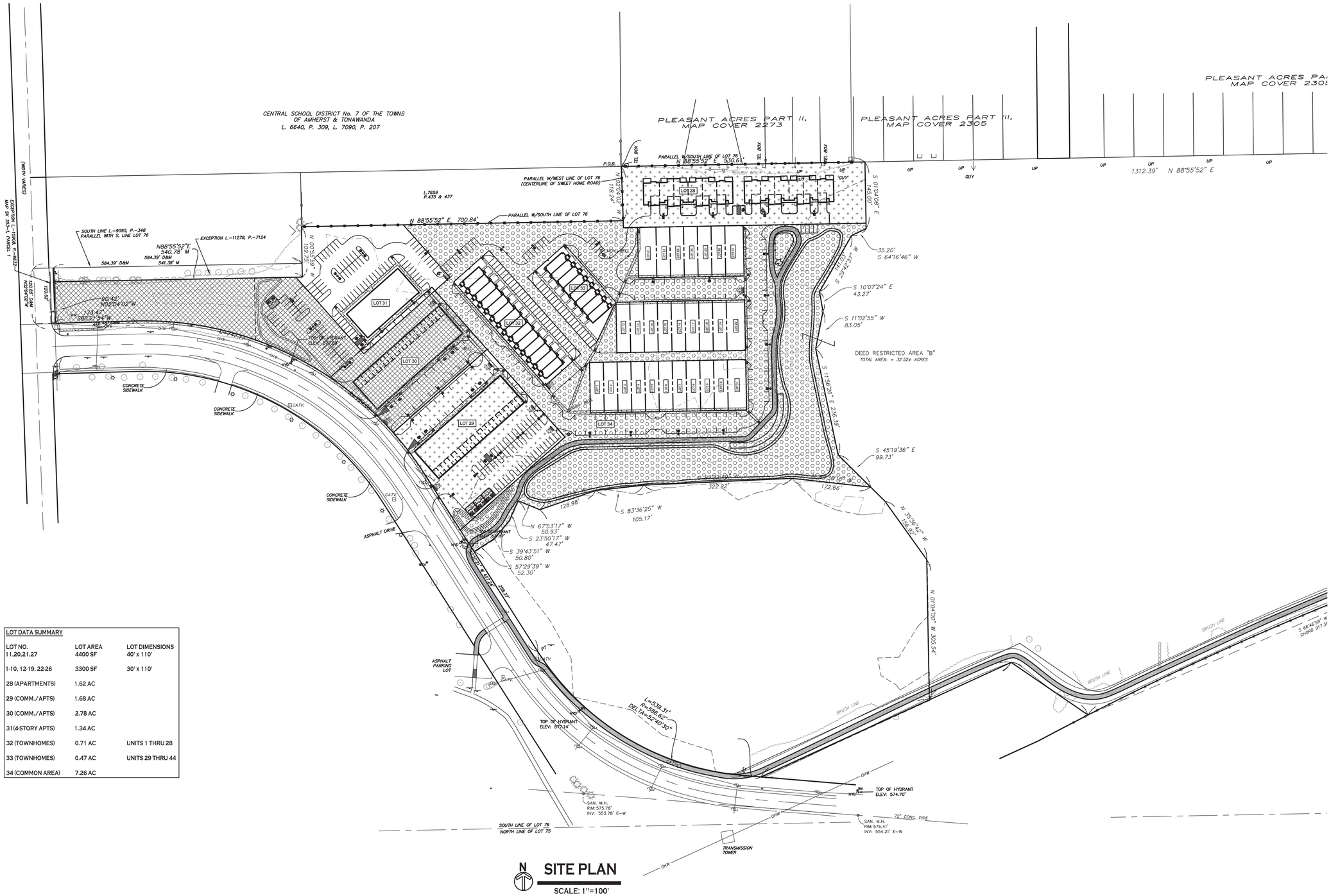

N

SITE PLAN

SCALE: 1"=100'

LOT DATA SUMMARY		
LOT NO.	LOT AREA	LOT DIMENSIONS
11,20,21,27	4400 SF	40' x 110'
1-10, 12-19, 22-26	3300 SF	30' x 110'
28 (APARTMENTS)	1.62 AC	
29 (COMM./APTS)	1.68 AC	
30 (COMM./APTS)	2.78 AC	
31 (4-STORY APTS)	1.34 AC	
32 (TOWNHOMES)	0.71 AC	UNITS 1 THRU 28
33 (TOWNHOMES)	0.47 AC	UNITS 29 THRU 44
34 (COMMON AREA)	7.26 AC	

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100' 100 0 100 200Ft.

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STATE OF NEW YORK CHRISTOPHER WOOD 076304 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Parcel Map

DRAWING NO.

C-102

Project no.: 21 011

Attachment: SP-2021-05_drawings_011322 (23057 : Sp-2021-05)

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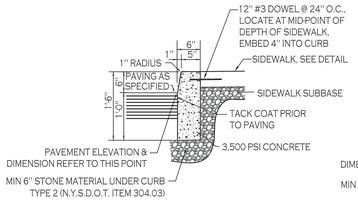
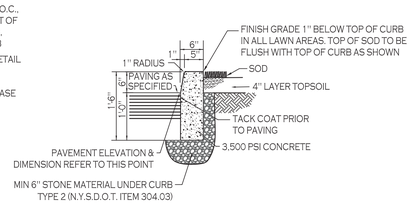


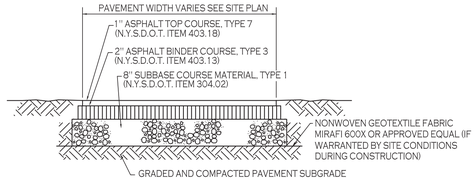
ABUTTING SIDEWALK



ABUTTING LANDSCAPE/GRASS

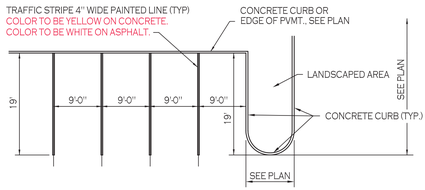
NOTES:
1. CONTROL JOINTS TO BE 2" DEEP AT 15'-0" O.C. - SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
2. WHERE THE CURB DROPS (IS FLUSH WITH ASPHALT) THE DEPTH OF CURB BELOW GRADE SHALL BE INCREASED TO 1'-6" AND OTHER DIMENSIONS ADJUSTED ACCORDINGLY.

TYPE "A" CONCRETE CURB - 1

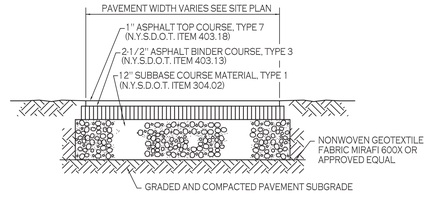


NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 401-3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304-3.

STANDARD DUTY ASPHALT SECTION - 4A

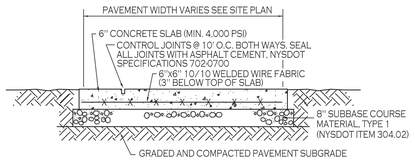


90° PARKING STALL LAYOUT - 2



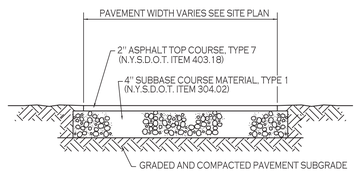
NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 401-3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304-3.

HEAVY DUTY ASPHALT SECTION - 4B



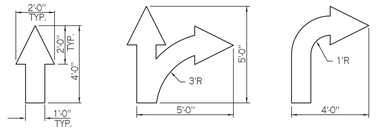
NOTE: CONCRETE PAVEMENT MATERIAL SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 501 AND CONSTRUCTION METHODS SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 502-3.

EXTERIOR CONCRETE SLAB-ON-GRADE SECTION - 4C

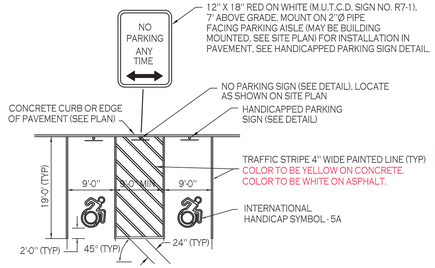


NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 401-3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304-3.

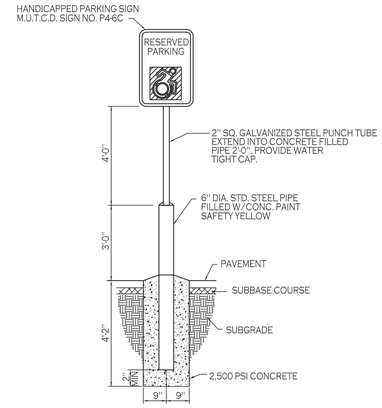
ASPHALT TRAIL SECTION - 4D



PAINTED TRAFFIC ARROWS - 3

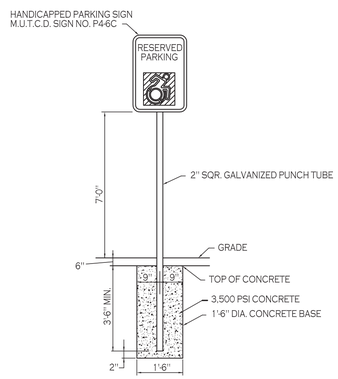


HANDICAPPED PAVEMENT MARKINGS & SIGNAGE - 5



HANDICAPPED PARKING SIGN - 6

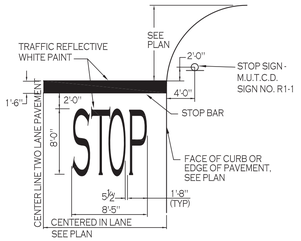
INSTALLED IN PAVEMENT



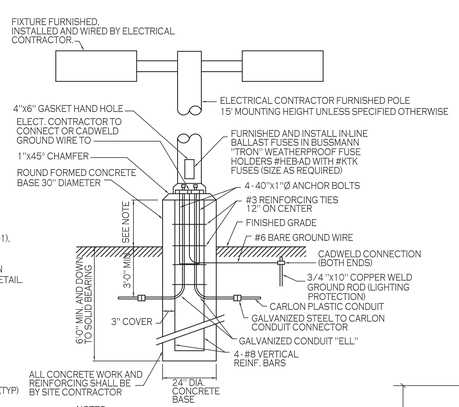
NOTES:
1. HANDICAPPED PARKING SIGN SHALL CONFORM WITH CURRENT STATE AND LOCAL CODES AND REGULATIONS.

HANDICAP PARKING SIGNS - 6

INSTALLED IN GRASS/LANDSCAPED AREA



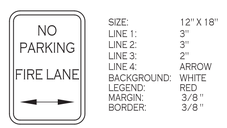
STOP BAR DETAIL - 7



NOTES:
1. FOR LOCATIONS OF FOUNDATIONS SEE SITE PLAN
2. FOR LIGHT FIXTURE ORDERING INFORMATION SEE SITE LIGHTING PLAN
3. LIGHT POLE BASE EXPOSURE ABOVE GRADE SHALL BE:
   IN CURBED ISLANDS: 6" ABOVE TOP OF CURB ELEVATION
   IN PAVEMENT: 3" ABOVE GRADE
   IN NONCURBED GRASS AREAS: 6" ABOVE GRADE

LIGHT POLE FOUNDATION - 8

USE FOR 15' MOUNTING HEIGHT L.E.D. FIXTURES

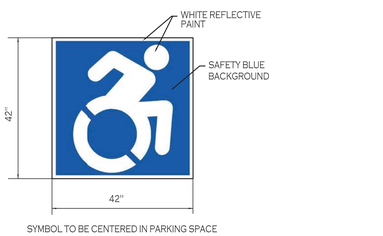


SIZE:	12" X 18"
LINE 1:	3"
LINE 2:	3"
LINE 3:	2"
LINE 4:	ARROW
BACKGROUND:	WHITE
LEGEND:	RED
MARGIN:	3/8"
BORDER:	3/8"

INSTALLATION

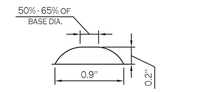
1) SIGNS SHALL BE LOCATED ON THE RIGHT SIDE OF THE ROADWAY FACING APPROACHING TRAFFIC.
2) SIGNS SHALL BE INSTALLED APPROXIMATELY TWO FEET OFF OF PAVEMENT EDGE OR FACE OF CURB.
3) THE HEIGHT OF THE SIGN SHALL BE A MINIMUM OF SEVEN (7) FEET, MEASURED FROM THE BOTTOM OF THE SIGN TO THE GROUND.
4) ALL SIGNS SHALL BE INSTALLED FACING TRAFFIC AT AN ANGLE OF BETWEEN 30 AND 45 DEGREES WITH A LINE PARALLEL TO THE FLOW OF TRAFFIC. THE SIGN LEGENDS SHALL INCLUDE SINGLE-HEADED ARROWS POINTING IN THE DIRECTION OF THE REGULATION IF THE SIGNS ARE AT THE END OF THE ZONE, OR DOUBLE-HEADED ARROWS POINTING IN BOTH DIRECTIONS IF THE SIGNS ARE AT INTERMEDIATE POINTS WITHIN A ZONE.
5) BUILDING MOUNT WHERE REQUIRED @ 50' O.C..

FIRE LANE SIGN - 14

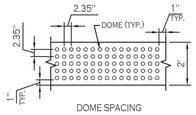


SYMBOL TO BE CENTERED IN PARKING SPACE

INTERNATIONAL HANDICAP SYMBOL - 5A

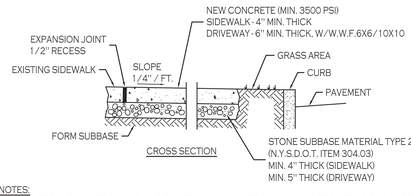


DOME SECTION



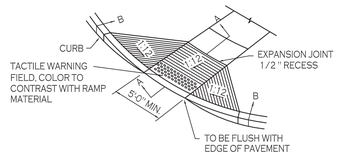
DOME SPACING

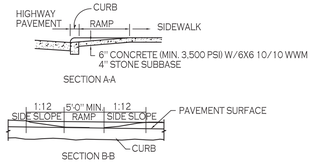
NOTE: TACTILE WARNING DEVICES SHALL BE PER ICC/ANSI A117.1-1998, SECTION 705.3.1.2 OR CURRENT UPDATE



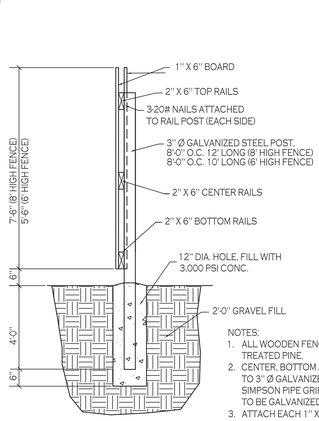
NOTES:
1. CONTROL JOINTS TO BE AT 5'-0" O.C., BOTH WAYS WHERE APPLICABLE. SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
2. CONCRETE SIDEWALK AND DRIVEWAY MATERIAL SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 501 AND CONSTRUCTION METHODS SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 608-3.
3. SUBBASE GRADE SHALL FOLLOW THE PROPOSED GRADE OF THE SIDEWALK AND SLOPE AWAY FROM BUILDING WHERE APPLICABLE, PROVIDE CONTINUOUS STONE PATH TO CURB UNDERDRAIN WHERE PROVIDED.
4. FULL DEPTH EXPANSION JOINTS SHALL BE INSTALLED EVERY 20' O.C., BOTHWAYS WHERE APPLICABLE. SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
5. SEE CURB DETAIL FOR DOWLING REQUIREMENTS WHERE ABUTTING CURB.
6. INSTALL 6" LONG #3 DOWELS @ 12" O.C. WHERE SIDEWALK ABUTS A BUILDING WALL AT AN ENTRANCE, THICKEN SIDEWALK TO 6" AT BUILDING WALL AND INSTALL DOWEL CENTERED IN THE 6" DEPTH. DOWELS AND THICKENING OF SIDEWALK SHALL EXTEND 18" EITHER SIDE OF ENTRANCE.
7. INSTALL 1/2" PREMOLDED EXPANSION JOINT WITH BACKER ROD & SEALANT WHERE SIDEWALK ABUTS BUILDING OR OTHER STRUCTURE.

CONCRETE SIDEWALK - 9



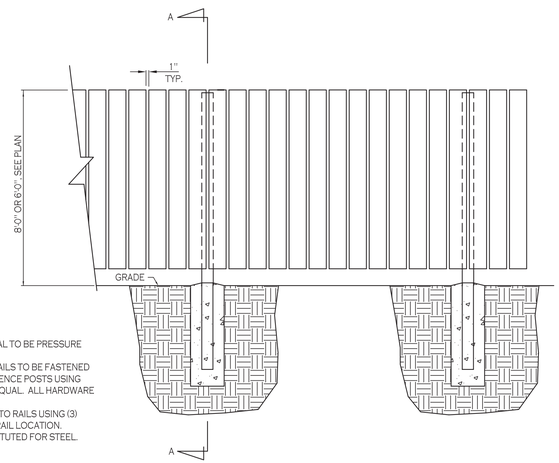


SIDEWALK CURB RAMP - 10



SECTION A-A

NOTES:
1. ALL WOODEN FENCE MATERIAL TO BE PRESSURE TREATED PINE.
2. CENTER, BOTTOM AND TOP RAILS TO BE FASTENED TO 3" Ø GALVANIZED STEEL FENCE POSTS USING SIMPSON PIPE GRIP TIES OR EQUAL. ALL HARDWARE TO BE GALVANIZED.
3. ATTACH EACH 1" X 6" BOARD TO RAILS USING (3) GALVANIZED NAILS AT EACH RAIL LOCATION.
4. WOOD POSTS CAN BE SUBSTITUTED FOR STEEL.



BOARD ON BOARD FENCE FENCE - 12

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Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

STATE OF NEW YORK CHRISTOPHER WOOD 076304 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Site Details

DRAWING NO.
C-103

Project no.: 21-011

Attachment: SP-2021-05_drawings_011322 (23057 : Sp-2021-05)

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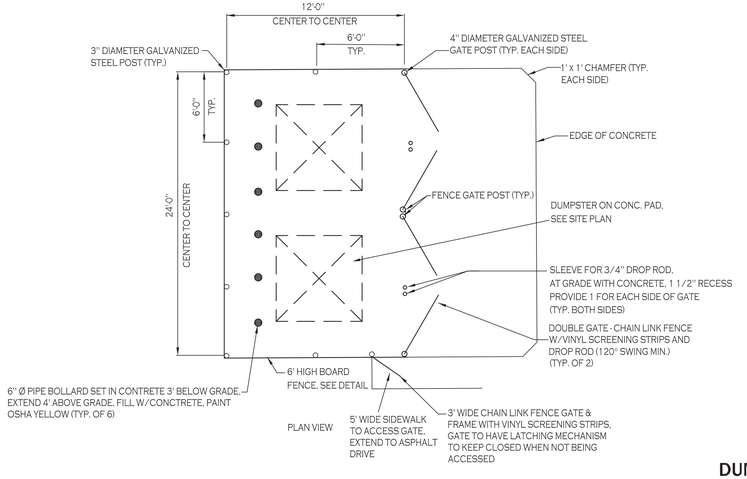
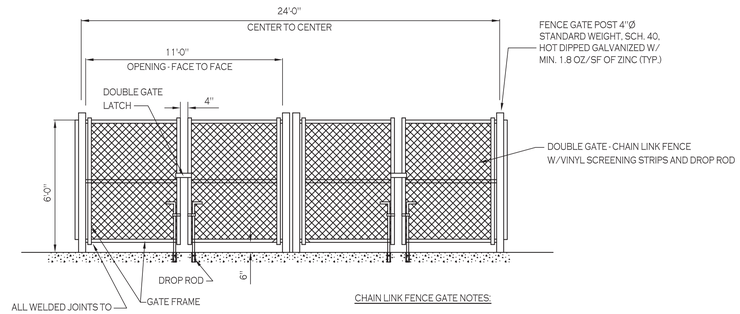


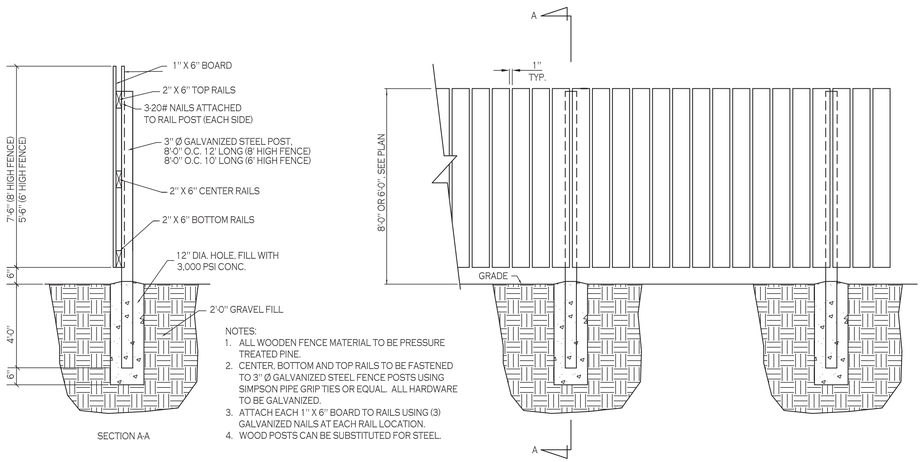


FRONT VIEW

DUMPSTER ENCLOSURE - 11

CHAIN LINK FENCE GATE NOTES:

1. GATE POST FOOTINGS TO BE MIN. 36" DEEP x (4x) POST DIAMETER, EXTEND POST TO WITHIN 6" OF BOTTOM.
2. GATE FRAMES TO BE 2" SQ. GALVANIZED STEEL, WEIGHING 2.60 LB/FT IN ACCORDANCE WITH ASTM F 900.
3. CHAIN LINK FENCE FABRIC SHALL BE 2" MESH, 9 GAUGE, ZINC COATED STEEL CORE WIRE. INSTALL MESH WITH HOOK BOLTS AND TENSION BARS ON ALL 4 SIDES, ATTACH AT 15" MAX.
4. DOUBLE GATE LATCH TO BE FORKED TYPE CAPABLE OF RETAINING GATE IN CLOSED POSITION AND HAVE PROVISION FOR PAD LOCK. LATCH SHALL BE OPERABLE FROM EITHER SIDE OF GATE.
5. ALL HARDWARE TO BE HOT DIPPED GALVANIZED STEEL TO SUIT GATE SIZE.



NOTES:
1. ALL WOODEN FENCE MATERIAL TO BE PRESSURE TREATED PINE.
2. CENTER, BOTTOM AND TOP RAILS TO BE FASTENED TO 3" Ø GALVANIZED STEEL FENCE POSTS USING SIMPSON PIPE GRIP TIES OR EQUAL. ALL HARDWARE TO BE GALVANIZED.
3. ATTACH EACH 1" X 6" BOARD TO RAILS USING (3) GALVANIZED NAILS AT EACH RAIL LOCATION.
4. WOOD POSTS CAN BE SUBSTITUTED FOR STEEL.

BOARD ON BOARD FENCE FENCE - FOR DUMPSTER ENCLOSURE

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STATE OF NEW YORK
CHRISTOPHER WOOD
076304
LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Site
Details

DRAWING NO.
C-104
Project no.: 21-011

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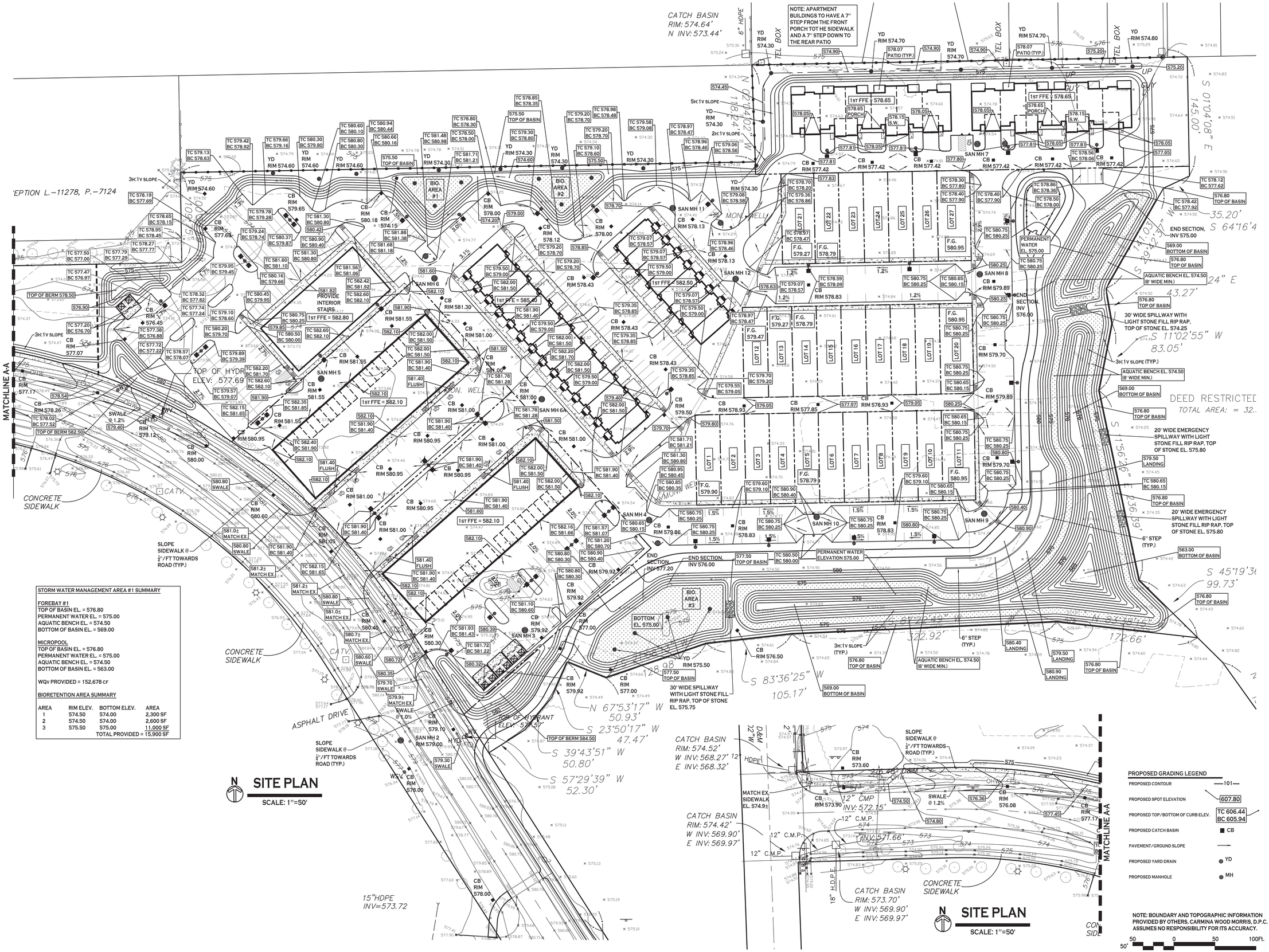

STORM WATER MANAGEMENT AREA #1 SUMMARY

FOREBAY #1
TOP OF BASIN EL. = 576.80
PERMANENT WATER EL. = 575.00
AQUATIC BENCH EL. = 574.50
BOTTOM OF BASIN EL. = 569.00

MICROPOOL
TOP OF BASIN EL. = 576.80
PERMANENT WATER EL. = 575.00
AQUATIC BENCH EL. = 574.50
BOTTOM OF BASIN EL. = 563.00

WQv PROVIDED = 152,678 CF

BIORETENTION AREA SUMMARY

AREA	RIM ELEV.	BOTTOM ELEV.	AREA
1	574.50	574.00	2,300 SF
2	574.50	574.00	2,600 SF
3	575.50	575.00	11,000 SF
		TOTAL PROVIDED =	15,900 SF

SITE PLAN
SCALE: 1"=50'

SITE PLAN
SCALE: 1"=50'

PROPOSED GRADING LEGEND

PROPOSED CONTOUR	101
PROPOSED SPOT ELEVATION	607.80
PROPOSED TOP/BOTTOM OF CURB ELEV.	TC 606.44 BC 605.94
PROPOSED CATCH BASIN	CB
PAVEMENT/GROUND SLOPE	
PROPOSED YARD DRAIN	YD
PROPOSED MANHOLE	MH

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

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STATE OF NEW YORK CHRISTOPHER WOOD 076394 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Grading Plan

DRAWING NO.
C-200

Project no.: 21-011

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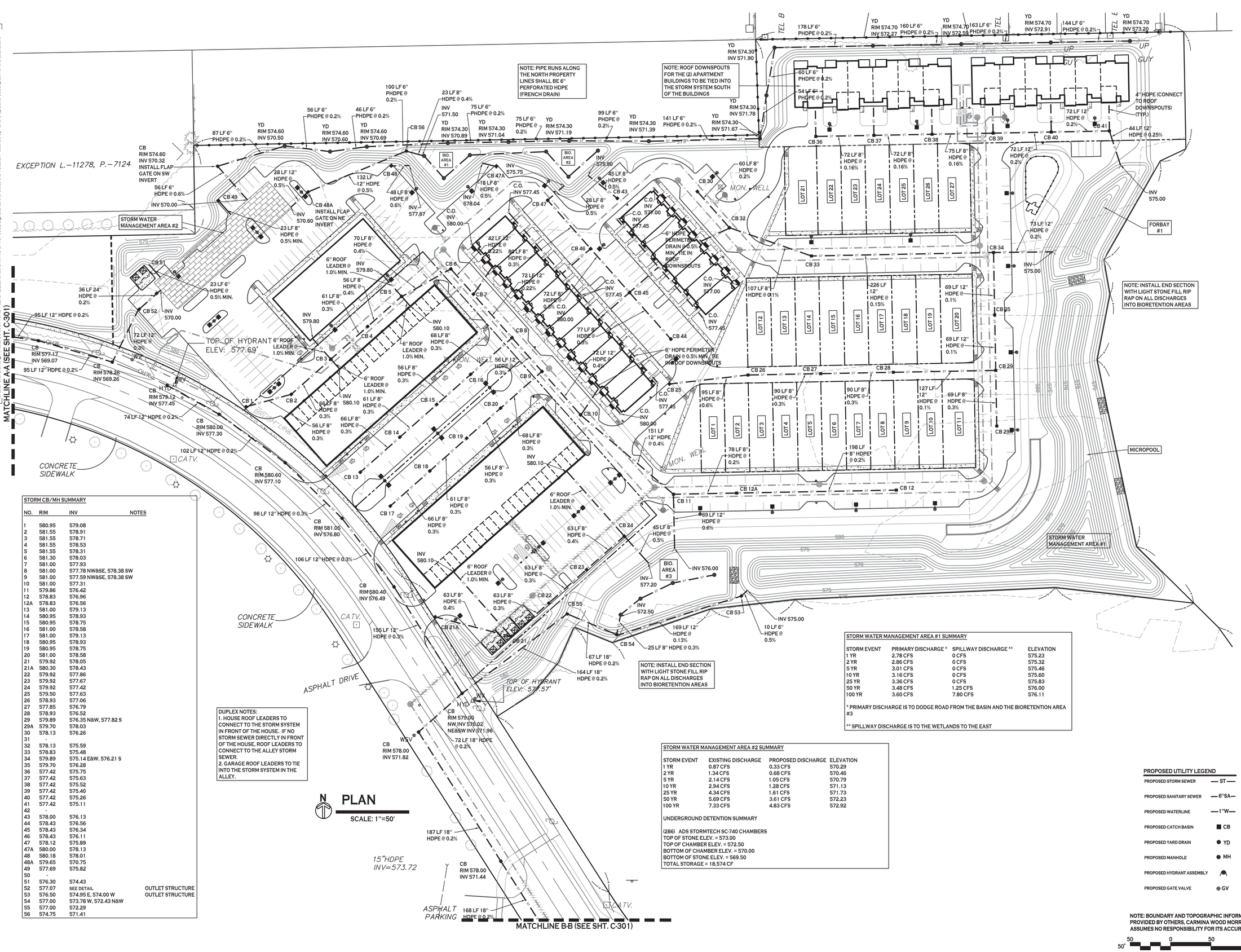
EXCEPTION L.–11278, P.–7124
MATCHLINE AA (SEE SHT. C-301)
MATCHLINE B-B (SEE SHT. C-301)
STORM WATER MANAGEMENT AREA #2
STORM WATER MANAGEMENT AREA #1
BIO. AREA #1
BIO. AREA #2
BIO. AREA #3
FORBAY #1
TOP OF HYDRANT ELEV: 577.69'
TOP OF HYDRANT ELEV: 577.57'
MON. WELL
CATV.
CONCRETE SIDEWALK
ASPHALT DRIVE
ASPHALT PARKING
BRUSHY LINE
TEL
UP
GUY
NOTE: PIPE RUNS ALONG THE NORTH PROPERTY LINES SHALL BE 6" PERFORATED HDPE (FRENCH DRAIN)
NOTE: ROOF DOWNSPOUTS FOR THE (2) APARTMENT BUILDINGS TO BE TIED INTO THE STORM SYSTEM SOUTH OF THE BUILDINGS
NOTE: INSTALL END SECTION WITH LIGHT STONE FILL RIP RAP ON ALL DISCHARGES INTO BIORETENTION AREAS
NOTE: INSTALL END SECTION WITH LIGHT STONE FILL RIP RAP ON ALL DISCHARGES INTO BIORETENTION AREAS
MICROPOOL
LOT 1
LOT 2
LOT 3
LOT 4
LOT 5
LOT 6
LOT 7
LOT 8
LOT 9
LOT 10
LOT 11
LOT 12
LOT 13
LOT 14
LOT 15
LOT 16
LOT 17
LOT 18
LOT 19
LOT 20
LOT 21
LOT 22
LOT 23
LOT 24
LOT 25
LOT 26
LOT 27
CB 1
CB 2
CB 3
CB 4
CB 5
CB 6
CB 7
CB 8
CB 9
CB 10
CB 11
CB 12
CB 12A
CB 13
CB 14
CB 15
CB 16
CB 17
CB 18
CB 19
CB 20
CB 21
CB 21A
CB 22
CB 23
CB 24
CB 25
CB 26
CB 27
CB 28
CB 29
CB 29A
CB 30
CB 32
CB 33
CB 34
CB 35
CB 36
CB 37
CB 38
CB 39
CB 40
CB 41
CB 43
CB 44
CB 45
CB 46
CB 47
CB 47A
CB 48
CB 48A
CB 49
CB 51
CB 52
CB 53
CB 54
CB 55
CB 56
HYD
WV
WSV
GAS
OHW
SAN
STORM
INV 575.00
INV 576.00
INV 577.20
INV 572.50
INV 575.75
INV 575.90
INV 578.04
INV 577.87
INV 580.00
INV 577.45
INV 580.00
INV 577.45
INV 577.45
INV 577.45
INV 580.10
INV 580.10
INV 580.10
INV 579.80
INV 579.80
INV 570.00
INV 570.60
INV 580.00
INV 577.45
INV 577.45
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INV 580.10
INV 580.10

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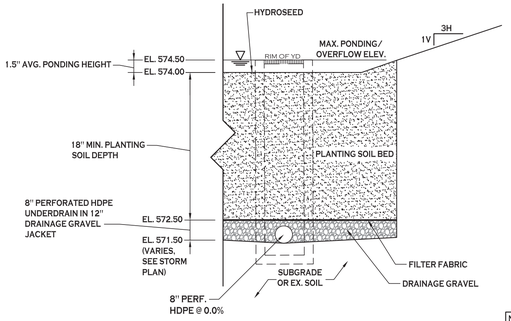
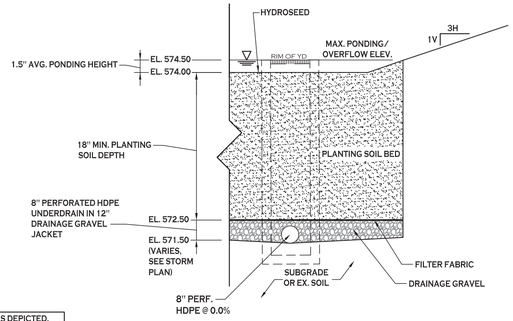
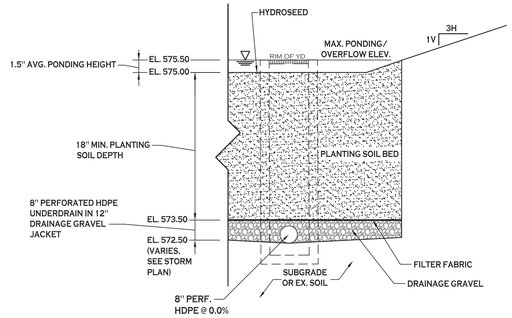


BIORETENTION AREA #1



BIORETENTION AREA #2

NOTE: AS DEPICTED, YARD DRAIN RIM ELEVATIONS ARE TO BE SET 6" ABOVE PROPOSED GRADE IN BIORETENTION AREAS.



BIORETENTION AREA #3

NOTES:
1. FILTER FABRIC TO BE NON-WOVEN CLASS 'C', MIRAFI 180-N OR APPROVED EQUIVALENT
2. MULCH TO BE SHREDDED HARDWOOD, AGED 12 MONTHS MIN.
3. DRAINAGE GRAVEL TO MEET AASHTO M-43. NO.67, SIZE 0.25" TO 0.75"
4. CONTRACTOR TO PROVIDE PLANTING SOIL SUBMITTAL SPECIFICATION FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.

NOTE: PLANTING SOIL SHALL BE LOAM/SAND MIX CONTAINING A MINIMUM OF 35 TO 60% SAND BY VOLUME AND LESS THAN 25% CLAY. SOIL SHOULD FALL WITHIN USCS TYPES SM OR ML WITH PERMEABILITY OF AT LEAST 0.5 FEET PER DAY. SOIL SHOULD BE FREE FROM STONES, STUMPS, ROOTS OR OTHER WOODY MATERIAL OVER 1" IN DIAMETER. PLACEMENT OF THE PLANTING SOIL SHOULD BE IN LIFTS OF 12" TO 18", LOOSELY COMPACTED.

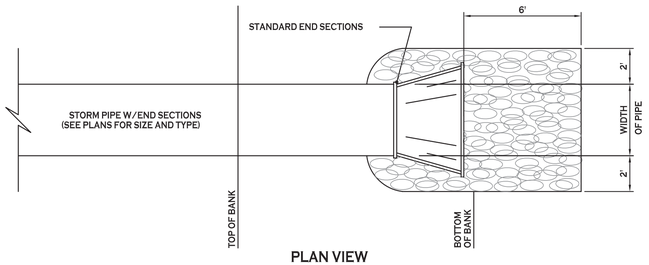
CHARACTERISTICS SHALL BE:
PH RANGE: 5.2 - 7.00
ORGANIC MATTER: 1.5 - 4.0%
MAGNESIUM: 35 LBS PER ACRE MIN.
PHOSPHORUS: 75 LBS PER ACRE MIN.
POTASSIUM: 85 LBS PER ACRE MIN.
SOLUBLE SALTS: 500 PPM
CLAY: 10 TO 25%
SILT: 30 TO 55%
SAND: 35 TO 60%

BIO-RETENTION AREA SEEDING SPEC (NORTHEAST WETLAND GRASS SEED MIX):

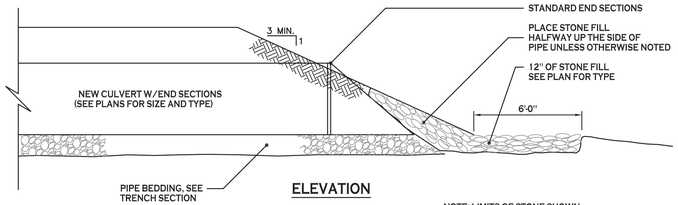
SEED MIXTURE	VARIETY	PERCENT BY NO. OF SEEDS
CREEPING BENTGRASS	AGROSTIS STOLONIFERA	63.0
ROUGH BLUEGRASS	POA TRIVIALIS	17.0
MEADOW FOXTAIL	ALOPECURUS ARUNDINACEUS	11.0
ANNUAL RYEGRASS	LOLIUM MULTIFLORUM	4.5
DEERTONGUE	PANICUM CLANDESTINUM	4.5

BIORETENTION AREA - TYPICAL SECTIONS

NOT TO SCALE



PLAN VIEW

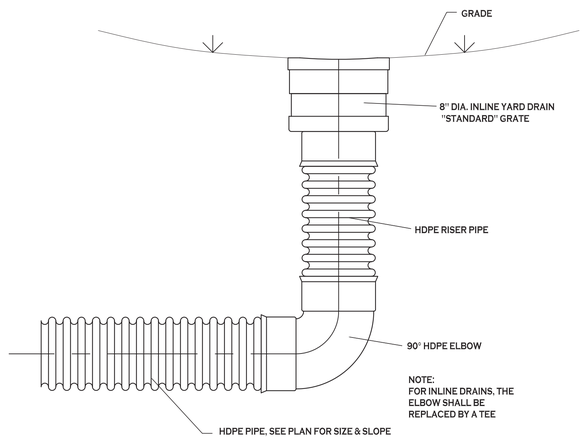


ELEVATION

NOTE: LIMITS OF STONE SHOWN ARE MINIMUMS, PLAN MAY INDICATE GREATER LIMITS

TYPICAL PIPE OUTLET W/ END SECTION & RIP RAP

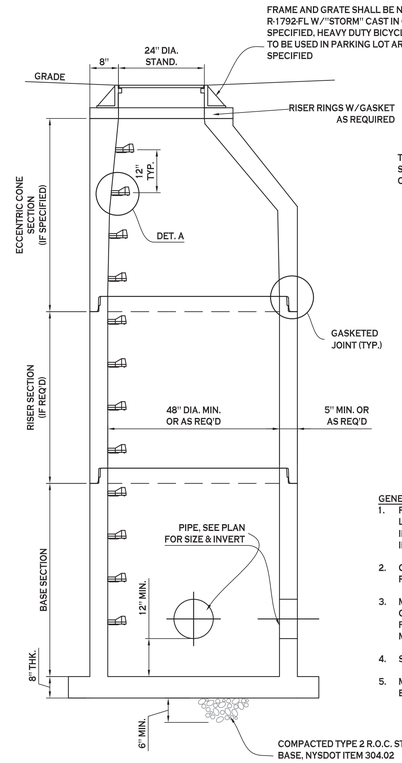
NOT TO SCALE



NOTE:
FOR INLINE DRAINS, THE ELBOW SHALL BE REPLACED BY A TEE

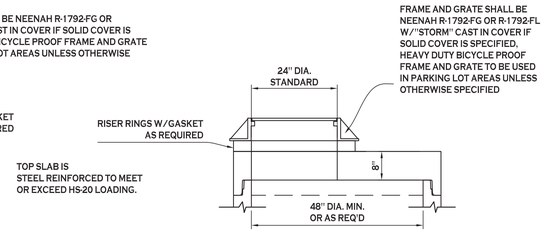
NOTE:
SEE TYPICAL TRENCH SECTION FOR BEDDING REQUIREMENTS

TYPICAL YARD DRAIN DETAIL



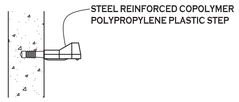
TYPICAL STORM MANHOLE DETAIL

NOT TO SCALE



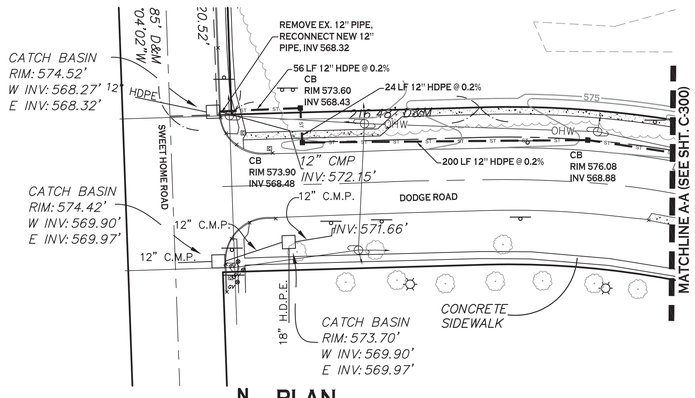
NOTE: ECCENTRIC CONE SECTION SHALL BE USED UNLESS DEPTH WARRANTS TOP SLAB PER MANUFACTURER

ALTERNATE TOP SLAB



DETAIL A

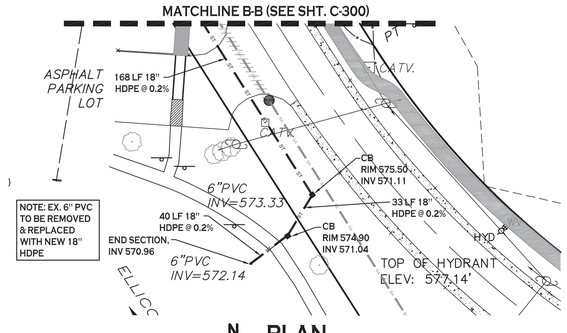
GENERAL NOTES:
1. REINFORCED STEEL TO CONFORM TO LATEST A.S.T.M. A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) IN BASE SLAB.
2. CONCRETE COMPRESSIVE STRENGTH - 4000 PSI MINIMUM.
3. MANHOLE DESIGN SPECIFICATIONS TO CONFORM TO LATEST A.S.T.M. C478 SPEC. FOR PRE-CAST REINFORCED CON-CRETE MANHOLE SECTIONS.
4. SINGLE POUR MONOLITHIC BASE SECTION.
5. MANHOLE TO BE COATED ON OUTSIDE WITH BITUMASTIC SEALER.



N

PLAN

SCALE: 1"=50'



N

PLAN

SCALE: 1"=50'

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STATE OF NEW YORK
CHRISTOPHER WOOD
076394
LICENSED PROFESSIONAL ENGINEER

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Storm Drainage Details

DRAWING NO.
C-301

Project no.: 21-011

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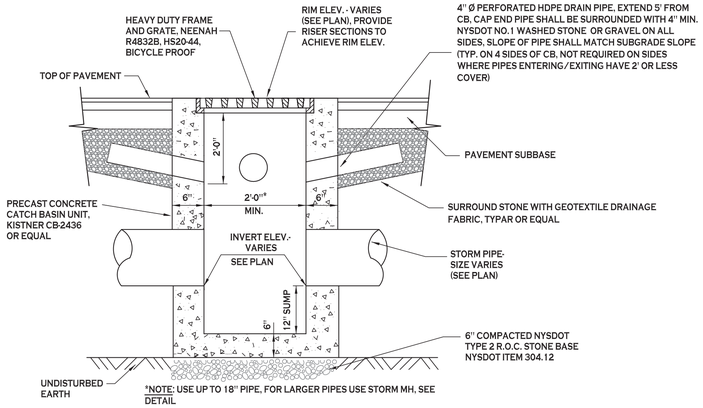
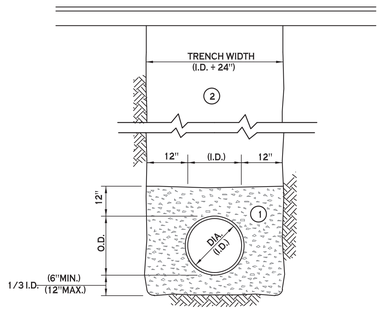


TYPICAL PRECAST CATCH BASIN

NOT TO SCALE



NOTES:

A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.

C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT 1985 EDITION)

(1) NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

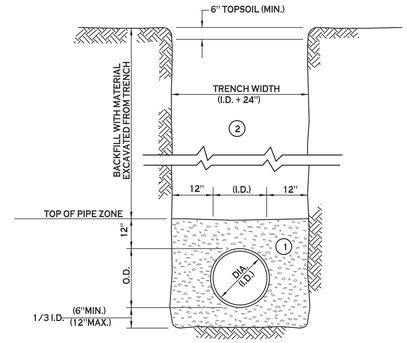
NO SLAG SHALL BE ALLOWED FOR MATERIAL (1)

(2) TYPE 2 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 304-2.02 TYPE 2. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN TWO INCHES AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL (2)

STORM SEWER TRENCH SECTION IN PAVED AREAS

NOT TO SCALE



NOTES:

A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.

C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT 1985 EDITION)

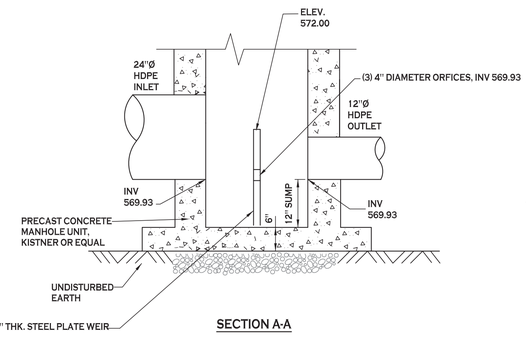
(1) NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL (1)

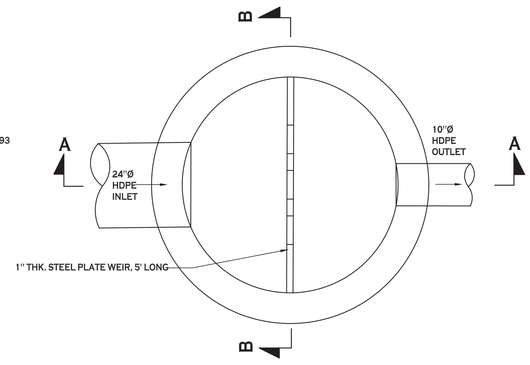
(2) BACKFILL MATERIAL SHALL BE NATIVE SOIL CONTAINING NO UNSUITABLE MATERIAL COMPACTED IN 6" LIFTS.

STORM SEWER TRENCH SECTION IN UNPAVED AREAS

NOT TO SCALE



SECTION A-A



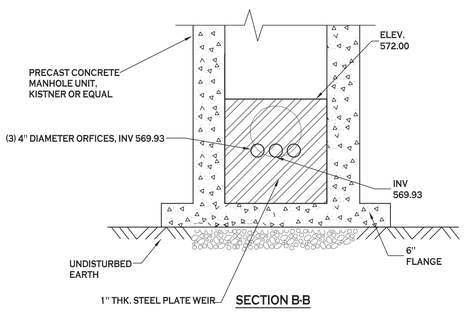
PLAN

NOTES:
1. FASTEN STEEL PLATE TO CB WALL WITH ANGLE CLIPS AND BOLTS
2. STEEL PLATE, ANGLE CLIPS, AND BOLTS TO BE HOT DIPPED GALVANIZED

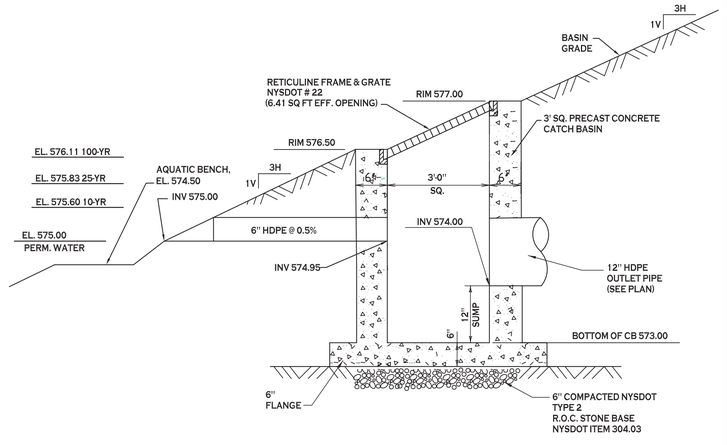
*NOTE: USE 5'-0" I.D. MANHOLE

OUTLET CONTROL STRUCTURE - CB 52

NOT TO SCALE



SECTION B-B



DETENTION BASIN OUTLET STRUCTURE - CB 53

N.T.S.

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STATE OF NEW YORK CHRISTOPHER M. GUY 076394 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Storm Drainage Details

DRAWING NO.

C-302

Project no.: 21-011

Attachment: SP-2021-05_drawings_011322 (23057 : Sp-2021-05)

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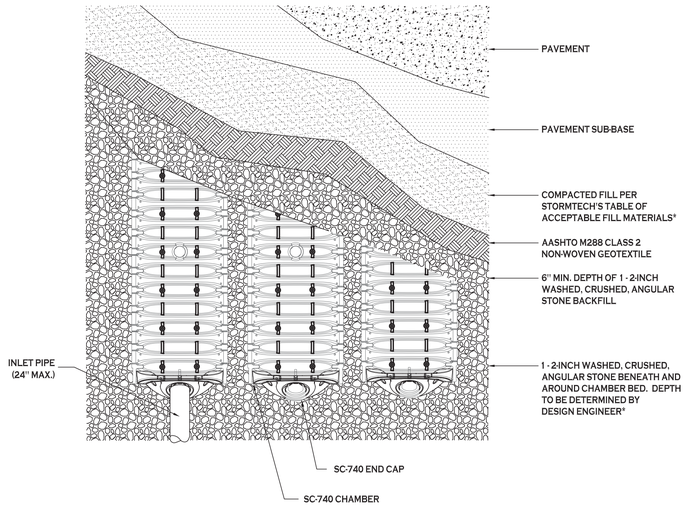


STORMTECH SC-740 CHAMBER SYSTEM
PLAN VIEW DETAIL

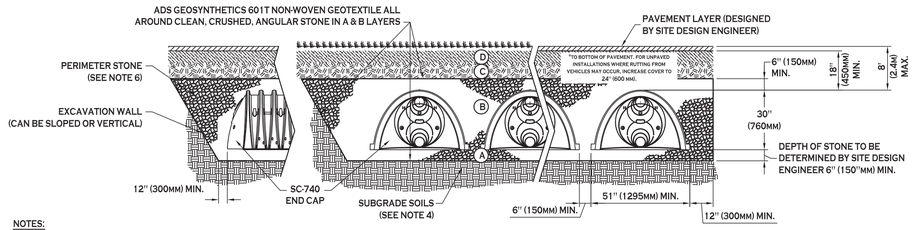
NOT TO SCALE

*SEE STORMTECH'S DESIGN MANUAL

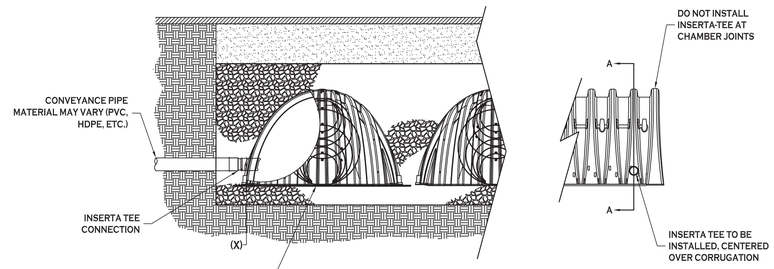
ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION/DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 MM) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LATER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 MM) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 MM) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 LBS (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 LBS (89 kN).
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. [2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 MM) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



NOTES:
1. SC-740 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
6. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



SECTION A-A

SIDE VIEW

NOTE:
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 MM)	4" (100 MM)
SC-740	10" (250 MM)	4" (100 MM)
DC-780	10" (250 MM)	4" (100 MM)
MC-3500	12" (300 MM)	6" (150 MM)
MC-4500	12" (300 MM)	8" (200 MM)
INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON		

INSERTA TEE DETAIL

NOT TO SCALE

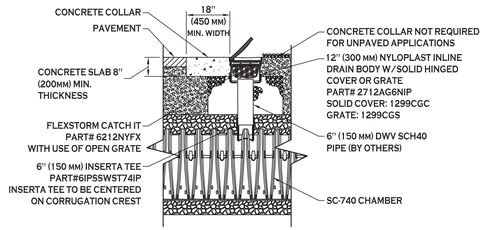
INSPECTION AND MAINTENANCE
STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
- A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
- A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
- A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
- A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
- A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 MM) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
- B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
- B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
  - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
  - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
- B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 MM) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 M) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES:
1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



SC-740 6" INSPECTION PORT DETAIL

NOT TO SCALE

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STATE OF NEW YORK · CHRISTOPHER WOOD · 076398 · LICENSED PROFESSIONAL ENGINEER

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: 2/24/21
Scale: As Noted

DRAWING NAME:
Storm Drainage Details

DRAWING NO.
C-303

Project no.: 21011

Attachment: SP-2021-05_drawings_011322 (23057 : Sp-2021-05)

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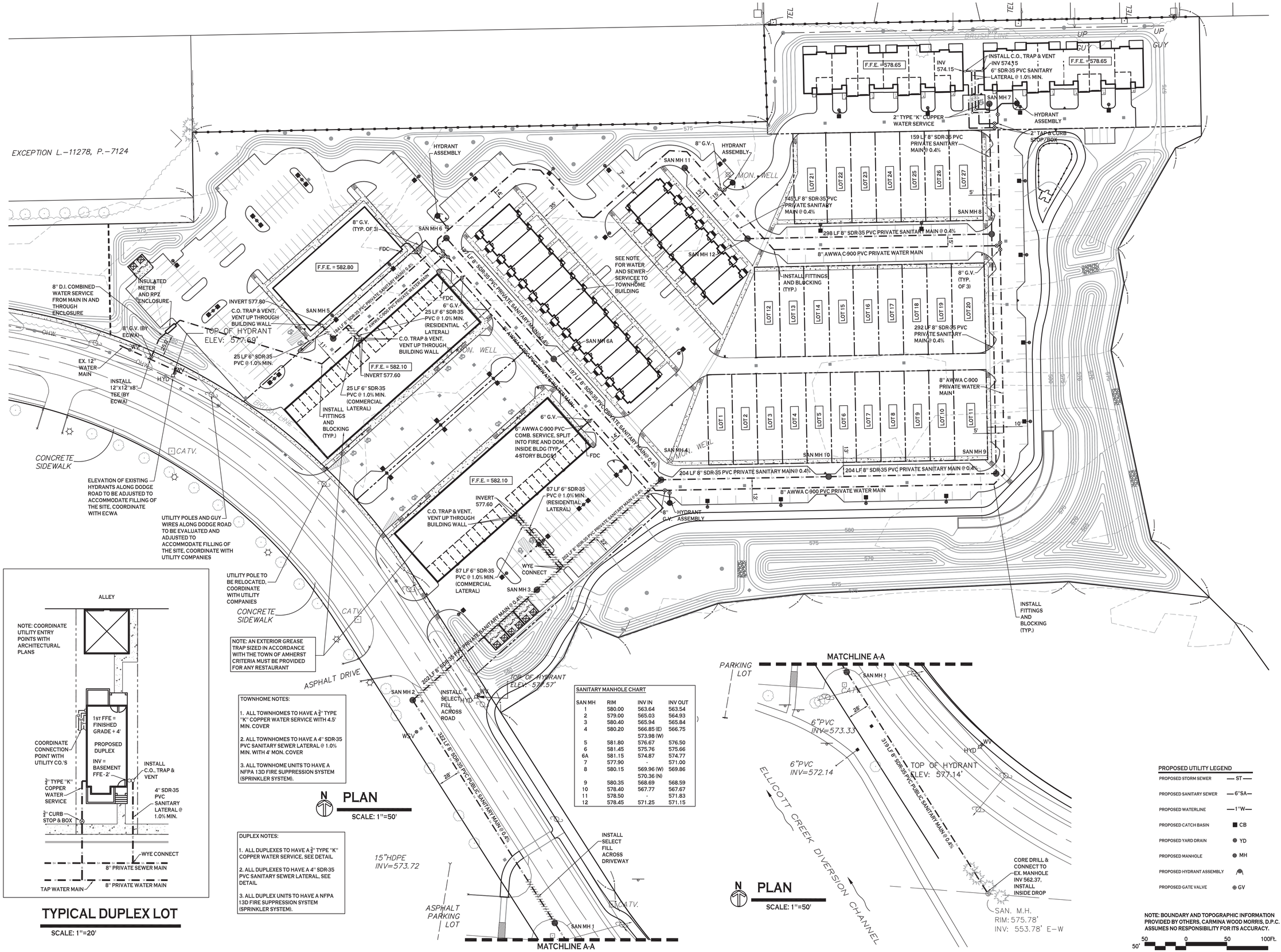

NOTE: AN EXTERIOR GREASE TRAP SIZED IN ACCORDANCE WITH THE TOWN OF AMHERST CRITERIA MUST BE PROVIDED FOR ANY RESTAURANT

TOWNHOME NOTES:

1. ALL TOWNHOMES TO HAVE A ¾" TYPE "K" COPPER WATER SERVICE WITH 4.5' MIN. COVER
2. ALL TOWNHOMES TO HAVE A 4" SDR-35 PVC SANITARY SEWER LATERAL @ 1.0% MIN. WITH 4' MON. COVER
3. ALL TOWNHOME UNITS TO HAVE A NFPA 13D FIRE SUPPRESSION SYSTEM (SPRINKLER SYSTEM).

DUPLEX NOTES:

1. ALL DUPLEXES TO HAVE A ¾" TYPE "K" COPPER WATER SERVICE, SEE DETAIL
2. ALL DUPLEXES TO HAVE A 4" SDR-35 PVC SANITARY SEWER LATERAL, SEE DETAIL
3. ALL DUPLEX UNITS TO HAVE A NFPA 13D FIRE SUPPRESSION SYSTEM (SPRINKLER SYSTEM).

SANITARY MANHOLE CHART

SAN MH	RIM	INV IN	INV OUT
1	580.00	563.64	563.54
2	579.00	565.03	564.93
3	580.40	565.94	565.84
4	580.20	566.85 (E) 573.98 (W)	566.75
5	581.80	576.67	576.50
6	581.45	575.76	575.66
6A	581.15	574.87	574.77
7	577.90	-	571.00
8	580.15	569.96 (W) 570.36 (N)	569.86
9	580.35	568.69	568.59
10	578.40	567.77	567.67
11	578.50	-	571.83
12	578.45	571.25	571.15

N **PLAN**
SCALE: 1"=50'

N **PLAN**
SCALE: 1"=50'

TYPICAL DUPLEX LOT
SCALE: 1"=20'

PROPOSED UTILITY LEGEND

PROPOSED STORM SEWER	ST
PROPOSED SANITARY SEWER	6"SA
PROPOSED WATERLINE	1"W
PROPOSED CATCH BASIN	CB
PROPOSED YARD DRAIN	YD
PROPOSED MANHOLE	MH
PROPOSED HYDRANT ASSEMBLY	
PROPOSED GATE VALVE	GV

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

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STATE OF NEW YORK CHRISTOPHER WOOD 076394 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Utility Plan

DRAWING NO.
C-400

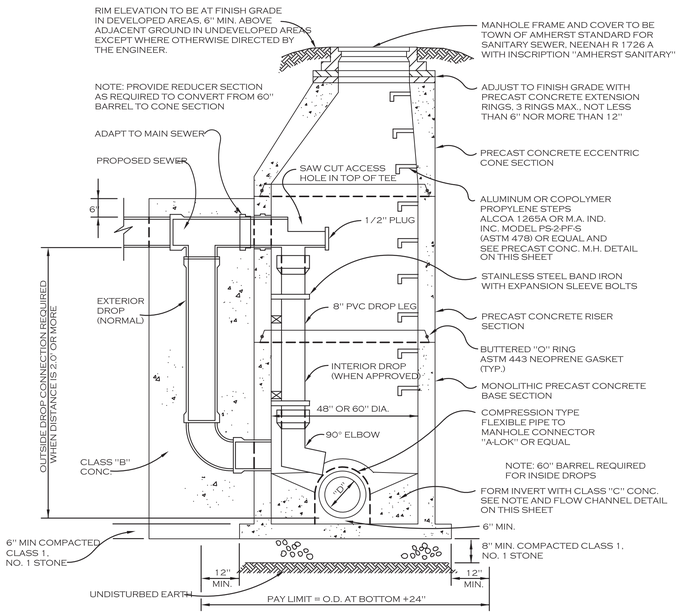
Project no.: 21-011

Attachment: SP-2021-05_drawings_011322 (23057 : Sp-2021-05)

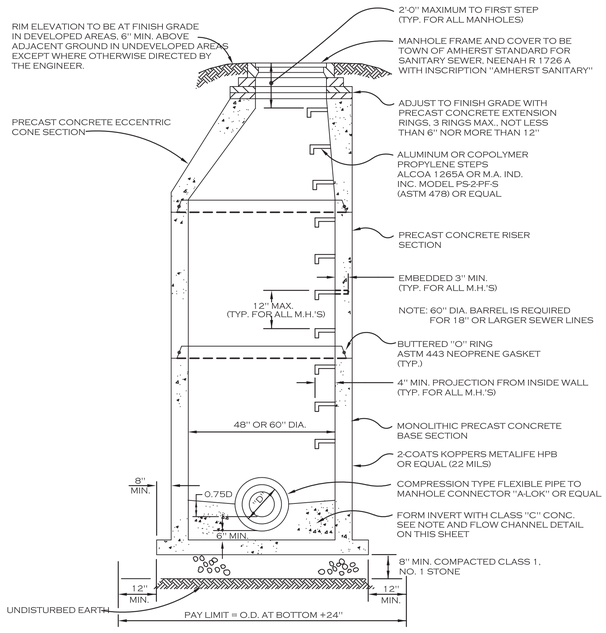
NOTIFY UNITED UNDERGROUND LOCATING SERVICE (U.U.L.S.) 72 HOURS BEFORE STARTING THE JOB

NOTIFY SUN OIL PIPELINE CORPORATION 72 HOURS BEFORE EXCAVATING (SEE DRAWING NO. 18)

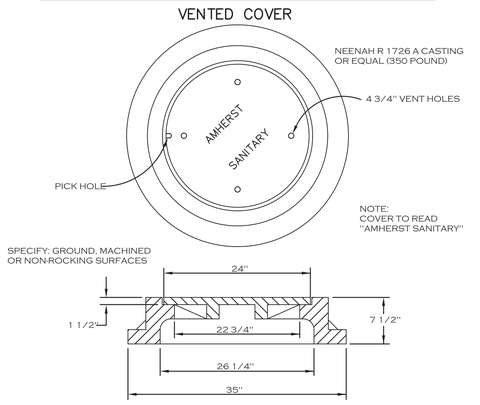
PRECAST CONCRETE DROP MANHOLE



PRECAST CONCRETE MANHOLE

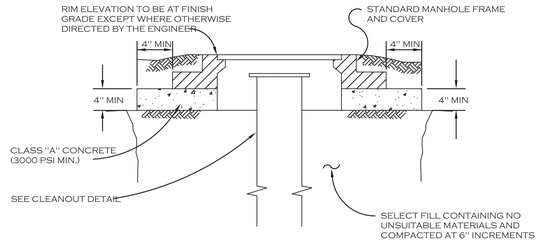


STANDARD MANHOLE FRAME AND COVER



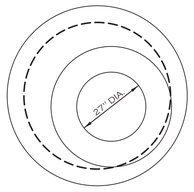
CLEANOUT WITH STANDARD MANHOLE FRAME AND COVER

(TO BE USED IN LOCATIONS ONLY AS APPROVED BY TOWN ENGINEER)

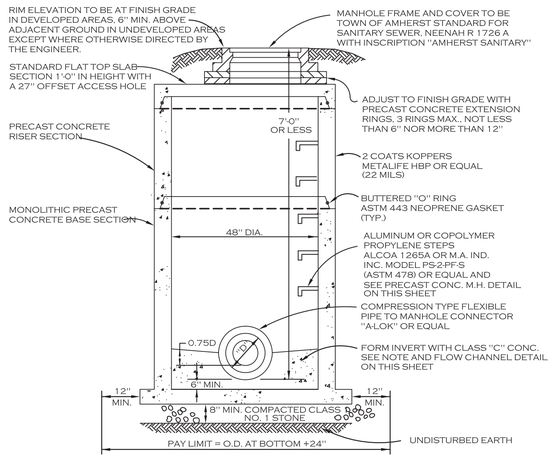


NOTE:
CLEANOUT NOT TO BE INSTALLED WHEN DISTANCE FROM M.H. EXCEEDS 150

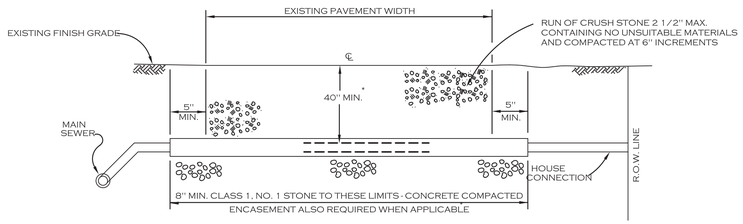
FLAT TOP MANHOLE ASSEMBLY



NOTE:
TO BE USED WHEN LOWEST INVERT TO RIM MEASUREMENT IS 7'-0" OR LESS

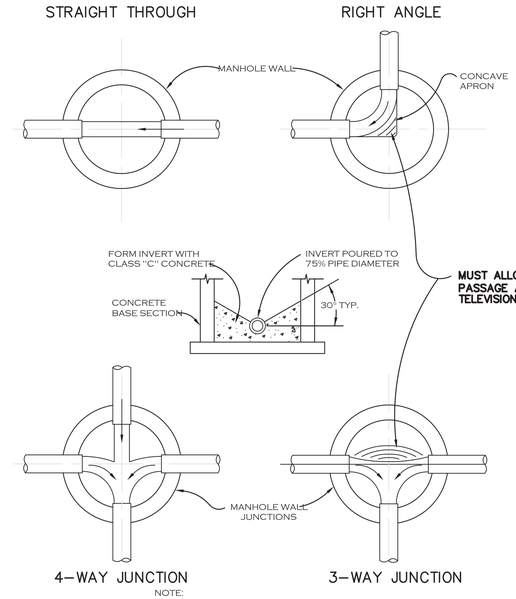


SANITARY TYPICAL PAVEMENT CROSSING FOR HOUSE CONNECTION



WHEN DEPTH FROM TOP OF HOUSE CONNECTION PIPE TO SURFACE IS LESS THAN 6.0 FEET, A CONCRETE ENCASEMENT WILL BE REQUIRED TO THE LIMITS SHOWN (SEE WATER CROSSING DETAIL SAN. SEWERS DWG. #4 - PG. #2 OF 4)

FLOW CHANNEL DETAIL SANITARY SEWERS



NOTE:
FLOW CHANNELS MUST ALLOW PLACEMENT, REMOVAL AND PASSAGE OF T.V. CAMERAS. THE CAMERA DIMENSIONS ARE APPROXIMATELY 26" LONG x 6 1/2" SQUARE. A BLOCK OF WOOD OF THESE DIMENSIONS MAY BE USED TO SIMULATE THE SIZE OF THE CAMERA. THIS WILL SIMPLIFY THE FORMATION OF FLOW CHANNELS AND INVERTS.

DEPTH OF ALL CHANNELS TO BE 75% OF PIPE DIAMETER.

FINISH ALL CHANNELS AT PROPER GRADE AS TO ALLOW SMOOTH & UN-OBSTRUCTED FLOW ALL INVERTS TO BE FLUSH WITH THE INSIDES.

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STATE OF NEW YORK CHRISTOPHER WOOD 076394 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: 12/1/21
Scale: As Noted

DRAWING NAME:
Sanitary Sewer Details

DRAWING NO.
C-401

Project no.: 21-011

Attachment: SP-2021-05_drawings_011322 (23057 : Sp-2021-05)

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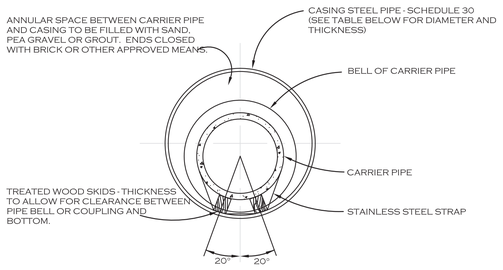
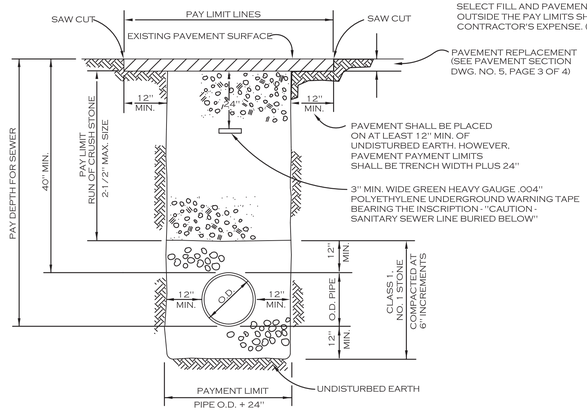
TOWN ROAD CROSSING BY JACKING AND BORING METHOD 8"–24" DIAMETER CARRIER PIPE



SCHEDULE FOR DIAMETER AND THICKNESS OF CASING PIPE		
CARRIER PIPE DIAMETER	CASING PIPE DIAMETER	CASING PIPE WALL THICKNESS
8"	16" OR 20"	0.375
10"	20"	0.375
12"	24"	0.375
15"	27"	0.375 MIN.
18"	30"	0.375
21"	36"	0.469
24"	42"	0.469

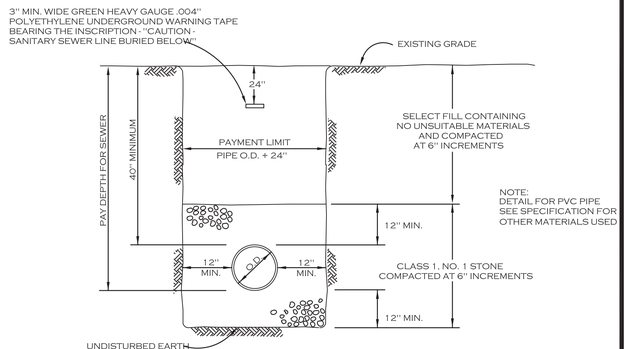
TYPICAL TRENCH DETAIL – TOWN ROAD CROSSING FOR MAIN SEWERS & HOUSE AND BUILDING CONNECTIONS

NOTE:
WHERE THE CONTRACTOR EXCAVATES BEYOND THE PAY LIMITS SHOWN; SELECT FILL AND PAVEMENT, SIDEWALK & DRIVEWAY REPLACEMENT OUTSIDE THE PAY LIMITS SHALL BE FURNISHED AND PLACED AT THE CONTRACTOR'S EXPENSE. (TYP.)



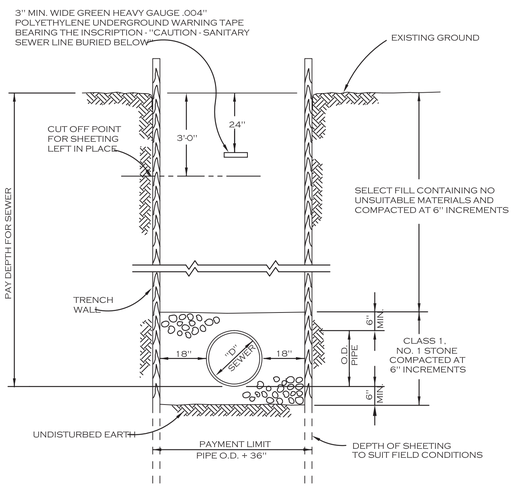
NOTE:
IF CONCRETE ENCASEMENT IS REQUIRED, IT SHALL BE INSTALLED IN PLACE OF (AND TO THE DIMENSIONS OF) THE PIPE BEDDING AND COVER TO 12" MIN. ABOVE AND BELOW THE PIPE (SEE WATER CROSSING DETAIL ON THIS SHEET)

TYPICAL EARTH TRENCH DETAIL UNPAVED AND UNTRAVELED AREAS

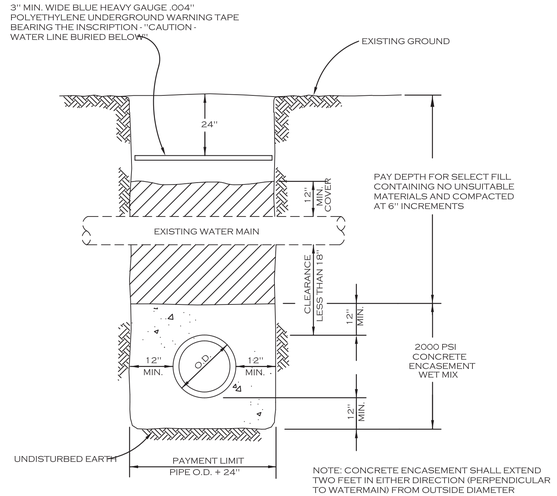


NOTE:
DETAIL FOR PVC PIPE SEE SPECIFICATION FOR OTHER MATERIALS USED

SHEETED TRENCH DETAIL

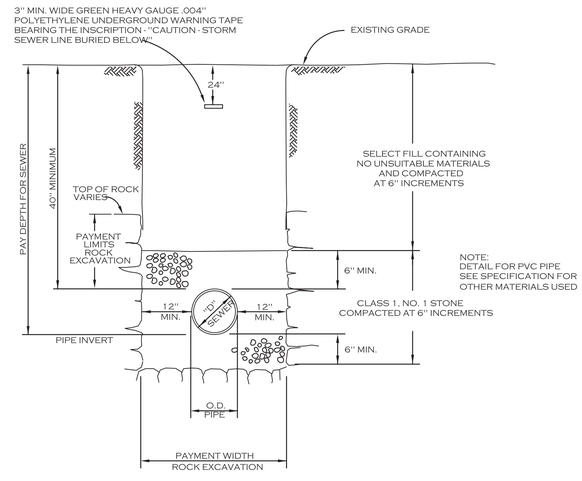


WATER CROSSING DETAIL CLEARANCE LESS THAN 18"



NOTE: CONCRETE ENCASEMENT SHALL EXTEND TWO FEET IN EITHER DIRECTION (PERPENDICULAR TO WATERMAIN) FROM OUTSIDE DIAMETER OF WATERMAIN.

TYPICAL ROCK TRENCH DETAIL



NOTE:
DETAIL FOR PVC PIPE SEE SPECIFICATION FOR OTHER MATERIALS USED

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REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Sanitary Sewer Details

DRAWING NO.
C-402

Project no.: 21-011

Attachment: SP-2021-05_drawings_011322 (23057 : Sp-2021-05)

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GENERAL NOTES:

01. THE CONTRACTOR SHALL COMPLY WITH THE TOWN OF AMHERST STANDARD DRAWINGS AND SPECIFICATIONS.

02. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE PROJECT ENGINEER AND THE TOWN OF AMHERST ENG. DEPT. OF ANY HAZARDOUS SUBSTANCE ENCOUNTERED DURING THE CONSTRUCTION OF THE WORK. HE SHALL AT HIS EXPENSE, CONFORM TO ALL LAWS, RULES, REGULATIONS AND DIRECTIONS AS PROMULGATED BY THE UNITED STATES DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, THE NEW YORK STATE DEPARTMENT OF HEALTH AND ANY SUCH LOCAL RULES, ORDINANCES AND LAWS WHEN ENCOUNTERING OR WORKING WITH ANY SUCH HAZARDOUS SUBSTANCE.

03. THE CONTRACTOR SHALL COMPLY IN ALL RESPECTS TO THE INDUSTRIAL CODE PART (RULE NO.) 53 RELATING TO CONSTRUCTION, EXCAVATION AND DEMOLITION OPERATIONS AT OR NEAR UNDERGROUND FACILITIES, AS ISSUED BY THE STATE OF NEW YORK DEPARTMENT OF LABOR, BOARD OF STANDARD AND APPEALS.

04. SINCE THE ERIE COUNTY WATER AUTHORITY OPERATES AND MAINTAINS THE EXISTING WATER LINES, THEY ARE TO BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE OF THE START OF CONSTRUCTION. ALL EXISTING VALVES ARE TO BE OPERATED BY THE ERIE COUNTY WATER AUTHORITY PERSONNEL.

05. THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AHEAD OF THE PIPE LAYING OPERATION, SO THAT, IF MINOR ADJUSTMENTS MUST BE MADE IN ELEVATION AND/OR ALIGNMENT DUE TO INTERFERENCE FROM THESE UTILITIES, SAID CHANGES CAN BE MADE IN ADVANCE OF THE WORK.

06. WHERE SUCH FACILITIES ARE UNDER THE SUPERVISION OF A PROFESSIONAL ENGINEER, HE SHALL CERTIFY TO THE ENGINEERING DEPARTMENT OF THE TOWN OF AMHERST THAT SAID FACILITIES AS CONSTRUCTED WERE SUPERVISED BY HIMSELF (HERSELF) AND THAT THE WORKS HAVE BEEN FULLY COMPLETED IN ACCORDANCE WITH THE APPROVED ENGINEERING REPORTS, PLANS, SPECIFICATIONS, CONTRACT DOCUMENTS AND ANY AND ALL ADDENDA TO SAME.

07. THE CONSTRUCTION OF THE FACILITIES SHALL BE UNDER THE SUPERVISION OF A PERSON OR FIRM QUALIFIED TO PRACTICE PROFESSIONAL ENGINEERING IN NEW YORK STATE UNDER THE EDUCATION LAW OF THE STATE, WHENEVER ENGINEERING SERVICES ARE REQUIRED BY SUCH LAW FOR SUCH PURPOSES.

08. A WRITTEN CERTIFICATE OF CONSTRUCTION COMPLIANCE, INCLUDING THE RESULTS OF HYDROSTATIC LEAKAGE TESTS, MADE BY THE PROFESSIONAL ENGINEER SUPERVISING THE CONSTRUCTION, SHALL BE SUBMITTED TO THE ERIE COUNTY DEPART. OF ENVIRONMENT PLANNING AND NEW YORK DEPARTMENT OF ENVIRONMENTAL CONSERVATION WITHIN THIRTY (30) DAYS AFTER CONSTRUCTION COMPLETION.

09. UNSUITABLE MATERIALS SUCH AS FROZEN ORGANIC AND/OR VEGETABLE MATERIAL, DEBRIS, TREES, LUMBER, LARGE STONES OR CLODS (6.0" OR LARGER), MUCK, PEAT, ORGANIC SILT WILL NOT BE ACCEPTABLE FILL AND CERTAIN MAN-MADE DEPOSITS OF INDUSTRIAL WASTE, SLUDGE OR LANDFILL MAY ALSO BE DETERMINED AS UNSUITABLE HAZARDOUS MATERIAL.

10. THE COMPACTION OF ALL MATERIALS WILL OCCUR AT 6" INCREMENTS.

11. VERIFICATION OF ALL EXISTING EASEMENTS IS THE RESPONSIBILITY OF THE DESIGN ENGINEER AND THEY MUST BE SHOWN ALONG WITH ALL PROPOSED EASEMENTS ON PLAN DRAWINGS.

12. SHOULD A FLUID CONDITION BE ENCOUNTERED AT THE TRENCH BOTTOM, THE CONTRACTOR IS TO INSTALL ADDITIONAL STONE CRADLE AS ORDERED BY THE ENGINEER.

13. ALL PIPE CROSSING UNDER PAVED AREAS ARE TO BE BACKFILLED TO SUBGRADE WITH COMPACTED SELECT MATERIAL TO FIVE (5) FEET OUTSIDE THE PAVEMENT EDGES.

14. THE CONTRACTOR SHALL RETAIN THE SERVICES OF A QUALIFIED TREE EXPERT TO REMOVE, WHERE NECESSARY, BRANCHES WHICH INTERFERE WITH THE CONSTRUCTION OPERATION, OR REPAIR TREES HAVING SUFFERED DAMAGE BY CONSTRUCTION ACTIVITIES. THE COST INVOLVED IN THE ABOVE IS TO BE INCLUDED IN THE VARIOUS ITEMS OF THE CONTRACT.

15. SEWERS SHALL BE LAID AT LEAST TEN (10) FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATERMAIN. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE. IN CASES WHERE IT IS NOT PRACTICAL TO MAINTAIN A TEN FOOT SEPARATION, THE APPROPRIATE REVIEWING AGENCY MAY ALLOW DEVIATION ON A CASE-BY-CASE BASIS, IF SUPPORTED BY DATA FROM THE DESIGN ENGINEER. SUCH DEVIATION MAY ALLOW INSTALLATION OF THE SEWER CLOSER TO A WATERMAIN, PROVIDED THAT THE WATERMAIN IS IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF LOCATED ON ONE SIDE OF THE SEWER AND AT AN ELEVATION SO THE BOTTOM OF THE WATERMAIN IS AT LEAST 18" (46CM) ABOVE THE TOP OF THE SEWER.

16. SEWERS CROSSING WATERMAINS SHALL BE LAID TO PROVIDE MINIMUM VERTICAL DISTANCE OF 18" (46CM) BETWEEN THE OUTSIDE OF A WATERMAIN AND THE OUTSIDE OF THE SEWER. THIS SHALL BE THE CASE WHERE THE WATERMAIN IS EITHER ABOVE OR BELOW THE SEWER. THE CROSSING SHALL BE ARRANGED SO THAT THE SEWER JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE WATERMAIN JOINTS. WHERE A WATERMAIN CROSSES UNDER A SEWER, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER, TO PREVENT DAMAGE TO THE WATERMAIN.

17. WHEN IT IS IMPOSSIBLE TO OBTAIN PROPER HORIZONTAL AND VERTICAL SEPARATION AS STIPULATED ABOVE, THE SEWER SHALL BE DESIGNED AND CONSTRUCTED EQUAL TO WATER PIPE AND SHALL BE PRESSURE TESTED AS TO ASSURE WATERTIGHTNESS PRIOR TO BACKFILLING.

18. THE PIPE SHALL BE P.V.C. SEWER PIPE CONFORMING TO THE LATEST REVISIONS OF ASTM DESIGNATION D-3034, SDR-35, INSTALLED IN ACCORDANCE WITH ASTM.

19. THE MANHOLE COVERS ARE TO BEAR THE INSCRIPTION "AMHERST SANITARY".

SANITARY SEWER TESTING METHODS

GENERAL NOTES

(A) LEAKAGE TESTS

01. THE TEST PERIOD WHEREIN THE MEASUREMENTS ARE TAKEN SHALL NOT BE LESS THAN 24 HOURS, REGARDLESS OF THE TEST METHOD USED.

02. THE TOTAL LEAKAGE OF ANY SECTION TESTED BY ANY TEST METHOD SHALL NOT EXCEED THE RATE OF 200 GALLONS PER MILE OF PIPE PER 24 HOURS PER INCH OF NOMINAL PIPE DIAMETER.

03. MANHOLES SHALL BE CONSIDERED AS SECTIONS OF 48" DIAMETER PIPE AND THE EQUIVALENT LEAKAGE ALLOWANCE SHALL BE COMPUTED PER NOTE 02 USING THE SUBMERGED HEIGHT OF MANHOLE AS THE LENGTH.

04. WHEN MANHOLES ARE TESTED SEPARATELY, ALL PIPE OPENINGS SHALL BE PLUGGED AND THE TEST PROCEDURES AND CRITERIA SHALL BE APPLIED IN THE SAME MANNER AS FOR TESTS INVOLVING ONLY THE PIPE OR A COMBINATION OF PIPE AND MANHOLES.

(B) INFILTRATION TEST CRITERIA FOR USE

01. THIS TEST METHOD MAY ONLY BE USED WHEN GROUND WATER LEVELS ARE AT LEAST TWO (2) FEET ABOVE THE TOP OF THE PIPE FOR THE ENTIRE LENGTH OF THE SECTION TO BE TESTED DURING THE ENTIRE PERIOD OF THE TESTS.

02. GROUND WATER LEVELS MAY BE MEASURED IN AN OPEN TRENCH OR IN STANDPIPES PREVIOUSLY PLACED IN BACKFILLED TRENCHES DURING BACKFILLING.

03. THE NUMBER OF STANDPIPES REQUIRED AND LOCATION OF THE SAME ARE TO BE AS ORDERED BY THE ENGINEER. STANDPIPES MAY BE OF ANY PIPE MATERIAL BUT MUST BE OF SUCH DIAMETER (2-1/2" MINIMUM) AS TO PERMIT THE INSERTION OF A RULE OR LEVEL ROD. CRUSHED STONE SHALL BE PLACED AROUND THE LOWER OPEN ENDS OF THE STANDPIPES.

04. STANDPIPES ARE TO BE REMOVED AT THE SATISFACTORY COMPLETION OF THE TESTS.

05. IF IN LIEU OF STANDPIPES, THE TRENCH IS TO BE LEFT OPEN FOR GROUND WATER OBSERVATION, THE LENGTH OF UNBACKFILLED TRENCH AT ANY ONE TIME MAY HAVE TO BE LIMITED FOR REASONS OF SAFETY.

(C) EXFILTRATION TEST CRITERIA FOR USE

01. THIS TEST CONSISTS OF FILLING THE PIPE WITH WATER TO PROVIDE A HEAD OF AT LEAST TWO (2) FEET ABOVE THE TOP OF THE PIPE OR ABOVE GROUND WATER WHICHEVER IS HIGHER AT THE HIGHEST POINT OF THE PIPE LINE UNDER TEST, AND THEN MEASURING THE LOSS OF WATER TO MAINTAIN THE ORIGINAL LEVEL.

02. IN THIS TEST THE PIPE LINE MUST BE FILLED WITH WATER AND ALLOWED TO REMAIN SO FILLED FOR AT LEAST 24 HOURS PRIOR TO TAKING MEASUREMENTS.

03. REGARDING GROUND WATER MEASUREMENTS: SEE NOTES 02 THROUGH 05 ABOVE.

04. REGARDING THE TEST STANDPIPE: THERE MUST BE SOME POSITIVE METHOD OF RELEASING ENTRAPPED AIR IN THE SEWER PRIOR TO TAKING MEASUREMENTS.

(D) DEFLECTION TEST FOR PVC SEWER PIPE

01. DEFLECTION TESTS SHALL BE PERFORMED ON ALL FLEXIBLE GRAVITY SEWER PIPE. TESTS SHALL BE CONDUCTED AFTER THE FINAL BACKFILL HAS BEEN IN PLACE FOR AT LEAST 30 DAYS.

02. NO PIPE SHALL EXCEED DEFLECTION OF 5%. DEFLECTION GAGE MAY BE BORROWED FROM THE TOWN ENGINEER FOR 8" AND 10" PIPE. THE DEFLECTION TEST MUST BE EXECUTED AFTER 30 DAYS OF PLACEMENT OF FINAL BACKFILL. THE TEST WILL ALSO BE DONE WITHOUT MECHANICAL PULLING DEVICES.

MANHOLE PLACEMENT AND MAINTENANCE
DURING CONSTRUCTION AND DEVELOPMENT

CONTRACTOR AND/OR DEVELOPERS SHALL CONSTRUCT ALL MANHOLE STRUCTURES IN ACCORDANCE WITH THE TOWN OF AMHERST STANDARD SPECIFICATIONS OR THE SPECIFICATIONS OF THE DESIGN ENGINEER WHEN REQUIRED BY THE TOWN.

ALL MANHOLES ARE TO BE DESIGNED AND FURNISHED WITH RIM ELEVATIONS AT FINAL FINISHED GRADES. THE CONTRACTOR, DEVELOPER, OR HOME BUILDER SHALL BE RESPONSIBLE FOR ALL CORRECTIONS, ADJUSTMENTS, AND MODIFICATIONS NEEDED FOR RAISING, LOWERING, OR REPLACING ANY AND ALL MANHOLES AS PROPOSED FOR THE FACILITY.

ALL AS-BUILT STATIONING, LINE AND GRADE IMPROVEMENTS, INVERT AND RIM ELEVATIONS, "Y" LOCATIONS, INSPECTION REPORTS, ROADWAY OR STREET NAMES, RIGHT-OF-WAY WIDTHS, AND EASEMENT LINES SHALL BE FURNISHED TO THE TOWN ON A SET OF MYLAR DRAWINGS PRIOR TO TAP-IN APPROVAL, PIP ACCEPTANCE, AND/OR RELEASE OF FINAL PAYMENT.

ALL MANHOLE STRUCTURES SHALL BE MADE ACCESSIBLE TO THE TOWN OF AMHERST TELEVISION/MAINTENANCE CREWS. THE CONTRACTOR AND/OR DEVELOPER SHALL PROVIDE A DRY, WELL COMPACTED, STABLE SURFACE FREE FROM SHOW AND OBSTRUCTIONS FOR SAFE AND OPEN ACCESS WITH TOWN VEHICLES. SHOULD THE CONTRACTOR AND/OR DEVELOPER WISH TV INSPECTIONS DURING WET WEATHER/WET SOFT SOIL CONDITIONS, HE SHALL PROVIDE ALL NECESSARY GRANULAR BACKFILL, DISTRIBUTED AND COMPACTED TO SUPPLY ACCESS TO EACH MANHOLE. THE CONTRACTOR AND/OR DEVELOPER SHALL BEAR ALL COSTS OF TOWING, DOWN TIME, CREW TIME, AND DAMAGE ALONG WITH RESTORATION, SHOULD SUCH ACCESSWAYS FAIL.

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STATE OF NEW YORK
CHRISTOPHER NOCE
076394
LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Sanitary Sewer General Notes

DRAWING NO.
C-403

Project no.: 21-011

Attachment: SP-2021-05_drawings_011322 (23057 : Sp-2021-05)

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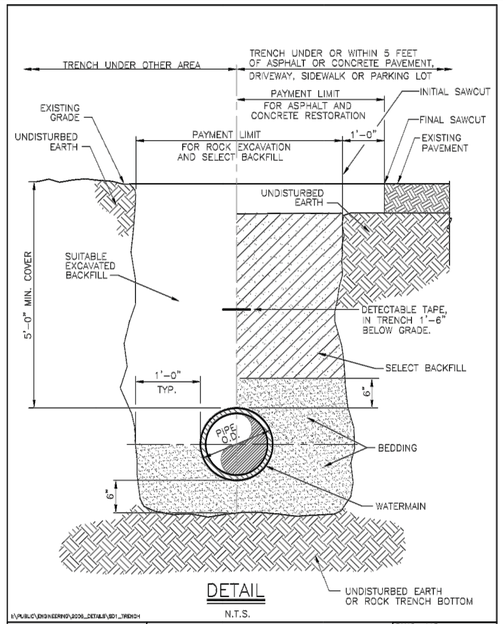
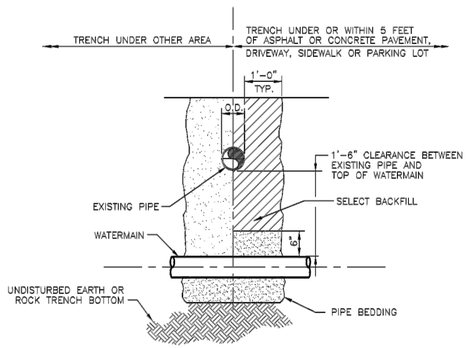


DETAIL
N.T.S.

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD1_TRENCH

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TRENCH THROUGH 12–INCH DIAMETER WATERMAIN	DWG. NO. SD1	
		DATE 4/28/92	REVISED 10/05



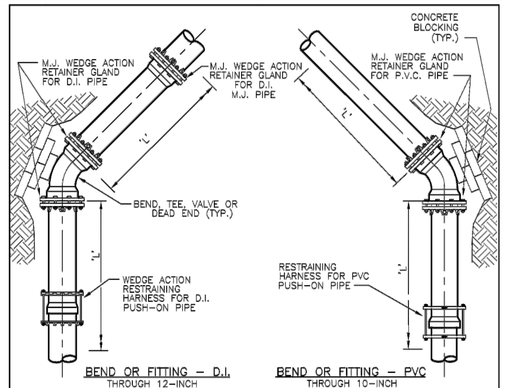
NOTES:

1. ALL EXISTING UTILITIES MUST BE SUPPORTED DURING CONSTRUCTION OF THE NEW WATERMAIN.
2. WHEN CROSSING A SEWERLINE WITH A NEW WATERMAIN, ONE FULL PIPE LENGTH (18 FT. MIN.) SHALL BE USED AT THE POINT OF CROSSING. THE WATERMAIN SHALL BE PLACED SO THAT BOTH JOINT ENDS ARE AS FAR AS POSSIBLE FROM THE EXISTING SEWERLINE.

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD2_PIPE_CROSSING

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL PIPE CROSSING	DWG. NO. SD2	
		DATE 4/28/92	REVISED 10/05



BEND OR FITTING – D.I.
THROUGH 12–INCH

BEND OR FITTING – PVC
THROUGH 10–INCH

RESTRAINED JOINT SCHEDULE					
PIPE SIZE	PIPE TYPE	11.25° ELBOW 'L'	22.5° ELBOW 'L'	45° ELBOW 'L'	TEE BRANCH, 90° BEND, VALVE OR DEAD END 'L'
6"	PVC	13'	25'	50'	120' MIN.
8"	PVC	15'	30'	59'	122' MIN.
8"	D.I.P.	15'	30'	59'	122' MIN.

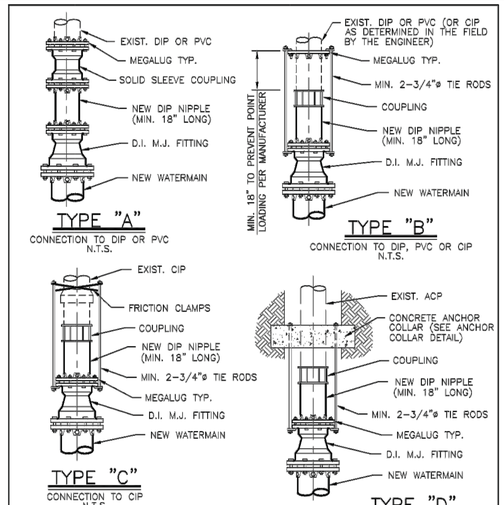
NOTES:

1. DIMENSION 'L' REPRESENTS THE LENGTH OF RESTRAINED PIPE REQUIRED IN FEET EACH SIDE OF THE PIPE FITTING.

PLAN
N.T.S.

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD4_REST._JOINT_SCHED

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL RESTRAINED JOINT SCHEDULE	DWG. NO. SD4	
		DATE 4/28/92	REVISED 10/05

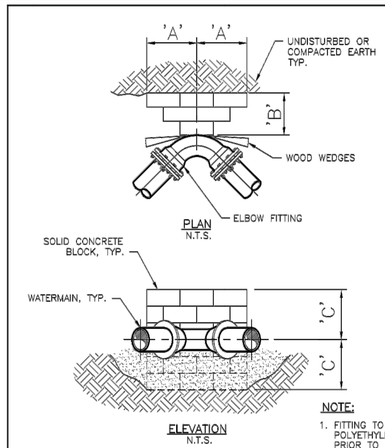


NOTES:

1. VALVES AND TEES MAY BE HARNESSED SIMILARLY.
2. HARNESSING IS FOR RESISTANCE TO INTERNAL PRESSURE–PIPE ITSELF MUST BE SUPPORTED ON FIRM BEDDING AND CAREFULLY BACKFILLED.
3. COAT ALL EXPOSED SURFACES OF HARNESS ASSEMBLY WITH BITUMINOUS COATING.
4. TIE RODS SHALL BE PLACED ON SIDES OF PIPE.

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD5_CONN_EXIST_WMAIN

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TYPICAL CONNECTION TO EXISTING WATERMAIN THROUGH 12–INCH DIAMETER WATERMAIN	DWG. NO. SD5	
		DATE 3/05	REVISED 10/05



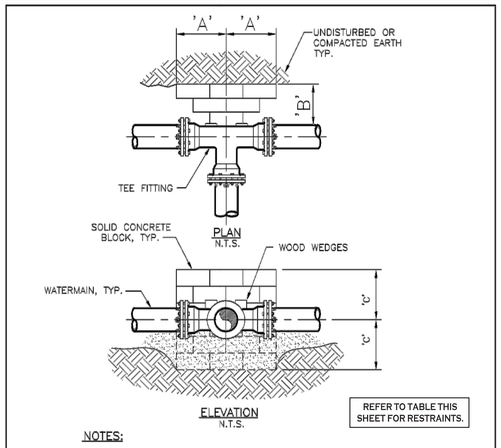
NOTE:

1. FITTING TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.

DIMENSION SCHEDULE												
PIPE SIZE	11.25° ELBOW			22.5° ELBOW			45° ELBOW			90° ELBOW		
	'A'	'B'	'C'	'A'	'B'	'C'	'A'	'B'	'C'	'A'	'B'	'C'
8"	1.5'	1.5'	2.5'	2.5'	1.5'	2.5'	3.0'	1.5'	3.5'	3.5'	1.5'	5.0'

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD6_THRUST_BLOCKS_ELBOW

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR ELBOW FITTING	DWG. NO. SD6	
		DATE 4/28/92	REVISED 10/05



REFER TO TABLE THIS SHEET FOR RESTRAINTS.

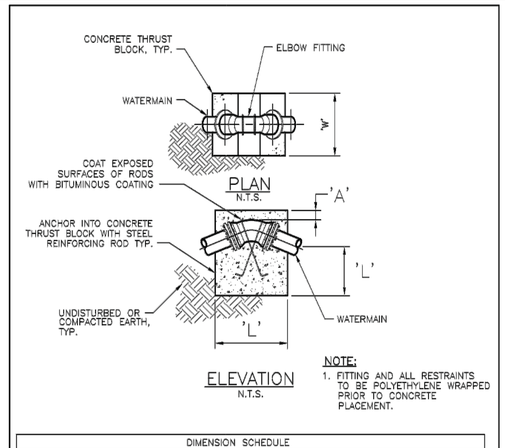
NOTES:

1. THRUST BLOCK REQUIRED FOR TEES, HYDRANT LATERAL TEES AND TAPPING SLEEVE INSTALLATIONS.
2. FITTING TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.

BRANCH TEE SIZE	DIMENSION SCHEDULE 'A'	'B'	'C'
6"	1'-0"	1'-0"	0'-6"
8"	1'-6"	1'-0"	0'-6"

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD7_THRUST_BLOCKS_TEE

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR TEE OR "DEAD END" FITTING	DWG. NO. SD7	
		DATE 4/28/92	REVISED 10/05



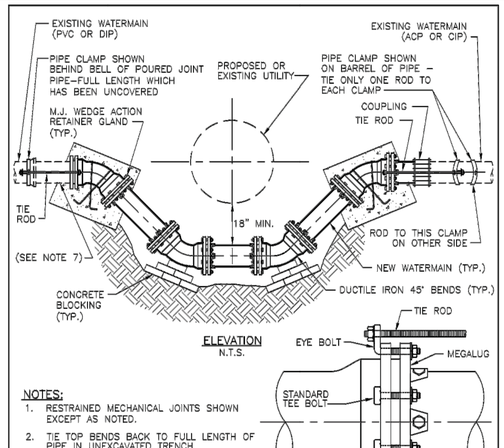
NOTE:

1. FITTING AND ALL RESTRAINTS TO BE POLYETHYLENE WRAPPED PRIOR TO CONCRETE PLACEMENT.

DIMENSION SCHEDULE													
PIPE SIZE	PIPE TYPE	11.25° ELBOW				22.5° ELBOW				45° ELBOW			
		'A'	'W'	'L'	ROD ø	'A'	'W'	'L'	ROD ø	'A'	'W'	'L'	ROD ø
8"	D.I.P	12"	1'-0"	1'-0"	1/2"	12"	1'-9"	1'-9"	1/2"	1'-6"	2'-0"	2'-0"	1/2"

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD8_THRUST_BLOCKS_VBEND

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR VERTICAL BEND	DWG. NO. SD8	
		DATE 4/28/92	REVISED 10/05



NOTES:

1. RESTRAINED MECHANICAL JOINTS SHOWN EXCEPT AS NOTED.
2. TIE TOP BENDS BACK TO FULL LENGTH OF PIPE IN UNEXCAVATED TRENCH.
3. VALVES, TEES AND HYDRANTS MAY BE HARNESSED SIMILARLY.
4. HARNESSING IS FOR RESISTANCE TO INTERNAL PRESSURES–PIPE ITSELF MUST BE SUPPORTED ON FIRM BEDDING AND CAREFULLY BACKFILLED.
5. COAT ALL EXPOSED SURFACES OF HARNESS ASSEMBLY WITH BITUMINOUS COATING.
6. TIE RODS SHALL BE PLACED ON SIDES OF PIPE.
7. IF EXISTING PIPE IS CIP OR PVC, CONNECT TO NEW FITTING ONLY WHEN ALLOWED BY ENGINEER.

TIE ROD SCHEDULE			
PIPE SIZE	PIPE TYPE	ROD ø	NUMBER OF RODS
8"	PVC	3/4"	2

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD10_HARN_OFFSET_EXIST_WMAIN

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL HARNESSING DETAILS–INSTALL OFFSET IN EXISTING WATERMAIN	DWG. NO. SD10	
		DATE 6/00	REVISED 10/05

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STATE OF NEW YORK CHRISTOPHER WOOD 072384 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Water Details

DRAWING NO.

C-404

Project no.: 21-011

Attachment: SP-2021-05_drawings_011322 (23057 : Sp-2021-05)

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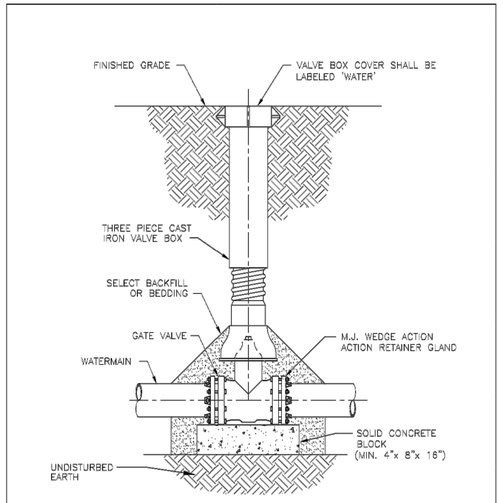
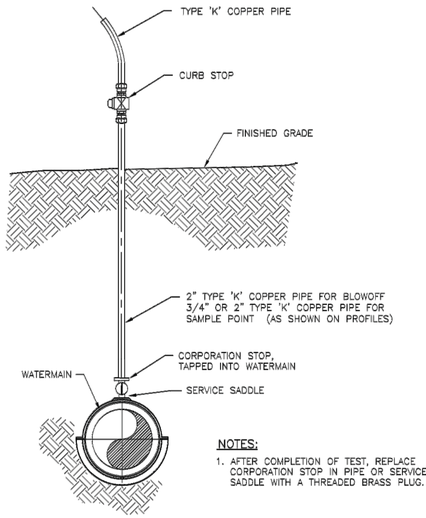


NOTES:
1. VALVE SHALL NOT SUPPORT VALVE BOX.
2. GATE VALVE SHALL BE INSTALLED LEVEL.
3. VALVE BOX SHALL BE PLUMB TO GRADE, WITH OPERATING NUT CENTERED IN BOX.

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT EDWA DETAILS\SD11_GATE_VALVE_SET

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GATE VALVE SETTING	DWG. NO. SD11	
		DATE 4/28/92	REVISED 02/17

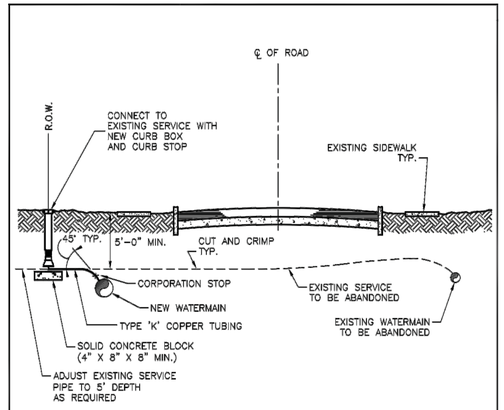


NOTES:
1. AFTER COMPLETION OF TEST, REPLACE CORPORATION STOP IN PIPE OR SERVICE SADDLE WITH A THREADED BRASS PLUG.

ELEVATION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT EDWA DETAILS\SD17_TEMP_BO_SAMP_PT

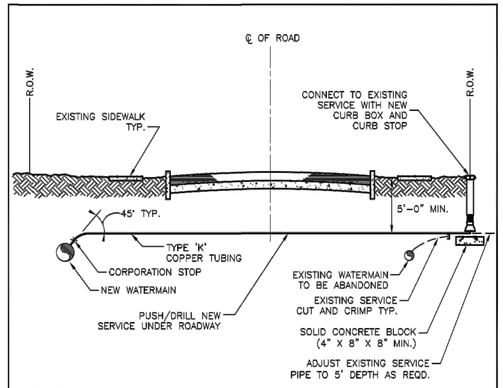
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TEMPORARY BLOW-OFF/SAMPLING POINT	DWG. NO. SD17	
		DATE 4/28/92	REVISED 10/05



NOTES:
1. EXISTING SERVICES SHALL BE CRIMPED AND ABANDONED IN PLACE.
2. SERVICE SADDLES SHALL BE USED UNDER THE FOLLOWING CONDITIONS:
   A. WHEN SERVICES ARE PLACED ON 4" OR SMALLER PIPES.
   B. WHEN SERVICES LARGER THAN 1" ARE PLACED ON A 6" PIPE.
   C. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON AN 8" PIPE.
   D. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON DUCTILE IRON PIPE.
   E. WHEN TAPPING ALL PLASTIC (PVC) PIPE.
   F. WHEN TAPPING ALL ASBESTOS-CEMENT PIPE.
3. CURB BOXES SHALL NOT BE PLACED IN SIDEWALKS, DRIVEWAYS, OR CURB RAMPS.
4. UNIONS ON COPPER TUBING ARE NOT ALLOWED UNLESS APPROVED BY ECWA PRIOR TO INSTALLATION.

I:\PUBLIC\ENGINEERING\CURRENT EDWA DETAILS\SD15_NR_SERV_REPLACE

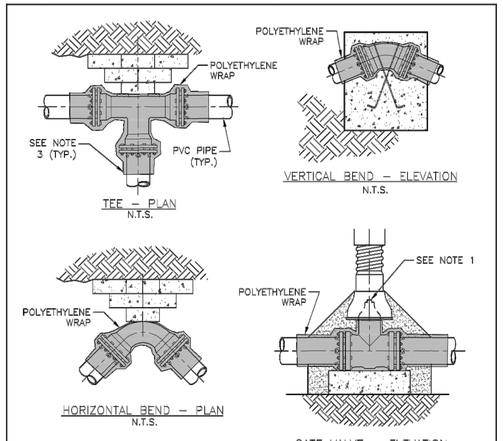
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL NEAR SIDE SERVICE REPLACEMENT/INSTALLATION	DWG. NO. SD15	
		DATE 4/92	REVISED 09/16



NOTES:
1. EXISTING SERVICES SHALL BE CRIMPED AND ABANDONED IN PLACE.
2. SERVICE SADDLES SHALL BE USED UNDER THE FOLLOWING CONDITIONS:
   A. WHEN SERVICES ARE PLACED ON 4" OR SMALLER PIPES.
   B. WHEN SERVICES LARGER THAN 1" ARE PLACED ON A 6" PIPE.
   C. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON AN 8" PIPE.
   D. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON DUCTILE IRON PIPE.
   E. WHEN TAPPING ALL PLASTIC (PVC) PIPE.
   F. WHEN TAPPING ALL ASBESTOS-CEMENT PIPE.
3. CURB BOXES SHALL NOT BE PLACED IN SIDEWALKS, DRIVEWAYS, OR CURB RAMPS.
4. USE POLYETHYLENE FOR 3/4" AND 1" SERVICES GREATER THAN 100 FEET IN LENGTH, AND FOR 1-1/2" AND 2" SERVICES GREATER THAN 60 FEET IN LENGTH. ALL POLYETHYLENE SERVICES SHALL INCLUDE A TRACER WIRE FOR DETECTION BY ECWA FORCES.
5. UNIONS ON COPPER TUBING ARE NOT ALLOWED UNLESS APPROVED BY ECWA PRIOR TO INSTALLATION.

I:\PUBLIC\ENGINEERING\CURRENT EDWA DETAILS\SD16_FR_SERV_REPLACE

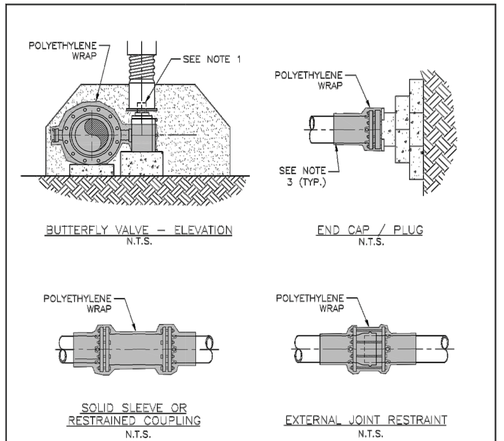
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL FAR SIDE SERVICE REPLACEMENT/INSTALLATION	DWG. NO. SD16	
		DATE 4/92	REVISED 09/16



NOTES:
1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP IS NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PIPE (OR POLYWRAP IF DIP) WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT EDWA DETAILS\SD39A_POLYWRAPPING_FITTINGS

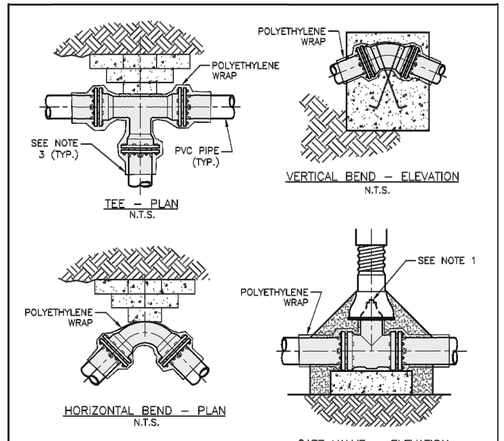
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING CAST/DUCTILE IRON FITTINGS	DWG. NO. SD39A	
		DATE 3/18	REVISED 12/18



NOTES:
1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP IS NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PIPE. (OR POLYWRAP IF DIP) WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT EDWA DETAILS\SD39B_POLYWRAPPING_FITTINGS

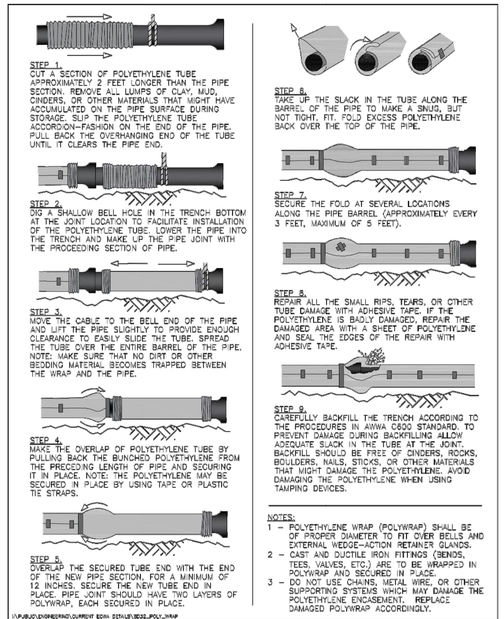
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING CAST/DUCTILE IRON FITTINGS	DWG. NO. SD39B	
		DATE 12/18	REVISED



NOTES:
1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON GATE VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PVC PIPE WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT EDWA DETAILS\SD39_POLYWRAPPING_FITTINGS

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING DUCTILE IRON FITTINGS ON PVC PIPE	DWG. NO. SD39	
		DATE 3/18	REVISED



NOTES:
1 – POLYETHYLENE WRAP (POLYWRAP) SHALL BE OF PROPER DIAMETER TO FIT OVER BELLS AND EXTERNAL WEDGE-ACTION RETAINER GLANDS.
2 – CAST AND DUCTILE IRON FITTINGS (BENDS, TEES, VALVES, ETC.) ARE TO BE WRAPPED IN POLYWRAP AND SECURED IN PLACE.
3 – DO NOT USE CHAINS, METAL WIRE, OR OTHER SUPPORTING SYSTEMS WHICH MAY DAMAGE THE POLYETHYLENE ENCASEMENT. REPLACE DAMAGED POLYWRAP ACCORDINGLY.

I:\PUBLIC\ENGINEERING\CURRENT EDWA DETAILS\SD32_POLY_WRAP

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYETHYLENE ENCASEMENT OF DUCTILE IRON PIPE	DWG. NO. SD32	
		DATE 08/16	REVISED 02/19

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STATE OF NEW YORK CHRISTOPHER WOOD 076364 LICENSED PROFESSIONAL ENGINEER

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Water Details

DRAWING NO.
C-405

Project no.: 21-011

Attachment: SP-2021-05_drawings_011322 (23057 : Sp-2021-05)

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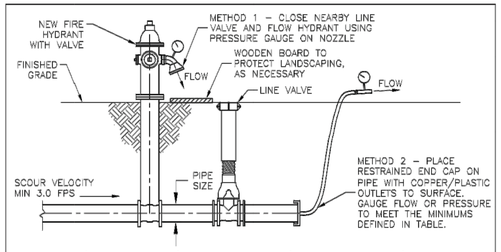


PIPE SIZE (IN)	REQUIRED FLOW (GPM)	METHOD 1 HYDRANT FLOW		METHOD 2 END CAP FLOW	
		2 1/2" NOZZLE PRESSURE (PSI)	4" NOZZLE PRESSURE (PSI)	2" I.D. PRESSURE (PSI)	3" I.D. PRESSURE (PSI)
6	275	7	1	7	2
8	500	9	2	22	5
10	750	20	4	50	10
12	1100	44	7	–	22
16	1900	–	20	–	62
20	3000	–	50	–	–

I.D. = INNER DIAMETER

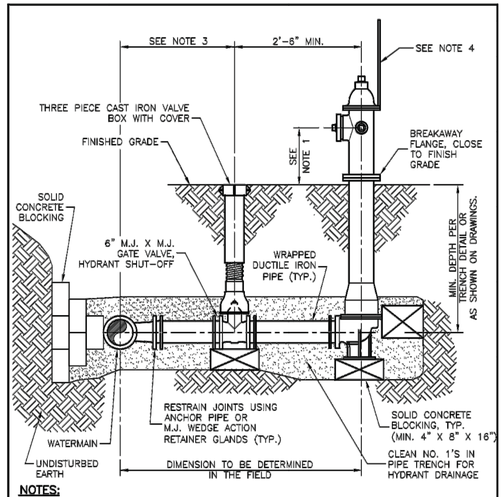
NOTES:

1. TO OBTAIN SCOUR VELOCITY (3.0 FPS) IN THE WATERLINE, CONTRACTOR SHALL ACHIEVE FLOWRATE AT NOZZLE DEFINED IN TABLE. PRESSURE GAUGE USED SHALL SHOW A HIGHER PRESSURE THAN THE MINIMUMS DEFINED IN THE TABLE.
2. OUTLET PRESSURE MEASURED BY PITOT GAUGE.
3. ENGINEER SHALL PROVIDE CALCULATIONS IF CONNECTIONS ARE OTHER THAN THOSE SHOWN, IF MULTIPLE CONNECTIONS ARE USED, OR AS REQUESTED BY ECWA.
4. TO FLUSH THREE PIPE VOLUMES, MINIMUM FLUSHING TIME (IN SECONDS) EQUALS THE LENGTH OF PIPE BEING FLUSHED, IN FEET.

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD36_WATERLINE_FLUSHING

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL WATERLINE FLUSHING	DWG. NO. SD36	
		DATE 6/16	REVISED 3/18



NOTES:

1. CENTERLINE OF THE LOWEST NOZZLE TO FINISHED GRADE SHALL BE A MIN. OF 15" & MAX. OF 18".
2. HYDRANT RISER SHALL BE INSTALLED PLUMB.
3. VALVE BOX SHALL NOT BE PLACED IN PAVEMENT.
4. RELOCATE HYDRANT MARKER (IF PRESENT), FOR WATERLINE REPLACEMENT PROJECTS ONLY.
5. HYDRANT FACE TO BE A MINIMUM OF 3' FROM THE BACK FACE OF ALL CURBS OR A MINIMUM OF 5' FROM ALL EDGES OF PAVEMENT (IF NO CURB).

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD13_HYD_INST

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL FIRE HYDRANT INSTALLATION	DWG. NO. SD13	
		DATE 6/00	REVISED 11/16

NOTES

1. All elevations refer to USGS NAVD83 datum.
2. The CONTRACTOR shall obtain necessary permits and furnish copies to the ENGINEER prior to commencing work.
3. The CONTRACTOR'S work area shall be confined to the limits of the right-of-ways and easements. The CONTRACTOR shall obtain any additional easements or work releases should the CONTRACTOR require additional area to accommodate his operations.
4. The CONTRACTOR shall provide maintenance and protection of traffic in accordance with the Erie County Highway Department standards and the NYSDOT Manual of Uniform Traffic Control Devices.
5. The locations and depths of existing underground utilities as shown on the plans and profiles are approximate. Other underground utilities not shown may be encountered. The CONTRACTOR shall perform test pits to verify the location and elevation of utilities at interconnections and crossings as shown, directed, or required. The CONTRACTOR shall excavate in advance of the pipe laying operation and expose all existing underground utilities to prevent damage during construction and to determine required changes in grade necessary to install the watermain to avoid conflicts.
6. The CONTRACTOR shall install those measures required to limit erosion of areas disturbed by the work. Clearing shall be performed on an as-needed basis, phased to reduce erosion and visual impact.
7. Blasting will not be permitted.
8. No more than one connection may be made to any existing watermain prior to testing, disinfection, and approval of the Waterline Installation Completed Works Approval Report(s) by the Erie County Water Authority and the Erie County Health Department.
9. The Erie County Water Authority shall only operate existing valves and fire hydrants, including newly installed valves and fire hydrants that have been placed into service. The CONTRACTOR is advised that watertight conditions may not exist when existing valves are closed.
10. The CONTRACTOR shall have all equipment, manpower, and materials required on site and ready for use prior to commencing any shut-down or removing any existing facilities from service. The CONTRACTOR shall notify all affected customers in writing of any shut-down at least 48 hours in advance. The CONTRACTOR shall notify the appropriate fire stations 48 hours in advance prior to taking any fire hydrants out of service. Any fire hydrants not in service shall be bagged in burlap or plastic. Any shut-down shall be limited to 4 consecutive hours. It may be necessary to schedule shut-downs at night, weekends, or other off hours so as to not affect schools, businesses or other customers, as determined by the ENGINEER. Shut-down requests shall be submitted to the Erie County Water Authority a minimum of 5 business days in advance of the requested shut-down date.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD29_GENERAL_NOTES

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GENERAL NOTES	DWG. NO. SD29	
		DATE 3/05	REVISED 7/17

11. All watermain piping shall be installed with a minimum of 5'-0" of cover.
12. All watermain piping shall be installed with a minimum of 1'-6" of vertical clearance and 10'-0" of horizontal clearance from sanitary and storm piping, measured from the outside of the pipes at the point of crossing.
13. If the material at the design grade is unsuitable as determined by the ENGINEER, the CONTRACTOR, when ordered in writing, shall excavate additional material to the depth necessary and shall backfill to the proposed grade with the select granular material.
14. The installation of 90 degree bends in the watermain is not allowed, unless approved by the Erie County Water Authority.
15. Thrust restraint for watermain piping through 12-inch diameter shall consist of thrust blocks and pipe joint restraint.
16. The CONTRACTOR shall notify the owner of any utility pole in advance of any excavation work that will take place within 5'-0" of the utility pole. The CONTRACTOR shall include the cost of temporary pole support in the appropriate bid item.Where utility poles are required to be supported during construction, the CONTRACTOR shall make all necessary arrangements with the utility company.
17. If materials are encountered during the construction that are suspected of being contaminated, the CONTRACTOR shall immediately notify the NYSDEC for direction regarding testing, separation, containment, and disposal procedures.
18. Existing fire hydrants removed during construction and not reinstalled as part of the work shall be scheduled and returned to the Erie County Water Authority Service Center, 3030 Union Road, Cheektowaga, New York 14227.
19. The CONTRACTOR shall cold patch all trench excavations in traveled areas including roads, driveways, sidewalks, and parking areas.
20. The CONTRACTOR shall not restrict access for school buses or any emergency vehicles.
21. The use of existing fire hydrants for any reason is prohibited without prior approval of the Erie County Water Authority. This includes newly installed fire hydrants that have been placed into service.
22. The CONTRACTOR shall submit procedures for testing and disinfection of the watermain to the ENGINEER for review prior to the start of testing.
23. The CONTRACTOR shall be present and assist in the Final Walk inspection. The CONTRACTOR shall provide sufficient personnel and equipment to demonstrate to the ENGINEER that all valves, fire hydrants, and curb stops operate as required.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD30_GENERAL_NOTES

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GENERAL NOTES	DWG. NO. SD30	
		DATE 3/05	REVISED 7/17

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STATE OF NEW YORK CHRISTOPHER WOOD 076304 PROFESSIONAL ENGINEER

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Water Details & Notes

DRAWING NO.
C-406

Project no.: 21-011

Attachment: SP-2021-05_drawings_011322 (23057 : Sp-2021-05)

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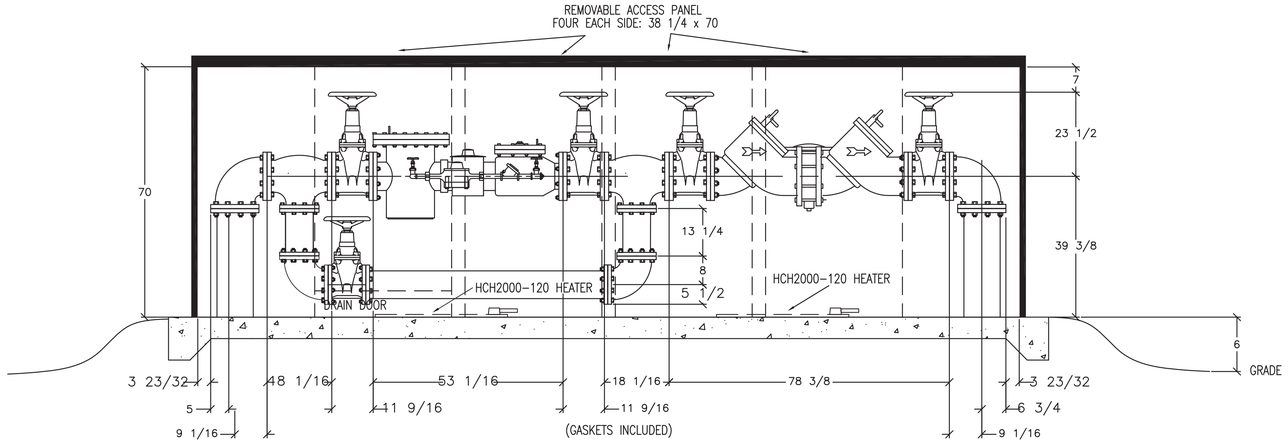

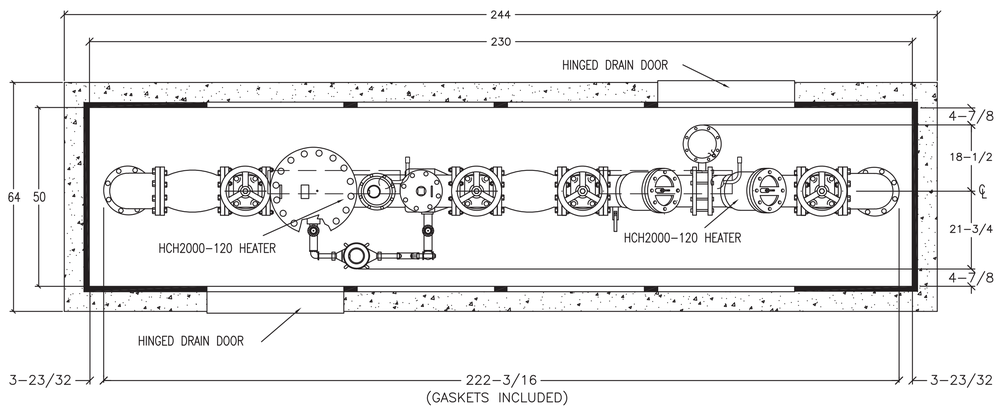

NOTES:

1. BACKFLOW PREVENTER DIMENSIONS FURNISHED BY WATTS
2. ALL DIMENSIONS ARE IN INCHES
3. WALL & INSULATION THICKNESS IS 1 1/2"
4. ROOF & INSULATION THICKNESS IS 3"
5. ENCLOSURE SHOWN IS SAFE-T-COVER MODEL 1000D-ALC00-17
6. EXTERIOR ENCLOSURE DIMENSIONS: 53"W x 233"L x 73" H
7. CONCRETE PAD IS 64"W x 244"L x 6"THK W/W.W.F. 6X6/10X10
8. METER SHOWN: 8" PROTECTUS III, SPOOL PIECE & METER SUPPLIED BY ECWA, VERIFY DIMENSIONS PRIOR TO ORDERING
9. RPZ SHOWN: 8" WATTS 909 NRS
10. CONTRACTOR TO INSTALL ELECTRIC SERVICE TO ENCLOSURE, COORDINATE SOURCE WITH OWNER
11. INSTALL A 120V GFI OUTLET IN THE ENCLOSURE
12. HEATERS TO HAVE THERMOSTAT CONTROL
13. ALL PIPING WITHIN THE ENCLOSURE SHALL BE DUCTILE IRON

LEGEND:

REMOVABLE ACCESS PANEL 38 1/4"W x 70"H w/DRAIN DOOR

REMOVABLE ACCESS PANEL 38 1/4"W x 70"H

8"METER & RPZ INSULATED ENCLOSURE

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STATE OF NEW YORK
CHRISTOPHER WOOD
076394
LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Insulated
Enclosure Detail

DRAWING NO.
C-407

Project no.: 21-011

Attachment: SP-2021-05_drawings_011322 (23057 : Sp-2021-05)

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NOTE:
PETITIONER AND PETITIONER'S CONTRACTOR SHALL TAKE ALL REASONABLE MEASURE TO PROTECT EXISTING TREES WHICH ARE TO BE PRESERVED FROM ALL POSSIBLE TYPES OF ROOT, TRUNK, AND LIMB DAMAGE; INCLUDING BUT NOT LIMITED TO, RETAINING WALLS WHICH PREVENT FILLING ON TOP OF ROOTS OR EXCAVATING TREE ROOTS AS REQUIRED BY §203-7-2-3 B (3) OF TOWN CODE.

PARALLEL W/WEST LINE OF LOT 76 (CENTERLINE OF SWEET HOME ROAD)

L.7659 P.435 & 437

PARALLEL W/SOUTH LINE OF LOT 76

N 88°55'52" E 700.84'

PARALLEL W/SOUTH LINE OF LOT 76 N 88°55'52" E 930.61'

P.O.B.

N 02°14'22" W 118.34'

L.–11278, P.–7124

PROPOSED 1-STORY 6 UNIT BUILDING W/ ATTACHED GARAGES

PROPOSED 1-STORY 6 UNIT BUILDING W/ ATTACHED GARAGES

150' x 70' 4-STORY APARTMENT BUILDING WITH (10) APARTMENT UNITS PER FLOOR (40 UNITS TOTAL)

(8) 2-STORY DUPLEX TOWNHOME UNITS (16 UNITS TOTAL)

(7) 2-STORY DUPLEX TOWNHOME UNITS (14 UNITS TOTAL)

225' x 80' 4-STORY MIXED USE BUILDING WITH 15,000 SF COMMERCIAL & (5) APARTMENT UNITS ON 1ST FLOOR, APARTMENTS ON FLOORS 2 THRU (50 UNITS)

225' x 80' 4-STORY MIXED USE BUILDING WITH 15,000 SF COMMERCIAL & (5) APARTMENT UNITS ON 1ST FLOOR, APARTMENTS ON FLOORS 2 THRU (50 UNITS)

LOT 21 LOT 22 LOT 23 LOT 24 LOT 25 LOT 26 LOT 27

LOT 12 LOT 13 LOT 14 LOT 15 LOT 16 LOT 17 LOT 18 LOT 19 LOT 20

LOT 1 LOT 2 LOT 3 LOT 4 LOT 5 LOT 6 LOT 7 LOT 8 LOT 9 LOT 10 LOT 11

PROPOSED DUPLEX LOTS - SEE 'DETAIL-B' ON THIS SHEET FOR TYPICAL PLANTING DETAIL

PROPOSED TOWNHOUSE UNITS - SEE 'DETAIL-A' ON THIS SHEET FOR TYPICAL PLANTING DETAIL

SITE 'A' 17.424± ACRES

DOG PARK

RECREATION TRAIL (10' WIDE)

STORM WATER MANAGEMENT AREA

TERRACED STEPS

RECREATION TRAIL (10' WIDE)

STORM WATER MANAGEMENT AREA

DEED RESTRICTED AREA "B" TOTAL AREA: = 32.52± ACRES

DODGE ROAD RELOCATION

CONCRETE SIDEWALK

ASPHALT DRIVE

ASPHALT PARKING LOT

CATV.

WSV®

HYD.

GAS VALVE

ELEV. = 71.65

S 10°07'24" E 43.27'

S 11°02'55" W 83.05'

S 11°56'26" E 236.32'

S 87°22'49" W 322.92'

N 35°38'15" W 172.66'

N 35°36'42" W 156.92'

N 01°04'00" W 305.54'

S 45°19'36" E 99.73'

S 64°16'46" W 35.20'

S 01°24'08" E 145.0'

N 67°53'17" W 50.93'

S 23°50'17" W 47.47'

S 39°43'51" W 50.80'

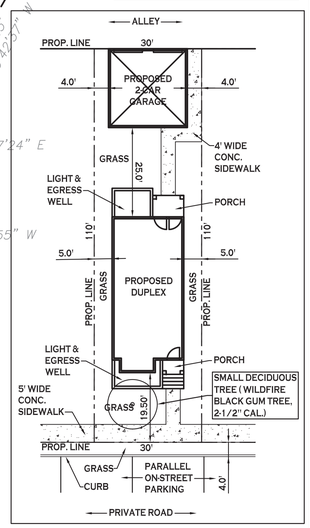
S 57°29'39" W 52.30'

S 83°36'29" W 105.17'

N 67°53'17" W 128.98'

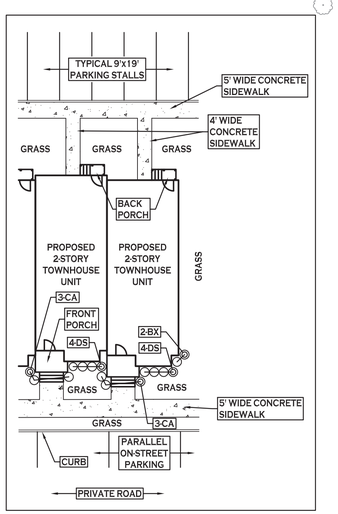
S 23°50'17" W 257.37'

N 67°53'17" W 257.37'



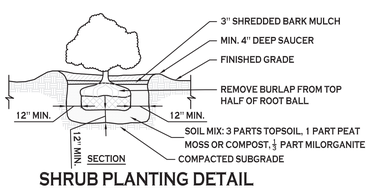
TYP. DUPLEX LOT (DETAIL-B)

SCALE: 1"=20'

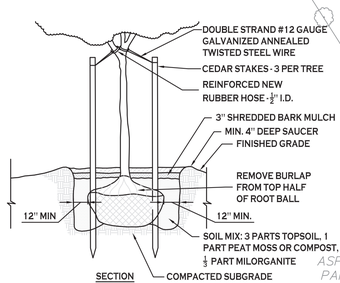


TYP. TOWNHOUSE LOT (DETAIL-A)

SCALE: 1"=20'



SHRUB PLANTING DETAIL



TREE PLANTING DETAIL

PLANTING NOTES:

1. ALL INTERIOR LANDSCAPED AREAS SHALL HAVE A MINIMUM PLANTING SOIL DEPTH OF THREE (3) FEET AND BE FREE FROM ALL FORMS OF CONSTRUCTION DEBRIS AND FOREIGN MATERIAL.
2. ALL TREE PIT SAUCERS, SHRUB BEDS, ORNAMENTAL GRASS BEDS, AND PERENNIAL FLOWER BEDS SHALL RECEIVE "PREEN" HERBICIDE AND THREE (3) INCHES DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
3. ALL SEASONAL FLOWER BEDS SHALL BE A MINIMUM OF TWELVE (12) INCHES DEEP WITH A WELL-BLENDED MIXTURE OF 50% PEAT MOSS. SEASONAL FLOWER BEDS SHALL RECEIVE "PREEN" HERBICIDE. NO MULCH SHALL BE INSTALLED IN THE SEASONAL FLOWER BEDS. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
4. ALL DECIDUOUS AND EVERGREEN TREES SHALL BE STAKED WITH THREE (3) TREE STAKES AS PER TREE PLANTING DETAIL.

PLANTING SCHEDULE - SAWYER'S LANDING, NORTH FRENCH ROAD, AMHERST NY

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		DECIDUOUS TREES			
CM	17	ACER X FREEMANII 'CELZAM'	CELEBRATION MAPLE	2 1/2" – 3" CAL.	B&B, 25' WIDE
CO	1	CELTIS OCCIDENTALIS	HACKBERRY	2 1/2" – 3" CAL.	B&B
AF	12	ACER X FREEMANII 'JEFFERSRED'	AUTUMN BLAZE MAPLE	2 1/2" – 3" CAL.	B&B
BN	21	BETULA NIGRA 'CULLY'	HERITAGE RIVER BIRCH	10'–12' HT.	B&B, MULTI-STEM (3-BOLE MIN)
AH	8	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2 1/2" – 3" CAL.	B&B
GT	5	GLEDITSIA TRIACANTHOS INERMIS 'SKYCOLE'	SKYLINE HONEYLOCUST	2 1/2" – 3" CAL.	B&B
NS	6	NYSSA SYLVATICA 'WILDFIRE'	WILDFIRE BLACK GUM	2 1/2" – 3" CAL.	B&B
QR	22	QUERCUS RUBRA	NORTHERN RED OAK	2 1/2" – 3" CAL.	B&B
UA	17	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2 1/2" – 3" CAL.	B&B
		SMALL/ORNAMENTAL TREES			
AC	10	AMELANCHIER CANADENSIS	SERVICEBERRY	8' – 10' HT.	B&B, MULTI-STEM
AG	7	AMELANCHIER GRANDIFLORA 'AUTUMN BRILLIANCE'	APPLE SERVICEBERRY	1–3/4" – 2" CAL.	B&B
CC	10	CERCIS CANADENSIS	EASTERN REDBUD	8' – 10' HT.	B&B, MULTI-STEM
KP	3	KOELREUTERIA PANICULATA	GOLDEN RAIN TREE		
MA	23	MALUS 'ADIRONDACK'	ADIRONDACK CRABAPPLE	1–3/4" – 2" CAL.	B&B
MP	13	MALUS 'PRAIRIFIRE'	PRAIRIFIRE CRABAPPLE	1–3/4" – 2" CAL.	B&B
MR	15	MALUS "ROYAL RAINDROPS"	ROYAL RAINDROP CRABAPPLE	1–3/4" – 2" CAL.	
PS	3	PRUNUS CERASIFERA 'THUNDERCLOUD'	THUNDERCLOUD PLUM	1–3/4" – 2" CAL.	B&B, DUPLEX LOTS 33–49

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		EVERGREEN TREES			
CF	69	ABIES CONCOLOR	CONCOLOR FIR	5' MIN. HT.	FULL TO GROUND
PG	83	PICEA GLAUCA	WHITE SPRUCE	5' MIN. HT.	FULL TO GROUND
PP	49	PICEA PUNGENS 'GLAUCA'	COLORADO BLUE SPRUCE	5' MIN. HT.	FULL TO GROUND
		SHRUBS			
BX	56	BUXUS "GREEN VELVET"	GREEN VELVET BOXWOOD	24" HT. MIN.	NO. 5 CONT.
CS	24	CORNUS SERICEA 'FARROW'	ARCTIC FIRE RED TWIG DOGWOOD	24" MIN. HT.	NO. 5 CONT.
DS	34	DIERVILLA SPLENDENS 'G2X88544'	KODIAK ORANGE DIERVILLA	24" MIN. HT.	NO. 5 CONT.
FX	18	FORSYTHIA X INTERMEDIA 'KOLGOLD'	MAGICAL GOLD FORSYTHIA	24" MIN. HT.	NO. 5 CONT.
SJ	60	SPIRAEA BUMALDA "GOLD MOUND"	GOLD MOUND SPIREA	NO. 3 CONT.	
		ORNAMENTAL GRASS			
CA	58	CALAMAGROSTIS X ACUTIFOLIA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	NO. 2 CONT.	
PA	29	PENNISETUM ALOPECUROIDES	FOUNTAIN GRASS	NO. 2 CONT.	SEE NOTE 1

LANDSCAPE NOTES:

1. ORNAMENTAL GRASSES SHOULD BE PRUNED BACK IN LATE FALL OR EARLY SPRING TO ALLOW FOR NEW FOLIAGE TO GROW IN SPRING.
2. ALL PLANTING BEDS & TREE PLANTING PITS SHALL RECEIVE A MINIMUM 3-INCH DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH.
3. ALL EVERGREEN TREES SHALL BE MEASURED FROM THE BOTTOM OF LEADER.

N

SITE PLAN

SCALE: 1"=50'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS. CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

ROBERT C. WALTER
REGISTERED LANDSCAPE ARCHITECT
MEMBER AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS
2765 DODGE ROAD, EAST AMHERST N.Y. 14051-2113
PHONE: (716) 364-5564

REGISTERED LANDSCAPE ARCHITECT ROBERT C. WALTER NO. 001186 STATE OF NEW YORK

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Landscape Plan

DRAWING NO.

L-100

Project no.: 21-011

Attachment: SP-2021-05_drawings_011322 (23057 : Sp-2021-05)

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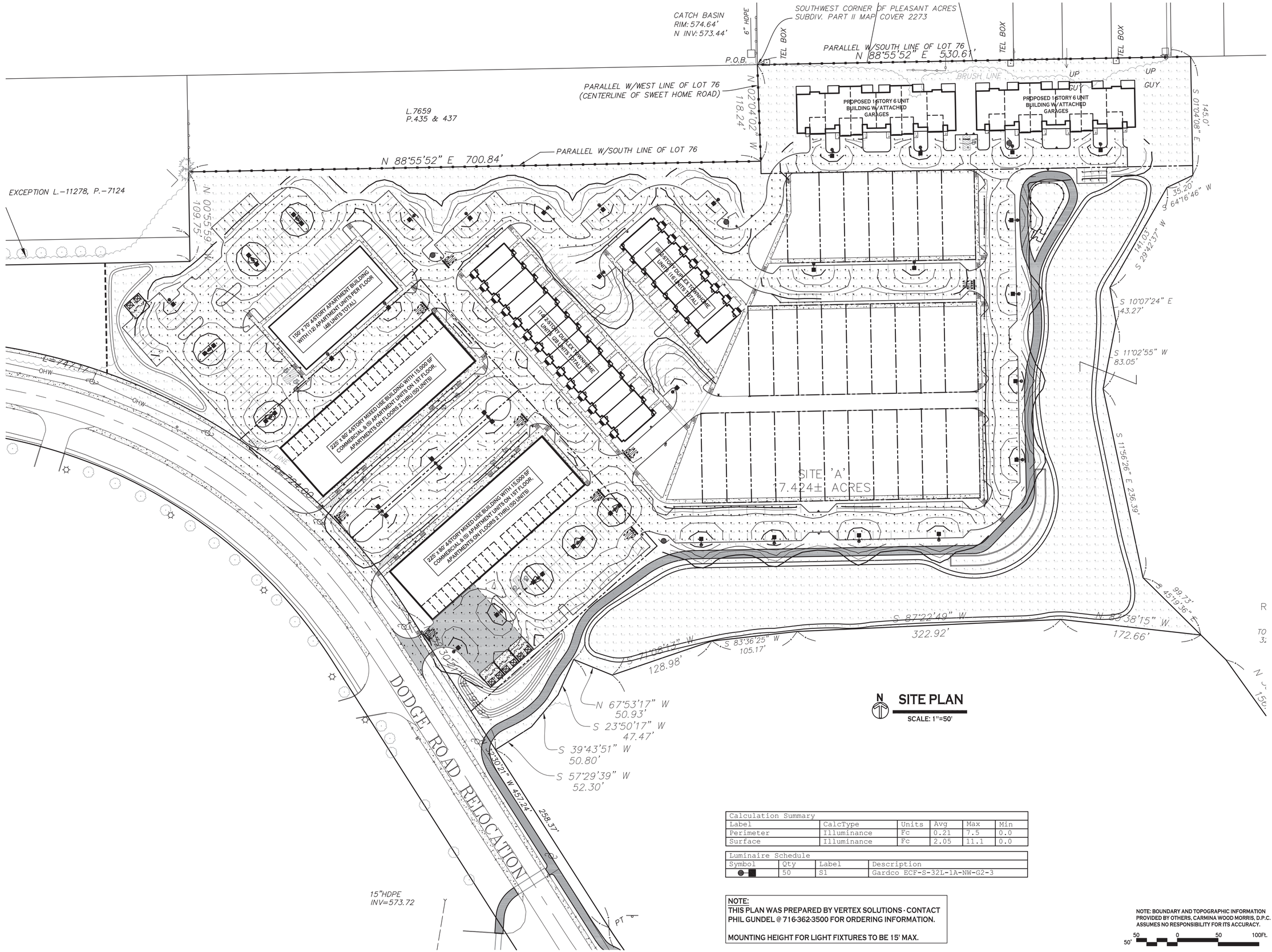

SITE PLAN

SCALE: 1"=50'

Calculation Summary					
Label	CalcType	Units	Avg	Max	Min
Perimeter	Illuminance	Fc	0.21	7.5	0.0
Surface	Illuminance	Fc	2.05	11.1	0.0

Luminaire Schedule			
Symbol	Qty	Label	Description
	50	S1	Gardco ECF-S-32L-1A-NW-G2-3

NOTE:
THIS PLAN WAS PREPARED BY VERTEX SOLUTIONS - CONTACT PHIL GUNDEL @ 716-362-3500 FOR ORDERING INFORMATION.

MOUNTING HEIGHT FOR LIGHT FIXTURES TO BE 15' MAX.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

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STATE OF NEW YORK CHRISTOPHER WOOD 076394 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Site Photometric Plan

DRAWING NO.

LP-100

Project no.: 21-011

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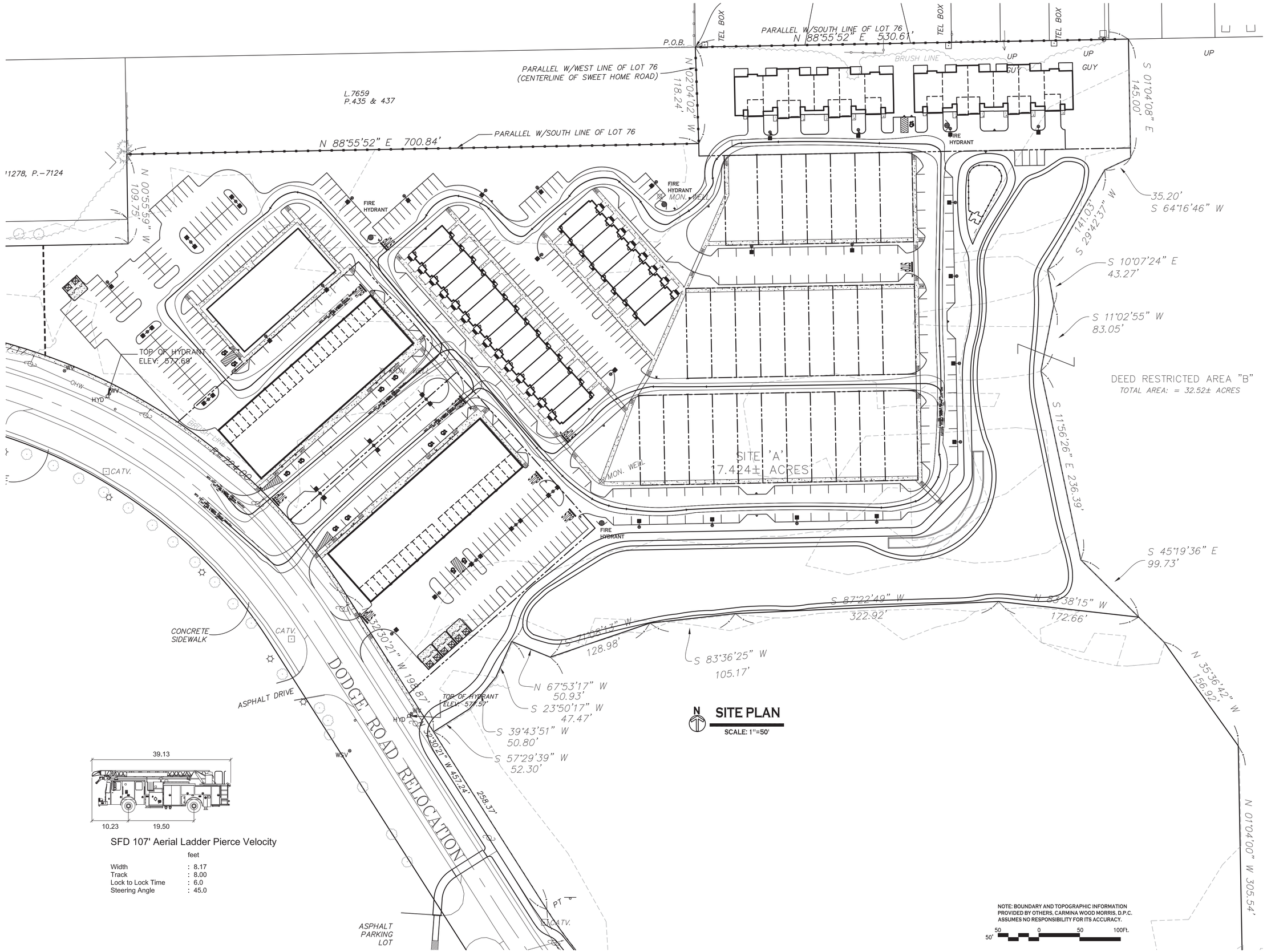

N **SITE PLAN**

SCALE: 1"=50'

SFD 107' Aerial Ladder Pierce Velocity

	feet
Width	: 8.17
Track	: 8.00
Lock to Lock Time	: 6.0
Steering Angle	: 45.0

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

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STATE OF NEW YORK
CHRISTOPHER WOOD
076394
LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Fire Truck Plan

DRAWING NO.

TT-100

Project no.: 21-011

Attachment: SP-2021-05_drawings_011322 (23057 : Sp-2021-05)

Attachment: SP-2021-05_drawings_011322 (23057 : SP-2021-05)

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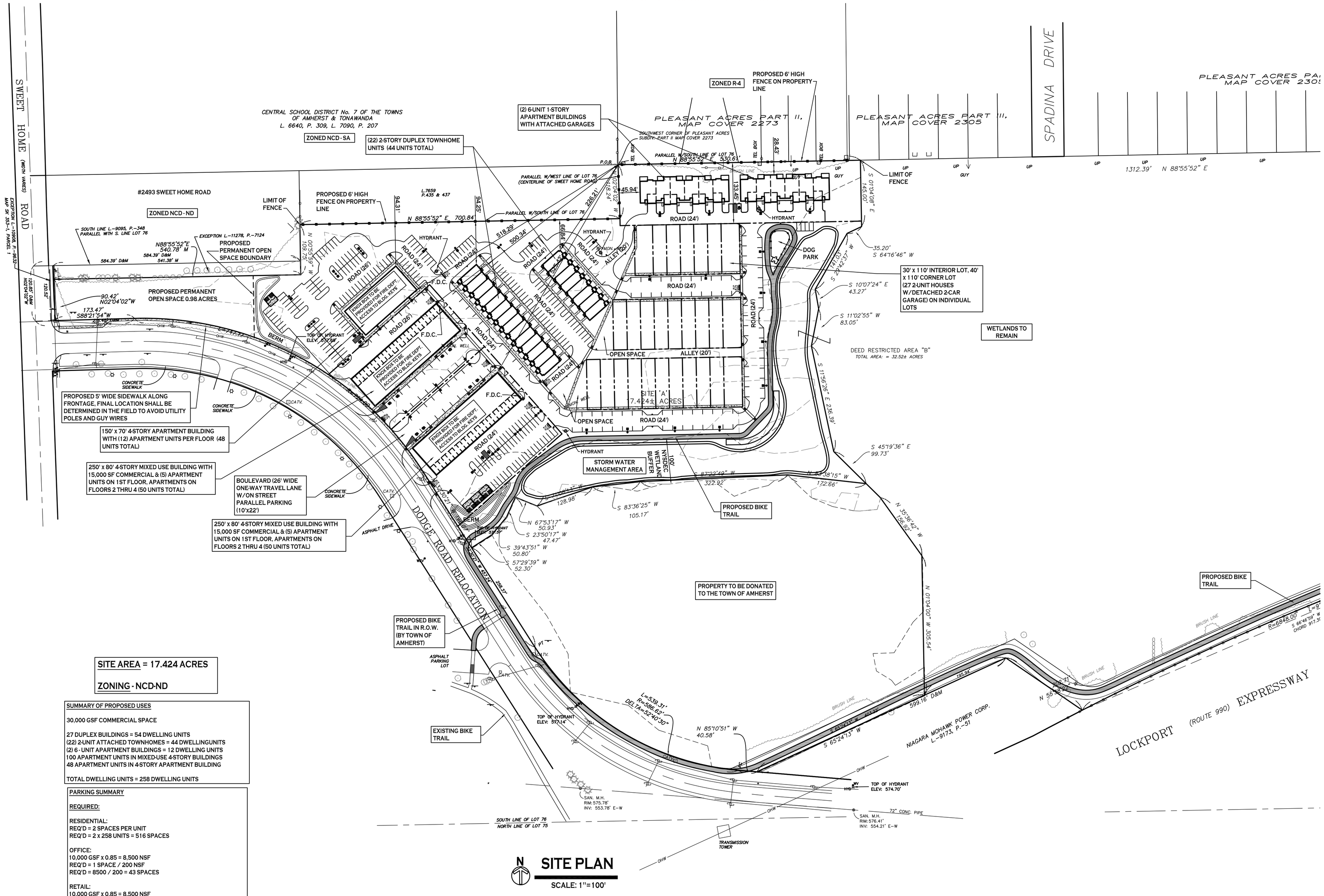

SITE AREA = 17.424 ACRES

ZONING - NCD-ND

SUMMARY OF PROPOSED USES

30,000 GSF COMMERCIAL SPACE

27 DUPLEX BUILDINGS = 54 DWELLING UNITS
(22) 2-UNIT ATTACHED TOWNHOMES = 44 DWELLINGUNITS
(2) 6 - UNIT APARTMENT BUILDINGS = 12 DWELLING UNITS
100 APARTMENT UNITS IN MIXED-USE 4-STORY BUILDINGS
48 APARTMENT UNITS IN 4-STORY APARTMENT BUILDING

TOTAL DWELLING UNITS = 258 DWELLING UNITS

PARKING SUMMARY

REQUIRED:

RESIDENTIAL:
REQ'D = 2 SPACES PER UNIT
REQ'D = 2 x 258 UNITS = 516 SPACES

OFFICE:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 1 SPACE / 200 NSF
REQ'D = 8500 / 200 = 43 SPACES

RETAIL:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 5.5 SPACES / 1,000 NSF
REQ'D = 8500 / 1000 x 5.5 = 47 SPACES

RESTAURANT:
REQ'D = 1 SPACE / 3 SEATS + 1 SPACE / 100 SF TAKE OUT AREA
REQ'D = 100 SEAT / 3 + 500 SF / 100 = 38 SPACES

TOTAL REQ'D = 644 SPACES

PROVIDED:

134 PARALLEL PARKING SPACES
256 9'x19' SPACES *
40 GARAGE SPACES IN 4-STORY BLDGS
64 GARAGE SPACES IN DETACHED GARAGES
494 TOTAL SPACES

* INCLUDES SPACES IN FRONT OF APARTMENT GARAGES

WETLAND SUMMARY

FEDERAL IMPACTS PROPOSED = 6.089 AC
FEDERAL IMPACTS PREVIOUSLY PROPOSED = 13.01 AC
DECREASE = 6.921 AC (53% DECREASE)

NYSDEC IMPACTS PROPOSED = 1.20 AC
NYSDEC IMPACTS PREVIOUSLY PROPOSED = 9.46 AC
DECREASE = 8.26 AC (87% DECREASE)

NYSDEC BUFFER IMPACT PROPOSED = 3.65 AC
NYSDEC BUFFER IMPACTS PREVIOUSLY PROPOSED = 4.20 AC
DECREASE = 0.55 AC (13% DECREASE)

NOTE: NYSDEC IMPACTS INCLUDES FEDERAL WETLAND IMPACT OVERLAP AREAS

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Overall Site Plan

DRAWING NO.

C-100

Project no.: 21.011

Attachment: SP-2021-05_drawings_011322 (23057 : SP-2021-05)

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

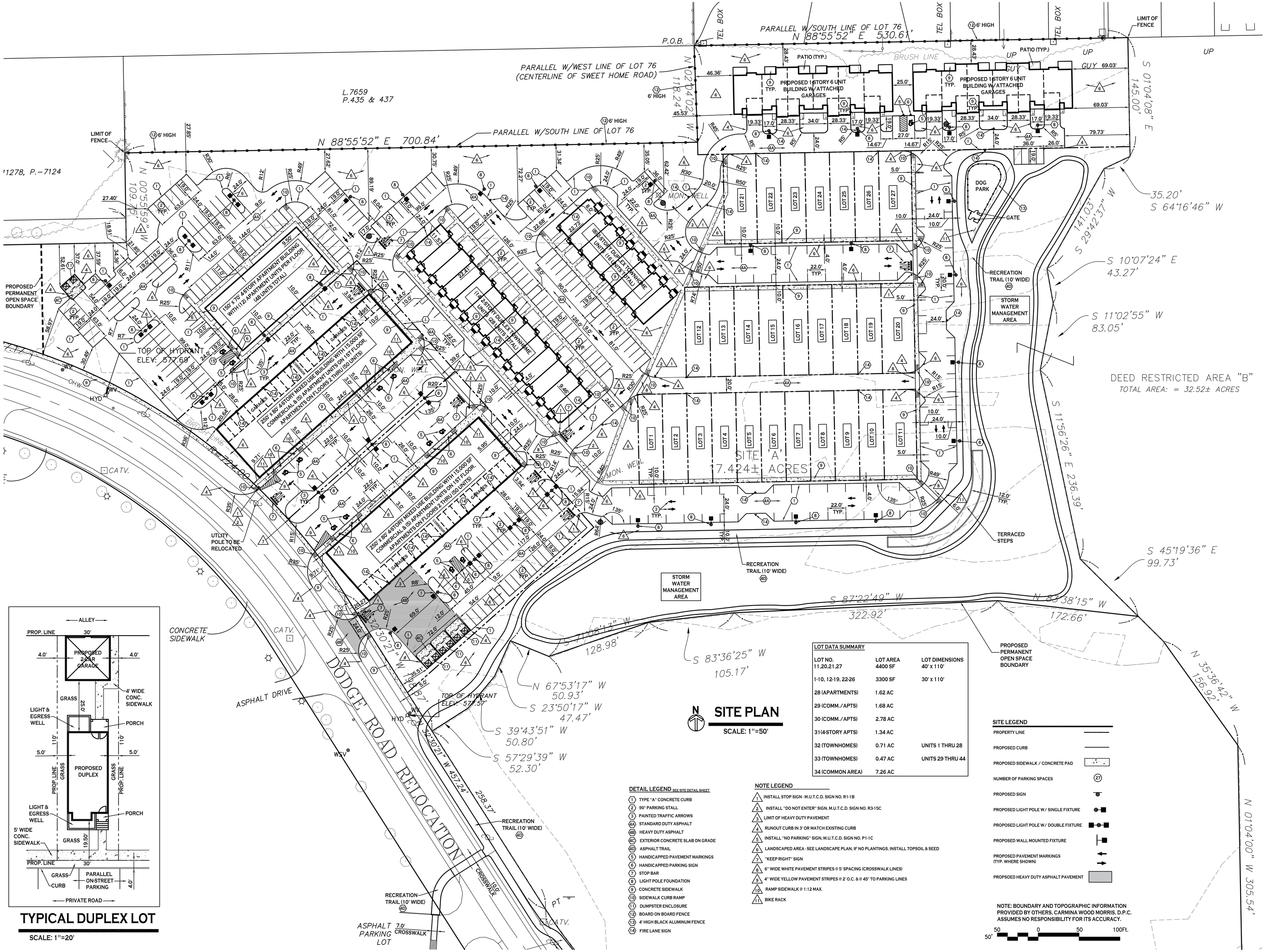
DRAWING NAME:

Site Plan

DRAWING NO.

C-101

Project no.: 21.011



SITE PLAN

SCALE: 1"=50'

LOT DATA SUMMARY		
LOT NO.	LOT AREA	LOT DIMENSIONS
11,20,21,27	4400 SF	40' x 110'
1-10, 12-19, 22-26	3300 SF	30' x 110'
28 (APARTMENTS)	1.62 AC	
29 (COMM./APTS)	1.68 AC	
30 (COMM./APTS)	2.78 AC	
31(4 STORY APTS)	1.34 AC	
32 (TOWNHOMES)	0.71 AC	UNITS 1 THRU 28
33 (TOWNHOMES)	0.47 AC	UNITS 29 THRU 44
34 (COMMON AREA)	7.26 AC	

DETAIL LEGEND SEE SITE DETAIL SHEET

1. TYPE "A" CONCRETE CURB
2. 90° PARKING STALL
3. PAINTED TRAFFIC ARROWS
4A. STANDARD DUTY ASPHALT
4B. HEAVY DUTY ASPHALT
4C. EXTERIOR CONCRETE SLAB ON GRADE
4D. ASPHALT TRAIL
5. HANDICAPPED PAVEMENT MARKINGS
6. HANDICAPPED PARKING SIGN
7. STOP BAR
8. LIGHT POLE FOUNDATION
9. CONCRETE SIDEWALK
10. SIDEWALK CURB RAMP
11. DUMPSTER ENCLOSURE
12. BOARD ON BOARD FENCE
13. 4' HIGH BLACK ALUMINUM FENCE
14. FIRE LANE SIGN

NOTE LEGEND

1. INSTALL STOP SIGN - M.U.T.C.D. SIGN NO. R1-1 B
2. INSTALL "DO NOT ENTER" SIGN, M.U.T.C.D. SIGN NO. R3-15C
3. LIMIT OF HEAVY DUTY PAVEMENT
4. RUNOUT CURB IN 3' OR MATCH EXISTING CURB
5. INSTALL "NO PARKING" SIGN, M.U.T.C.D. SIGN NO. P1-1C
6. LANDSCAPED AREA - SEE LANDSCAPE PLAN, IF NO PLANTINGS, INSTALL TOPSOIL & SEED
7. "KEEP RIGHT" SIGN
8. 6" WIDE WHITE PAVEMENT STRIPES @ 5' SPACING (CROSSWALK LINES)
9. 4" WIDE YELLOW PAVEMENT STRIPES @ 2' O.C. & @ 45° TO PARKING LINES
10. RAMP SIDEWALK @ 1:12 MAX.
11. BIKE RACK

SITE LEGEND

- PROPERTY LINE
- PROPOSED CURB
- PROPOSED SIDEWALK / CONCRETE PAD
- NUMBER OF PARKING SPACES (27)
- PROPOSED SIGN
- PROPOSED LIGHT POLE W/ SINGLE FIXTURE
- PROPOSED LIGHT POLE W/ DOUBLE FIXTURE
- PROPOSED WALL MOUNTED FIXTURE
- PROPOSED PAVEMENT MARKINGS (TYP. WHERE SHOWN)
- PROPSOED HEAVY DUTY ASPHALT PAVEMENT

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

TYPICAL DUPLEX LOT

SCALE: 1"=20'

DRAFT (1/13/2022)
TOWN OF AMHERST
PLANNING BOARD
SITE PLAN RESOLUTION
SP-2021-05

PETITIONER

Sawyer's Landing LLC
c/o Sean Hopkins, Esq.
5500 Main Street, Suite 343
Williamsville, NY 14221

PROPERTY LOCATION

1081 North French Road (portion) (NCD)

WHEREAS, the Town of Amherst Planning Board on Thursday, May 20, 2021 and January 13, 2022 held public hearings on a Site Plan for a mixed-use development, and

WHEREAS, the Planning Board reviewed the plans and specifications for the proposed project, and

WHEREAS, the Site Plan was referred to the Town's various review agencies, and

WHEREAS, in accordance with Section 8-7-8 of the Zoning Ordinance, the Planning Board finds that:

A. The site plan includes usable space for active and passive recreation, including pedestrian connections.

B. The site plan includes open space lands for public ownership and use offered for dedication or other disposition to the Town or other public entity.

C. School sites and facilities are adequate to accommodate the proposed site plan.

D. The site plan does not include the extension of roadways to adjacent property.

WHEREAS, in accordance with Section 8-7-9 of the Zoning Ordinance, the Planning Board finds that:

A. The proposed site plan is consistent with the development plan if one is required.

B. The proposed site plan is consistent with the purpose and specific requirements of the Zoning Ordinance and generally consistent with the policies of the Comprehensive Plan.

C. Adequate services and utilities will be available prior to occupancy.

D. The site plan is consistent with all other applicable laws.

E. Pursuant to Local Law #3-82, as amended, the Planning Board has determined that the requirements of SEQR are complete and that the subject proposal is not expected to have a significant adverse effect on the environment. The previously undertaken SEQR process included a DEIS, FEIS and culminated in the Town Board's issuance of a SEQR Findings Statement on December 17, 2007. Lead Agency was re-established for review of the proposed amendment to the Findings Statement to

Attachment: SP-2021-05_draft resolution_011322 (23057 : Sp-2021-05)

DRAFT (1/13/2022)
TOWN OF AMHERST
PLANNING BOARD
SITE PLAN RESOLUTION
SP-2021-05

PETITIONER	PROPERTY LOCATION
Sawyer's Landing LLC	1081 North French Road (portion) (NCD)

allow the proposed mixed-use development, and the Findings Statement was revised on September 27, 2021.

F. Wetland permits were issued for this project by NYSDEC on December 17, 2019 and the US Army Corps of Engineers under Section 404 of the Clean Water Act on December 12, 2019. Both permits authorize work on the project until November 30, 2024.

NOW THEREFORE BE IT FURTHER RESOLVED that the Planning Board, in accordance with Section 8-7 of the Zoning Ordinance **approves/denies** said Site Plan subject to the following conditions:

1. That the consideration of signs is specifically excluded from this approval as they require a separate review and approval by the Town.

2. That all dumpsters/trash containers and all mechanical equipment, utility structures, multiple meter boards, generators, and similar appurtenances, including those which are mounted on any part of a primary structure shall be appropriately screened with a fence, wall, and/or landscaping. Provide gate on dumpster enclosure that shall be closed whenever dumpster is not being serviced, enclosure shall be high enough to screen the dumpster(s) within.

3. That as-built record drawings, including location of utilities, be provided to the Engineering Department prior to issuance of a Certificate of Occupancy by the Building Department.

The foregoing resolution was adopted by the Town of Amherst Planning Board, _____; moved by _____; seconded by _____; ayes _, noes _; absent - ____.

_____ _____
Robert J. Gilmour, Chair Date

SM/ac
X:\Current_Planning\Files\Site Plans\2021\SP-2021-05_(1081 N_FrenchRd_NCD)_2021\SP-2021-05_draft resolution_011322.doc

cc: Town Clerk
Commissioner of Building
Town Engineer
Fire Chiefs
Traffic/Safety
Highway Superintendent
ECDEP
NYSDOT
NYSDEC
Sean Hopkins, Hopkins Sorgi & McCarthy, 5500 Main St., Suite 343, Williamsville, NY 14221
William Severyn, Severyn Development, 43 Central Ave. Suite 300, Lancaster, NY 14086
Adam Faeth, Ciminelli Real Estate Corp., 50 Fountain Plaza, Suite 500, Buffalo, NY 14202
Chris Wood, Carmina Wood Morris, 487 Main St, Suite 500, Buffalo, NY 14203
David Sutton, Sutton Architects, 5409 Main St, 2nd Floor, Williamsville, NY 14221

Approved Plan: _____
Received: _____

Attachment: SP-2021-05_draft resolution_011322 (23057 : Sp-2021-05)

Amherst

Town of Amherst Planning Department *Erie County, New York*

Brian J. Kulpa
Supervisor
Daniel C. Howard, AICP
Planning Director
Daniel J. Ulatowski, AICP
Assistant Planning Director

January 20, 2021

Sawyer's Landing LLC
c/o Sean W. Hopkins, Esq.
Hopkins Sorgi & McCarthy
5500 Main Street, Suite 343
Williamsville, New York 14221

SUBJECT: MAJOR SITE PLAN REVIEW, **SP-2021-05**; PROPOSED SAWYERS LANDING MIXED-USE DEVELOPMENT; PROPERTY LOCATED AT **1081 NORTH FRENCH ROAD (PORTION) (MUIR WOODS SITE A) NCD.**

Dear Mr. Hopkins:

At its meeting of January 13, 2022 the Planning Board voted to **adjourn** the subject site plan at your request.

This request will be placed on the Planning Board agenda for the February 17, 2022 meeting.

Please submit revised plans or required materials by Monday, January 31, 2022 so they may be reviewed prior to the meeting.

Should you have any questions regarding the Planning Board's decision, please do not hesitate to call us.

Very truly yours,

for Daniel C. Howard, AICP
Planning Director

DH/ac
X:\Current_Planning\Files\Site Plans\2021\SP-2021-05_(1081 N_FrenchRd_NCD)_2021\SP-2021-05_Adjournment Letter_011322.doc
cc: William Severyn, Severyn Development, 43 Central Ave. Suite 300, Lancaster, NY 14086
Adam Faeth, Ciminelli Real Estate Corp., 50 Fountain Plaza, Suite 500, Buffalo, NY 14202
Chris Wood, Carmina Wood Morris, 487 Main St, Suite 500, Buffalo, NY 14203
David Sutton, Sutton Architects, 5409 Main St, 2nd Floor, Williamsville, NY 14221

Attachment: SP-2021-05_adjournment_011322 (23057 : Sp-2021-05)

Application for Site Plan Approval 1021 North French Road [Including Subdivision of Project Site] - Proposed Mixed-Use Project - Site "A" of Muir Woods Property
Applicant: Sawyers Landing LLC

Prepared By: Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221
Tel: 510-4338
E-mail: shopkins@hsr-legal.com

TOWN OF AMHERST PLANNING DEPARTMENT

Application for Major Site Plan Review

For Official Use

File #: SP-2021-05 **Acreage** 17.42 **Fee $** 13,315.00

Address Verified by Assessor's Office
VERIFIED BY DATE

Site Plan Review

		Fill In Applicable Fees
1 acre or less	$1,250.00	$1,250.00
Each Additional acre or fraction thereof	$ 650.00/acre	$11,050.00
Amendments to Site Plans	$1,200.00	
Request for Relief of / or Change to Conditions of Site Plan Approval	$1,200.00	
Request for Extension of Site Plan Approval	$ 450.00	
Stormwater Pollution Prevention Plan		
1-4.99 Acres	$ 500.00	
5-10 Acres	$ 750.00	
>10 Acres	$1,000.00	$1,000.00
Affidavit Fee for Public Hearing	$ 15.00	$15.00
	TOTAL FEE:	$ 13,315.00

Materials Received by Planning Department
RECEIVED BY DATE

RECEIVED FEB 22 2021 TOWN OF AMHERST PLANNING DEPT.

Materials Accepted by Town Clerk & Fee Paid
ACCEPTED BY DATE

To Be Completed By Applicant

Petitioner: Name: Sawyers Landing LLC c/o Sean W. Hopkins, Esq.

Address: 5500 Main Street, Suite 343

Williamsville, New York 14221

city state zip code

Phone: 510-4338 Fax: _____ E Mail: shopkins@hsr-legal.com

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

MAJOR SITE PLAN APPLICATION ***con't.*** ***PAGE 2***

Representative (Architect, Engineer, Landscape Architect, Surveyor, or Attorney):

Name: Christopher Wood, P.E.

Address: Carmina Wood Morris DPC

483 Main Street, Suite 600

Buffalo (city) New York (state) 14203 (zip code)

Phone: 842-3165 [Ext. 103] Fax: 842-0263

E Mail: cwood@cwm-ae.com

Project Location (must be verified by Town Assessor's Office):

Address: Portion of 1081 North French Road

SBL No(s): 40.08-3-13.1/A

Project Name: Proposed Mixed-Use Project

Project Description:

See attached Exhibit "2" for Project Description. The layout of the proposed mixed-use project to be located on the New Community District - General Commercial ("NCD-GC") zoned property at 1081 North French Road as depicted on the Overall Site Plan [Drawing C-100] prepared by Carmina Wood Morris DPC. A reduced size copy of the Overall Site Plan is provided at Exhibit "3". and a reduced size copy of the Site Plan [Drawing C-101] is provided at Exhibit "4". The proposed mixed-use project includes the subdivision of the 17.42 acre Project Site into 52 parcels as depicted on the Parcel Map [Drawing C-102] prepared by Carmina Wood Morris DPC. A reduced size copy of the Parcel Map [Drawing C-102] is provided at Exhibit "5".

Town of Amherst Planning Department 5583 Main Street Williamsville-NY-14221
(716) 631-7051- Fax: (716) 631-7153

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

If this petition is an amendment to a previously approved site plan, please describe the proposed changes (include type and size of existing structures and number of existing parking spaces):

Not Applicable.

Gross Floor Area (non-residential):	0 existing	30,000 sq. ft. proposed	30,000 sq. ft. total
Number of Residential Units:	0 existing	206 proposed	206 total
Number of Parking Spaces:	0 existing	505 proposed	505 total

Acreage of Parcel: 17.42 Acres

Frontage on Public Roads: The proposed parcel will have approximately 1,120 ft. on Dodge Road and approximately 120 ft. of frontage on Sweet Home Road.

Existing Zoning District(s) NCD-GC

[Note: A completed Part 1 of the Full Environmental Assessment Form prepared pursuant to the State Environmental Quality Review Act ("SEQRA") is attached as Exhibit "1" of this Site Plan Application.]

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Town of Amherst Planning Department 5583 Main Street Williamsville-NY-14221
(716) 631-7051- Fax: (716) 631-7153

Exhibit 1 – Part 1 of the Full Environmental Assessment Form prepared pursuant to the State Environmental Quality Review Act ("SEQRA") with attached Page 5[a] and Attachments "A" and "B"

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Full Environmental Assessment Form
Part 1 - Project and Setting

Prepared By: Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221
Tel: 716.510-4338
E-mail: shopkins@hsr-legal.com

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project: Proposed Mixed-Use Project - Site A of Muir Woods		
Project Location (describe, and attach a general location map): Portion of 1081 North French Road - Town of Amherst - Erie County		
Brief Description of Proposed Action (include purpose or need): The proposed action consists of a request for Site Plan Approval [including the subdivision of the Project Site] for a mixed use project consisting of 2 four story mixed-use buildings [15,000 sq. ft of commercial space and 50 units per building], 47 two-family town homes on individual lots and 2 single-story apartment buildings [6 units per building] along with all related site improvements depicted on the fully engineered plans prepared by Carmina Wood Morris DPC. A reduced size copy of the Overall Site Plan [Drawing C-100] is provided at Exhibit "3". The action has been defined broadly to include all required discretionary approvals and permits as well as all site improvements including the proposed driveway connections to Dodge Road, access aisles, parking spaces, driveways, wetland impacts, lighting, landscaping, on-site storm water management improvements, sanitary sewer and water lines and connections and all other required utility improvements. The project purpose is to develop Site "A" of overall Muir Woods Project Site as a mixed-use project. The proposed mixed-use project is a Type I action pursuant to SEQRA and the Town Board issued an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") on October 19, 2020 to allow mixed-use development of the Project Site. On October 19, 2020, the Town Board also adopted a resolution to amend the Town's Comprehensive to designate the Project Site as appropriate for mixed-use.		
Name of Applicant/Sponsor: Sawyers Landing LLC c/o Sean Hopkins, Esq.	Telephone: 716.510-4338 E-Mail: shopkins@hsr-legal.com	
Address: 5500 Main Street, Suite 343		
City/PO: Williamsville, NY	State: NY	Zip Code: 14221
Project Contact (if not same as sponsor; give name and title/role):	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:
Property Owner (if not same as sponsor): Ciminelli Muir Woods, LLC c/o Adam Faeth, Esq.	Telephone: 716.631-8000 E-Mail: afaeth@ciminelli.com	
Address: 50 Fountain Plaza, Suite 500		
City/PO: Buffalo	State: NY	Zip Code: 14202

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees ☑Yes ☐No	Sewage Works Corporation and PIPs	To be determined
b. City, Town or Village Planning Board or Commission ☑Yes ☐No	Planning Board - Site Plan Approval [includes Subdivision Approval - 52 lots]	February 22, 2021
c. City, Town or Village Zoning Board of Appeals ☐Yes ☑No		
d. Other local agencies ☑Yes ☐No	Building Department - Building Permits; Amherst IDA [PILOT, etc.]	To be determined
e. County agencies ☑Yes ☐No	ECPDW - Highway Work Permit; ECWA - Water; ECHD - Sewer and Water	To be determined
f. Regional agencies ☐Yes ☑No		
g. State agencies ☑Yes ☐No	NYSDEC - Amended Wetland Permit; DSCA Approval, Sewage Work Corp. & SPDES Permit	Amended Wetland Permit issued on 12/24/20; To be determined.
h. Federal agencies ☑Yes ☐No	USACE - Amended Wetland Permit [Pending]	July 1, 2020

i. Coastal Resources.

i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐Yes ☑No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☑Yes ☐No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☑Yes ☐No

If Yes, identify the plan(s):

NYS Heritage Areas:West Erie Canal Corridor [Note: The project will not have any impacts on the West Erie Canal Corridor.]

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes ☑No

If Yes, identify the plan(s):

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
Site "A" of the Muir Woods property is zoned New Community District - Neighborhood District ("NCD-ND") pursuant to the Town of Amherst Zoning Map.

b. Is the use permitted or allowed by a special or conditional use permit? ☐ Yes ☑ No

c. Is a zoning change requested as part of the proposed action? ☐ Yes ☑ No
If Yes,
i. What is the proposed new zoning for the site?

C.4. Existing community services.

a. In what school district is the project site located? Sweet Home Central School District

b. What police or other public protection forces serve the project site?
Town of Amherst Police Department

c. Which fire protection and emergency medical services serve the project site?
Volunteer Fire Department

d. What parks serve the project site?
Various Town Parks including Nature View Park

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)?Mixed-use project consisting of 2 four-story buildings with 15,000 sq. ft. of 1st floor commercial space and 50 apartments per building; 47 two-family townhomes; and two six-unit single-story apartment buildings.

b. a. Total acreage of the site of the proposed action? 28.47 acres
b. Total acreage to be physically disturbed? 17.0 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 326 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % Units:

d. Is the proposed action a subdivision, or does it include a subdivision? ☑ Yes ☐ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
The 45 two-family townhome buildings will consist of individual lots and mixed-use buildings may consist of separate parcels.
ii. Is a cluster/conservation layout proposed? ☐ Yes ☐ No
iii. Number of lots proposed? 52 [47 lots for the two-family townhomes]
iv. Minimum and maximum proposed lot sizes? Minimum 3300 sf Maximum 6.81 Acres

e. Will the proposed action be constructed in multiple phases? ☑ Yes ☐ No
i. If No, anticipated period of construction: ____ months
ii. If Yes:
- Total number of phases anticipated 3-4
- Anticipated commencement date of phase 1 (including demolition) Fall month 2021 year
- Anticipated completion date of final phase July month 2024 year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases:
The infrastructure necessary for each phase will be installed to ensure compliance with applicable technical standards including those for stormwater management.

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

f. Does the project include new residential uses? ☑Yes ☐No
If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase		20		50
At completion of all phases		47		112

The build-out of the residential components will be based on market conditions.

g. Does the proposed action include new non-residential construction (including expansions)? ☑Yes ☐No
If Yes, There will be 15,000 sq. ft. of commercial space in each of the two 4-story mixed-use buildings.
i. Total number of structures 2
ii. Dimensions (in feet) of largest proposed structure: 55' height; 80' width; and 225' length
iii. Approximate extent of building space to be heated or cooled: 30,000 square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☑Yes ☐No
If Yes,
i. Purpose of the impoundment: Storm water management
ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☑Other specify: Storm water runoff from impervious surfaces.
iii. If other than water, identify the type of impounded/contained liquids and their source.
N/A
iv. Approximate size of the proposed impoundment. Volume: ____ million gallons; surface area: 1.5 acres
v. Dimensions of the proposed dam or impounding structure: N/A height; ____ length
vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):
Impoundment area is an excavation consisting of earth fill.

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐Yes ☑No
If Yes:
i. What is the purpose of the excavation or dredging?
ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?
- Volume (specify tons or cubic yards):
- Over what duration of time?

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.
iv. Will there be onsite dewatering or processing of excavated materials? ☐Yes ☐No
If yes, describe.
v. What is the total area to be dredged or excavated? ____ acres
vi. What is the maximum area to be worked at any one time? ____ acres
vii. What would be the maximum depth of excavation or dredging? ____ feet
viii. Will the excavation require blasting? ☐Yes ☐No
ix. Summarize site reclamation goals and plan:

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☑Yes ☐No
If Yes:
i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): The proposed mixed-use project will result in 4.89 acres of impacts to federal wetlands (reduction of 7.87 acres), 1.20 acres of impacts to NYSDEC Freshwater Wetlands (reduction of 8.26 acres) and 3.65 acres of impacts to regulated 100 ft. Adjacent Areas of of the NYSDEC Freshwater Wetlands (reduction of .55 acres).

[The New York State Department of Environmental Conservation issued an Amended Wetland Permit on December 24, 2020. A copy of the Amended Wetland Permit is provided at Exhibit "8".]

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

iii. Will the proposed action cause or result in disturbance to bottom sediments? ☐Yes ☑No
If Yes, describe:

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☑No
If Yes:

- acres of aquatic vegetation proposed to be removed:
- expected acreage of aquatic vegetation remaining after project completion:
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access):
- proposed method of plant removal:
- if chemical/herbicide treatment will be used, specify product(s):

v. Describe any proposed reclamation/mitigation following disturbance:

c. Will the proposed action use, or create a new demand for water? ☑Yes ☐No
If Yes:

i. Total anticipated water usage/demand per day: 50,820 gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑Yes ☐No
If Yes:

- Name of district or service area: ECWA Consolidated Water District
- Does the existing public water supply have capacity to serve the proposal? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No
- Do existing lines serve the project site? ☑Yes ☐No

iii. Will line extension within an existing district be necessary to supply the project? ☐Yes ☑No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project:
- Source(s) of supply for the district:

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐Yes ☐No
If, Yes:

- Applicant/sponsor for new district:
- Date application submitted or anticipated:
- Proposed source(s) of supply for new district:

v. If a public water supply will not be used, describe plans to provide water supply for the project:

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑Yes ☐No
If Yes:

i. Total anticipated liquid waste generation per day: 50,820 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each):
Sanitary wastewater

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑Yes ☐No
If Yes:

- Name of wastewater treatment plant to be used: Tonawanda Creek Wastewater Treatment Plant
- Name of district: Town of Amherst Consolidated Sanitary Sewer District
- Does the existing wastewater treatment plant have capacity to serve the project? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

- Do existing sewer lines serve the project site? ☑Yes ☐No
- Will a line extension within an existing district be necessary to serve the project? ☐Yes ☑No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☑No

If Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑Yes ☐No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or 8.0 acres (impervious surface)

_____ Square feet or 28.47 acres (parcel size)

ii. Describe types of new point sources. Parking lots and roof tops

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

Stormwater runoff will be conveyed into the on-site stormwater management system to be installed per the applicable stringent stormwater quality and quantity standards of the NYS Department of Environmental Conservation ("NYSDEC")

- If to surface waters, identify receiving water bodies or wetlands: NYSDEC & Federal wetlands on the east portion of the Project Site.
- Will stormwater runoff flow to adjacent properties? ☐Yes ☑No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☑Yes ☐No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☑No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:

- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

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h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? ☐Yes ☑No A Traffic Impact Study was prepared by SRF Associates DPC dated August 3, 2020 and 4 copies have been submitted with the Site Plan Application dated February 22, 2020.

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐Weekend ☐ Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): _____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☑Yes ☐No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: _____

To be determined

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):

National Grid

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐Yes ☑No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 7:00 to 7:00
- Saturday: 8:00 to 6:00
- Sunday: As needed
- Holidays: Not Applicable

ii. During Operations:

- Monday - Friday: 8:00 to 11:00
- Saturday: 8:00 to 11:00
- Sunday: 8:00 to 10:00
- Holidays: 8:00 to 10:00

The hours of operation during "During Operations" as listed above apply to the first floor commercial space in the two mixed-use buildings. The hours are estimates since the tenants that will lease the first floor commercial space including both office and retail tenants have not yet been identified.

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m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

Construction activities will include the use of construction equipment during daytime hours that will exceed ambient background noise levels. The construction related noise impacts are a temporary unavoidable impact.

ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☑ No

Describe:

n. Will the proposed action **have outdoor lighting?** ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

Lighting will be installed in compliance with the lighting standards contained in the Town of Amherst Zoning Code. There will not be any lighting spillover onto contiguous properties.

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☑ No

Describe:

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures:

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally, describe the proposed storage facilities:

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☑ Yes ☐ No

If Yes:

i. Describe proposed treatment(s):

Potential use of lawn fertilizer and pesticides on maintained portions of property in accordance with applicable standards for application and use of lawn fertilizer and pesticides.

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☑ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☑ Yes ☐ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: 2 tons per week (unit of time)
- Operation : 2 tons per week (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: wood and metal waste may be recycled by the contract at their discretion
- Operation: Town of Amherst recycling program will be followed

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: approved NYSDEC landfill via contractor or private disposal company
- Operation: approved NYSDEC landfill via private disposal company

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s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☑ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)
☑ Forest ☐ Agriculture ☐ Aquatic ☑ Other (specify): Wetlands

ii. If mix of uses, generally describe:

There are mixture of uses in the vicinity of the Project Site including residential uses to the north in the Bucyrus Heights Subdivision, an elementary school, apartments and office buildings on Sweet Home Road and permanent open space to the east of Site "A".

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	0	8.0	+ 8.0
• Forested	12.17	1.87	-10.3
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	0	0	0
• Agricultural (includes active orchards, field, greenhouse etc.)	0	0	0
• Surface water features (lakes, ponds, streams, rivers, etc.)	0	0	0
• Wetlands (freshwater or tidal)	16.3	10.2	- 6.1
• Non-vegetated (bare rock, earth or fill)	0	0	0
• Other Describe: Greenspace, Landscaping, Pond	0	8.4	+8.4

The categories as listed above include the large wetland area subject to the jurisdiction of both the NYSDEC and USACE consisting of approximately 9.81 acres that was previously approved for development by the Town Board that will consist of Permanent Open Space to be donated to the Town of Amherst.

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c. Is the project site presently used by members of the community for public recreation? ☐Yes ☑No
i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☑Yes ☐No
If Yes,
i. Identify Facilities:
1. Heritage Heights Elementary School (Sweet Home School District- 2545 Sweet Home Road); 2. Creative Play Learning Center (Private Day Care Facility- 647 Dodge Road); and 3. Four Seasons Child Care & Preschool (Private Day Care Facility- 1639 North French Road).

e. Does the project site contain an existing dam? ☐Yes ☑No
If Yes:
i. Dimensions of the dam and impoundment:
- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____
iii. Provide date and summarize results of last inspection:
_____
_____

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐Yes ☑No
If Yes:
i. Has the facility been formally closed? ☐Yes ☐No
- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:
_____
_____

iii. Describe any development constraints due to the prior solid waste activities: _____
_____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐Yes ☑No
If Yes:
i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:
_____
_____

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐Yes ☑No
If Yes:
i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐Yes ☐No
☐ Yes – Spills Incidents database — Provide DEC ID number(s): _____
☐ Yes – Environmental Site Remediation database — Provide DEC ID number(s): _____
☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures: _____
_____
_____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐Yes ☑No
If yes, provide DEC ID number(s): _____

iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):
_____
_____

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v. Is the project site subject to an institutional control limiting property uses? ☐Yes ☑No

- If yes, DEC site ID number:
- Describe the type of institutional control (e.g., deed restriction or easement):
- Describe any use limitations:
- Describe any engineering controls:
- Will the project affect the institutional or engineering controls in place? ☐Yes ☐No
- Explain:

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? >5 feet

b. Are there bedrock outcroppings on the project site? ☐Yes ☑No
If Yes, what proportion of the site is comprised of bedrock outcroppings? ____%

c. Predominant soil type(s) present on project site:

Getzville silt loam	94 %
Swormville clay loam	6 %
	%

d. What is the average depth to the water table on the project site? Average: >5 feet

e. Drainage status of project site soils:
☐ Well Drained: ____% of site
☐ Moderately Well Drained: ____% of site
☑ Poorly Drained 100 % of site

f. Approximate proportion of proposed action site with slopes:
☑ 0-10%: 100 % of site
☐ 10-15%: ____% of site
☐ 15% or greater: ____% of site

g. Are there any unique geologic features on the project site? ☐Yes ☑No
If Yes, describe:

h. Surface water features.
i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☑Yes ☐No
ii. Do any wetlands or other waterbodies adjoin the project site? ☑Yes ☐No
If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.
iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑Yes ☐No
iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name ____ Classification ____
- Lakes or Ponds: Name ____ Classification ____
- Wetlands: Name Federal Waters, NYS Wetland Approximate Size NYS Wetland (in a...
- Wetland No. (if regulated by DEC) TE-33

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐Yes ☑No
If yes, name of impaired water body/bodies and basis for listing as impaired:

i. Is the project site in a designated Floodway? ☐Yes ☑No

j. Is the project site in the 100-year Floodplain? ☐Yes ☑No

k. Is the project site in the 500-year Floodplain? ☑Yes ☐No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐Yes ☑No
If Yes:
i. Name of aquifer:

The proposed mixed-use project will result in 4.89 acres of impacts to federal wetlands (reduction of 7.87 acres), 1.20 acres of impacts to NYSDEC Freshwater Wetlands (reduction of 8.26 acres) and 3.65 acres of impacts to regulated 100 ft. Adjacent Areas of NYSDEC Freshwater Wetlands (reduction of .55 acres). A copy of the Amended Wetland Permit issued by the New York State Department of Environmental Conservation authorizing the impacts to the NYSDEC Freshwater Wetlands and the regulated 100 ft. Adjacent Area to accommodate the proposed mixed-use project on Site A of the Muir Woods property is provided at Attachment "A" of this Part 1 of the Full Environmental Assessment Form.

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m. Identify the predominant wildlife species that occupy or use the project site:
Typical suburban species

n. Does the project site contain a designated significant natural community? ☐Yes ☑No
If Yes:
i. Describe the habitat/community (composition, function, and basis for designation):
ii. Source(s) of description or evaluation:
iii. Extent of community/habitat:
- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐Yes ☑No

If Yes:
i. Species and listing (endangered or threatened):

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☑Yes ☐No

If Yes:
i. Species and listing:
Spiny Softshell - The Project Sponsor does not believe that Spiny Softshell is present on Site A of the Muir Woods property.

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐Yes ☑No
If yes, give a brief description of how the proposed action may affect that use:

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐Yes ☑No
If Yes, provide county plus district name/number:

b. Are agricultural lands consisting of highly productive soils present? ☐Yes ☑No
i. If Yes: acreage(s) on project site?
ii. Source(s) of soil rating(s):

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐Yes ☑No
If Yes:
i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature
ii. Provide brief description of landmark, including values behind designation and approximate size/extent:

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐Yes ☑No
If Yes:
i. CEA name:
ii. Basis for designation:
iii. Designating agency and date:

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e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? ☑ Yes ☐ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: Eligible property:Heritage Heights Elementary School

iii. Brief description of attributes on which listing is based:

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☑ Yes ☐ No

[Ccopy of the No Impact Determination letter issued by the NYSOPRP dated October 10, 2001 is provided at Attachment "B".]

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s):

ii. Basis for identification:

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☐ Yes ☑ No

If Yes:

i. Identify resource:

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.):

iii. Distance between project and resource: _____ miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation:

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

Documentation evaluating potential adverse environmental impacts pursuant to the State Environmental Quality Review Act ("SEQRA") including the fully engineered plans prepared by Carmina Wood Morris DPC have been submitted with the Site Plan Application.

G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name: Sawyers Landing LLC Date: February 22, 2021

Signature _____ Title Attorney for Project Sponsor

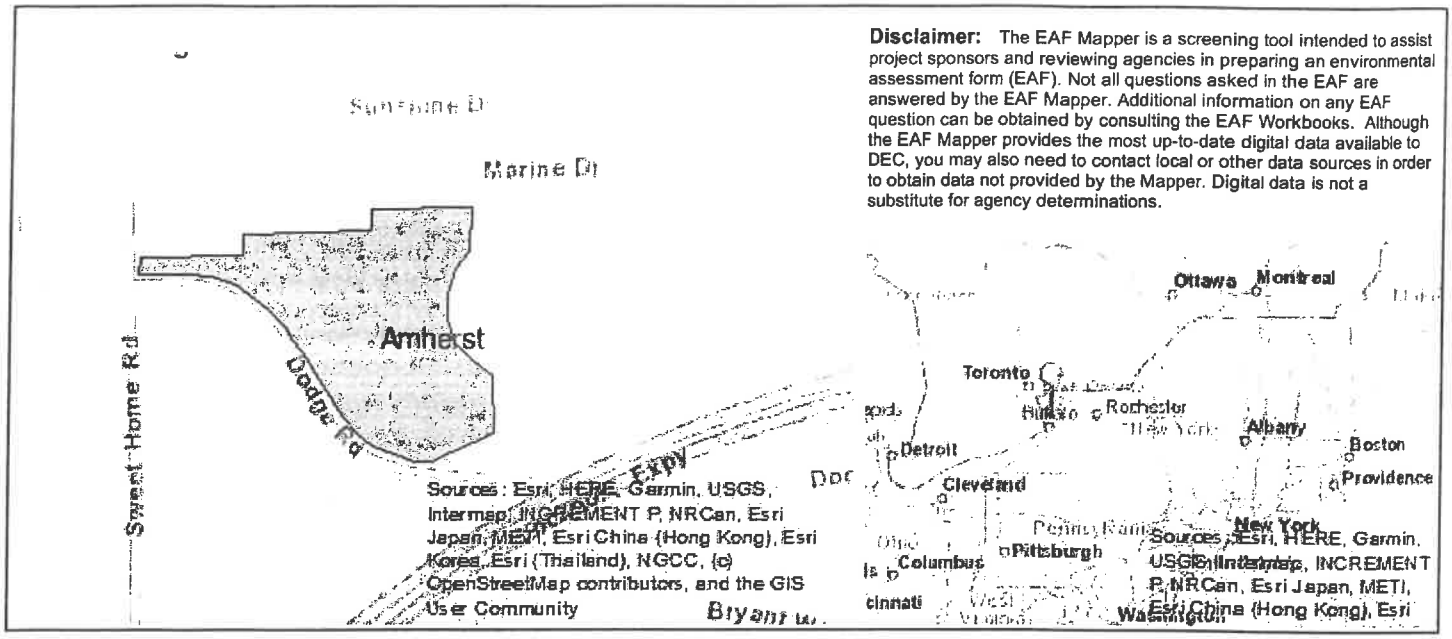
Sean W. Hopkins, Esq.

PRINT FORM

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

EAF Mapper Summary Report

Thursday, June 18, 2020 8:50 AM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.

B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Yes - Digital mapping data are not available for all Special Planning Districts. Refer to EAF Workbook.
C.2.b. [Special Planning District - Name]	NYS Heritage Areas:West Erie Canal Corridor
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	Yes
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.iv [Surface Water Features - Wetlands Name]	Federal Waters, NYS Wetland
E.2.h.iv [Surface Water Features - Wetlands Size]	NYS Wetland (in acres):34.6
E.2.h.iv [Surface Water Features - DEC Wetlands Number]	TE-33
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	No

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

E.2.k. [500 Year Floodplain]	Yes
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	No
E.2.o. [Endangered or Threatened Species]	No
E.2.p. [Rare Plants or Animals]	Yes
E.2.p. [Rare Plants or Animals - Name]	Spiny Softshell
E.3.a. [Agricultural District]	No
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Yes - Digital mapping data for archaeological site boundaries are not available. Refer to EAF Workbook.
E.3.e.ii [National or State Register of Historic Places or State Eligible Sites - Name]	Eligible property:Heritage Heights Elementary School
E.3.f. [Archeological Sites]	Yes
E.3.i. [Designated River Corridor]	No

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

TOWN OF AMHERST ATTACHMENT
State Environmental Quality Review
ENVIRONMENTAL ASSESSMENT FORM
Proposed Mixed-Use Project - Portion of 1081 North French Road

1. For each applicable category of proposed new structures, including additions to existing structures, provide the following information for all soil types on the project site (*according to Soil Survey of Erie County, NY; Table 11, Building Site Development, pp 294-305):*

Soil Name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Getzville Silt Loam	Severe	Severe	Severe	Severe	Moderate
Swormville Clay Loam	Severe	Severe	Severe	Severe	Severe

2. If the Soil survey indicates either "severe" or "moderate" suitability for the proposed types of construction, a geotechnical and hydrological analysis based on one test per 3.5 acres of project area must be provided (per Town Board resolution, 3/17/03, amended 6/16/03).

   _____ Geotechnical report attached _____ Not applicable

   [Note: 3 copies of the Geotechnical Report that has been ordered for the relevant portion of 1081 North French Road to be developed as a mixed-use project will be submitted to the Planning Department. A comprehensive Geotechnical Report for the entire overall Muir Woods Property was previously submitted.

3. Is your property located: On Youngs Road between Dodge and Klein Roads? ☐ Yes ■ No
   On Wehrle Dr. between Spindrift Dr. and Oakwood Rd? ☐ Yes ■ No

   If so, the property may be within an area of the Town that is affected by a moratorium on connections to the sanitary sewer system.

4. Are there alternative locations on the site for this project? ☐ Yes ■ No

5. Location and size of real property owned by petitioner within one (1) mile of subject proposal:
   X Not Applicable

6. Are you aware of current or future plans or intentions by others in the Town of Amherst to develop property within 1000± ft. of the present project request: ■ Yes No

   Describe A student housing community is proposed on property to the east of the Project Site commonly referred to as Site "B" of Muir Woods.

   (Potential environmental impacts from adjacent or nearby projects undergoing the approval process will receive a coordinated environmental review to determine cumulative effects on common receivers (e.g. traffic and drainage corridors) and other relevant environmental concerns.)

7. Maximum number of vehicular trips to be generated per peak hour upon completion of project 106
   Source: Traffic Impact Study prepared by SRF Associates DPC dated August 3, 2020. 3 copies of the Traffic Impact Study have been submitted with the Site Plan Application.

8. Will blasting occur during construction? ☐ Yes ■ No

9. Does the project propose to connect and be tributary to the public sanitary sewer system? ■ Yes ☐ No

10. Proposed net additional gallons per day (gpd) of sanitary sewer discharge upon completion of project:
    50,820 average flow 203,280 peak flow.

    (Average flows of 2,500 gpd or greater will require an Engineer's Report that includes a detailed downstream sewer capacity analysis and the identification of and commitment to required I/I offset work during peak wastewater flow conditions.)

11. Based on the Town's *2011 Reconnaissance Level Survey of Historic Resources,* is your property 'blue-rated' for historic significance? Yes ■ No
    [There are not any buildings located on the Project Site.]

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Attachment "A" of Part 1 of Full Environmental Assessment Form - Amended Wetland Permit Issued by the New York State Separtment of Environmental Conservation dated December 24, 2020

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

PERMIT

Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
Ciminelli Muir Woods LLC
50 Fountain Plaza, Suite 500
Buffalo, NY 14202
(716) 631-8000

Facility:
MUIR WOODS DEVELOPMENT
1121 N French Rd
Amherst, NY 14228

Facility Location: in AMHERST in ERIE COUNTY
Facility Principal Reference Point: NYTM-E: 191.586 NYTM-N: 4770.823
Latitude: 43°01'38.9" Longitude: 78°47'07.2"

Authorized Activity: Construction of a mixed-use project named "Muir Woods" consisting of approximately two 4-story mixed-use buildings consisting of commercial space and residential units, 90 two-family townhouses and 2 six-unit apartment buildings, approximately 133 detached single-family residential units and 515 cottage-style and apartment-style housing units with various amenities; and gas, electric, sanitary, potable water and storm water (the necessary infrastructure), while maintaining open space on approximately 224 acres in the Audubon New Community District. The Muir Woods project property is a 326 acre site bounded by the Lockport Expressway (Interstate Route 990) and Dodge Road on the south, Sweet Home Road on the west, North French Road on the north and Campbell Boulevard on the east. The project will result in permanent impacts to approximately 2.39 acres of State regulated wetlands (TE-22, TE-23 and TE-34), and 11.38 acres of State regulated 100 foot wide wetland adjacent area. As mitigation for those impacts the project includes creation of 19.58 acres of in-kind and out-of-kind wetlands on-site, in six areas, to replace the functions and benefits of the impacted wetlands. There will be 4.3 acres of stream channel enhancement on-site as mitigation for State wetland regulated adjacent area impacts. The project also includes construction at 520 Campbell Road property as detailed on plan sheets referenced in Natural Resource Condition No. 4.

Permit Authorizations

Freshwater Wetlands - Under Article 24
Permit ID 9-1422-00398/00001

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

Water Quality Certification - Under Section 401 - Clean Water Act
Permit ID 9-1422-00398/00002

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: DAVID S DENK, Regional Permit Administrator
Address: NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY 14203 -2915

Authorized Signature: David S. Denk Digitally signed by David S. Denk DN: cn=David S. Denk, o=NYS DEC, ou=Div. of Env. Permits, email=david.denk@dec.ny.gov, c=US Date: 2020.12.24 10:29:47 -05'00' Date ___/___/___

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: FRESHWATER WETLANDS; WATER QUALITY CERTIFICATION

1. **No Work Prior to Approval of Legal Instrument for Preservation of Undeveloped Areas of Site** No work authorized by this permit may begin until the Department approves a legal instrument, such as a deed restriction and/or conservation easement, that will preserve in perpetuity the natural resource values of the undeveloped areas of the site. This condition does not apply to the 520 Campbell Boulevard property.

2. **Declaration of Restrictions 520 Campbell Boulevard Property** A Declaration of Restrictions permanently prohibiting any future development of the 6.88 acres of jurisdictional federal wetlands and portion of the upland area on 520 Campbell Boulevard as depicted on the Wetland Restriction Exhibit Map must be incorporated into the deeds for lots 1 – 12 and 21. By 60 days after Water Quality Certification issuance, the permittee shall file with the real property records of the Erie County Clerk`s Office, the deed for each applicable lot containing this notice. The permittee shall within two weeks following the filing of the deed(s) submit proof of filing from the County Clerk's Office

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showing the Liber and page number at which the deed notice was filed and the date of filing for one of the affected lots to: Regional Permit Administrator, NYSDEC Region 9 Headquarters, 270 Michigan Ave, Buffalo, NY 14203-2915.

3. **Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by Ciminelli Development Company, Inc. and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009.

4. **Conformance with Plans Site B** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include the "Concept Plan - Muir Woods" dated 08 November 2019 amended to show Conifer Planting Area (attached).

5. **Conformance with Plans - 520 Campbell Boulevard** All activities authorized by this permit for the 520 Campbell Boulevard property must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans include those sheets entitled: The Preserve at Muir Woods (DEC Planting Exhibit, DEC Earthwork Exhibit and the Wetland Restriction Exhibit) by Greenman-Pedersen, Inc. dated May 2018.

6. **Conformance with Plans Site A** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include Drawing C-100 dated July 20, 2020 and received by this Department on August 10, 2020.

7. **Future Phases** Prior to development of Muir Woods Sites A and B, the permittee must obtain specific approval of engineered plans for Sites A and B to ensure compliance with the terms and condition of this permit, the approved wetland mitigation plans and the most current Findings Statement for the overall Muir Woods Project issued pursuant to the State Environmental Quality Review Act. The permittee shall submit the engineered plans for the development of Sites A and B for review by the Department simultaneous with submission of such engineered plans to the Town of Amherst. If required by the Department, the permittee shall make any necessary modifications to the engineered plans to ensure compliance with the terms and conditions of this permit, the approved wetland mitigation plans and the most current Findings Statement.

8. **Permit Conditions Prevail over Plans** If any condition of this permit conflicts with the approved plans noted in Condition Number 1, the permit conditions shall prevail over the plans unless specific written approval for such a change is obtained from this Department prior to implementation.

9. **Pre-construction Meeting to Review Permit** Prior to commencing work at the project site, the permittee shall schedule a pre-construction meeting with Department staff (Contact: Mr. David Denk, Regional Permit Administrator, NYSDEC, Division of Environmental Permits, Telephone : 716/851- 7165 and/or Mr. Charles P. Rosenburg, NYSDEC, Division of Fish and Wildlife, Telephone: 716/851-7010) and selected contractors to review the conditions contained in this permit.

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10. Mark Areas of No Disturbance on the Muir Woods Site Grade stakes and/or other appropriate measures (substantial contractor fencing, perhaps in combination with necessary silt fencing) shall be used to ensure that no equipment enters identified areas of no disturbance within the immediate area under construction (i.e.- Site A, Site B, Site C or Site D) on the Muir Woods project site. Boundaries of the on-site mitigation areas shall likewise be marked to define the limits of that work.

11. Install Controls Along Limits of Disturbance Before any soil is disturbed within a specific Site Development Area, as detailed in Condition #6 above, the permittee shall install securely anchored silt fencing and/or continuous staked hay bales along the limits-of-disturbance as shown on the plans or drawings referenced in this permit. Such erosion and sedimentation controls shall be maintained until unpaved portions of the subject site are stabilized by a self-sustaining cover of vegetation that is adequate to prevent erosion and sedimentation on and off the site. Sediment which has accumulated at the controls shall be removed periodically as necessary during the construction period. Before the controls are removed, the permittee shall remove all sediment that has accumulated at the controls.

12. Work Within Ares Depicted on Plans All construction activity, including operation of machinery, excavation, filling, grading, clearing of vegetation, disposal of waste, street paving and stockpiling of material must take place within the Site Development Areas or mitigation areas as depicted on the project plans referenced by this permit. Construction activity is prohibited within areas to be left in a natural condition or locations on the property not within the Site Development Areas or mitigation areas designated by this permit. Disturbance to the wetlands and their regulated 100 foot wide adjacent areas shall be strictly limited to the work areas identified in the plans, and specifically the MAP SHOWING WETLAND IMPACT AREAS - NEW YORK STATE WETLANDS, and APPENDIX M - PROPOSED ON-SITE MITIGATION PLAN.

13. Invasive Species (Non-Native Vegetation) To prevent the unintentional introduction or spread of invasive species, the permittee must ensure that all construction equipment is cleaned of mud, seeds, vegetation and other debris before entering any approved Site Development Areas within State regulated wetlands or their 100 foot wide adjacent areas, as well as all on-site wetland mitigation areas.

14. Prevention of Invasive Species The permittee shall prevent the establishment of invasive species (purple loosestrife, Phragmites, reed canary-grass, Japanese knotweed, glossy buckthorn and common buckthorn) across all disturbed areas within the wetland mitigation area for five growing seasons. If any of these invasive species become established, monitoring and treatment may be extended for an additional 5 years at the Department's discretion.

15. Wetland Mitigation is Mandatory Completion of all freshwater wetland mitigation is mandatory regardless of whether or not construction proceeds to completion. The required mitigation must be completed by the expiration date of this permit. Mitigation will be subject to remediation, if necessary, pursuant to Condition #16 below. All mitigation areas shall be monitored for a period of ten (10) years or until the mitigation is deemed successful by this Department. Monitoring reports shall be prepared for the first four (4) years after construction of the mitigation areas and every other year (years 6, 8 and 10) thereafter. This Department may, at its discretion, modify the 10-year monitoring period and/or monitoring report requirement at any time. Monitoring reports shall be submitted to Mr. Charles P. Rosenburg, Habitat Manager, NYSDEC, Bureau of Ecosystem Health, 270 Michigan Avenue, Buffalo, NY 14203-2915 Telephone: 716/851-7024.

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16. **On-Site Mitigation to be in Accordance with Mitigation Plan** The on-site mitigation shall be in accordance with Appendix M - Proposed On-Site Wetland Mitigation for Muir Woods prepared by Earth Dimensions, Inc. revised May 25, 2009 and with the modifications shown in Exhibit 22 of the July 20, 2020 application binder.

17. **Planting Row of Native Conifers** The permittee shall plant a row of native conifer trees in the location shown on the attached plan. The tree plantings must be a minimum of 6 feet tall, spaced 15 feet apart, and must be planted no later than October 15th following the completion of construction of the adjacent apartment units.

18. **Survival Rate for Mitigation Plantings** The permittee shall prepare a care, maintenance, inspection, and replacement schedule for the tree and shrub plantings described in the mitigation plan to ensure an 85% survival rate for five growing seasons. This condition includes all on-site landscape "buffer" plantings.

19. **Herbicides, Pesticides in Wetland or Adjacent Area** The use of herbicides and other pesticides in State regulated wetlands or their 100 foot wide adjacent areas is a regulated activity and may only be conducted pursuant to a valid Article 33 Pesticides Permit.

20. **Requirement for SPDES General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities** Since development of the Muir Woods site in the Town of Amherst will involve land disturbance of one (1) or more acres, the permittee is required to obtain coverage under State Pollutant Discharge Elimination System (SPDES) General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities. A Notice of Intent (NOI) is required to be sent to NYSDEC, Division of Water, 625 Broadway, 4th Floor, Albany, New York 12233-3505, Telephone: 518/402-8111 and approved before construction commences. Alternatively, an eNOI may be filed electronically as described on the Department's website. The General Permit GP-0-15-002 and NOI form are available on the Department's website at www.dec.state.ny.us.

21. **Visibly Turbid Discharges Prohibited** Visibly turbid discharges from project dewatering operations, excavation and grading activities are strictly prohibited to any "water body" (pond, wetland, stream or water course). Any such discharges shall be (1) retained in an appropriately maintained upland settling basin, filtered through crushed stone, sand, filter fabric fences, hay bales etc., or (2) directed to a grassy area sufficiently distant from any water body to preclude such entry.

22. **Stockpiling of Soil** Stockpiling of excavated soil is prohibited at locations within any portion of the TE-22, TE-23 and TE-34 Wetlands or their regulated 100 foot wide adjacent areas, or within any mapped 100-year floodplain beyond the Site Development Areas or mitigation areas identified in the plans.

23. **Stabilize Disturbed Areas** All areas of soil disturbance resulting from this project shall be seeded with an appropriate perennial grass seed and mulched with straw, or hydro-seeded. Mulch shall be maintained until suitable vegetative cover is established.

24. **Temporary Mulch, Final Seeding** If seeding is impracticable due to the time of year, a temporary mulch shall be applied and final seeding shall be performed at the earliest opportunity when weather conditions favor germination and growth.

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25. **Disposal of Material** Any non-merchantable tree and brush debris, demolition debris, excess construction materials, and/or excess excavated materials shall be immediately and completely disposed of on an approved upland site more than 100 feet from any regulated freshwater wetland. These materials shall be suitably stabilized so as not to re-enter any water body, wetland, or wetland adjacent area; and must be disposed of in accordance with all local, state, and federal statutes, regulations, or ordinances.

26. **Placement of Interpretive Signs Required** Permanent interpretive signs shall be placed at various wetland boundary locations throughout the Muir Woods project site . The permittee shall submit a proposal for the signs to the Department for approval. The interpretive signs shall be a minimum of 12 inches by 12 inches and shall be placed on permanent posts.

27. **Annual Project Inspection / Meeting** The permittee shall schedule an annual inspection/meeting to update Department staff on project progress and compliance with conditions of this permit for the on-site wetland mitigation area.

28. **Wetland Monuments** Monuments shall be placed every 200 feet along the outer edge of the wetland preservation areas. The monuments shall be 30" long, 5/8" rebar and cap embedded flush and in the center of the top exposed surface of concrete in a minimum 4 inch diameter, 4.5 foot long section of PVC Schedule 40 drain pipe filled with concrete, extending vertically1.5 to 2 feet above existing grade at each location. The caps shall say "Conservation Area Marker, Do Not Disturb". These monuments are to be permanently maintained.

29. **Wetland Boundaries** The boundaries of the TE-22, TE-23 and TE-34 Wetlands shall be fixed for the period of this permit (expires November 30, 2024). At that time, new boundary delineations for those wetlands will be required by this Department (to be performed or confirmed by a Department Biologist). Since project activities will be subject to the updated wetland boundary delineations and pertinent regulations at that time, any future permit modification (if necessary) would be reviewed based on the updated delineations and pertinent regulations. As such, modifications to the current project plan may be necessary depending upon the updated wetland delineations and permit regulations in effect at that time.

30. **State Not Liable for Damage** The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

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31. **State May Order Removal or Alteration of Work** If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

32. **State May Require Site Restoration** If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may lawfully require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.

33. **Precautions Against Contamination of Waters** All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. **Water Quality Certification** The authorized project, as conditioned pursuant to the Certificate, complies with Section 301, 302, 303, 306, and 307 of the Federal Water Pollution Control Act, as amended and as implemented by the limitations, standards, and criteria of state statutory and regulatory requirements set forth in 6 NYCRR Section 608.9(a). The authorized project, as conditioned, will also comply with applicable New York State water quality standards, including but not limited to effluent limitations, best usages and thermal discharge criteria, as applicable, as set forth in 6 NYCRR Parts 701, 702, 703, and 704.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. **Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

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The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. Relationship of this Permit to Other Department Orders and Determinations Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. Applications For Permit Renewals, Modifications or Transfers The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY14203 -2915

4. Submission of Renewal Application The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Freshwater Wetlands, Water Quality Certification.

5. Permit Modifications, Suspensions and Revocations by the Department The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

a. materially false or inaccurate statements in the permit application or supporting papers;

b. failure by the permittee to comply with any terms or conditions of the permit;

c. exceeding the scope of the project as described in the permit application;

d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;

e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. Permit Transfer Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

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NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification
The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit
The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits
The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights
This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

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Attachment "B" of Part 1 of Full Environmental Assessment Form - No Impact Determination Letter Issued by Ruth Pierpont, Director, New York State Office of Parks, Recreation and Historic Preservation, dated October 10, 2001

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

NEW YORK STATE
Bernadette Castro
Commissioner

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189

518-237-8643

October 10, 2001

Carolyn A. Pierce
CCRG
105 Robie Avenue
Buffalo, New York 14214

Dear Ms. Pierce:

Re: SEQRA
Muir Woods Mixed-Use Development
Amherst/Erie County
01PR0345

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Parks, Recreation and Historic Preservation Law, Section 14.09.

Based upon this review, it is the OPRHP's opinion that your project will have No Impact upon cultural resources in or eligible for inclusion in the State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Director

RLP:cmp

RECEIVED
OCT 16 2001
CIMINELLI DEVELOPMENT COMPANY, INC.

An Equal Opportunity/Affirmative Action Agency
printed on recycled paper

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Exhibit 2 – Description of the Proposed Mixed-Use Project on a Portion of 1081 North French Road [Site "A" of the Muir Woods Property]

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EXHIBIT 2 OF SITE PLAN APPLICATION

DESCRIPTION OF PROPOSED MIXED-USE PROJECT TO BE LOCATION ON A PORTION OF 1081 NORTH FRENCH ROAD [SITE "A" OF MUIR WOODS PROPERTY]

The proposed project consists of a mixed-use project on a portion of 1081 North French Road [Site "A" of Muir Woods Property] (the "Project Site"). The Project Site is properly zoned for the proposed mixed-use project. The mixed-use project consists of 2 four-story mixed-use buildings [15,000 sq. ft. of 1st floor commercial space and 50 units per building], 47 two-family town homes on individual lots, and 2 single-story apartment buildings [6 units per building] along with all related site improvements depicted on the fully engineered plans prepared by Christopher Wood, P.E. of Carmina Wood Morris DPC submitted with this Site Plan Application. A reduced size copy of the Overall Site Plan [Drawing C-100] is provided at Exhibit "3". The Elevation Plans as prepared by Sutton Architecture PLLC are provided at Exhibit "8". The fully engineered plans for the mixed-use project consist of the following:

- Cover Sheet;
- Topographic Survey;
- Boundary Survey;
- Demolition & Erosion Control Plan [Drawing C-001];
- Demolition & Erosion Control Details Plan [Drawing C-002];
- Overall Site Plan [Drawing C-100];
- Site Plan [Drawing C-101];
- Parcel Map [Drawing C-102];
- Site Details Plan [Drawing C-103];
- Site Details Plan [Drawing C-104];
- Grading Plan [Drawing C-200];
- Storm Drainage Plan [Drawing C-300];
- Storm Drainage Details Plan [Drawing C-301];

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- Storm Drainage Plan [Drawing C-302];
- Storm Drainage Details Plan [Drawing C-303];
- Storm Drainage Details Plan [Drawing C-304];
- Utility Plan [Drawing C-400];
- Sanitary Sewer Details Plan [Drawing C-401];
- Sanitary Sewer Details Plan [Drawing C-402];
- Sanitary Sewer General Notes Plan [Drawing C-403];
- Sanitary Sewer Testing Notes Plan [Drawing C-404];
- Water Details Plan [Drawing C-405];
- Water Details & Notes Plan [Drawing C-407];
- Insulated Enclosure Detail Plan [Drawing C-408]; and
- Landscape Plan as Prepared by Robert Walter, RLA [Drawing L-100]

For purposes of the review process, the proposed mixed-use project has been defined broadly to include all required discretionary approvals and permits as well as all site improvements including the proposed driveway connections to Dodge Road, access aisles, parking spaces, driveways, wetland impacts, lighting, landscaping, on-site storm water management improvements, sanitary sewer and water lines and connections and all other required utility improvements.[1] The project purpose is to develop Site "A" of overall Muir Woods Project Site as an innovative mixed-use project on property that has been designated for development for several decades. The proposed mixed-use project is a Type I action pursuant to SEQRA. The Town Board issued an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") on October 19, 2020 to allow mixed-use development of the Project Site.[2]

[1] A completed Part 1 of the Full Environmental Assessment Form with attached Page 5[a] and Attachments "A" and "B" is provided at Exhibit "1".

[2] A copy Resolution 2020-791 as adopted by the Town of Amherst Town Board on October 19, 2020 for the purpose of Issuing an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") for allowing mixed-use development on the Project Site is provided at Exhibit "9".

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Additionally, on October 19, 2020, the Town Board also adopted a resolution to amend the Town's Comprehensive to designate the Project Site as appropriate for mixed-use.[3]

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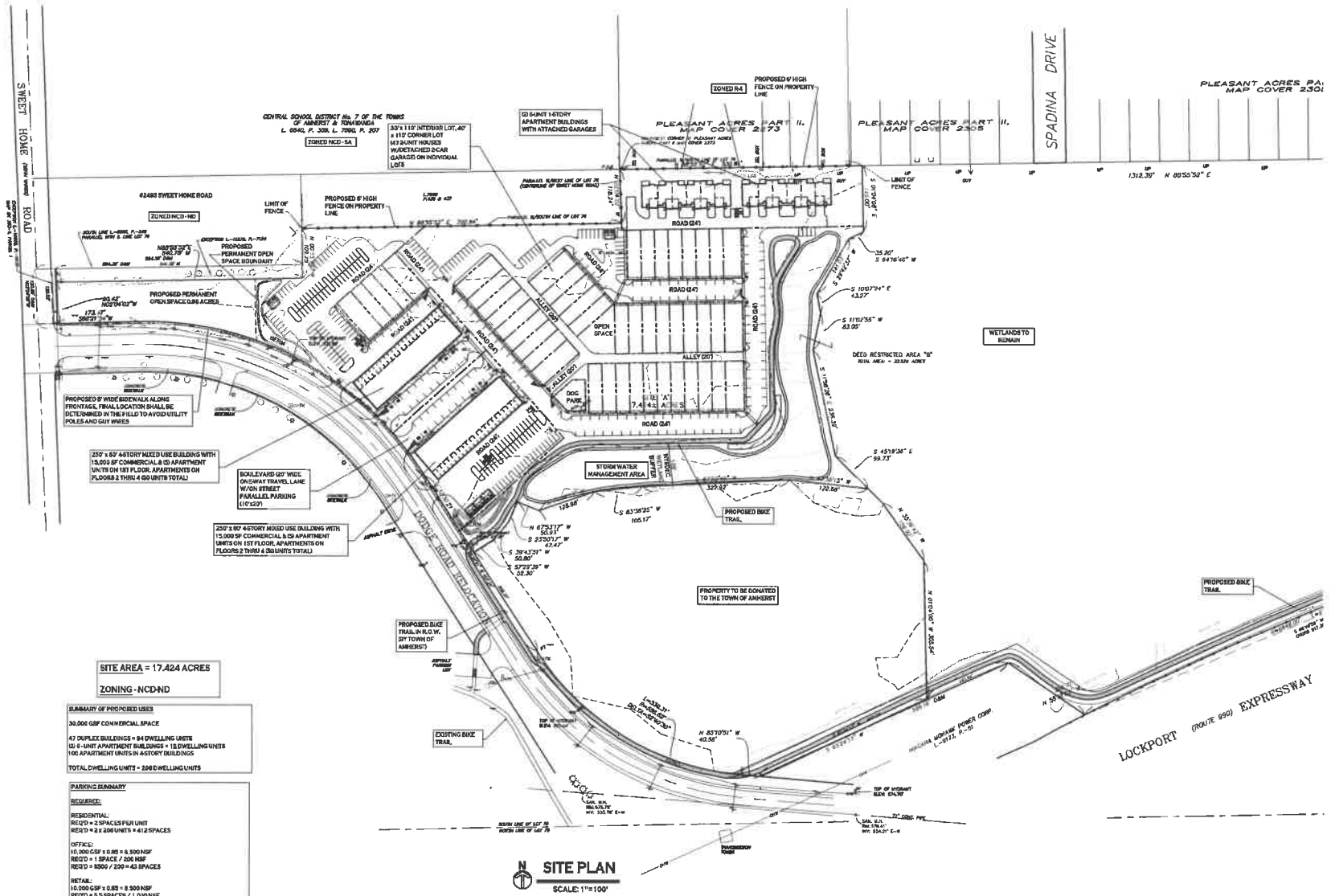
[3] A copy of Resolution 2020-792 as Adopted by the Town of Amherst Town Board on October 19, 2020 for the purpose of approving an Amendment to the Town of Amherst Comprehensive Plan to accommodate mixed-use development on the Project Site is provided at Exhibit "10".

Exhibit 3 – Reduced Size Copy of Overall Site Plan [Drawing C-100] as Prepared by Christopher Wood, P.E., of Carmina Wood Morris DPC

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



N

SITE PLAN

SCALE: 1"=100'

SITE AREA = 17.424 ACRES

ZONING - NCD/ND

SUMMARY OF PROPOSED USES

30,000 GSF COMMERCIAL SPACE

47 DUPLEX BUILDINGS = 94 DWELLING UNITS
(2) 6-UNIT APARTMENT BUILDINGS = 12 DWELLING UNITS
100 APARTMENT UNITS IN 4-STORY BUILDINGS

TOTAL DWELLING UNITS = 206 DWELLING UNITS

PARKING SUMMARY

REQUIRED:

RESIDENTIAL:
REQ'D = 2 SPACES PER UNIT
REQ'D = 2 x 206 UNITS = 412 SPACES

OFFICE:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 1 SPACE / 200 NSF
REQ'D = 8500 / 200 = 43 SPACES

RETAIL:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 5.5 SPACES / 1,000 NSF
REQ'D = 8500 / 1000 x 5.5 = 47 SPACES

RESTAURANT:
REQ'D = 1 SPACE / 3 SEATS + 1 SPACE / 100 SF TAKE OUT AREA
REQ'D = 100 SEAT / 3 + 500 SF / 100 = 38 SPACES

TOTAL REQ'D = 540 SPACES

PROVIDED:

158 PARALLEL PARKING SPACES
213 9'x18' SPACES *
49 GARAGE SPACES IN 4-STORY BLDGS
94 GARAGE SPACES IN DETACHED GARAGES
126 TOTAL SPACES

* INCLUDES SPACES IN FRONT OF APARTMENT GARAGES

PERMANENT OPEN SPACE SUMMARY

TOTAL PROPOSED PERMANENT OPEN SPACE = 0.98 ACRES

WETLAND SUMMARY

FEDERAL IMPACTS PROPOSED = 6.089 AC
FEDERAL IMPACTS PREVIOUSLY PROPOSED = 13.01 AC
DECREASE = 6.921 AC (53% DECREASE)

NYSDEC IMPACTS PROPOSED = 1.20 AC
NYSDEC IMPACTS PREVIOUSLY PROPOSED = 8.48 AC
DECREASE = 8.20 AC (87% DECREASE)

NYSDEC BUFFER IMPACT PROPOSED = 3.65 AC
NYSDEC BUFFER IMPACTS PREVIOUSLY PROPOSED = 4.20 AC
DECREASE = 0.55 AC (13% DECREASE)

NOTE: NYSDEC IMPACTS INCLUDES FEDERAL WETLAND IMPACT OVERLAP AREAS

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 0 100 200FT

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497 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0283

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

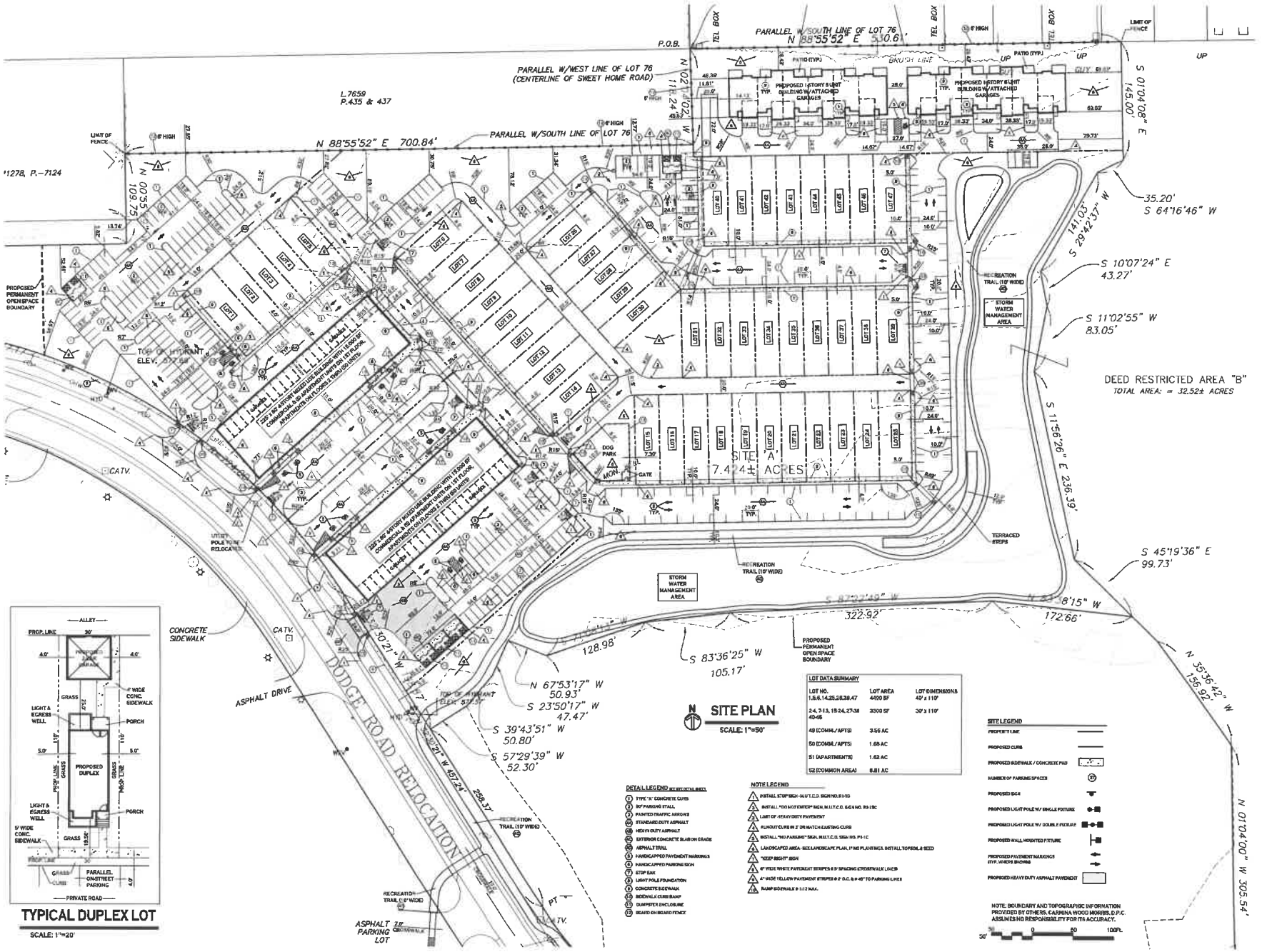
DRAWING NAME:
Overall Site Plan

DRAWING NO.
C-100
Project no.: 21.011

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Exhibit 4 – Reduced Size Copy of Site Plan [Drawing C-101] as Prepared by Christopher Wood, P.E., of Carmina Wood Morris DPC

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

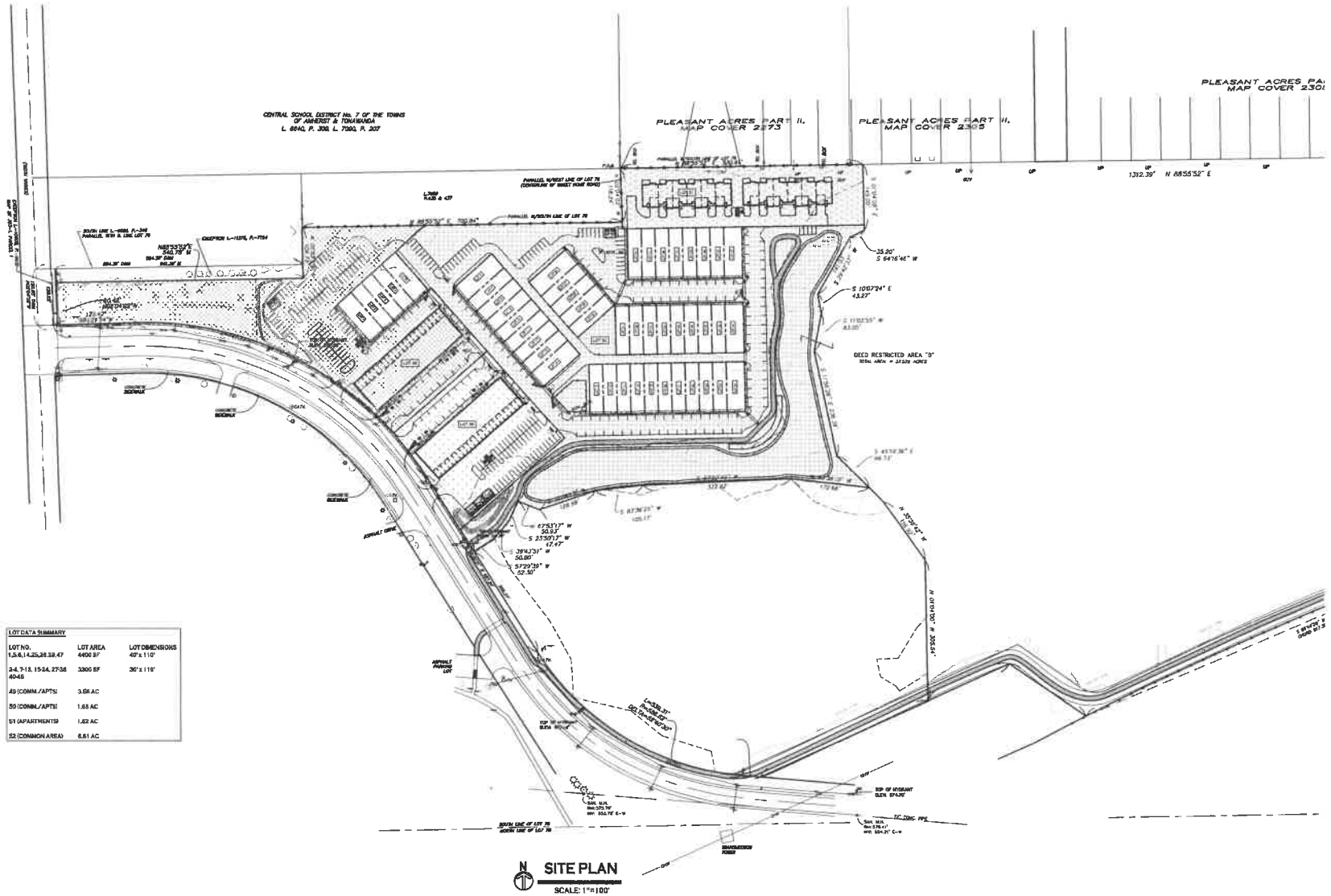
DRAWING NAME:
Site Plan

DRAWING NO.
C-101
Project no.: 21.011

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Exhibit 5 – Reduced Size Copy of Parcel Map [Drawing C-102] as Prepared by Christopher Wood, P.E., of Carmina Wood Morris DPC

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Parcel Map

DRAWING NO.
C-102

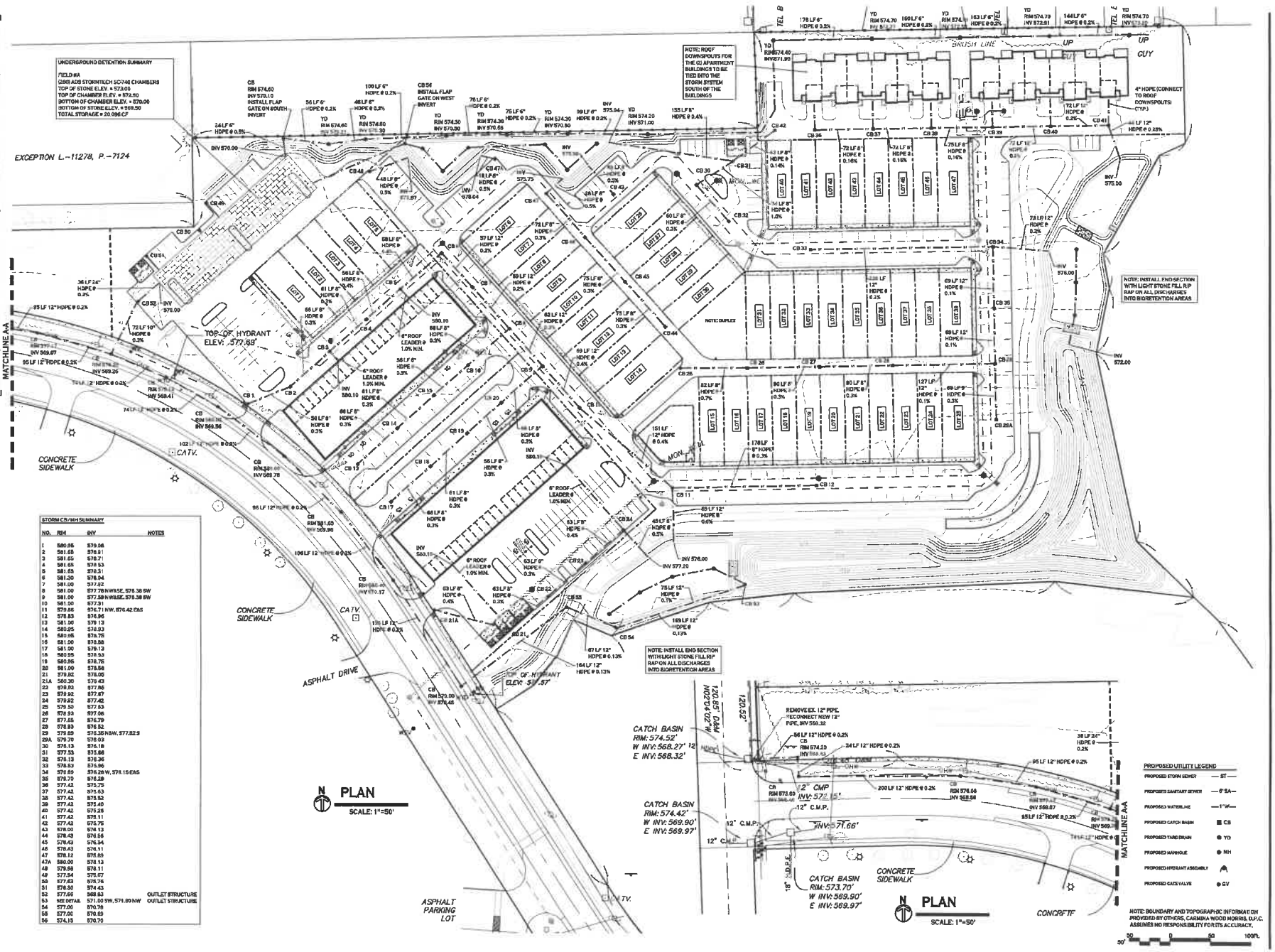
Project no.: 21.011

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200FL

Exhibit 6 – Reduced Size Copy of Storm Drainage Plan [Drawing C-300] as Prepared by Christopher Wood, P.E., of Carmina Wood Morris DPC

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



STORM CB/MH SUMMARY

NO.	RIM	INV	NOTES
1	580.95	579.06	
2	581.65	578.91	
3	581.65	578.71	
4	581.65	578.53	
5	581.65	578.31	
6	581.30	578.04	
7	581.00	577.82	
8	581.00	577.78 NWASE, 576.38 SW	
9	581.00	577.59 NWASE, 576.38 SW	
10	581.00	577.31	
11	579.86	576.71 NW, 576.42 EAS	
12	578.83	576.96	
13	581.00	579.13	
14	580.95	578.93	
15	580.95	578.75	
16	581.00	578.88	
17	581.00	579.13	
18	580.95	578.93	
19	580.95	578.75	
20	581.00	578.88	
21	579.92	578.05	
21A	580.30	578.43	
22	579.92	577.86	
23	579.92	577.87	
24	579.92	577.42	
25	579.50	577.63	
26	578.93	577.06	
27	577.85	576.79	
28	578.93	576.52	
29	579.89	576.35 NSW, 577.82 S	
29A	579.70	576.03	
30	578.13	576.18	
31	577.53	575.86	
32	578.13	576.36	
33	578.83	575.96	
34	578.89	576.28 W, 576.15 EAS	
35	579.70	576.28	
36	577.42	575.75	
37	577.42	575.63	
38	577.42	575.52	
39	577.42	575.40	
40	577.42	575.26	
41	577.42	575.11	
42	577.42	575.75	
43	578.00	576.13	
44	578.43	576.56	
45	578.43	576.34	
46	578.43	576.11	
47	578.12	575.89	
47A	580.00	578.13	
48	579.56	576.11	
49	577.54	575.67	
50	577.63	575.76	
51	576.30	574.43	
52	577.66	569.83	OUTLET STRUCTURE
53	SEE DETAIL	571.00 SW, 571.80 NW	OUTLET STRUCTURE
54	577.00	570.78	
55	577.00	570.69	
56	574.15	570.70	

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F 716.842.0283

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Storm Drainage Plan

DRAWING NO.
C-300

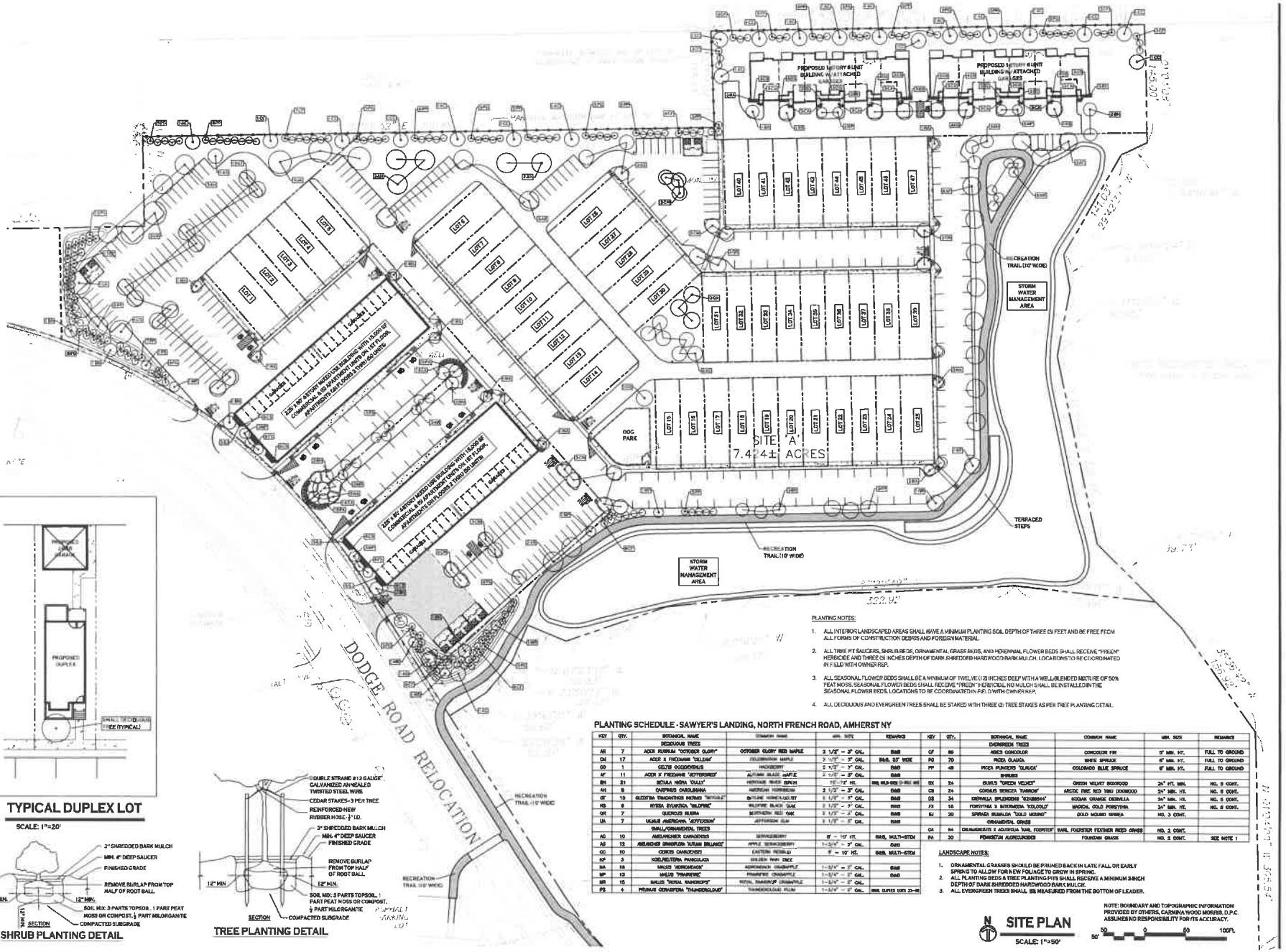
Project no.: 21.011

1.I

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Exhibit 7 – Reduced Size Copy of Landscape Plan [Drawing L-100] as Prepared by Robert Walter, Registered Landscape Architect

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



PLANTING NOTES:

1. ALL INTERIOR LANDSCAPED AREAS SHALL HAVE A MINIMUM PLANTING SOIL DEPTH OF THREE (3) FEET AND BE FREE FROM ALL FORMS OF CONSTRUCTION DEBRIS AND FOREIGN MATERIAL.
2. ALL TREE PIT SAUCERS, SHRUB BEDS, ORNAMENTAL GRASS BEDS, AND HERENNIAL FLOWER BEDS SHALL RECEIVE "PRIEN" HERBICIDE AND THREE (3) INCHES DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
3. ALL SEASONAL FLOWER BEDS SHALL BE A MINIMUM OF TWELVE (12) INCHES DEEP WITH A WELL-BLENDED MIXTURE OF 50% PEAT MOSS, SEASONAL FLOWER BEDS SHALL RECEIVE "PRIEN" HERBICIDE, NO MULCH SHALL BE INSTALLED IN THE SEASONAL FLOWER BEDS. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
4. ALL DECIDUOUS AND EVERGREEN TREES SHALL BE STAKED WITH THREE (3) TREE STAKES AS PER TREE PLANTING DETAIL.

PLANTING SCHEDULE - SAWYER'S LANDING, NORTH FRENCH ROAD, AMHERST NY

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		DECIDUOUS TREES			
AR	7	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	2 1/2" – 3" CAL.	B&B
CM	17	ACER X FREEMANII 'CELZAM'	CELEBRATION MAPLE	2 1/2" – 3" CAL.	B&B, 12' WIDE
CO	1	CELTIS OCCIDENTALIS	HACKBERRY	2 1/2" – 3" CAL.	B&B
AF	11	ACER X FREEMANII 'JEFFERSRED'	AUTUMN BLAZE MAPLE	2 1/2" – 3" CAL.	B&B
BH	21	BETULA NIGRA 'CULLY'	HERITAGE RIVER BIRCH	10'-12' HT.	MIN. MULTI-STEM (3-5)
AH	9	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2 1/2" – 3" CAL.	B&B
GT	10	GLEDITSIA TRIACANTHOS INERMIS 'SKYCOLE'	SKYLINE HONEYLOCUST	2 1/2" – 3" CAL.	B&B
NS	6	NYSSA SYLVATICA 'WILDFIRE'	WILDFIRE BLACK GUM	2 1/2" – 3" CAL.	B&B
QR	7	QUERCUS RUBRA	NORTHERN RED OAK	2 1/2" – 3" CAL.	B&B
UA	7	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2 1/2" – 3" CAL.	B&B
		SMALL ORNAMENTAL TREES			
AC	10	AMELANCHIER CANADENSIS	SERVICEBERRY	8' – 10' HT.	B&B, MULTI-STEM
AG	12	AMELANCHIER GRANDIFLORA 'AUTUMN BRILLIANCE'	APPLE SERVICEBERRY	1-3/4" – 2" CAL.	B&B
CC	10	CERCIS CANADENSIS	EASTERN REDBUD	8' – 10' HT.	B&B, MULTI-STEM
KP	3	KOELREUTERIA PANICULATA	GOLDEN RAIN TREE		
MA	16	MALUS 'ADIRONDACK'	ADIRONDACK CRABAPPLE	1-3/4" – 2" CAL.	B&B
MF	12	MALUS 'PRAIRIFIRE'	PRAIRIFIRE CRABAPPLE	1-3/4" – 2" CAL.	B&B
MR	15	MALUS 'ROYAL RAINDROPS'	ROYAL RAINDROPS CRABAPPLE	1-3/4" – 2" CAL.	
PS	4	PRUNUS SERRASFERA 'THUNDERCLOUD'	THUNDERCLOUD PLUM	1-3/4" – 2" CAL.	B&B, SUPER VARS 25-45
		EVERGREEN TREES			
CF	80	ABIES CONCOLOR	CONCOLOR FIR	5' MIN. HT.	FULL TO GROUND
PG	70	PICEA GLAUCA	WHITE SPRUCE	5' MIN. HT.	FULL TO GROUND
PP	48	PICEA PUNGENS 'GLAUCA'	COLORADO BLUE SPRUCE	5' MIN. HT.	FULL TO GROUND
		SHRUBS			
BX	24	BUXUS 'GREEN VELVET'	GREEN VELVET BOXWOOD	24" MIN. HT.	NO. 5 CONT.
CS	24	CORNUS SERICEA 'FARROW'	ARCTIC FIRE RED TWIG DOGWOOD	24" MIN. HT.	NO. 5 CONT.
DS	34	DEUTZIA SPLENDENS 'KOMSPLEN'	KOSMIK ORANGE DEUTZIA	24" MIN. HT.	NO. 5 CONT.
FX	18	FORSYTHIA X INTERMEDIA 'KOLGOLD'	MAGICAL GOLD FORSYTHIA	24" MIN. HT.	NO. 5 CONT.
SJ	20	SPIRAEA JAPONICA 'GOLD MOUND'	GOLD MOUND SPIREA	NO. 3 CONT.	
		ORNAMENTAL GRASS			
CA	84	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	NO. 2 CONT.	
PA	30	PENNISETUM ALOPECUROIDES	FOUNTAIN GRASS	NO. 2 CONT.	SEE NOTE 1

LANDSCAPE NOTES:

1. ORNAMENTAL GRASSES SHOULD BE PRUNED BACK IN LATE FALL OR EARLY SPRING TO ALLOW FOR NEW FOLIAGE TO GROW IN SPRING.
2. ALL PLANTING BEDS & TREE PLANTING PITS SHALL RECEIVE A MINIMUM 3-INCH DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH.
3. ALL EVERGREEN TREES SHALL BE MEASURED FROM THE BOTTOM OF LEADER.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

N

SITE PLAN

SCALE: 1"=50'

50' 0 50' 100'FT.

TYPICAL DUPLEX LOT

SCALE: 1"=20'

SHRUB PLANTING DETAIL

TREE PLANTING DETAIL

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Carmina Wood Morris DPC
497 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0251

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/9/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Landscape Plan

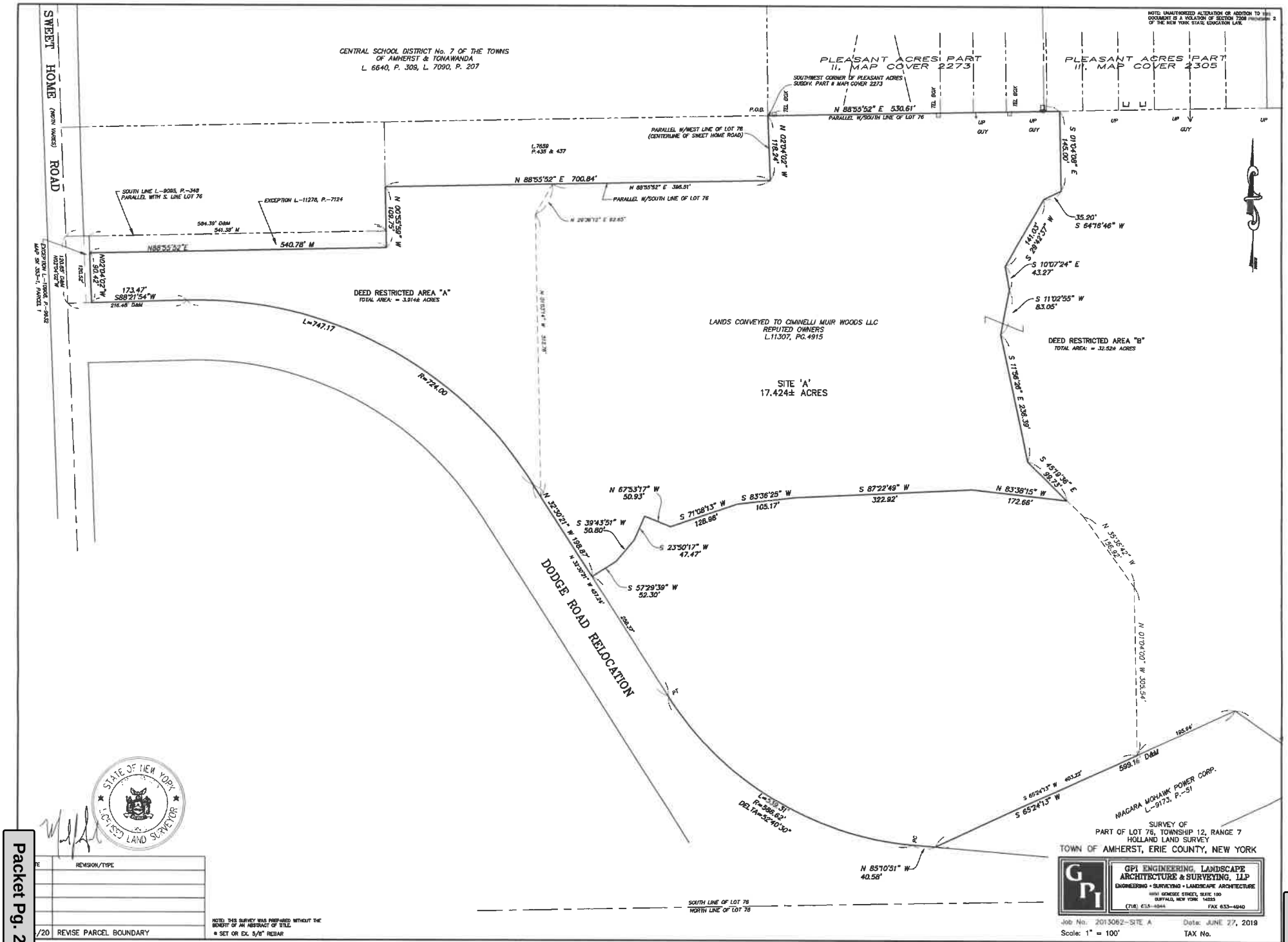
DRAWING NO.
L-100

Project no.: 21.011

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Exhibit 6 – Reduced Size Copy of Storm Drainage Plan [Drawing C-300] as Prepared by Christopher Wood, P.E., of Carmina Wood Morris DPC

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

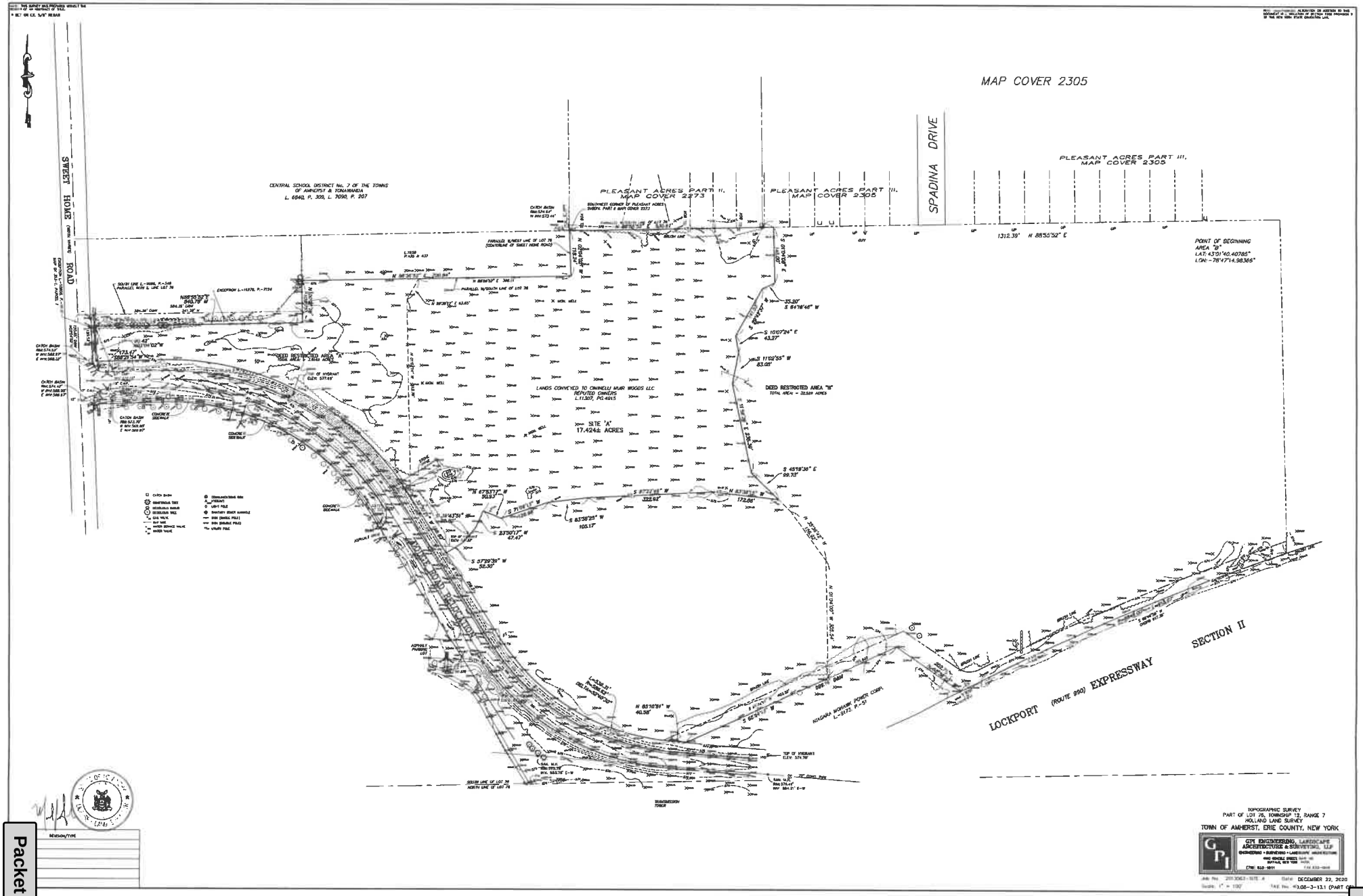
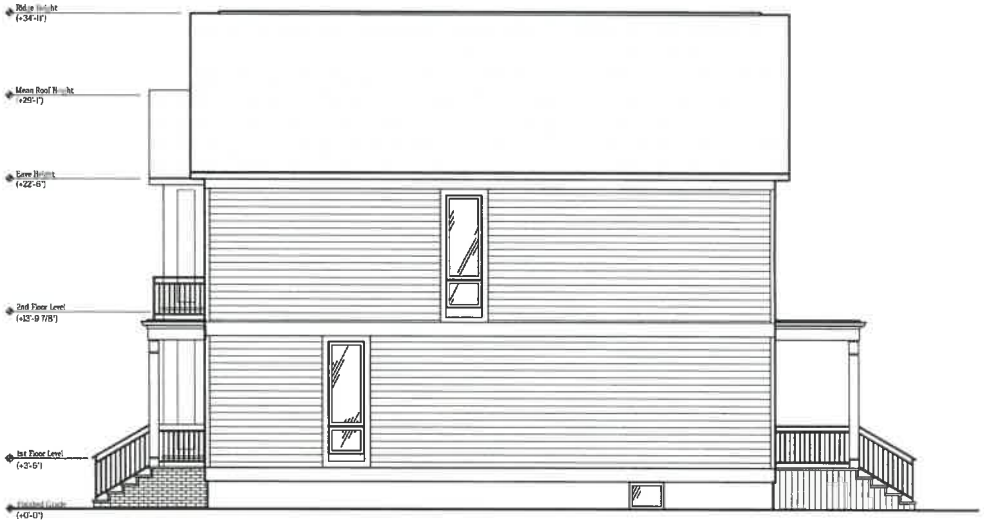

MAP COVER 2305
SPADINA DRIVE
PLEASANT ACRES PART II.
MAP COVER 2273
PLEASANT ACRES PART III.
MAP COVER 2305
PLEASANT ACRES PART III.
MAP COVER 2305
CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA
L. 6840, P. 309, L. 7090, P. 207
SWEET HOME ROAD
POINT OF BEGINNING
AREA 79±
LAT: 43°01'40.40785"
LON: -78°47'14.98386"
SITE 'A'
17.424± ACRES
LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC
REPUTED OWNERS
L.11307, Pg.4915
DEED RESTRICTED AREA "B"
TOTAL AREA = 32.529 ACRES
DEED RESTRICTED AREA "A"
TOTAL AREA = 7.846 ACRES
SECTION II
LOCKPORT (ROUTE 990) EXPRESSWAY
TOPOGRAPHIC SURVEY
PART OF LOT 78, ROWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK
GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
DECEMBER 22, 2020

Exhibit 8 – 11” x 17” Size Copies of Elevation Plans for Two-Family Townhomes on Individual Lots, Six-Unit Single-Story Buildings and Four-Story Mixed Use Buildings as Prepared by Sutton Architecture PLLC

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



Front Elevation



Right Elevation

1/4" = 1'-0"



Rear Elevation

1/4" = 1'-0"



Left Elevation

1/4" = 1'-0"

SEVERYN DEVELOPMENT
BETTER BUILT HOMES
Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing
Two Family

Portion Of 1081 North French Road Amherst, NY
2/23/21

SUTTON architecture
"Design 2 Build"
5409 Main Street
716-932-7156

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



South Elevation

1/8" = 1'-0"



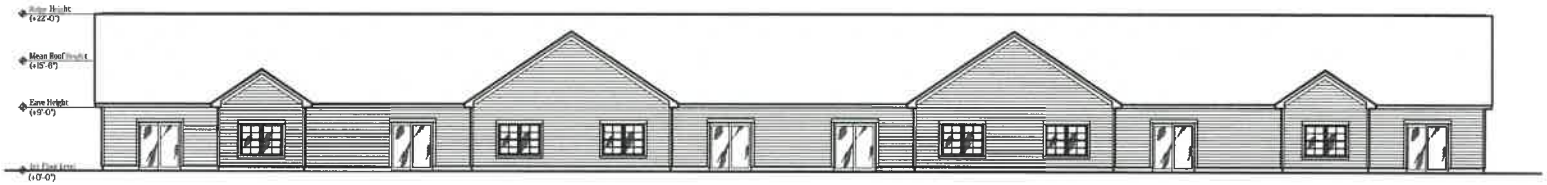
East Elevation

1/8" = 1'-0"



West Elevation

1/8" = 1'-0"



North Elevation

1/8" = 1'-0"

SEVERYN DEVELOPMENT
BETTER BUILT HOMES

Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing
6 Unit Multifamily

Portion Of 1081 North French Road Amherst, NY
2/23/21

SUTTON architecture
"Design 2 Build"
5409 Main Street
716-932-7156

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



North Elevation

1/8" = 1'-0"



South Elevation

1/8" = 1'-0"

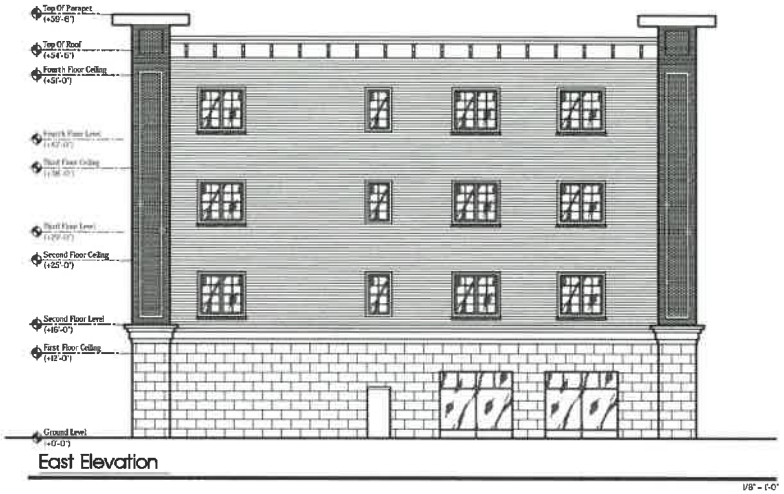
SEVERYN DEVELOPMENT
BETTER BUILT HOMES
Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing
4 Story Mixed Use

Portion Of 1081 North French Road Amherst, NY
2/23/21

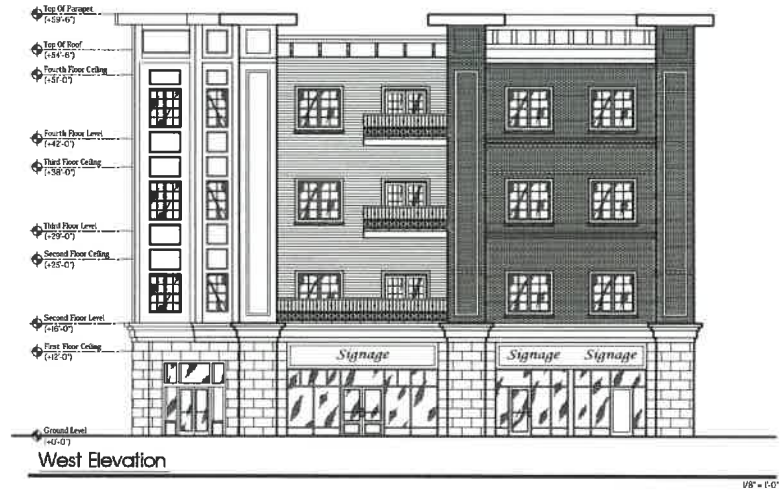
SUTTON architecture
"Design 2 Build"
5409 Main Street
716-832-7158

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



East Elevation

1/8" = 1'-0"



West Elevation

1/8" = 1'-0"

SD SEVERYN DEVELOPMENT
BETTER BUILT HOMES
Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing

4 Story Mixed Use

Portion Of 1081 North French Road Amherst, NY

2/23/21

SUTTON architecture
"Design 2 Build"
5409 Main Street
716-932-7156

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Exhibit 9 – Resolution 2020-791 as Adopted by the Town of Amherst Town Board on October 19, 2020 for the Purpose of Issuing an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") for Mixed-Use Development on 1081 North French Road [Site "A" of Muir Woods Property]

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Amherst Town Board
5583 Main Street
Williamsville, NY 14221
www.amherst.ny.us

Francina J. Spoth
Town Clerk

Meeting: 10/19/20 07:00 PM
Department: Town Clerk
Initiated by: **Kathleen Cooper**
Co-Sponsored by:

DOC ID: 22383 **RESOLUTION 2020-791** **ROLL CALL VOTE (ADOPTED)**

Amendment to the SEQR Findings Statement for "Muir Woods - Site A" (1081 N. French Road)

Amendment to the SEQR Findings Statement for
"Muir Woods - Site A"
[1081 North French Road (NCD); Z-2002-09C]

RESOLVED, that pursuant to 6NYCRR Part 617 (SEQR) and Town Code Section 104, as amended, that the requirements of SEQR have been completed, and be it further

RESOLVED, that pursuant to NYS Town Law Section 272-a, the Town Board concurs with the findings of the Planning Board as stated in their resolution of August 20, 2020 to amend the "Development Program" within the SEQR Findings Statement approved by the Town Board on August 5, 2020 to permit "Site A" located at the western end of the overall Muir Woods site located at 1081 North French Road (NCD) to be developed as a mixed-use residential/commercial project instead of flex office/R&D buildings.

RESOLVED, that Ciminelli Muir Woods, LLC has offered to donate to the Town approximately 43 acres of Permanent Open Space located between Site "A" and Site "B" of the Overall Muir Wood Property as depicted on a plan prepared by Greenman-Pedersen Consulting Engineers Inc. dated October 13, 2020;

RESOLVED, the approximately 43 acres of Permanent Open Space includes a portion of the Muir Woods Project with frontage on Dodge Road and is also contiguous to the southern boundary of a portion of the Bucyrus Heights Subdivision and the approximately 43 acres of Permanent Open Space includes extensive existing vegetation and also includes wetlands subject to the jurisdiction of the United States Army Corps of Engineers ("USACE") and wetlands and regulated 100 ft. adjacent areas subject to the jurisdiction of the New York State Department of Environmental Conservation ("NYSDEC"); and

RESOLVED, the Town Board hereby finds as follows: i.) Acquisition of the approximately 43 acres of Permanent Open Space on the Muir Woods Project Site is consistent with the Conceptual Land Use Plan for the Town contained at Figure 6 of the adopted Bicentennial Comprehensive Plan that designates this acreage as "Recreation, Open Space & Gateways"; and, ii.) Acquisition of the approximately 43 acres of Permanent Open Space on the Muir Woods Project Site as described herein will result in benefits to the Town and its residents including homeowners in the Bucyrus Heights Subdivision.

RESOLVED, the Town Board has evaluated the potential adverse environmental impacts associated with the acquisition of the 43 acres of Permanent Open Space and determined that such acquisition will not result in any potentially significant adverse environmental impacts.

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

RESOLVED, that the Town Board hereby authorizes the acquisition of the approximately 43 acres of Permanent Open Space on the Muir Woods Project Site as described herein via a donation from Ciminelli Muir Woods, LLC subject to the following terms and conditions:

1. The adoption of this resolution by the Town Board for the purpose of acquiring the Permanent Open Space described herein does not include the Town Board designating the Permanent Open Space as "parkland". The Town Board shall adopt a separate resolution in the future if it determines designating the Permanent Open Space as "parkland" is appropriate.

2. Ciminelli Muir Woods, LLC, its successors and assigns, shall retain an easement with respect to the approximately 43 acres of Permanent Open Space for the purpose of completing required wetland mitigation and wetland mitigation monitoring in accordance with the terms and conditions contained in wetland permits issued by the USACE and the NYSDEC. Upon the USACE and the NYSDEC determining that the required wetland mitigation has been completed to their satisfaction and the expiration of the monitoring period, the easement shall terminate.

3. Prior to the recording of a deed from Ciminelli Muir Woods, LLC to the Town of Amherst for the purpose of conveying ownership of the Permanent Open Space as described herein, a Declaration of Restrictive Covenants shall be recorded at the Erie County Clerk's Office for the restricting the use of the approximately 43 acres of Permanent Open Space in accordance with the terms and conditions of wetland permits issued by the USACE and the NYSDEC and also for the purpose of prohibiting future development of the approximately 43 acres of Permanent Open Space.

4. Ciminelli Muir Woods, LLC shall be responsible for the expenses associated with the preparation of a survey and an Abstract of Title for the Permanent Open Space as described herein and the recording fees for the deed to be recorded at the Erie County Clerk's Office.

5. The documentation required to effectuate the transfer of the Permanent Open Space as described herein and to comply with the above conditions shall be subject to review and approval by the Town Attorney's Office.

6. The Supervisor is authorized to execute any documentation required to effectuate the acquisition of the 43 acres of Permanent Open Space in accordance with the terms and conditions contained in this resolution.

10/06/2020

A motion to open the public hearing was made by Supervisor Kulpa, seconded by Councilmember Lavin and unanimously approved 4-0. The public hearing was opened at 7:51 PM.

Sean W. Hopkins, Esq., presented for both resolution #791 and #792 and answered questions from the Board.

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

There were no speakers from the public, therefore Supervisor Kulpa moved to adjourn the public hearing and set a Decision Date for October 19th. The motion was seconded by Councilmember Lavin and unanimously approved 4-0. The public hearing was adjourned at 8:13 PM.

10/19/2020
A motion to open the public hearing was made by Supervisor Kulpa, seconded by Councilmember Lavin and unanimously approved 5-0. The public hearing was opened at 7:18 PM.

Sean W. Hopkins, Esq., presented under Res #792.

There were no speakers from the public, therefore Supervisor Kulpa moved to close the public hearing, seconded by Councilmember Lavin and unanimously approved 5-0. The public hearing was closed at 7:20 PM.

A motion to adopt the amended SEQR Findings Statement was made by Supervisor Kulpa, seconded by Deputy Supervisor Berger and approved via Roll Call vote 4-1 (nay, Bucki).

RESULT:	**ROLL CALL VOTE (ADOPTED) [4 TO 1]**
MOVER:	Brian J. Kulpa, Supervisor
SECONDER:	Jacqualine Berger, Deputy Supervisor
AYES:	Kulpa, Berger, Lavin, Szukala
NAYS:	Bucki

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Exhibit 10 – Resolution 2020-792 as Adopted by the Town of Amherst Town Board on October 19, 2020 for the Purpose of Approving an Amendment to the Town of Amherst Comprehensive Plan

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Amherst Town Board
5583 Main Street
Williamsville, NY 14221
www.amherst.ny.us

Francina J. Spoth
Town Clerk

Meeting: 10/19/20 07:00 PM
Department: Town Clerk
Initiated by: **Kathleen Cooper**
Co-Sponsored by:

DOC ID: 22366 **RESOLUTION 2020-792** **ROLL CALL VOTE (ADOPTED)**

Amendment to the Comprehensive Plan for "Muir Woods - Site A" (1081 N. French Road)

Amendment to the Comprehensive Plan for
"Muir Woods - Site A"
[1081 North French Road (NCD); BCPA-2020-02]

RESOLVED, that pursuant to 6NYCRR Part 617 (SEQR) and Town Code Section 104, as amended, that the requirements of SEQR have been completed, and be it further

RESOLVED, that pursuant to NYS Town Law Section 272-a and Section 11.6 of the Town Comprehensive Plan, the Town Board concurs with the findings of the Planning Board as stated in their resolution of August 20, 2020 to amend the Conceptual Land Use Plan (Figure 6) and the University Focal Planning Area (Figure 21) of the Comprehensive Plan for "Muir Woods - Site A" located at 1081 North French Road (NCD) to permit mixed-use residential/commercial use on Site A.

For additional information (copy & paste link):
https://share.amherst.ny.us:443/docman/doc_files_list.php?hash=uaaidrb0hpn0mkelzsugvr62

10/06/2020
A motion to open the public hearing was made by Supervisor Kulpa, seconded by Councilmember Lavin and unanimously approved 4-0. The public hearing was opened at 7:51 PM.

Sean W. Hopkins, Esq., presented for both resolution #791 and #792 and answered questions from the Board.

There were no speakers from the public, therefore Supervisor Kulpa moved to adjourn the public hearing and set a Decision Date for October 19th. The motion was seconded by Councilmember Lavin and unanimously approved 4-0. The public hearing was adjourned at 8:13 PM.

10/19/2020
A motion to open the public hearing was made by Supervisor Kulpa, seconded by Deputy Supervisor Berger and unanimously approved 5-0. The public hearing was opened at 7:07 PM.

Sean W. Hopkins, Esq., presented.

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

There were no speakers from the public, therefore Supervisor Kulpa moved to close the public hearing, seconded by Deputy Supervisor Berger and unanimously approved 5-0. The public hearing was closed at 7:18 PM.

A motion to approve the Negative Declaration was made by Supervisor Kulpa, seconded by Deputy Supervisor Berger and approved 4-1 (nay, Bucki). A motion to adopt the resolution was made by Supervisor Kulpa, seconded by Deputy Supervisor Berger and approved via Roll Call vote 4-1 (nay, Bucki).

RESULT:	**ROLL CALL VOTE (ADOPTED) [4 TO 1]**
MOVER:	Brian J. Kulpa, Supervisor
SECONDER:	Jacqualine Berger, Deputy Supervisor
AYES:	Kulpa, Berger, Lavin, Szukala
NAYS:	Bucki

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

HSM

February 26, 2021

Ellen Kost, AICP, Assistant Planning Director
Town of Amherst Planning Department
5583 Main Street
Williamsville, NY 14221

Re: Proposed Mixed Use Project - Site A of Muir Woods [SP-2021-05]
Portion of 1081 North French Road – Town of Amherst
File No. 10024.12

Dear Ellen:

Attached as Exhibit "1" is a copy of the Amended Wetland Permit [LRB-2001-00067] issued by the United States Army Corps of Engineers ("USACE") on February 25, 2021 authorizing impacts to 6.089 acres of federal wetlands [reduction of 6.921 acres of previously authorized impacts to federal wetlands] in order to accommodate the mixed-use development of Site "A" of the Muir Woods Property in accordance with the project layout depicted on the Concept Site Plan prepared by Christopher Wood, P.E. of Carmina Wood Morris DPC attached as Sheet 1 of 3.

Please feel free to call me at 510-4338 or via e-mail if you have any questions regarding this letter or the Amended Wetland Permit issued by the USACE on February 25, 2021 or the status of the pending request for Major Site Plan Approval for the proposed mixed-use project.

Thank you for your continued cooperation.

Sincerely,

HOPKINS SORGI & MCCARTHY PLLC

Sean W. Hopkins, Esq.

cc: Adam Faeth, Esq., Ciminelli Real Estate Corporation [Via e-mail and mail]
William Severyn, Severyn Development Inc. [Via e-mail and mail]
Christopher Wood, P.E., Carmina Wood Morris DPC [Via e-mail]
Scott J. Livingstone, Earth Dimensions, Inc. [Via e-mail]
Jody Celeste, Earth Dimensions, Inc. [Via e-mail]

HOPKINS SORGI & MCCARTHY PLLC
Attorneys at Law
5500 Main Street, Suite 343 • Williamsville, New York 14221
Direct: 716-510-4338 • E-mail: shopkins@hsr-legal.com • www.hsr-legal.com

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Exhibit 1 – Amended Wetland Permit Issued by the United States Army Corps of Engineers dated February 25, 2021

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

DEPARTMENT OF THE ARMY
BUFFALO DISTRICT, CORPS OF ENGINEERS
1776 NIAGARA STREET
BUFFALO, NEW YORK 14207-3199

February 25, 2021

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

Mr. Adam Faeth
Development Manager
Ciminelli Muir Woods LLC
350 Essjay Road Suite 101
Williamsville, NY 14221

Dear Mr. Faeth:

This is in reply to your submittal dated July 20, 2020 in which you requested a modification of Department of the Army Permit No. LRB-2001-00067. The project is located on a 326-acre parcel in the Town of Amherst, Erie County, New York. Specifically, you seek authorization to change the proposed use of an area identified as Site A from research and development and flex office space to a mixed-use commercial and residential development. This includes two 4-story mixed-use buildings, two-family townhouses, 6-unit apartment buildings, and a recreational trail to connect Site A with Site B. Wetland impacts have been reduced from 13.01 acres to 6.089 acres in Site A. A reduction of 6.921 acres. In addition, because of the reconfigured project including the significant reduction of wetland impacts, you have requested that the requirement of off-site compensatory mitigation be removed. Lastly, you have requested that 134 acres of the overall Muir Woods site located northeast of Site B, is donated to the Town of Amherst. This area will remain as open space in perpetuity. Permit compliance with mitigation requirements will remain as it currently is on the 134-acre site as a responsibility of Ciminelli Muir Woods LLC.

A Public Notice was published and coordinated with agencies and adjacent property owners using standard procedures. No comments were received as a result of the Public Notice. Based upon our evaluation, I concluded your request will not result in any unacceptable environmental or navigational impacts. Therefore, I am modifying Department of the Army permit No. LRB-2001-00067 to reflect the changes outlined in your request and identified on the attached drawings. All other terms and conditions of Permit No. LRB-2001-00067 remain in full force and effect.

Sheets 1, 2, and 3 of 3 are hereby made part of Permit No. LRB-2001-00067. Sheet 1 of 3 of this modification is an update to Sheets 2, 3, and 5 of 6 of the original permit. Sheet 2 and 3 of 3 of this modification are updates to Sheet 5 of 6 of the original permit. In addition, the following Special Conditions No. 6 and 8 of Permit No. LRB-2001-00067 are modified so that they no

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

longer include the requirement of off-site compensatory mitigation, as indicated below with the original and the following modified condition:

1. Special Condition Number 6: As mitigation to compensate for unavoidable and permanent impacts to 17.83 acres of Federal wetlands and 1.29 acres of Federal tributaries (approximately 5227 linear feet), the permittee shall create, at a minimum; 26.91 acres of wetland on-site, and 27.37 acres of wetland off-site. In addition, the permittee shall enhance 4.3 acres of tributary (approximately 2630 linear feet) on-site, all in accordance with the approved on-site and off-site mitigation plan that is made part of this permit. The mitigation area must be constructed in accordance with the approved plan as well as all permit conditions.

   Modified Special Condition Number 6: As mitigation to compensate for unavoidable and permanent impacts to 10.91 acres of Federal wetlands and 1.29 acres of Federal tributaries (approximately 5227 linear feet), the permittee shall create, at a minimum; 26.91 acres of wetland on-site. In addition, the permittee shall enhance 4.3 acres of tributary (approximately 2630 linear feet) on-site, all in accordance with the approved on-site mitigation plan that is made part of this permit. The mitigation area must be constructed in accordance with the approved plan as well as all permit conditions.

2. Special Condition Number 8: The approved compensatory mitigation must be in strict conformance with the plans approved by the Corps of Engineers. Such approved plans were prepared by Ciminelli Development Company, Incorporated and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009, including the Proposed On-Site Wetland Mitigation Plan, and the Proposed Off-Site Wetland Mitigation Plan dated November 16, 2009. The stated mitigation plans are hereby incorporated into and made part of the permit as Attachments 1 and 2. The permittee shall implement the mitigation in accordance with the plans and all permit conditions. Where permit conditions differ from the mitigation plan, the permit conditions shall be the ruling condition.

   Modified Special Condition Number 8: The approved compensatory mitigation must be in strict conformance with the plans approved by the Corps of Engineers. Such approved plans were prepared by Ciminelli Development Company, Incorporated and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009, including the Proposed On-Site Wetland Mitigation Plan dated November 16, 2009. The stated on-site mitigation plan is hereby incorporated into and made part of the permit as Attachments 1. The permittee shall implement the mitigation in accordance with the plans and all permit conditions. Where permit conditions differ from the mitigation plan, the permit conditions shall be the ruling condition.

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

Questions pertaining to this matter should be directed to Martin Crosson at 716-879-4346, by writing to the following address: U.S. Army Corps of Engineers, 1776 Niagara Street, Buffalo, New York 14207 or by E-mail at: martin.h.crosson@usace.army.mil

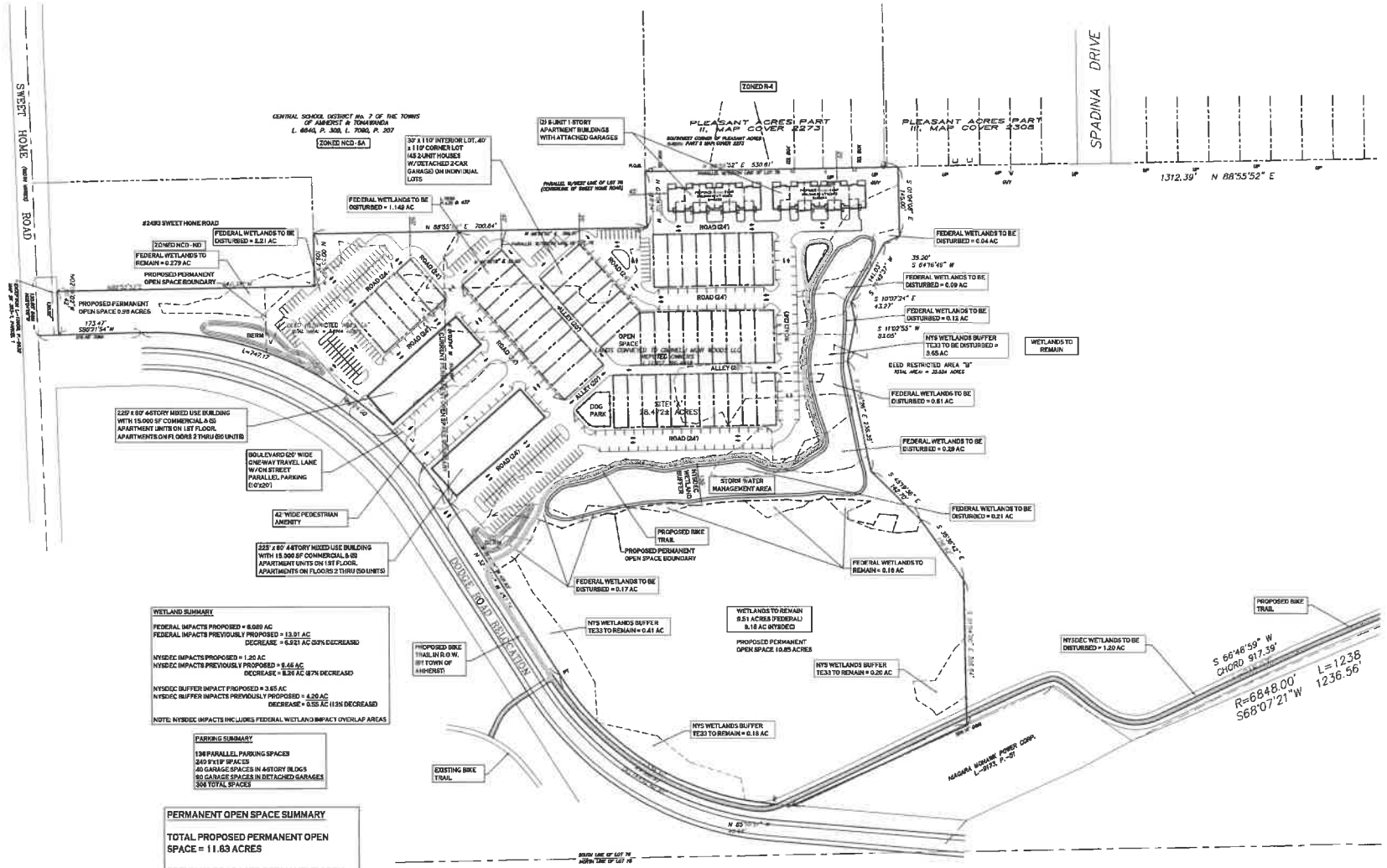
BY AUTHORITY OF THE SECRETARY OF THE ARMY

Steven V. Metivier

For: Mark Scalabrino
Acting Chief, Regulatory Branch

Enclosures

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 1 of 3

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS. CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200FT.

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All rights reserved. Reuse of these documents without the expressed written permission of Carmina Wood Morris DPC is prohibited. WORKING is a violation of article 145 sections 7209A and 7301 of the New York State education law for any person, unless acting under the direction of a registered architect, licensed engineer or land surveyor to alter this drawing. If altered such R.A., P.E. or L.L.S. shall affix his or her seal, signature, the date, the notation "altered by" and a specific description of the alteration.

Carmina Wood Morris
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0061

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Muir Woods Site "A"
Sweet Home & Dodge Road
Amherst, New York

Date: 7/1/20
Drawn by: C. Wood
Scale: As Noted

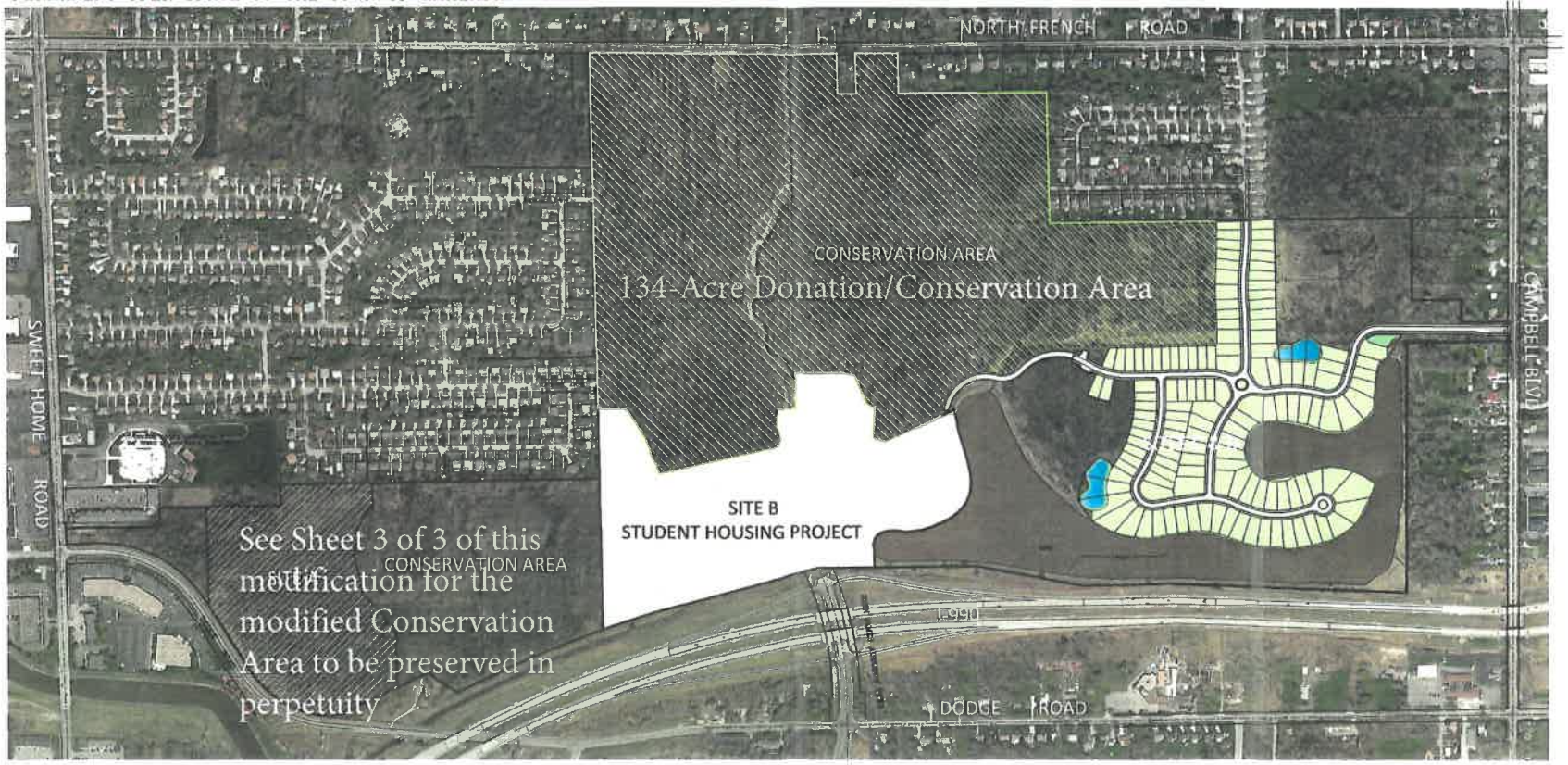
DRAWING NAME:
Concept Site Plan

DRAWING NO.
C-100
Project no.: 19.192

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

MUIR WOODS OVERALL PROJECT AREA

PROPOSED DONATION OF APPROXIMATELY 134 ACRES OF
PERMANENT OPEN SPACE TO THE TOWN OF AMHERST

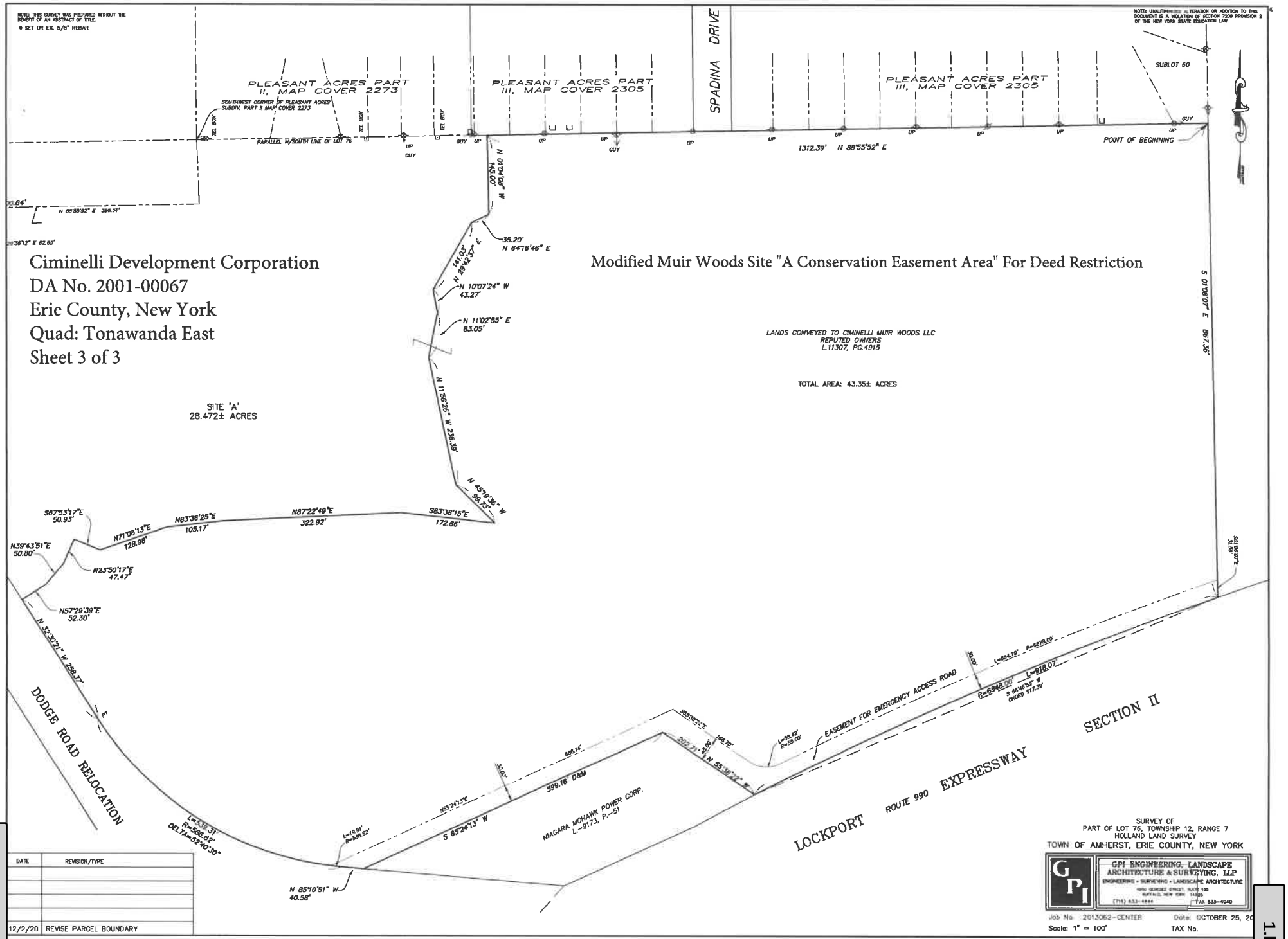


CONSERVATION AREA TO BE DONATED

Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 2 of 3

GPI GREENMAN-PEDERSEN, INC. CONSULTING ENGINEERS ENGINEERING • SURVEYING • PLANNING

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

HSM

December 26, 2020

Ellen Kost, AICP, Assistant Planning Director
Town of Amherst Planning Department
5583 Main Street
Williamsville, NY 14221

Re: Proposed Mixed Use Project - Site A of Muir Woods [Z-2002-09C & BCPA-2020-02]
Portion of 1081 North French Road
Applicant/Project Sponsor: Ciminelli Real Estate Corporation
File No. 10024.12

Dear Ellen:

Attached as Exhibit "1" is a copy of the Amended Wetland Permit [Permit No. 9-1422-00398/0001] issued by the New York State Department of Environmental Conservation ("NYSDEC") on December 24, 2020 authorizing the impacts to NYSDEC Freshwater Wetlands and the associated regulated 100 ft. Adjacent Area in order to accommodate the mixed-use development of Site "A" of the Muir Woods Property in accordance with the project layout depicted on the Concept Site Plan prepared by Christopher Wood, P.E. of Carmina Wood Morris DPC.

Attached as Exhibit "2" is a copy of the Public Notice of the United States Army Corps of Engineers ("USACE") dated December 21, 2020. The comment period on the pending requested Amended Wetland Permit being sought from the USACE expires on January 11, 2021. The Project Sponsor anticipates receiving an Amended Wetland Permit from the USACE by the end of January.

Please feel free to call me at 510-4338 or via e-mail if you have any questions regarding this letter or the Amended Wetland Permit issued by the NYSDEC on December 24, 2020 or the status of the mixed-use project.

Thank you for your continued cooperation.

Sincerely,

HOPKINS SORGI & MCCARTHY PLLC

Sean W. Hopkins, Esq.

cc: Adam Faeth, Esq., Ciminelli Real Estate Corporation [Via e-mail and mail]
William Severyn, Severyn Development Inc. [Via e-mail and mail]
Christopher Wood, P.E., Carmina Wood Morris DPC [Via e-mail]

HOPKINS SORGI & MCCARTHY PLLC
Attorneys at Law
5500 Main Street, Suite 343 • Williamsville, New York 14221
Direct: 716-510-4338 • E-mail: shopkins@hsr-legal.com • www.hsr-legal.com

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Scott J. Livingstone, Earth Dimensions, Inc. [Via e-mail]
Jody Celeste, Earth Dimensions, Inc. [Via e-mail]

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Exhibit 1 – Amended Wetland Permit Issued by the NYS Department of Environmental Conservation dated December 24, 2020

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 9
270 Michigan Avenue, Buffalo, NY 14203-2915
P: (716) 851-7165 I F: (716) 851-7168
www.dec.ny.gov

December 24, 2020

Mr. Adam Faeth
Ciminelli Real Estate Corporation
50 Fountain Plaza, Suite 500
Buffalo, New York 14202

Muir Woods Development – "Site A"
Permit Transmittal Letter
Permit No. 9-1422-00398/00001

Dear Mr. Faeth:

Enclosed is your permit which was issued in accordance with applicable provisions of the Environmental Conservation Law. The permit is valid for only that project, activity or operation expressly authorized. If modifications are desired after permit issuance, you must submit the proposed revisions and receive written approval from the Permit Administrator prior to initiating any change. If the Department determines that the modification represents a material change in the scope of the authorized project, activity, operation or permit conditions, you will be required to submit a new application for permit.

Please review all permit conditions carefully. In particular, identify your initial responsibilities under this permit in order to assure timely action if required. Since failure to comply precisely with permit conditions may be treated as a violation of the environmental conservation law, you are requested to provide a copy of the permit to the project contractor, facility operator, and other persons directly responsible for permit implementation (if any).

If you have any questions, please contact this office at the above address.

Respectfully,
David S. Denk
Regional Permit Administrator

Enclosure
ecc: NYSDEC Law Enforcement
Maureen Brady, NYSDEC Office of General Counsel
Mr. Chuck Rosenburg, NYSDEC Division of Fish and Wildlife
Mr. Martin Crossen, USACOE
Sean Hopkins, Esq., Hopkins Sorgi & McCarthy PLLC

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

PERMIT
Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
Ciminelli Muir Woods LLC
50 Fountain Plaza, Suite 500
Buffalo, NY 14202
(716) 631-8000

Facility:
MUIR WOODS DEVELOPMENT
1121 N French Rd
Amherst, NY 14228

Facility Location: in AMHERST in ERIE COUNTY
Facility Principal Reference Point: NYTM-E: 191.586 NYTM-N: 4770.823
Latitude: 43°01'38.9" Longitude: 78°47'07.2"

Authorized Activity: Construction of a mixed-use project named "Muir Woods" consisting of approximately two 4-story mixed-use buildings consisting of commercial space and residential units, 90 two-family townhouses and 2 six-unit apartment buildings, approximately 133 detached single-family residential units and 515 cottage-style and apartment-style housing units with various amenities; and gas, electric, sanitary, potable water and storm water (the necessary infrastructure), while maintaining open space on approximately 224 acres in the Audubon New Community District. The Muir Woods project property is a 326 acre site bounded by the Lockport Expressway (Interstate Route 990) and Dodge Road on the south, Sweet Home Road on the west, North French Road on the north and Campbell Boulevard on the east. The project will result in permanent impacts to approximately 2.39 acres of State regulated wetlands (TE-22, TE-23 and TE-34), and 11.38 acres of State regulated 100 foot wide wetland adjacent area. As mitigation for those impacts the project includes creation of 19.58 acres of in-kind and out-of-kind wetlands on-site, in six areas, to replace the functions and benefits of the impacted wetlands. There will be 4.3 acres of stream channel enhancement on-site as mitigation for State wetland regulated adjacent area impacts. The project also includes construction at 520 Campbell Road property as detailed on plan sheets referenced in Natural Resource Condition No. 4.

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Permit Authorizations

Freshwater Wetlands - Under Article 24
Permit ID 9-1422-00398/00001

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

Water Quality Certification - Under Section 401 - Clean Water Act
Permit ID 9-1422-00398/00002

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: DAVID S DENK, Regional Permit Administrator
Address: NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY 14203 -2915

Authorized Signature: David S. Denk Digitally signed by David S. Denk DN: cn=David S. Denk, o=NYS DEC, ou=Div. of Env. Permits, email=david.denk@dec.ny.gov, c=US Date: 2020.12.24 10:29:47 -05'00' Date ___/___/___

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: FRESHWATER WETLANDS; WATER QUALITY CERTIFICATION

1. **No Work Prior to Approval of Legal Instrument for Preservation of Undeveloped Areas of Site** No work authorized by this permit may begin until the Department approves a legal instrument, such as a deed restriction and/or conservation easement, that will preserve in perpetuity the natural resource values of the undeveloped areas of the site. This condition does not apply to the 520 Campbell Boulevard property.

2. **Declaration of Restrictions 520 Campbell Boulevard Property** A Declaration of Restrictions permanently prohibiting any future development of the 6.88 acres of jurisdictional federal wetlands and portion of the upland area on 520 Campbell Boulevard as depicted on the Wetland Restriction Exhibit Map must be incorporated into the deeds for lots 1 – 12 and 21. By 60 days after Water Quality Certification issuance, the permittee shall file with the real property records of the Erie County Clerk`s Office, the deed for each applicable lot containing this notice. The permittee shall within two weeks following the filing of the deed(s) submit proof of filing from the County Clerk's Office

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

showing the Liber and page number at which the deed notice was filed and the date of filing for one of the affected lots to: Regional Permit Administrator, NYSDEC Region 9 Headquarters, 270 Michigan Ave, Buffalo, NY 14203-2915.

3. **Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by Ciminelli Development Company, Inc. and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009.

4. **Conformance with Plans Site B** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include the "Concept Plan - Muir Woods" dated 08 November 2019 amended to show Conifer Planting Area (attached).

5. **Conformance with Plans - 520 Campbell Boulevard** All activities authorized by this permit for the 520 Campbell Boulevard property must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans include those sheets entitled: The Preserve at Muir Woods (DEC Planting Exhibit, DEC Earthwork Exhibit and the Wetland Restriction Exhibit) by Greenman-Pedersen, Inc. dated May 2018.

6. **Conformance with Plans Site A** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include Drawing C-100 dated July 20, 2020 and received by this Department on August 10, 2020.

7. **Future Phases** Prior to development of Muir Woods Sites A and B, the permittee must obtain specific approval of engineered plans for Sites A and B to ensure compliance with the terms and condition of this permit, the approved wetland mitigation plans and the most current Findings Statement for the overall Muir Woods Project issued pursuant to the State Environmental Quality Review Act. The permittee shall submit the engineered plans for the development of Sites A and B for review by the Department simultaneous with submission of such engineered plans to the Town of Amherst. If required by the Department, the permittee shall make any necessary modifications to the engineered plans to ensure compliance with the terms and conditions of this permit, the approved wetland mitigation plans and the most current Findings Statement.

8. **Permit Conditions Prevail over Plans** If any condition of this permit conflicts with the approved plans noted in Condition Number 1, the permit conditions shall prevail over the plans unless specific written approval for such a change is obtained from this Department prior to implementation.

9. **Pre-construction Meeting to Review Permit** Prior to commencing work at the project site, the permittee shall schedule a pre-construction meeting with Department staff (Contact: Mr. David Denk, Regional Permit Administrator, NYSDEC, Division of Environmental Permits, Telephone : 716/851- 7165 and/or Mr. Charles P. Rosenburg, NYSDEC, Division of Fish and Wildlife, Telephone: 716/851-7010) and selected contractors to review the conditions contained in this permit.

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10. Mark Areas of No Disturbance on the Muir Woods Site Grade stakes and/or other appropriate measures (substantial contractor fencing, perhaps in combination with necessary silt fencing) shall be used to ensure that no equipment enters identified areas of no disturbance within the immediate area under construction (i.e.- Site A, Site B, Site C or Site D) on the Muir Woods project site. Boundaries of the on-site mitigation areas shall likewise be marked to define the limits of that work.

11. Install Controls Along Limits of Disturbance Before any soil is disturbed within a specific Site Development Area, as detailed in Condition #6 above, the permittee shall install securely anchored silt fencing and/or continuous staked hay bales along the limits-of-disturbance as shown on the plans or drawings referenced in this permit. Such erosion and sedimentation controls shall be maintained until unpaved portions of the subject site are stabilized by a self-sustaining cover of vegetation that is adequate to prevent erosion and sedimentation on and off the site. Sediment which has accumulated at the controls shall be removed periodically as necessary during the construction period. Before the controls are removed, the permittee shall remove all sediment that has accumulated at the controls.

12. Work Within Ares Depicted on Plans All construction activity, including operation of machinery, excavation, filling, grading, clearing of vegetation, disposal of waste, street paving and stockpiling of material must take place within the Site Development Areas or mitigation areas as depicted on the project plans referenced by this permit. Construction activity is prohibited within areas to be left in a natural condition or locations on the property not within the Site Development Areas or mitigation areas designated by this permit. Disturbance to the wetlands and their regulated 100 foot wide adjacent areas shall be strictly limited to the work areas identified in the plans, and specifically the MAP SHOWING WETLAND IMPACT AREAS - NEW YORK STATE WETLANDS, and APPENDIX M - PROPOSED ON-SITE MITIGATION PLAN.

13. Invasive Species (Non-Native Vegetation) To prevent the unintentional introduction or spread of invasive species, the permittee must ensure that all construction equipment is cleaned of mud, seeds, vegetation and other debris before entering any approved Site Development Areas within State regulated wetlands or their 100 foot wide adjacent areas, as well as all on-site wetland mitigation areas.

14. Prevention of Invasive Species The permittee shall prevent the establishment of invasive species (purple loosestrife, Phragmites, reed canary-grass, Japanese knotweed, glossy buckthorn and common buckthorn) across all disturbed areas within the wetland mitigation area for five growing seasons. If any of these invasive species become established, monitoring and treatment may be extended for an additional 5 years at the Department's discretion.

15. Wetland Mitigation is Mandatory Completion of all freshwater wetland mitigation is mandatory regardless of whether or not construction proceeds to completion. The required mitigation must be completed by the expiration date of this permit. Mitigation will be subject to remediation, if necessary, pursuant to Condition #16 below. All mitigation areas shall be monitored for a period of ten (10) years or until the mitigation is deemed successful by this Department. Monitoring reports shall be prepared for the first four (4) years after construction of the mitigation areas and every other year (years 6, 8 and 10) thereafter. This Department may, at its discretion, modify the 10-year monitoring period and/or monitoring report requirement at any time. Monitoring reports shall be submitted to Mr. Charles P. Rosenburg, Habitat Manager, NYSDEC, Bureau of Ecosystem Health, 270 Michigan Avenue, Buffalo, NY 14203-2915 Telephone: 716/851-7024.

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16. **On-Site Mitigation to be in Accordance with Mitigation Plan** The on-site mitigation shall be in accordance with Appendix M - Proposed On-Site Wetland Mitigation for Muir Woods prepared by Earth Dimensions, Inc. revised May 25, 2009 and with the modifications shown in Exhibit 22 of the July 20, 2020 application binder.

17. **Planting Row of Native Conifers** The permittee shall plant a row of native conifer trees in the location shown on the attached plan. The tree plantings must be a minimum of 6 feet tall, spaced 15 feet apart, and must be planted no later than October 15th following the completion of construction of the adjacent apartment units.

18. **Survival Rate for Mitigation Plantings** The permittee shall prepare a care, maintenance, inspection, and replacement schedule for the tree and shrub plantings described in the mitigation plan to ensure an 85% survival rate for five growing seasons. This condition includes all on-site landscape "buffer" plantings.

19. **Herbicides, Pesticides in Wetland or Adjacent Area** The use of herbicides and other pesticides in State regulated wetlands or their 100 foot wide adjacent areas is a regulated activity and may only be conducted pursuant to a valid Article 33 Pesticides Permit.

20. **Requirement for SPDES General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities** Since development of the Muir Woods site in the Town of Amherst will involve land disturbance of one (1) or more acres, the permittee is required to obtain coverage under State Pollutant Discharge Elimination System (SPDES) General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities. A Notice of Intent (NOI) is required to be sent to NYSDEC, Division of Water, 625 Broadway, 4th Floor, Albany, New York 12233-3505, Telephone: 518/402-8111 and approved before construction commences. Alternatively, an eNOI may be filed electronically as described on the Department's website. The General Permit GP-0-15-002 and NOI form are available on the Department's website at www.dec.state.ny.us.

21. **Visibly Turbid Discharges Prohibited** Visibly turbid discharges from project dewatering operations, excavation and grading activities are strictly prohibited to any "water body" (pond, wetland, stream or water course). Any such discharges shall be (1) retained in an appropriately maintained upland settling basin, filtered through crushed stone, sand, filter fabric fences, hay bales etc., or (2) directed to a grassy area sufficiently distant from any water body to preclude such entry.

22. **Stockpiling of Soil** Stockpiling of excavated soil is prohibited at locations within any portion of the TE-22, TE-23 and TE-34 Wetlands or their regulated 100 foot wide adjacent areas, or within any mapped 100-year floodplain beyond the Site Development Areas or mitigation areas identified in the plans.

23. **Stabilize Disturbed Areas** All areas of soil disturbance resulting from this project shall be seeded with an appropriate perennial grass seed and mulched with straw, or hydro-seeded. Mulch shall be maintained until suitable vegetative cover is established.

24. **Temporary Mulch, Final Seeding** If seeding is impracticable due to the time of year, a temporary mulch shall be applied and final seeding shall be performed at the earliest opportunity when weather conditions favor germination and growth.

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25. **Disposal of Material** Any non-merchantable tree and brush debris, demolition debris, excess construction materials, and/or excess excavated materials shall be immediately and completely disposed of on an approved upland site more than 100 feet from any regulated freshwater wetland. These materials shall be suitably stabilized so as not to re-enter any water body, wetland, or wetland adjacent area; and must be disposed of in accordance with all local, state, and federal statutes, regulations, or ordinances.

26. **Placement of Interpretive Signs Required** Permanent interpretive signs shall be placed at various wetland boundary locations throughout the Muir Woods project site . The permittee shall submit a proposal for the signs to the Department for approval. The interpretive signs shall be a minimum of 12 inches by 12 inches and shall be placed on permanent posts.

27. **Annual Project Inspection / Meeting** The permittee shall schedule an annual inspection/meeting to update Department staff on project progress and compliance with conditions of this permit for the on-site wetland mitigation area.

28. **Wetland Monuments** Monuments shall be placed every 200 feet along the outer edge of the wetland preservation areas. The monuments shall be 30" long, 5/8" rebar and cap embedded flush and in the center of the top exposed surface of concrete in a minimum 4 inch diameter, 4.5 foot long section of PVC Schedule 40 drain pipe filled with concrete, extending vertically1.5 to 2 feet above existing grade at each location. The caps shall say "Conservation Area Marker, Do Not Disturb". These monuments are to be permanently maintained.

29. **Wetland Boundaries** The boundaries of the TE-22, TE-23 and TE-34 Wetlands shall be fixed for the period of this permit (expires November 30, 2024). At that time, new boundary delineations for those wetlands will be required by this Department (to be performed or confirmed by a Department Biologist). Since project activities will be subject to the updated wetland boundary delineations and pertinent regulations at that time, any future permit modification (if necessary) would be reviewed based on the updated delineations and pertinent regulations. As such, modifications to the current project plan may be necessary depending upon the updated wetland delineations and permit regulations in effect at that time.

30. **State Not Liable for Damage** The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

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31. **State May Order Removal or Alteration of Work** If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

32. **State May Require Site Restoration** If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may lawfully require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.

33. **Precautions Against Contamination of Waters** All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. **Water Quality Certification** The authorized project, as conditioned pursuant to the Certificate, complies with Section 301, 302, 303, 306, and 307 of the Federal Water Pollution Control Act, as amended and as implemented by the limitations, standards, and criteria of state statutory and regulatory requirements set forth in 6 NYCRR Section 608.9(a). The authorized project, as conditioned, will also comply with applicable New York State water quality standards, including but not limited to effluent limitations, best usages and thermal discharge criteria, as applicable, as set forth in 6 NYCRR Parts 701, 702, 703, and 704.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. **Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

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The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. **Relationship of this Permit to Other Department Orders and Determinations** Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. **Applications For Permit Renewals, Modifications or Transfers** The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY14203 -2915

4. **Submission of Renewal Application** The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Freshwater Wetlands, Water Quality Certification.

5. **Permit Modifications, Suspensions and Revocations by the Department** The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

a. materially false or inaccurate statements in the permit application or supporting papers;

b. failure by the permittee to comply with any terms or conditions of the permit;

c. exceeding the scope of the project as described in the permit application;

d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;

e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. **Permit Transfer** Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

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NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification
The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit
The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits
The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights
This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

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Exhibit 2 – Public Notice as Published by the United States Army Corps of Engineers dated December 21, 2020

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Public Notice

U.S. Army Corps
of Engineers
Buffalo District
CELRB-TDR

Applicant: Ciminelli Real Estate Corporation

Published: December 21, 2020
Expires: January 11, 2021

Application No: 2001-00067 (2020 Site A Modification)
Section: New York

All written comments should reference the above Application No. and be addressed to:
Attn: Martin Crosson
U.S. Army Corps of Engineers, Buffalo District
1776 Niagara Street
Buffalo, NY 14207

THE PURPOSE OF THIS PUBLIC NOTICE IS TO SOLICIT COMMENTS FROM THE PUBLIC REGARDING THE WORK DESCRIBED BELOW. NO DECISION HAS BEEN MADE AS TO WHETHER OR NOT A PERMIT WILL BE ISSUED AT THIS TIME.

Application for Permit Modification under Authority of Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act (33 U.S.C. 1344).

APPLICANT: Ciminelli Real Estate Corporation/Ciminelli Muir Woods, LLC ("Ciminelli"). Ciminelli has requested a modification to an existing permit described below.

WATERWAY & LOCATION: approximately 98 acres of Federal wetlands, a 32 acre lake and approximately 4.4 acres of tributaries have been previously identified as jurisdictional on the 326 acre parcel permitted for development known as "Muir Woods". The permitted project is located in the Town of Amherst, County of Erie and State of New York.

LATITUDE & LONGITUDE: Latitude North: 43°01'46"
Longitude West: -78°46'33"

EXISTING CONDITIONS: On May 14, 2012 a permit was issued to Ciminelli for placement of fill into 17.83 acres of Federal wetland and 1.29 acres of federally regulated tributaries for the multi-use development known as "Muir Woods". The current jurisdictional determination remains valid until the existing permit expiration date of November 30, 2024.

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PROPOSED MODIFICATION: Ciminelli proposes to modify the existing permit to change the proposed use of the area identified as Site A of the "Muir Woods" site. Under the existing permit, Site A was to consist of research and development and flex office space. The applicant is currently proposing to change the previously proposed use of Site A to a mixed-use commercial and residential development. The concept plan for the proposed project includes two 4-story mixed-use buildings, in addition to two-family townhouses and 6-unit apartment buildings. Also in association with the proposed changes, a new recreational bike/walking trail that will enter Site A from the southeast connection with Site B ultimately connecting to the rest of the on-site trail system and the Town's recreational trail that connects to the North Campus of the University of Buffalo and the Ellicott Creek Trailway system. The applicant has indicated these modifications are necessary due to changes in economic conditions in the real estate market, and also due to their consideration of input from the Town of Amherst municipal boards and the local public.

PROJECT PURPOSE
Basic: Construction of a multi-use development.
Overall: Modification of an existing permitted Ciminelli construction project by changing the proposed use of Site A of the Muir Woods site to the planned development from Research and Development and flex office space to mixed-use commercial and residential development with associated amenities on Site A due to market changes and consideration of the Town of Amherst municipal boards and local public input.

Water Dependency Determination: As with the existing permit, this newly proposed modification resulting in changes in project purpose and use within Site A, impacts to waters of the US have been determined to not be water dependent. Therefore, alternatives that do not require impacts to US waters are presumed to exist. The applicant adequately demonstrated that US waters have been avoided and minimized to the greatest extent practicable. As a result, wetland impacts have been reduced from the currently permitted 13.010 acres to 6.089 in Site A.

Mitigation: The currently permitted wetland impact in Site A is 13.010 acres. The new proposed impact to Site A wetlands are 6.089 acres resulting in a reduction in wetland impacts by 6.921 acres. As a result of the decrease in wetland impacts in Site A, the previously approved off-site mitigation consisting of creation of 27.37 acres of wetland habitat in the Town of Newstead has been proposed to be removed as a permit requirement. The previously approved and currently permitted on-site mitigation for Site A consisting of creation of approximately 10.47 acres of wetland remains unchanged. In addition, the increase in avoided wetland area and the reduction in developed area proposed in Site A results in an increase to the amount of wetland area to be preserved on-site as permanent open space from 3.91 acres to 11.83 acres.

Location and details of the above described work are shown on the attached maps and drawings.

Comments or questions pertaining to the work described in this notice should reference the Application Number and be directed to the attention of Martin Crosson, who can be contacted at the above address, by calling (716) 879-4346, or by e-mail at: martin.h.crosson@usace.army.mil. A lack of response will be interpreted as meaning that there is no objection to the work as proposed.

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Comments submitted in response to this notice will be fully considered during the public interest review for this permit application. All written comments will be made a part of the administrative record which is available to the public under the Freedom of Information Act. The Administrative Record, or portions thereof, may also be posted on a Corps of Engineers internet web site. Due to resource limitations, this office will normally not acknowledge the receipt of comments or respond to individual letters of comment.

Any individual may request a public hearing by submitting their written request, stating the specific reasons for holding a hearing, in the same manner and time period as other comments.

Pursuant to Section 106 of the National Historic Preservation Act, this proposed modification to Site A does not constitute an action that requires additional consultation with the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP). In a letter dated September 10, 2009 NYSOPRHP indicated the proposed project will have No Effect upon cultural resources in or eligible for inclusion in the National Registers of Historic Places. The proposed modification does not change the previously considered permit area or determination.

Pursuant to Section 7 of the Endangered Species Act (16 U.S.C. 1531), the Corps of Engineers has concluded consultation with the USFWS to evaluate potential impacts to the northern long-eared bat (NLEB). The Corps has previously determined that the project may affect the NLEB, but that the scope of the work falls within the parameters of the 4(d) Rule. Therefore, consultation has concluded. The existing permit for the project included the entire Site A area. This proposed modification does not constitute an action that requires further coordination or consideration under the Endangered Species Act (16 U.S.C. 1531).

Pursuant to Section 401(d) of the Clean Water Act, A Water Quality Certification will be issued or waived for this proposed project modification by the State of New.

Public hearings for the purposes of the Corps permit program will be held when the District Commander determines he can obtain additional information, not available in written comments, that will aid him in the decision-making process for this application. A Corps hearing is not a source of information for the general public, nor a forum for the resolution of issues or conflicting points of view (witnesses are not sworn, and cross examination is prohibited). Hearings will not be held to obtain information on issues unrelated to the work requiring a permit, such as property ownership, neighbor disputes, or the behavior or actions of the public or applicant on upland property not regulated by the Department of the Army. Information obtained from a public hearing is given no greater weight than that obtained from written comments. Therefore, you should not fail to make timely written comments because a hearing might be held.

The decision to approve or deny this permit modification request will be based on an evaluation of the probable impact, including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may

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be relevant to the proposal will be considered including the cumulative effects thereof; among these are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, flood plain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and in general, the needs and welfare of the people.

The Corps of Engineers is soliciting comments from the public; Federal, state and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

SIGNED

Diane C. Kozlowski
Chief, Regulatory Branch

NOTICE TO POSTMASTER: It is requested that this notice be posted continuously and conspicuously for 20 days from the date of issuance.

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Traffic Impact Study

for the proposed

Muir Woods - Site A
Proposed Mixed-Use Project
1081 North French Road

Town of Amherst
Erie County, New York
August 3, 2020

Project No. 40027

Prepared For:

Ciminelli Real Estate Corporation
350 Essjay Road
Williamsville, New York 14221

Prepared By:

SRF Associates
www.srfa.net
Transportation Planning / Engineering / Design

3495 Winton Place
Building E, Suite 110
Rochester, New York 14623

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LIST OF REFERENCES

1. Highway Capacity Manual, Sixth Edition. Transportation Research Board. National Research Council, Washington, DC. 2016.
2. New York State Department of Transportation (NYSDOT) Traffic Data Viewer. 2020. Retrieved from https://www.dot.ny.gov/tdv.
3. Trip Generation, Tenth Edition. Institute of Transportation Engineers. Washington, DC. 2017.
4. Traffic Impact Study for Submittal to Town of Amherst The Hub Amherst. Kimley-Horn of New York, P.C. 2017.
5. Traffic Impact Study for Access Modification Report For Break in Access Application For Northerly Extension of John James Audubon Parkway As A Town of Amherst Roadway. GPI Engineering. 2020.

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EXECUTIVE SUMMARY

OVERVIEW

The purpose of this report is to identify and evaluate the potential traffic impacts associated with the proposed development of Site "A" of the overall Muir Woods Property as a mixed-use project. Site "A" of the Muir Woods Property consists of approximately 28.47 acres located 1081 North French Road in the Town of Amherst, Erie County, New York ("Project Site"). The Applicant is seeking to amend the Amended Findings Statement issued by the Town of Amherst Town Board ("Town Board") pursuant to the State Environmental Quality Review Act ("SEQRA") on August 5, 2019 to accommodate a change of the previously proposed use of the Project Site as 237,000 sq. ft. of flex office and R&D space to a mixed-use project as described in this report and depicted on the Concept Site Plan prepared by Carmina Wood Morris DPC.

The operating characteristics of the proposed access points and impacts to the adjacent roadway network are identified and mitigating measures, if any, are provided to minimize capacity or safety concerns.

In an effort to define traffic impact, this analysis establishes existing base traffic conditions, projects background traffic flow including area growth and/or additional traffic resulting from new development in the area, and determines the traffic operations that would result the full development of the proposed mixed-use project.

The Project Site consists of vacant land and is located along the north side of Dodge Road, west of Interstate 990, in the Town of Amherst, Erie County, New York. Surrounding the proposed development is residential development and Heritage Heights Elementary School to the north, vacant land to the east, offices to the south, and a medical plaza to the west. Land uses in the vicinity of the Project Site include residential, office, medical, and educational uses. The study area consists of the following intersections:

- Dodge Road/Sweet Home Road
- Dodge Road/ North Forest Road

Access to the Project Site will be provided via three proposed driveways connecting to Dodge Road as follows: one full access driveway located at the southerly/easterly end of the Project Site, one full access driveway located at the northerly/westerly end of the Project Site, and a driveway separated by a 42 ft. wide median which has been designed to be a pedestrian amenity area (i.e. one driveway is enter-only and the other is exit only).

Construction of the proposed mixed-use project is anticipated to be completed within two years. Town of Amherst officials were contacted to discuss projects within the study area that are under construction and/or approved. Three projects were identified that are either under construction, approved for construction, or completed after data was collected in 2017: The Hub Amherst at 2949 North Forest Road, a student housing community on Site "B" of the overall Muir Woods Property, and a mixed-use building at 315 Campbell Boulevard.

Traffic related to full build out of The Hub Development was used to develop the 2020 base traffic volumes. Additional traffic related to the proposed student housing community on Site "B" of the Muir Woods Property has been added to the base traffic volumes at the study area intersections. To account for normal increases in background traffic growth including the mixed-use building 315 Campbell @ Dodge, as well as any other unforeseen developments in the project study area, a growth rate of 1% per year has been applied to the base traffic volumes. This growth rate is

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based upon historical traffic growth derived from NYSDOT traffic volume data for the area as well as consideration of the approved projects previously mentioned.

CONCLUSIONS & RECOMMENDATIONS

This study evaluates the potential traffic impacts resulting from the Muir Woods Site A Development. This study also provides the Town of Amherst and other governmental agencies with detailed information providing a hard look at potential traffic impacts for the purpose of the environmental review of the proposed mixed-use project pursuant to the State Environmental Quality Review Act ("SEQRA").

Based upon the analyses, the results indicate that the proposed mixed-use project will not have significant adverse traffic impacts on the existing roadway network. The following sets forth conclusions based upon the results of the analyses:

1. The proposed mixed-use project is expected to generate approximately 47 entering/85 exiting vehicle trips during the AM peak hour and 106 entering/82 exiting vehicle trips during the PM peak hour.

2. The proposed mixed-use project will not result in any potentially significant adverse traffic impacts to the study area intersections. No mitigation is warranted at the study area intersections as a result of the proposed mixed-use project.

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I. INTRODUCTION

The purpose of this report is to identify the potential traffic impacts associated with the proposed Muir Woods Site A Development in the Town of Amherst, Erie County, New York. The operating characteristics of the proposed access points and impacts to the adjacent roadway network are identified and mitigating measures, if any, are provided to minimize capacity or safety concerns.

In an effort to define traffic impact, this analysis establishes 2020 existing base traffic conditions, projects background traffic flow including area growth and/or additional traffic resulting from new development in the area, and determines the traffic operations that would result from full development of the proposed project.

II. LOCATION

The proposed mixed-use project is located along the north side of Dodge Road, west of Interstate 990, in the Town of Amherst, Erie County, New York. The site is currently vacant. Surrounding the proposed development is residential development and Heritage Heights Elementary School to the north, vacant land to the east, offices to the south, and a medical plaza to the west. Land uses in the vicinity of the project site include residential, office, medical, and educational uses. The study area consists of the following existing intersections:

- Dodge Road/Sweet Home Road
- Dodge Road/ North Forest Road

The site location and study area are shown in **Figure 1** (all figures are included at the end of the report).

III. EXISTING HIGHWAY SYSTEM

The following information outlined in **Table I** provides a description of the existing roadway network within the project study area.

TABLE I: EXISTING HIGHWAY SYSTEM

ROADWAY	ROUTE[1]	FUNC. CLASS[2]	JURIS.[3]	SPEED LIMIT[4]	# OF TRAVEL LANES[5]	TRAVEL PATTERN/ DIRECTION	EST. AADT[6]	AADT SOURCE[7]
Dodge Road (from Sweet Home Road to Campbell Road)	CR 45	Minor Arterial	ECDPW	40	2	Two-way/ East-West	7,058	NYSDOT (2016)
Sweet Home Road (from N Ellicott Road to Commerce Drive)	CR 301	Minor Arterial	ECDPW	45	4	Two-way/ North-South	22,713	NYSDOT (2016)
Sweet Home Road (from Commerce Drive to N French Road)	CR 301	Minor Arterial	ECDPW	45	4	Two-way/ North-South	16,008	NYSDOT (2016)

Notes:

1. "CR" = County Route.

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2. State Functional Classification of Roadway: Urban.
3. Jurisdiction: "ECDPW" = Erie County Department of Public Works.
4. Posted or Statewide Limit in Miles per Hour (MPH).
5. Excludes turning/auxiliary lanes developed at intersections.
6. Estimated Annual Average Daily Traffic (AADT) in Vehicles per Day (vpd).
7. "NYSDOT" = New York Department of Transportation. Source (Year). Obtained volumes represent the most recent available data.

Figure 2 illustrates the lane geometry at each of the study intersections and the AADT/ADT volumes on the study roadways.

IV. EXISTING TRAFFIC CONDITIONS

A. Peak Intervals for Analysis

Given the functional characteristics of the land uses proposed for the Project Site (residential, office and retail), the peak hours selected for analysis are the weekday commuter AM and PM peaks. The combination of site traffic and adjacent through traffic produces the greatest demand during these time periods.

B. Existing Traffic Volume Data

Historical weekday commuter AM (7:00-9:00 AM) and PM (4:00-6:00 PM) peak hour volumes were obtained from the Greater Buffalo Niagara Regional Transportation Council (GRBNRTC) and the Traffic Impact Statement for The Hub Amherst at the study area intersections, as noted in *Section II*, on Tuesday February 28, 2017 and Monday, July 17, 2017. The peak hour traffic periods generally occurred between 7:30-8:30 AM and 4:45-5:45 PM at the study intersections. Given the current traffic situation due to business restrictions resulting from COVID-19, it is not possible to collect more current traffic data.

All turning movement count data was collected on a typical weekday. The traffic volumes were reviewed to confirm the accuracy and relative balance of the collective traffic counts. Traffic volumes were adjusted to reflect 2020 traffic conditions by adding traffic associated with any developments (e.g. The Hub residential development) that have been constructed or are currently under construction since the data collection in 2017. The 2020 weekday AM and PM peak hour base volumes used for analysis purposes in this study are reflected in **Figure 3**.

C. Field Observations

Signal timing information was obtained by the Town of Amherst at the signalized intersection within the study area to determine peak hour phasing plans and phase durations during each interval.

D. Existing Crash History Analysis

Crash data has been requested from local agencies and an analysis will be provided once all data is received.

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V. FUTURE AREA DEVELOPMENT AND LOCAL GROWTH

Construction of the proposed mixed-use project is anticipated to be completed within two years. Town of Amherst officials were contacted to discuss projects within the study area that are under construction and/or approved. Three projects were identified that are either under construction, approved for construction, or completed after data was collected in 2017: The Hub Amherst at 2949 North Forest Road, a student housing project on Site "B" of the Muir Woods Property , and a mixed-use building at 315 Campbell Boulevard.

Traffic related to full build out of The Hub Development was used to develop the 2020 base traffic volumes. Additional traffic related to the proposed student housing project on Site "B" of the Muir Woods Property has been added to the base traffic volumes at the study area intersections. To account for normal increases in background traffic growth including the mixed-use building 315 Campbell Boulevard, as well as any other unforeseen developments in the project study area, a growth rate of one percent (1%) per year has been applied to the base traffic volumes. This growth rate is based upon historical traffic growth derived from NYSDOT traffic volume data for the area as well as consideration of the approved projects previously mentioned. The 2022 background traffic volumes are depicted in **Figure 4** for the build out time period.

VI. PROPOSED DEVELOPMENT

A. Description

The proposed mixed-use project will construct:

- (45) 2-unit attached townhomes
- (2) 6-unit 1-story apartment buildings
- (2) 4-story mixed-use buildings with (12) commercial units and (5) apartment units on the 1st floor; apartments on floors 2-4 (50 units total)

An estimated 1,875 square feet (SF) per commercial tenant for the 12 commercial units. Of the 12 units, it is estimated that 8 units will consist of retail use and 4 units will consist of general office space. Access to the Project Site will be provided via three proposed driveways connecting to Dodge Road as follows: one full access driveway located at the southerly/easterly end of the site, one full access driveway located at the northerly/westerly end of the site, and a one-way couple separated by a 42 ft wide pedestrian amenity area (i.e. one driveway is enter-only and the other is exit only).

B. Site Traffic Generation

The volume of traffic generated by a site is dependent on the intended land use and size of the development. Trip generation is an estimate of the number of trips generated by a specific building or land use. These trips represent the volume of traffic entering and exiting the development. Trip Generation, 10th Edition is used as a reference for this information. Data published by the ITE is the nationally accepted standard for generating trips for new uses. The trip rate for the peak hour of the generator may or may not coincide in time or volume with the trip rate for the peak hour of adjacent street traffic. Volumes generated during the peak hour of adjacent street traffic, in this case, the weekday AM and PM peaks, represent a more critical volume when analyzing the capacity of the system; those intervals will provide the basis of this analysis. All trip generation information has been included in the appendix.

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Table II summarizes the volume of projected site trips during the weekday AM and PM peak hours.

TABLE II
SITE GENERATED TRIPS

DESCRIPTION	ITE LUC	SIZE/ UNITS	AM PEAK HOUR		PM PEAK HOUR	
			ENTER	EXIT	ENTER	EXIT
Houses w/ 2- Car Detached Garage	210	90 units	17	50	56	33
1-Story Apartments	220	12 units	1	5	6	3
4-Story Apartment Units	221	100 units	9	25	27	17
General Office Building	710	15,000 SF	14	2	2	14
Variety/Retail Store	814	15,000 SF	6	3	15	15
		Total Site Trips	***47***	***85***	***106***	***82***

Notes:
1. "ITE LUC" = ITE Land Use Code.

The proposed mixed-use project is expected to generate approximately 47 entering/85 exiting vehicle trips during the AM weekday peak hour and 106 entering/82 exiting vehicle trips during the PM weekday peak hour.

C. Site Traffic Distribution

The cumulative effect of site traffic on the transportation network is dependent on the origins and destinations of that traffic and the location of the access drive serving the Project Site.

The proposed arrival/departure distribution of traffic to be generated at this site is considered a function of several parameters, including the following:

- Employment centers in the local area and region;
- Population centers in the local area and region;
- Proximity and access to Interstate 990;
- Proximity to the North Campus of the University at Buffalo;
- Site access drive locations and internal roadway circulation;
- Existing highway network;
- Existing traffic patterns; and
- Existing traffic conditions and controls

Based on these parameters, **Figure 6** shows the anticipated trip distribution patterns for the proposed development. **Figure 7** illustrates the peak hour of site-generated traffic based on those percentages for the proposed development.

VII. FULL DEVELOPMENT VOLUMES

The projected design hour traffic volumes were developed for the weekday AM and PM peak hours by combining the future background traffic conditions (Figure 4), and projected site generated for the proposed development (Figure 7) to yield the total traffic conditions expected under full development conditions. **Figure 8** illustrate the total weekday AM and PM peak hour

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volumes anticipated for the proposed mixed-use project under full development conditions respectively.

VIII. CAPACITY ANALYSIS

Capacity analysis is a technique used for determining a measure of effectiveness for a section of roadway and/or intersection based on the number of vehicles during a specific time period. The measure of effectiveness used for the capacity analysis is referred to as a Level of Service (LOS). Levels of Service are calculated to provide an indication of the amount of delay that a motorist experiences while traveling along a roadway or through an intersection. Since the most amount of delay to motorists usually occurs at intersections, capacity analysis typically focuses on intersections, as opposed to highway segments.

Six Levels of Service are defined for analysis purposes. They are assigned letter designations, from "A" to "F", with LOS "A" representing the best conditions and LOS "F" the worst. Suggested ranges of service capacity and an explanation of Levels of Service are included in the Appendix.

The standard procedure for capacity analysis of signalized and un-signalized intersections is outlined in the Highway Capacity Manual (HCM 2016) published by the Transportation Research Board. Traffic analysis software, Synchro 10, which is based on procedures and methodologies contained in the HCM, was used to analyze operating conditions at study area intersections. The procedure yields a Level of Service (LOS) based on the HCM as an indicator of how well intersections operate.

Existing base and background operating conditions during the peak study periods are evaluated to determine a basis for comparison with the projected future conditions. The future traffic conditions generated by the proposed development under Phase I and full build out were analyzed to assess the operations of the intersections in the study area. Capacity results for existing, background, and full development conditions are listed in **Table III**. The discussion following the table summarizes capacity conditions. All capacity analysis calculations are included in the Appendices.

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TABLE III: CAPACITY ANALYSIS RESULTS

INTERSECTION	2020 BASE CONDITIONS				2022 BACKGROUND CONDITIONS				FULL BUILD CONDITIONS			
	AM		PM		AM		PM		AM		PM	
Sweet Home Road / Commerce Drive/Dodge Road (S)												
EB left - Commerce Road	D	40.5	C	30.3	D	41.1	C	30.9	D	41.1	C	32.1
EB thru/right - Commerce Drive	B	14.2	E	77.7	B	14.3	F	88.5	B	15.0	F	100.2
WB left- Dodge Road	C	27.7	F	191.3	C	28.0	F	*	C	29.3	F	*
WB thru/right - Dodge Road	E	76.4	B	19.3	F	86.8	B	19.9	F	106.8	C	22.9
NB left - Sweet Home Road	C	31.5	C	32.4	C	33.3	C	34.3	C	33.3	C	34.8
NB thru/right - Sweet Home Road	C	20.9	B	18.8	C	21.0	B	19.2	C	21.2	C	20.5
SB left - Sweet Home Road	B	17.6	B	10.1	B	19.0	B	10.3	C	21.2	B	11.9
SB thru/right - Sweet Home Road	C	30.0	C	32.2	C	30.8	C	33.8	C	30.7	C	33.7
Overall LOS	***C***	***34.0***	***D***	***37.6***	***D***	***36.3***	***D***	***40.3***	***D***	***40.4***	***D***	***47.7***
Dodge Road / Proposed North Driveway (U)												
SEB thru/left - Dodge Road	N/A				N/A				A	8.3	A	8.5
SWB - Proposed North Driveway									B	14.9	B	14.9
Dodge Road / Proposed Middle Exit Only Driveway (U)												
SWB - Proposed Middle Exit Only Driveway	N/A				N/A				B	13.3	B	13.4
Dodge Road / Proposed South Driveway (U)												
SEB thru/left - Dodge Road	N/A				N/A				A	8.2	A	8.5
SWB - Proposed South Driveway									C	16.2	C	16.1
Dodge Road / North ForestRoad (U)												
WB thru/left - Dodge Road	A	9.2	A	8.3	A	9.3	A	8.4	A	9.5	A	8.6
NB - North Forest Road	D	27.5	D	28.6	D	31.1	E	35.9	E	39.6	F	59.6

NOTES:

1. A(2.8) = Level of Service (Delay in seconds per vehicle)
2. (U) = Unsignalized
3. N/A = Approach does not exist and/or was not analyzed during this condition
4. F(*) = Delay greater than 200 seconds per vehicle

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Sweet Home Rd/Commerce Drive-Dodge Road
All approaches operate at LOS "D" or better during the AM and PM peak hours under all conditions with the exception of the westbound through/right turn movement which operates at LOS "F" under background and future conditions during the AM peak hour; in addition the westbound left turn and the eastbound through/right turn movements also operate at LOS "F" under background conditions during the PM peak hour. The southbound left turn movement is projected to change from LOS "B" to "C" between background and full development conditions during the AM peak hour. No other changes in LOS are projected as a result of the development. The existing traffic signal is fully actuated and will automatically adjust, within the set parameters, to accommodate the additional traffic. No mitigation is warranted or recommended at this intersection as a result of the proposed development.

Dodge Road/Proposed Driveways
All of the proposed driveways are projected to operate at LOS "C" or better during both peak hours under full development conditions.

Dodge Road/North Forest Road
All approaches operate at LOS "D" or better during the AM peak hour under the existing base and background conditions. During the PM peak hour, the northbound approach operates at LOS "E" under background conditions. Under full development conditions, the northbound approach is projected to operate at LOS "E" during the AM peak hour and LOS "F" with delays on the order of 59.6 seconds per vehicle during the PM peak hour. The development will add 7(16) northbound left turns during the AM(PM) peak hours. The traffic volumes that are exiting northbound North Forest Road are relatively small and a traffic signal is not warranted at this location. No mitigation is warranted or recommended at this intersection as a result of the proposed development.

IX. CONCLUSIONS

This study evaluates the potential traffic impacts resulting from the Muir Woods Site A Development. This study also provides the Town of Amherst and other governmental agencies with detailed information providing a hard look at potential traffic impacts for the purpose of the environmental review of the proposed mixed-use project pursuant to the State Environmental Quality Review Act ("SEQRA").

Based upon the analyses, the results indicate that the proposed mixed-use project will not have significant adverse traffic impacts on the existing roadway network. The following sets forth conclusions based upon the results of the analyses:

1. The proposed mixed-use project is expected to generate approximately 47 entering/85 exiting vehicle trips during the AM peak hour and 106 entering/82 exiting vehicle trips during the PM peak hour.

2. The proposed mixed-use project will not result in any potentially significant adverse traffic impacts to the study area intersections. No mitigation is warranted at the study area intersections as a result of the proposed mixed-use project.

X. FIGURES

Figures 1 through 8 are included on the following pages.

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

FIGURE 1 - SITE LOCATION AND STUDY AREA



Legend

- Study Intersection
- Proposed Driveway
- Site Location
- Study Area

PROPOSED MUIR WOODS SITE A DEVELOPMENT

TOWN OF AMHERST, NY

0 250 500 1000

Feet

N

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Transportation

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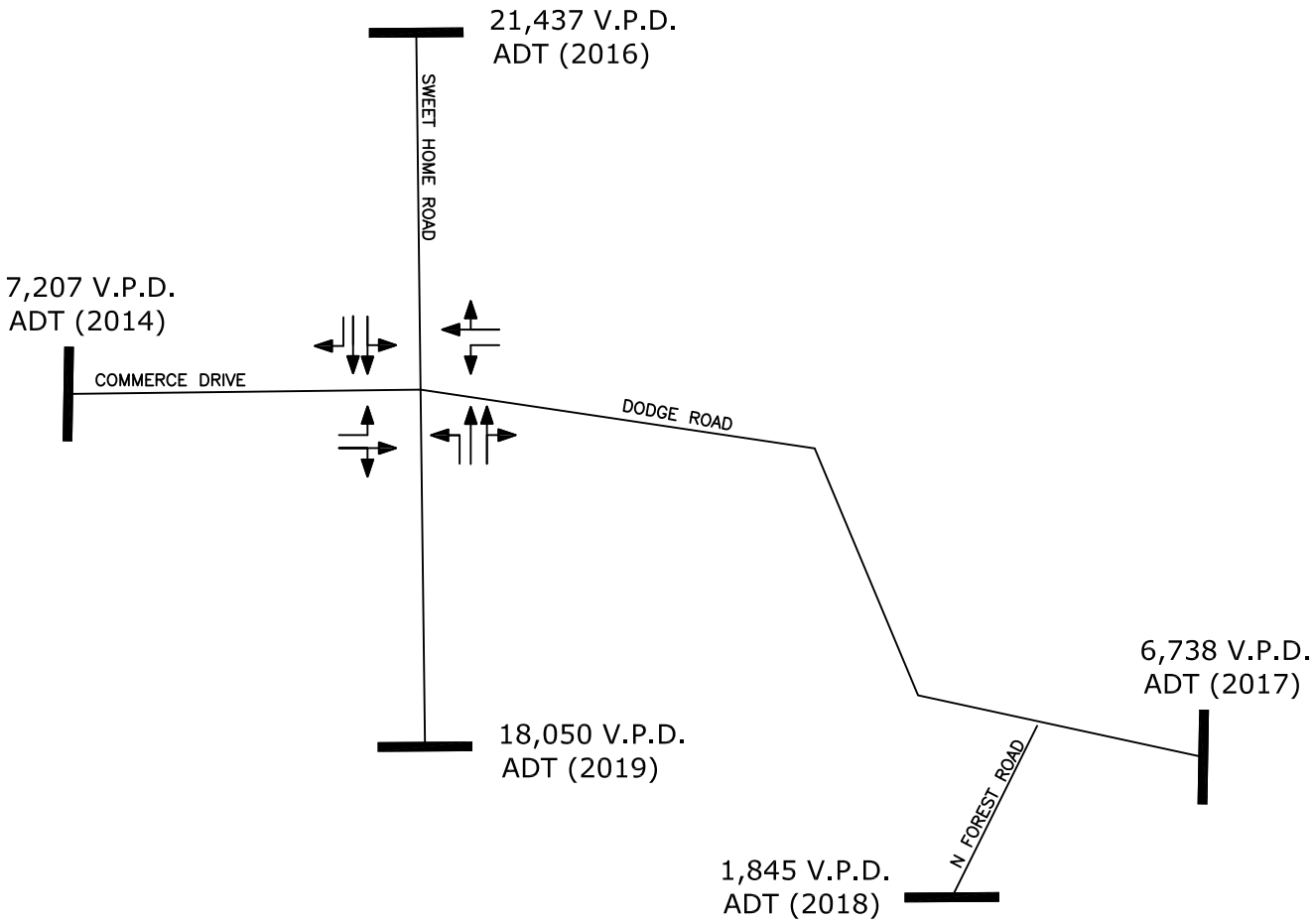

NOTES:
1. All counts by NYSDOT
2. V.P.D. = Vehicles per Day

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FIGURE 2

LANE GEOMETRY &
AVERAGE DAILY TRAFFIC

PROPOSED MUIR WOODS SITE A,
TOWN OF AMHERST, NY

KEY

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

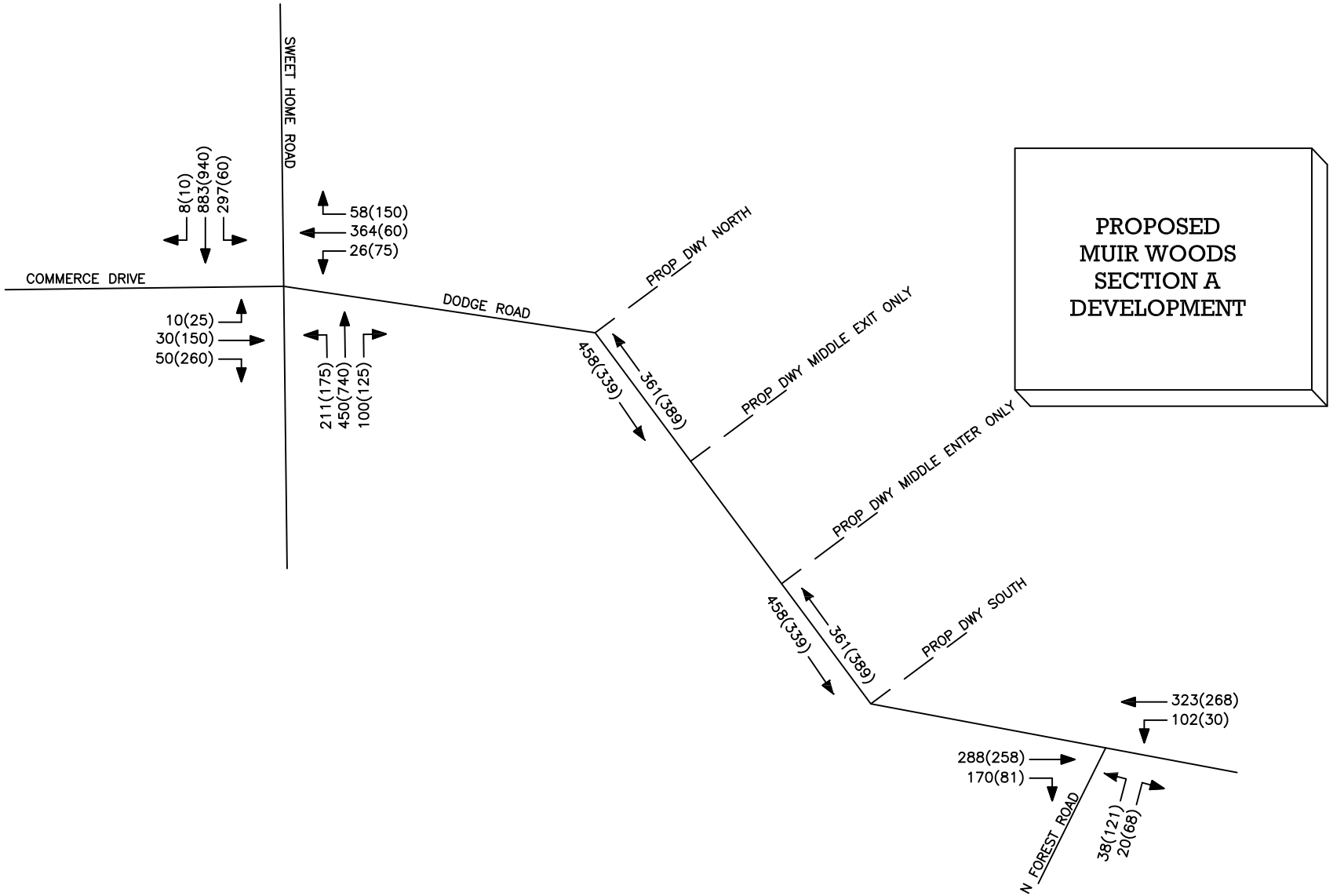

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FIGURE 3

PEAK HOUR VOLUMES
2020 BASE CONDITIONS

PROPOSED MUIR WOODS SITE A,
TOWN OF AMHERST, NY

KEY

00(00) = AM(PM)

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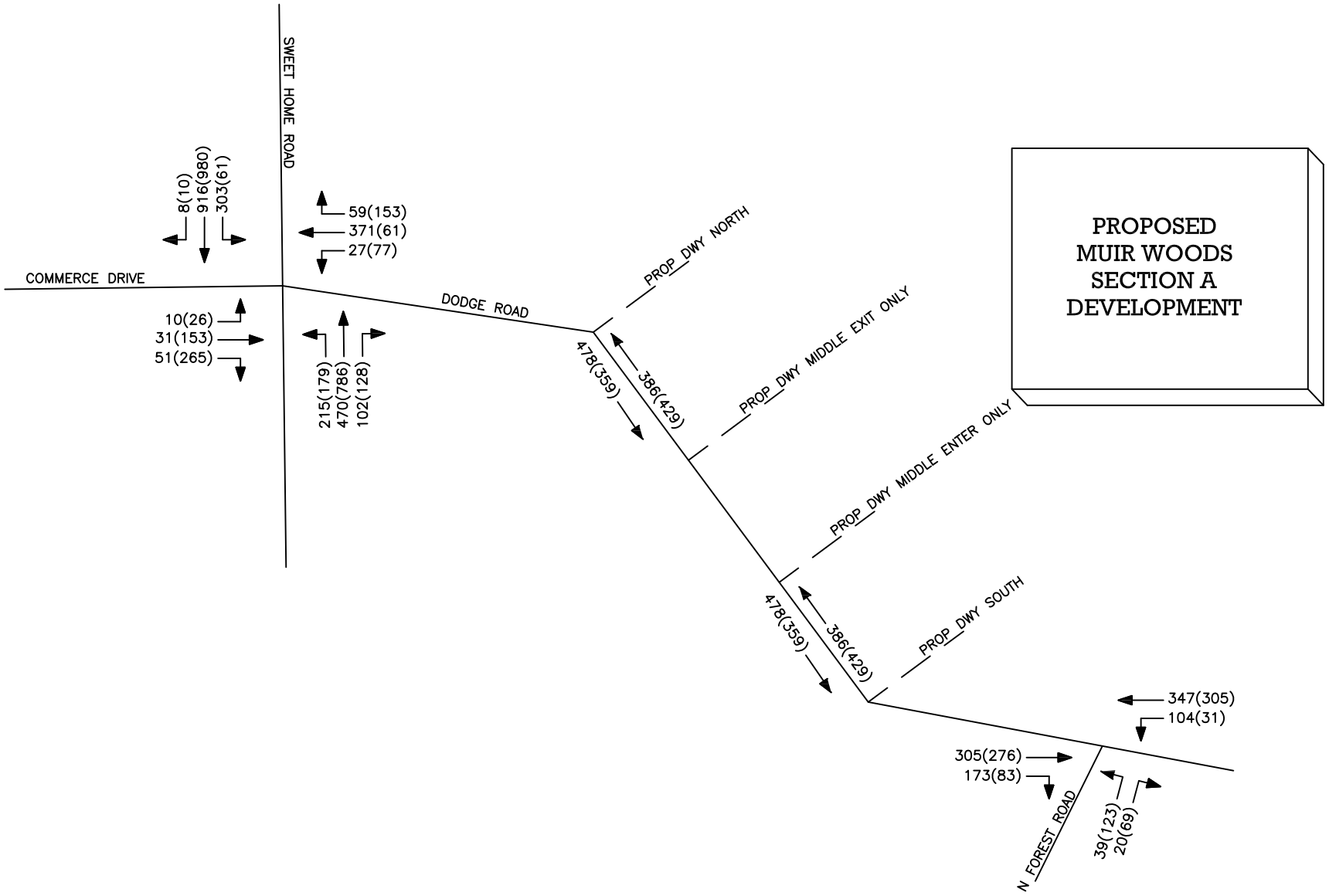

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FIGURE 4

PEAK HOUR VOLUMES
2022 BACKGROUND CONDITIONS

PROPOSED MUIR WOODS SITE A,

KEY

00(00) = AM(PM)

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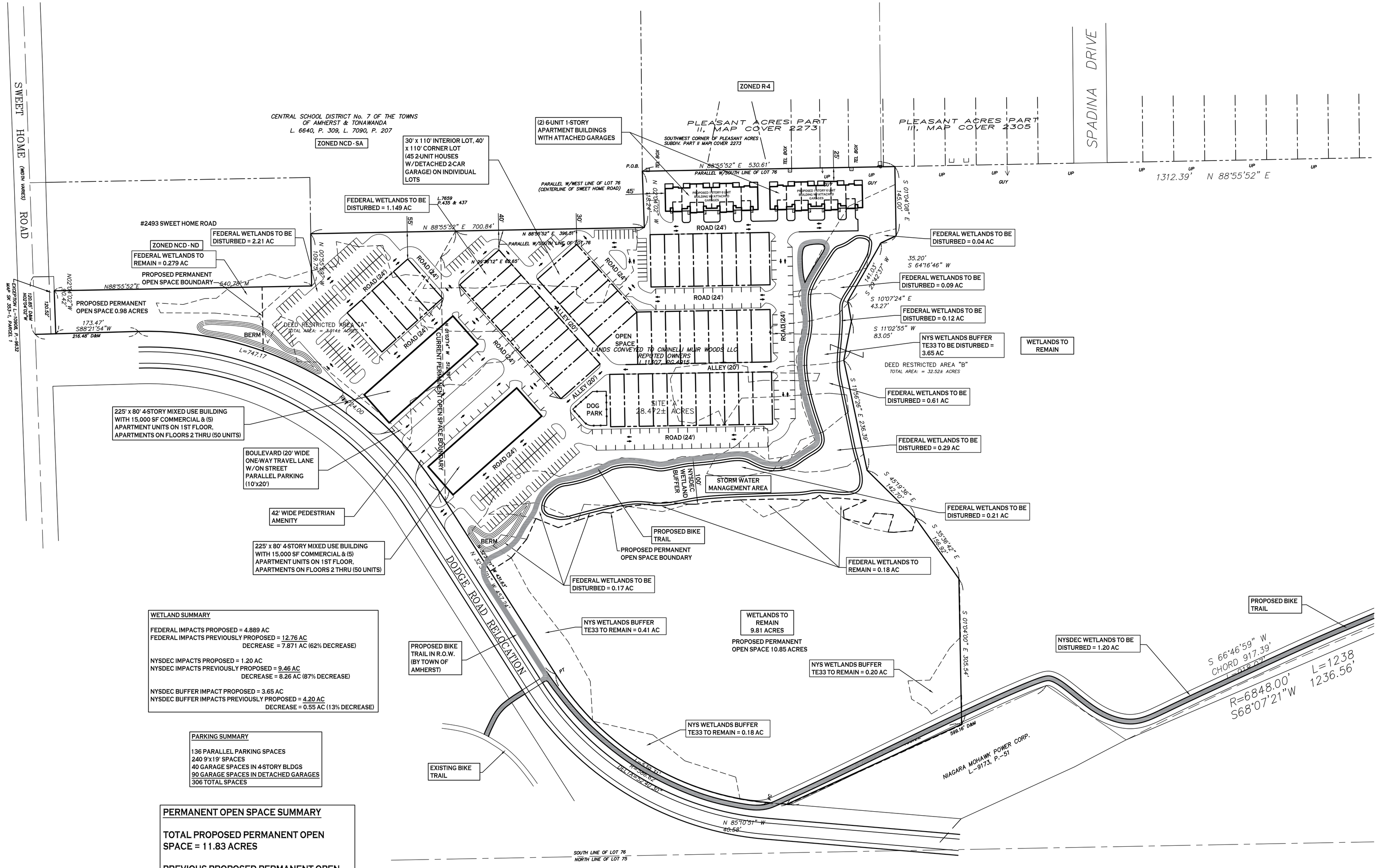

SITE PLAN

SCALE: 1"=100'

WETLAND SUMMARY

FEDERAL IMPACTS PROPOSED = 4.889 AC
FEDERAL IMPACTS PREVIOUSLY PROPOSED = 12.76 AC
DECREASE = 7.871 AC (62% DECREASE)

NYSDEC IMPACTS PROPOSED = 1.20 AC
NYSDEC IMPACTS PREVIOUSLY PROPOSED = 9.46 AC
DECREASE = 8.26 AC (87% DECREASE)

NYSDEC BUFFER IMPACT PROPOSED = 3.65 AC
NYSDEC BUFFER IMPACTS PREVIOUSLY PROPOSED = 4.20 AC
DECREASE = 0.55 AC (13% DECREASE)

PARKING SUMMARY

136 PARALLEL PARKING SPACES
240 9'x19' SPACES
40 GARAGE SPACES IN 4-STORY BLDGS
90 GARAGE SPACES IN DETACHED GARAGES
306 TOTAL SPACES

PERMANENT OPEN SPACE SUMMARY

TOTAL PROPOSED PERMANENT OPEN SPACE = 11.83 ACRES

PREVIOUS PROPOSED PERMANENT OPEN SPACE = 3.91 ACRES

NET INCREASE = 7.92 ACRES

SITE DATA

28.47 ACRES TOTAL
ZONED: NCD - ND

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Muir Woods Site "A"

Sweet Home & Dodge Road
Amherst, New York

Date: 7/1/20
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Concept Site Plan

DRAWING NO.

C-100

Project no.: 19.192

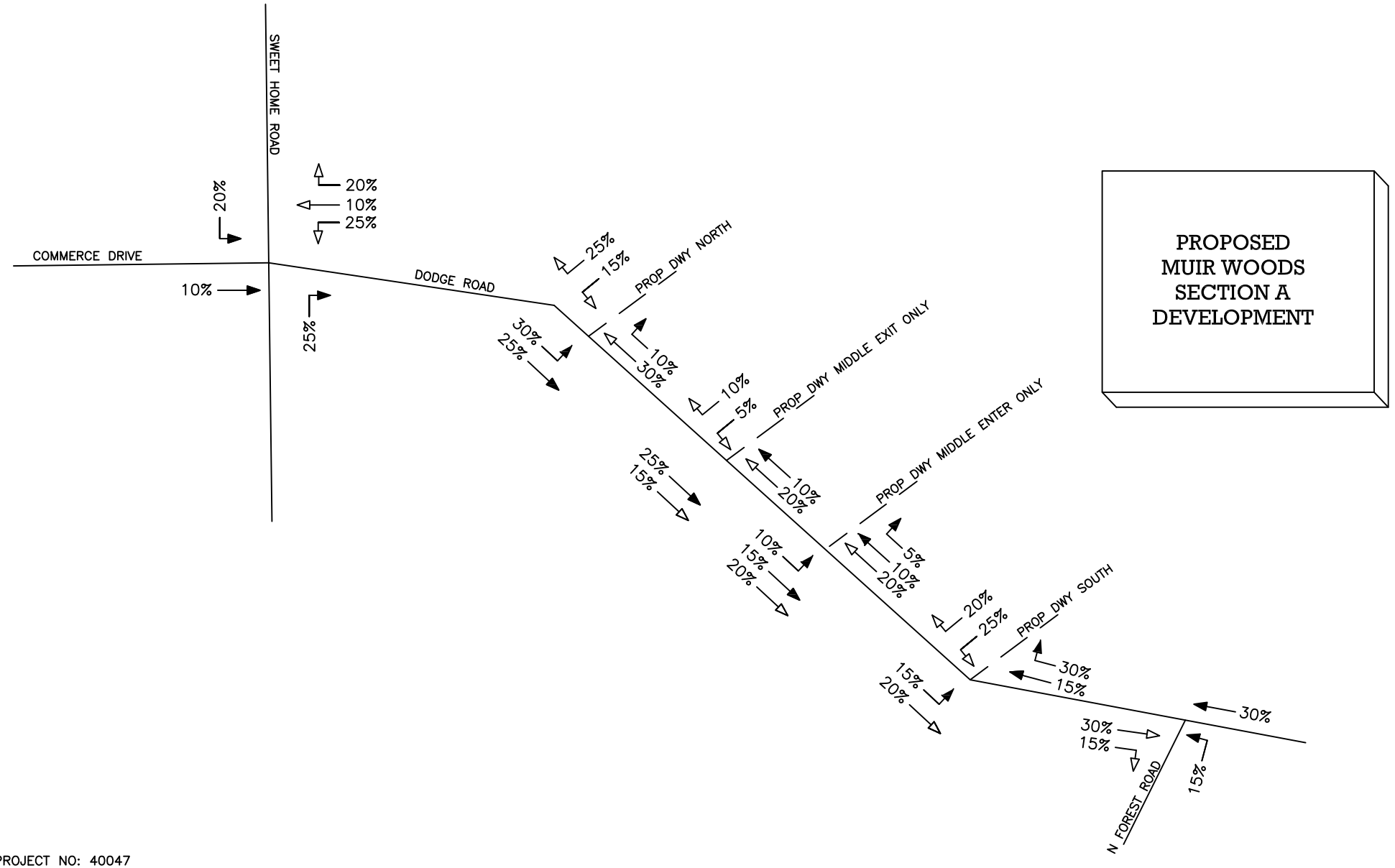

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FIGURE 6

TRIP DISTRIBUTION

PROPOSED MUIR WOODS SITE A,
TOWN OF AMHERST, NY

KEY

00(00) = AM(PM)
ENTERING TRIPS →
EXITING TRIPS →

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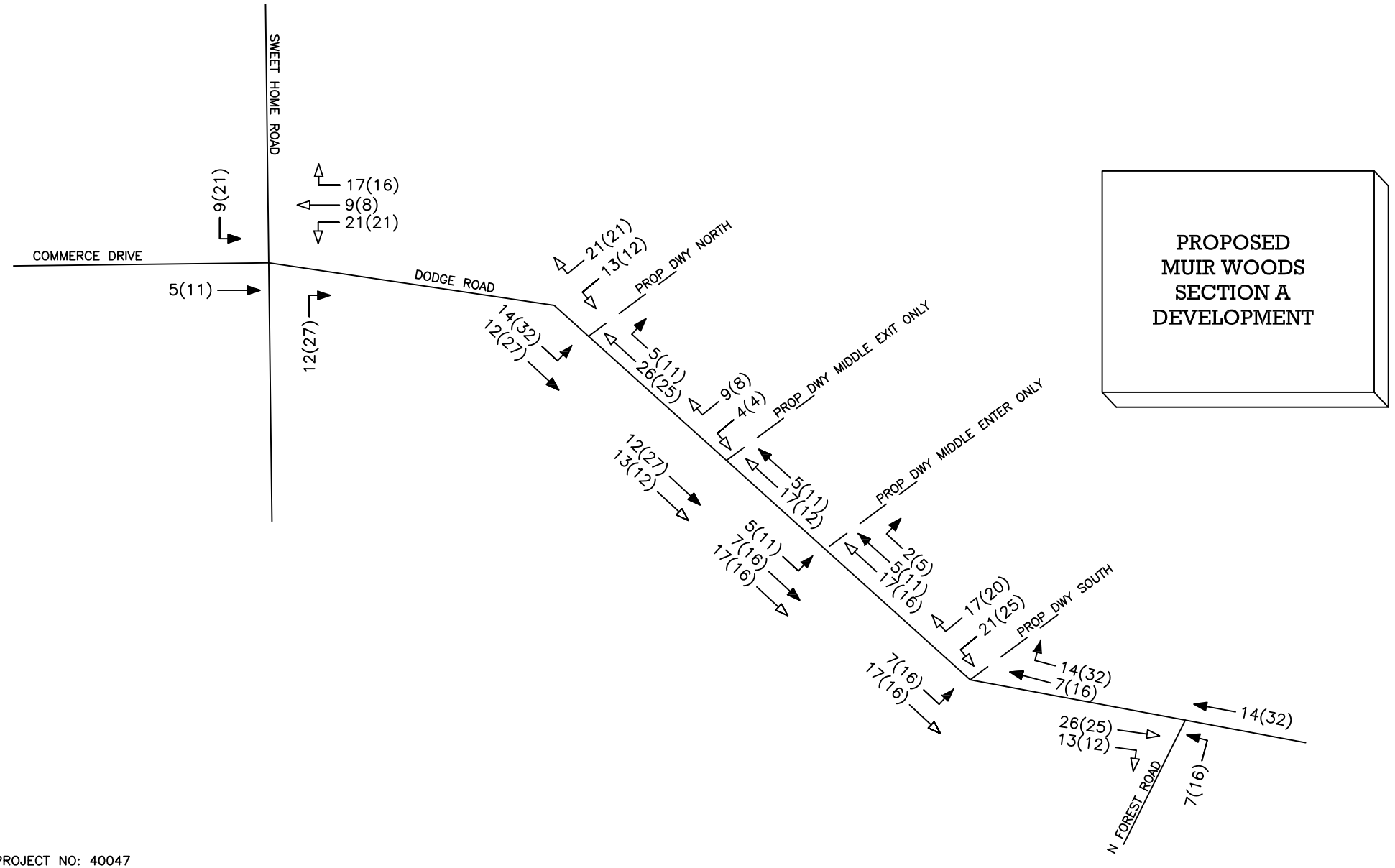

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FIGURE 7

SITE GENERATED TRIPS

PROPOSED MUIR WOODS SITE A,
TOWN OF AMHERST, NY

KEY

00(00) = AM(PM)
ENTERING TRIPS →
EXITING TRIPS →

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

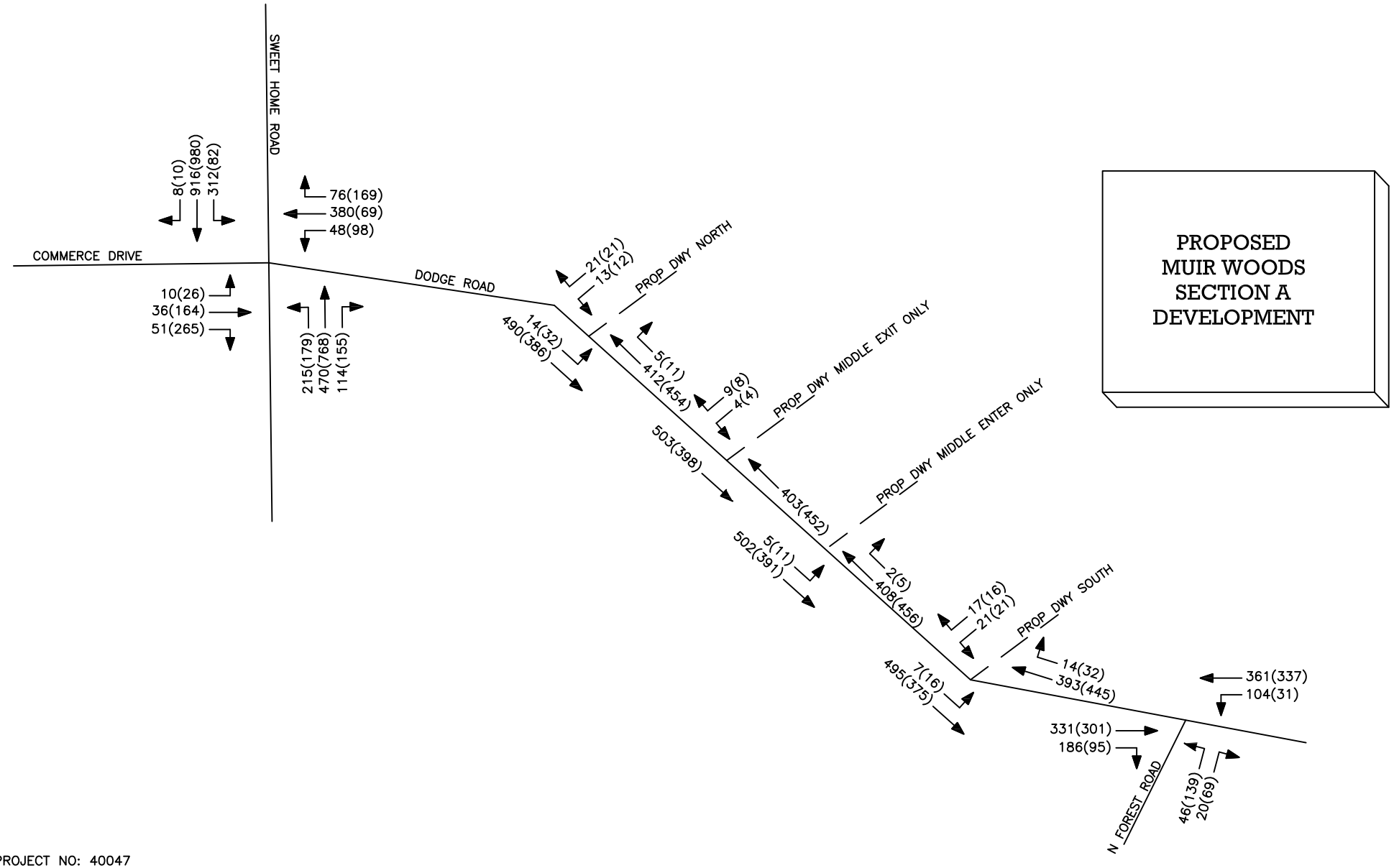

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FIGURE 8

PEAK HOUR VOLUMES
FULL DEVELOPMENT CONDITIONS

PROPOSED MUIR WOODS SITE A,
TOWN OF AMHERST, NY

KEY

00(00) = AM(PM)

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APPENDICES

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

A1

Collected Traffic Volume Data

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

TRI-STATE TRAFFIC DATA
www.TSTData.com
184 Baker Rd
Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Amherst, NY
N Forest Rd/Dodge Rd
Tuesday, February 28, 2017
Location: 43.023716, -78.788008

Count Name: N Forest Rd/Dodge Rd
Site Code:
Start Date: 02/28/2017
Page No: 1

Turning Movement Data

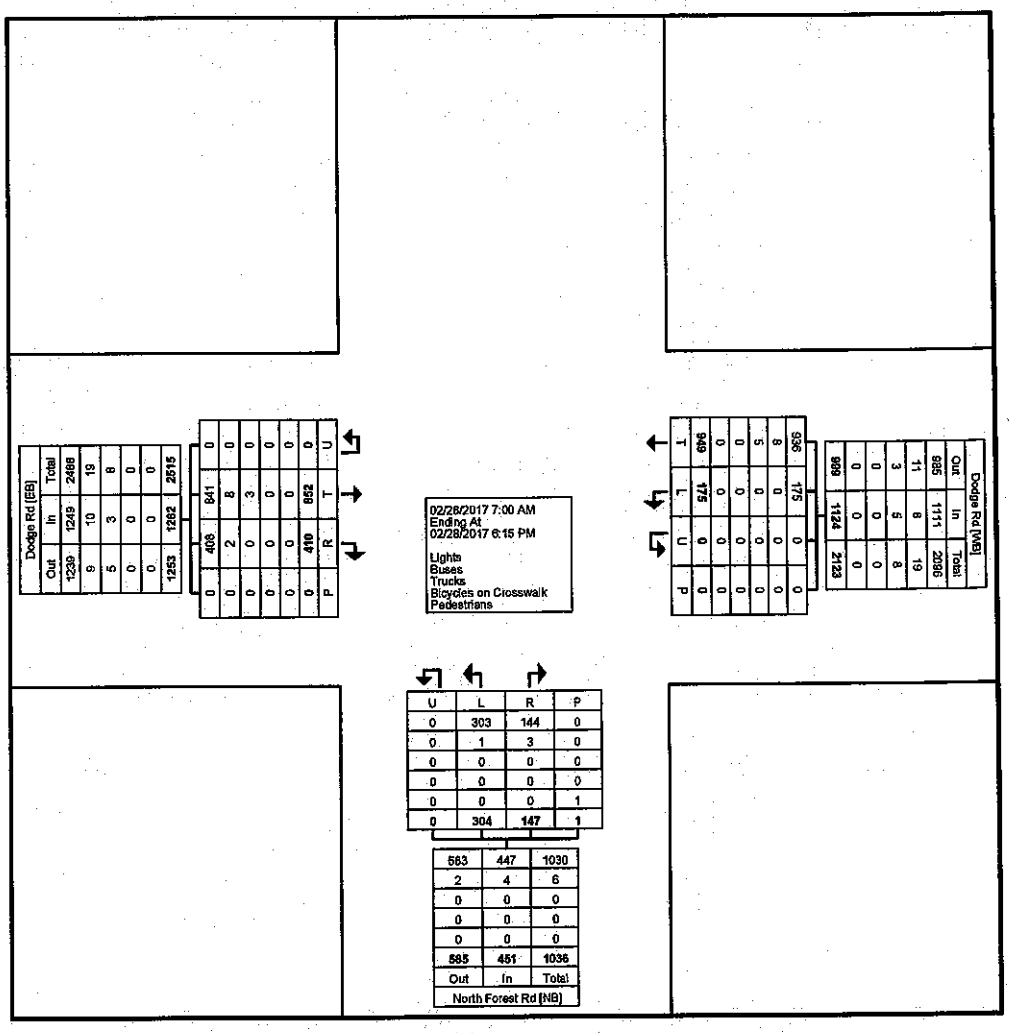
Start Time	Dodge Rd Westbound					North Forest Rd Northbound					Dodge Rd Eastbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
7:00 AM	32	3	0	0	35	2	12	0	0	14	21	30	0	0	51	100
7:15 AM	51	5	0	0	56	1	8	0	0	9	23	37	0	0	60	125
7:30 AM	77	15	0	0	92	4	10	0	0	14	54	55	0	0	109	215
7:45 AM	101	41	0	0	142	5	5	0	0	10	53	85	0	0	138	290
Hourly Total	261	64	0	0	325	12	35	0	0	47	151	207	0	0	358	730
8:00 AM	83	19	0	0	102	2	5	0	0	7	37	53	0	0	90	199
8:15 AM	59	25	0	0	84	6	14	0	0	20	24	59	0	0	83	187
8:30 AM	37	10	0	0	47	3	12	0	0	15	32	45	0	0	77	139
8:45 AM	44	14	0	0	58	4	14	0	1	18	26	50	0	0	76	152
Hourly Total	223	68	0	0	291	15	45	0	1	60	119	207	0	0	326	677
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	56	8	0	0	64	35	35	0	0	70	20	37	0	0	57	191
4:15 PM	51	2	0	0	53	13	30	0	0	43	16	44	0	0	60	156
4:30 PM	58	5	0	0	63	16	34	0	0	50	19	51	0	0	70	183
4:45 PM	45	5	0	0	50	7	25	0	0	32	18	61	0	0	79	161
Hourly Total	210	20	0	0	230	71	124	0	0	195	73	193	0	0	266	691
5:00 PM	84	6	0	0	90	32	38	0	0	70	22	86	0	0	108	268
5:15 PM	78	11	0	0	89	10	22	0	0	32	19	55	0	0	74	195
5:30 PM	39	3	0	0	42	4	23	0	0	27	11	67	0	0	78	147
5:45 PM	53	3	0	0	56	3	17	0	0	20	15	37	0	0	52	128
Hourly Total	254	23	0	0	277	49	100	0	0	149	67	245	0	0	312	738
6:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Grand Total	949	175	0	0	1124	147	304	0	1	451	410	852	0	0	1262	2837
Approach %	84.4	15.6	0.0	-	-	32.6	67.4	0.0	-	-	32.5	67.5	0.0	-	-	-
Total %	33.5	6.2	0.0	-	39.6	5.2	10.7	0.0	-	15.9	14.5	30.0	0.0	-	44.5	-
Lights	936	175	0	-	1111	144	303	0	-	447	408	841	0	-	1249	2807
% Lights	98.6	100.0	-	-	98.8	98.0	99.7	-	-	99.1	99.5	98.7	-	-	99.0	98.9
Buses	8	0	0	-	8	3	1	0	-	4	2	8	0	-	10	22
% Buses	0.8	0.0	-	-	0.7	2.0	0.3	-	-	0.9	0.5	0.9	-	-	0.8	0.8
Trucks	5	0	0	-	5	0	0	0	-	0	0	3	0	-	3	8
% Trucks	0.5	0.0	-	-	0.4	0.0	0.0	-	-	0.0	0.0	0.4	-	-	0.2	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

TRI-STATE TRAFFIC DATA
www.TSTData.com
184 Baker Rd
Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Amherst, NY
N Forest Rd/Dodge Rd
Tuesday, February 28, 2017
Location: 43.023716, -78.788008

Count Name: N Forest Rd/Dodge Rd
Site Code:
Start Date: 02/28/2017
Page No: 2



Turning Movement Data Plot

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

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Amherst, NY
N Forest Rd/Dodge Rd
Tuesday, February 28, 2017
Location: 43.023716, -78.788008

Count Name: N Forest Rd/Dodge Rd
Site Code:
Start Date: 02/28/2017

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Dodge Rd Westbound					North Forest Rd Northbound					Dodge Rd Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	
7:30 AM	77	15	0	0	92	4	10	0	0	14	54	55	0	0	109	215
7:45 AM	101	41	0	0	142	5	5	0	0	10	53	85	0	0	138	290
8:00 AM	83	19	0	0	102	2	5	0	0	7	37	53	0	0	90	199
8:15 AM	59	25	0	0	84	6	14	0	0	20	24	59	0	0	83	187
Total	320	100	0	0	420	17	34	0	0	51	168	252	0	0	420	891
Approach %	76.2	23.8	0.0	-	-	33.3	66.7	0.0	-	-	40.0	60.0	0.0	-	-	-
Total %	35.9	11.2	0.0	-	47.1	1.9	3.8	0.0	-	5.7	18.9	28.3	0.0	-	47.1	-
PHF	0.792	0.610	0.000	-	0.739	0.708	0.607	0.000	-	0.638	0.778	0.741	0.000	-	0.761	0.768
Lights	318	100	0	-	418	15	33	0	-	48	168	248	0	-	416	882
% Lights	99.4	100.0	-	-	99.5	88.2	97.1	-	-	94.1	100.0	98.4	-	-	99.0	99.0
Buses	1	0	0	-	1	2	1	0	-	3	0	2	0	-	2	6
% Buses	0.3	0.0	-	-	0.2	11.8	2.9	-	-	5.9	0.0	0.8	-	-	0.5	0.7
Trucks	1	0	0	-	1	0	0	0	-	0	0	2	0	-	2	3
% Trucks	0.3	0.0	-	-	0.2	0.0	0.0	-	-	0.0	0.0	0.8	-	-	0.5	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

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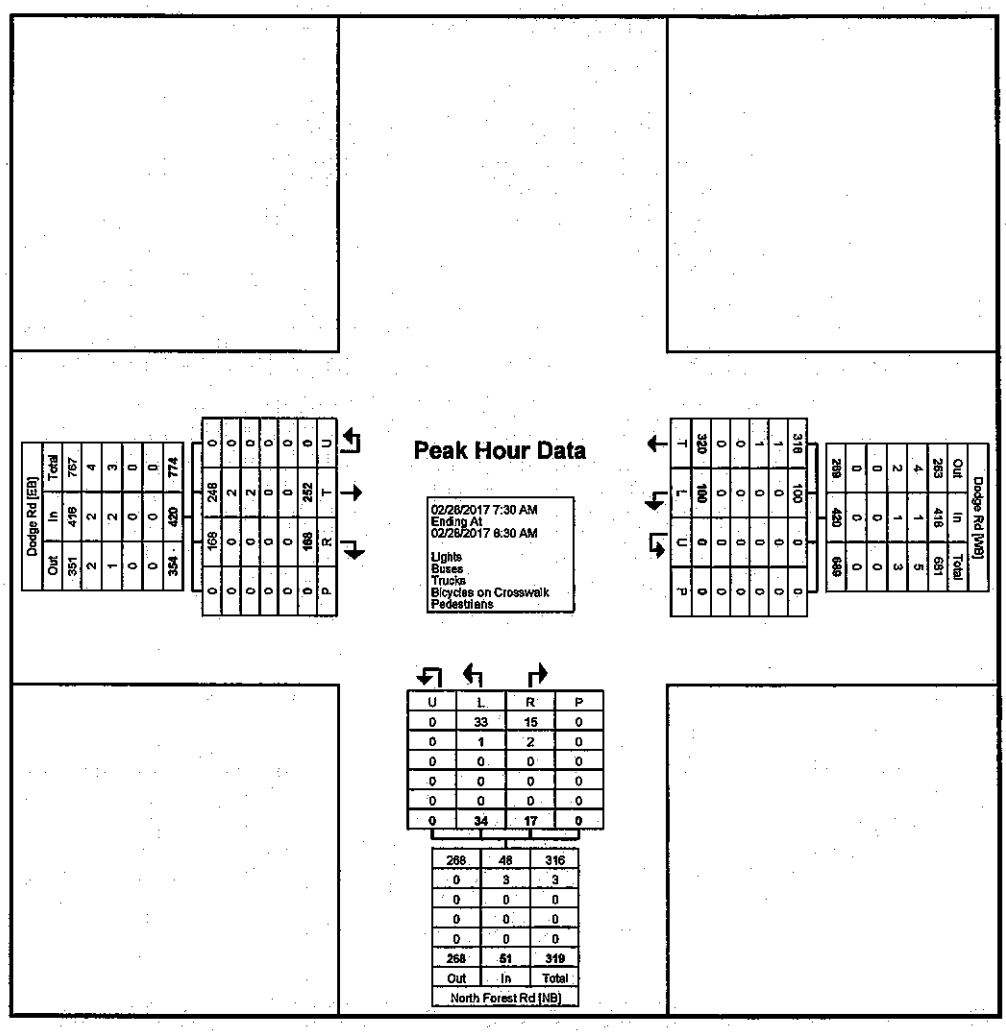

Turning Movement Peak Hour Data Plot (7:30 AM)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

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Serving Transportation Professionals Since 1995

Amherst, NY
N Forest Rd/Dodge Rd
Tuesday, February 28, 2017
Location: 43.023716, -78.788008

Count Name: N Forest Rd/Dodge Rd
Site Code:
Start Date: 02/28/2017
Page No: 5

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Dodge Rd Westbound					North Forest Rd Northbound					Dodge Rd Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	
4:30 PM	58	5	0	0	63	16	34	0	0	50	19	51	0	0	70	183
4:45 PM	45	5	0	0	50	7	25	0	0	32	18	61	0	0	79	161
5:00 PM	84	6	0	0	90	32	38	0	0	70	22	86	0	0	108	268
5:15 PM	78	11	0	0	89	10	22	0	0	32	19	55	0	0	74	195
Total	265	27	0	0	292	65	119	0	0	184	78	253	0	0	331	807
Approach %	90.8	9.2	0.0	-	-	35.3	64.7	0.0	-	-	23.6	76.4	0.0	-	-	-
Total %	32.8	3.3	0.0	-	36.2	8.1	14.7	0.0	-	22.8	9.7	31.4	0.0	-	41.0	-
PHF	0.789	0.614	0.000	-	0.811	0.508	0.783	0.000	-	0.657	0.886	0.735	0.000	-	0.766	0.753
Lights	265	27	0	-	292	65	119	0	-	184	78	253	0	-	331	807
% Lights	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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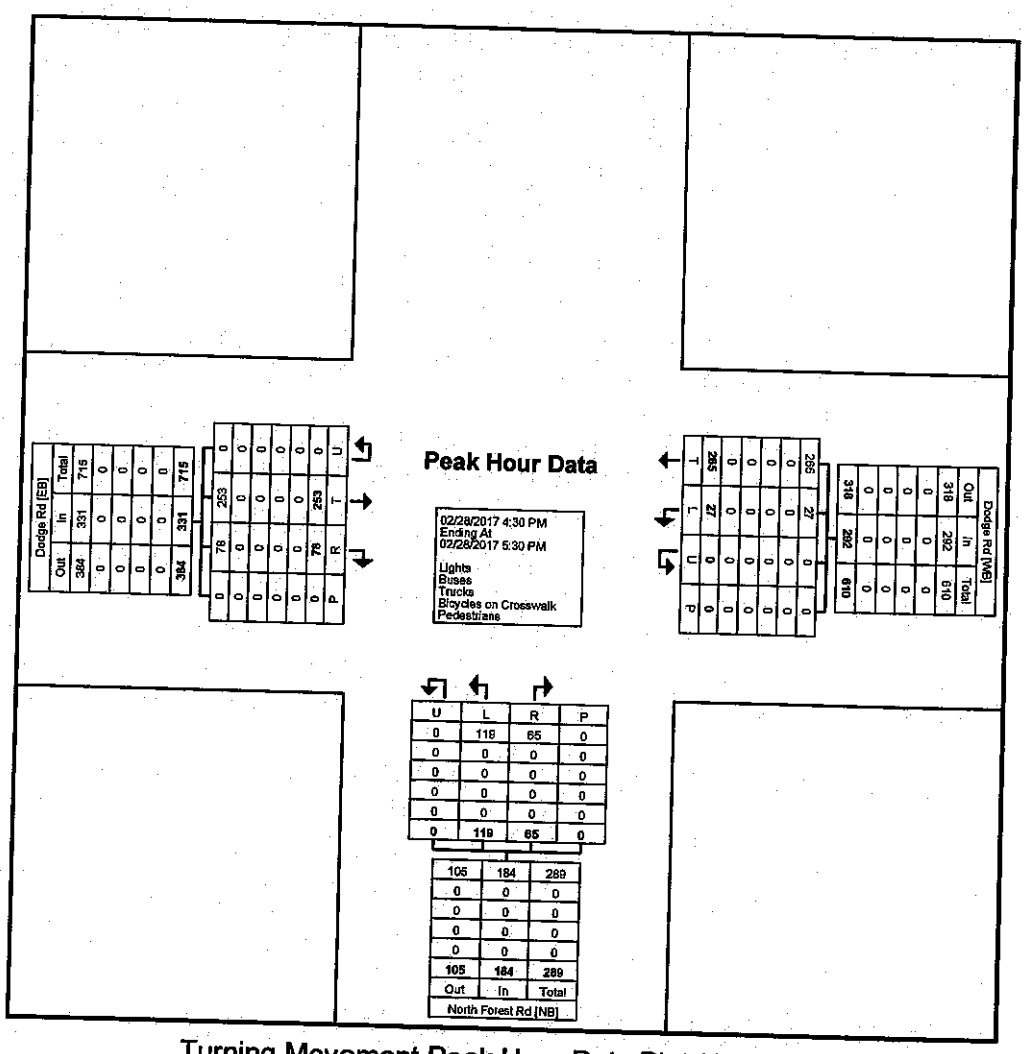
Start Date: 02/28/2017
Page No: 6



Turning Movement Peak Hour Data Plot (4:30 PM)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

TTS - THE HUB - 2949 N. FOREST
KIMLEY-HORN, 3/2017

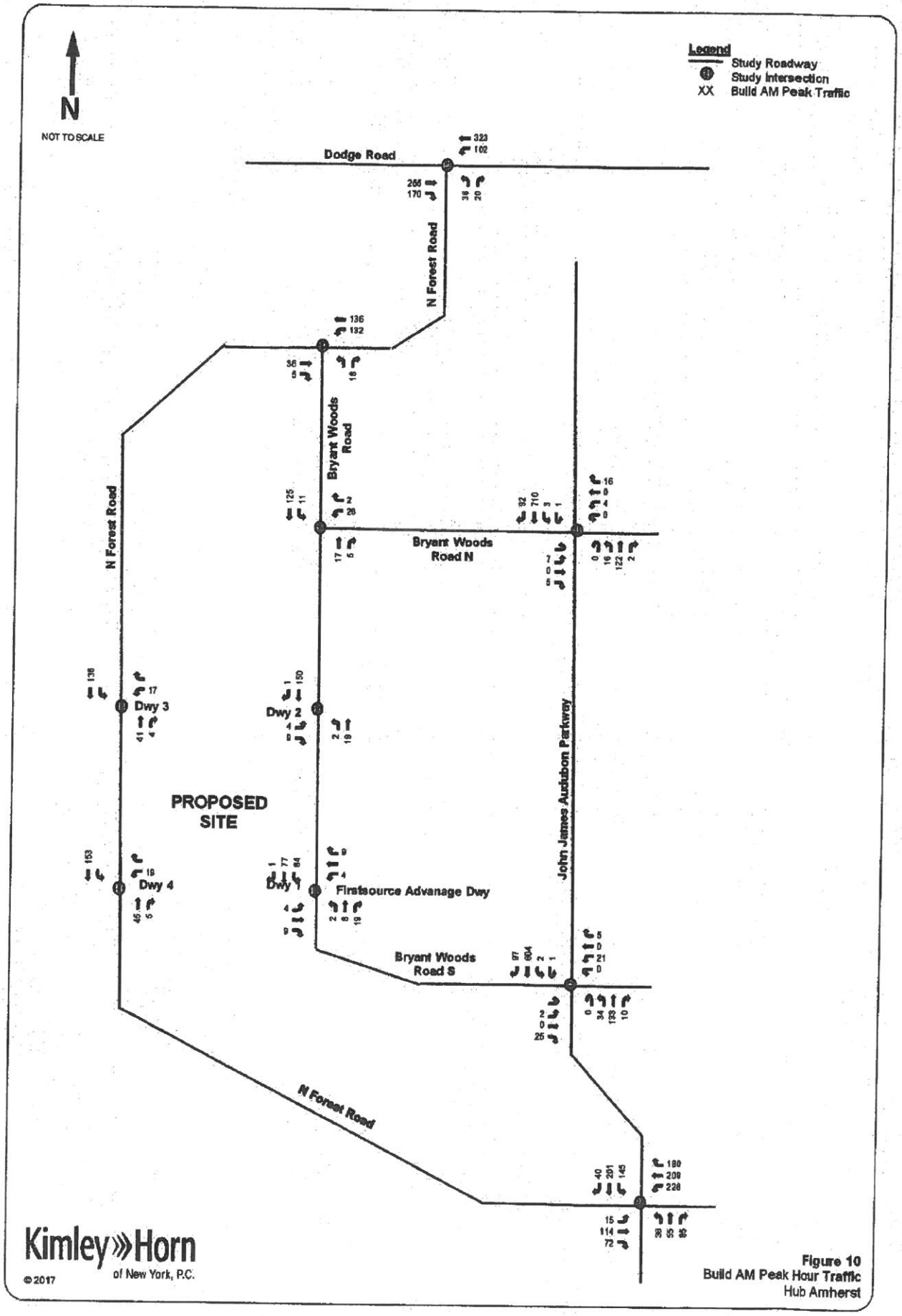


Figure 10
Build AM Peak Hour Traffic
Hub Amherst

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

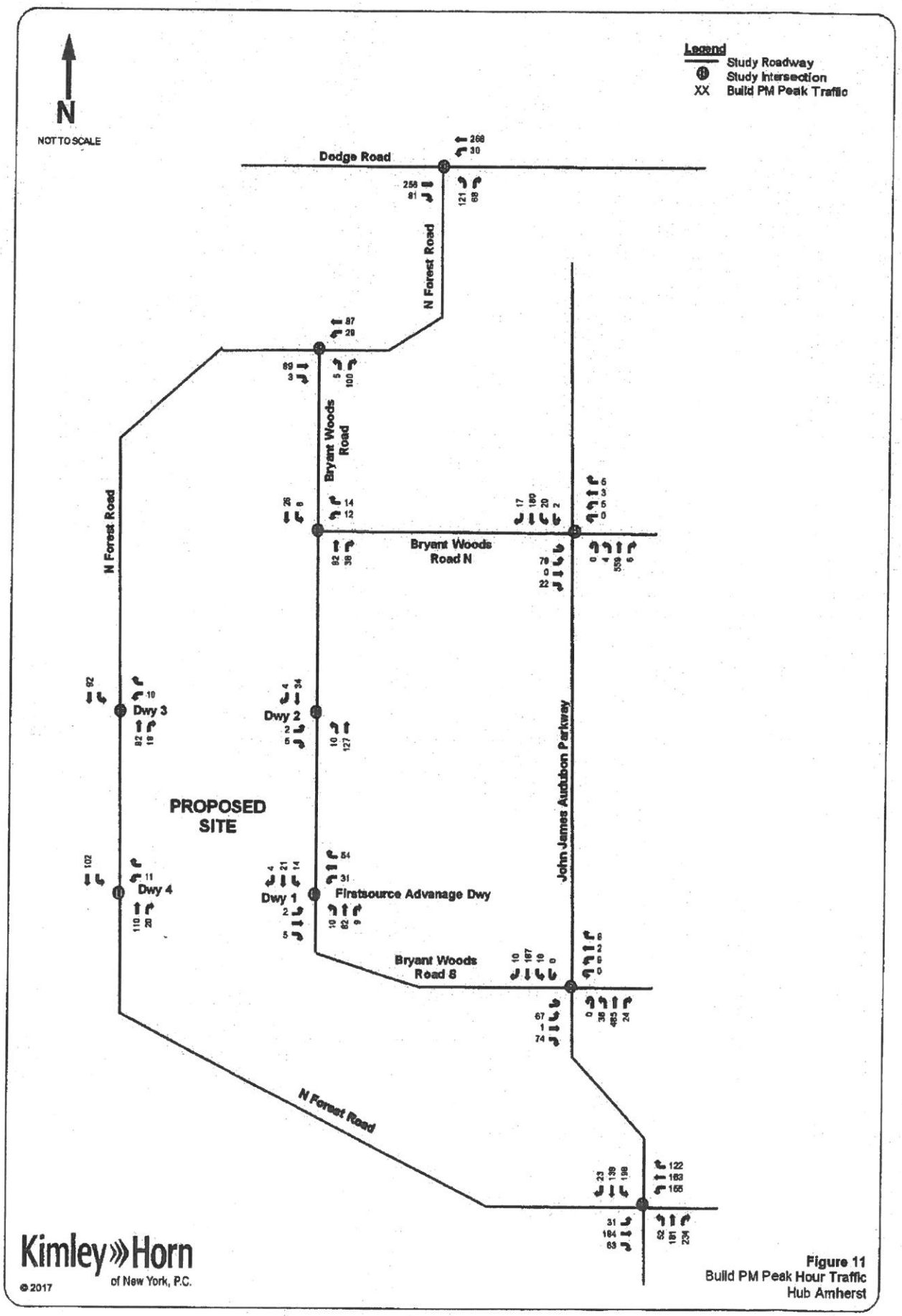


Figure 11
Build PM Peak Hour Traffic
Hub Amherst

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Peak Hour Data for Intersection

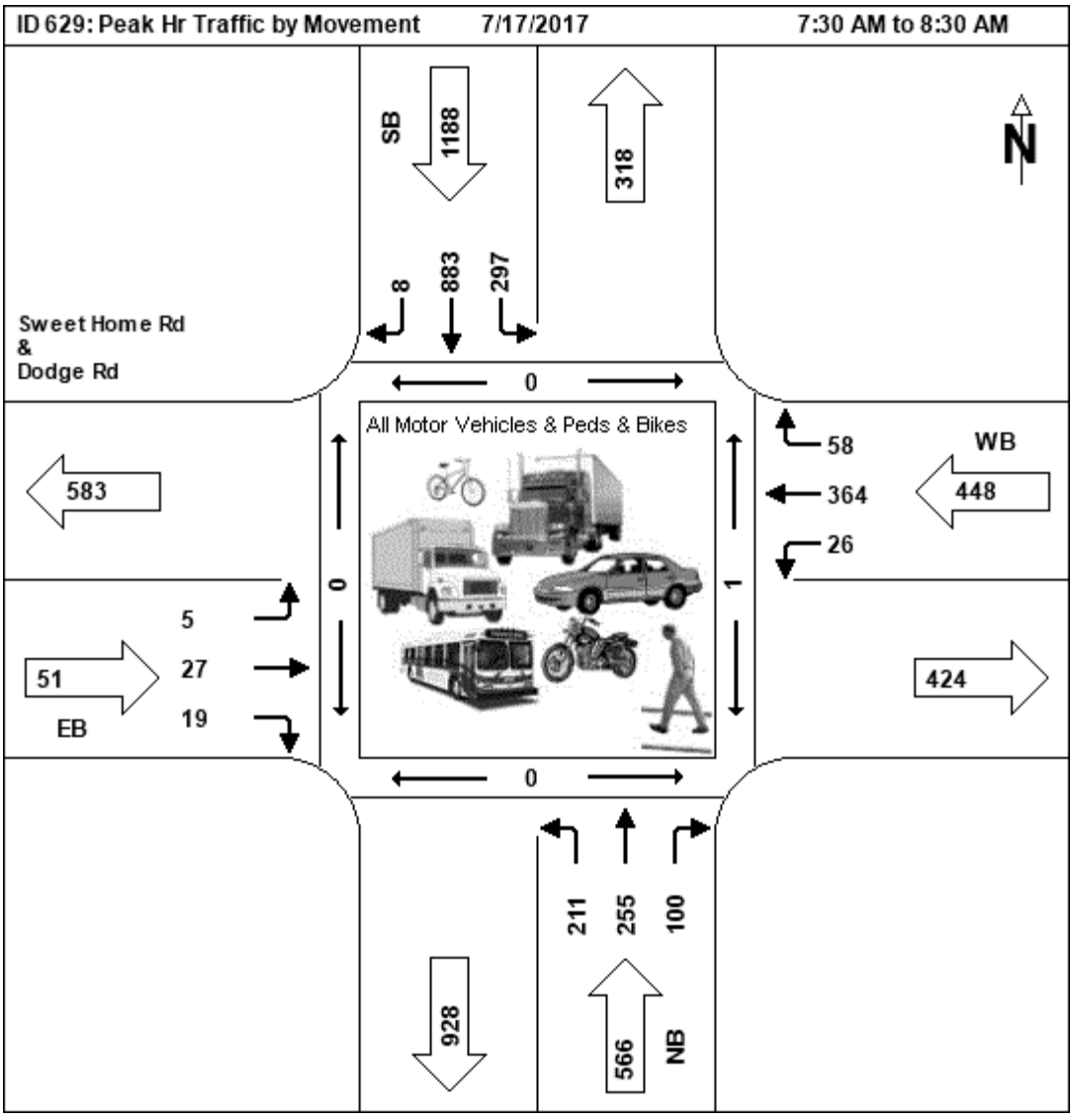
Int ID:	629		
Community:	Amherst	**Corridor:**	NA
Road 1:	Sweet Home Rd	**Road 3:**	Commerce Dr
Road 2:	Dodge Rd	**Road 4:**	

|<< < > >>| 1-2 of 2

AM Peak Hour
07/17/2017

Start Time	NB Left	NB Thru	NB Right	NB Ped	NB App Total	EB Left	EB Thru	EB Right	EB Ped	EB App Total	SB Left	SB Thru	SB Right	SB Ped	SB App Total	WB Left	WB Thru	WB Right	WB Ped	WB App Total	Int Total
7:30 AM	65	54	17	1	136	3	14	4	0	21	60	290	2	0	352	3	97	11	0	111	620
7:45 AM	50	69	31	0	150	0	3	0	0	3	75	196	0	0	271	6	120	8	0	134	558
8:00 AM	49	66	25	0	140	1	5	4	0	10	66	175	2	0	243	10	72	22	0	104	497
8:15 AM	47	66	27	0	140	1	5	11	0	17	96	222	4	0	322	7	75	17	0	99	578
Total	211	255	100	1	566	5	27	19	0	51	297	883	8	0	1188	26	364	58	0	448	2253
PHF	0.81	0.92	0.81		0.94	0.42	0.48	0.43		0.61	0.77	0.76	0.50		0.84	0.65	0.76	0.66		0.84	
HV %	6	4	6			60	0	32			1	3	0			12	1	2			

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes



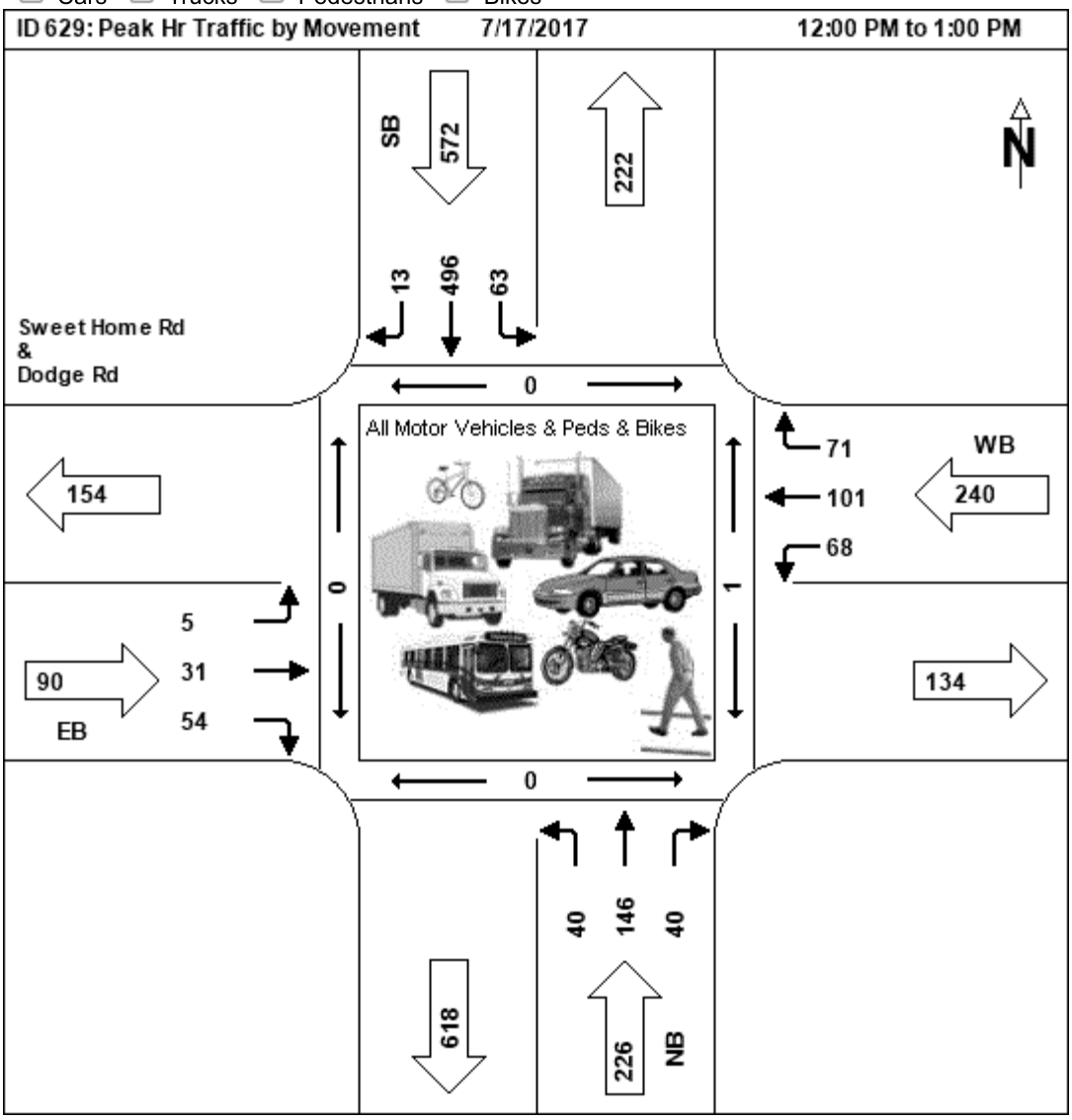
Midday Peak Hour
07/17/2017

Start Time	NB Left	NB Thru	NB Right	NB Ped	NB App Total	EB Left	EB Thru	EB Right	EB Ped	EB App Total	SB Left	SB Thru	SB Right	SB Ped	SB App Total	WB Left	WB Thru	WB Right	WB Ped	WB App Total	Int Total

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

12:00 PM	6	34	11	1	51	0	6	12	0	18	20	127	4	0	151	26	19	26	0	71	291
12:15 PM	10	15	4	0	29	5	16	13	0	34	17	110	2	0	129	12	23	26	0	61	253
12:30 PM	3	34	10	0	47	0	5	14	0	19	19	120	3	0	142	11	24	11	0	46	254
12:45 PM	21	63	15	0	99	0	4	15	0	19	7	139	4	0	150	19	35	8	0	62	330
Total	40	146	40	1	226	5	31	54	0	90	63	496	13	0	572	68	101	71	0	240	1128
PHF	0.48	0.58	0.67		0.57	0.25	0.48	0.90		0.66	0.79	0.89	0.81		0.95	0.65	0.72	0.68		0.85	
HV %	13	8	5			20	3	4			2	2	0			1	0	1			

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes

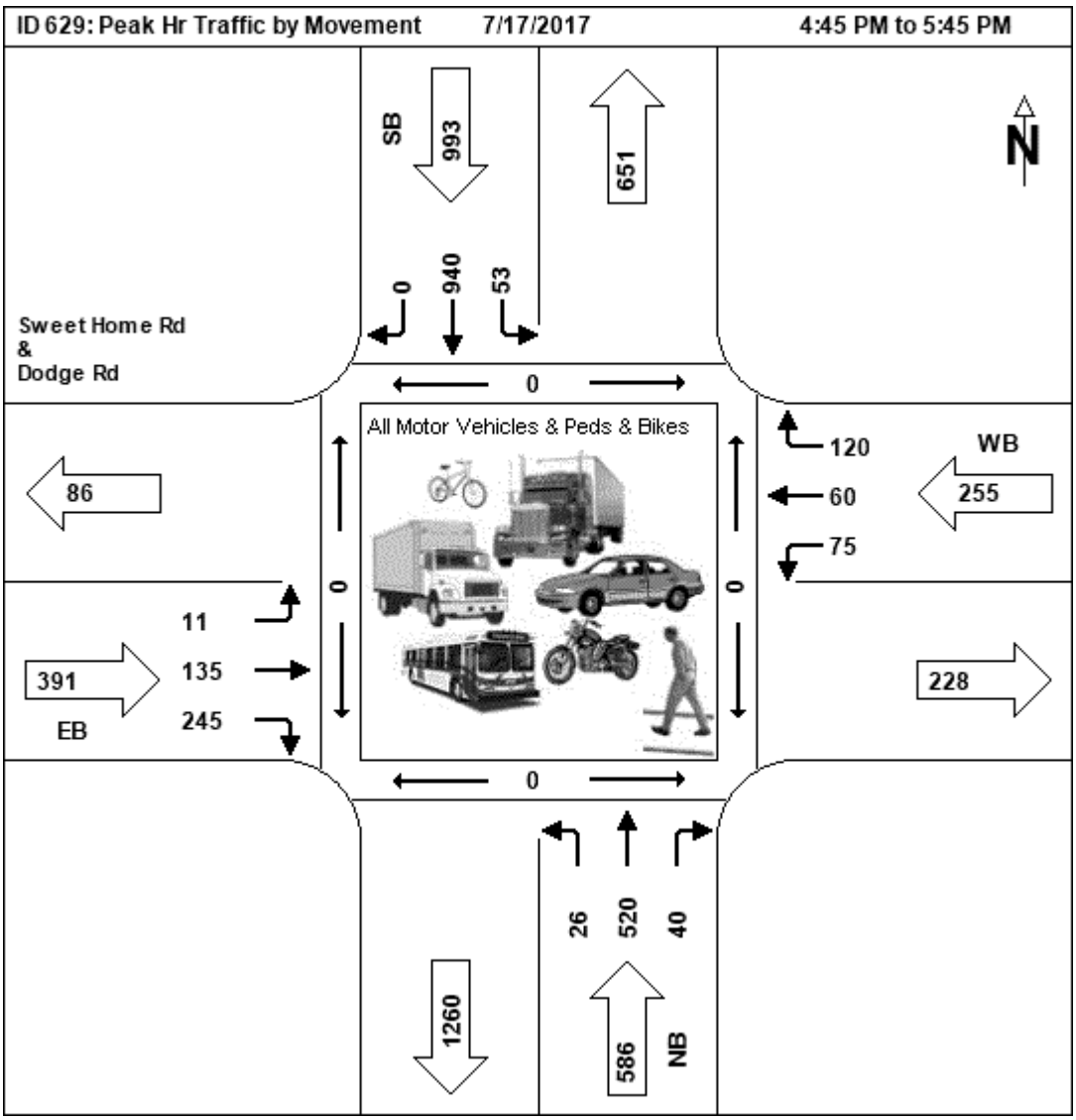


PM Peak Hour
07/17/2017

	NB					EB					SB					WB						
Start Time	Left	Thru	Right	Ped	App Total	Left	Thru	Right	Ped	App Total	Left	Thru	Right	Ped	App Total	Left	Thru	Right	Ped	App Total	Int Total
4:45 PM	8	132	12	0	152	2	28	51	0	81	24	190	0	0	214	30	22	21	0	73	520
5:00 PM	5	119	6	0	130	4	51	116	0	171	10	258	0	0	268	20	22	50	0	92	661
5:15 PM	7	149	10	0	166	4	27	34	0	65	14	266	0	0	280	18	10	21	0	49	560
5:30 PM	6	119	12	0	137	1	27	44	0	72	5	226	0	0	231	7	6	28	0	41	481
Total	26	519	40	0	585	11	133	245	0	389	53	940	0	0	993	75	60	120	0	255	2222
PHF	0.81	0.87	0.83		0.88	0.69	0.65	0.53		0.57	0.55	0.88			0.89	0.63	0.68	0.60		0.69	
HV %	12	1	5			18	2	1			0	1				0	2	1			

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

A2

Miscellaneous Traffic Data and Calculations

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

STATION: **531020**

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR294** ROAD NAME: **NORTH FOREST RD** FROM: **1.0 N OF NY263** TO: **DODGE RD** COUNTY: **Erie**
DIRECTION: Northbound FACTOR GROUP: 30 REC. SERIAL #: W699 FUNC. CLASS: 16 TOWN: **AMHERST**
STATE DIR CODE: 6 WK OF YR: 16 PLACEMENT: .57m S of Bryant Woods S NHS: no LION#:
DATE OF COUNT: 04/19/2015 @ REF MARKER: JURIS: Village BIN:
NOTES LANE 1: North ADDL DATA: Class Speed CC Stn: RR CROSSING:
COUNT TYPE: VEHICLES BATCH ID: DOT-SJWR5Cww17a CLASS HPMS SAMPLE: 3010446
COUNT TAKEN BY: ORG CODE: TTG INITIALS: DKS PROCESSED BY: ORG CODE: DOT INITIALS: SJW

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M																											
7	T																											
8	W																											
9	T																											
10	F																											
11	S																											
12	S																											
13	M																											
14	T																											
15	W																											
16	T																											
17	F																											
18	S																											
19	S																											
20	M	**2**	**0**	**0**	**0**	**1**	**4**	**12**	**48**	**64**	**42**	**59**	**47**	**74**	**74**	**68**	**100**	**94**	**82**	**63**	**32**	**41**	**20**	**17**	**11**	955	100	15
21	T	**3**	**0**	**1**	**0**	**0**	**1**	**11**	**48**	**43**	**39**	**47**	**66**	**77**	**69**	**81**	**114**	**96**	**98**	**72**	**37**	**40**	**22**	**13**	**8**	986	114	15
22	W	**5**	**1**	**1**	**2**	**2**	**1**	**12**	**48**	**55**	**42**	**46**	**58**	**81**	**59**	**79**	**97**	**98**	**82**	**56**	**47**	**35**	**27**	**23**				
23	T																											
24	F																											
25	S																											
26	S																											
27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

ADT

4 0 1 1 1 1 12 48 54 41 51 57 77 67 76 104 96 87 64 39 39 23 18 10 971

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
3	71	2	65	104	11%	1.000	1.047	**AADT 927**

ROAD #: **CR294** ROAD NAME: **NORTH FOREST RD** FROM: **1.0 N OF NY263** TO: **DODGE RD** COUNTY: **Erie**
STATION: **531020** STATE DIR CODE: **6** PLACEMENT: **.57m S of Bryant Woods S** **DATE OF COUNT: 04/19/2015**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

STATION: **531020**

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR294** ROAD NAME: **NORTH FOREST RD** FROM: **1.0 N OF NY263** TO: **DODGE RD** COUNTY: **Erie**
DIRECTION: Southbound FACTOR GROUP: 30 REC. SERIAL #: W805 FUNC. CLASS: 16 TOWN: **AMHERST**
STATE DIR CODE: 7 WK OF YR: 16 PLACEMENT: .57m S of Bryant Woods S NHS: no LION#:
DATE OF COUNT: 04/19/2015 @ REF MARKER: JURIS: Village BIN:
NOTES LANE 1: South ADDL DATA: Class Speed CC Stn: RR CROSSING:
COUNT TYPE: VEHICLES BATCH ID: DOT-SJWR5Cww17a CLASS HPMS SAMPLE: 3010446
COUNT TAKEN BY: ORG CODE: TTG INITIALS: dks PROCESSED BY: ORG CODE: DOT INITIALS: SJW

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	W																											
2	T																											
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5	S																											
6	M																											
7	T																											
8	W																											
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11	S																											
12	S																											
13	M																											
14	T																											
15	W																											
16	T																											
17	F																											
18	S																											
19	S																											
20	M	**1**	**1**	**1**	**1**	**1**	**11**	**42**	**77**	**104**	**51**	**48**	**44**	**53**	**52**	**71**	**69**	**104**	**79**	**50**	**23**	**18**	**13**	**12**	**3**	929	104	8
21	T	**1**	**1**	**2**	**0**	**0**	**12**	**42**	**84**	**91**	**53**	**56**	**55**	**67**	**63**	**60**	**56**	**85**	**97**	**44**	**28**	**15**	**10**	**7**	**9**	938	97	17
22	W	**1**	**1**	**1**	**2**	**1**	**13**	**41**	**72**	**87**	**57**	**51**	**55**	**63**	**51**	**54**	**66**	**79**	**96**	**56**	**31**	**16**	**15**	**12**				
23	T																											
24	F																											
25	S																											
26	S																											
27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
1	**1**	**2**	**1**	**0**	**12**	**42**	**78**	**94**	**54**	**52**	**51**	**61**	**55**	**62**	**64**	**89**	**91**	**50**	**27**	**16**	**13**	**10**	**6**	**932**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
3	71	2	65	94	10%	1.000	1.047	**AADT 890**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR45** ROAD NAME: **DODGE RD**
DIRECTION: Eastbound FACTOR GROUP: 30
STATE DIR CODE: 6 WK OF YR: 32
DATE OF COUNT: 08/07/2017
NOTES LANE 1: EB 1 Lane - 40 mph

COUNT TAKEN BY: ORG CODE: MBN INITIALS: APV

FROM: **SWEET HOME RD** TO: **NY 270 CAMPBELL BLVD**
REC. SERIAL #: Y110 FUNC. CLASS: 16
PLACEMENT: 450 FEET EAST OF AUDUBON PK NHS: no
@ REF MARKER: JURIS: Village
ADDL DATA: Class Speed CC Stn:
COUNT TYPE: AXLE PAIRS BATCH ID: DOT-R05c32aMBN0000-20170
PROCESSED BY: ORG CODE: DOT INITIALS: CW

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	T																											
2	W																											
3	T																											
4	F																											
5	S																											
6	S																											
7	M																		472	223	157	142	81	43	41			
8	T	23	10	6	6	4	17	55	207	272	174	158	216	271	230	243	301	447	457	249	168	165	116	61	41	3897	457	17
9	W	27	14	6	7	3	13	69	195	244	172	177	212	283	268	250	319	412	437	234	185	162	133	51	37	3910	437	17
10	T	18	10	7	5	6	8	60	158	204	154	182	202	301	264	267	326	438	436	228	158	152	114	66	46	3810	438	16
11	F	27	8	13	8	6	16	64	172																			
12	S																											
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14	M																											
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21	M																											
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24	T																											
25	F																											
26	S																											
27	S																											
28	M																											
29	T																											
30	W																											
31	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																									ADT
24	**10**	**8**	**6**	**5**	**14**	**62**	**183**	**240**	**167**	**172**	**210**	**285**	**254**	**253**	**315**	**432**	**450**	**234**	**167**	**155**	**111**	**55**	**41**	**3853**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
4	87	4	87	450	12%	1.000	1.100	**AADT 3503**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR45** ROAD NAME: **DODGE RD**
DIRECTION: Westbound FACTOR GROUP: 30
STATE DIR CODE: 7 WK OF YR: 32
DATE OF COUNT: 08/07/2017
NOTES LANE 1: WB 1 Lane - 40 mph

COUNT TAKEN BY: ORG CODE: MBN INITIALS: APV

FROM: **SWEET HOME RD** TO: **NY 270 CAMPBELL BLVD**
REC. SERIAL #: Y110 FUNC. CLASS: 16
PLACEMENT: 450 FEET EAST OF AUDUBON PK NHS: no
@ REF MARKER: JURIS: Village
ADDL DATA: Class Speed CC Stn:
COUNT TYPE: AXLE PAIRS BATCH ID: DOT-R05c32aMBN0000-2017

PROCESSED BY: ORG CODE: DOT INITIALS: CW

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	T																											
2	W																											
3	T																											
4	F																											
5	S																											
6	S																											
7	M																		250	150	104	92	61	38	18			
8	T	**17**	**5**	**2**	**7**	**8**	**27**	**124**	**380**	**419**	**243**	**185**	**169**	**293**	**250**	**231**	**233**	**211**	**287**	**189**	**121**	**109**	**66**	**54**	**17**	3647	419	8
9	W	**9**	**5**	**6**	**6**	**13**	**22**	**125**	**348**	**424**	**225**	**194**	**200**	**202**	**243**	**280**	**212**	**234**	**268**	**206**	**133**	**102**	**68**	**59**	**15**	3599	424	8
10	T	**16**	**3**	**1**	**7**	**9**	**31**	**120**	**335**	**390**	**219**	**208**	**208**	**208**	**243**	**285**	**225**	**252**	**261**	**187**	**127**	**106**	**68**	**50**	**26**	3585	390	8
11	F	**11**	**5**	**5**	**3**	**11**	**27**	**111**	**302**																			
12	S																											
13	S																											
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30	W																											
31	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
13	**4**	**4**	**6**	**10**	**27**	**120**	**341**	**411**	**229**	**196**	**192**	**234**	**245**	**265**	**223**	**232**	**266**	**183**	**121**	**102**	**66**	**50**	**19**	**3559**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
5	87	5	87	411	12%	1.000	1.100

ESTIMATED

AADT
3235

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

1.I

STATION: **534822**

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Northbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 23
DATE OF COUNT: 06/03/2019
NOTES LANE 0: North

COUNT TAKEN BY: ORG CODE: TTG INITIALS: DKS

FROM: **COMMERCE DRIVE**
REC. SERIAL #: W807
PLACEMENT: 151' N of Sunshine Dr
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS

PROCESSED BY: ORG CODE: DOT INITIALS: JH

TO: **N FRENCH RD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:

BATCH ID: DOT-R05V23aTTG5196HPMS SAMPLE:

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	S																											
2	S																											
3	M																**774**	**1037**	**1082**	**627**	**443**	**469**	**345**	**209**	**140**			
4	T	**69**	**39**	**23**	**11**	**18**	**46**	**199**	**447**	**506**	**431**	**399**	**484**	**556**	**524**	**607**	**754**	**1009**	**977**	**661**	**468**	**428**	**347**	**201**	**141**	9345	1009	16
5	W	**83**	**50**	**29**	**19**	**27**	**43**	**207**	**467**	**509**	**430**	**409**	**541**	**597**	**521**	**671**	**841**	**1058**	**958**	**630**	**444**	**451**	**358**	**195**	**135**	9673	1058	16
6	T	**89**	**37**	**19**	**18**	**19**	**69**	**186**	**466**	**515**	**474**	**403**	**509**	**563**	**563**	**658**	**825**	**1015**	**1079**	**699**	**549**	**498**	**378**	**235**				
7	F																											
8	S																											
9	S																											
10	M																											
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28	F																											
29	S																											
30	S																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																									ADT
79	**41**	**24**	**16**	**21**	**52**	**194**	**454**	**503**	**439**	**399**	**504**	**565**	**529**	**637**	**788**	**1017**	**1011**	**645**	**470**	**456**	**352**	**207**	**137**	**9540**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	80	4	80	1017	11%	0.987	1.113

ESTIMATED (one way)

AADT
8571

ROAD #: **CR301** ROAD NAME: **SWEET HOME RD** FROM: **COMMERCE DRIVE** TO: **N FRENCH RD** COUNTY: **Erie**
STATION: **534822** STATE DIR CODE: **1** PLACEMENT: **151' N of Sunshine Dr** **DATE OF COUNT: 06/03/2019**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Southbound FACTOR GROUP: 30
STATE DIR CODE: 2 WK OF YR: 23
DATE OF COUNT: 06/03/2019
NOTES LANE 0: South

FROM: **COMMERCE DRIVE**
REC. SERIAL #: R314
PLACEMENT: 151' N of Sunshine Dr
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS

TO: **N FRENCH RD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05V23aTTG5196HPMS SAMPLE:

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:

COUNT TAKEN BY: ORG CODE: TTG INITIALS: DKS
PROCESSED BY: ORG CODE: DOT INITIALS: JH

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	S																											
2	S																											
3	M																**699**	**811**	**832**	**567**	**382**	**321**	**258**	**169**	**84**			
4	T	**43**	**33**	**20**	**20**	**51**	**171**	**524**	**1071**	**994**	**566**	**536**	**553**	**542**	**550**	**618**	**636**	**794**	**850**	**622**	**297**	**303**	**219**	**180**	**95**	10288	1071	7
5	W	**55**	**29**	**17**	**25**	**42**	**175**	**509**	**1093**	**1076**	**641**	**534**	**616**	**658**	**581**	**586**	**741**	**804**	**788**	**592**	**379**	**319**	**248**	**132**	**88**	10728	1093	7
6	T	**51**	**28**	**12**	**19**	**45**	**168**	**510**	**1095**	**978**	**632**	**570**	**657**	**697**	**639**	**635**	**714**	**823**	**897**	**616**	**377**	**315**	**308**	**189**				
7	F																											
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AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																									ADT
49	**30**	**16**	**21**	**45**	**169**	**507**	**1072**	**1003**	**605**	**540**	**601**	**624**	**582**	**605**	**689**	**797**	**831**	**591**	**354**	**310**	**255**	**166**	**88**	**10550**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	80	4	80	1072	10%	0.987	1.113

ESTIMATED (one way)

AADT
9479

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

STATION: **536335**

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Northbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 15
DATE OF COUNT: 04/06/2020
NOTES LANE 1: North
NOTES LANE 2: North
COUNT TAKEN BY: ORG CODE: TTG INITIALS: JB

FROM: **N ELLICOTT RD**
REC. SERIAL #: W796
PLACEMENT: 605ft N of N Ellicott Creek
@ REF MARKER:
ADDL DATA: Class Speed
COUNT TYPE: VEHICLES
PROCESSED BY: ORG CODE: DOT INITIALS: CPA

TO: **COMMERCE DRIVE**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05C15cTTG5196

COUNTY: **Erie**
TOWN:
LION#:
BIN: 3367090
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M															**393**	**465**	**479**	**413**	**323**	**216**	**173**	**102**	**83**	**53**			
7	T	**35**	**23**	**26**	**24**	**22**	**64**	**243**	**301**	**262**	**259**	**316**	**328**	**380**	**389**	**430**	**478**	**462**	**403**	**294**	**237**	**166**	**120**	**81**	**65**	5408	478	15
8	W	**30**	**26**	**25**	**16**	**18**	**87**	**235**	**303**	**264**	**225**	**242**	**286**	**320**	**329**	**353**	**467**	**400**	**397**	**318**	**242**	**183**	**135**	**90**	**75**	5066	467	15
9	T	**40**	**22**	**24**	**22**	**23**	**78**	**231**	**270**	**258**	**239**	**266**	**294**	**346**	**309**	**418**	**419**	**477**	**421**	**284**	**231**	**146**	**114**	**96**	**72**	5100	477	16
10	F	**44**	**29**	**25**	**26**	**19**	**53**	**164**	**213**	**248**	**199**																	
11	S																											
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30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																								ADT
37	**25**	**25**	**22**	**20**	**70**	**218**	**272**	**258**	**230**	**275**	**303**	**349**	**342**	**398**	**457**	**454**	**408**	**305**	**232**	**167**	**118**	**88**	**66**	**5139**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
5	92	5	92	457	9%	1.000	1.054

ESTIMATED

AADT
4876

ROAD #: **CR301** ROAD NAME: **SWEET HOME RD** FROM: **N ELLICOTT RD** TO: **COMMERCE DRIVE** COUNTY: **Erie**
STATION: **536335** STATE DIR CODE: **1** PLACEMENT: **605ft N of N Ellicott Creek** **DATE OF COUNT: 04/06/2020**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

STATION: **536335**

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Southbound
STATE DIR CODE: 2
DATE OF COUNT: 04/06/2020
NOTES LANE 1: South
NOTES LANE 2: South
COUNT TAKEN BY: ORG CODE: TTG INITIALS: JB

FROM: **N ELLICOTT RD**
REC. SERIAL #: JH88
PLACEMENT: 605ft N of N Ellicott Creek
@ REF MARKER:
ADDL DATA: Class Speed
COUNT TYPE: VEHICLES
PROCESSED BY: ORG CODE: DOT INITIALS: CPA

TO: **COMMERCE DRIVE**
FACTOR GROUP: 30
WK OF YR: 15
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05C15cTTG5196

COUNTY: **Erie**
TOWN:
LION#:
BIN: 3367090
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M															**404**	**497**	**481**	**434**	**284**	**212**	**129**	**97**	**72**	**69**			
7	T	**31**	**29**	**9**	**16**	**27**	**86**	**208**	**320**	**270**	**294**	**276**	**331**	**371**	**388**	**428**	**472**	**470**	**384**	**262**	**229**	**133**	**86**	**70**	**82**	5272	472	15
8	W	**35**	**21**	**15**	**15**	**28**	**88**	**220**	**300**	**264**	**272**	**320**	**266**	**314**	**227**	**248**	**298**	**282**	**248**	**187**	**129**	**97**	**70**	**44**	**58**	4046	320	10
9	T	**25**	**17**	**11**	**12**	**17**	**52**	**122**	**173**	**154**	**137**	**186**	**198**	**222**	**212**	**224**	**308**	**256**	**281**	**165**	**153**	**91**	**74**	**41**	**48**	3179	308	15
10	F	**25**	**9**	**13**	**13**	**20**	**38**	**116**	**194**	**135**	**149**																	
11	S																											
12	S																											
13	M																											
14	T																											
15	W																											
16	T																											
17	F																											
18	S																											
19	S																											
20	M																											
21	T																											
22	W																											
23	T																											
24	F																											
25	S																											
26	S																											
27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
29	**19**	**12**	**14**	**23**	**66**	**166**	**247**	**206**	**213**	**261**	**265**	**302**	**276**	**326**	**394**	**372**	**337**	**224**	**181**	**112**	**82**	**57**	**64**	**4248**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
5	92	5	92	394	9%	1.000	1.054

ESTIMATED

AADT
4030

ROAD #: **CR301** ROAD NAME: **SWEET HOME RD** FROM: **N ELLICOTT RD** TO: **COMMERCE DRIVE** COUNTY: **Erie**
STATION: **536335** STATE DIR CODE: **2** PLACEMENT: **605ft N of N Ellicott Creek** **DATE OF COUNT: 04/06/2020**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

STATION: **534822**

New York State Department of Transportation
Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Northbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 28
DATE OF COUNT: 07/05/2016
NOTES LANE 0: NB 2 lane - 45 mph

COUNT TAKEN BY: ORG CODE: CSE INITIALS: CDM

FROM: **COMMERCE DRIVE**
REC. SERIAL #: 1867
PLACEMENT: 525 ft N of Bucyrus Dr
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS

PROCESSED BY: ORG CODE: MBN INITIALS: AHL

TO: **N FRENCH RD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05MBN-28-5-July-6-2016

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	F																											
2	S																											
3	S																											
4	M																											
5	T											397	468	580	510	566	692	905	889	578	443	430	359	229	159			
6	W	73	44	20	17	22	45	168	374	471	384	409	448	529	483	557	696	887	1021	711	498	442	371	225	192	9087	1021	17
7	T	96	51	22	20	21	60	154	375	494	367	368	439	526	522	602	639	856	931	582	459	434	361	270	167	8816	931	17
8	F	105	57	27	25	36	53	138	358	407																		
9	S																											
10	S																											
11	M																											
12	T																											
13	W																											
14	T																											
15	F																											
16	S																											
17	S																											
18	M																											
19	T																											
20	W																											
21	T																											
22	F																											
23	S																											
24	S																											
25	M																											
26	T																											
27	W																											
28	T																											
29	F																											
30	S																											
31	S																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
91	51	23	21	26	53	153	369	457	376	391	452	545	505	575	676	883	947	624	467	435	364	241	173	8898

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	71	4	71	947	11%	1.000	1.093

ESTIMATED (one way)

AADT
8141

ROAD #: **CR301** ROAD NAME: **SWEET HOME RD** FROM: **COMMERCE DRIVE** TO: **N FRENCH RD** COUNTY: **Erie**
STATION: **534822** STATE DIR CODE: **1** PLACEMENT: **525 ft N of Bucyrus Dr** **DATE OF COUNT: 07/05/2016**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

STATION: **534822**

New York State Department of Transportation
Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Southbound FACTOR GROUP: 30
STATE DIR CODE: 2 WK OF YR: 28
DATE OF COUNT: 07/05/2016
NOTES LANE 0: SB 2 lane - 45 mph

COUNT TAKEN BY: ORG CODE: CSE INITIALS: CDM

FROM: **COMMERCE DRIVE**
REC. SERIAL #: 1867
PLACEMENT: 525 ft N of Bucyrus Dr
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS

PROCESSED BY: ORG CODE: MBN INITIALS: AHL

TO: **N FRENCH RD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05MBN-28-5-July-6-2016

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	F																											
2	S																											
3	S																											
4	M																											
5	T											470	454	539	500	503	502	618	686	463	376	257	240	176	126			
6	W	56	33	9	16	32	135	372	705	742	499	460	444	525	530	497	544	627	705	507	365	306	289	206	108	8712	742	8
7	T	60	32	19	17	33	124	387	685	746	501	501	484	551	523	521	558	629	700	497	385	286	255	203	103	8800	746	8
8	F	65	31	30	28	35	111	354	655	571																		
9	S																											
10	S																											
11	M																											
12	T																											
13	W																											
14	T																											
15	F																											
16	S																											
17	S																											
18	M																											
19	T																											
20	W																											
21	T																											
22	F																											
23	S																											
24	S																											
25	M																											
26	T																											
27	W																											
28	T																											
29	F																											
30	S																											
31	S																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
60	32	19	20	33	123	371	682	686	500	477	461	538	518	507	535	625	697	489	375	283	261	195	112	8599

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	71	4	71	697	8%	1.000	1.093

ESTIMATED (one way)

AADT
7867

ROAD #: **CR301** ROAD NAME: **SWEET HOME RD** FROM: **COMMERCE DRIVE** TO: **N FRENCH RD** COUNTY: **Erie**
STATION: **534822** STATE DIR CODE: **2** PLACEMENT: **525 ft N of Bucyrus Dr** **DATE OF COUNT: 07/05/2016**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

STATION: **534232**

New York State Department of Transportation
Traffic Count Hourly Report

ROAD #: **CR CR45** ROAD NAME: **DODGE RD**
DIRECTION: Eastbound FACTOR GROUP: 30
STATE DIR CODE: 6 WK OF YR: 46
DATE OF COUNT: 11/07/2016
NOTES LANE 1: One Lane EB - 35 MPH

COUNT TAKEN BY: ORG CODE: TTG INITIALS: DKS

FROM: **SWEET HOME RD**
REC. SERIAL #: EZ53
PLACEMENT: 850' E of Audubon Pkwy
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS
PROCESSED BY: ORG CODE: R05 INITIALS: RPJ

TO: **NY 270 CAMPBELL BLVD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05V46aTTG5196

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	T																											
2	W																											
3	T																											
4	F																											
5	S																											
6	S																											
7	M															**269**	**339**	**457**		**259**	**156**		**60**	**53**	**27**			
8	T	**37**	**11**	**6**	**3**	**4**	**20**												**482**	**264**	**153**	**114**	**75**	**55**	**30**			
9	W	**16**	**11**	**5**	**6**	**6**	**19**	**47**	**184**	**175**	**128**	**138**	**211**	**256**	**193**	**233**	**330**	**484**	**513**	**212**	**143**	**134**	**76**	**61**	**45**	3626	513	17
10	T	**16**	**7**	**2**	**6**	**5**	**17**	**53**	**204**	**170**	**144**	**152**	**213**	**250**	**220**	**268**	**365**	**466**	**447**	**226**	**159**	**141**	**94**	**62**	**43**	3730	466	16
11	F	**30**																										
12	S																											
13	S																											
14	M																											
15	T																											
16	W																											
17	T																											
18	F																											
19	S																											
20	S																											
21	M																											
22	T																											
23	W																											
24	T																											
25	F																											
26	S																											
27	S																											
28	M																											
29	T																											
30	W																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
25	**10**	**4**	**5**	**5**	**19**	**49**	**191**	**170**	**134**	**143**	**209**	**250**	**203**	**254**	**341**	**463**	**475**	**237**	**151**	**128**	**75**	**57**	**36**	**3634**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
5	70	5	70	475	13%	0.987	1.017

ESTIMATED

AADT
3573

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR45** ROAD NAME: **DODGE RD**
DIRECTION: Westbound FACTOR GROUP: 30
STATE DIR CODE: 7 WK OF YR: 46
DATE OF COUNT: 11/07/2016
NOTES LANE 1: One Lane WB - 35 MPH

COUNT TAKEN BY: ORG CODE: TTG INITIALS: DKS

FROM: **SWEET HOME RD**
REC. SERIAL #: EZ96
PLACEMENT: 850' E of Audubon Pkwy
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS
PROCESSED BY: ORG CODE: R05 INITIALS: RPJ

TO: **NY 270 CAMPBELL BLVD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05V46aTTG5196

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	T																											
2	W																											
3	T																											
4	F																											
5	S																											
6	S																											
7	M															**233**	**227**	**267**		**162**	**127**		**54**	**33**	**19**			
8	T	**9**	**6**	**2**	**10**	**9**	**34**												**329**	**165**	**105**	**91**	**48**	**40**	**21**			
9	W	**7**	**7**	**2**	**14**	**7**	**38**	**138**	**416**	**453**	**239**	**188**	**168**	**207**	**226**	**250**	**227**	**241**	**275**	**178**	**103**	**81**	**63**	**43**	**14**	3585	453	8
10	T	**10**	**5**	**1**	**9**	**14**	**37**	**144**	**421**	**469**	**222**	**187**	**175**	**209**	**212**	**227**	**213**	**250**	**254**	**178**	**120**	**70**	**64**	**38**	**16**	3545	469	8
11	F	**9**																										
12	S																											
13	S																											
14	M																											
15	T																											
16	W																											
17	T																											
18	F																											
19	S																											
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23	W																											
24	T																											
25	F																											
26	S																											
27	S																											
28	M																											
29	T																											
30	W																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
9	**6**	**2**	**11**	**10**	**36**	**139**	**413**	**455**	**227**	**186**	**170**	**205**	**216**	**234**	**219**	**250**	**282**	**169**	**113**	**80**	**56**	**38**	**18**	**3544**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
5	70	5	70	455	13%	0.987	1.017	**AADT 3485**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

STATION: 535024

New York State Department of Transportation
Roadway Traffic Count Hourly Report

ROUTE/ROAD:	COMMERCE DR	FROM:	WOODRIDGE DR	TO:	SWEET HOME RD	REGION-COUNTY:	5-ERIE
FED DIR CODE:	3, 7	REF. MARKER:		FUNC. CLASS:	19 - U Local System	MUNI:	Amherst-Town-0019
ST DIR CODE:	7	END MILEPOST:	.82	FACTOR GROUP:	30	BIN:	
DOT ID:	157446	LANES BY DIR:	1 East 1 West	CC STN:		RR CROSSING:	
BEGIN DATE:	9/21/2014	WEEK OF YEAR:	38	ADDL DATA:		HPMS SAMPLE:	
NOTES 1:	West	PLACEMENT:	.2m E of John Glenn DR	JURISDICTION:	03-Town	1 WAY CODE:	
NOTES 2:						COUNT TYPE:	Vehicle
TAKEN BY:	TTG-DKS	PROCESSED BY:	DOT-VJR	BATCH ID:	DOT-R5 WW39A	SPEED LIMIT:	

DATE	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	DAILY TOTAL	HIGH COUNT	HIGH HOUR
9/21, Sun																	**82**	**77**	**96**	**81**	**42**	**34**	**28**	**12**	452		
9/22, Mon	**13**	**7**	**4**	**3**	**28**	**66**	**336**	**761**	**730**	**393**	**330**	**457**	**486**	**431**	**429**	**673**	**855**	**684**	**321**	**185**	**154**	**82**	**34**	**35**	7497	855	16-17
9/23, Tue	**28**	**5**	**45**	**6**	**36**	**69**	**347**	**783**	**739**	**414**	**319**	**330**	**491**	**397**	**374**	**650**	**842**	**707**	**351**	**226**	**137**	**72**	**35**	**28**	7431	842	16-17
9/24, Wed	**24**	**14**	**42**	**6**	**31**	**61**	**351**	**761**	**721**	**414**	**288**	**355**	**467**	**408**	**447**	**646**	**785**	**759**	**322**	**215**	**127**	**88**	**39**	**36**	7407	785	16-17
9/25, Thu	**22**	**11**	**37**	**8**	**27**	**77**	**336**																		518		
AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6 AM to Fri Noon)																									**AWDT**		
	25	**10**	**41**	**7**	**31**	**69**	**343**	**768**	**730**	**407**	**312**	**381**	**481**	**412**	**417**	**656**	**827**	**717**	**331**	**209**	**139**	**81**	**36**	**33**	7463		

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY Roadway High Hour	Roadway % of day	East High Hour	East % of day	West High Hour	West % of day	ESTIMATED AADT Roadway	East	West
4	87	3	73	827	11.1	578	14.2	431	12.7	7027	3821	3206

FACTOR

Month	Seasonal	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Axl
9	1.06	1.00	1.00	1.00	1.00	1.00			1.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

New York State Department of Transportation

EB Traffic Count Hourly Report

STATION: 535024

ROUTE/ROAD:	COMMERCE DR	FROM:	WOODRIDGE DR	TO:	SWEET HOME RD	REGION-COUNTY:	5-ERIE
FED DIR CODE:	3	REF. MARKER:		FUNC. CLASS:	19 - U Local System	MUNI:	Amherst-Town-0019
ST DIR CODE:	7	END MILEPOST:	.82	FACTOR GROUP:	30	BIN:	
DOT ID:	157446	LANES BY DIR:	1 East	CC STN:		RR CROSSING:	
BEGIN DATE:	9/21/2014	WEEK OF YEAR:	38	ADDL DATA:		HPMS SAMPLE:	
NOTES 1:	West	PLACEMENT:	.2m E of John Glenn DR	JURISDICTION:	03-Town	1 WAY CODE:	
NOTES 2:						COUNT TYPE:	Vehicle
TAKEN BY:	TTG-DKS	PROCESSED BY:	DOT-VJR	BATCH ID:	DOT-R5 WW39A	SPEED LIMIT:	

DATE	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	DAILY TOTAL	HIGH COUNT	HIGH HOUR
9/21, Sun																	**39**	**33**	**38**	**49**	**21**	**12**	**10**	**5**	207		
9/22, Mon	**5**	**1**	**2**	**1**	**9**	**26**	**65**	**334**	**289**	**185**	**176**	**304**	**261**	**213**	**214**	**406**	**583**	**509**	**192**	**123**	**78**	**31**	**13**	**21**	4041	583	16-17
9/23, Tue	**22**	**4**	**41**	**1**	**14**	**25**	**74**	**351**	**315**	**193**	**149**	**186**	**266**	**208**	**179**	**402**	**602**	**534**	**213**	**132**	**68**	**31**	**11**	**16**	4037	602	16-17
9/24, Wed	**20**	**12**	**39**	**1**	**13**	**20**	**80**	**354**	**292**	**192**	**147**	**199**	**258**	**203**	**224**	**402**	**550**	**577**	**179**	**132**	**67**	**40**	**18**	**20**	4039	577	17-18
9/25, Thu	**17**	**7**	**34**	**2**	**10**	**32**	**72**																		174		
AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6 AM to Fri Noon)																									**AWDT**		
	20	**8**	**38**	**1**	**12**	**26**	**73**	**346**	**299**	**190**	**157**	**230**	**262**	**208**	**206**	**403**	**578**	**540**	**195**	**129**	**71**	**34**	**14**	**19**	4058		

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY Roadway High Hour	Roadway % of day	East High Hour	East % of day	West High Hour	West % of day	ESTIMATED AADT Roadway	East	West
4	87	3	73	827	11.1	578	14.2	431	12.7	7027	3821	3206

FACTOR

Month	Seasonal	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Axl
9	1.06	1.00	1.00	1.00	1.00	1.00			1.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

STATION: 535024

New York State Department of Transportation
WB Traffic Count Hourly Report

ROUTE/ROAD:	COMMERCE DR	FROM:	WOODRIDGE DR	TO:	SWEET HOME RD	REGION-COUNTY:	5-ERIE
FED DIR CODE:	7	REF. MARKER:		FUNC. CLASS:	19 - U Local System	MUNI:	Amherst-Town-0019
ST DIR CODE:	7	END MILEPOST:	.82	FACTOR GROUP:	30	BIN:	
DOT ID:	157446	LANES BY DIR:	1 West	CC STN:		RR CROSSING:	
BEGIN DATE:	9/21/2014	WEEK OF YEAR:	38	ADDL DATA:		HPMS SAMPLE:	
NOTES 1:	West	PLACEMENT:	.2m E of John Glenn DR	JURISDICTION:	03-Town	1 WAY CODE:	
NOTES 2:						COUNT TYPE:	Vehicle
TAKEN BY:	TTG-DKS	PROCESSED BY:	DOT-VJR	BATCH ID:	DOT-R5 WW39A	SPEED LIMIT:	

DATE	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	DAILY TOTAL	HIGH COUNT	HIGH HOUR
9/21, Sun																	**43**	**44**	**58**	**32**	**21**	**22**	**18**	**7**	245		
9/22, Mon	**8**	**6**	**2**	**2**	**19**	**40**	**271**	**427**	**441**	**208**	**154**	**153**	**225**	**218**	**215**	**267**	**272**	**175**	**129**	**62**	**76**	**51**	**21**	**14**	3456	441	08-09
9/23, Tue	**6**	**1**	**4**	**5**	**22**	**44**	**273**	**432**	**424**	**221**	**170**	**144**	**225**	**189**	**195**	**248**	**240**	**173**	**138**	**94**	**69**	**41**	**24**	**12**	3394	432	07-08
9/24, Wed	**4**	**2**	**3**	**5**	**18**	**41**	**271**	**407**	**429**	**222**	**141**	**156**	**209**	**205**	**223**	**244**	**235**	**182**	**143**	**83**	**60**	**48**	**21**	**16**	3368	429	08-09
9/25, Thu	**5**	**4**	**3**	**6**	**17**	**45**	**264**																		344		
AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6 AM to Fri Noon)																									**AWDT**		
	5	**2**	**3**	**5**	**19**	**43**	**270**	**422**	**431**	**217**	**155**	**151**	**220**	**204**	**211**	**253**	**249**	**177**	**137**	**80**	**68**	**47**	**22**	**14**	3405		

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY Roadway High Hour	Roadway % of day	East High Hour	East % of day	West High Hour	West % of day	ESTIMATED AADT Roadway	East	West
4	87	3	73	827	11.1	578	14.2	431	12.7	7027	3821	3206

FACTOR

Month	Seasonal	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Axl
9	1.06	1.00	1.00	1.00	1.00	1.00			1.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

STATION: **536335**

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD** FROM: **N ELLICOTT RD** TO: **COMMERCE DRIVE** COUNTY: **Erie**
DIRECTION: Northbound FACTOR GROUP: 30 REC. SERIAL #: GC47 FUNC. CLASS: 16 TOWN:
STATE DIR CODE: 1 WK OF YR: 44 PLACEMENT: 654ft N of N Ellicott Creek NHS: no LION#:
DATE OF COUNT: 10/24/2016 @ REF MARKER: JURIS: Village BIN: 3367090
NOTES LANE 1: North ADDL DATA: Class Speed CC Stn: RR CROSSING:
NOTES LANE 2: North COUNT TYPE: VEHICLES BATCH ID: DOT-R05C44aTTG5196 HPMS SAMPLE:
COUNT TAKEN BY: ORG CODE: TTG INITIALS: JM PROCESSED BY: ORG CODE: DOT INITIALS: SJW

DATE	DAY	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
		AM												PM														
1	S																											
2	S																											
3	M																											
4	T																											
5	W																											
6	T																											
7	F																											
8	S																											
9	S																											
10	M																											
11	T																											
12	W																											
13	T																											
14	F																											
15	S																											
16	S																											
17	M																											
18	T																											
19	W																											
20	T																											
21	F																											
22	S																											
23	S																											
24	M																				**551**	**457**	**315**	**218**	**155**			
25	T	**95**	**35**	**29**	**38**	**46**	**131**	**528**	**977**	**1072**	**621**	**470**	**562**	**659**	**616**	**761**	**837**	**1028**	**1036**	**714**	**520**	**461**	**360**	**232**	**156**	11984	1072	8
26	W	**87**	**42**	**14**	**36**	**41**	**120**	**507**	**931**	**1085**	**628**	**527**	**554**	**618**	**722**	**758**	**852**	**1058**	**1061**	**744**	**555**	**425**	**426**	**251**	**161**	12203	1085	8
27	T	**93**	**37**	**25**	**42**	**40**	**142**	**488**	**951**	**1036**	**600**	**492**	**506**	**588**	**599**	**693**	**862**	**982**	**1040**	**630**	**540**	**454**	**365**	**282**	**188**	11675	1040	17
28	F	**98**	**56**	**37**	**43**	**40**	**111**	**446**	**959**	**988**	**626**																	
29	S																											
30	S																											
31	M																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																								ADT
93	**42**	**26**	**40**	**42**	**126**	**492**	**954**	**1045**	**619**	**496**	**541**	**622**	**646**	**737**	**850**	**1023**	**1046**	**696**	**542**	**449**	**366**	**246**	**165**	**11904**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	87	4	87	1046	9%	1.000	1.074

ESTIMATED

AADT
11084

ROAD #: **CR301** ROAD NAME: **SWEET HOME RD** FROM: **N ELLICOTT RD** TO: **COMMERCE DRIVE** COUNTY: **Erie**
STATION: **536335** STATE DIR CODE: **1** PLACEMENT: **654ft N of N Ellicott Creek** **DATE OF COUNT: 10/24/2016**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

STATION: **536335**

New York State Department of Transportation
Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD** FROM: **N ELLICOTT RD** TO: **COMMERCE DRIVE** COUNTY: **Erie**
DIRECTION: Southbound FACTOR GROUP: 30 REC. SERIAL #: L442 FUNC. CLASS: 16 TOWN:
STATE DIR CODE: 2 WK OF YR: 44 PLACEMENT: 654ft N of N Ellicott Creek NHS: no LION#:
DATE OF COUNT: 10/24/2016 @ REF MARKER: JURIS: Village BIN: 3367090
NOTES LANE 1: South ADDL DATA: Class Speed CC Stn: RR CROSSING:
NOTES LANE 2: South COUNT TYPE: VEHICLES BATCH ID: DOT-R05C44aTTG5196 HPMS SAMPLE:
COUNT TAKEN BY: ORG CODE: TTG INITIALS: MJ PROCESSED BY: ORG CODE: DOT INITIALS: SJW

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	S																											
2	S																											
3	M																											
4	T																											
5	W																											
6	T																											
7	F																											
8	S																											
9	S																											
10	M																											
11	T																											
12	W																											
13	T																											
14	F																											
15	S																											
16	S																											
17	M																											
18	T																											
19	W																											
20	T																											
21	F																											
22	S																											
23	S																											
24	M																				**399**	**311**	**182**	**134**	**102**			
25	T	**69**	**25**	**16**	**24**	**51**	**179**	**474**	**943**	**769**	**596**	**571**	**643**	**718**	**609**	**625**	**1000**	**1321**	**1416**	**779**	**448**	**300**	**211**	**146**	**121**	12054	1416	17
26	W	**57**	**23**	**24**	**40**	**51**	**179**	**485**	**1005**	**901**	**661**	**630**	**647**	**771**	**713**	**752**	**1206**	**1380**	**1346**	**870**	**459**	**302**	**274**	**166**	**118**	13060	1380	16
27	T	**83**	**42**	**20**	**29**	**70**	**156**	**527**	**1040**	**912**	**650**	**572**	**592**	**808**	**663**	**688**	**983**	**1331**	**1307**	**742**	**489**	**337**	**227**	**167**	**125**	12560	1331	16
28	F	**58**	**43**	**18**	**35**	**45**	**162**	**447**	**952**	**841**	**664**																	
29	S																											
30	S																											
31	M																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

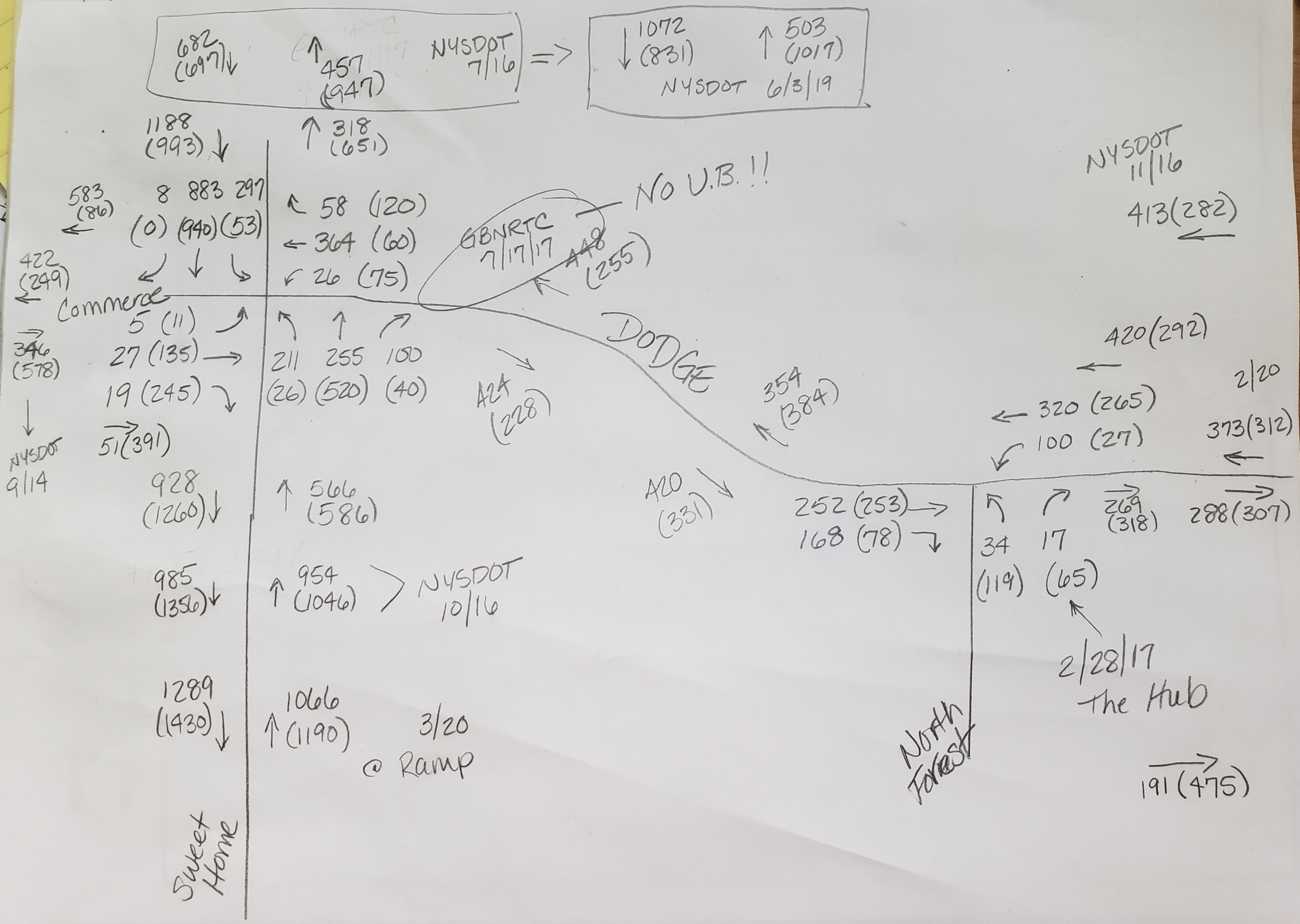
12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
67	**33**	**20**	**32**	**54**	**169**	**483**	**985**	**856**	**643**	**591**	**627**	**766**	**662**	**688**	**1063**	**1344**	**1356**	**797**	**449**	**312**	**224**	**153**	**116**	**12490**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	87	4	87	1356	11%	1.000	1.074

ESTIMATED

AADT
11629

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)


682 (697)
457 (947)
NYSDOT 7/16
1072 (831)
503 (1017)
NYSDOT 6/3/19
1188 (993)
318 (651)
583 (86)
8 883 297
(0) (940) (53)
58 (120)
364 (60)
26 (75)
GBNRTC 7/17/17
NO U.B.!!
448 (255)
NYSDOT 11/16
413 (282)
422 (249)
Commerce
5 (11)
27 (135)
19 (245)
346 (578)
211 255 100
(26) (520) (40)
DODGE
424 (228)
354 (384)
420 (292)
2/20
320 (265)
100 (27)
373 (312)
51 (391)
NYSDOT 9/14
928 (1260)
566 (586)
420 (331)
252 (253)
168 (78)
34 17
(119) (65)
269 (318)
288 (307)
985 (1356)
954 (1046)
NYSDOT 10/16
2/28/17
The Hub
1289 (1430)
1066 (1190)
3/20
@ Ramp
North Forest
191 (475)
Sweet Home

SRF ASSOCIATES
www.srfa.net
Transportation Planning / Engineering / Design

Muir Woods Site A, Town of Amherst, NY

Documentation of Ambient Traffic Volume Growth

Roadway	Segment starts at	Segment end at	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Annual Growth
North Forest Road	1.0 N of NY263/Turtle Creek Apt DWY	Dodge Road								2,189			1,809		1,825	1,845		-2.81%
Dodge Road	Sweet Home Road	NY270 Campbell Road					6,363			5,440				7,058	6,738			0.72%
Sweet Home Road	Commerce Drive	North French Road			16,280				16,606		15,052			16,008			18,050	0.86%
Sweet Home Road	N Ellicott Road	Commerce Drive	23,552		21,115			21,021						21,437				-0.78%
Commerce Drive	Woodbridge Road	Sweet Home Road										7,027						

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

PROJECT DETAILS

Project Name:	Muir Woods	Type of Project:	
Project No:		City:	
Country:		Built-up Area(Sq.ft):	
Analyst Name:	Amy Dake	Clients Name:	
Date:	6/22/2020	ZIP/Postal Code:	
State/Province:		No. of Scenarios:	2
Analysis Region:			

SCENARIO SUMMARY

Scenarios	Name	No. of Land Uses	Phases of Development	No. of Years to Project Traffic	User Group	Estimated New Vehicle Trips		
						Entry	Exit	Total
Scenario - 1	AM Peak Hour	5	1	0		47	85	132
Scenario - 2	PM Peak Hour	5	1	0		106	82	181

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Scenario - 1

Scenario Name: AM Peak Hour
User Group:
Dev. phase: 1
No. of Years to Project Traffic : 0
Analyst Note:
Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method / Rate/Equation	Entry / Split%	Exit / Split%	Total
210 - Single-Family Detached Housing	General Urban/Suburban	Dwelling Units	90	Weekday, Peak Hour of Adjacent Street Traffic,	Average	17	50	67
Data Source: Trip Gen Manual, 10th Ed +					0.74	25%	75%	
220 - Multifamily Housing (Low-Rise)	General Urban/Suburban	Dwelling Units	12	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LOG)	1	5	6
Data Source: Trip Gen Manual, 10th Ed +					Ln(T) =0.95Ln(X) - 0.51	23%	77%	
221 - Multifamily Housing (Mid-Rise) [Private]	General Urban/Suburban	Dwelling Units	100	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LOG)	9	25	34
Data Source: Trip Gen Manual, 10th Ed +					Ln(T) =0.98Ln(X) - 0.98	26%	74%	
710 - General Office Building	General Urban/Suburban	1000 Sq. Ft. GFA	15	Weekday, Peak Hour of Adjacent Street Traffic,	Average	14	2	17
Data Source: Trip Gen Manual, 10th Ed +					1.16	86%	14%	
875 - Department Store	General Urban/Suburban	1000 Sq. Ft. GFA	15	Weekday, Peak Hour of Adjacent Street	Average	6	3	9
Data Source: Trip Gen Manual, 10th Ed +					0.58	64%	36%	

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
210 - Single-Family Detached Housing	100	100	1	1	25	75
220 - Multifamily Housing (Low-Rise)	100	100	1	1	23	77
221 - Multifamily Housing (Mid-Rise) [Private]	100	100	1	1	26	74
710 - General Office Building	100	100	1	1	86	14
875 - Department Store	100	100	1	1	64	36

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
210 - Single-Family Detached Housing	17	50	0	0	17	50
	67		0		67	
220 - Multifamily Housing (Low-Rise)	1	5	0	0	1	5
	6		0		6	
221 - Multifamily Housing (Mid-Rise) [Private]	9	25	0	0	9	25
	34		0		34	
710 - General Office Building	15	2	0	0	14	2
	17		0		17	
875 - Department Store	6	3	0	0	6	3
	9		0		9	

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
210 - Single-Family Detached Housing	17	50	67
220 - Multifamily Housing (Low-Rise)	1	5	6

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

221 - Multifamily Housing (Mid-Rise) [Private]	9	25	34
710 - General Office Building	14	2	17
875 - Department Store	6	3	9

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	47	85	132
External Vehicle Trips	47	85	132
New Vehicle Trips	47	85	132

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Scenario - 2

Scenario Name: PM Peak Hour
User Group:
Dev. phase: 1
No. of Years to Project Traffic : 0
Analyst Note:
Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method / Rate/Equation	Entry / Split%	Exit / Split%	Total
210 - Single-Family Detached Housing	General Urban/Suburban	Dwelling Units	90	Weekday, Peak Hour of Adjacent Street Traffic,	Average	56	33	89
Data Source: Trip Gen Manual, 10th Ed +					0.99	63%	37%	
220 - Multifamily Housing (Low-Rise)	General Urban/Suburban	Dwelling Units	12	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LOG)	6	3	9
Data Source: Trip Gen Manual, 10th Ed +					Ln(T) =0.89Ln(X) - 0.02	63%	37%	
221 - Multifamily Housing (Mid-Rise)	General Urban/Suburban	Dwelling Units	100	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LOG)	27	17	44
Data Source: Trip Gen Manual, 10th Ed +					Ln(T) =0.96Ln(X) - 0.63	61%	39%	
710 - General Office Building	General Urban/Suburban	1000 Sq. Ft. GFA	15	Weekday, Peak Hour of Adjacent Street Traffic,	Average	2	14	17
Data Source: Trip Gen Manual, 10th Ed +					1.15	16%	84%	
875 - Department Store [Private]	General Urban/Suburban	1000 Sq. Ft. GFA	15	Weekday, Peak Hour of Adjacent Street	Average	15	15	30
Data Source: Trip Gen Manual, 10th Ed +					1.95	50%	50%	

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
210 - Single-Family Detached Housing	100	100	1	1	63	37
220 - Multifamily Housing (Low-Rise)	100	100	1	1	63	37
221 - Multifamily Housing (Mid-Rise)	100	100	1	1	61	39
710 - General Office Building	100	100	1	1	16	84
875 - Department Store [Private]	100	100	1	1	50	50

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
210 - Single-Family Detached Housing	56	33	0	0	56	33
	89		0		89	
220 - Multifamily Housing (Low-Rise)	6	3	0	0	6	3
	9		0		9	
221 - Multifamily Housing (Mid-Rise)	27	17	0	0	27	17
	44		0		44	
710 - General Office Building	3	14	0	0	2	14
	17		0		17	
875 - Department Store [Private]	15	15	0	0	15	15
	30		0		30	

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
210 - Single-Family Detached Housing	56	33	89
220 - Multifamily Housing (Low-Rise)	6	3	9

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

221 - Multifamily Housing (Mid-Rise)	27	17	44
710 - General Office Building	2	14	17
875 - Department Store [Private]	15	15	30

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	106	82	188
External Vehicle Trips	106	82	188
New Vehicle Trips	106	82	188

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

PROPOSED MUIR WOODS SECTION A
TOWN OF AMHERST, NY
AM PEAK

Fig 3 Fig 4 Fig 6 Fig 7 Fig 8

Num of yrs: 2

LOCATION NUMBER	INTERSECTION DESCRIPTION	2020 Existing Volume	2022 Bkgd Vol 1.00%	Muir Woods Site B	2022 Bkgrd Volume	Proposed Muir Woods Section A Enter Dist. %	Exit Dist. %	Trips IN 47	Trips OUT 85	Total Site Trips	FULL Build Volumes
1	Sweet Home Road Dodge Road/Commerce Drive										
	SR	8	8		8						8
	ST	883	901	15	916						916
	SL	297	303		303	20%		9		9	312
	WR	58	59		59		20%		17	17	76
	WT	364	371		371		10%		9	9	380
	WL	26	27		27		25%		21	21	48
	NR	100	102		102	25%		12		12	114
	NT	450	459	11	470						470
	NL	211	215		215						215
	ER	50	51		51						51
	ET	30	31		31	10%		5		5	36
	EL	10	10		10						10
2	Dodge Road Proposed North Driveway										
	SR						25%		21	21	21
	ST										
	SL						15%		13	13	13
	WR					10%		5		5	5
	WT	361	368	18	386		30%		26	26	412
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	458	467	11	478	25%		12		12	490
	EL					30%		14		14	14
3	Dodge Road Proposed Middle Out Driveway										
	SR						10%		9	9	9
	ST										
	SL						5%		4	4	4
	WR										
	WT	361	368	18	386	10%	15%	5	13	17	403
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	458	467	11	478	25%	15%	12	13	25	503
	EL										
4	Dodge Road Proposed Middle In Driveway										
	SR										
	ST										
	SL										
	WR					5%		2		2	2
	WT	361	368	18	386	10%	20%	5	17	22	408
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	458	467	11	478	15%	20%	7	17	24	502
	EL					10%		5		5	5
5	Dodge Road Proposed South Driveway										
	SR						20%		17	17	17
	ST										
	SL						25%		21	21	21
	WR					30%		14		14	14
	WT	361	368	18	386	15%		7		7	393
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	458	467	11	478		20%		17	17	495
	EL					15%		7		7	7
6	Dodge Road North Forest Road										
	SR										
	ST										
	SL										
	WR										
	WT	323	329	18	347	30%		14		14	361
	WL	102	104		104						104
	NR	20	20		20						20
	NT										
	NL	38	39		39	15%		7		7	46
	ER	170	173		173		15%		13	13	186
	ET	288	294	11	305		30%		26	26	331
	EL										

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PROPOSED MUIR WOODS SECTION A
TOWN OF AMHERST, NY
PM PEAK

Fig 3 Fig 4 Fig 6 Fig 7 Fig 8

Num of yrs: 2

LOCATION NUMBER	INTERSECTION DESCRIPTION	2020 Existing Volume	2022 Bkgd Vol 1.00%	Muir Woods Site B	2022 Bkgrd Volume	Proposed Muir Woods Section A Enter Dist. %	Proposed Muir Woods Section A Exit Dist. %	Proposed Muir Woods Section A Trips IN 106	Proposed Muir Woods Section A Trips OUT 82	Total Site Trips	FULL Build Volumes
1	Sweet Home Road Dodge Road/Commerce Drive										
	SR	10	10		10						10
	ST	940	959	21	980						980
	SL	60	61		61	20%		21		21	82
	WR	150	153		153		20%		16	16	169
	WT	60	61		61		10%		8	8	69
	WL	75	77		77		25%		21	21	98
	NR	125	128		128	25%		27		27	155
	NT	740	755	13	768						768
	NL	175	179		179						179
	ER	260	265		265						265
	ET	150	153		153	10%		11		11	164
	EL	25	26		26						26
2	Dodge Road Proposed North Driveway										
	SR						25%		21	21	21
	ST										
	SL						15%		12	12	12
	WR					10%		11		11	11
	WT	389	397	32	429		30%		25	25	454
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	339	346	13	359	25%		27		27	386
	EL					30%		32		32	32
3	Dodge Road Proposed Middle Out Driveway										
	SR						10%		8	8	8
	ST										
	SL						5%		4	4	4
	WR										
	WT	389	397	32	429	10%	15%	11	12	23	452
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	339	346	13	359	25%	15%	27	12	39	398
	EL										
4	Dodge Road Proposed Middle In Driveway										
	SR										
	ST										
	SL										
	WR					5%		5		5	5
	WT	389	397	32	429	10%	20%	11	16	27	456
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	339	346	13	359	15%	20%	16	16	32	391
	EL					10%		11		11	11
5	Dodge Road Proposed South Driveway										
	SR						20%		16	16	16
	ST										
	SL						25%		21	21	21
	WR					30%		32		32	32
	WT	389	397	32	429	15%		16		16	445
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	339	346	13	359		20%		16	16	375
	EL					15%		16		16	16
6	Dodge Road North Forest Road										
	SR										
	ST										
	SL										
	WR										
	WT	268	273	32	305	30%		32		32	337
	WL	30	31		31						31
	NR	68	69		69						69
	NT										
	NL	121	123		123	15%		16		16	139
	ER	81	83		83		15%		12	12	95
	ET	258	263	13	276		30%		25	25	301
	EL										

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SWEET HOME/DODGE/COMMERCE

1.I

Phase Times (next/2/2/2, next/2/2/7/6) E/W									
	1	2	3	4	5	6 SB	7	8	
Movement	SBL	NB			NBL	[redacted]		[redacted]	
Minimum Green	10	40	0	0	10	40	0	15	0 - 255 sec.
Passage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 sec.
Yellow	3.2	4.3	0.0	0.0	3.2	4.3	0.0	3.9	0.0 - 25.5 sec.
Red Clearance	1.1	1.4	0.0	0.0	1.1	1.4	0.0	1.8	0.0 - 25.5 sec. or 0 - 255 sec.
Max 1	20	45	0	0	20	45	0	30	0 - 255 sec
Max 2	0	0	0	0	0	0	0	0	0 - 255 sec
Walk	0	7	0	0	0	7	0	7	0 - 255 sec
Ped Clear	0	15	0	0	0	15	0	15	0 - 255 sec
Seconds Per Actuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 sec.
Time Before Reduction	0	0	0	0	0	0	0	0	0 - 255 sec
Time to Reduce	0	0	0	0	0	0	0	0	0 - 255 sec
Minimum Gap	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0 - 25.5 sec.
Max Variable Initial	0	0	0	0	0	0	0	0	0 - 255 sec
Max Extend	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 sec.
Auto Max	0	0	0	0	0	0	0	0	0 - 255 sec
Inhibit Min Yellow									X = On
Red Decimal Off									X = On

Other Controller Functions (next/2/2/9)									
Phase -->	1	2	3	4	5	6	7	8	
Inhibit Simultaneous Gap Out									X = On
Last Car Passage	2	0 = recall phase, 1 = last car passage, 2 = NOT recall - Not last car passage							
Red Revert (+2seconds)	0.0	0 - 25.5 sec.							
Auto Ped Clear		X = On							
Flashing Don't Walk Thru Yellow		X = On							
Soft Recall / Red Rest Delay	0.0	0 - 25.5 sec.							
Change Sequence	X	X = On (After a download with a power on - off cycle)							
Phase -->	1	2	3	4	5	6	7	8	
Red Clear Extension Detector	0	0	0	0	0	0	0	0	0 = none 1 - 32 = detector 1 - 32
Red Clear Extension Red Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0 - 25.5 sec.

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A3

Level of Service: Criteria and Definitions

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Level of Service Criteria

Highway Capacity Manual 2016

SIGNALIZED INTERSECTIONS

Level of Service is a qualitative measure describing operational conditions within a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. Level of Service for signalized intersections is defined in terms of delay specifically, average total delay per vehicle for a 15 minute analysis period. The ranges are as follows:

Level of Service	Control Delay per vehicle (seconds)
A	< 10
B	10 – 20
C	20 – 35
D	35 – 55
E	55 – 80
F	>80

UNSIGNALIZED INTERSECTIONS

Level of Service for unsignalized intersections is also defined in terms of delay. However, the delay criteria are different from a signalized intersection. The primary reason for this is driver expectation that a signalized intersection is designed to carry higher volumes than an unsignalized intersection. The total delay threshold for any given Level of Service is less for an unsignalized intersection than for a signalized intersection. The ranges are as follows:

Level of Service	Control Delay per vehicle (seconds)
A	< 10
B	10 – 15
C	15 – 25
D	25 – 35
E	35 - 50
F	>50

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A4

Level of Service Calculations: Existing Conditions

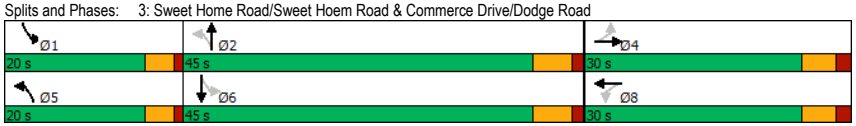
Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	30	50	26	364	58	211	450	100	297	883	8
Future Volume (vph)	10	30	50	26	364	58	211	450	100	297	883	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.906			0.979			0.973			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1128	1434	0	1612	1839	0	1703	3366	0	1787	3502	0
Flt Permitted	0.163			0.693			0.117			0.308		
Satd. Flow (perm)	194	1434	0	1176	1839	0	210	3366	0	579	3502	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		62			8			34			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	60%	0%	32%	12%	1%	2%	6%	4%	6%	1%	3%	0%
Adj. Flow (vph)	12	37	62	32	449	72	260	556	123	367	1090	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	99	0	32	521	0	260	679	0	367	1100	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.5	24.5		24.5	24.5		49.5	34.2		49.0	34.0	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.56	0.39		0.56	0.39	
v/c Ratio	0.23	0.22		0.10	1.01		0.74	0.51		0.72	0.82	
Control Delay	40.5	14.2		27.7	76.4		31.5	20.9		17.6	30.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	40.5	14.2		27.7	76.4		31.5	20.9		17.6	30.0	
LOS	D	B		C	E		C	C		B	C	
Approach Delay		17.0			73.5			23.8			26.9	
Approach LOS		B			E			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 88.2			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 34.0		Intersection LOS: C	
Intersection Capacity Utilization 72.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	288	170	102	323	38	20
Future Volume (vph)	288	170	102	323	38	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.950				0.953	
Flt Protected				0.988	0.968	
Satd. Flow (prot)	1783	0	0	1863	1753	0
Flt Permitted				0.988	0.968	
Satd. Flow (perm)	1783	0	0	1863	1753	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Adj. Flow (vph)	374	221	132	419	49	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	595	0	0	551	75	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.5%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	288	170	102	323	38	20
Future Vol, veh/h	288	170	102	323	38	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	374	221	132	419	49	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	595	0	1168	485
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	683	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	991	-	216	586
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	505	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	991	-	178	586
Mov Cap-2 Maneuver	-	-	-	-	178	-
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	417	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	27.5
HCM LOS			D

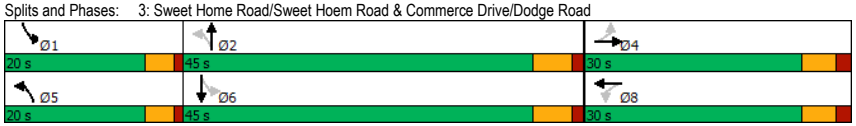
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	234	-	-	991	-
HCM Lane V/C Ratio	0.322	-	-	0.134	-
HCM Control Delay (s)	27.5	-	-	9.2	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.3	-	-	0.5	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	150	260	75	60	150	175	740	125	60	940	10
Future Volume (vph)	25	150	260	75	60	150	175	740	125	60	940	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.905			0.893			0.978			0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1530	1696	0	1805	1675	0	1612	3476	0	1805	3567	0
Flt Permitted	0.435			0.164			0.095			0.188		
Satd. Flow (perm)	700	1696	0	312	1675	0	161	3476	0	357	3567	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		88			127			24			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	18%	2%	1%	0%	2%	1%	12%	1%	5%	0%	1%	0%
Adj. Flow (vph)	33	197	342	99	79	197	230	974	164	79	1237	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	539	0	99	276	0	230	1138	0	79	1250	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.4	24.4		24.4	24.4		55.8	45.4		45.0	36.6	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.62	0.50		0.50	0.41	
v/c Ratio	0.17	1.03		1.18	0.51		0.73	0.65		0.27	0.86	
Control Delay	30.3	77.7		191.3	19.3		32.4	18.8		10.1	32.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	30.3	77.7		191.3	19.3		32.4	18.8		10.1	32.2	
LOS	C	E		F	B		C	B		B	C	
Approach Delay		75.0			64.7			21.1			30.9	
Approach LOS		E			E			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 90.3			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 37.6		Intersection LOS: D	
Intersection Capacity Utilization 81.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	258	81	30	268	121	68
Future Volume (vph)	258	81	30	268	121	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.968				0.951	
Flt Protected				0.995	0.969	
Satd. Flow (prot)	1839	0	0	1890	1751	0
Flt Permitted				0.995	0.969	
Satd. Flow (perm)	1839	0	0	1890	1751	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	344	108	40	357	161	91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	452	0	0	397	252	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.1%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	6.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	258	81	30	268	121	68
Future Vol, veh/h	258	81	30	268	121	68
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	344	108	40	357	161	91

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	452	0	835	398
Stage 1	-	-	-	-	398	-
Stage 2	-	-	-	-	437	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1119	-	340	656
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	655	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1119	-	325	656
Mov Cap-2 Maneuver	-	-	-	-	325	-
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	626	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	28.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	397	-	-	1119	-
HCM Lane V/C Ratio	0.635	-	-	0.036	-
HCM Control Delay (s)	28.6	-	-	8.3	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	4.2	-	-	0.1	-

A5

Level of Service Calculations: Background Conditions

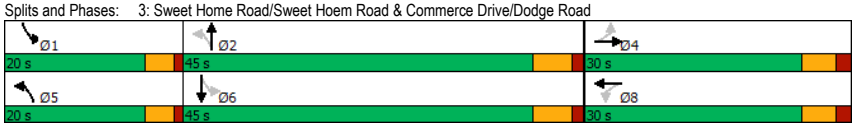
Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	31	51	27	371	59	215	470	102	303	916	8
Future Volume (vph)	10	31	51	27	371	59	215	470	102	303	916	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.906			0.979			0.973			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1128	1435	0	1612	1839	0	1703	3366	0	1787	3502	0
Flt Permitted	0.163			0.692			0.112			0.298		
Satd. Flow (perm)	194	1435	0	1174	1839	0	201	3366	0	561	3502	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		63			8			33			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	60%	0%	32%	12%	1%	2%	6%	4%	6%	1%	3%	0%
Adj. Flow (vph)	12	38	63	33	458	73	265	580	126	374	1131	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	101	0	33	531	0	265	706	0	374	1141	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.5	24.5		24.5	24.5		51.2	35.6		50.2	35.1	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.57	0.40		0.56	0.39	
v/c Ratio	0.23	0.23		0.10	1.05		0.75	0.52		0.75	0.83	
Control Delay	41.1	14.3		28.0	86.8		33.3	21.0		19.0	30.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	41.1	14.3		28.0	86.8		33.3	21.0		19.0	30.8	
LOS	D	B		C	F		C	C		B	C	
Approach Delay		17.1			83.4			24.3			27.9	
Approach LOS		B			F			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 89.6			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.05			
Intersection Signal Delay: 36.3		Intersection LOS: D	
Intersection Capacity Utilization 73.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	305	173	104	347	39	20
Future Volume (vph)	305	173	104	347	39	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.951				0.954	
Flt Protected				0.989	0.968	
Satd. Flow (prot)	1784	0	0	1865	1755	0
Flt Permitted				0.989	0.968	
Satd. Flow (perm)	1784	0	0	1865	1755	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Adj. Flow (vph)	396	225	135	451	51	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	621	0	0	586	77	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.0%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	305	173	104	347	39	20
Future Vol, veh/h	305	173	104	347	39	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	396	225	135	451	51	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	621	0	1230	509
Stage 1	-	-	-	-	509	-
Stage 2	-	-	-	-	721	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	969	-	198	568
Stage 1	-	-	-	-	608	-
Stage 2	-	-	-	-	485	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	969	-	161	568
Mov Cap-2 Maneuver	-	-	-	-	161	-
Stage 1	-	-	-	-	608	-
Stage 2	-	-	-	-	395	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	31.1
HCM LOS			D

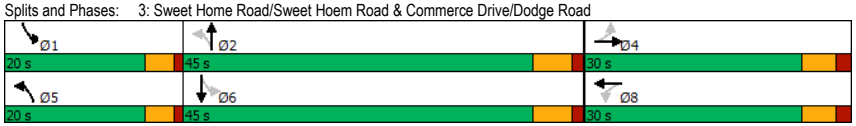
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	213	-	-	969	-
HCM Lane V/C Ratio	0.36	-	-	0.139	-
HCM Control Delay (s)	31.1	-	-	9.3	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.5	-	-	0.5	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	153	265	77	61	153	179	768	128	61	980	10
Future Volume (vph)	26	153	265	77	61	153	179	768	128	61	980	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.905			0.893			0.979			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1530	1696	0	1805	1675	0	1612	3480	0	1805	3571	0
Flt Permitted	0.421			0.164			0.093			0.174		
Satd. Flow (perm)	678	1696	0	312	1675	0	158	3480	0	331	3571	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		88			128			24			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	18%	2%	1%	0%	2%	1%	12%	1%	5%	0%	1%	0%
Adj. Flow (vph)	34	201	349	101	80	201	236	1011	168	80	1289	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	550	0	101	281	0	236	1179	0	80	1302	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.4	24.4		24.4	24.4		57.2	46.6		46.2	37.7	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.62	0.51		0.50	0.41	
v/c Ratio	0.19	1.07		1.23	0.52		0.75	0.66		0.29	0.89	
Control Delay	30.9	88.5		206.8	19.9		34.3	19.2		10.3	33.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	30.9	88.5		206.8	19.9		34.3	19.2		10.3	33.8	
LOS	C	F		F	B		C	B		B	C	
Approach Delay		85.1			69.3			21.7			32.5	
Approach LOS		F			E			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 91.6			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.23			
Intersection Signal Delay: 40.3		Intersection LOS: D	
Intersection Capacity Utilization 83.7%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	276	83	31	305	123	69
Future Volume (vph)	276	83	31	305	123	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.969				0.951	
Flt Protected				0.995	0.969	
Satd. Flow (prot)	1841	0	0	1890	1751	0
Flt Permitted				0.995	0.969	
Satd. Flow (perm)	1841	0	0	1890	1751	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	368	111	41	407	164	92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	479	0	0	448	256	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.4%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	8.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	276	83	31	305	123	69
Future Vol, veh/h	276	83	31	305	123	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	368	111	41	407	164	92

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	479	0	913	424
Stage 1	-	-	-	-	424	-
Stage 2	-	-	-	-	489	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1094	-	306	634
Stage 1	-	-	-	-	664	-
Stage 2	-	-	-	-	621	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1094	-	291	634
Mov Cap-2 Maneuver	-	-	-	-	291	-
Stage 1	-	-	-	-	664	-
Stage 2	-	-	-	-	591	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	35.9
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	361	-	-	1094	-
HCM Lane V/C Ratio	0.709	-	-	0.038	-
HCM Control Delay (s)	35.9	-	-	8.4	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	5.2	-	-	0.1	-

A6

Level of Service Calculations: Full Build Conditions

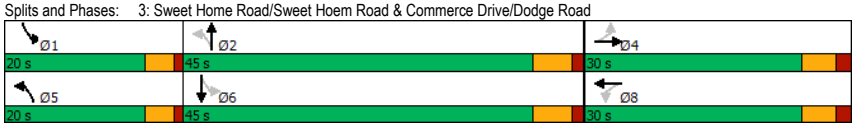
Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	36	51	48	380	76	215	470	114	312	916	8
Future Volume (vph)	10	36	51	48	380	76	215	470	114	312	916	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		150	0		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.912			0.975			0.971			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1128	1458	0	1612	1831	0	1703	3358	0	1787	3502	0
Flt Permitted	0.163			0.688			0.113			0.285		
Satd. Flow (perm)	194	1458	0	1167	1831	0	203	3358	0	536	3502	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		63			10			38			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	60%	0%	32%	12%	1%	2%	6%	4%	6%	1%	3%	0%
Adj. Flow (vph)	12	44	63	59	469	94	265	580	141	385	1131	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	107	0	59	563	0	265	721	0	385	1141	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.5	24.5		24.5	24.5		50.8	35.3		50.5	35.1	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.57	0.39		0.56	0.39	
v/c Ratio	0.23	0.24		0.18	1.11		0.75	0.54		0.77	0.83	
Control Delay	41.1	15.0		29.3	106.8		33.3	21.2		21.2	30.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	41.1	15.0		29.3	106.8		33.3	21.2		21.2	30.7	
LOS	D	B		C	F		C	C		C	C	
Approach Delay		17.7			99.5			24.5			28.3	
Approach LOS		B			F			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 89.6			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 40.4		Intersection LOS: D	
Intersection Capacity Utilization 75.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	331	186	104	361	46	20
Future Volume (vph)	331	186	104	361	46	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.951				0.959	
Flt Protected				0.989	0.966	
Satd. Flow (prot)	1784	0	0	1865	1760	0
Flt Permitted				0.989	0.966	
Satd. Flow (perm)	1784	0	0	1865	1760	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Adj. Flow (vph)	430	242	135	469	60	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	672	0	0	604	86	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.3%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	331	186	104	361	46	20
Future Vol, veh/h	331	186	104	361	46	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	430	242	135	469	60	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	672	0	1290	551
Stage 1	-	-	-	-	551	-
Stage 2	-	-	-	-	739	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	928	-	182	538
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	476	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	928	-	146	538
Mov Cap-2 Maneuver	-	-	-	-	146	-
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	382	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	39.6
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	187	-	-	928	-
HCM Lane V/C Ratio	0.458	-	-	0.146	-
HCM Control Delay (s)	39.6	-	-	9.5	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	2.2	-	-	0.5	-

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	14	490	412	5	13	21
Future Volume (vph)	14	490	412	5	13	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999		0.916	
Flt Protected		0.999			0.981	
Satd. Flow (prot)	0	1861	1861	0	1674	0
Flt Permitted		0.999			0.981	
Satd. Flow (perm)	0	1861	1861	0	1674	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		240	235		405	
Travel Time (s)		5.5	5.3		9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	533	448	5	14	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	548	453	0	37	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.6

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	14	490	412	5	13	21
Future Vol, veh/h	14	490	412	5	13	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	533	448	5	14	23

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	453	0	-	0	1014	451
Stage 1	-	-	-	-	451	-
Stage 2	-	-	-	-	563	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1108	-	-	-	264	608
Stage 1	-	-	-	-	642	-
Stage 2	-	-	-	-	570	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1108	-	-	-	259	608
Mov Cap-2 Maneuver	-	-	-	-	259	-
Stage 1	-	-	-	-	630	-
Stage 2	-	-	-	-	570	-

Approach	SE	NW	SW
HCM Control Delay, s	0.2	0	14.9
HCM LOS			B

Minor Lane/Major Mvmt	NWT	NWR	SEL	SETSWLn1	
Capacity (veh/h)	-	-	1108	-	401
HCM Lane V/C Ratio	-	-	0.014	-	0.092
HCM Control Delay (s)	-	-	8.3	0	14.9
HCM Lane LOS	-	-	A	A	B
HCM 95th %tile Q(veh)	-	-	0	-	0.3

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑		Y	
Traffic Volume (vph)	0	503	403	0	4	9
Future Volume (vph)	0	503	403	0	4	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.904	
Flt Protected					0.986	
Satd. Flow (prot)	0	1863	1863	0	1660	0
Flt Permitted					0.986	
Satd. Flow (perm)	0	1863	1863	0	1660	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		235	240		378	
Travel Time (s)		5.3	5.5		8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	547	438	0	4	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	547	438	0	14	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.2

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑		Y	
Traffic Vol, veh/h	0	503	403	0	4	9
Future Vol, veh/h	0	503	403	0	4	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	547	438	0	4	10

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	985	438
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	547	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	275	619
Stage 1	0	-	-	0	651	-
Stage 2	0	-	-	0	580	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	275	619
Mov Cap-2 Maneuver	-	-	-	-	275	-
Stage 1	-	-	-	-	651	-
Stage 2	-	-	-	-	580	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	NWT	SETSWLn1
Capacity (veh/h)	-	- 447
HCM Lane V/C Ratio	-	- 0.032
HCM Control Delay (s)	-	- 13.3
HCM Lane LOS	-	- B
HCM 95th %tile Q(veh)	-	- 0.1

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	5	502	408	2	0	0
Future Volume (vph)	5	502	408	2	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999			
Flt Protected						
Satd. Flow (prot)	0	1863	1861	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	1861	0	0	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		240	291		382	
Travel Time (s)		5.5	6.6		8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	546	443	2	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	551	445	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.7%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	7	495	393	14	21	17
Future Volume (vph)	7	495	393	14	21	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.995		0.941	
Flt Protected		0.999			0.973	
Satd. Flow (prot)	0	1861	1853	0	1706	0
Flt Permitted		0.999			0.973	
Satd. Flow (perm)	0	1861	1853	0	1706	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		291	117		311	
Travel Time (s)		6.6	2.7		7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	538	427	15	23	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	546	442	0	41	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 41.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.7

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	7	495	393	14	21	17
Future Vol, veh/h	7	495	393	14	21	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	538	427	15	23	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	442	0	-	0	989	435
Stage 1	-	-	-	-	435	-
Stage 2	-	-	-	-	554	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1118	-	-	-	274	621
Stage 1	-	-	-	-	653	-
Stage 2	-	-	-	-	575	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1118	-	-	-	271	621
Mov Cap-2 Maneuver	-	-	-	-	271	-
Stage 1	-	-	-	-	646	-
Stage 2	-	-	-	-	575	-

Approach	SE	NW	SW
HCM Control Delay, s	0.1	0	16.2
HCM LOS			C

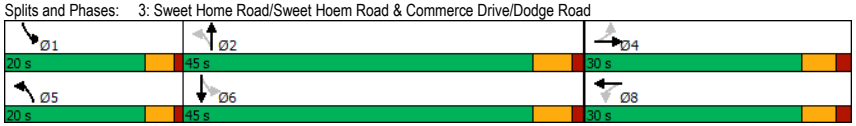
Minor Lane/Major Mvmt	NWT	NWR	SEL	SETSWLn1	
Capacity (veh/h)	-	-	1118	-	362
HCM Lane V/C Ratio	-	-	0.007	-	0.114
HCM Control Delay (s)	-	-	8.2	0	16.2
HCM Lane LOS	-	-	A	A	C
HCM 95th %tile Q(veh)	-	-	0	-	0.4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	164	265	98	69	169	179	768	155	82	980	10
Future Volume (vph)	26	164	265	98	69	169	179	768	155	82	980	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		150	0		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.907			0.894			0.975			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1530	1700	0	1805	1677	0	1612	3462	0	1805	3571	0
Flt Permitted	0.369			0.164			0.093			0.153		
Satd. Flow (perm)	594	1700	0	312	1677	0	158	3462	0	291	3571	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		82			124			30			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	18%	2%	1%	0%	2%	1%	12%	1%	5%	0%	1%	0%
Adj. Flow (vph)	34	216	349	129	91	222	236	1011	204	108	1289	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	565	0	129	313	0	236	1215	0	108	1302	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.4	24.4		24.4	24.4		57.1	45.8		47.0	37.7	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.62	0.50		0.51	0.41	
v/c Ratio	0.22	1.10		1.57	0.58		0.75	0.70		0.39	0.88	
Control Delay	32.1	100.2		333.9	22.9		34.8	20.5		11.9	33.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	32.1	100.2		333.9	22.9		34.8	20.5		11.9	33.7	
LOS	C	F		F	C		C	C		B	C	
Approach Delay		96.4			113.7			22.8			32.0	
Approach LOS		F			F			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 91.5			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.57			
Intersection Signal Delay: 47.7		Intersection LOS: D	
Intersection Capacity Utilization 85.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	301	95	31	337	139	69
Future Volume (vph)	301	95	31	337	139	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.968				0.955	
Flt Protected				0.996	0.968	
Satd. Flow (prot)	1839	0	0	1892	1756	0
Flt Permitted				0.996	0.968	
Satd. Flow (perm)	1839	0	0	1892	1756	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	401	127	41	449	185	92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	528	0	0	490	277	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 62.0%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	13

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	301	95	31	337	139	69
Future Vol, veh/h	301	95	31	337	139	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	401	127	41	449	185	92

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	528	0	996	465
Stage 1	-	-	-	-	465	-
Stage 2	-	-	-	-	531	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1049	-	273	602
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	594	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1049	-	259	602
Mov Cap-2 Maneuver	-	-	-	-	259	-
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	563	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	59.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	319	-	-	1049	-
HCM Lane V/C Ratio	0.869	-	-	0.039	-
HCM Control Delay (s)	59.6	-	-	8.6	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	7.9	-	-	0.1	-

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	32	386	454	11	12	21
Future Volume (vph)	32	386	454	11	12	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.997		0.914	
Flt Protected		0.996			0.982	
Satd. Flow (prot)	0	1855	1857	0	1672	0
Flt Permitted		0.996			0.982	
Satd. Flow (perm)	0	1855	1857	0	1672	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		240	235		405	
Travel Time (s)		5.5	5.3		9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	420	493	12	13	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	455	505	0	36	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 56.8%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.9

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	32	386	454	11	12	21
Future Vol, veh/h	32	386	454	11	12	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	420	493	12	13	23

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	505	0	-	0	989	499
Stage 1	-	-	-	-	499	-
Stage 2	-	-	-	-	490	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1060	-	-	-	274	572
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	616	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1060	-	-	-	262	572
Mov Cap-2 Maneuver	-	-	-	-	262	-
Stage 1	-	-	-	-	584	-
Stage 2	-	-	-	-	616	-

Approach	SE	NW	SW
HCM Control Delay, s	0.7	0	14.9
HCM LOS			B

Minor Lane/Major Mvmt	NWT	NWR	SEL	SETSWLn1	
Capacity (veh/h)	-	-	1060	-	400
HCM Lane V/C Ratio	-	-	0.033	-	0.09
HCM Control Delay (s)	-	-	8.5	0	14.9
HCM Lane LOS	-	-	A	A	B
HCM 95th %tile Q(veh)	-	-	0.1	-	0.3

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑		Y	
Traffic Volume (vph)	0	398	452	0	4	8
Future Volume (vph)	0	398	452	0	4	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.907	
Flt Protected					0.985	
Satd. Flow (prot)	0	1863	1863	0	1664	0
Flt Permitted					0.985	
Satd. Flow (perm)	0	1863	1863	0	1664	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		235	240		378	
Travel Time (s)		5.3	5.5		8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	433	491	0	4	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	433	491	0	13	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.2

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑		Y	
Traffic Vol, veh/h	0	398	452	0	4	8
Future Vol, veh/h	0	398	452	0	4	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	433	491	0	4	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	924	491
Stage 1	-	-	-	-	491	-
Stage 2	-	-	-	-	433	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	299	578
Stage 1	0	-	-	0	615	-
Stage 2	0	-	-	0	654	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	299	578
Mov Cap-2 Maneuver	-	-	-	-	299	-
Stage 1	-	-	-	-	615	-
Stage 2	-	-	-	-	654	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	13.4
HCM LOS			B

Minor Lane/Major Mvmt	NWT	SETSWLn1
Capacity (veh/h)	-	- 441
HCM Lane V/C Ratio	-	- 0.03
HCM Control Delay (s)	-	- 13.4
HCM Lane LOS	-	- B
HCM 95th %tile Q(veh)	-	- 0.1

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	11	391	456	5	0	0
Future Volume (vph)	11	391	456	5	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999			
Flt Protected		0.999				
Satd. Flow (prot)	0	1861	1861	0	0	0
Flt Permitted		0.999				
Satd. Flow (perm)	0	1861	1861	0	0	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		240	291		382	
Travel Time (s)		5.5	6.6		8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	425	496	5	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	437	501	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.8%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	16	375	445	32	21	16
Future Volume (vph)	16	375	445	32	21	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.991		0.943	
Flt Protected		0.998			0.972	
Satd. Flow (prot)	0	1859	1846	0	1707	0
Flt Permitted		0.998			0.972	
Satd. Flow (perm)	0	1859	1846	0	1707	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		291	117		311	
Travel Time (s)		6.6	2.7		7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	408	484	35	23	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	425	519	0	40	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 42.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.8

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	16	375	445	32	21	16
Future Vol, veh/h	16	375	445	32	21	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	408	484	35	23	17

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	519	0	-	0	944	502
Stage 1	-	-	-	-	502	-
Stage 2	-	-	-	-	442	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1047	-	-	-	291	569
Stage 1	-	-	-	-	608	-
Stage 2	-	-	-	-	648	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1047	-	-	-	285	569
Mov Cap-2 Maneuver	-	-	-	-	285	-
Stage 1	-	-	-	-	595	-
Stage 2	-	-	-	-	648	-

Approach	SE	NW	SW
HCM Control Delay, s	0.3	0	16.1
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	1047	-	363
HCM Lane V/C Ratio	-	-	0.017	-	0.111
HCM Control Delay (s)	-	-	8.5	0	16.1
HCM Lane LOS	-	-	A	A	C
HCM 95th %tile Q(veh)	-	-	0.1	-	0.4

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STORMWATER POLLUTION PREVENTION PLAN for CONSTRUCTION ACTIVITIES

Sawyer's Landing

Dodge & Sweet Home Road
Town of Amherst, Erie County, New York

Prepared for

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February 2021



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101 SCOPE

A. **PURPOSE:** Sawyer's Landing LLC (SL) has placed an emphasis on following the New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit for Stormwater Discharges from Construction Activity governing storm water discharges during construction, and in accordance with erosion control practices. The Contractor's participation in this program is mandatory and its non-compliance is subject to various remedies, including without limitation, monetary set-offs, withholding payments; reimbursement for costs, expenses (including reasonable attorney's fees), fines and civil penalties incurred by SL; and/or liquidated damages. This section provides a descriptive explanation of SL's Storm Water Pollution Prevention Program and required Contractor participation.

The Engineer of record for this project certifies that this SWPPP meets the requirements and is in compliance with the New York State Stormwater Management Design Manual and latest NYSDEC Phase II stormwater regulation requirements.

B. **SPDES General Permit for Stormwater Discharges from Construction Activity:** Regulations promulgated by the NYSDEC to regulate the discharge of storm water from construction activities on sites where more than one (1) acre of soil is disturbed. One of the ways to comply with these regulations for affected sites is to request coverage under the General Permit for Construction Activities for New York State. In order to use the General Permit, a Notice of Intent (NOI) form must be completed and electronically submitted to the NYSDEC at least 5 business days prior to any earth-disturbing activities (this time frame may increase to 60 business days if a full review of the SWPPP is determined necessary by the NYSDEC) and a Storm Water Pollution Prevention Plan (SWPPP) for the site must be prepared and followed during the construction activities. Once a copy of the SPDES permit is received from NYSDEC after filing, it will be included in Appendix L of this report.

Approval from a regulated, traditional land use control MS4:

1. An **owner or operator** of a construction activity that is <u>not</u> subject to the requirements of a regulated, traditional land use control MS4 must first develop a SWPPP in accordance with all applicable requirements of this permit and then submit a completed NOI form to the NYSDEC.

2. An **owner or operator** of a construction activity that is subject to the requirements of a regulated, traditional land use control MS4 must first

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develop a SWPPP in accordance with all applicable requirements of this permit and then have its SWPPP reviewed and accepted by the MS4 prior to submitting the NOI to the NYSDEC. The **owner or operator** shall have the "MS4 SWPPP Acceptance" form signed by the principal executive officer or ranking elected official from the regulated, traditional land use control MS4, or by a duly authorized representative of that person, and then submit that form along with the NOI to the address referenced under "Notice of Intent (NOI) Submittal".

C. **RESPONSIBILITIES OF THE CONTRACTOR:** The Contractor shall manage the discharge of storm water from the site in accordance with the NYSDEC General Permit for Construction Activities conditions and the following provisions of this section. The Operator shall be responsible for conducting the storm water management practices in accordance with the permit. The Contractor shall be responsible for providing **qualified inspector**s to conduct the inspections required by the SWPPP. The Contractor shall be responsible for any enforcement action taken or imposed by federal, state, or local agencies, including the cost of fines, construction delays, and remedial actions resulting from the Contractor's failure to comply with the permit provisions. It shall be the responsibility of the Contractor to make any changes to the SWPPP necessary when the Contractor or any of his subcontractors elects to use borrow or fill or material storage sites, either contiguous to or remote from the construction site, when such sites are used solely for this construction site. Such sites are considered to be part of the construction site covered by the permit and this SWPPP. Off-site borrow, fill, or material storage sites which are used for multiple construction projects are not subject to this requirement, unless specifically required by state or local jurisdictional entity regulations. The Contractor should consider this requirement in negotiating with earthwork subcontractors, since the choice of an off-site borrow, fill, or material storage site may impact their duty to implement, make changes to, and perform inspections required by the SWPPP for the site.

D. **NOTICE OF INTENT:** The Operator has petitioned the NYSDEC for coverage under the storm water discharges during construction at this site to be covered by the SPDES General Permit for Construction Activity for the State of New York. A Notice of Intent (NOI) for coverage under this permit has been filed by the Operator. The SWPPP must be prepared prior to submittal of the NOI form. The Operator will require the Contractor to be a co-permittee with the Operator. The Contractor will be required to post the NOI at the construction site along with any building permits.

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E. **CONTRACTOR CERTIFICATION & TRAINING:** Proof of Training/Certification of the Contractor's Designated individual shall be kept on site at all times.

F. **REQUIREMENTS FOR THE GENERAL CONTRACTOR AND SUBCONTRACTOR(S):** The General Contractor and Subcontractor(s) shall sign the "Contractor's Certification Statement" (located in the Appendix of this report) verifying they have been instructed on how to comply with and fully understand the requirements of the SPDES General Permit for Construction Activity for the State of New York and the SWPPP. These certifications must be signed, by a responsible corporate officer or other party meeting the "Signatory Requirements" of the SPDES General Permit, on behalf of each entity, prior to the beginning of any construction activities.

G. **STORM WATER POLLUTION PREVENTION PROGRAM LOCATION REQUIREMENTS:** The SWPPP is meant to be a working document that shall be maintained at the site of the Construction Activities at all times throughout the project, shall be readily available upon request by the Operator's personnel or NYSDEC or any other agency with regulatory authority over storm water issues, and shall be kept on-site until the site complies with the Final Stabilization section of this document. A sign or other notice must be posted near the main entrance of the construction site which contains a completed NOI, the location of the SWPPP and the name and phone number of a contact person responsible for scheduling SWPPP viewing times, and any other state specific requirements.

H. **INSPECTIONS AND RECORD-KEEPING:**

A. **General Construction Site Inspection and Maintenance Requirements**

1. The **owner or operator** must ensure that all erosion and sediment control practices and all post-construction stormwater management practices identified in the SWPPP are maintained in effective operating condition at all times.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York, or protect the public health and safety and/or the environment.

B. **Owner or operator Maintenance Inspection Requirements**

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1. The **owner or operator** shall inspect, in accordance with the requirements in the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, the erosion and sediment controls identified in the SWPPP to ensure that they are being maintained in effective operating condition at all times.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the **owner or operator** can stop conducting the maintenance inspections. The **owner or operator** shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of the General Permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the **owner or operator** can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved final stabilization and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. **Qualified inspector Inspection Requirements**

The **owner or operator** shall have a **qualified inspector** conduct site inspections in conformance with the following requirements:

Note: The **trained contractor** identified in Part III.A.6 of the General Permit **cannot** conduct the **qualified inspector** site inspections unless they meet the **qualified inspector** qualifications included in Appendix A of the General Permit. In order to perform these inspections, the trained contractor would have to be a:

- Licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- Registered Landscape Architect, or
- Someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape

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Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity.

1. A **qualified inspector** shall conduct site inspections for all construction activities identified in Tables 1 and 2 of Appendix B of the General Permit, with the exception of:

   a. The construction of a single family residential subdivision with 25% or less impervious cover at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C of the General Permit and not directly discharging to one of the 303(d) segments listed in Appendix E of the General Permit;

   b. The construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E of the General Permit;

   c. Construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

   d. Construction activities located in the watersheds identified in Appendix D of the General Permit that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the **qualified inspector** shall conduct site inspections in accordance with the following timetable:

   a. For construction sites where soil disturbance activities are on-going, the **qualified inspector** shall conduct a site inspection at least once every seven (7) calendar days.

   b. For construction sites where soil disturbance activities are on-going and the **owner or operator** has received authorization in accordance with Part II.C.3 of the General Permit to **disturb greater than five (5) acres** of soil at any one time, the **qualified inspector**

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shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

c. For construction sites where soil disturbance activities have been **temporarily suspended (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas**, the **qualified inspector** shall conduct a site inspection at least once every thirty (30) calendar days. The **owner or operator** shall notify the Regional Office stormwater contact person (see contact information in Appendix F of the General Permit) or, in areas under the jurisdiction of a regulated, traditional land use control MS4, the MS4 (provided the MS4 is not the **owner or operator** of the construction activity) in writing prior to reducing the frequency of inspections.

d. For construction sites where **soil disturbance activities have been shut down with partial project completion**, the **qualified inspector** can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved final stabilization and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The **owner or operator** shall notify the Regional Office stormwater contact person or, in areas under the jurisdiction of a regulated, traditional land use control MS4, the MS4 (provided the MS4 is not the **owner or operator** of the construction activity). in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the **owner or operator** shall have the **qualified inspector** perform a final inspection and certify that all disturbed areas have achieved final stabilization, and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "Final Stabilization" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The **owner or operator** shall then submit the completed NOT form to the address in Part II.A.1 of the General Permit.

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3. At a minimum, the **qualified inspector** shall inspect all erosion and sediment control practices to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved final stabilization, all points of discharge to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the construction site, and all points of discharge from the construction site.

4. The **qualified inspector** shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

   a. Date and time of inspection;

   b. Name and title of person(s) performing inspection;

   c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

   d. A description of the condition of the runoff at all points of discharge from the construction site. This shall include identification of any discharges of sediment from the construction site. Include discharges from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

   e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the construction site which receive runoff from disturbed areas. This shall include identification of any discharges of sediment to the surface waterbody;

   f. Identification of all erosion and sediment control practices that need repair or maintenance;

   g. Identification of all erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

   h. Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection;

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i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s); and

k. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The **qualified inspector** shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The **qualified inspector** shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The **qualified inspector** shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the **qualified inspector** shall notify the **owner or operator** and appropriate contractor or subcontractor identified in Part III.A.6. of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the **qualified inspector**. Pursuant to Part II.C.2 of the General Permit, the inspection reports shall be maintained on site with the SWPPP.

Record Retention - The **owner or operator** shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the site achieves final stabilization. This period may be extended by the Department, in its sole discretion, at any time upon written notification.

l. **SWPPP MODIFICATIONS:** The inspection report should also identify if any revisions to the SWPPP are warranted due to unexpected conditions. The SWPPP is meant

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to be a dynamic working guide that is to be kept current and amended whenever there is a change in design, construction, operation, or maintenance at the construction site that has or could have a significant effect on the discharge of pollutants or when the plan proves to be ineffective in eliminating or significantly minimizing pollutant discharges. The Contractor's failure to modify or report deficiencies to the Operator will result in the Contractor being liable for fines and construction delays resulting from any federal, state, or local agency enforcement action.

J. **FINAL STABILIZATION AND TERMINATION OF PERMIT COVERAGE:** A site can be considered finally stabilized when all soil disturbing activities have been completed and a uniform perennial vegetative cover with a density of **85%** for the unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures have been established and the facility no longer discharges storm water associated with construction activities and a Notice of Termination (NOT) form filed by the Operator(s) with the NYSDEC. The Operator's Project Manager must complete the NOT. The NOT must be signed by the signatory (or equivalent position) on the NOI and subsequently submitted to the appropriate agency. The Operator's Project Manager must provide a completed copy of the NOT to the Contractor for inclusion in the SWPPP, which will then be optically scanned into the final SWPPP document as required. This filing terminates coverage under the General Permit and terminates the Contractor's responsibility to implement the SWPPP, but the requirements of the SWPPP, including periodic inspections, must be continued until the NOT is filed. The **owner or operator** shall also have the **qualified inspector** perform a final site inspection prior to signing and submitting the NOT to the Department. The local MS4/Stormwater Management Officer must also sign the NOT and may require a final site inspection to be completed prior to. Final payment and/or the release of retainage will be withheld until all provisions of the SWPPP have been submitted, completed and accepted by the Operator.

102 PROJECT NAME AND LOCATION

Sawyer's Landing

Dodge Road

Town of Amherst, County of Erie, New York

Easting: 190681.1

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Northing: 4770798.8

Estimated Area of Site ≈ 17.4 acres

Estimated Area to be disturbed by Construction Activities ≈ 16.4 acres

A general location map is included as Appendix A.

103 OPERATOR'S NAME AND ADDRESS

Sawyer's Landing LLC

c/o Severyn Development

43 Central Avenue

Lancaster, NY 14086

Contact Person: William Severyn

Telephone: 716–818-0207

104 PROJECT DESCRIPTION

This project is a development of a 17.4 acre site located on the north side of Dodge Road, west of Sweet Home Road in the Town of Amherst. Both Dodge Road and Sweet Home Road are Erie County roads. Proposed is the construction of a mixed use development to include (2) 4-story buildings with a total of 30,000 sf of commercial and 100 apartments, (47) duplex lots and (2) 1-story apartment buildings with a total of 12 units. A bike trail will be constructed on site, this trail will connect to the existing Town of Amherst bike trail on the south side of Dodge Road. The approximately 1 acre westerly portion will remain undisturbed and be deed restricted as permanent open space. The site is currently undeveloped consisting of woods and overgrown brush/grass. NYSDEC and Federal wetlands were delineated on site by Earth Dimensions, Inc. Approximately 6.1 acres of Federal and 1.2 acres of NYSDEC wetlands have been permitted to be impacted. The proposed site development area to be disturbed for this project is approximately 16.4 acres.

Soil disturbing activities will include:

A. Construction of temporary construction exit points

B. Clearing & grubbing of the site within disturbance limits

C. Installation of detention basins, bioretention areas including topsoil & seed

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D. Installation of storm sewer pipes and inlets

E. Construction of utilities

F. Construction of curb and parking lot

G. Final grading & landscaping

H. Construction of building

This project is owned by Sawyer's Landing LLC and will be developed by the same. The work area consists of approximately 16.4 acres for which erosion and sediment controls have been developed and fully addressed in this written plan and the Erosion and Sediment Control Plans. See the construction documents for additional details.

105 RUNOFF COEFFICIENT, SOILS, AND RAINFALL INFORMATION

The initial runoff curve number for the pre-construction site is "CN" = 78. The post-construction runoff curve number for the site will be "CN" = 91. The site is 17.4 acres of which approximately 16.4 acres will be disturbed by construction activities.

See soils information located in Appendix H.

The site is in Erie County, which receives an average of approximately 45 inches rainfall annually with the highest amounts of rainfall received in the months of May thru September. Annual snow for this area is approximately 120 inches.

106 WATERS

The runoff generated from this site will discharge to the storm system on Dodge Road which is tributary to Ellicott Creek.

107 INDIAN COUNTRY LANDS

This project is not located on Indian Lands.

108 ENDANGERED AND THREATENED SPECIES

No endangered or threatened species have been determined to be on the site.

109 CRITICAL HABITAT

See section 108 above.

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110 HISTORIC PLACES

The assessed property is shown on the NYSHPO map as an archeologically sensitive area. A NYSHPO "no effect" letter is included in Appendix I.

111 WETLANDS AND/OR OTHER SURFACE WATERS

Federal and NYSDEC wetlands were delineated on site by Earth Dimensions, Inc. Approximately 6.1 acres of Federal and 1.2 acres of NYSDEC wetlands have been permitted to be impacted. The USACOE and NYSDEC wetland permits are included in Appendix K of this report.

112 EROSION AND SEDIMENT CONTROLS

112.1 STABILIZATION PRACTICES

Stabilization practices for this site include:

A. Land clearing activities shall be done only in areas where earthwork will be performed and shall progress as earthwork is needed.

B. Use of stabilization method for all slopes with a slope greater than 1V:3H.

C. Permanent seeding and planting of all unpaved areas using the hydromulching grass seeding technique.

D. Mulching exposed areas.

E. Vegetation preservation in undisturbed areas.

F. Frequent watering to minimize wind erosion during construction.

a. **For sites where 5 acres or more are disturbed at any one time**: In areas where soil disturbance activity has been temporarily or permanently ceased, temporary and/or permanent soil stabilization measures shall be installed and/or implemented within seven (7) days from the date the soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the most current version of the New York Standards and Specifications for Erosion and Sediment Control.

b. The **owner or operator** shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

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c. The **owner or operator** shall install any additional measures needed to protect water quality.

112.2 STRUCTURAL PRACTICES

Structural practices for this site include:

A. Inlet protection using a method detailed in the Construction Documents.

B. Perimeter protection using temporary silt fence/silt sock or silt sock.

C. Outlet protection using rip-rap stone and end sections.

D. Stabilized Construction Entrance.

E. Temporary stone wash off areas.

F. Storm sewer, curb/gutter.

G. Sediment traps and basins.

112.3 SEQUENCE OF MAJOR ACTIVITIES

The Contractor will be responsible for implementing the following erosion control and storm water management control measures. The Contractor may designate these tasks to certain subcontractors as he sees fit, but the ultimate responsibility for implementing these controls and ensuring their proper functioning remains with the Contractor. The order of activities will be as follows:

A. Construct temporary construction exits at locations shown on the Demolition & Erosion Control Plan Sheet.

B. Install perimeter silt fence/silt socks/silt sock in the locations shown on the Demolition & Erosion Control Plan Sheet.

C. Clear & Grub site.

D. Installation of detention basin to act as sediment basin.

E. Commence site grading.

F. If less than 5 acres of the site have been disturbed and construction activity has ceased for more than 14 days, temporarily seed and water to stabilize this area. If more than 5 acres of the site have been disturbed and construction activity has ceased for more than 7 days, temporarily seed and water to stabilize this area.

G. Installation of proposed utilities.

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H. Install base material as required for pavement/buildings.

I. Finalize pavement subgrade preparation.

J. Construction of buildings.

K. Construct all curb, drainage inlets, storm sewer pipes and storm sewer manholes, as shown on the plans. Install temporary inlet protection at the locations of all inlets.

L. Dust control.

L. Remove inlet protection around inlets and manholes no more than 48 hours prior to placing stabilized base course.

N. Carry out final grading and seeding and planting.

O. Install bioretention areas (do not install bioretention soil or underdrains until surrounding area is stabilized).

P. Clean storm system following construction, clean detention basin of any silt and return to design grades.

Q. Remove silt fencing/silt sock only after all paving is complete and exposed surfaces are stabilized.

R. Remove temporary construction exits only prior to pavement construction in these areas.

Note: Sediment control storage during construction (traps & basins) during construction shall be 134 cy per acre of disturbance per NYSDEC requirements.

112.4 STORM WATER MANAGEMENT

The existing site is generally flat and slopes west with portions sloping east. The portion that slopes west settles in a low area and once the capacity of that area is exceeded, sheet flow continues towards Sweet Home Road and is collected by an existing 12" pipe on the north side of Dodge Road. This pipe flows to the Erie County system on Sweet Home Road. The portion that flows east flows to the offsite wetlands.

Currently Dodge Road does not have a drainage system. A series of catch basins and pipes will be installed in the green area on the north side of Dodge Road to collect the road drainage. The west portion of this system will connect to the existing closed drainage system on Sweet Home Road. The east portion will discharge to the Ellicott Creek diversion channel using and existing discharge point. This new system will also convey the proposed discharge from the site as described below.

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The proposed onsite storm sewer system consists of smooth interior and perforated HDPE pipes connected by a series of catch basins, manholes and yard drains. The site is split into a storm water management area on the east and west sides.

West Side

The west side of the site has (2) bioretention areas which portions of the westerly area will discharge to. These bioretention areas along with the remainder of the west portion of the site will discharge to the underground detention area. Note that the yard drains installed along the north property line discharge to the underground detention area. An outlet structure in the SW portion of this area will control runoff to at or below existing runoff flow rates. The discharge from the outlet control structure will discharge to the new system on Dodge Road which flows to the Sweet Home Road system.

Underground Detention Summary

(286) ADS Stormtech SC-740 chambers
Top of stone elev. = 573.00
Top of chamber elev. = 572.50
Bottom of chamber elev. = 570.00
Bottom of stone elev. = 569.50
Total storage = 18,574 CF

Event	Ex. Discharge	Pro. Discharge	Elev.
1 yr	0.87 cfs	0.33 cfs	570.29
2 yr	1.34 cfs	0.68 cfs	570.46
5 yr	2.14 cfs	1.05 cfs	570.79
10 yr	2.94 cfs	1.28 cfs	571.13
25 yr	4.34 cfs	1.61 cfs	571.73
50 yr	5.69 cfs	3.61 cfs	572.23
100 yr	7.33 cfs	4.83 cfs	572.92

East Side

The east side of the site has a bioretention area and wet detention pond which this portion of the site discharges to. The NE portion of the site discharges to a forebay which spills into the main micropool portion of the wet detention basin. The SE portion of the site discharges to the bioretention area which also spills into the main micropool portion of the site. An outlet control structure is located in

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the SE portion of the micropool and controls the discharge from this storm water management area. Spillways are also located on the east portion of the micropool which will discharge to the existing wetlands to the east in order to not cut off all flow from this site into this area. The discharge from the outlet control structure will discharge to the new system on Dodge Road which flows to the Ellicott Creek diversion channel.

The bioretention areas and wet detention pond for the project area are sized to provide 100% of the required Runoff Reduction Volume (RRv) and Water Quality Volume (WQv) treatment for the overall site in accordance with Chapter 4 of the NYSDEC Stormwater design manual. The soils in the vicinity of the bioretention areas are mainly USDA hydrologic group 'D' and therefore the system will be installed with underdrains per NYSDEC requirements. The bioretention areas will consist of 6" and 8" perforated HDPE underdrains in 12" of drainage gravel, followed by filter fabric and 18" minimum of planting soil. Overflow yard drains will be installed to allow 6" maximum temporary ponding for RRv treatment. The east bioretention area (area #3) spills into the wet detention pond and the underdrain pipe ties together with the pond discharge and flows to Dodge Road. The east bioretention areas (areas #1 & #2) have a catch basin to act as the spillway and this catch basin and the underdrain pipes discharge to the underground detention area.

Storm Water Management Area Summary

Forebay
Top of basin elev. = 576.80
Permanent water elev. = 575.00
Aquatic bench elev. = 574.50
Bottom of basin elev. = 569.00

Micropool
Top of basin elev. = 576.80
Permanent water elev. = 575.00
Aquatic bench elev. = 574.50
Bottom of basin elev. = 563.00

Overall Storm Water Summary

WQv Provided = 152,678 cf (pond)
WQv Provided = 6,948 cf (bioretention)
WQv Provided = 159,626 cf (total)

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Bioretention Area Summary:

Area	Rim Elev.	Bottom Elev.	Area
1	574.50	574.00	2,300 sf
2	574.50	574.00	2,600 sf
3	575.50	575.00	11,000 sf
		Total Provided =	15,900 sf

Water Quality Summary:
WQv req'd = 28,804 cf (0.661 ac-ft)
RRv min. req'd = 5,518 cf (0.127 ac-ft)
RRv provided = 8,662 cf (0.199 ac-ft)
WQv provided = 159,626 cf (3.665 ac-ft)
Total RRv + WQv provided = 8,662 cf + 159,626 cf = 168,287 cf (3.868 ac-ft)

Detention: Comparison of the existing 1-year vs. the proposed 1-year runoff
Comparison of the existing 10-year vs. the proposed 10-year runoff
Comparison of the existing 100-year vs. the proposed 100-year runoff

Storm pipes: 10-year storm

Refer to the engineer's report in Appendix N for additional details.

113 OTHER CONTROLS

113.1 OFF-SITE VEHICLE TRACKING

A stabilized construction exit will be provided to help reduce vehicle tracking of sediments. Existing paved areas will remain as long as possible and will be used for vehicle wash areas and to further aid in the reduction of vehicle tracking of sediments. The paved streets adjacent to the site entrance shall be inspected daily and swept as necessary to remove any excess mud, dirt, or rock tracked from the site. Dump trucks hauling material to/from the construction site will be covered with a tarpaulin. The job site superintendent will be responsible for seeing that these procedures are followed.

113.2 EXCAVATION SPOIL MATERIALS

Excavation spoil materials are generated during the excavation of the development's building and utilities installation. These materials must be properly managed to prevent them from contributing to storm water discharges. The materials generated from the development of this project will be hauled off-site or stockpiled for re-use in designated areas which will have temporary erosion &

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sediment control measures installed. Any removal from site will be done under the necessary permits required by the local governing agencies.

113.3 DUST CONTROL

Minimizing wind erosion and controlling dust will be accomplished by one or more of the following methods:

A. Frequent watering of excavation and fill areas.

B. Providing gravel or paving at entrance/exit drives, parking areas and transit paths.

113.4 WASTE DISPOSAL

If needed, all waste materials will be collected and stored in securely lidded metal dumpsters rented from an approved waste management company. The dumpster will comply with all local and state solid waste management regulations.

All trash and construction debris from the site will be deposited in the dumpsters. The dumpsters will be emptied when full and then hauled to a NYSDEC approved landfill for proper disposal. No construction waste will be buried on-site. All personnel will be instructed regarding the correct procedures for waste disposal.

113.5 SANITARY WASTE

If needed, portable toilet units or field offices with toilet facilities connected to the municipal sanitary sewer will be used for sanitary purposes. All portable toilet units will be emptied a minimum of once per week by a licensed portable facility provided in compliance with local and state regulations.

113.6 CONCRETE WASTE FROM CONCRETE TRUCKS

A. Emptying of excess unhardened concrete and/or washout from concrete delivery trucks will be allowed on the job site, but in either (1) specifically designated diked areas which have been prepared to prevent contact between concrete and/or washout and storm water which will be discharged from the site or (2) in locations where waste concrete will be poured into forms to make rip-rap or other useful concrete products.

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B. Hardened waste concrete from the designated diked areas described above will be disposed of in accordance with applicable local and state regulations with regards to disposal of construction debris.

113.7 HAZARDOUS SUBSTANCES & HAZARDOUS WASTE

A. All hazardous waste materials will be disposed of by the Contractor in the manner specified by local, state, and/or federal regulations and by the manufacturer of such products. Site personnel will be instructed in these practices by the job superintendent, who will also be responsible for seeing these practices are followed. Material Safety Data Sheets (MSDS's) for each substance with hazardous properties that is used on the job site will be obtained and used for the proper management of potential wastes that may result from these products. An MSDS will be posted in the immediate area where such products are stored and/or used and another copy of each MSDS will be maintained in the SWPPP file at the job site construction office. Each employee who must handle a substance with hazardous properties will be instructed on the use of MSDS sheets and the specific information in the applicable MSDS for the product he/she is using, particularly regarding spill control techniques.

B. The contractor will implement the Spill Prevention Control and Countermeasures (SPCC) Plan found within this SWPPP and will train all personnel in the proper cleanup and handling of spilled materials. No spilled hazardous materials of hazardous wastes will be allowed to come in contact with storm water discharges. If such contact occurs, the storm water discharge shall be contained on site until appropriate measures in compliance with state and federal regulations are taken to dispose of such contaminated storm water. It shall be the responsibility of the job superintendent to properly train all personnel in the use of the SPCC plan.

C. Any spills of hazardous materials which are in excess of the Reportable Quantities as defined by the EPA regulations shall be immediately reported to the EPA National Response Center at 1-100-424-1102. From SWPPP-9 "Reportable Quantity Release Form" must be filled out.

D. In order to minimize the potential for a spill of hazardous materials to come in contact with storm water, the following steps will be implemented:

1. All materials with hazardous properties (such as pesticides, petroleum products, fertilizers, detergents, construction chemicals,

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acids, paints, paint solvents, cleaning solvents, additives for soil stabilization, concrete curing compounds and additives, etc.) will be stored in a secure location, under cover, when not in use.

2. The minimum practical quantity of all such materials will be kept on the job site.

3. A spill control and containment kit (containing for example, absorbent such as kitty litter or sawdust, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided at the storage site.

4. All of the product in a container will be used before the container is disposed of. All such containers will be triple rinsed with water prior to disposal. The rinse water used in these containers will be disposed of in a manner in compliance with state and federal regulations and will not be allowed to mix with storm water discharges.

5. All products will be stored in and used from the original container with the original product label.

6. All products will be used in strict compliance with instructions on the product label.

7. The disposal of excess or used products will be in strict compliance with instructions on the product label.

113.8 CONTAMINATED SOILS

A. Any contaminated soils (resulting from spills of materials with hazardous properties) which may result from construction activities will be contained and cleaned up immediately in accordance with the procedures given in the Spill Prevention Control and Countermeasures (SPCC) Plan and in accordance with applicable state and federal regulations.

B. The job site superintendent will be responsible for seeing that these procedures are followed.

114 COMPLIANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS

The Contractor will obtain copies of any and all local and state regulations which are applicable to storm water management, erosion control, and

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pollution minimization at this job site and will comply fully with such regulations. The Contractor will submit written evidence of such compliance if requested by the Operator or any agent of a regulatory body. The Contractor will comply with all conditions of the SPDES General Permit for Construction Activity for the State of New York, including the conditions related to maintaining the SWPPP and evidence of compliance with the SWPPP at the job site and allowing regulatory personnel access to the job site and to records in order to determine compliance.

The SWPPP for this site development project requires regulated MS4 approval from the Town of Amherst. All changes to the SWPPP must be approved by the Town of Amherst prior to applying changes to the SWPPP in the field.

115 INSPECTION AND MAINTENANCE PROCEDURES

The following inspection and maintenance practices will be used to maintain erosion and sediment controls and stabilization measures.

1. All control measures will be inspected by the owner/operator at least weekly and shall continue until the site complies with the Final Stabilization section of this document (See Section 116).

2. All control measures will be inspected by a Qualified Professional at least weekly and shall continue until the site complies with the Final Stabilization section of this document (See Section 116).

3. All measures will be maintained in good working order; if repairs or other measures are found to be necessary, they will be initiated within 24 hours of report.

4. Built up sediment will be removed from silt fence/silt sock when it has reached one-third the height of the fence.

5. Silt fence/silt socks will be inspected for depth of sediment, tears, etc., to see if the fabric is securely attached to the fence posts, and to see that the fence posts are securely in the ground.

6. Temporary and permanent seeding and all other stabilization measures will be inspected for bare spots, washouts, and healthy growth.

7. A maintenance inspection report will be made after each inspection. Copies of the report forms to be completed by the inspector are included in this SWPPP.

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8. The job site superintendent will be responsible for selecting and training the individuals who will be responsible for these inspections, maintenance and repair activities, and filling out inspection and maintenance reports.

9. Personnel selected for the inspection and maintenance responsibilities will receive training from the job site superintendent. They will be trained in all the inspection and maintenance practices necessary for keeping the erosion and sediment controls that are used onsite in good working order. They will also be trained in the completion of, initiation of actions required by, and the filing of the inspection forms. Documentation of this personnel training will be kept on site with the SWPPP.

10. Disturbed areas and materials storage areas will be inspected for evidence of or potential for pollutants entering stormwater systems.

11. Report to the NYSDEC within 24 hours any noncompliance with the SWPPP that will endanger public health or the environment. Follow up with a written report within 5 days of the noncompliance event. The following events require 24 hour reporting: a) any unanticipated bypass which exceeds any effluent limitation in the permit, b) any upset which exceeds any effluent limitation in the permit, and c) a violation of a maximum daily discharge limitation for any of the pollutants listed by the NYSDEC in the permit to be reported within 24 hours. The written submission must contain a description of the non-compliance and its cause; the period of non-compliance, including exact dates and times, and if the non-compliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the non-compliance.

12. Releases of hazardous substances or oil in excess of reportable quantities (as established under 40 CFR 110, 40 CFR 117 or 40 CFR 302) must be reported.

Upon completion of construction, the property owner is responsible for ensuring that the stormwater facilities are regularly inspected and maintained. Maintenance and inspection procedures are as follows.

1. On a quarterly basis and following significant rainfall events or snow-melts, perform the following:

    - Inspect catch basins, storm manholes, yard drains, storm piping and stormwater pond for debris and accumulation of sediment.

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- Remove and properly dispose of any collected debris and sediment in accordance with applicable state, federal and local regulations.
- Flush piping with water if necessary to remove accumulated sediment.
- Bioretention areas shall be maintained per the NYSDEC Maintenance and Management Checklist included in this SWPPP.
- Check all stone outfall structures for erosion and re-stone if necessary to prevent further erosion.
- Inspect grassed/landscaped areas for un-vegetated areas or areas with less than 85% healthy stand of grass and reseed and mulch as necessary. Water daily if reseeded in July and August.
- A record of all inspections should be kept.

2. Maintain all lawn areas by regular mowing, including the grassed slopes of the stormwater pond and any grass swales. Any eroded areas shall be regarded, seeded and mulched immediately.

116 INSPECTION AND MAINTENANCE REPORT FORMS

Once installation of any required or optional erosion control device or measure has been implemented, inspections shall be performed by a Qualified Professional at least once every seven (7) calendar days. For construction sites where soil disturbance activities are on-going and the **owner or operator** has received authorization in accordance with Part II.C.3 of the General Permit to disturb greater than five (5) acres of soil at any one time, the **qualified inspector** shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days. The owner and contractor shall obtain from the MS4 an approval for disturbing more than five-acres at any given time. For construction sites where active construction has been suspended, inspection frequency under the general permit can be reduced to once every 30 days, provided temporary stabilization measures have been applied to all disturbed areas. The forms found in this SWPPP shall be used by the inspectors to inventory and report the condition of each measure to assist in maintaining the erosion and sediment control measures in good working order.

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These report forms shall become an integral part of the SWPPP and shall be made readily accessible to governmental inspection officials, the Operator's Engineer, and the Operator for review upon request during visits to the project site. In addition, copies of the reports shall be provided to any of these persons, upon request, via mail or facsimile transmission. Inspection and maintenance report forms are to be maintained by the permittee for five years following the final stabilization of the site.

117 OTHER RECORD-KEEPING REQUIREMENTS

The Contractor shall keep the following records related to construction activities at the site:

- Dates when major grading activities occur and the areas which were graded
- Dates and details concerning the installation of structural controls
- Dates when construction activities cease in an area
- Dates when an areas is stabilized, either temporarily or permanently
- Dates of rainfall and the amount of rainfall
- Dates and descriptions of the character and amount of any spills of hazardous materials
- Records of reports filed with regulatory agencies if reportable quantities of hazardous materials spilled

118 SPILL PREVENTION CONTROL AND COUNTERMEASURES (SPCC) PLAN

118.1 MATERIALS COVERED

The following materials or substances are expected to be present onsite during construction:

- Concrete/Additives/Wastes
- Cleaning solvents
- Sanitary wastes
- Detergents
- Petroleum based products
- Paints/Solvents
- Pesticides
- Solid and construction wastes
- Acids

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- Fertilizers
- Soil stabilization additives

118.2 MATERIAL MANAGEMENT PRACTICES

The following are the material management practices that will be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff. The job site superintendent will be responsible for ensuring that these procedures are followed.

A. Good Housekeeping

The following good housekeeping practices will be followed onsite during the construction project.

1. An effort will be made to store only enough products required to do the job.
2. All materials stored onsite will be stored in a neat, orderly manner and, if possible, under a roof or in a containment area. At a minimum, all containers will be stored with their lids on when not in use. Drip pans shall be provided under all dispensers.
3. Products will be kept in their original containers with the original manufacturer's label in legible condition.
4. Substances will not be mixed with one another unless recommended by the manufacturer.
5. Whenever possible, all of a product will be used up before disposing of the container.
6. Manufacturer's recommendations for proper use and disposal will be followed.
7. The job site superintendent will be responsible for daily inspections to ensure proper use and disposal of materials.

B. Hazardous Products

These practices will be used to reduce the risks associated with hazardous materials. Material Safety Data Sheets (MSDS's) for each substance with hazardous properties that is used on the job site will be obtained and used for the proper management of potential wastes that may result from

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these products. An MSDS will be posted in the immediate area where such product is stored and/or used and another copy of each MSDS will be maintained in the SWPPP file at the job site construction trailer office. Each employee who must handle a substance with hazardous properties will be instructed on the use of MSDS sheets and the specific information in the applicable MSDS for the product he/she is using, particularly regarding spill control techniques.

1. Products will be kept in original containers with the original labels in legible condition.

2. Original labels and material safety data sheets (MSDS's) will be procured and used for each material.

3. If surplus product must be disposed of, manufacturer's or local/state/federal recommended methods for proper disposal will be followed.

4. A spill control and containment kit (containing for example, absorbent such as kitty litter or sawdust, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided at the storage site.

5. All of the product in a container will be used before the container is disposed of. All such containers will be triple rinsed with water prior to disposal. The rinse water used in these containers will be disposed of in a manner in compliance with state and federal regulations and will not be allowed to mix with storm water discharges.

C. Hazardous Waste

All hazardous waste materials will be disposed of by the Contractor in the manner specified by local, state, and/or federal regulations and by the manufacturer of such products. Site personnel will be instructed in these practices by the job site superintendent, who will also be responsible for seeing that these practices are followed.

D. Product Specific Practices

The following product specific practices will be followed on the job site.

1. Petroleum Products

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All onsite vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers which are clearly labeled. Any petroleum storage tanks stored onsite will be located within a containment area that is designed with an impervious surface between the tank and the ground. The secondary containment must be designed to provide a containment volume that is equal to 110% of the volume of the largest tank. Drip pans shall be provided for all dispensers. Any asphalt substances used onsite will be applied according to the manufacturer's recommendations. The location of any fuel tanks and/or equipment storage areas must be identified on a plan by the contractor once the locations have been determined.

2. Fertilizers

Fertilizers will be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer will be worked in the soil to limit exposure to stormwater. Storage will be in a covered shed. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.

3. Paints, Paint Solvents, and Cleaning Solvents

All containers will be tightly sealed and stored when not in use. Excess paint and solvents will not be discharged to the storm sewer system but will be properly disposed of according to manufacturer's instructions or state and federal regulations.

4. Concrete Wastes

Concrete trucks will be allowed to wash out or discharge surplus concrete or drum wash water on the site, but only in either (1) specifically designated diked areas which have been prepared to prevent contact between the concrete and/or wash out and storm water which will be discharged from the site or (2) in locations where waste concrete can be poured into forms to make riprap or other useful concrete products.

The hardened residue from the concrete wash out diked areas will be disposed of in the same manner as other non-hazardous construction waste materials or may be broken up and used on site

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as deemed appropriate by the Contractor. The job site superintendent will be responsible for seeing that these procedures are followed.

All concrete wash out areas will be located in an area where the likelihood of the area contributing to storm water discharges is negligible. If required, additional BMPs must be implemented to prevent concrete wastes from contributing to storm water discharges. The location of concrete wash out area(s) must be identified on a plan by the contractor once the locations have been determined. In addition, a standard detail on the construction of the concrete wash out shall be included on this plan.

E. Solid and Construction Wastes

All waste materials will be collected and stored in an appropriately covered container and/or securely lidded metal dumpster rented from a local waste management company which must be a solid waste management company licensed to do business in New York and the Town of Amherst. The dumpster will comply with all local and state solid waste management regulations.

All trash and construction debris from the site will be deposited in the dumpster. The dumpster will be emptied a minimum of twice per week or more often if necessary, and the trash will be hauled to a landfill approved by the NYSDEC. No construction waste materials will be buried on site. All personnel will be instructed regarding the correct procedures for waste disposal.

All waste dumpsters and roll-off containers will be located in an area where the likelihood of the containers contributing to storm water discharges is negligible. If required, additional BMPs must be implemented, such as sandbags around the base, to prevent wastes from contributing to storm water discharges. The location of waste dumpsters and roll-off containers must be identified on a plan by the contractor once the locations have been determined.

F. Sanitary Wastes

Portable toilet units or field offices with toilet facilities connected to the municipal sanitary sewer will be used for sanitary purposes. All portable

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toilet units will be emptied a minimum of once per week by a licensed portable facility provided in compliance with local and state regulations.

All sanitary waste units will be located in an area where the likelihood of the unit contributing to storm water discharges is negligible. If required, additional BMPs must be implemented, such as sandbags around the base, to prevent wastes from contributing to storm water discharges. The location of sanitary waste units must be identified on a plan by the contractor once the locations have been determined.

G. Contaminated Soils

Any contaminated soils (resulting from spills of materials with hazardous properties) which may result from construction activities will be contained and cleaned up immediately in accordance with the procedures given in the Materials Management Plan and in accordance with applicable state and federal regulations.

118.3 SPILL PREVENTION AND RESPONSE PROCEDURES

The Contractor will train all personnel in the proper handling and cleanup of spilled materials. No spilled hazardous materials or hazardous wastes will be allowed to come in contact with storm water discharges. If such contact occurs, the storm water discharge will be contained on site until appropriate measures in compliance with state and federal regulations are taken to dispose of such contaminated storm water. It shall be the responsibility of the job site superintendent to properly train all personnel in spill prevention and clean up procedures.

A. In order to minimize the potential for a spill of hazardous materials to come into contact with storm water, the following steps will be implemented:

1. All materials with hazardous properties (such as pesticides, petroleum products, fertilizers, detergents, construction chemicals, acids, paints, paint solvents, cleaning solvents, additives for soil stabilization, concrete curing compounds and additives, etc.) will be stored in a secure location, with their lids on, preferably under cover, when not in use.

2. The minimum practical quantity of all such materials will be kept on the job site.

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3. A spill control and containment kit (containing, for example, absorbent materials, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided at the storage site.

4. Manufacturer's recommended methods for spill cleanup will be clearly posted and site personnel will be trained regarding these procedures and the location of the information and cleanup supplies.

B. In the event of a spill, the following procedures should be followed

1. All spills will be cleaned up immediately after discovery.

2. The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with the hazardous substances.

3. The project manager and the Engineer of Record will be notified immediately.

   Spills of toxic or hazardous materials will be reported to the appropriate federal, state, and/or local government agency, regardless of the size of the spill. Spills of amounts that exceed Reportable Quantities of certain substances specifically mentioned in federal regulations (40 CFR 110, 40 CFR 117, and 40 CFR 302) must be immediately reported to the EPA National Response Center, telephone 1-100-424-1102. From SWPPP-9 "Reportable Quantity Release Form" must be filled out.

4. If the spill exceeds a Reportable Quantity, the SWPPP must be modified within seven (7) calendar days of knowledge of the discharge to provide a description of the release, the circumstances leading to the release, and the date of the release. The plans must identify measures to prevent the recurrence of such releases and to respond to such releases.

C. The job site superintendent will be the spill prevention and response coordinator. He will designate the individuals who will receive spill prevention and response training. These individuals will each become responsible for a particular phase of prevention and response. The names

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of these personnel will be posted in the material storage area and in the office trailer onsite.

119 CONTROL OF NON-STORM WATER DISCHARGES

Certain types of discharges are allowable under the NYSDEC SPDES General Permit for Construction Activity for the State of New York, and it is the intent of this SWPPP to allow such discharges. These types of discharges will be allowed under the conditions that no pollutants will be allowed to come in contact with the water prior to or after its discharge. The control measures which have been outlined previously in this SWPPP will be strictly followed to ensure that no contamination of these non-storm water discharges takes place. The following allowable non-storm water discharges which may occur at the job site include:

A. Discharges from firefighting activities.

B. Fire hydrant flushings (see note below)

C. Waters used to wash vehicles or control dust in order to minimize offsite sediment tracking.

D. Routine external building washdown which does not use detergents.

E. Pavement wash waters where spills or leaks of hazardous materials have not occurred or detergents have not been used.

F. Air conditioning condensate.

G. Springs or other uncontaminated groundwater, including dewatering ground water infiltration.

H. Foundation or footing drains where no contamination with process materials such as solvents is present.

Note: The Contractor shall discharge any super-chlorinated water from water distribution pipe disinfection activities into sanitary sewer system.

120 STORM WATER CONTROL FACILITY MAINTENANCE

Upon completion of construction, SL shall be responsible for maintenance of the storm sewer system and all ponds, bioretention areas, etc. per a Stormwater Maintenance Agreement to the Town of Amherst that shall be filed with the County of Erie.

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The frequency of inspections for the bioretention areas shall match the frequencies listed on the "Bioretention Operation, Maintenance and Management Inspection Checklist" in Appendix O of the SWPPP.

The proposed catch basins, as per section 115, shall be inspected 4 times per year for removal of floatable debris. Any silt buildup over 6" in depth shall be removed and disposed of properly off-site.

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Appendix A

Site Location Map

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Stormwater Interactive Map



The coordinates of the point you clicked on are:

UTM 18	**Easting:**	190681.063	**Northing:**	4770798.806
Longitude/Latitude	**Longitude:**	-78.796	**Latitude:**	43.027

The approximate address of the point you clicked on is:
26-42 Dodge Rd, Getzville, New York, 14068

County: Erie
Town: Amherst
USGS Quad: TONAWANDA EAST

DEC Administrative Boundaries

Region 9:
(Western New York) Allegany, Chautauqua, Cattaraugus, Erie, Niagara and Wyoming counties. For more information visit http://www.dec.ny.gov/about/617.html.

Regulated MS4s

UA 2000: 11350
Standard: Buffalo
Municipality: AMHERST
SWIS: 142200
Regulated: Automatic

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Appendix B

NYSDEC Notice of Intent (NOI)

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NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR _____ (for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-20-001

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-

RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)
Sawyer's Landing LLC

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
Severyn

Owner/Operator Contact Person First Name
Will

Owner/Operator Mailing Address
43 Central Ave

City
Lancaster

State
NY

Zip
14086 -

Phone (Owner/Operator)
716 - 912 - 0969

Fax (Owner/Operator)
___ - ___ - ____

Email (Owner/Operator)
william.severyn.ny@gmail.com

FED TAX ID
__ - _____ (not required for individuals)

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Project Site Information

Project/Site Name
Sawyer's Landing

Street Address (NOT P.O. BOX)
Dodge Road

Side of Street
● North ○ South ○ East ○ West

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Amherst

State: NY
Zip: 14228 -
County: Erie
DEC Region: 9

Name of Nearest Cross Street
Sweet Home Road

Distance to Nearest Cross Street (Feet)
0

Project In Relation to Cross Street
○ North ○ South ● East ○ West

Tax Map Numbers
Section-Block-Parcel
40.08-3-13.1

Tax Map Numbers

1. Provide the Geographic Coordinates for the project site. To do this, go to the NYSDEC Stormwater Interactive Map on the DEC website at:

https://gisservices.dec.ny.gov/gis/stormwater/

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located the centroid of your project site, go to the bottom right hand corner of the map for the X, Y coordinates. Enter the coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)
-7 8796
Ex. -73.749

Y Coordinates (Northing)
43027
Ex. 42.652

2. What is the nature of this construction project?

● **New Construction**

○ **Redevelopment with increase in impervious area**

○ **Redevelopment with no increase in impervious area**

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3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use	Post-Development Future Land Use
● FOREST	○ SINGLE FAMILY HOME
○ PASTURE/OPEN LAND	○ SINGLE FAMILY SUBDIVISION
○ CULTIVATED LAND	○ TOWN HOME RESIDENTIAL
○ SINGLE FAMILY HOME	○ MULTIFAMILY RESIDENTIAL
○ SINGLE FAMILY SUBDIVISION	○ INSTITUTIONAL/SCHOOL
○ TOWN HOME RESIDENTIAL	○ INDUSTRIAL
○ MULTIFAMILY RESIDENTIAL	○ COMMERCIAL
○ INSTITUTIONAL/SCHOOL	○ MUNICIPAL
○ INDUSTRIAL	○ ROAD/HIGHWAY
○ COMMERCIAL	○ RECREATIONAL/SPORTS FIELD
○ ROAD/HIGHWAY	○ BIKE PATH/TRAIL
○ RECREATIONAL/SPORTS FIELD	○ LINEAR UTILITY (water, sewer, gas, etc.)
○ BIKE PATH/TRAIL	○ PARKING LOT
○ LINEAR UTILITY	○ CLEARING/GRADING ONLY
○ PARKING LOT	○ DEMOLITION, NO REDEVELOPMENT
○ OTHER	○ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
	● OTHER: Mixed use

Number of Lots:

***Note:** for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

Total Site Area	Total Area To Be Disturbed	Existing Impervious Area To Be Disturbed	Future Impervious Area Within Disturbed Area
17.4	16.4	0.0	8.0

5. Do you plan to disturb more than 5 acres of soil at any one time? ● Yes ○ No

6. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	B	C	D
%	%	%	100 %

7. Is this a phased project? ○ Yes ● No

8. Enter the planned start and end dates of the disturbance activities.

Start Date: 7/1/2021 – End Date: 7/1/2022

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9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.

Name

Ellicott Creek

9a. Type of waterbody identified in Question 9?

- ○ Wetland / State Jurisdiction On Site (Answer 9b)
- ○ Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 9b)
- ○ Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ● Stream / Creek Off Site
- ○ River On Site
- ○ River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ○ Other Type Off Site

9b. How was the wetland identified?

- ○ Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ○ Other (identify)

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001? ○ Yes ● No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001? ○ Yes ● No

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? ○ Yes ● No
If no, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ○ Yes ● No
If Yes, what is the acreage to be disturbed?

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ○ Yes ● No

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15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ● Yes ○ No ○ Unknown

16. What is the name of the municipality/entity that owns the separate storm sewer system?

Erie County

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ Yes ● No ○ Unknown

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law? ○ Yes ● No

19. Is this property owned by a state authority, state agency, federal government or local government? ○ Yes ● No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) ○ Yes ● No

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? ● Yes ○ No

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)? ● Yes ○ No
If No, skip questions 23 and 27-39.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? ● Yes ○ No

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24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ● **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer
Carmina Wood Morris DPC

Contact Name (Last, Space, First)
Wood Christopher

Mailing Address
487 Main St

City
Buffalo

State NY Zip 14127-

Phone 716-842-3165

Fax 716-842-0263

Email
cwood@cwm-ae.com

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name
Christopher

MI

Last Name
Wood

Signature

Date
03 / 03 / 2021

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25. Has a construction sequence schedule for the planned management practices been prepared? ● Yes ○ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ● Check Dams
- ○ Construction Road Stabilization
- ● Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ○ Sediment Basin
- ○ Sediment Traps
- ● Silt Fence
- ● Stabilized Construction Entrance
- ● Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ○ Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ● Mulching
- ● Protecting Vegetation
- ○ Recreation Area Improvement
- ● Seeding
- ○ Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ○ Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ○ Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ○ Retaining Wall
- ○ Riprap Slope Protection
- ○ Rock Outlet Protection
- ○ Streambank Protection

Other

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Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

- ● **Preservation of Undisturbed Areas**
- ● **Preservation of Buffers**
- ○ **Reduction of Clearing and Grading**
- ○ **Locating Development in Less Sensitive Areas**
- ○ **Roadway Reduction**
- ○ **Sidewalk Reduction**
- ○ **Driveway Reduction**
- ○ **Cul-de-sac Reduction**
- ○ **Building Footprint Reduction**
- ○ **Parking Reduction**

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

- ● All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).
- ○ Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

		0	.	6	6	1

acre-feet

29. Identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required(#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

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Table 1 - Runoff Reduction (RR) Techniques and Standard Stormwater Management Practices (SMPs)

	Total Contributing Area (acres)		Total Contributing Impervious Area (acres)
RR Techniques (Area Reduction)			
● Conservation of Natural Areas (RR-1)	1.0	and/or	0.0
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)		and/or	
○ Tree Planting/Tree Pit (RR-3)		and/or	
○ Disconnection of Rooftop Runoff (RR-4)		and/or	
RR Techniques (Volume Reduction)			
○ Vegetated Swale (RR-5)			
○ Rain Garden (RR-6)			
○ Stormwater Planter (RR-7)			
○ Rain Barrel/Cistern (RR-8)			
○ Porous Pavement (RR-9)			
○ Green Roof (RR-10)			
Standard SMPs with RRv Capacity			
○ Infiltration Trench (I-1)			
○ Infiltration Basin (I-2)			
○ Dry Well (I-3)			
○ Underground Infiltration System (I-4)			
● Bioretention (F-5)	4.3		
○ Dry Swale (O-1)			
Standard SMPs			
○ Micropool Extended Detention (P-1)			
○ Wet Pond (P-2)			
○ Wet Extended Detention (P-3)			
○ Multiple Pond System (P-4)			
● Pocket Pond (P-5)	3.4		
○ Surface Sand Filter (F-1)			
○ Underground Sand Filter (F-2)			
○ Perimeter Sand Filter (F-3)			
○ Organic Filter (F-4)			
○ Shallow Wetland (W-1)			
○ Extended Detention Wetland (W-2)			
○ Pond/Wetland System (W-3)			
○ Pocket Wetland (W-4)			
○ Wet Swale (O-2)			

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Table 2 - Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Alternative SMP	Total Contributing Impervious Area (acres)
○ Hydrodynamic	
○ Wet Vault	
○ Media Filter	
○ Other [ ]	

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Name

Manufacturer

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

Total RRv provided

0.199 **acre-feet**

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28).

○ **Yes** ● **No**

If Yes, go to question 36.
If No, go to question 32.

32. Provide the Minimum RRv required based on HSG.
[Minimum RRv Required = (P)(0.95)(Ai)/12, Ai=(S)(Aic)]

Minimum RRv Required

0.127 **acre-feet**

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

● **Yes** ○ **No**

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

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33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRv Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question 29.

WQv Provided

3.664 **acre-feet**

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRv provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a). 3.863

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? ● **Yes** ○ **No**

If Yes, go to question 36.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.

CPv Required

0.42 **acre-feet**

CPv Provided

0.42 **acre-feet**

36a. The need to provide channel protection has been waived because:

○ Site discharges directly to tidal waters or a fifth order or larger stream.

○ Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (37a), if applicable.

Total Overbank Flood Control Criteria (Qp)

Pre-Development

4.34 **CFS**

Post-development

3.63 **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development

7.33 **CFS**

Post-development

4.38 **CFS**

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37a. The need to meet the Qp and Qf criteria has been waived because:

- ○ Site discharges directly to tidal waters or a fifth order or larger stream.
- ○ Downstream analysis reveals that the Qp and Qf controls are not required

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? ● Yes ○ No

If Yes, Identify the entity responsible for the long term Operation and Maintenance

Sawyer's Landing LLC

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required(#28). (See question 32a) This space can also be used for other pertinent project information.

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40. Identify other DEC permits, existing and new, that are required for this project/facility.

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Solid Waste
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ● Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers
- ○ Stream Bed or Bank Protection / Article 15
- ○ Endangered or Threatened Species(Incidental Take Permit)
- ○ Individual SPDES
- ○ SPDES Multi-Sector GP NYR
- ○ Other
- ● None

41. Does this project require a US Army Corps of Engineers Wetland Permit? ● **Yes** ○ **No**
If Yes, Indicate Size of Impact. .

42. Is this project subject to the requirements of a regulated, traditional land use control MS4? ● **Yes** ○ **No**
(If No, skip question 43)

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ● **Yes** ○ **No**

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. NYR

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Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name: Will

MI:

Print Last Name: Severyn

Owner/Operator Signature: William T Severyn

Date: 03/03/2021

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Appendix C

MS4 SWPPP Acceptance Form

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NYS Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit

*(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information	
1. Owner/Operator Name:	Sawyer's Landing LLC
2. Contact Person:	Will Severyn
3. Street Address:	43 Central Ave
4. City/State/Zip:	Lancaster, NY 14086
II. Project Site Information	
5. Project/Site Name:	Sawyer's Landing
6. Street Address:	Dodge Road
7. City/State/Zip:	Amherst, NY 14228
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information	
8. SWPPP Reviewed by:	
9. Title/Position:	
10. Date Final SWPPP Reviewed and Accepted:	
IV. Regulated MS4 Information	
11. Name of MS4:	
12. MS4 SPDES Permit Identification Number: NYR20A	
13. Contact Person:	
14. Street Address:	
15. City/State/Zip:	
16. Telephone Number:	

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MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

Date:

VI. Additional Information

(NYS DEC - MS4 SWPPP Acceptance Form - January 2015)

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Appendix D

NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity Permit No. GP-0-20-001

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70

of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

1-23-20

Authorized Signature

Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

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Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;

2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State.*

3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

*Discharge*s authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the *Stormwater Pollution Prevention Plan* ("SWPPP") the reason(s) for the

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deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:

   (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharge*s;

   (ii) Control stormwater *discharge*s, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;

   (iii) *Minimize* the amount of soil exposed during *construction activity*;

   (iv) *Minimize* the disturbance of *steep slopes*;

   (v) *Minimize* sediment *discharge*s from the site;

   (vi) Provide and maintain *natural buffer*s around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharge*s, unless *infeasible*;

   (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;

   (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and

   (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.

b. **Soil Stabilization**. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments

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listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

c. **Dewatering**. *Discharges* from *dewatering* activities, including *discharges* from *dewatering* of trenches and excavations, must be managed by appropriate control measures.

d. **Pollution Prevention Measures**. Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards.* At a minimum, such measures must be designed, installed, implemented and maintained to:

(i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;

(ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and

(iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

e. **Prohibited *Discharges*.** The following *discharges* are prohibited:

(i) Wastewater from washout of concrete;

(ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

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(iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;

(iv) Soaps or solvents used in vehicle and equipment washing; and

(v) Toxic or hazardous substances from a spill or other release.

f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices ("SMPs") are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

(i) Runoff Reduction Volume ("RRv"): Reduce the total Water Quality Volume ("WQv") by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

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For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site discharges directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria ("Qp"): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria ("Qf"): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

b. *Sizing Criteria* for *New Development* in Enhanced Phosphorus Removal Watershed

(i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be

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calculated in accordance with the criteria in Section 10.3 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible*.

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site *discharge*s directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

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c. Sizing Criteria for Redevelopment Activity

(i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.

(1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or

(2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or

(3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or

(4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

(ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iii) *Overbank* Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

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d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharges* necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;

2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharges* authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharges* authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharges* will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

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E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharges*; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.

3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: "Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned"; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharges* from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.

4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **not** authorized by this permit:

1. *Discharges* after *construction activities* have been completed and the site has undergone *final stabilization*;

2. *Discharges* that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;

3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;

4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

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operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;

6. *Construction activities* for residential, commercial and institutional projects:

   a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

7. *Construction activities* for linear transportation projects and linear utility projects:

   a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

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8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:

   a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.

      - 1-5 acres of disturbance - 20 feet
      - 5-20 acres of disturbance - 50 feet
      - 20+ acres of disturbance - 100 feet, or

   b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
      (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
      (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
      (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
      (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or

   c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

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(i) No Affect
(ii) No Adverse Affect
(iii) Executed Memorandum of Agreement, or

d. Documentation that:

(i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharges* from *construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the "MS4 SWPPP Acceptance" form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.

3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of *Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4* . This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

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B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (http://www.dec.ny.gov/). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

   NOTICE OF INTENT
   NYS DEC, Bureau of Water Permits
   625 Broadway, 4th Floor
   Albany, New York 12233-3505

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.

3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.

4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.

2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:

   a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (http://www.dec.ny.gov/) for more information,

   b. where required, all necessary Department permits subject to the *Uniform Procedures Act ("UPA")* (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators* of *construction activities* that are required to obtain *UPA* permits

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must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

c. the final SWPPP has been prepared, and

d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.

3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

   a. For *construction activities* that are not subject to the requirements of a *regulated, traditional land use control MS4*:

      (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or

      (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has not been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;

      (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

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b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:

(i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed "*MS4* SWPPP Acceptance" form, or

(ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed "MS4 SWPPP Acceptance" form.

4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination ("NOT") has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor's or subcontractor's certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land*

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use control MS4, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

a. The *owner or operator* shall have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.

c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

d. The *owner or operator* shall install any additional site-specific practices needed to protect water quality.

e. The *owner or operator* shall include the requirements above in their SWPPP.

4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..

5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.

6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

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regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of *a construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

   An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4,* the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.

2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

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operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.

2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.

3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.

4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:

    a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

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b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*;

c. to address issues or deficiencies identified during an inspection by the *qualified inspector,* the Department or other regulatory authority; and

d. to document the final construction conditions.

5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.

6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor.* The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

   The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

   "I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with

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the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharges* from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:

   a. Background information about the scope of the project, including the location, type and size of project

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b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge*(s);

c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);

d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;

e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;

f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;

g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;

h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;

i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection

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schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;

k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and

l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

   Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

   The post-construction stormwater management practice component of the SWPPP shall include the following:

   a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

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b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;

c. A Stormwater Modeling and Analysis Report that includes:
   (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;

   (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;

   (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;

   (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;

   (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and

   (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;

d. Soil testing results and locations (test pits, borings);

e. Infiltration test results, when required; and

f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

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3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria,* Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators* of *construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators* of the *construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

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begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- New York State Erosion and Sediment Control Certificate Program holder
- Registered Landscape Architect, or
- someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:

   a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located

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in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:

a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.

b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

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d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization,* and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.B.1 of this permit.

e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization,* all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site*, and all points of *discharge* from the *construction site*.

4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

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(Part IV.C.4.a)

a. Date and time of inspection;

b. Name and title of person(s) performing inspection;

c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

d. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This shall include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;

f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;

g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;

i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);

k. Identification and status of all corrective actions that were required by previous inspection; and

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l. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the *qualified inspector.* Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.

2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:

   a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

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b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;

c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.

d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.

3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.

4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the "MS4 Acceptance" statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector*'s final site inspection certification(s) required in Part V.A.3. of this permit.

5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:

a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

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b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),

c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,

d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

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Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator,* its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to $37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

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E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit , or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:

    a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

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(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(i) the chief executive officer of the agency, or

(ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

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superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.

3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.

4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4,* or by a duly authorized representative of that person.

   It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

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include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge*(s), the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner's or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

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3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.

4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.

2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

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(Part VII.R)

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

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APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

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Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property –means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both "sewage" and "stormwater".

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for "*Construction Activity(ies)*" also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for "*Commence (Commencement of) Construction Activities*" and "*Larger Common Plan of Development or Sale*" *also.*

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system

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and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

Embankment –means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department's rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

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Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term "plan" in "larger common plan of development or sale" is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same "common plan" is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State;
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a *combined sewer*; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer –means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

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New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

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Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

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SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

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Steep Slope – means land area designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint sources*. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint sources*, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

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training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

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APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single family home not located in one of the watersheds listed in Appendix C or not *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E
- Construction of a barn or other *agricultural building*, silo, stock yard or pen.

The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects
- Pond construction
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover
- Cross-country ski trails and walking/hiking trails
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

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Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

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Table 2
CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

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Table 2 (Continued)

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover,* and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

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APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River - Figure 1
- Onondaga Lake Watershed - Figure 2
- Greenwood Lake Watershed -Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

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Appendix C

Figure 1 - New York City Watershed East of the Hudson

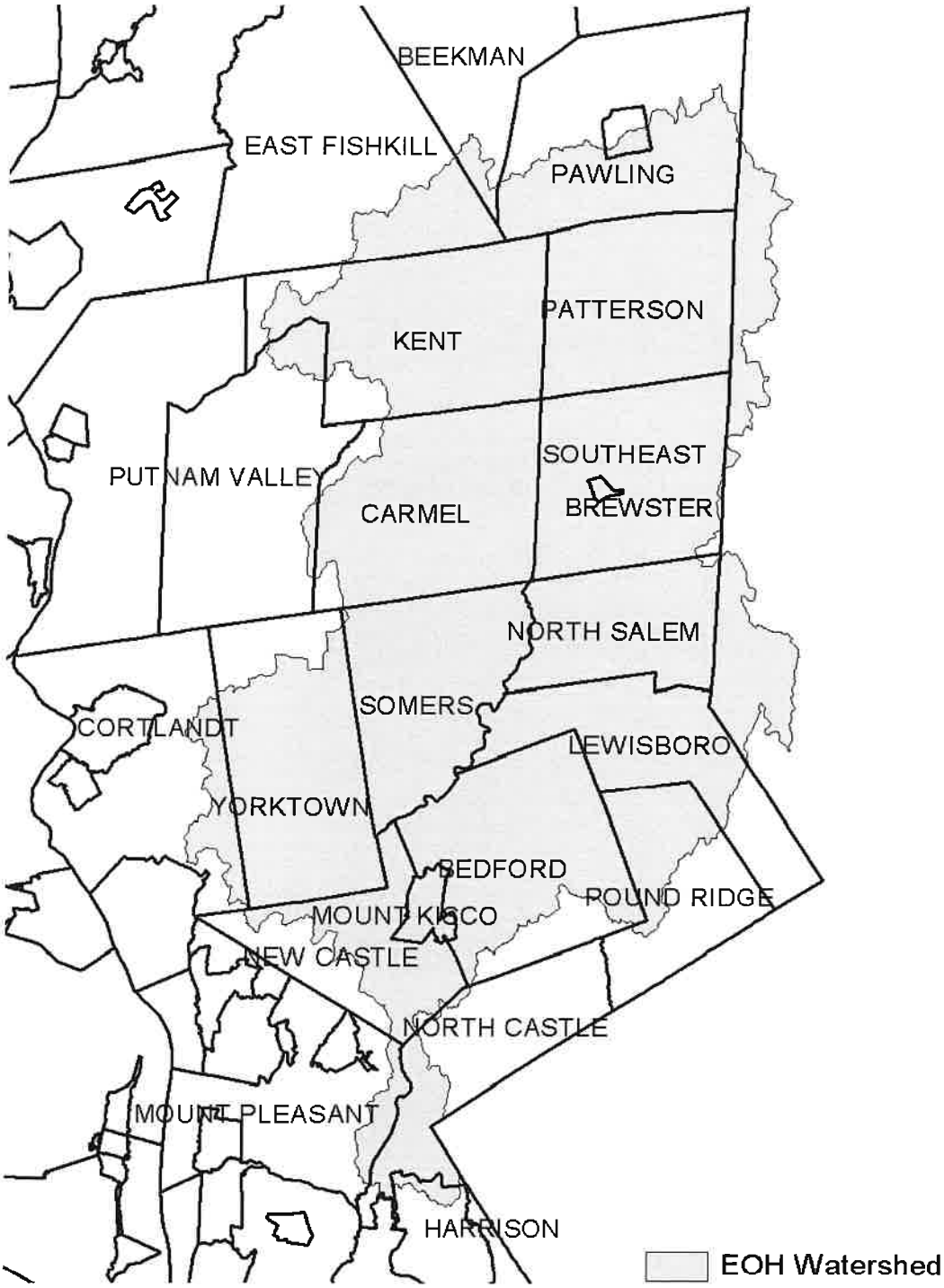

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Figure 2 - Onondaga Lake Watershed



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Figure 3 - Greenwood Lake Watershed



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Figure 4 - Oscawana Lake Watershed

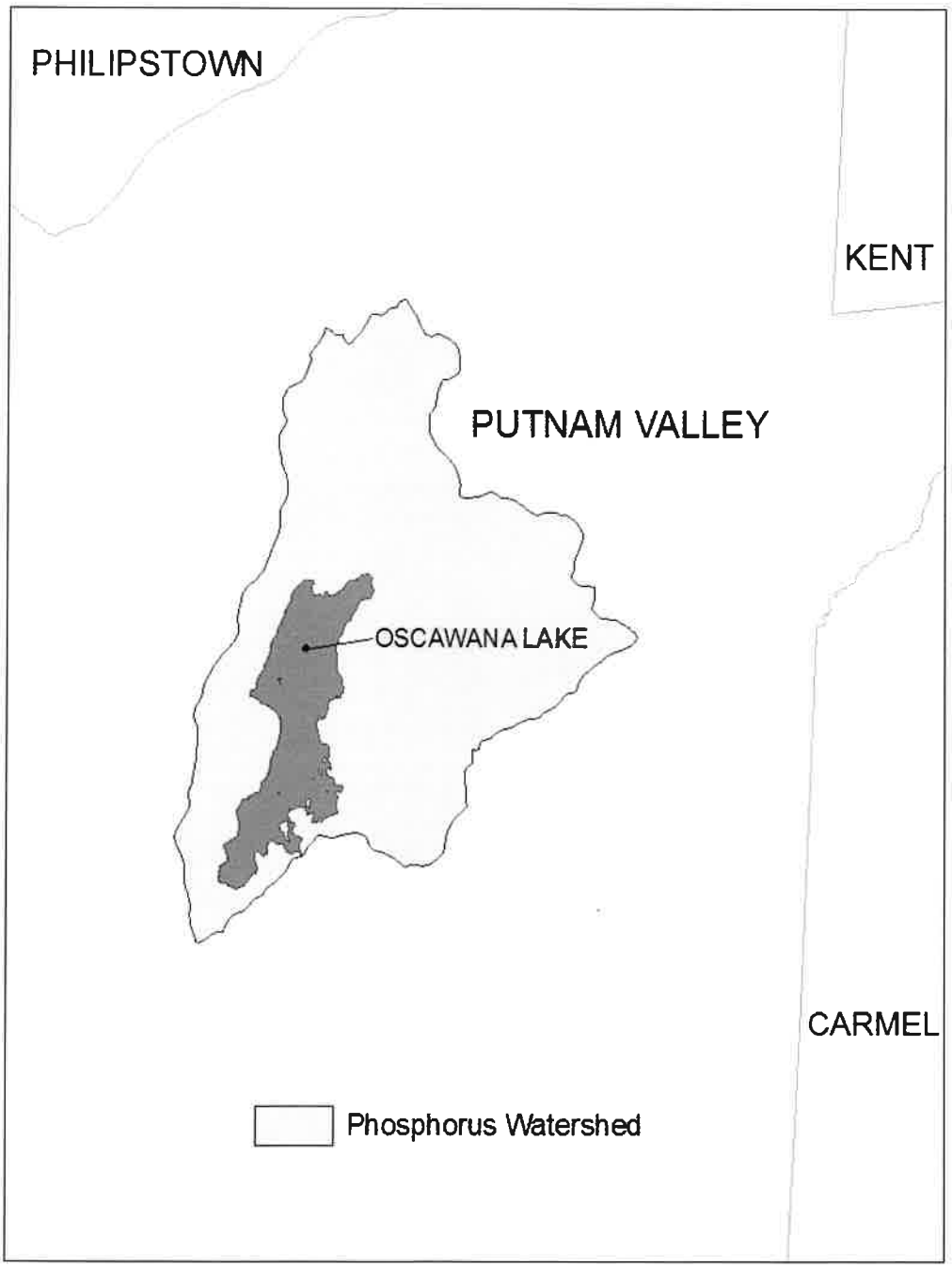

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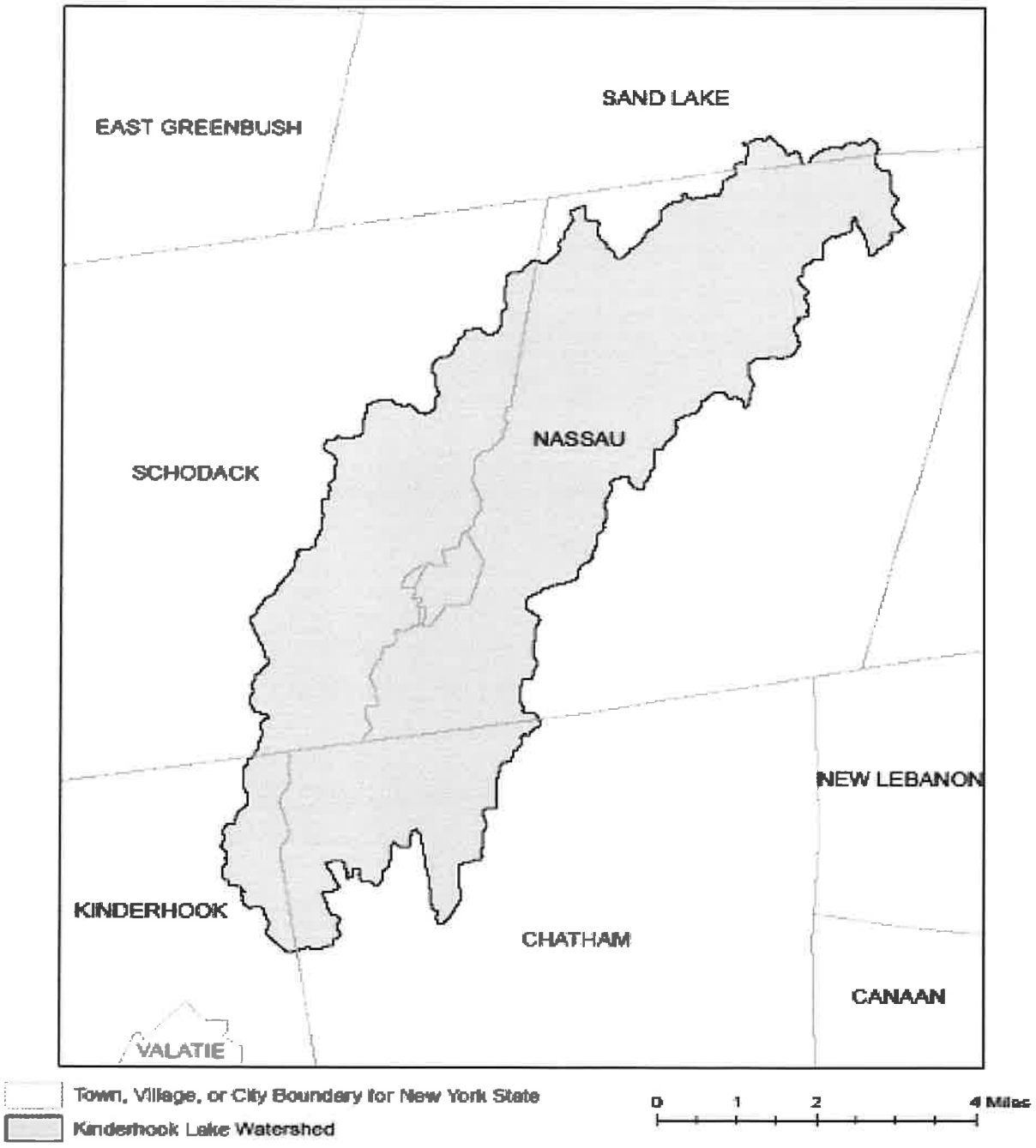
Figure 5 - Kinderhook Lake Watershed



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APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River - See Figure 1 in Appendix C

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APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

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303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

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303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

APPENDIX F – List of NYS DEC Regional Offices

Region	Covering the following counties:	Division of Environmental Permits (DEP) Permit Administrators	Division of Water (DOW) Water (SPDES) Program
1	Nassau and Suffolk	50 Circle Road Stony Brook, NY 11790 Tel. (631) 444-0365	50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0405
2	Bronx, Kings, New York, Queens and Richmond	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4997	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4933
3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester	21 South Putt Corners Road New Paltz, NY 12561-1696 Tel. (845) 256-3059	100 Hillside Avenue, Suite 1w White Plains, NY 10603 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1150 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2069	1130 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	1115 State Route 86, Po Box 296 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, NY 12885-1172 Tel. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Appendix E

Forms

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

STORM WATER POLLUTION PREVENTION PLAN
CONTRACTOR'S CERTIFICATION STATEMENT

Sawyer's Landing

CONTRACTOR'S CERTIFICATION:

"I certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP for the construction site identified in such SWPPP as a condition of authorization to discharge storm water. I also understand that the operator must comply with the terms and conditions of the New York State Pollutant Discharge Elimination System (SPDES) general permit for storm water discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards."

Note: The contractor shall have at least one NYSDEC trained individual onsite at all times when earthwork and other SWPPP associated work is being performed from each contractor(s) and subcontractor(s). Each contractor(s) and subcontractor(s) shall provide copies of these individuals' certifications to the Town of Amherst.

Name: _____
(Print)

Signature: _____

Title: _____

Company Name: _____

Address: _____

Telephone Number: _____

Date: _____

Scope of Services: _____

Trained Individual(s) Responsible for Implementation: _____

This form must be signed by a responsible corporate officer or other party meeting the "Signatory Requirements" of the NYSDEC SPDES General Permit

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

SWPPP Preparer Certification Form

SPDES General Permit for Stormwater Discharges From Construction Activity (GP-0-20-001)

Project Site Information

Project/Site Name

Sawyer's Landing

Owner/Operator Information

Owner/Operator (Company Name/Private Owner/Municipality Name)

Sawyer's Landing LLC

Certification Statement – SWPPP Preparer

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Christopher		Wood
First name	MI	Last Name



Signature

3/3/21

Date

Revised: January 2020

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Owner/Operator Certification Form

SPDES General Permit For Stormwater Discharges From Construction Activity (GP-0-20-001)

Project/Site Name: Sawyer's Landing

eNOI Submission Number: _____

eNOI Submitted by: ☐ **Owner/Operator** ☑ **SWPPP Preparer** ☐ **Other**

Certification Statement - Owner/Operator

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Owner/Operator First Name M.I. Last Name

William T Severyn

Signature

3/3/21

Date

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Appendix F

NYSDEC Notice of Termination (NOT)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505
(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ___ ___ ___ ___ ___ ___

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person: | 4a.Telephone:

4b. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. □ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP. ***Date final stabilization completed** (month/year): _____

9b. □ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ___ ___ ___ ___ ___ ___
(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. □ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? □ yes □ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? □ yes □ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

_____

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? □ yes □ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

□ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.

□ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).

□ For post-construction stormwater management practices that are privately owned, a mechanism is in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the owner or operator's deed of record.

□ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university or hospital), government agency or authority, or public utility; policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____ (acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? □ yes □ no

(If Yes, complete section VI - "MS4 Acceptance" statement

V. Additional Information/Explanation:

(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:	
Title/Position:	
Signature:	Date:

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued	
VII. Qualified Inspector Certification - Final Stabilization:	
I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:
VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):	
I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:
IX. Owner or Operator Certification	
I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2015)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Appendix G

Construction Documents

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York
SITE DEVELOPMENT DRAWINGS

AGENCIES

ENGINEERING DEPARTMENT
NAME/TITLE: JEFFERY BURROUGHS, P.E. – TOWN ENGINEER
COMPANY/DEPT: TOWN OF AMHERST ENGINEERING DEPARTMENT
ADDRESS: 1100 NORTH FOREST ROAD
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716-631-7154

PLANNING & ZONING DEPARTMENT
NAME/TITLE: DANIEL HOWARD – PLANNING DIRECTOR
COMPANY/DEPT: TOWN OF AMHERST PLANNING DEPARTMENT
ADDRESS: 5583 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716-631-7051

LAND SURVEYOR
NAME/TITLE:
COMPANY/DEPT: GPI ENGINEERING, LANDSCAPE ARCHITECTURE SURVEYING, LLP
ADDRESS: 4950 GENESEE STREET, SUITE 100
BUFFALO, NEW YORK 14225
TELEPHONE 716-633-4844

UTILITIES

NATURAL GAS
COMPANY/DEPT: NATIONAL FUEL GAS CORP.
ADDRESS: 6363 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716-857-7000

TELEPHONE COMPANY
COMPANY/DEPT: VERIZON
ADDRESS: 65 FRANKLIN STREET
BUFFALO, NEW YORK 14203
TELEPHONE 716-840-8748

CABLE COMPANY
COMPANY/DEPT: TIME WARNER
ADDRESS: 789 CHURCH ROAD
WEST SENECA, NEW YORK
TELEPHONE 716-558-8615

ELECTRIC COMPANY
COMPANY/DEPT: NATIONAL GRID
ADDRESS: 144 KENSINGTON AVENUE
BUFFALO, NEW YORK 14214
TELEPHONE 716-236-2738

WATER
COMPANY/DEPT: ERIE COUNTY WATER AUTHORITY
ADDRESS: 3030 UNION ROAD
CHEEKTOWAGA, NEW YORK 14227
TELEPHONE 716-684-1510

DIG SAFELY NEW YORK
TELEPHONE 1-800-962-7962

OWNER/DEVELOPER

NAME: Sawyer's Landing LLC
ADDRESS 43 Central Ave Suite #300
Lancaster, NY 14086

TELEPHONE 716 818-0207

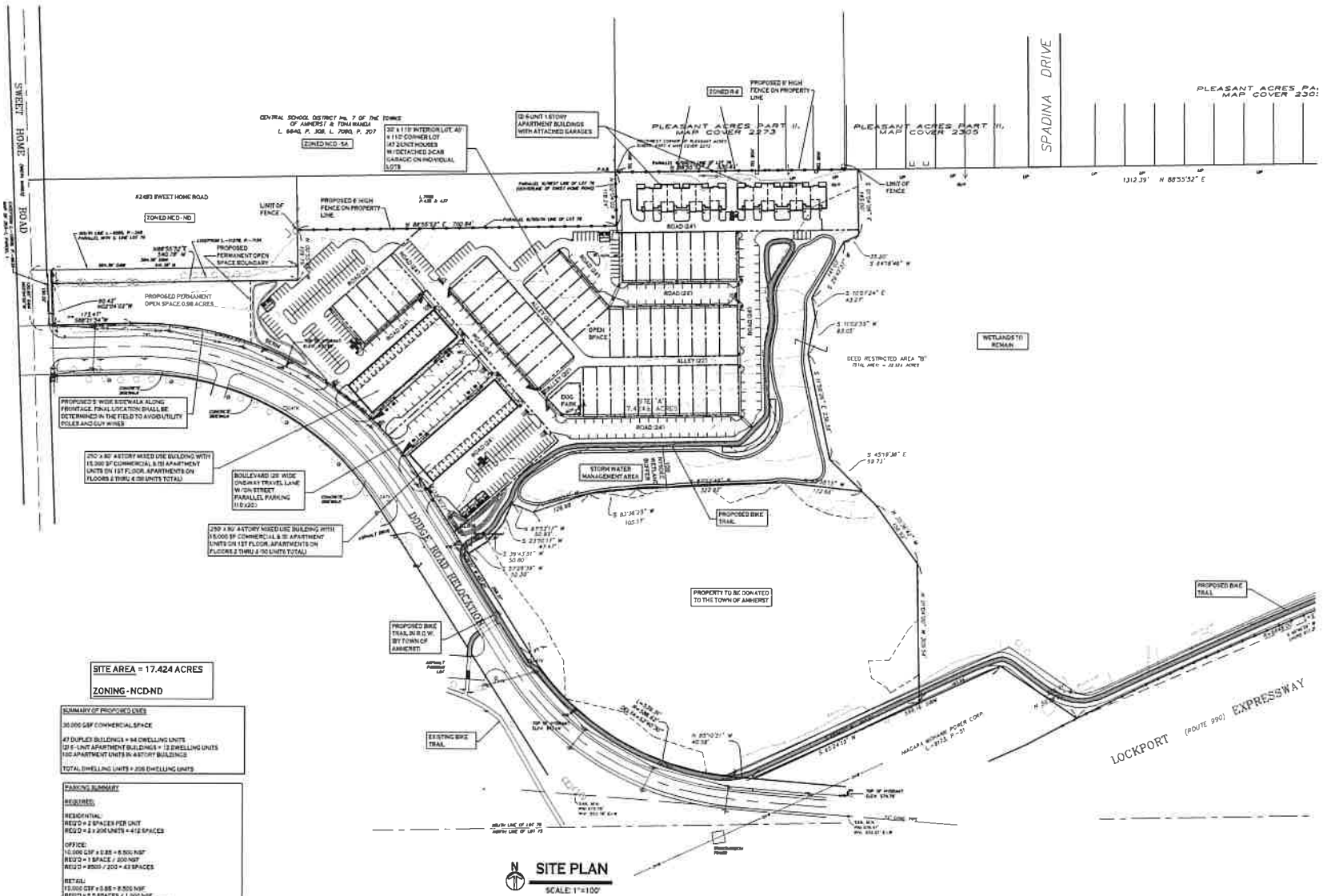
ENGINEER

Carmina • Wood • Morris DPC
487 Main Street Suite 600
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

FEBRUARY 2021

DWG NO.	DRAWING TITLE
–	COVER SHEET
–	TOPOGRAPHIC MAP
–	BOUNDARY SURVEY
C-001	DEMOLITION & EROSION CONTROL PLAN
C-002	DEMOLITION & EROSION CONTROL DETAILS
C-100	OVERALL SITE PLAN
C-101	SITE PLAN
C-102	PARCEL MAP
C-103	SITE DETAILS
C-104	SITE DETAILS
C-200	GRADING PLAN
C-300	STORM DRAINAGE PLAN
C-301	STORM DRAINAGE DETAILS
C-302	STORM DRAINAGE DETAILS
C-303	STORM DRAINAGE DETAILS
C-400	UTILITY PLAN
C-401	SANITARY SEWER DETAILS
C-402	SANITARY SEWER DETAILS
C-403	SANITARY SEWER GENERAL NOTES
C-404	SANITARY SEWER TESTING NOTES
C-405	WATER DETAILS
C-406	WATER DETAILS
C-407	WATER DETAILS & NOTES
C-408	INSULATED ENCLOSURE DETAIL
L-100	LANDSCAPE PLAN

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



SITE PLAN
SCALE: 1"=100'

© Carmina Wood Morris DPC

Carmina Wood Morris
487 Main Street Suite 300
Buffalo, New York 14203
P 716.842.2185
F 716.842.0761

REVISIONS:
No. Description Date
Nil.

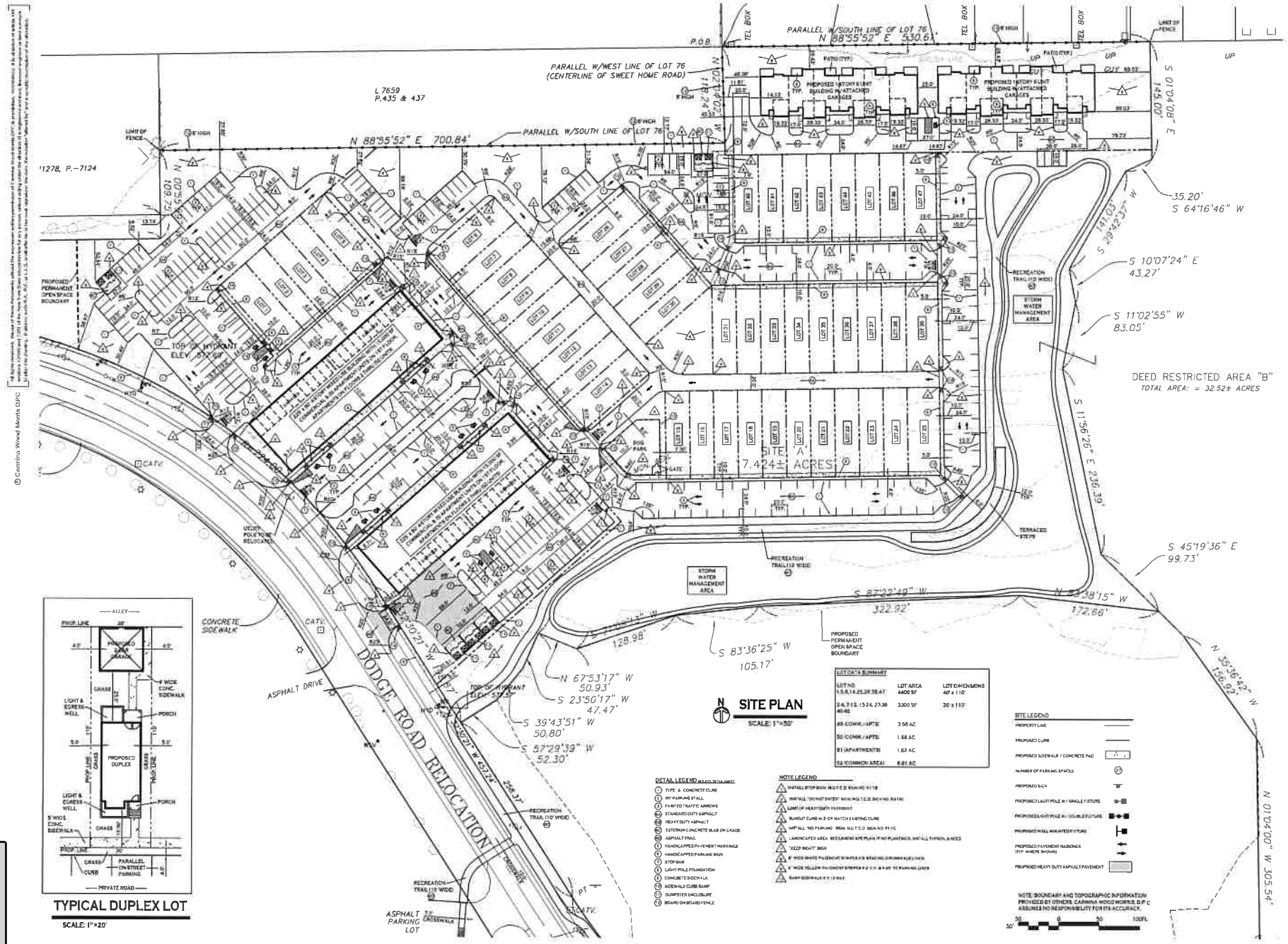
PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Overall Site Plan

DRAWING NO.
C-100
Project no.: 21.011

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



Carmina Wood Morris
467 Main Street Suite 500
Buffalo, New York 14203
P 716.842.2185
F 716.842.0263

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Plotted

DRAWING NAME:
Site Plan

DRAWING NO.
C-101
Project no.: 21.01

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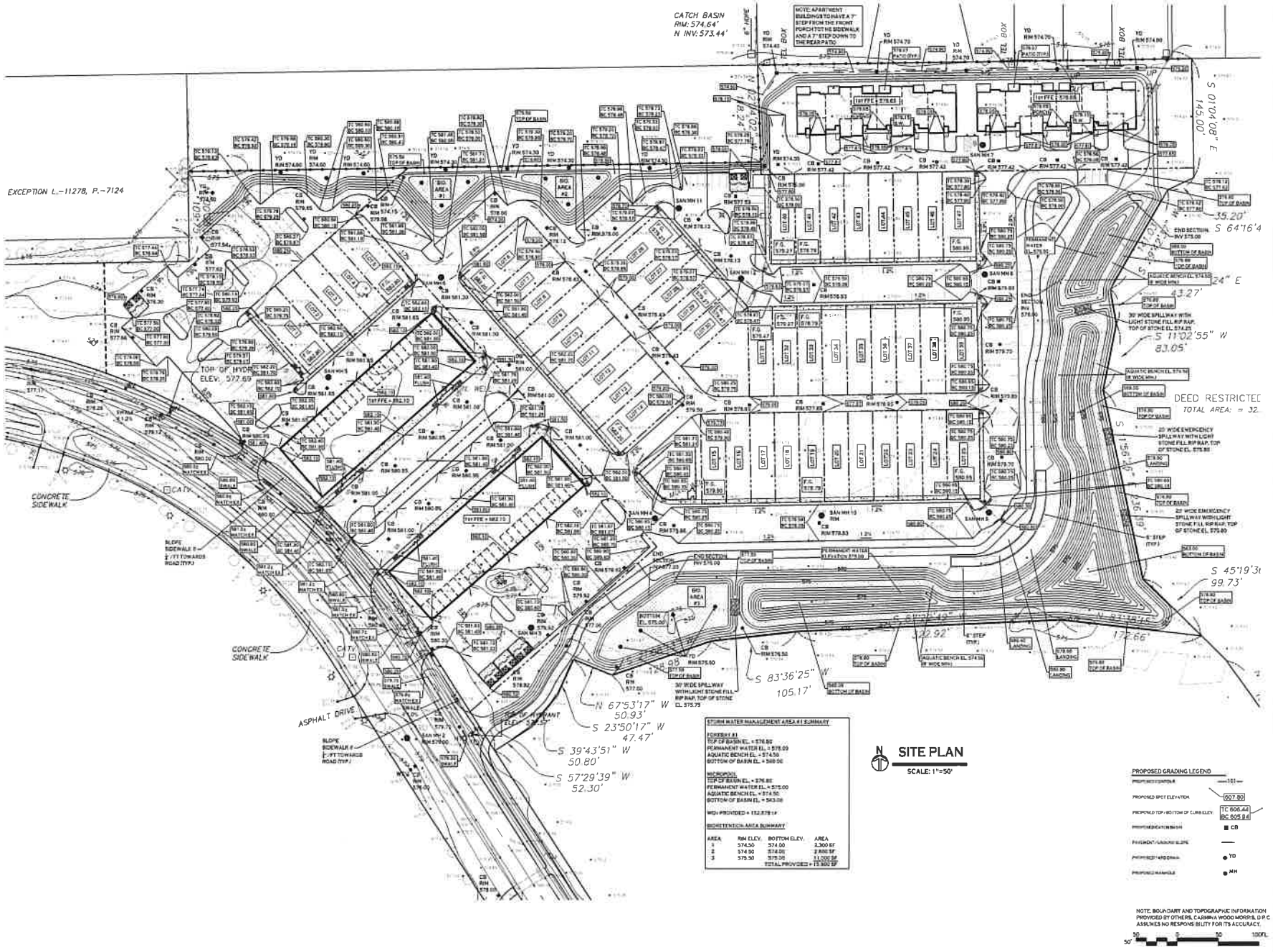
Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



Carmina Wood Morris
487 Main Street - Suite 500
Buffalo, New York 14203
P 716.842.3185
F 716.842.0961

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As noted

DRAWING NAME:
Grading Plan

DRAWING NO.
C-200

Project no.: 21.011

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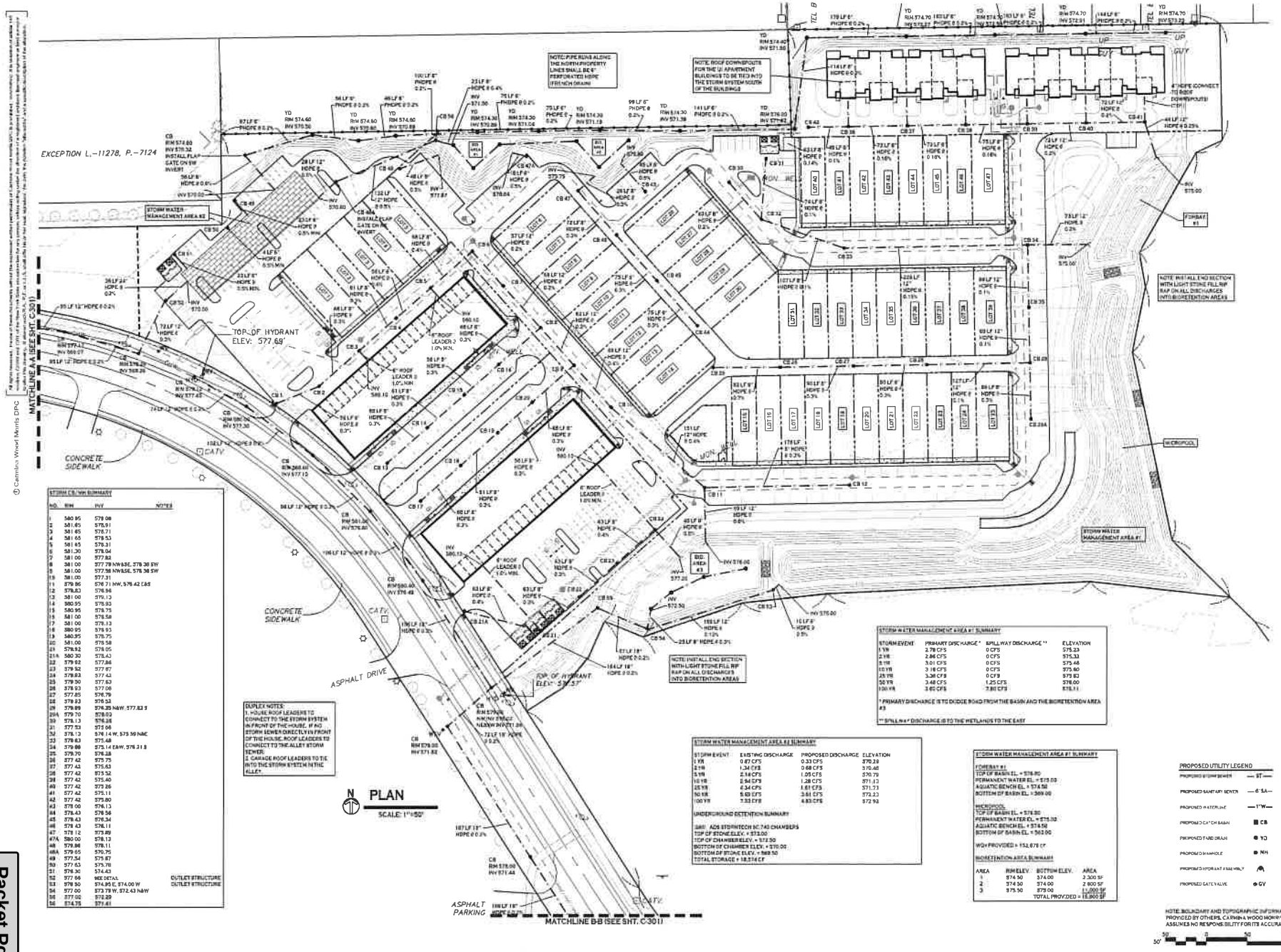
Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



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REVISIONS:
No. | Description | Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

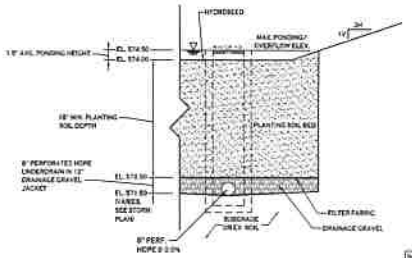
Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Storm Drainage Plan

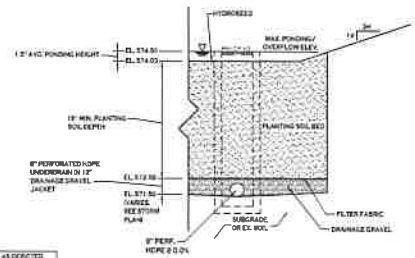
DRAWING NO.
C-300

Project no.: 21.011

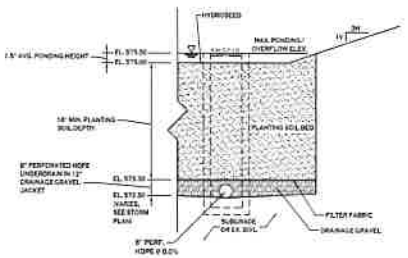
Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



BIORETENTION AREA #1



BIORETENTION AREA #2



BIORETENTION AREA #3

NOTE: AS DEPICTED TYPICALLY IN BIORETENTION AREAS

BIORETENTION AREA - TYPICAL SECTIONS

NOT TO SCALE

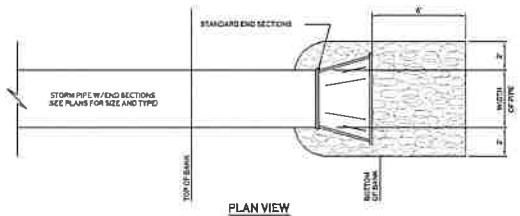
NOTES:
1. FILTER FABRIC TO BE NON-WOVEN CLASS 'C', MIRAFI 140N OR APPROVED EQUIVALENT.
2. MULCH TO BE SHREDDED HARDWOOD, AGED 12 MONTHS MIN.
3. DRAINAGE GRAVEL TO MEET AASHTO M-43, NO.57, SIZE 0.25" TO 0.75"
4. CONTRACTOR TO PROVIDE PLANTING SOIL SUBMITTAL SPECIFICATION FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION

NOTE: PLANTING SOIL SHALL BE LOAM/SAND MIX CONTAINING A MINIMUM OF 35 TO 99% SAND BY VOLUME AND LESS THAN 25% CLAY. SOIL SHOULD FALL WITHIN USCS TYPES SM OR SL WITH PERMEABILITY OF AT LEAST 0.5 FEET PER DAY. SOIL SHOULD BE FREE FROM STONES, STUMPS, ROOTS OR OTHER WOODY MATERIAL OVER 1" IN DIAMETER. PLACEMENT OF THE PLANTING SOIL SHOULD BE IN LIFTS OF 12" TO 18", LOOSELY COMPACTED.

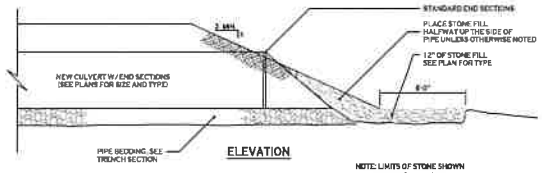
CHARACTERISTICS SHALL BE:
PH RANGE: 5.2 - 7.00
ORGANIC MATTER: 1.5 - 4.0%
MAGNESIUM: 35 LBS PER ACRE MIN.
PHOSPHERUS: 75 LBS PER ACRE MIN
POTASSIUM: 85 LBS PER ACRE MIN.
SOLUBLE SALTS: 500 PPM
CLAY: 10 TO 25%
SILT: 30 TO 55%
SAND: 35 TO 60%

BIO-RETENTION AREA SEEDING SPEC (NORTHEAST WETLAND GRASS SEED MIX):

SEED MIXTURE	VARIETY	PERCENT BY NO. OF SEEDS
CREEPING BENTGRASS	AGROSTIS STOLONIFERA	33.0
TUFTED HAIRGRASS	POA TRIVIALIS	17.0
MEADOW FOXTAIL	ALOPECURUS PRATENSIS	11.0
SWAMP TIMOTHY	LOLIUM MULTIFLORUM	4.5
DEERTONGUE	PANICUM CLANDESTINUM	4.5



PLAN VIEW

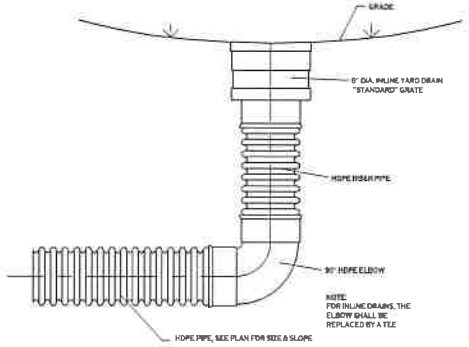


ELEVATION

NOTE: LIMITS OF STONE SHOWN ARE MINIMUMS. PLAN MAY INDICATE GREATER LIMITS

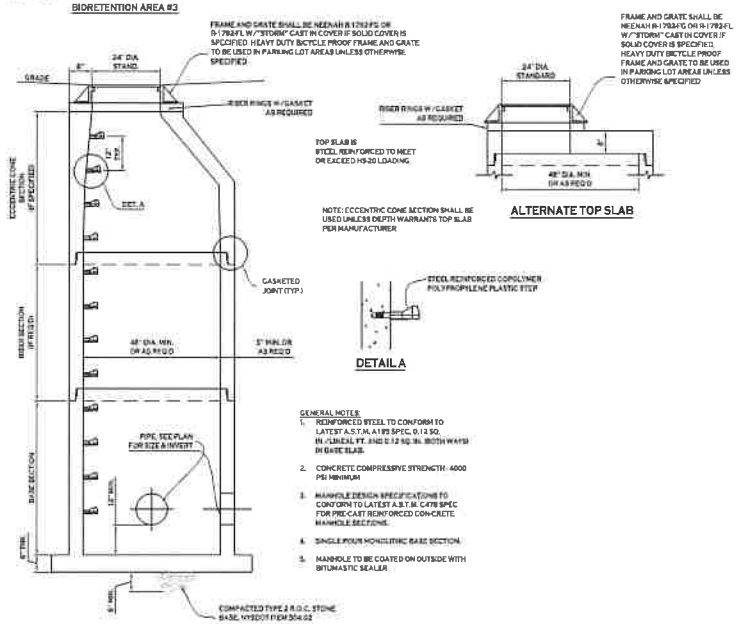
TYPICAL PIPE OUTLET W/ END SECTION & RIP RAP

NOT TO SCALE



NOTE: SEE TYPICAL TRENCH SECTION FOR BEDDING REQUIREMENTS

TYPICAL YARD DRAIN DETAIL



TYPICAL STORM MANHOLE DETAIL

NOT TO SCALE

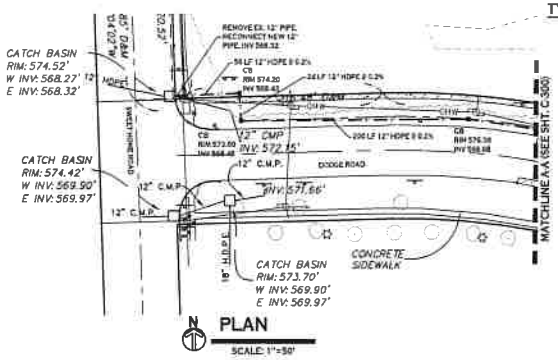
ALTERNATE TOP SLAB

TOP SLAB IS STEEL REINFORCED TO MEET OR EXCEED H-20 LOADING

NOTE: ECCENTRIC CONE SECTION SHALL BE USED UNLESS DEPTH WARRANTS TOP SLAB PER MANUFACTURER

DETAIL A

GENERAL NOTES:
1. REINFORCED STEEL TO CONFORM TO LATEST A.S.T.M. A185 SPEC., 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. BOTH WAYS IN BASE SLAB.
2. CONCRETE COMPRESSIVE STRENGTH: 4000 PSI MINIMUM
3. MANHOLE DESIGN SPECIFICATIONS TO CONFORM TO LATEST A.S.T.M. C478 SPEC FOR PRE-CAST REINFORCED CONCRETE MANHOLE SECTIONS.
4. SINGLE POUR MONOLITHIC BASE SECTION.
5. MANHOLE TO BE COATED ON OUTSIDE WITH BITUMASTIC SEALER



N PLAN

SCALE: 1"=50'



N PLAN

SCALE: 1"=50'

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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Storm Drainage Details

DRAWING NO.
C-301
Project no.: 21.011

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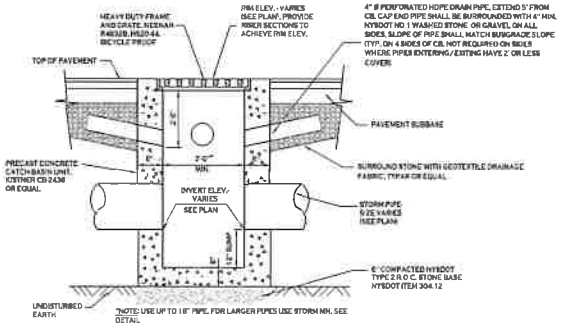
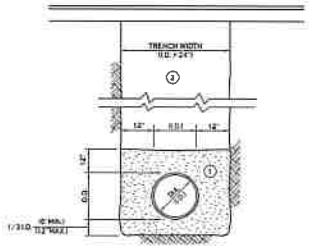


TYPICAL PRECAST CATCH BASIN
NOT TO SCALE



NOTES:
A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.
C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.
D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT | 985 EDITION)

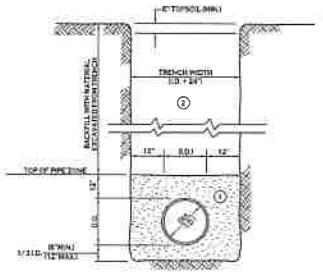
① NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703.02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL ①

② TYPE 2 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYDOT SECTION 304.2.02 TYPE 2. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN TWO INCHES AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL ②

STORM SEWER TRENCH SECTION IN PAVED AREAS
NOT TO SCALE



NOTES:
A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.
C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.
D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

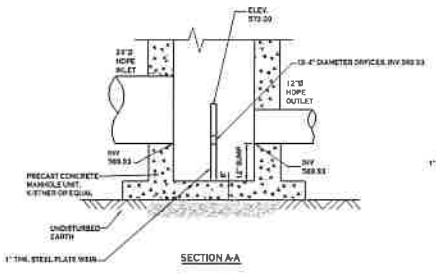
PIPE BEDDING MATERIAL (NYSDOT | 985 EDITION)

① NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703.02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL ①

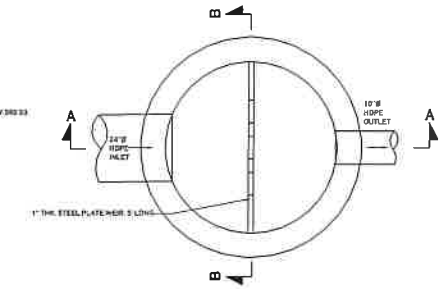
② BACKFILL MATERIAL SHALL BE NATIVE SOIL CONTAINING NO UNSUITABLE MATERIAL COMPACTED IN 6" LIFTS.

STORM SEWER TRENCH SECTION IN UNPAVED AREAS
NOT TO SCALE



SECTION A-A

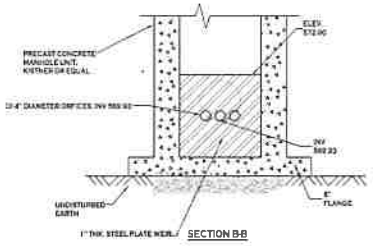
NOTES:
1. FASTEN STEEL PLATE TO CB WALL WITH ANGLE CLIPS AND BOLTS
2. STEEL PLATE, ANGLE CLIPS, AND BOLTS TO BE HOT DIPPED GALVANIZED



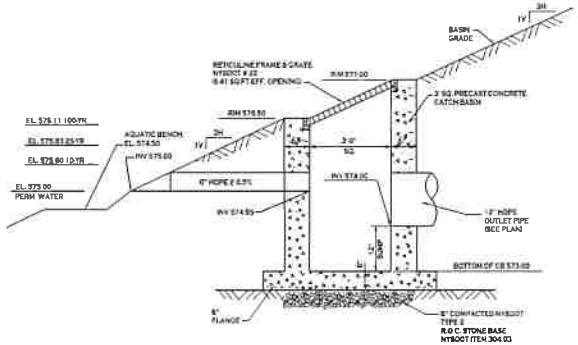
PLAN

*NOTE: USE 5'-0" I.D. MANHOLE

OUTLET CONTROL STRUCTURE - CB 52
NOT TO SCALE



SECTION B-B



DETENTION BASIN OUTLET STRUCTURE - CB 53
N.T.S.

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REVISIONS:
No. Description Date

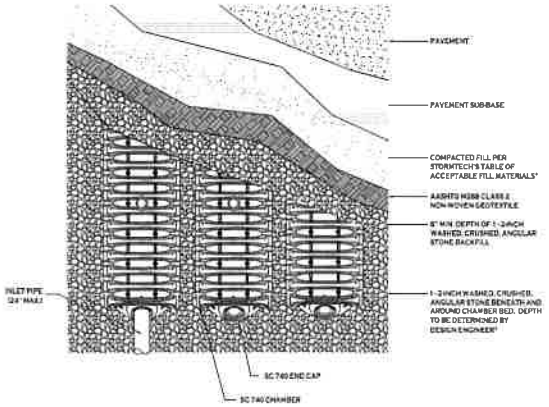
PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Storm Drainage Details

DRAWING NO.
C-302
Project no.: 21,011

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



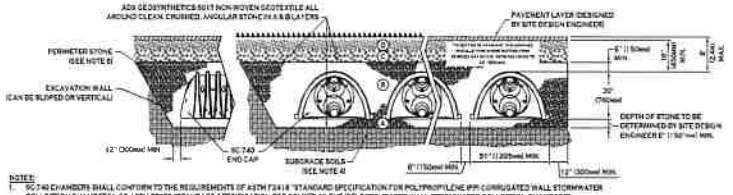
STORMTECH SC-740 CHAMBER SYSTEM PLAN VIEW DETAIL

NOT TO SCALE

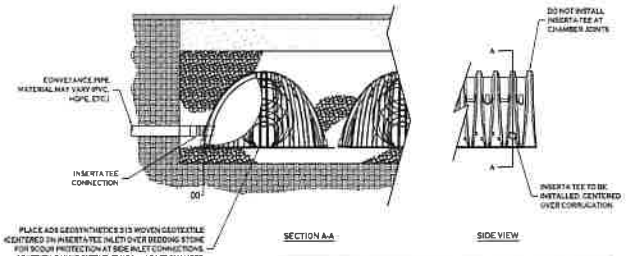
ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION/DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1]: A-1, A-2-4, A-3 OR AASHTO M43[1]: 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,500 lbs (89 kN).
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1]: 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1]: 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[3,4]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43 STONE)".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) MAX LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS



NOTES:
1. SC-740 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
6. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION



NOTE:
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
MC-3500	12" (300 mm)	6" (150 mm)
MC-4500	12" (300 mm)	8" (200 mm)

INSERTA TEE FITTINGS AVAILABLE FOR SOR-26, SOR-35, SCH-40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON

INSERTA TEE DETAIL

NOT TO SCALE

INSPECTION AND MAINTENANCE

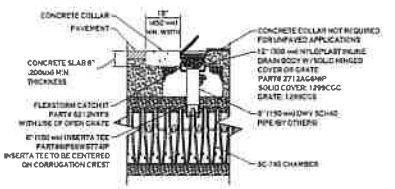
STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
  - () MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
  - () FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 rad) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES:
1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



SC-740 6" INSPECTION PORT DETAIL

NOT TO SCALE

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REVISIONS:
No. Description Date

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Site Development plans for:
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Portion of 1081 North French Road
Amherst, New York

Date: 2/15/21
Drawn by: 2/24/21
Scale: As Noted

DRAWING NAME:
Storm Drainage Details

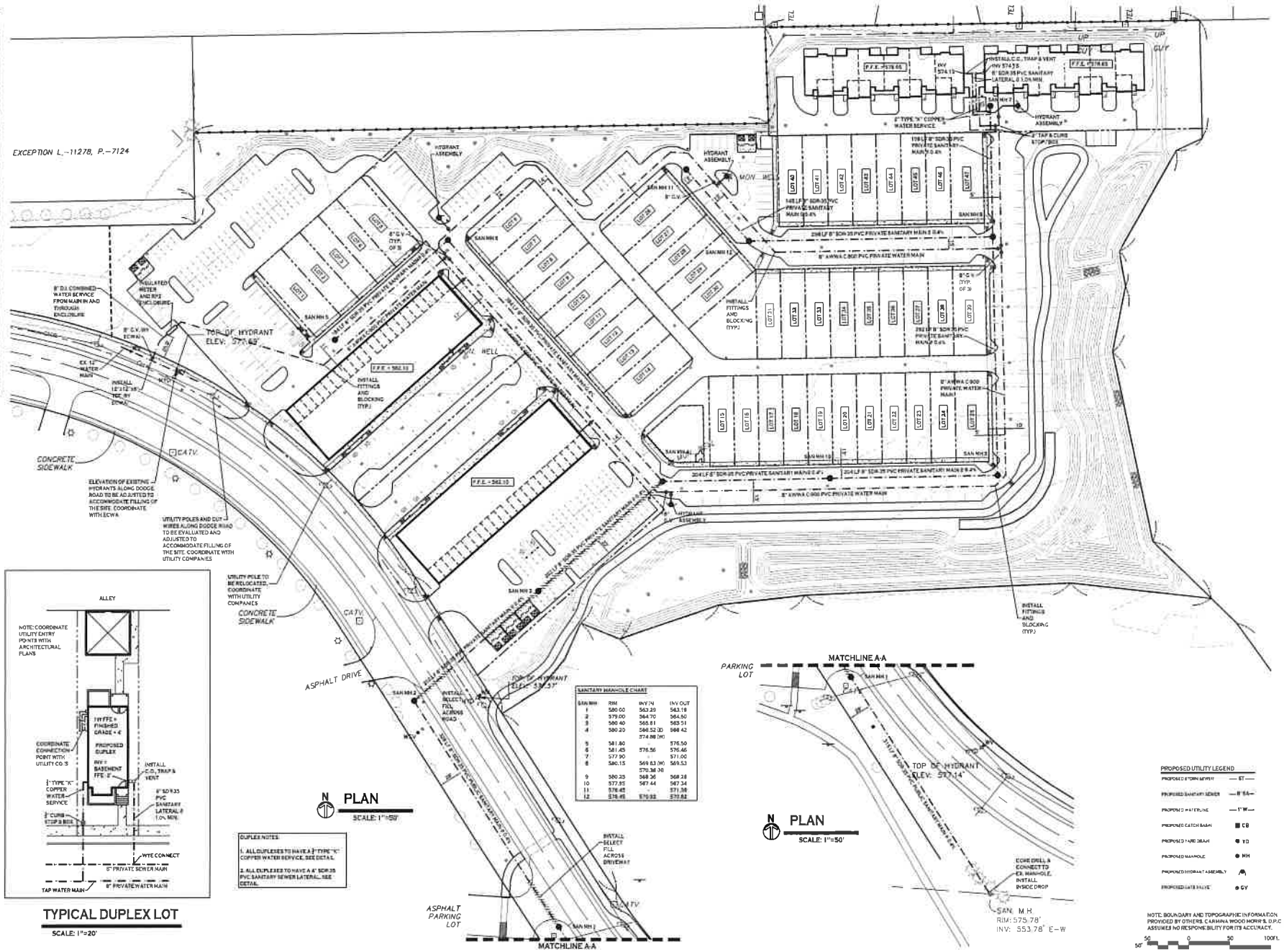
DRAWING NO.
C-303

Project no: 21,011

Packet Pg. 2554

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

1.1



© Carmina Wood Morris DPC

Carmina Wood Morris DPC

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

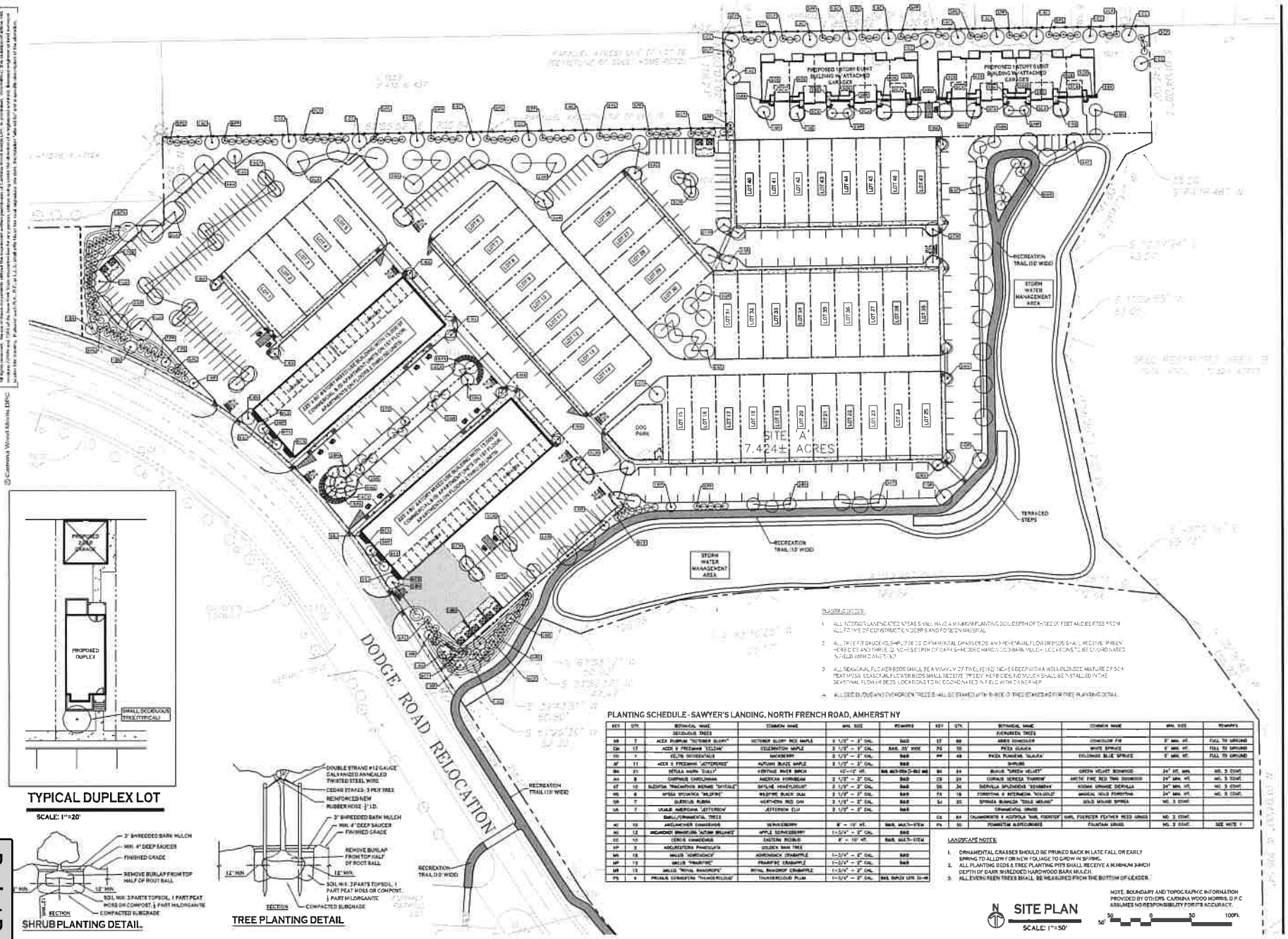
Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Utility Plan

DRAWING NO.
C-400

Project no.: 21,011

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



© Carmina Wood Morris, DPC

TYPICAL DUPLEX LOT

SCALE: 1"=20'

SHRUB PLANTING DETAIL

TREE PLANTING DETAIL

PLANTING NOTES:

1. ALL INTERIOR LANDSCAPED AREAS SHALL HAVE A MINIMUM PLANTING SOIL DEPTH OF THREE (3) FEET AND BE FREE FROM ALL FORMS OF CONSTRUCTION DEBRIS AND FOREIGN MATERIAL.
2. ALL TREE PITS AND SHRUB BEDS, ORNAMENTAL GRASS BEDS AND PERENNIAL FLOWER BEDS SHALL RECEIVE THREE (3) INCHES DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH. LOCATIONS TO BE CONFIRMED IN FIELD WITH OWNER REP.
3. ALL SEASONAL FLOWER BEDS SHALL BE A MINIMUM OF TWELVE (12) INCHES DEEP WITH A WELL-BLENDED MIXTURE OF 50% PEAT MOSS. SEASONAL FLOWER BEDS SHALL RECEIVE TWENTY HERBICIDE. NO MULCH SHALL BE INSTALLED IN THE SEASONAL FLOWER BEDS. LOCATIONS TO BE CONFIRMED IN FIELD WITH OWNER REP.
4. ALL DECIDUOUS AND EVERGREEN TREES SHALL BE STAKED WITH RIDE O TREE STAKES (R) FOR TREE PLANTING DETAIL.

PLANTING SCHEDULE - SAWYER'S LANDING, NORTH FRENCH ROAD, AMHERST NY

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		DECIDUOUS TREES			
AR	7	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	2 1/2" – 3" CAL.	B&B
CH	17	ACER X FREEMANII 'CELZAM'	CELEBRATION MAPLE	2 1/2" – 3" CAL.	B&B, 25' WIDE
CO	1	CELTIS OCCIDENTALIS	HACKBERRY	2 1/2" – 3" CAL.	B&B
AF	11	ACER X FREEMANII 'AUTUMN FIRE'	AUTUMN BLAZE MAPLE	2 1/2" – 3" CAL.	B&B
BH	21	BETULA NIGRA 'DURA-3'	HERITAGE RIVER BIRCH	10'-12' HT.	B&B, MULTI-STEM
AM	8	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2 1/2" – 3" CAL.	B&B
GT	10	GLEDITSIA TRIACANTHOS INERMIS 'SKYCOLE'	SKYLINE HONEYLOCUST	2 1/2" – 3" CAL.	B&B
WS	8	SYRINGA SYLVATICA 'WILDFIRE'	WILDFIRE BLACK LILAC	2 1/2" – 3" CAL.	B&B
QR	7	QUERCUS RUBRA	NORTHERN RED OAK	2 1/2" – 3" CAL.	B&B
UA	7	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2 1/2" – 3" CAL.	B&B
		SMALL/ORNAMENTAL TREES			
AC	12	AMELANCHIER CANADENSIS	SERVICEBERRY	8' – 10' HT.	B&B, MULTI-STEM
MJ	13	MALUS/MALUS 'ADIRONDACK'	APPLE SERVICEBERRY	1-3/4" – 2" CAL.	B&B
CC	10	CERCIS CANADENSIS	EASTERN REDBUD	8' – 10' HT.	B&B, MULTI-STEM
KP	3	KOELREUTERIA PANICULATA	GOLDEN RAIN TREE		
MA	18	MALUS 'ADIRONDACK'	ADIRONDACK CRABAPPLE	1-3/4" – 2" CAL.	B&B
MP	13	MALUS 'PRAIRIFIRE'	PRAIRIFIRE CRABAPPLE	1-3/4" – 2" CAL.	B&B
MR	13	MALUS 'ROYAL RAINDROPS'	ROYAL RAINDROP CRABAPPLE	1-3/4" – 2" CAL.	
PS	4	PRUNUS SERRULATA 'THUNDERCLOUD'	THUNDERCLOUD PLUM	1-3/4" – 2" CAL.	B&B, SAMPLE LOTS 33-46
		EVERGREEN TREES			
AB	69	ABIES CONCOLOR	CONCOLOR FIR	5' MIN. HT.	FULL TO GROUND
PG	10	PICEA GLAUCA	WHITE SPRUCE	6' MIN. HT.	FULL TO GROUND
PP	48	PICEA PUNGENS 'GLAUCA'	COLORADO BLUE SPRUCE	5' MIN. HT.	FULL TO GROUND
		SHRUBS			
BM	24	BUXUS 'GREEN VELVET'	GREEN VELVET BOXWOOD	24" HT. MIN.	MO. 3 CONT.
CS	24	CORNUS SERICEA 'FARROW'	ARCTIC FIRE RED TWIG DOGWOOD	24" MIN. HT.	MO. 3 CONT.
DS	24	DIERVILLA SPLENDENS 'SEIBERT4'	KODIAK ORANGE DIERVILLA	24" MIN. HT.	MO. 3 CONT.
FX	18	FORSYTHIA X INTERMEDIA 'BOUCLE'	MAGICAL GOLD FORSYTHIA	24" MIN. HT.	MO. 3 CONT.
SJ	35	SPIRAEA JAPONICA 'GOLD MOUND'	GOLD MOUND SPIREA	NO. 2 CONT.	
		ORNAMENTAL GRASS			
CK	84	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	NO. 2 CONT.	
PA	30	PENNISETUM ALOPECUROIDES	FOUNTAIN GRASS	NO. 2 CONT.	SEE NOTE 1

LANDSCAPE NOTES:

1. ORNAMENTAL GRASSES SHOULD BE PRUNED BACK IN LATE FALL OR EARLY SPRING TO ALLOW FOR NEW FOLIAGE TO GROW IN SPRING.
2. ALL PLANTING BEDS & TREE PLANTING PITS SHALL RECEIVE A MINIMUM 3-INCH DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH.
3. ALL EVERGREEN TREES SHALL BE MEASURED FROM THE BOTTOM OF LEADER.

N SITE PLAN

SCALE: 1"=50'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS. CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR IT'S ACCURACY.

50 0 50 100FT.

Carmina Wood Morris DPC

487 Main Street - Suite 500
Buffalo, New York 14203
P 716.842.3181
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road

Amherst, New York

Date: 2/9/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Landscape Plan

DRAWING NO.

L-100

Project no.: 21.011

1.1

Packet Pg. 2556

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Appendix H

Soils Information

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



Map Scale: 1:3,590 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Erie County, New York
Survey Area Data: Version 20, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 26, 2019—Oct 10, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ge	Getzville silt loam	27.2	87.5%
Ld	Lamson mucky very fine sandy loam	1.8	5.7%
Sw	Swormville clay loam	2.1	6.8%
Totals for Area of Interest		**31.1**	**100.0%**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Appendix I

SHPO Information

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

NEW YORK STATE
Bernadette Castro
Commissioner

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189

518-237-8643

October 10, 2001

Carolyn A. Pierce
CCRG
105 Robie Avenue
Buffalo, New York 14214

Dear Ms. Pierce:

Re: SEQRA
Muir Woods Mixed-Use Development
Amherst/Erie County
01PR0345

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Parks, Recreation and Historic Preservation Law, Section 14.09.

Based upon this review, it is the OPRHP's opinion that your project will have No Impact upon cultural resources in or eligible for inclusion in the State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Director

RLP:cmp

RECEIVED
OCT 16 2001
CIMINELLI DEVELOPMENT COMPANY, INC.

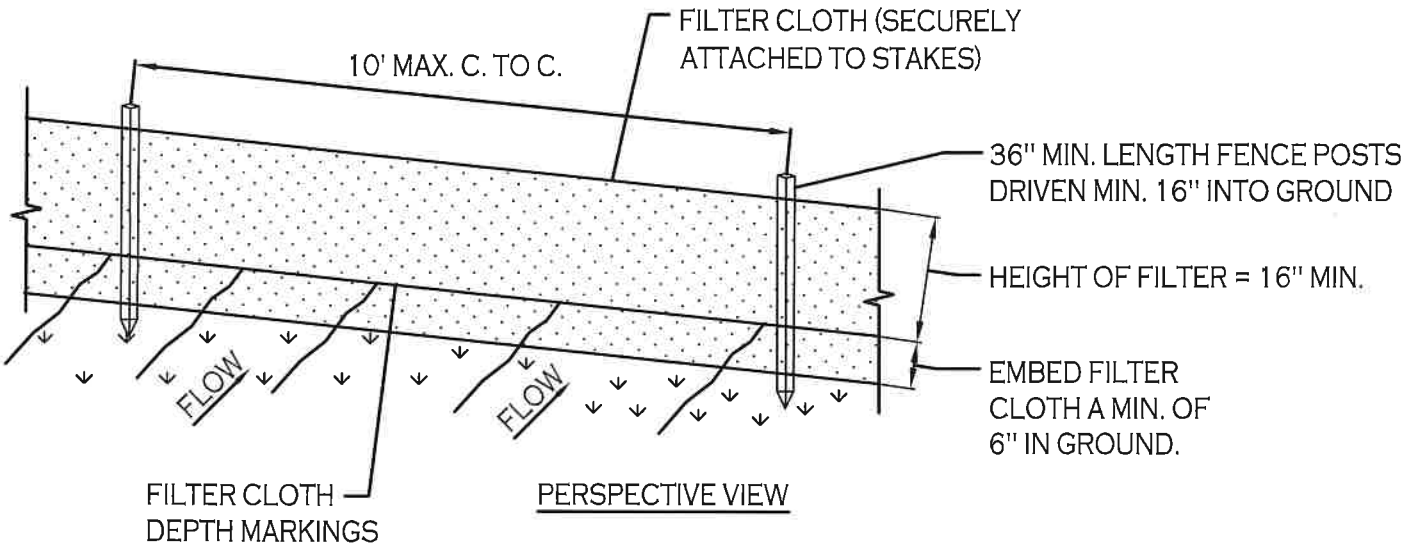
An Equal Opportunity/Affirmative Action Agency
printed on recycled paper

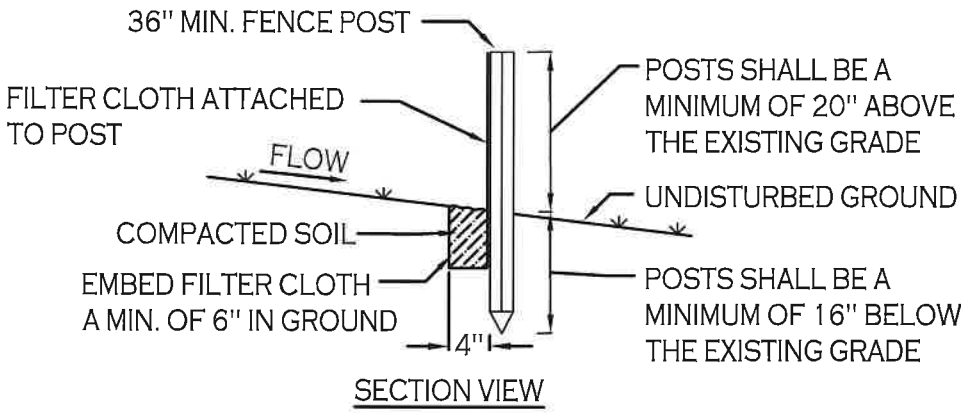
Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Appendix J

Standard Erosion Control Details

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)





CONSTRUCTION SPECIFICATIONS

1. WOVEN FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.

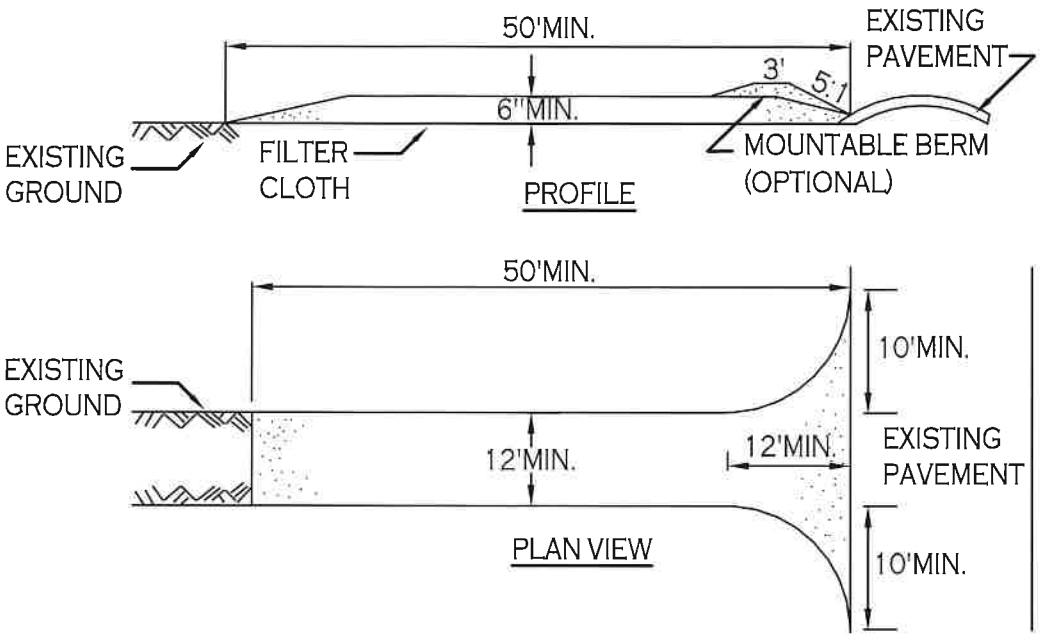
2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.

3. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

SILT FENCE DETAIL

NOT TO SCALE

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



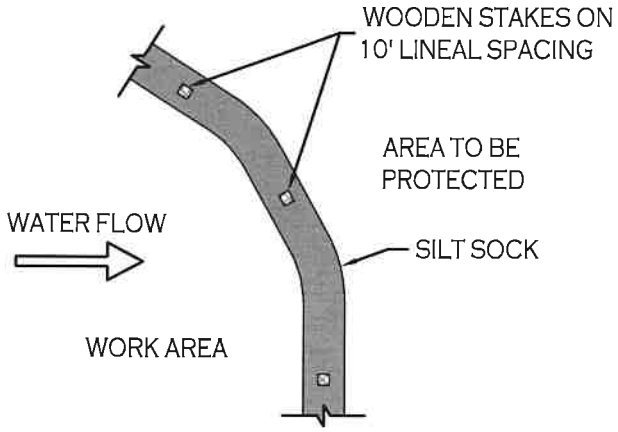
CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

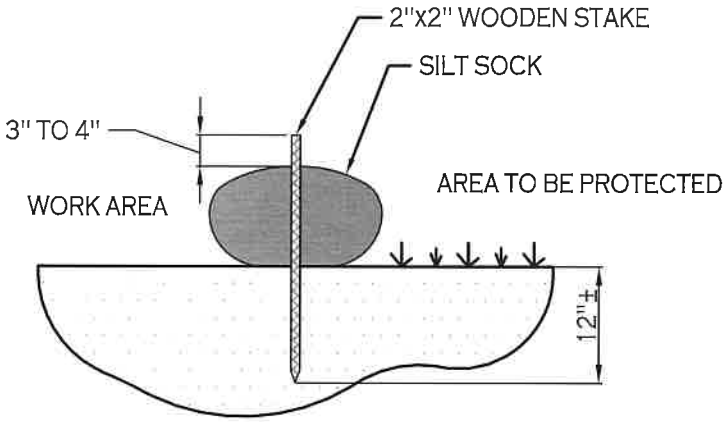
STABILIZED CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



PLAN VIEW



SECTION VIEW

NOTES:

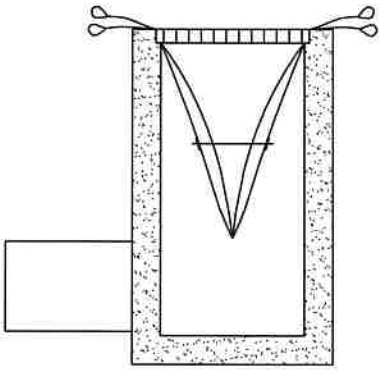
CONTRACTOR SHALL INSPECT AND MAINTAIN SILT SOCK AS NEEDED DURING THE DURATION OF CONSTRUCTION PROJECT.

CONTRACTOR SHALL REMOVE SEDIMENT COLLECTED AT THE BASE OF THE SILT SOCK WHEN IT HAS REACHED $\frac{1}{2}$ OF THE EXPOSED HEIGHT OF THE SILT SOCK. ALTERNATIVELY, RATHER THAN CREATE A SOIL DISTURBING ACTIVITY, THE ENGINEER MAY CALL FOR ADDITIONAL SILT SOCK TO BE ADDED AT AREAS OF HIGH SEDIMENTATION, PLACED IMMEDIATELY ON TOP OF THE EXISTING SEDIMENT LADEN SILT SOCK.

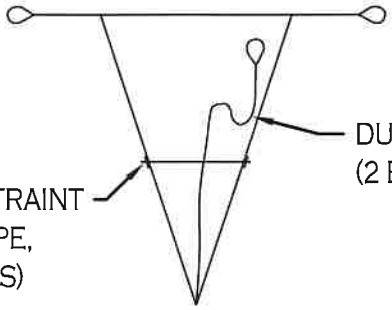
SILT SOCK DETAIL

NOT TO SCALE

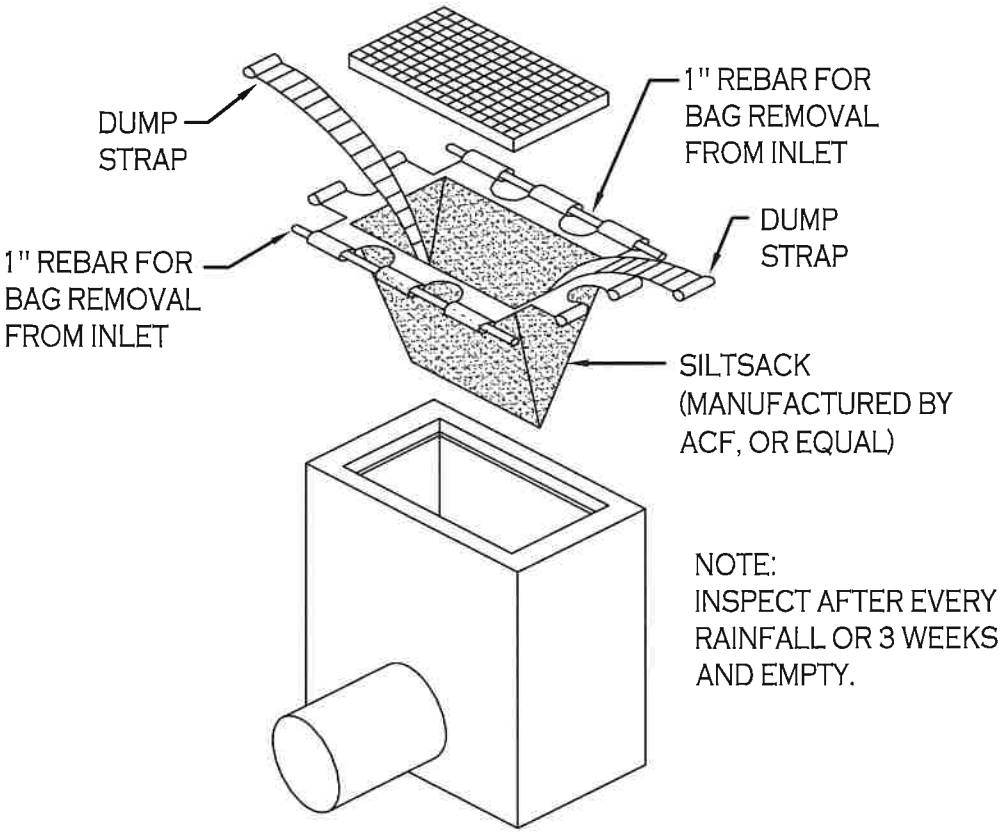
Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



INSTALLATION DETAIL



BAG DETAIL



SILT SACK DETAIL

NOT TO SCALE

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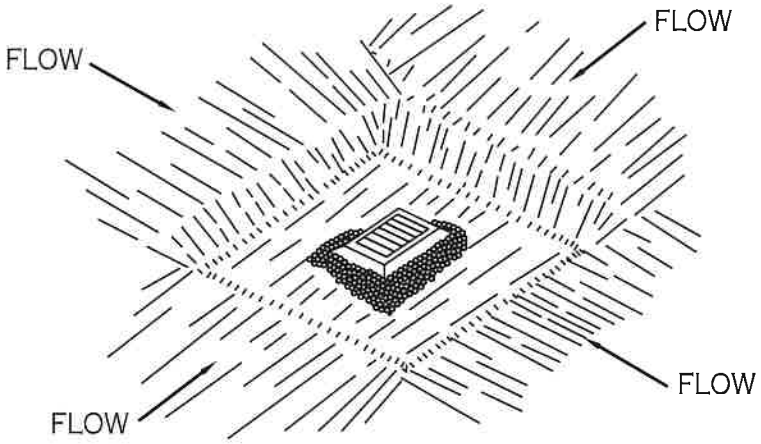
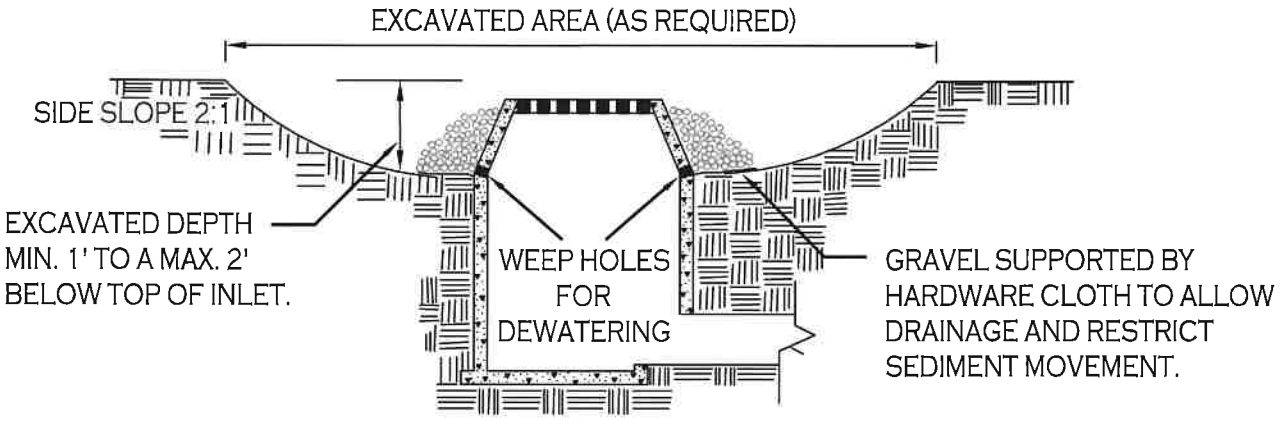




CONSTRUCTION SPECIFICATIONS

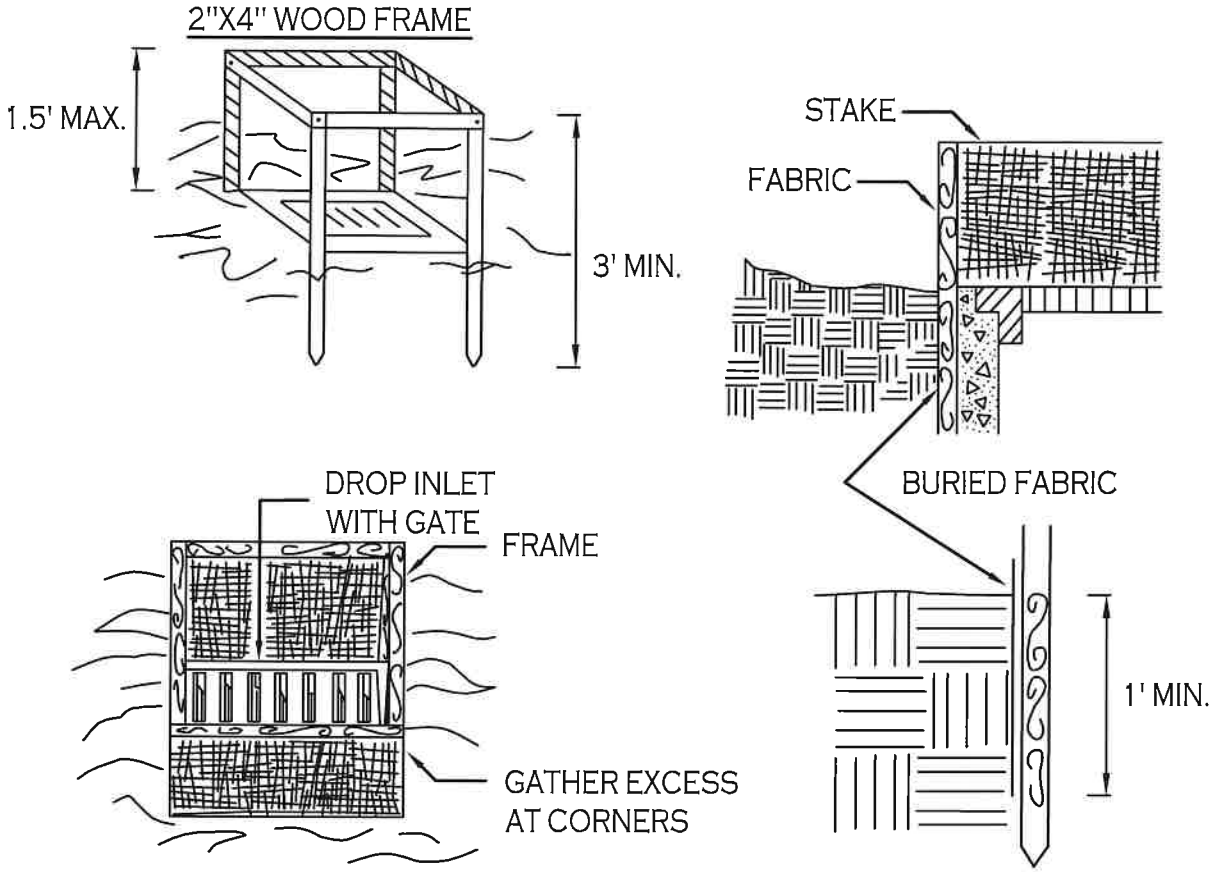
1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER EXCAVATION.
2. GRADE APPROACH TO THE INLET UNIFORMLY AROUND THE BASIN.
3. WEEP HOLES SHALL BE PROTECTED BY GRAVEL.
4. UPON STABILIZATION OF CONTRIBUTING DRAINAGE AREA, SEAL WEEP HOLES, FILL BASIN WITH STABLE SOIL TO FINAL GRADE, COMPACT IT PROPERLY AND STABILIZE WITH PERMANENT SEEDING.

MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 1

NOT TO SCALE

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.

2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.

3. STAKE MATERIALS WILL BE STANDARD 2" x 4" WOOD OR EQUIVALENT. METAL WITH A MINIMUM LENGTH OF 3 FEET.

4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.

5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.

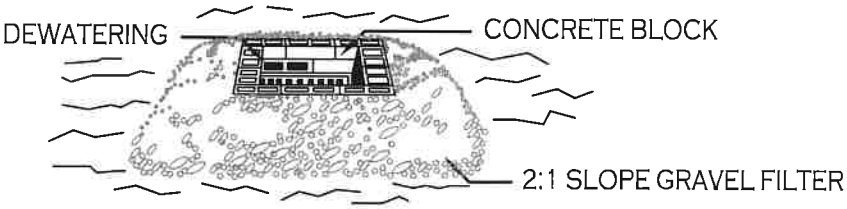
6. A 2" x 4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.

MAXIMUN DRAINAGE AREA 1 ACRE

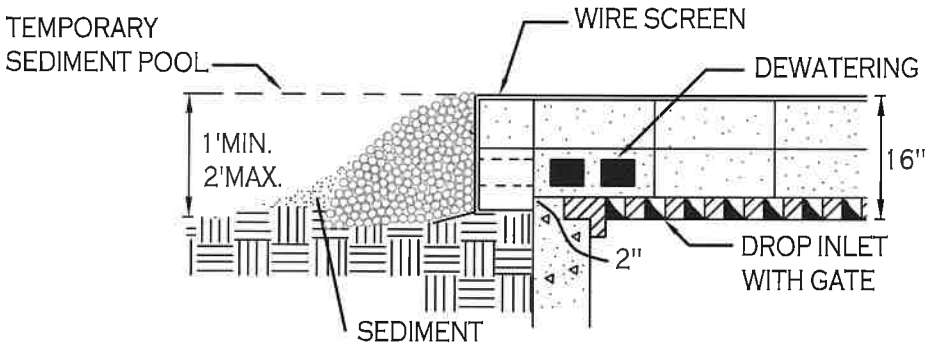
INLET PROTECTION DETAIL 2

NOT TO SCALE

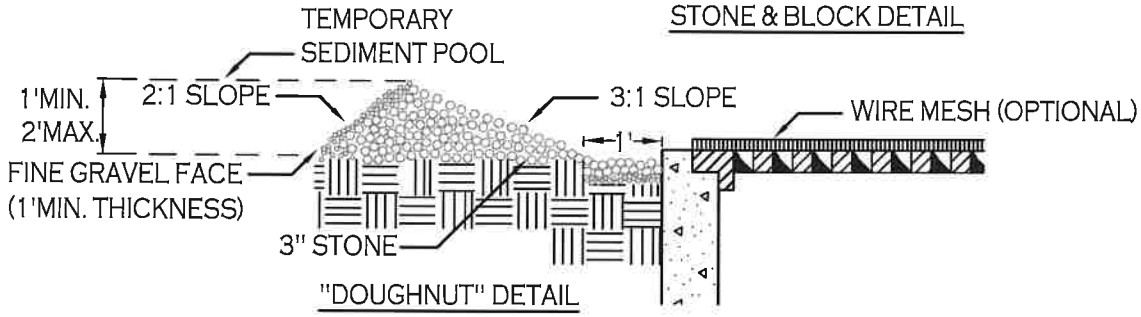
Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



STONE & BLOCK PLAN VIEW



STONE & BLOCK DETAIL



"DOUGHNUT" DETAIL

CONSTRUCTION SPECIFICATIONS

1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE FOR DEWATERING. FOUNDATION SHALL BE 2 INCHES MINIMUM BELOW REST OF INLET AND BLOCKS SHALL BE PLACED AGAINST INLET FOR SUPPORT.

2. HARDWARE CLOTH OR 1/2" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.

3. USE CLEAN STONE OR GRAVEL 1/2-3/4 INCH IN DIAMETER PLACED 2 INCHES BELOW TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER.

4. FOR STONE STRUCTURES ONLY, A 1 FOOT THICK LAYER OF THE FILTER STONE WILL BE PLACED AGAINST THE 3 INCH STONE AS SHOWN ON THE DRAWINGS.

MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 3

NOT TO SCALE

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Appendix K

Wetland Permits

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 9
270 Michigan Avenue, Buffalo, NY 14203-2915
P: (716) 851-7165 I F: (716) 851-7168
www.dec.ny.gov

December 24, 2020

Mr. Adam Faeth
Ciminelli Real Estate Corporation
50 Fountain Plaza, Suite 500
Buffalo, New York 14202

Muir Woods Development – "Site A"
Permit Transmittal Letter
Permit No. 9-1422-00398/00001

Dear Mr. Faeth:

Enclosed is your permit which was issued in accordance with applicable provisions of the Environmental Conservation Law. The permit is valid for only that project, activity or operation expressly authorized. If modifications are desired after permit issuance, you must submit the proposed revisions and receive written approval from the Permit Administrator prior to initiating any change. If the Department determines that the modification represents a material change in the scope of the authorized project, activity, operation or permit conditions, you will be required to submit a new application for permit.

Please review all permit conditions carefully. In particular, identify your initial responsibilities under this permit in order to assure timely action if required. Since failure to comply precisely with permit conditions may be treated as a violation of the environmental conservation law, you are requested to provide a copy of the permit to the project contractor, facility operator, and other persons directly responsible for permit implementation (if any).

If you have any questions, please contact this office at the above address.

Respectfully,
David S. Denk
Regional Permit Administrator

Enclosure
ecc: NYSDEC Law Enforcement
Maureen Brady, NYSDEC Office of General Counsel
Mr. Chuck Rosenburg, NYSDEC Division of Fish and Wildlife
Mr. Martin Crossen, USACOE
Sean Hopkins, Esq., Hopkins Sorgi & McCarthy PLLC

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

PERMIT
Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
Ciminelli Muir Woods LLC
50 Fountain Plaza, Suite 500
Buffalo, NY 14202
(716) 631-8000

Facility:
MUIR WOODS DEVELOPMENT
1121 N French Rd
Amherst, NY 14228

Facility Location: in AMHERST in ERIE COUNTY
Facility Principal Reference Point: NYTM-E: 191.586 NYTM-N: 4770.823
Latitude: 43°01'38.9" Longitude: 78°47'07.2"

Authorized Activity: Construction of a mixed-use project named "Muir Woods" consisting of approximately two 4-story mixed-use buildings consisting of commercial space and residential units, 90 two-family townhouses and 2 six-unit apartment buildings, approximately 133 detached single-family residential units and 515 cottage-style and apartment-style housing units with various amenities; and gas, electric, sanitary, potable water and storm water (the necessary infrastructure), while maintaining open space on approximately 224 acres in the Audubon New Community District. The Muir Woods project property is a 326 acre site bounded by the Lockport Expressway (Interstate Route 990) and Dodge Road on the south, Sweet Home Road on the west, North French Road on the north and Campbell Boulevard on the east. The project will result in permanent impacts to approximately 2.39 acres of State regulated wetlands (TE-22, TE-23 and TE-34), and 11.38 acres of State regulated 100 foot wide wetland adjacent area. As mitigation for those impacts the project includes creation of 19.58 acres of in-kind and out-of-kind wetlands on-site, in six areas, to replace the functions and benefits of the impacted wetlands. There will be 4.3 acres of stream channel enhancement on-site as mitigation for State wetland regulated adjacent area impacts. The project also includes construction at 520 Campbell Road property as detailed on plan sheets referenced in Natural Resource Condition No. 4.

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Permit Authorizations

Freshwater Wetlands - Under Article 24
Permit ID 9-1422-00398/00001

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

Water Quality Certification - Under Section 401 - Clean Water Act
Permit ID 9-1422-00398/00002

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: DAVID S DENK, Regional Permit Administrator
Address: NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY 14203 -2915

Authorized Signature: David S. Denk Digitally signed by David S. Denk DN: cn=David S. Denk, o=NYS DEC, ou=Div. of Env. Permits, email=david.denk@dec.ny.gov, c=US Date: 2020.12.24 10:29:47 -05'00' Date ___/___/___

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: FRESHWATER WETLANDS; WATER QUALITY CERTIFICATION

1. **No Work Prior to Approval of Legal Instrument for Preservation of Undeveloped Areas of Site** No work authorized by this permit may begin until the Department approves a legal instrument, such as a deed restriction and/or conservation easement, that will preserve in perpetuity the natural resource values of the undeveloped areas of the site. This condition does not apply to the 520 Campbell Boulevard property.

2. **Declaration of Restrictions 520 Campbell Boulevard Property** A Declaration of Restrictions permanently prohibiting any future development of the 6.88 acres of jurisdictional federal wetlands and portion of the upland area on 520 Campbell Boulevard as depicted on the Wetland Restriction Exhibit Map must be incorporated into the deeds for lots 1 – 12 and 21. By 60 days after Water Quality Certification issuance, the permittee shall file with the real property records of the Erie County Clerk`s Office, the deed for each applicable lot containing this notice. The permittee shall within two weeks following the filing of the deed(s) submit proof of filing from the County Clerk's Office

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showing the Liber and page number at which the deed notice was filed and the date of filing for one of the affected lots to: Regional Permit Administrator, NYSDEC Region 9 Headquarters, 270 Michigan Ave, Buffalo, NY 14203-2915.

3. **Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by Ciminelli Development Company, Inc. and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009.

4. **Conformance with Plans Site B** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include the "Concept Plan - Muir Woods" dated 08 November 2019 amended to show Conifer Planting Area (attached).

5. **Conformance with Plans - 520 Campbell Boulevard** All activities authorized by this permit for the 520 Campbell Boulevard property must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans include those sheets entitled: The Preserve at Muir Woods (DEC Planting Exhibit, DEC Earthwork Exhibit and the Wetland Restriction Exhibit) by Greenman-Pedersen, Inc. dated May 2018.

6. **Conformance with Plans Site A** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include Drawing C-100 dated July 20, 2020 and received by this Department on August 10, 2020.

7. **Future Phases** Prior to development of Muir Woods Sites A and B, the permittee must obtain specific approval of engineered plans for Sites A and B to ensure compliance with the terms and condition of this permit, the approved wetland mitigation plans and the most current Findings Statement for the overall Muir Woods Project issued pursuant to the State Environmental Quality Review Act. The permittee shall submit the engineered plans for the development of Sites A and B for review by the Department simultaneous with submission of such engineered plans to the Town of Amherst. If required by the Department, the permittee shall make any necessary modifications to the engineered plans to ensure compliance with the terms and conditions of this permit, the approved wetland mitigation plans and the most current Findings Statement.

8. **Permit Conditions Prevail over Plans** If any condition of this permit conflicts with the approved plans noted in Condition Number 1, the permit conditions shall prevail over the plans unless specific written approval for such a change is obtained from this Department prior to implementation.

9. **Pre-construction Meeting to Review Permit** Prior to commencing work at the project site, the permittee shall schedule a pre-construction meeting with Department staff (Contact: Mr. David Denk, Regional Permit Administrator, NYSDEC, Division of Environmental Permits, Telephone : 716/851- 7165 and/or Mr. Charles P. Rosenburg, NYSDEC, Division of Fish and Wildlife, Telephone: 716/851-7010) and selected contractors to review the conditions contained in this permit.

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10. Mark Areas of No Disturbance on the Muir Woods Site Grade stakes and/or other appropriate measures (substantial contractor fencing, perhaps in combination with necessary silt fencing) shall be used to ensure that no equipment enters identified areas of no disturbance within the immediate area under construction (i.e.- Site A, Site B, Site C or Site D) on the Muir Woods project site. Boundaries of the on-site mitigation areas shall likewise be marked to define the limits of that work.

11. Install Controls Along Limits of Disturbance Before any soil is disturbed within a specific Site Development Area, as detailed in Condition #6 above, the permittee shall install securely anchored silt fencing and/or continuous staked hay bales along the limits-of-disturbance as shown on the plans or drawings referenced in this permit. Such erosion and sedimentation controls shall be maintained until unpaved portions of the subject site are stabilized by a self-sustaining cover of vegetation that is adequate to prevent erosion and sedimentation on and off the site. Sediment which has accumulated at the controls shall be removed periodically as necessary during the construction period. Before the controls are removed, the permittee shall remove all sediment that has accumulated at the controls.

12. Work Within Ares Depicted on Plans All construction activity, including operation of machinery, excavation, filling, grading, clearing of vegetation, disposal of waste, street paving and stockpiling of material must take place within the Site Development Areas or mitigation areas as depicted on the project plans referenced by this permit. Construction activity is prohibited within areas to be left in a natural condition or locations on the property not within the Site Development Areas or mitigation areas designated by this permit. Disturbance to the wetlands and their regulated 100 foot wide adjacent areas shall be strictly limited to the work areas identified in the plans, and specifically the MAP SHOWING WETLAND IMPACT AREAS - NEW YORK STATE WETLANDS, and APPENDIX M - PROPOSED ON-SITE MITIGATION PLAN.

13. Invasive Species (Non-Native Vegetation) To prevent the unintentional introduction or spread of invasive species, the permittee must ensure that all construction equipment is cleaned of mud, seeds, vegetation and other debris before entering any approved Site Development Areas within State regulated wetlands or their 100 foot wide adjacent areas, as well as all on-site wetland mitigation areas.

14. Prevention of Invasive Species The permittee shall prevent the establishment of invasive species (purple loosestrife, Phragmites, reed canary-grass, Japanese knotweed, glossy buckthorn and common buckthorn) across all disturbed areas within the wetland mitigation area for five growing seasons. If any of these invasive species become established, monitoring and treatment may be extended for an additional 5 years at the Department's discretion.

15. Wetland Mitigation is Mandatory Completion of all freshwater wetland mitigation is mandatory regardless of whether or not construction proceeds to completion. The required mitigation must be completed by the expiration date of this permit. Mitigation will be subject to remediation, if necessary, pursuant to Condition #16 below. All mitigation areas shall be monitored for a period of ten (10) years or until the mitigation is deemed successful by this Department. Monitoring reports shall be prepared for the first four (4) years after construction of the mitigation areas and every other year (years 6, 8 and 10) thereafter. This Department may, at its discretion, modify the 10-year monitoring period and/or monitoring report requirement at any time. Monitoring reports shall be submitted to Mr. Charles P. Rosenburg, Habitat Manager, NYSDEC, Bureau of Ecosystem Health, 270 Michigan Avenue, Buffalo, NY 14203-2915 Telephone: 716/851-7024.

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16. **On-Site Mitigation to be in Accordance with Mitigation Plan** The on-site mitigation shall be in accordance with Appendix M - Proposed On-Site Wetland Mitigation for Muir Woods prepared by Earth Dimensions, Inc. revised May 25, 2009 and with the modifications shown in Exhibit 22 of the July 20, 2020 application binder.

17. **Planting Row of Native Conifers** The permittee shall plant a row of native conifer trees in the location shown on the attached plan. The tree plantings must be a minimum of 6 feet tall, spaced 15 feet apart, and must be planted no later than October 15th following the completion of construction of the adjacent apartment units.

18. **Survival Rate for Mitigation Plantings** The permittee shall prepare a care, maintenance, inspection, and replacement schedule for the tree and shrub plantings described in the mitigation plan to ensure an 85% survival rate for five growing seasons. This condition includes all on-site landscape "buffer" plantings.

19. **Herbicides, Pesticides in Wetland or Adjacent Area** The use of herbicides and other pesticides in State regulated wetlands or their 100 foot wide adjacent areas is a regulated activity and may only be conducted pursuant to a valid Article 33 Pesticides Permit.

20. **Requirement for SPDES General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities** Since development of the Muir Woods site in the Town of Amherst will involve land disturbance of one (1) or more acres, the permittee is required to obtain coverage under State Pollutant Discharge Elimination System (SPDES) General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities. A Notice of Intent (NOI) is required to be sent to NYSDEC, Division of Water, 625 Broadway, 4th Floor, Albany, New York 12233-3505, Telephone: 518/402-8111 and approved before construction commences. Alternatively, an eNOI may be filed electronically as described on the Department's website. The General Permit GP-0-15-002 and NOI form are available on the Department's website at www.dec.state.ny.us.

21. **Visibly Turbid Discharges Prohibited** Visibly turbid discharges from project dewatering operations, excavation and grading activities are strictly prohibited to any "water body" (pond, wetland, stream or water course). Any such discharges shall be (1) retained in an appropriately maintained upland settling basin, filtered through crushed stone, sand, filter fabric fences, hay bales etc., or (2) directed to a grassy area sufficiently distant from any water body to preclude such entry.

22. **Stockpiling of Soil** Stockpiling of excavated soil is prohibited at locations within any portion of the TE-22, TE-23 and TE-34 Wetlands or their regulated 100 foot wide adjacent areas, or within any mapped 100-year floodplain beyond the Site Development Areas or mitigation areas identified in the plans.

23. **Stabilize Disturbed Areas** All areas of soil disturbance resulting from this project shall be seeded with an appropriate perennial grass seed and mulched with straw, or hydro-seeded. Mulch shall be maintained until suitable vegetative cover is established.

24. **Temporary Mulch, Final Seeding** If seeding is impracticable due to the time of year, a temporary mulch shall be applied and final seeding shall be performed at the earliest opportunity when weather conditions favor germination and growth.

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25. **Disposal of Material** Any non-merchantable tree and brush debris, demolition debris, excess construction materials, and/or excess excavated materials shall be immediately and completely disposed of on an approved upland site more than 100 feet from any regulated freshwater wetland. These materials shall be suitably stabilized so as not to re-enter any water body, wetland, or wetland adjacent area; and must be disposed of in accordance with all local, state, and federal statutes, regulations, or ordinances.

26. **Placement of Interpretive Signs Required** Permanent interpretive signs shall be placed at various wetland boundary locations throughout the Muir Woods project site . The permittee shall submit a proposal for the signs to the Department for approval. The interpretive signs shall be a minimum of 12 inches by 12 inches and shall be placed on permanent posts.

27. **Annual Project Inspection / Meeting** The permittee shall schedule an annual inspection/meeting to update Department staff on project progress and compliance with conditions of this permit for the on-site wetland mitigation area.

28. **Wetland Monuments** Monuments shall be placed every 200 feet along the outer edge of the wetland preservation areas. The monuments shall be 30" long, 5/8" rebar and cap embedded flush and in the center of the top exposed surface of concrete in a minimum 4 inch diameter, 4.5 foot long section of PVC Schedule 40 drain pipe filled with concrete, extending vertically1.5 to 2 feet above existing grade at each location. The caps shall say "Conservation Area Marker, Do Not Disturb". These monuments are to be permanently maintained.

29. **Wetland Boundaries** The boundaries of the TE-22, TE-23 and TE-34 Wetlands shall be fixed for the period of this permit (expires November 30, 2024). At that time, new boundary delineations for those wetlands will be required by this Department (to be performed or confirmed by a Department Biologist). Since project activities will be subject to the updated wetland boundary delineations and pertinent regulations at that time, any future permit modification (if necessary) would be reviewed based on the updated delineations and pertinent regulations. As such, modifications to the current project plan may be necessary depending upon the updated wetland delineations and permit regulations in effect at that time.

30. **State Not Liable for Damage** The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

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31. **State May Order Removal or Alteration of Work** If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

32. **State May Require Site Restoration** If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may lawfully require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.

33. **Precautions Against Contamination of Waters** All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. **Water Quality Certification** The authorized project, as conditioned pursuant to the Certificate, complies with Section 301, 302, 303, 306, and 307 of the Federal Water Pollution Control Act, as amended and as implemented by the limitations, standards, and criteria of state statutory and regulatory requirements set forth in 6 NYCRR Section 608.9(a). The authorized project, as conditioned, will also comply with applicable New York State water quality standards, including but not limited to effluent limitations, best usages and thermal discharge criteria, as applicable, as set forth in 6 NYCRR Parts 701, 702, 703, and 704.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. **Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

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The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. **Relationship of this Permit to Other Department Orders and Determinations** Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. **Applications For Permit Renewals, Modifications or Transfers** The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY14203 -2915

4. **Submission of Renewal Application** The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Freshwater Wetlands, Water Quality Certification.

5. **Permit Modifications, Suspensions and Revocations by the Department** The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

a. materially false or inaccurate statements in the permit application or supporting papers;

b. failure by the permittee to comply with any terms or conditions of the permit;

c. exceeding the scope of the project as described in the permit application;

d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;

e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. **Permit Transfer** Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

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NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification
The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit
The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits
The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights
This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

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DEPARTMENT OF THE ARMY
BUFFALO DISTRICT, CORPS OF ENGINEERS
1776 NIAGARA STREET
BUFFALO, NEW YORK 14207-3199

February 25, 2021

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

Mr. Adam Faeth
Development Manager
Ciminelli Muir Woods LLC
350 Essjay Road Suite 101
Williamsville, NY 14221

Dear Mr. Faeth:

This is in reply to your submittal dated July 20, 2020 in which you requested a modification of Department of the Army Permit No. LRB-2001-00067. The project is located on a 326-acre parcel in the Town of Amherst, Erie County, New York. Specifically, you seek authorization to change the proposed use of an area identified as Site A from research and development and flex office space to a mixed-use commercial and residential development. This includes two 4-story mixed-use buildings, two-family townhouses, 6-unit apartment buildings, and a recreational trail to connect Site A with Site B. Wetland impacts have been reduced from 13.01 acres to 6.089 acres in Site A. A reduction of 6.921 acres. In addition, because of the reconfigured project including the significant reduction of wetland impacts, you have requested that the requirement of off-site compensatory mitigation be removed. Lastly, you have requested that 134 acres of the overall Muir Woods site located northeast of Site B, is donated to the Town of Amherst. This area will remain as open space in perpetuity. Permit compliance with mitigation requirements will remain as it currently is on the 134-acre site as a responsibility of Ciminelli Muir Woods LLC.

A Public Notice was published and coordinated with agencies and adjacent property owners using standard procedures. No comments were received as a result of the Public Notice. Based upon our evaluation, I concluded your request will not result in any unacceptable environmental or navigational impacts. Therefore, I am modifying Department of the Army permit No. LRB-2001-00067 to reflect the changes outlined in your request and identified on the attached drawings. All other terms and conditions of Permit No. LRB-2001-00067 remain in full force and effect.

Sheets 1, 2, and 3 of 3 are hereby made part of Permit No. LRB-2001-00067. Sheet 1 of 3 of this modification is an update to Sheets 2, 3, and 5 of 6 of the original permit. Sheet 2 and 3 of 3 of this modification are updates to Sheet 5 of 6 of the original permit. In addition, the following Special Conditions No. 6 and 8 of Permit No. LRB-2001-00067 are modified so that they no

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Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

longer include the requirement of off-site compensatory mitigation, as indicated below with the original and the following modified condition:

1. Special Condition Number 6: As mitigation to compensate for unavoidable and permanent impacts to 17.83 acres of Federal wetlands and 1.29 acres of Federal tributaries (approximately 5227 linear feet), the permittee shall create, at a minimum; 26.91 acres of wetland on-site, and 27.37 acres of wetland off-site. In addition, the permittee shall enhance 4.3 acres of tributary (approximately 2630 linear feet) on-site, all in accordance with the approved on-site and off-site mitigation plan that is made part of this permit. The mitigation area must be constructed in accordance with the approved plan as well as all permit conditions.

   Modified Special Condition Number 6: As mitigation to compensate for unavoidable and permanent impacts to 10.91 acres of Federal wetlands and 1.29 acres of Federal tributaries (approximately 5227 linear feet), the permittee shall create, at a minimum; 26.91 acres of wetland on-site. In addition, the permittee shall enhance 4.3 acres of tributary (approximately 2630 linear feet) on-site, all in accordance with the approved on-site mitigation plan that is made part of this permit. The mitigation area must be constructed in accordance with the approved plan as well as all permit conditions.

2. Special Condition Number 8: The approved compensatory mitigation must be in strict conformance with the plans approved by the Corps of Engineers. Such approved plans were prepared by Ciminelli Development Company, Incorporated and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009, including the Proposed On-Site Wetland Mitigation Plan, and the Proposed Off-Site Wetland Mitigation Plan dated November 16, 2009. The stated mitigation plans are hereby incorporated into and made part of the permit as Attachments 1 and 2. The permittee shall implement the mitigation in accordance with the plans and all permit conditions. Where permit conditions differ from the mitigation plan, the permit conditions shall be the ruling condition.

   Modified Special Condition Number 8: The approved compensatory mitigation must be in strict conformance with the plans approved by the Corps of Engineers. Such approved plans were prepared by Ciminelli Development Company, Incorporated and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009, including the Proposed On-Site Wetland Mitigation Plan dated November 16, 2009. The stated on-site mitigation plan is hereby incorporated into and made part of the permit as Attachments 1. The permittee shall implement the mitigation in accordance with the plans and all permit conditions. Where permit conditions differ from the mitigation plan, the permit conditions shall be the ruling condition.

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Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

Questions pertaining to this matter should be directed to Martin Crosson at 716-879-4346, by writing to the following address: U.S. Army Corps of Engineers, 1776 Niagara Street, Buffalo, New York 14207 or by E-mail at: martin.h.crosson@usace.army.mil

BY AUTHORITY OF THE SECRETARY OF THE ARMY

Steven V. Metivier

For: Mark Scalabrino
Acting Chief, Regulatory Branch

Enclosures

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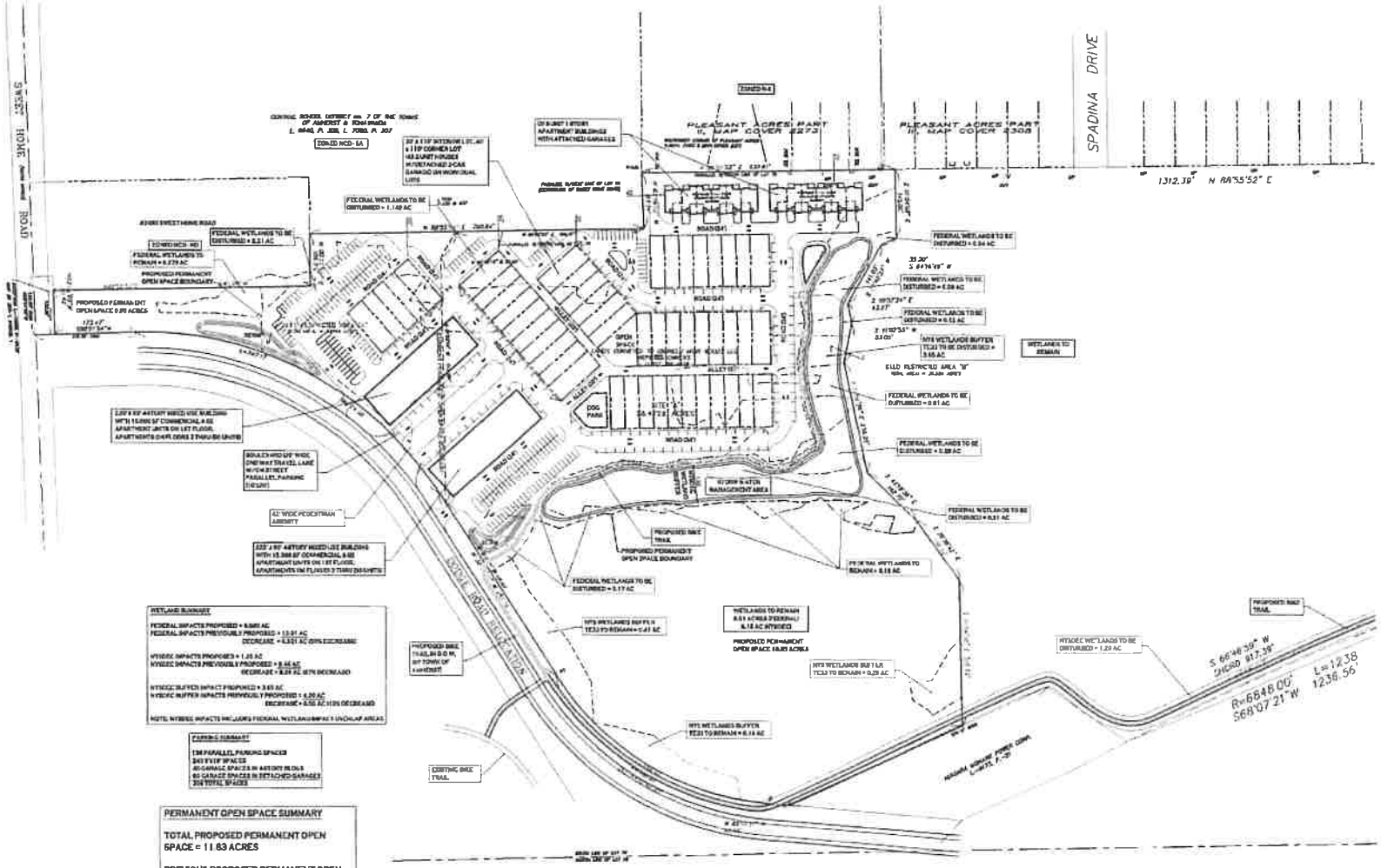


Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 1 of 3

Carmina Wood Morris

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Muir Woods Site "A"
Sweet Home & Dodge Road
Amherst, New York

Date: 7/1/20
Drawn by: C. Wood
Scale: As Noted

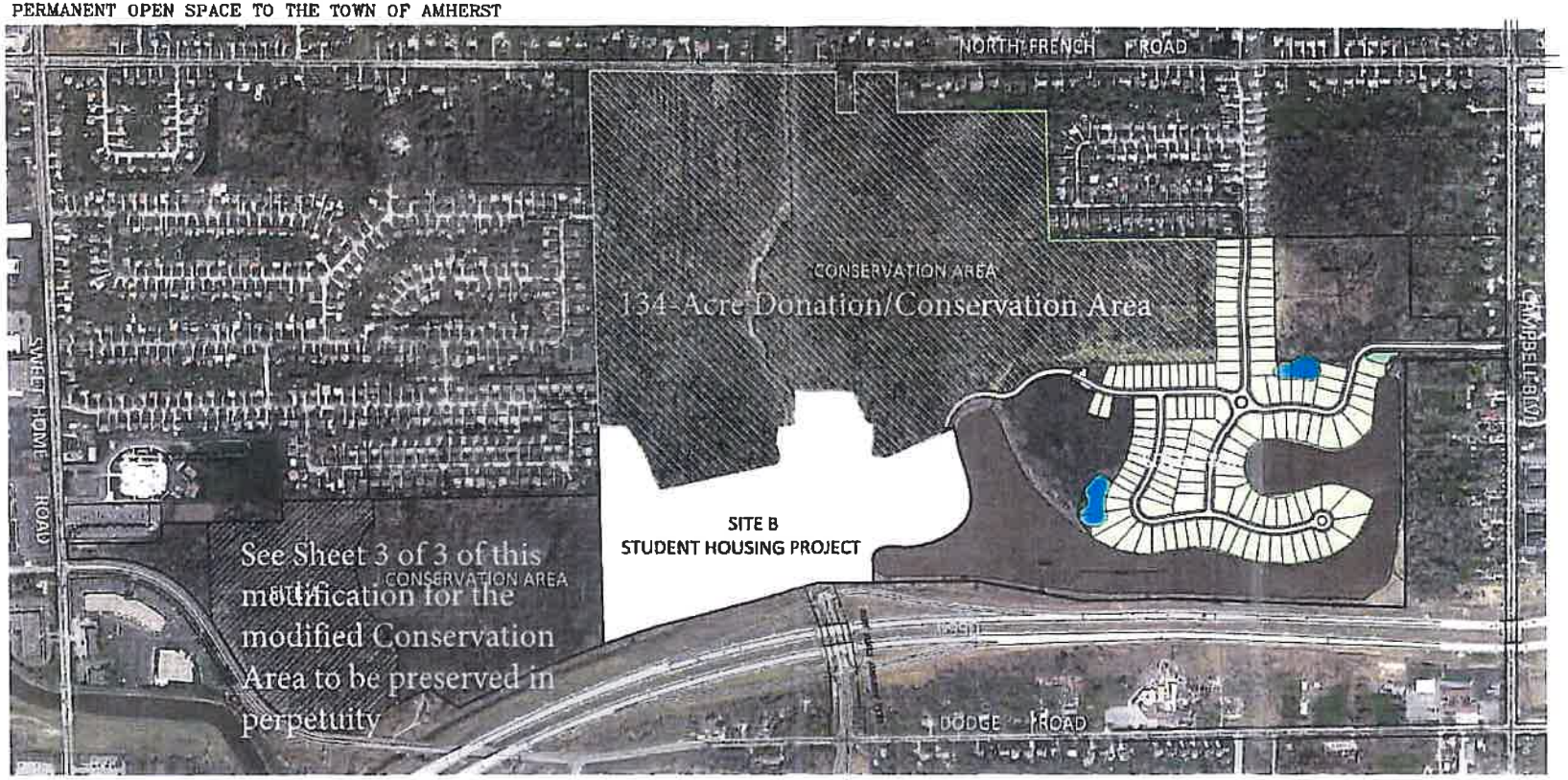
DRAWING NAME:
Concept Site Plan

DRAWING NO.
C-100
Project no.: 10,102

© Carmina Wood Morris DPC

MUIR WOODS OVERALL PROJECT AREA

PROPOSED DONATION OF APPROXIMATELY 134 ACRES OF PERMANENT OPEN SPACE TO THE TOWN OF AMHERST

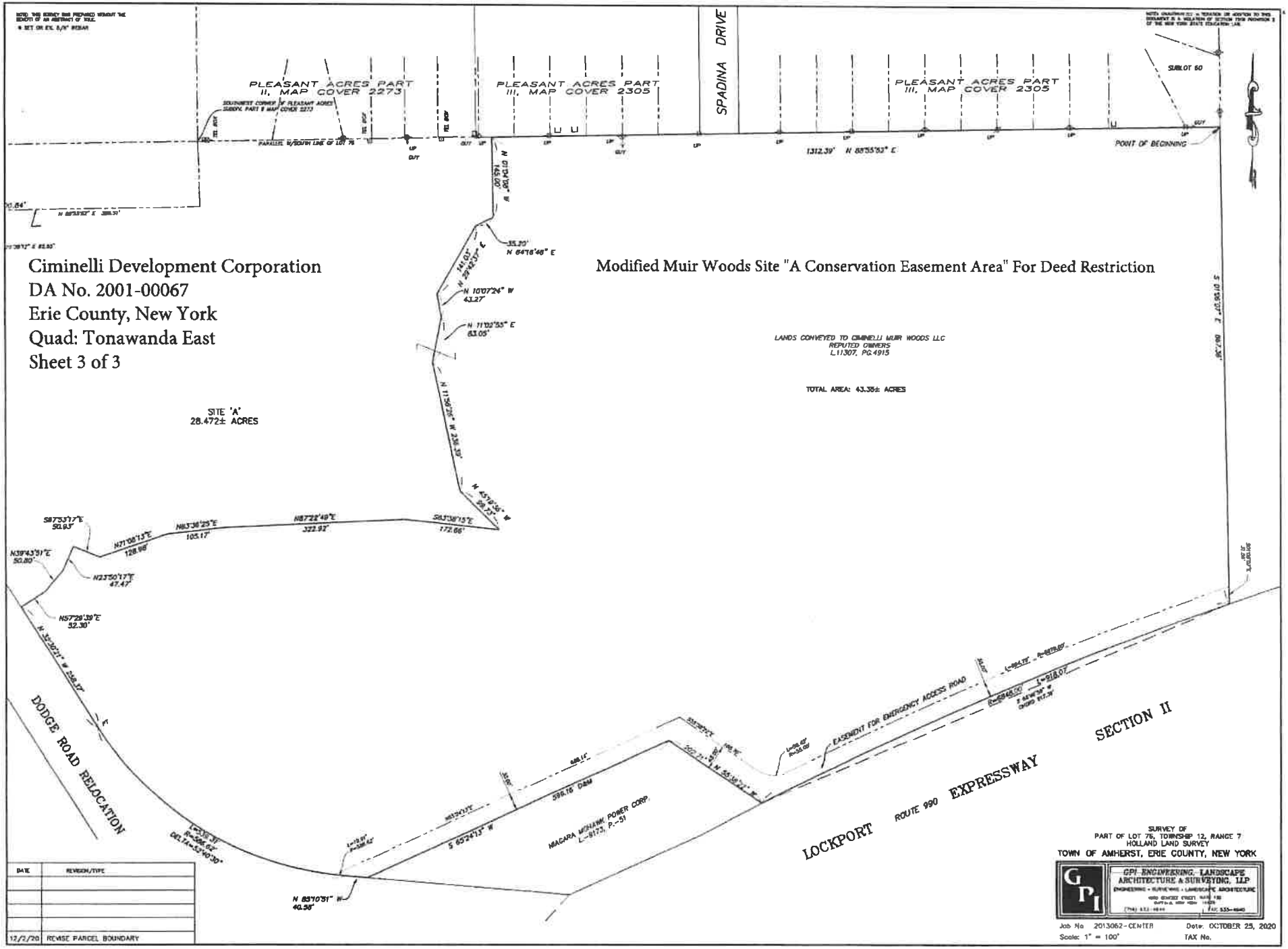


CONSERVATION AREA TO BE DONATED

Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 2 of 3

GPI GREENMAN-PEDERSEN, INC. CONSULTING ENGINEERS

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)


Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 3 of 3
Modified Muir Woods Site "A Conservation Easement Area" For Deed Restriction
PLEASANT ACRES PART II, MAP COVER 2273
PLEASANT ACRES PART III, MAP COVER 2305
PLEASANT ACRES PART III, MAP COVER 2305
SPADINA DRIVE
SUBLOT 60
POINT OF BEGINNING
1312.39' N 88°55'52" E
LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC
REPUTED OWNERS
L.11307, PG.4915
TOTAL AREA: 43.35± ACRES
SITE 'A'
28.472± ACRES
DODGE ROAD RELOCATION
LOCKPORT ROUTE 990 EXPRESSWAY
SECTION II
EASEMENT FOR EMERGENCY ACCESS ROAD
NIAGARA MOHAWK POWER CORP.
L.-8173, P.-51
SURVEY OF
PART OF LOT 76, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK
GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
Job No. 2013062-CENTER
Date: OCTOBER 25, 2020
Scale: 1" = 100'
TAX No.
DATE
REVISION/TYPE
12/2/20
REVISE PARCEL BOUNDARY

Appendix L

NYSDEC Letter of Acknowledgement

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Appendix M

5 Acre Disturbance Letter

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Carmina · Wood · Morris DPC

487 Main Street Suite 600 Buffalo, New York 14203 P: 716.842.3165 F: 716.842.0263 W: cwm-ae.com

March 4, 2021

Vaishali Reberholt, PE, CPESC
Town of Amherst Engineering Department
1100 North Forest Road
Amherst, NY 14221

Re: **Sawyer's Landing**
Amherst, NY

Dear Vaishali:

This letter shall serve as our request to have a total of 5 acres disturbed at one time at the above site. Per the NYSDEC General Permit, our site inspections will increase to 2 times per week when 5 acres is reached and will continue until the time the total disturbance is under 5 acres.

If you have any questions regarding the above, please feel free to contact me at 842-3165 [Ext 103] or via e-mail at cwood@cwm-ae.com.

Sincerely,
Carmina Wood Morris, D.P.C.

Christopher Wood, PE

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Appendix N

Engineer's Report

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Carmina · Wood · Morris DPC

487 Main Street Suite 600 Buffalo, New York 14203 P: 716.842.3165 F: 716.842.0263 W: cwm-ae.com

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

ENGINEER'S REPORT

for

Sawyer's Landing

Dodge & Sweet Home Road
Town of Amherst, Erie County, New York

Prepared for

Sawyer's Landing LLC

c/o Severyn Development
43 Central Ave Suite #300
Lancaster, NY 14086

Prepared by

Carmina Wood Morris, D.P.C.

487 Main Street, Suite 500
Buffalo, NY 14203

Telephone: (716) 842-3165
Fax: (716) 842-0263

February 2021



Table of Contents

Written Engineer's Report

Section 1 - Location & Description
Section 2 - Water Service
Section 3 - Sanitary Sewer Service
Section 4 - Storm Sewer Service

Appendices

Appendix A Sanitary Sewer and Water Demand Calculations

Appendix B Storm Sewer System Drainage Calculations

- Existing Runoff
- Proposed Runoff – East
- Proposed Runoff - West
- Green Infrastructure & Water Quality Calculations

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Section 1 - Location & Description

This project is a development of a 17.4 acre site located on the north side of Dodge Road, west of Sweet Home Road in the Town of Amherst. Both Dodge Road and Sweet Home Road are Erie County roads. Proposed is the construction of a mixed use development to include (2) 4-story buildings with a total of 30,000 sf of commercial and 100 apartments, (47) duplex lots and (2) 1-story apartment buildings with a total of 12 units. A bike trail will be constructed on site, this trail will connect to the existing Town of Amherst bike trail on the south side of Dodge Road. The approximately 1 acre westerly portion will remain undisturbed and be deed restricted as permanent open space. The site is currently undeveloped consisting of woods and overgrown brush/grass. NYSDEC and Federal wetlands were delineated on site by Earth Dimensions, Inc. Approximately 6.1 acres of Federal and 1.2 acres of NYSDEC wetlands have been permitted to be impacted. The proposed site development area to be disturbed for this project is approximately 16.4 acres.

Section 2 - Water Service

A new 8" D.I. combined service will be tapped off the existing 24" D.I.P. ECWA water main along the north side of Dodge Road. Following the tap, the 8" D.I. service will continue north into the site where it will enter into a Hot-Box enclosure. Within the Hot-Box enclosure an 8" meter (by ECWA) and an 8" Watts 957 RPZ will be installed. The service will exit the Hot-Box enclosure and then transition into 8" AWWA C-900 PVC. The service will run throughout the site to provide both domestic and fire service to the proposed buildings. Heat & light for testing will be provided in the area of the meter & RPZ to prevent freezing. Drainage due to testing or failure will be to the exterior through a drain, drainage will be away from the enclosure. The owner will be responsible for keeping the drainage ports clear of snow and debris. A total of 4 (four) proposed fire hydrants shall be installed around the site to provide fire protection coverage. There are no existing water services to this site, and therefor none to be killed/abandoned per ECWA requirements.

Domestic Summary:

Peak Operating Demand:	140.6 gpm
Water Main:	24" on Dodge Road
Static Pressure:	105 psi (per ECWA, 98 psi residual)
Friction Loss:	0.0 psi
Loss through meter/RPZ:	13.0 psi
Elevation Loss:	0.0 psi
Pressure after RPZ & Meter:	92 psi
Pressure at 4th floor:	77 psi

Repairs to all devices will be made during off hours, dual backflow preventers are not required. The site is not located in a 100-year flood plain. Disinfection of the

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

water service following installation will be continuous feed, according to AWWA C-651, latest revision.

Section 3 - Sanitary Sewer Service

The proposed sanitary sewer service will connect to the existing 60" sanitary sewer (peanut line) located on the south side of Dodge Road. In order to connect to this sewer, a public sewer extension along the south side of Dodge Road will be required. This public extension will consist of a total of 643 LF of 8" SDR-35 PVC at a minimum slope of 0.4%.

The proposed private on site sewer mains will consist of 8" SDR-35 PVC at a minimum slope of 0.4%. Each of the proposed commercial buildings and apartment buildings will have a 6" SDR-35 PVC sanitary sewer lateral at a minimum slope of 1.0% tied into the private main. The duplex units will have a 4" SDR-35 PVC sanitary sewer lateral at a minimum slope of 1.0% tied into the private main. The 8" private main will tie into the proposed public extension on the south side of Dodge Road across from the SE portion of the project site.

A downstream sanitary sewer capacity analysis (DSCA) is required to be prepared for the site given the flows will exceed 2,500 gpd. This report is included in Appendix A.

Design Parameters

Housing: use 110/gpd/bedroom
Q = 412 bedrooms x 110 gpd/bed = 45,320 gpd

Commercial: use 0.1 gpd/sf
Q = 20,000 sf x 0.1 gpd/sf = 2,000 gpd

use 15 gpd/employee
Q = 20 employees x 15 gpd/emp = 300 gpd

Restaurant: use 35 gpd/seat
Q = 100 seats x 35 gpd/seat = 3,500 gpd

Total = 51,120 gpd (average)

using a 3.97 PF (see appendix A for calc)

Total = 51,120 x 3.97 = 202,908 gpd = 140.91 gpm = 0.314 cfs

The hydraulic loading rates per "Design Standard for Wastewater Treatment Works" 2014, NYSDEC. See attached Sanitary Sewer & Water Calculations for additional information.

I/I Mitigation:

Peak Flow = 140.91 gpm

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

4:1 offset = 140.91 x 4 = 563.63 gpm
Mitigation Credit = $250/gpm
I/I Mitigation = 563.63 gpm x $250/gpm = $140,908.66
Refer to Appendix A for additional information.

Section 4 - Storm Sewer Service

The existing site is generally flat and slopes west with portions sloping east. The portion that slopes west settles in a low area and once the capacity of that area is exceeded, sheet flow continues towards Sweet Home Road and is collected by an existing 12" pipe on the north side of Dodge Road. This pipe flows to the Erie County system on Sweet Home Road. The portion that flows east flows to the offsite wetlands.

Currently Dodge Road does not have a drainage system. A series of catch basins and pipes will be installed in the green area on the north side of Dodge Road to collect the road drainage. The west portion of this system will connect to the existing closed drainage system on Sweet Home Road. The east portion will discharge to the Ellicott Creek diversion channel using and existing discharge point. This new system will also convey the proposed discharge from the site as described below.

The proposed onsite storm sewer system consists of smooth interior and perforated HDPE pipes connected by a series of catch basins, manholes and yard drains. The site is split into a storm water management area on the east and west sides.

West Side

The west side of the site has (2) bioretention areas which portions of the westerly area will discharge to. These bioretention areas along with the remainder of the west portion of the site will discharge to the underground detention area. Note that the yard drains installed along the north property line discharge to the underground detention area. An outlet structure in the SW portion of this area will control runoff to at or below existing runoff flow rates. The discharge from the outlet control structure will discharge to the new system on Dodge Road which flows to the Sweet Home Road system.

Underground Detention Summary

(286) ADS Stormtech SC-740 chambers
Top of stone elev. = 573.00
Top of chamber elev. = 572.50
Bottom of chamber elev. = 570.00
Bottom of stone elev. = 569.50
Total storage = 18,574 CF

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Sawyer's Landing
3/4/2021
4 of 5

Event	Ex. Discharge	Pro. Discharge	Elev.
1 yr	0.87 cfs	0.33 cfs	570.29
2 yr	1.34 cfs	0.68 cfs	570.46
5 yr	2.14 cfs	1.05 cfs	570.79
10 yr	2.94 cfs	1.28 cfs	571.13
25 yr	4.34 cfs	1.61 cfs	571.73
50 yr	5.69 cfs	3.61 cfs	572.23
100 yr	7.33 cfs	4.83 cfs	572.92

East Side

The east side of the site has a bioretention area and wet detention pond which this portion of the site discharges to. The NE portion of the site discharges to a forebay which spills into the main micropool portion of the wet detention basin. The SE portion of the site discharges to the bioretention area which also spills into the main micropool portion of the site. An outlet control structure is located in the SE portion of the micropool and controls the discharge from this storm water management area. Spillways are also located on the east portion of the micropool which will discharge to the existing wetlands to the east in order to not cut off all flow from this site into this area. The discharge from the outlet control structure will discharge to the new system on Dodge Road which flows to the Ellicott Creek diversion channel.

The bioretention areas and wet detention pond for the project area are sized to provide 100% of the required Runoff Reduction Volume (RRv) and Water Quality Volume (WQv) treatment for the overall site in accordance with Chapter 4 of the NYSDEC Stormwater design manual. The soils in the vicinity of the bioretention areas are mainly USDA hydrologic group 'D' and therefore the system will be installed with underdrains per NYSDEC requirements. The bioretention areas will consist of 6" and 8" perforated HDPE underdrains in 12" of drainage gravel, followed by filter fabric and 18" minimum of planting soil. Overflow yard drains will be installed to allow 6" maximum temporary ponding for RRv treatment. The east bioretention area (area #3) spills into the wet detention pond and the underdrain pipe ties together with the pond discharge and flows to Dodge Road. The east bioretention areas (areas #1 & #2) have a catch basin to act as the spillway and this catch basin and the underdrain pipes discharge to the underground detention area.

Storm Water Management Area Summary

Forebay
Top of basin elev. = 576.80
Permanent water elev. = 575.00
Aquatic bench elev. = 574.50
Bottom of basin elev. = 569.00

Micropool
Top of basin elev. = 576.80
Permanent water elev. = 575.00
Aquatic bench elev. = 574.50
Bottom of basin elev. = 563.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Sawyer's Landing
3/4/2021
5 of 5

Overall Storm Water Summary

WQv Provided = 152,678 cf (pond)
WQv Provided = 6,948 cf (bioretention)
WQv Provided = 159,626 cf (total)

Bioretention Area Summary:

Area	Rim Elev.	Bottom Elev.	Area
1	574.50	574.00	2,300 sf
2	574.50	574.00	2,600 sf
3	575.50	575.00	11,000 sf
		Total Provided =	15,900 sf

Water Quality Summary:
WQv req'd = 28,804 cf (0.661 ac-ft)
RRv min. req'd = 5,518 cf (0.127 ac-ft)
RRv provided = 8,662 cf (0.199 ac-ft)
WQv provided = 159,626 cf (3.665 ac-ft)
Total RRv + WQv provided = 8,662 cf + 159,626 cf = 168,287 cf (3.868 ac-ft)

Detention: Comparison of the existing 1-year vs. the proposed 1-year runoff
Comparison of the existing 10-year vs. the proposed 10-year runoff
Comparison of the existing 100-year vs. the proposed 100-year runoff

Storm pipes: 10-year storm

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Appendix A

Sanitary Sewer and Water Demand Calculations

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

CARMINA WOOD MORRIS, D.P.C.
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 21.011 Date: 2/19/2021
Project Name: Sawyer's Landing
Project Address: Sweet Home Road and Dodge Road - Amherst, NY
Subject: Sanitary Sewer Demand Calcs
Sheet: 1 of 1

1.I

Sanitary Sewage Demand Calculations:

West - Mixed Use Buildings							
0.1	gal/d/sf	x 20,000	sf	=	2,000	gpd	*use 0.1 gallons per day per square foot
35.0	gal/d/seat	x 100	seats	=	3,500	gpd	*use 35 gallons per day per seat (fast food)
15	gal/d/employee	x 20	employees	=	300	gpd	*use 15 gallons per day per employee
West - Apartments							
220	gal/d/unit	x 100	units	=	22,000	gpd	*use 220 gallons per day per 2-bedroom unit
North - Apartments and Duplex Buildings							
220	gal/d/unit	x 94	units	=	20,680	gpd	*use 220 gallons per day per 2-bedroom unit
220	gal/d/unit	x 12	units	=	2,640	gpd	*use 220 gallons per day per 2-bedroom unit
Total Site Sanitary Demand:				=	51,120	gpd	
				=	0.051	MGD	
Find Peak Sanitary Demand:				=	0.079	cfs	

Peaking Factor based on Population:
Total demand: 51,120 gpd / 100 gpcd = 511 per capita

Population (P) = 511 people

Peaking Factor : $(18 + \sqrt{P}) / (4 + \sqrt{P})$ where P is in thousands

Peaking Factor = 3.97

Peak Sanitary Demand = 51,120 x 3.97 = 202,908 gpd
= 0.203 MGD
= 0.314 cfs

Required Infiltration and Inflow Mitigation:

Peak Sanitary Flow	=	202,908 gpd	=	140.91	gpm
4:1 offset flow per NYSDEC requirements	=	140.9 x 4	=	563.63	gpm req'd
Mitigation Credit	=	$250 / gpm			
Mitigation Agreement Amount	=	**$140,908.66**			

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

CARMINA WOOD MORRIS, D.P.C.
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 21.011 Date: 2/19/2021
Project Name: Sawyer's Landing
Project Address: Sweet Home Road and Dodge Road - Amherst, NY
Subject: Sanitary Sewer & Water Demand Calcs
Sheet: 2 of 2

Water Demand Calculations (domestic):

Site

51,120 gpd x 1.1 = 56,232 gpd *use 110% of sewage demand

*use 1.8 peaking factor and assume a 12 hour day

56,232 gpm x 1day/12hr x 1hr/60min = 78.10 gpm

78.10 gpm x 1.8 = 140.58 gpm Q_{peak}

Headlosses:

Q_{peak} = 140.58 gpm
Pipe = 8 inch Ductile Iron C = 140
Length = 20 LF (approx. distance from tap to RPZ)

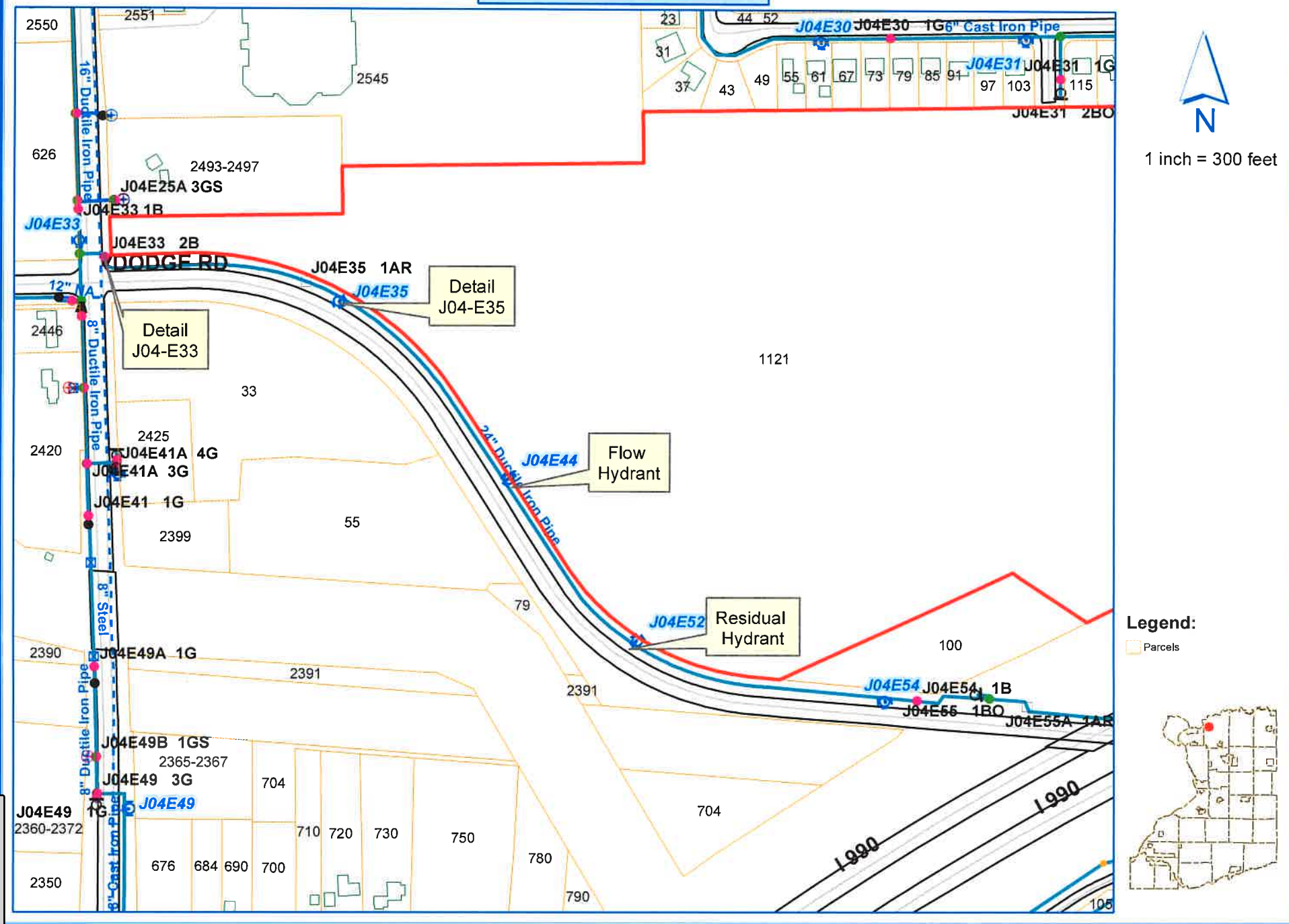
$$H_L = \frac{10.44\, L\, Q^{1.85}}{C^{1.85}\, D^{4.866}} = \frac{10.44(20)(21.51)^{1.85}}{(140)^{1.85}\,(6)^{4.866}} = 0.01 \text{ ft} = 0.00 \text{ psi}$$

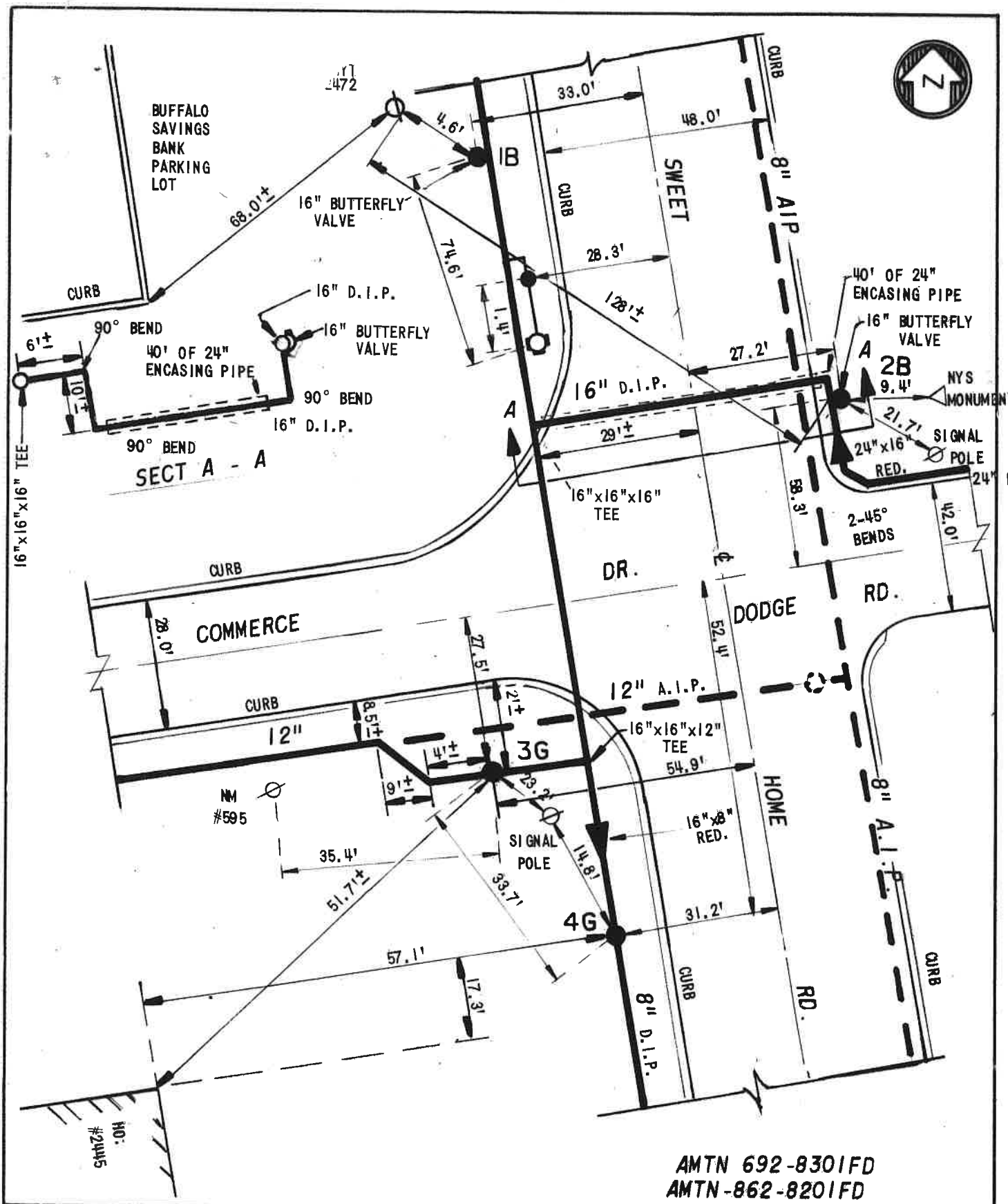
Δ elev = 0 ft = 0.00 psi
Loss through meter = 1 psi
Loss through RPZ = 12 psi
Total Losses = 13.0 psi
Static Pressure = 105 psi (per ECWA - residual pressure 98 psi)
Residual Pressure Following RPZ = 105 - 13.0 = 92.0 psi (available after rpz & meter)

Residual Pressure 30" above 4th Floor
Δ elev = 35 ft = 15.16 psi
Residual Pressure 30" above 4th Floor = 76.8 psi

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

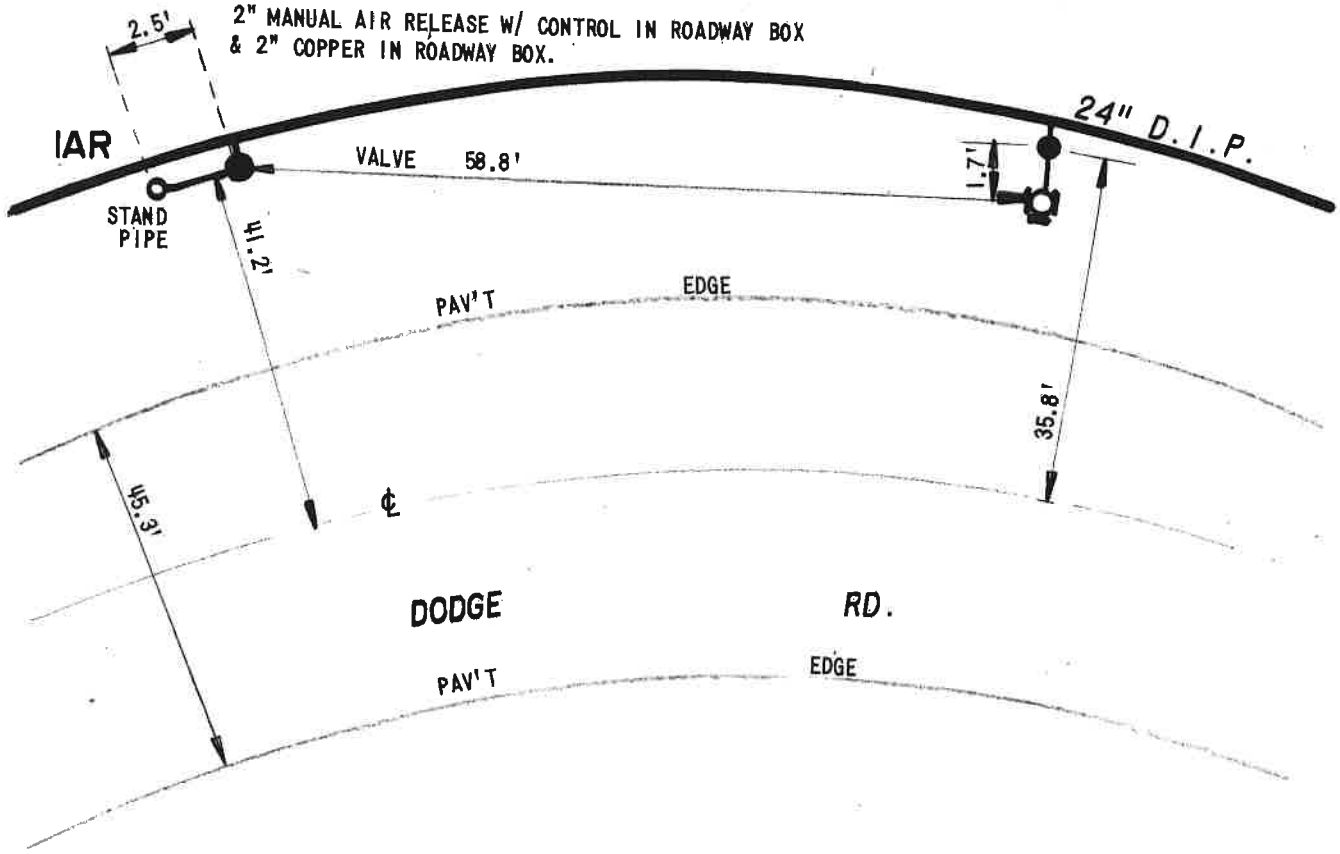
1121 Dodge Rd., AMTN





ERIE COUNTY WATER AUTHORITY, BUFFALO, NEW YORK	REVISED DR. BY: RLS DATE: 6-30-06 NOT TO SCALE	TOWN OF AMHERST W.D 15C	J04-E33 DETAIL SHEET NO.

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)



AMTN-692-8301-FD

SHEET 1

ERIE COUNTY WATER AUTHORITY, BUFFALO, NEW YORK	REVISED DR. BY: RLS DATE: 6-30-06 NOT TO SCALE	TOWN OF AMHERST W.D. 15C	J04-E35 DETAIL SHEET NO.

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

AMHERST
Size of Main/Branch: 24"/6" Fire District: 22028 GETZVILLE FD 11 Water District: 315 AMHERST DISTRICT 15C

Performed By: JRS & DPZ

Comments: HYDRANT FLOW TEST REQUESTED BY BILL GROFF
PRATT & HUTH, PHONE: 633-4844, FAX: 633-4940

Dischrge Coef: .90 Elvtn Usgs(ft): Static(psi): 105 Residual(psi): 98 Required Residual Pressure(psi): 20
Gallons Used..: 7,680 Total Flow(gpm): 2,558 Flow at Reqd Resid Pressure: 9,850

Flow Hydrants:

C	Flow Hyd	Flow Hydrant Address	Main/Brnch	Nzle	Size	Pitot	Flow	Comments
_	J04 E44	DODGE RD	24"/6"	1:	2.50	58.0	1,279	
		2ND HYD E/O SWEET HOME RD		2:	2.50	58.0	1,279	
				3:			Tot Flow:	2,558

Bottom

I=Flow Hydrant Inquiry
ENTER=Continue F3=Exit F6=Maintain Test F7=Test Hydrant Inquiry F15=Print Test Information

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Downstream Sewer Capacity Analysis

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Muir Woods Site

Sweet Home & Dodge Road, Amherst New York

Downstream Sewer Capacity Analysis Report

Project Description

This new site development project will consist of the construction of apartment buildings, duplexes, office, restaurant, and retail space. Construction will also include on-site utility, landscaping improvements, and associated roads and parking. The overall acreage of the site is 28.47 acres. The site is located at Sweet Home Road and Dodge Road on a western portion of parcel 40.08-3-13.1 in the Town of Amherst.

The proposed sewer for this project will tie into the existing 60" RCP Peanut line along Dodge Road. Sewage will then be conveyed west and then eventually north through the 84" West Side Interceptor to the Town of Amherst Wastewater Treatment Facility #16.

Node 1 – Dodge Road (60"):

Existing Peak Flow measured (wet weather event)	=	40.602 cfs (21.851 mgd)*
Proposed Muir Woods Peak Flow	=	0.337 cfs **
Proposed Peak Flow	=	40.939 cfs

Theoretical capacity of existing 60" RCP pipe @ 0.07% = 81.366 cfs

Conclusion: The proposed peak flow is less than the capacity of the 60" pipe, therefore there is sufficient capacity. At no time during the monitoring did the flow depth exceed the pipe diameter at Node 1 of the downstream monitoring points during the rain events monitored.

Node 2 – North Ellicott Creek Rd (60")

Existing Peak Flow measured (wet weather event)	=	99.524 cfs (53.561 mgd)*
Proposed Muir Woods Peak Flow	=	0.337 cfs **
Proposed Peak Flow	=	99.861 cfs

Theoretical capacity of existing 60" pipe = 82.873 cfs (44.60 mgd)

Conclusion: Current flows the day following the 1.21" rainfall event exceeded the capacity of the existing 60" sewer pipe, but at no time during the monitoring period did the flow at any point slow or stall which would have caused a backup or flooding at the manhole. In addition, Sanitary Sewer Overflow (SSD) did not occur. I/I mitigation shall be required for the contribution proposed for this project.

Notes:

Pipe slopes, sizes and materials provided by Town of Amherst Engineering Department Sewer Maintenance Division

* Converted from measurements in TECSmith report dated 8/12/20

** See Sanitary Sewage Demand Calculations

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Node 3 – Sweet Home (66")

Existing Peak Flow measured (overall)	=	69.058 cfs (39.601 mgd)*
Proposed Muir Woods Peak Flow	=	0.337 cfs **
Proposed Peak Flow	=	69.395 cfs

Capacity of existing 66" pipe = 106.657 cfs (57.40 mgd)

Conclusion: The proposed peak flow is less than the capacity of the 66" pipe, therefore there is sufficient capacity. At no time during the monitoring did the flow depth exceed the pipe diameter at Node 3 of the downstream monitoring points during the rain events monitored.

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Notes:

Pipe slopes, sizes and materials provided by Town of Amherst Engineering Department Sewer Maintenance Division

* Converted from measurements in TECSmith report dated 8/12/20

** See Sanitary Sewage Demand Calculations

Location Map

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Muir Woods Site - Sweet Home and Dodge Rd



8/18/2020, 8:51:26 AM

Parcels

Municipal Boundaries

1:9,028

0 300 600 1,200 ft

0 90 180 360 m

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, :GIS .gov

Sanitary Demand Calculations

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

CARMINA WOOD MORRIS, D.P.C.
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 19.192 Date: 8/24/2020
Project Name: Muir Woods
Project Address: Sweet Home Road and Dodge Road - Amherst, NY
Subject: Sanitary Sewer Demand Calcs
Sheet: 1 of 1

1.I

Sanitary Sewage Demand Calculations:

West - Mixed Use Buildings							
0.1 gal/d/sf	x	15,000	sf	=	1,500	gpd	*use 0.1 gallons per day per square foot
35.0 gal/d/seat	x	200	seats	=	7,000	gpd	*use 35 gallons per day per seat (fast food)
15 gal/d/employee	x	20	employees	=	300	gpd	*use 15 gallons per day per employee
West - Apartments							
220 gal/d/unit	x	110	units	=	24,200	gpd	*use 220 gallons per day per 2-bedroom unit
North - Apartments and Duplex Buildings							
220 gal/d/unit	x	90	units	=	19,800	gpd	*use 220 gallons per day per 2-bedroom unit
220 gal/d/unit	x	12	units	=	2,640	gpd	*use 220 gallons per day per 2-bedroom unit

Total Site Sanitary Demand: = 55,440 gpd
= 0.055 MGD
Find Peak Sanitary Demand: = 0.086 cfs

Peaking Factor based on Population:
Total demand: 55,440 gpd / 100 gpcd = 554 per capita

Population (P) = 554 people

Peaking Factor : $(18 + \sqrt{P}) / (4 + \sqrt{P})$ where P is in thousands

Peaking Factor = 3.95

Peak Sanitary Demand = 55,440 x 3.95 = 219,029 gpd
= 0.219 MGD
= 0.339 cfs

Required Infiltration and Inflow Mitigation:

Peak Sanitary Flow = 219,029 gpd = 152.10 gpm

4:1 offset flow per NYSDEC requirements = 152.1 x 4 = 608.41 gpm req'd

Mitigation Credit = $250 / gpm

Mitigation Agreement Amount = $152,103.30

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

TECSmith Monitoring Report

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Date	Node 1			Node 2			Node 3			Rain:
	Dodge Rd 60" (60")			North Ellicott Creek Rd. (60")			Sweethome 66 (66")			
	FLOW (GAL x 1,000)	PEAK FLOW (MGD)	PEAK LEVEL (IN)	FLOW (GAL x 1,000)	PEAK FLOW (MDG)	PEAK LEVEL (IN)	FLOW (GAL x 1	PEAK FLOW (MDG)	PEAK LEVEL (IN)	(inches)
7/8/2020	4186.283	8.161	14.473	7265.409	8.598	16.319	4800986323.2	8.025	19.770	0
7/9/2020	6195.964	8.253	14.556	7387.504	8.661	16.273	6645115872.8	8.044	19.590	0
7/10/2020	6231.790	8.143	14.521	7625.321	9.362	16.873	6667623530.3	8.079	19.790	0
7/11/2020	10033.769	21.851	39.526	20780.607	53.561	76.701	10540796680.3	28.096	66.000	1.21
7/12/2020	9184.078	14.374	22.474	11292.759	17.205	23.420	9306202243.7	13.750	25.810	0
7/13/2020	7070.585	9.115	15.714	11243.925	29.525	33.420	7609650153.8	9.108	20.730	0.47
7/14/2020	6974.494	9.101	15.869	9685.896	13.288	20.168	7274548275.2	9.280	20.720	0
7/15/2020	6591.385	8.845	15.512	8174.879	9.503	17.013	6975378581.5	8.831	20.460	0
7/16/2020	9916.241	20.532	27.213	18886.012	44.070	43.892	12067803314.2	39.601	32.990	0.86
7/17/2020	10096.644	16.639	23.493	12451.728	18.137	24.043	10307997546.4	14.224	26.250	0.03
7/18/2020	8256.593	10.757	17.307	9766.538	11.556	18.960	8664937727.1	10.772	22.350	0
7/19/2020	7589.558	11.382	18.060	10166.964	17.245	24.128	8331695207.5	24.048	23.030	0.21
7/20/2020	7269.757	9.235	16.144	8853.911	10.160	18.118	7730113857.4	9.669	20.890	0
7/21/2020	6681.658	8.895	15.365	8179.097	9.991	17.880	1603593925.8	9.197	20.330	0
7/22/2020	8633.887	15.390	22.402	15950.443	42.105	43.300	16326027301.0	29.736	27.790	0.42
7/23/2020	7327.211	9.216	16.027	9664.310	11.130	18.508	6916249204.1	19.172	20.800	0
7/24/2020	6764.464	8.779	15.317	8434.117	9.760	17.405	8296938032.2	15.723	20.360	0
7/25/2020	6426.122	8.861	15.407	8159.333	9.969	17.608	6871634377.4	12.359	20.320	0
7/26/2020	6409.255	8.667	15.297	8027.060	9.774	17.372	6816880470.0	9.106	20.360	0
7/27/2020	6487.339	8.269	15.107	7871.954	9.244	16.902	6854655651.9	8.336	20.100	0.03
7/28/2020	6298.427	8.016	14.780	7696.223	9.134	16.757	6692447010.5	8.080	19.740	0.01
7/29/2020	8340.302	16.584	23.592	12134.192	36.728	39.530	9170179156.5	20.222	29.310	0.18
7/30/2020	6969.955	8.785	15.769	8383.294	9.650	17.268	7523641190.2	9.272	20.460	0
7/31/2020	6450.443	8.415	15.050	7762.583	9.287	16.964	7145517425.5	9.079	20.020	0
8/1/2020	6190.340	8.162	14.979	7900.808	9.762	17.305	6954528215.3	13.188	20.010	0
8/2/2020	7093.727	10.270	17.033	9801.968	15.922	22.240	7827565960.7	17.585	22.270	0.29
8/3/2020	6767.967	8.538	15.346	8117.853	9.663	17.172	7374180322.3	9.104	20.460	0
8/4/2020	6796.062	10.365	17.180	8920.731	24.649	28.896	7717920498.0	19.489	24.920	0.9
8/5/2020	4464.403	13.072	20.203	5583.196	26.407	31.097	3896577334.0	14.011	25.600	0
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Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

Date: August 12, 2020

SANITARY SEWER FLOW CAPACITY STUDY – Summary Review

Prepared For: Muir Woods Capacity Analysis

Christopher Wood
487 Main Street, Suite 600
Buffalo, New York 14203
P: (716) 842-3165
F: (716) 842-0263

Project Name: Muir Woods Capacity Analysis

Flow Monitoring Period: July 8, 2020 to August 5, 2020

Rain Events (> 0.5-inches) Monitored: July 11 (1.21"), July 16 (0.86"), and August (0.90")

Number of Monitoring Nodes: Three (3) downstream manholes

Node Locations and Descriptions:

- Node 1 Dodge Rd 60" (60")
- Node 2 North Ellicott Creek Rd. (60")
- Node 3 Sweethome 66 (66")

Summary Conclusion:

Based on the data presented in this report, specifically the flow depth measurements recorded (see graphs below)

- At no time did the flow depth exceed pipe diameter at Node 1 and Node3 of the downstream monitoring points during the rain events monitored.
- One time the flow depth exceed pipe diameter at Node 2 of the downstream monitoring points during the rain events monitored.
- At no time during the monitoring period did the flow at any point slow or stall which would have caused a backup or flooding at the manhole.

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

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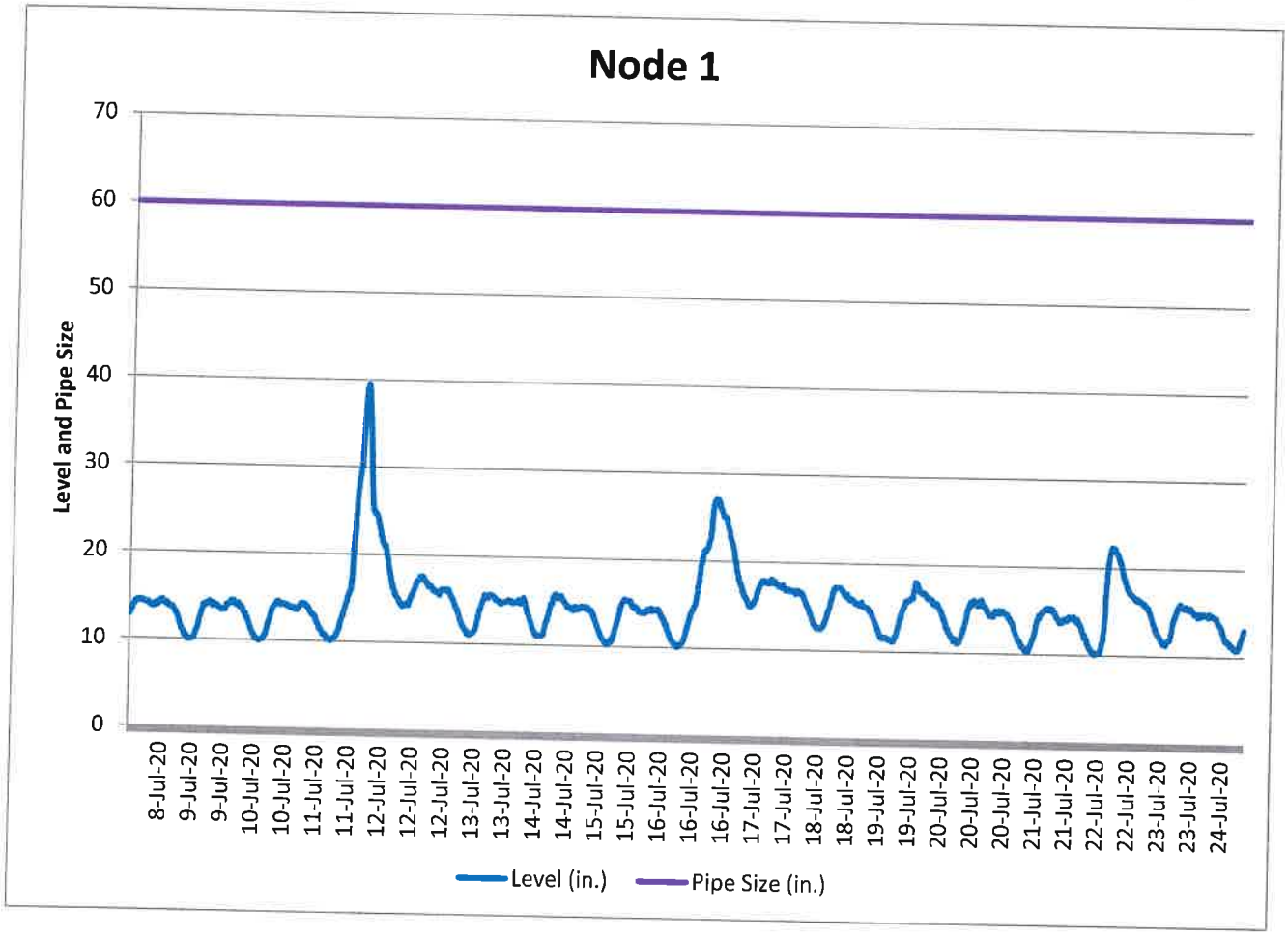
Fax: 716-687-1418

Depth of Flow Capacity Summary:

Depth of flow capacity is based on diameter of pipe. See graphs below.

- At no time during the monitoring period did depth of flow exceed pipe diameter at Node 1.



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

TECsmith

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PO Box 383
Elma, New York 14059-0383
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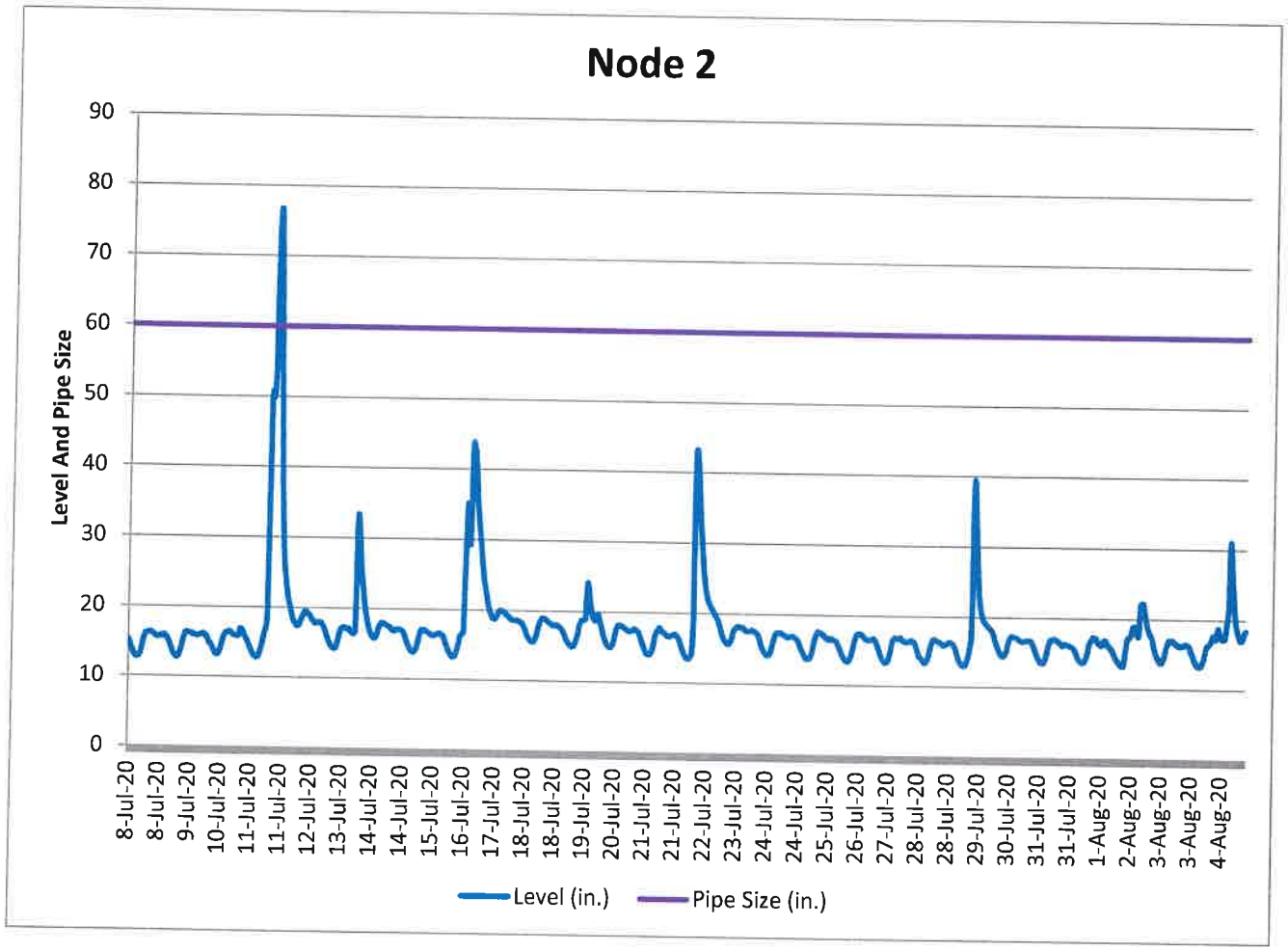
Fax: 716-687-1418

- One time during the monitoring period did depth of flow exceed pipe diameter at Node 2.

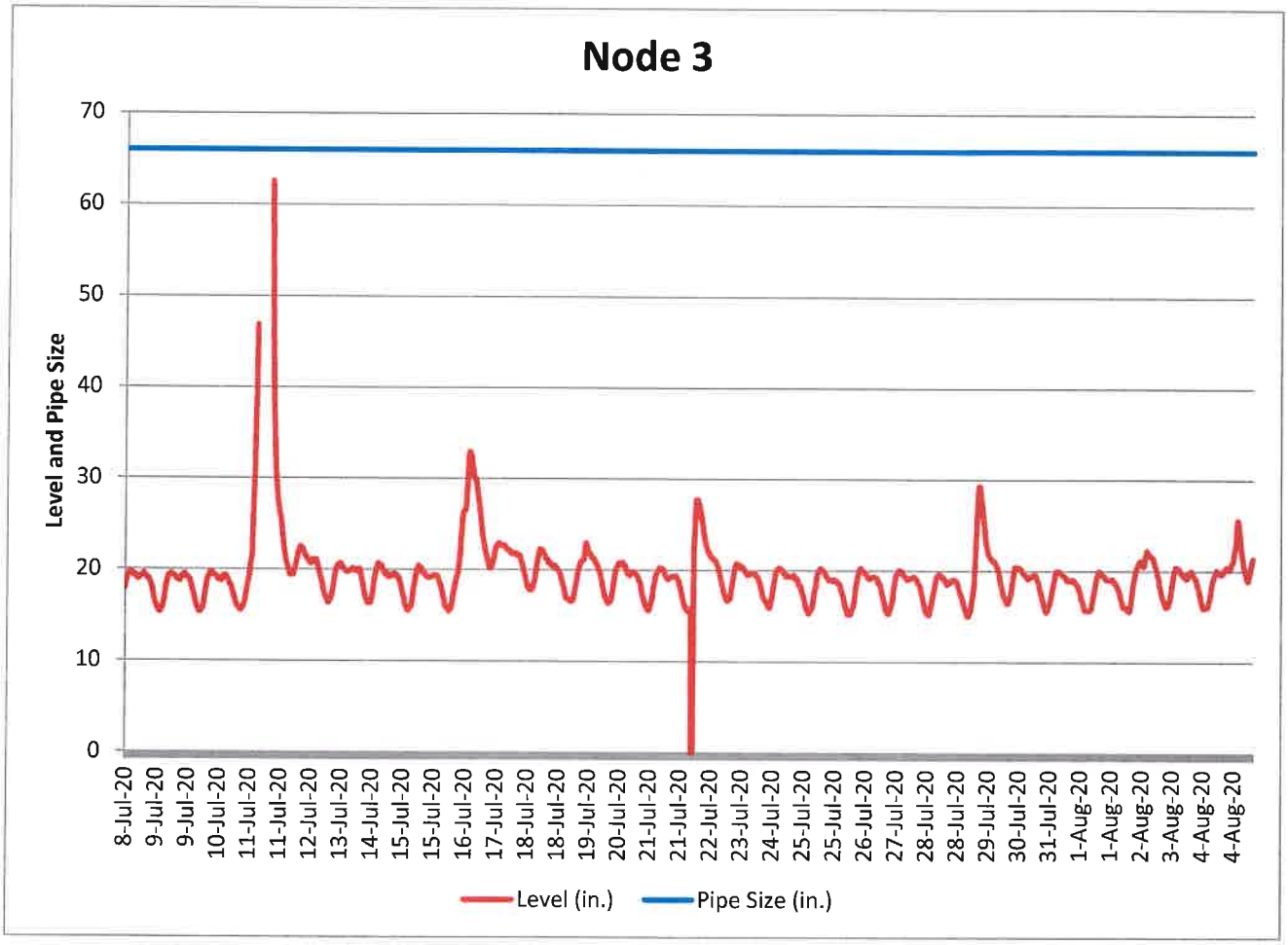


Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

- At no time during the monitoring period did depth of flow exceed pipe diameter at Node 3.



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

(T) Amherst Engineering Department Sewer Maintenance Division Downstream Routing Map

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Town of Amherst Engineering Department
Sewer Maintenance Division

Main Sanitary Sewer Interceptors

DOWNSTREAM SEWER

AMHERST PEANUT LINE & WEST SIDE INTERCEPTOR

460 Dodge Road - Proposed 26 Unit Apartment Building - Amherst Consolidated Sewer District

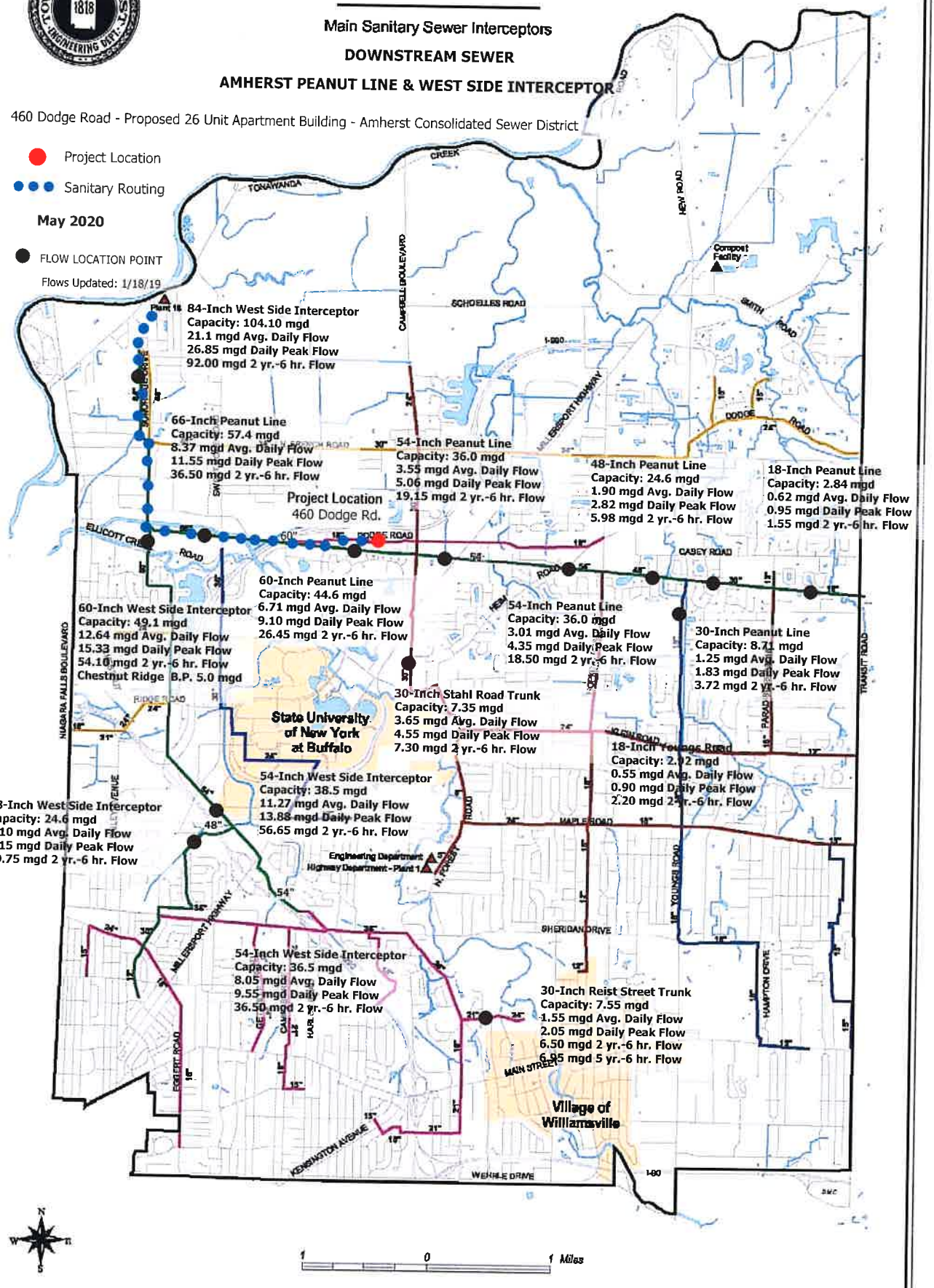
Project Location

Sanitary Routing

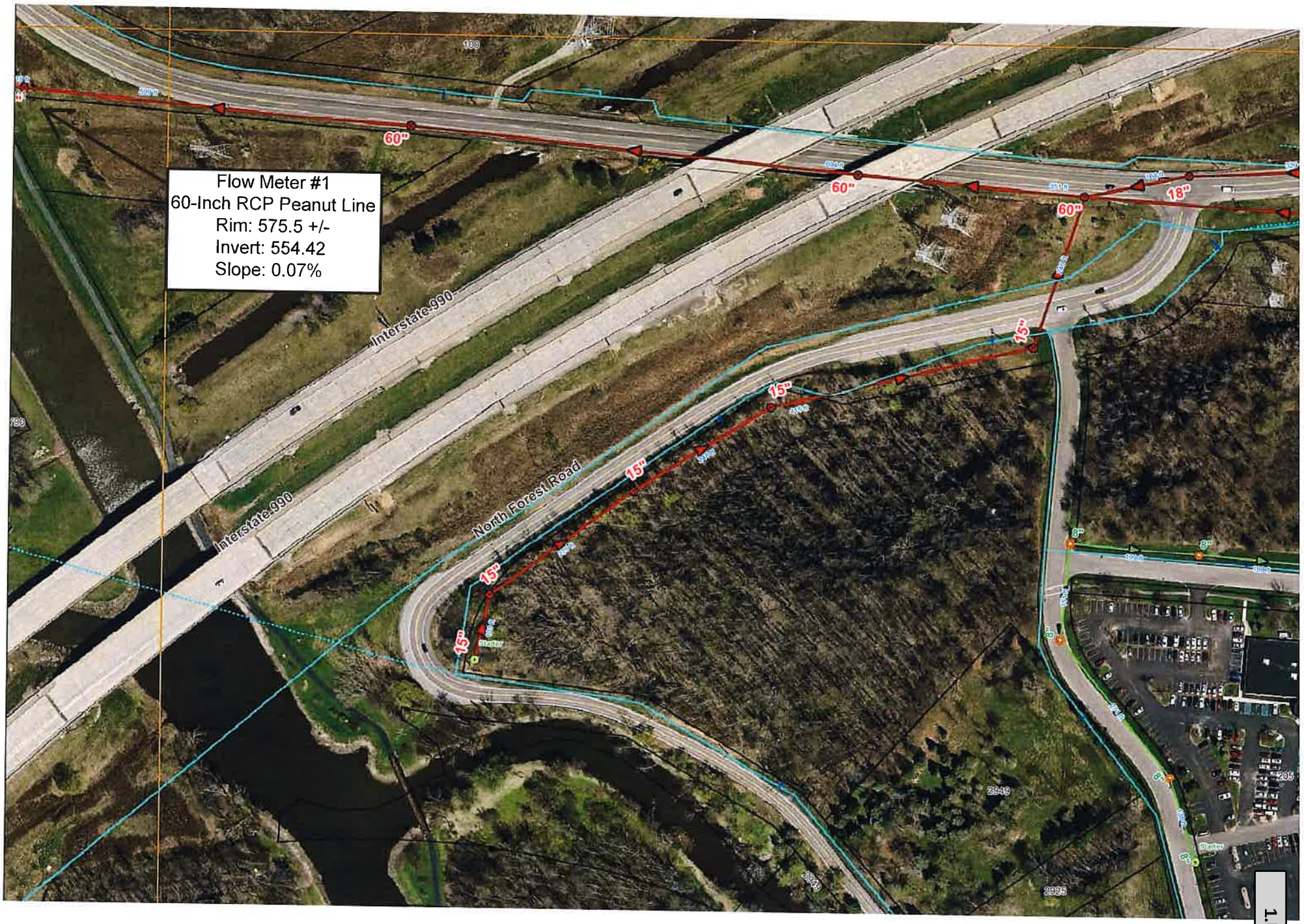
May 2020

FLOW LOCATION POINT

Flows Updated: 1/18/19



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)


Flow Meter #1
60-Inch RCP Peanut Line
Rim: 575.5 +/-
Invert: 554.42
Slope: 0.07%
Interstate 990
Interstate 990
North Forest Road
60"
60"
60"
18"
15"
15"
15"
15"
15"


348 N Ellicott Creek Rd
Buffalo, New York
Google
Street View
Flow Meter #2

Flow Meter #3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Appendix B

Storm Sewer System Drainage Calculations

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Existing Runoff

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

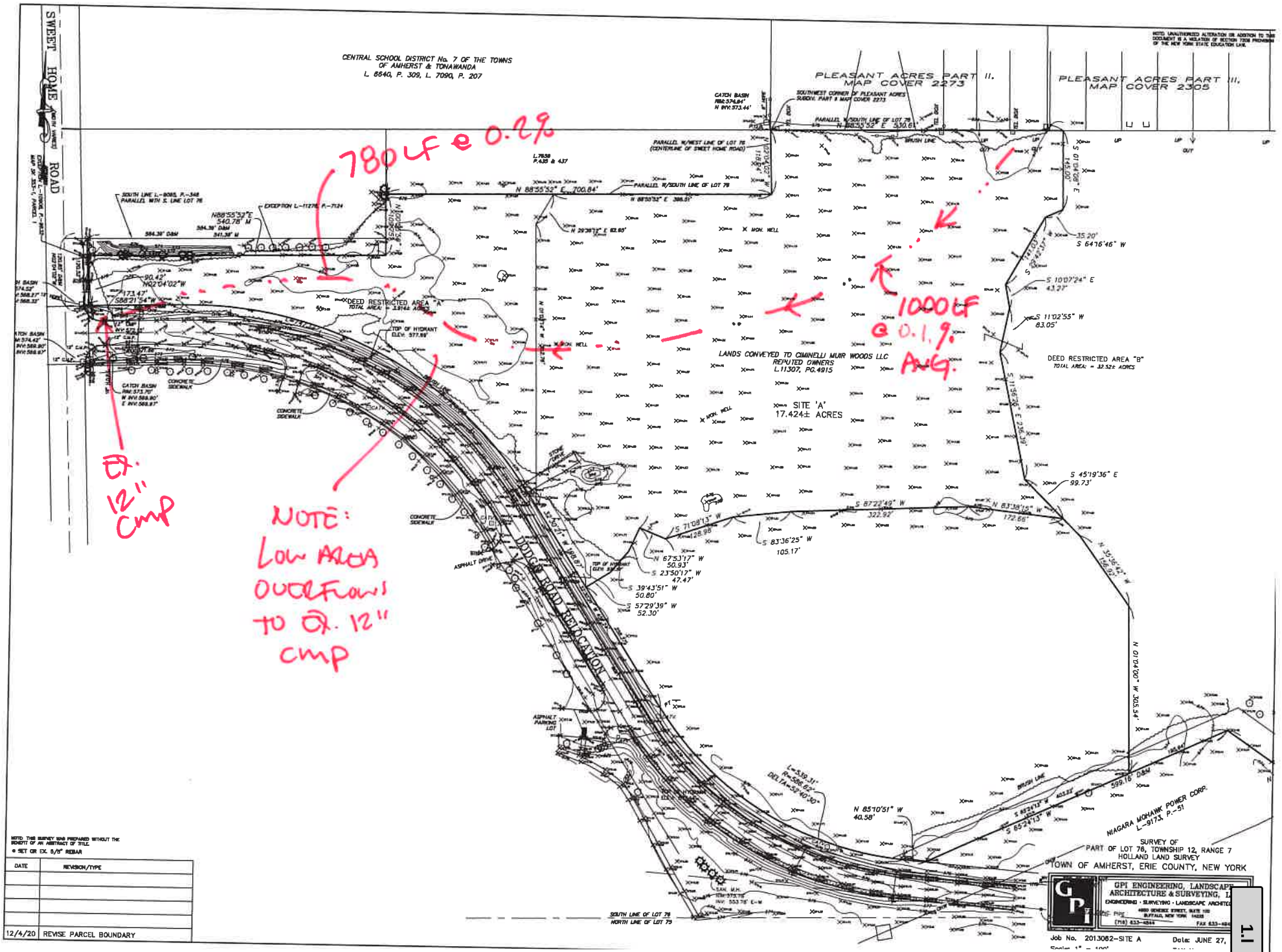


Existing

Subcat Reach Pond Link

Routing Diagram for 21.011 Existing
Prepared by Hewlett-Packard Company, Printed 3/1/2021
HydroCAD® 10.00-18 s/n 05019 © 2016 HydroCAD Software Solutions LLC

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)


780 LF @ 0.2%
1000 LF @ 0.1% AVG.
EX. 12" CMP
NOTE: LOW AREA OVERFLOWS TO EX. 12" CMP
SWEET HOME ROAD
CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA
L. 8640, P. 309, L. 7090, P. 207
PLEASANT ACRES PART II. MAP COVER 2273
PLEASANT ACRES PART III. MAP COVER 2305
LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC REPUTED OWNERS L.11307, PG.4915
SITE 'A' 17.424± ACRES
DEED RESTRICTED AREA "A" TOTAL AREA = 3.8144 ACRES
DEED RESTRICTED AREA "B" TOTAL AREA = 12.52± ACRES
DODGE ROAD RELOCATION
NIAGARA MOHAWK POWER CORP. L.-9173, P.-51
SURVEY OF PART OF LOT 78, TOWNSHIP 12, RANGE 7 HOLLAND LAND SURVEY TOWN OF AMHERST, ERIE COUNTY, NEW YORK
GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, L
Job No. 2013082-SITE A
Date: JUNE 27,
DATE | REVISION/TYPE
12/4/20 | REVISE PARCEL BOUNDARY

Events for Subcatchment 1S: Existing

Event	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-Year	0.87	0.578	0.41
2-Year	1.34	0.851	0.60
5-Year	2.14	1.304	0.92
10-Year	2.94	1.752	1.24
25-Year	4.34	2.527	1.78
50-Year	5.69	3.272	2.31
100-Year	**7.33**	**4.181**	**2.95**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.830	77	Brush, Fair, HSG D (1S)
12.170	79	Woods, Fair, HSG D (1S)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
17.000	HSG D	1S
0.000	Other	

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	4.830	0.000	4.830	Brush, Fair	1S
0.000	0.000	0.000	12.170	0.000	12.170	Woods, Fair	1S

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

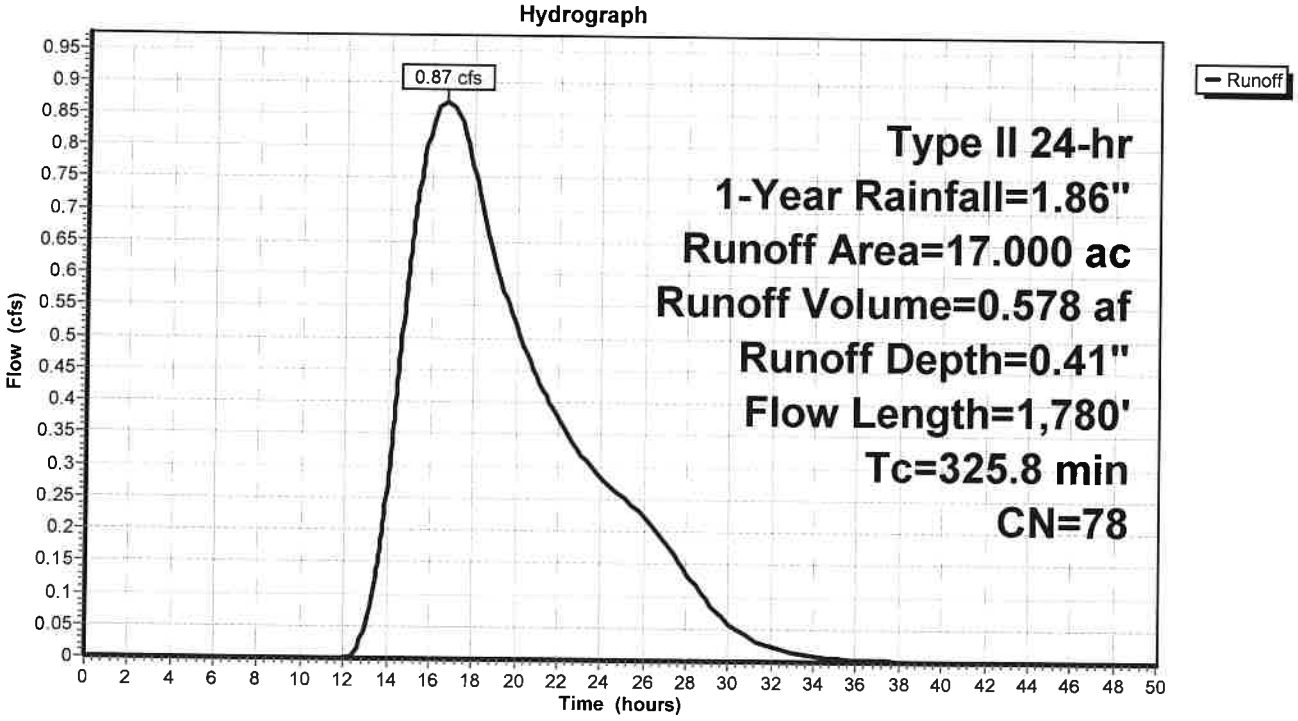
Runoff = 0.87 cfs @ 16.65 hrs, Volume= 0.578 af, Depth= 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

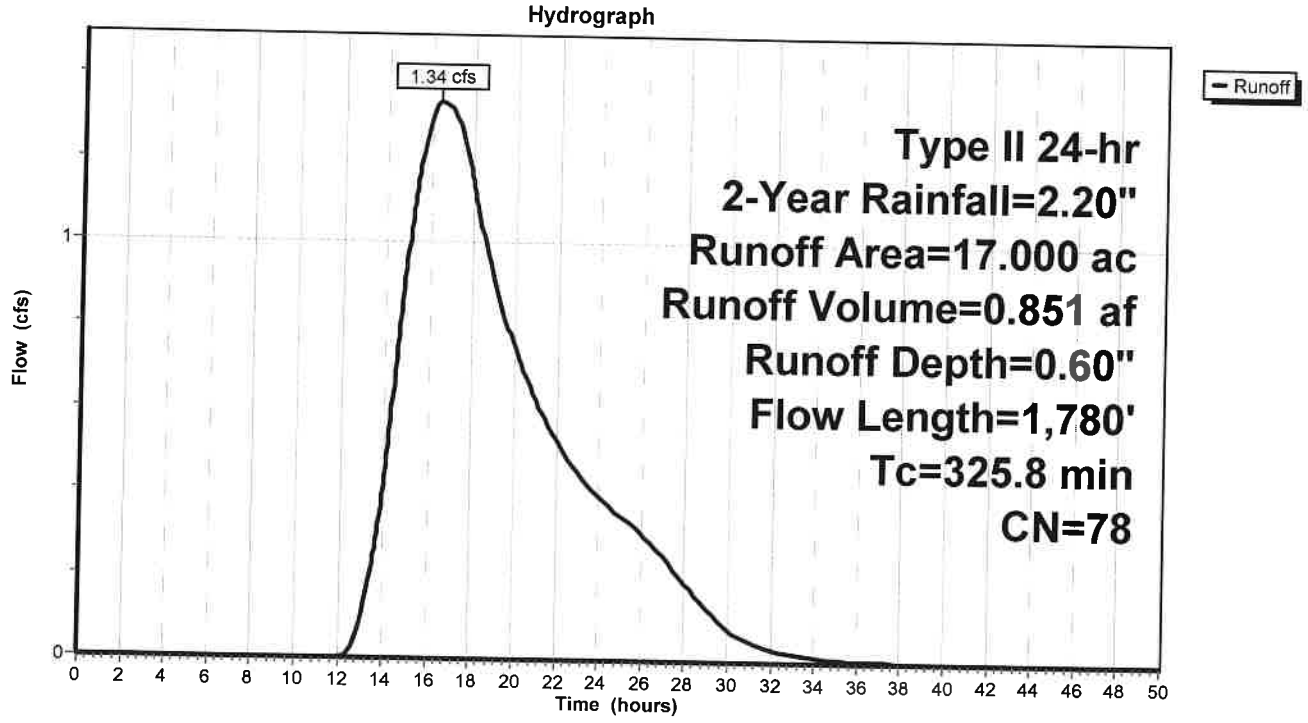
Runoff = 1.34 cfs @ 16.35 hrs, Volume= 0.851 af, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

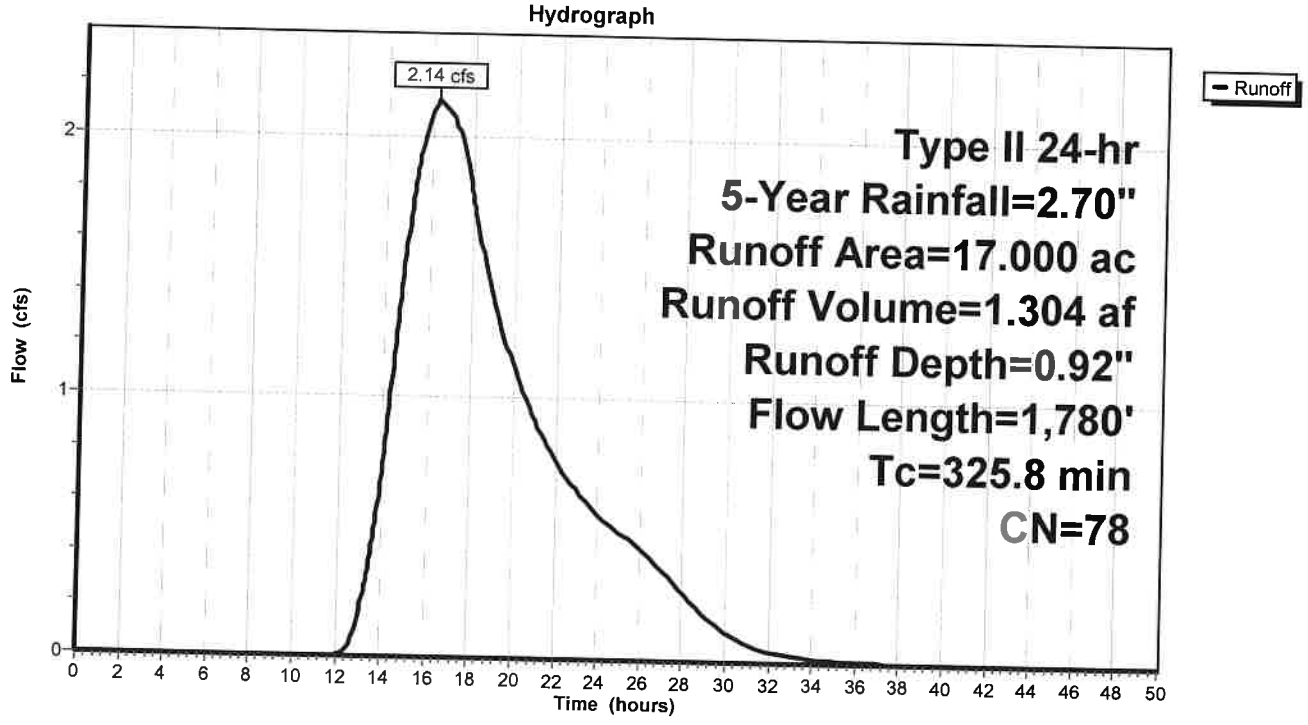
Runoff = 2.14 cfs @ 16.31 hrs, Volume= 1.304 af, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

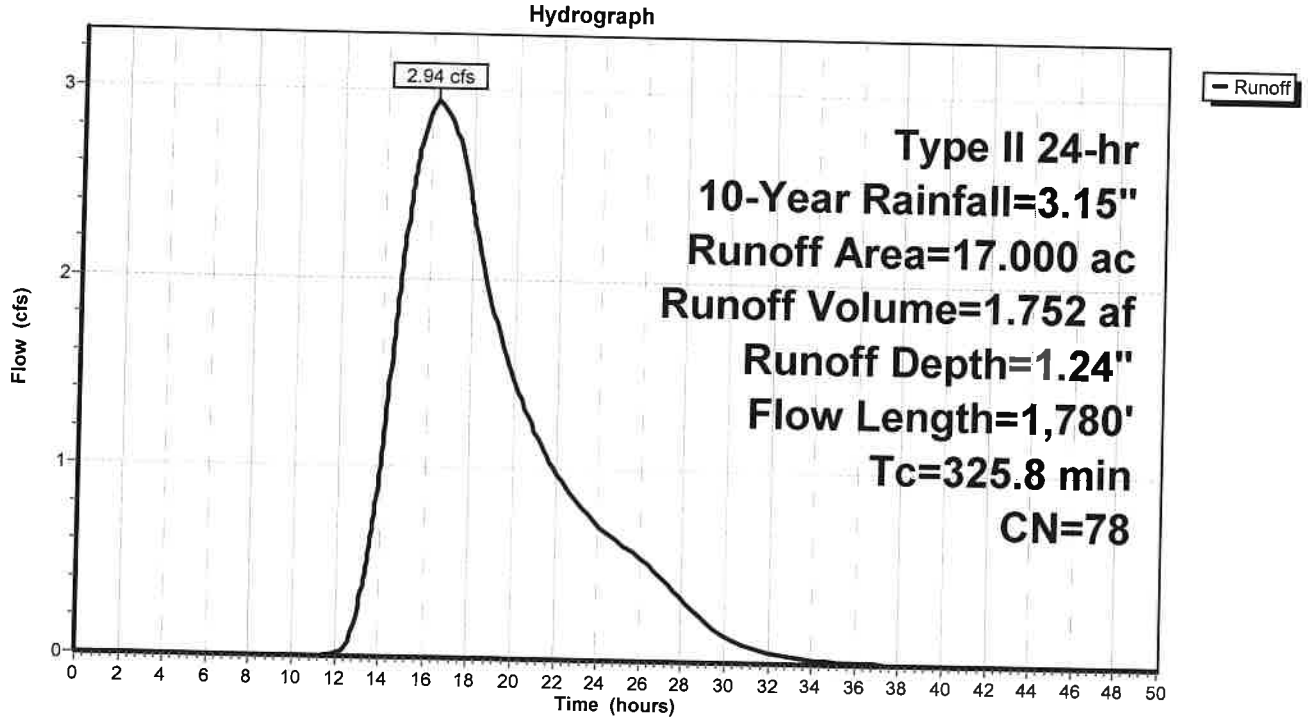
Runoff = 2.94 cfs @ 16.31 hrs, Volume= 1.752 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

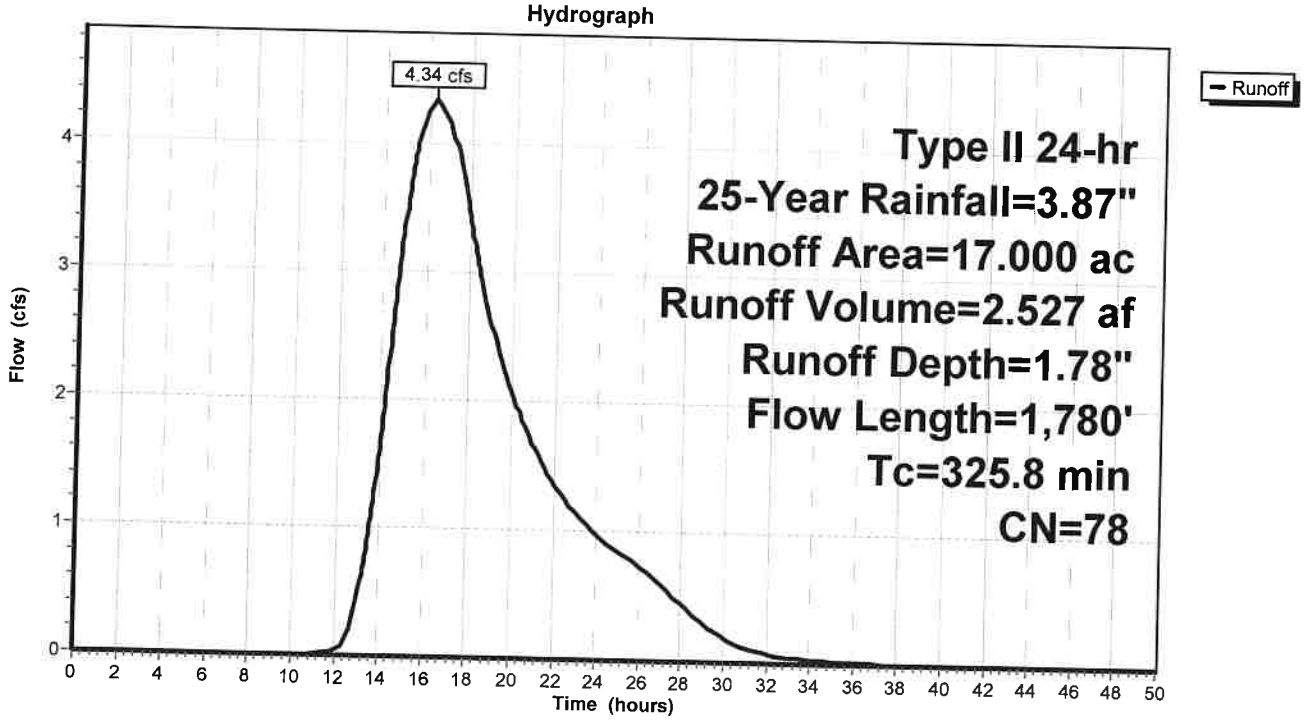
Runoff = 4.34 cfs @ 16.30 hrs, Volume= 2.527 af, Depth= 1.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

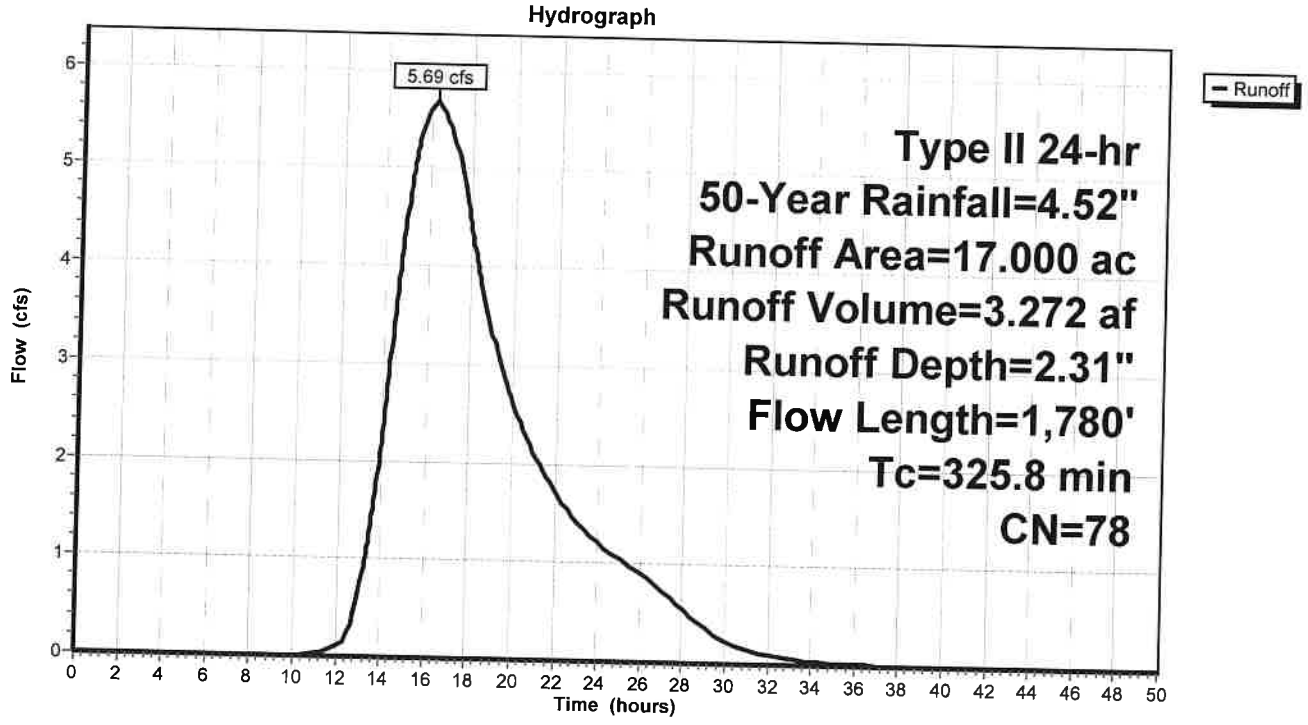
Runoff = 5.69 cfs @ 16.29 hrs, Volume= 3.272 af, Depth= 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

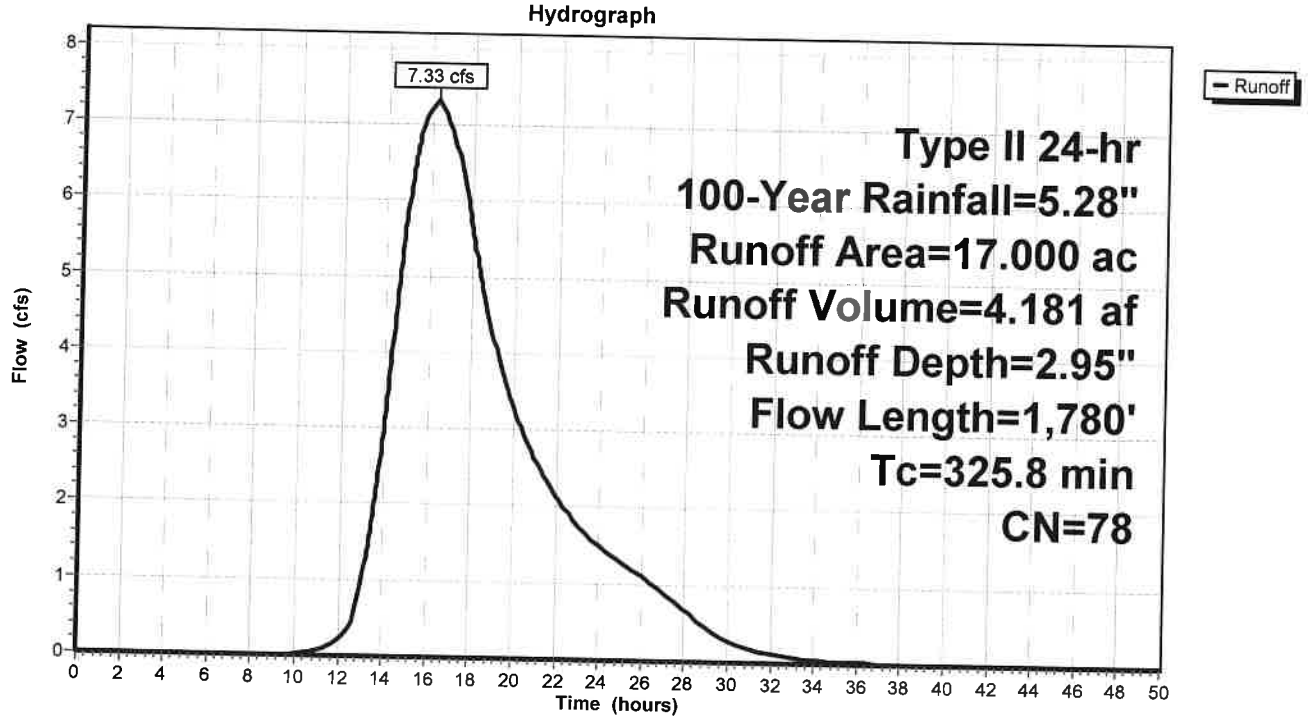
Runoff = 7.33 cfs @ 16.29 hrs, Volume= 4.181 af, Depth= 2.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



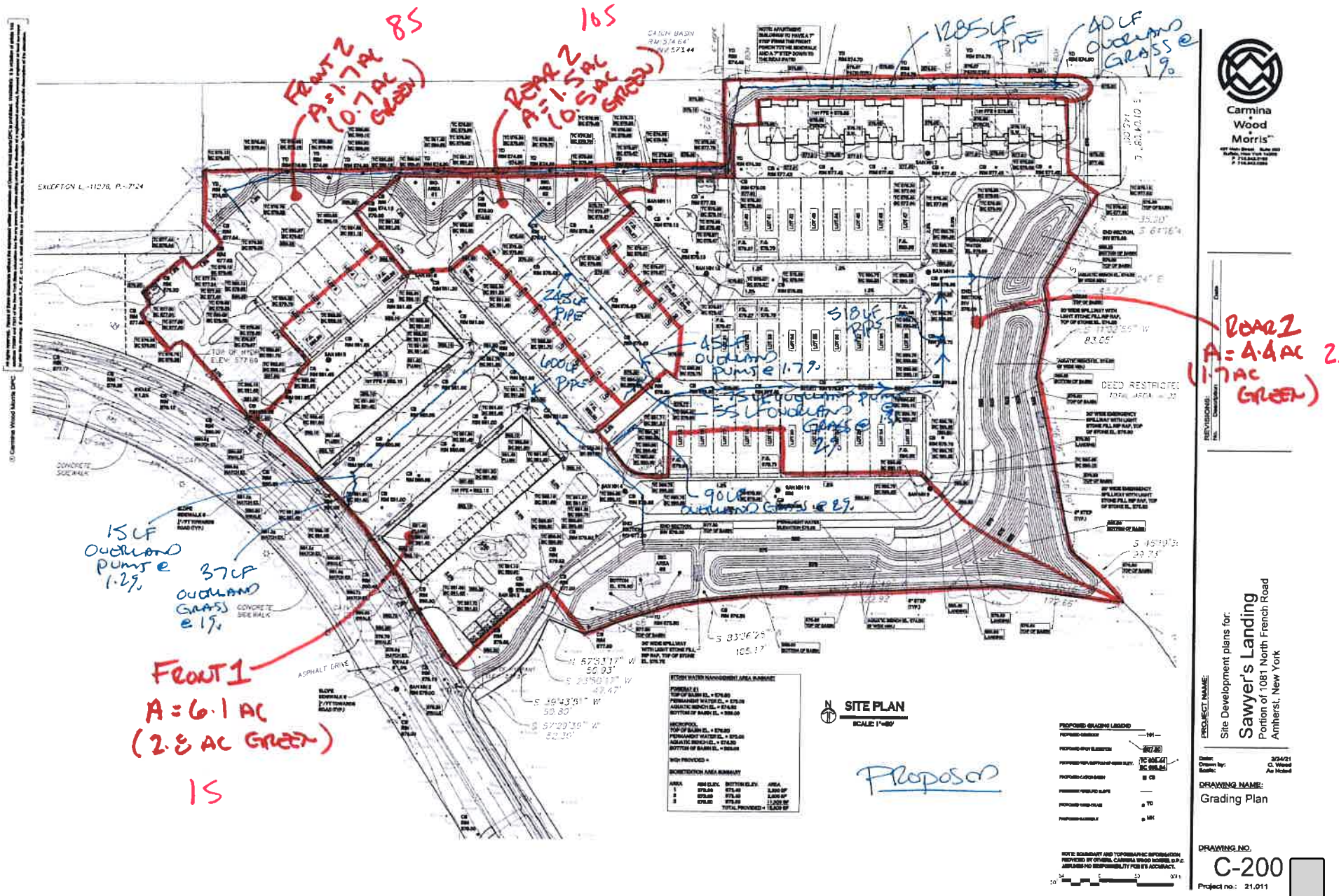
Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

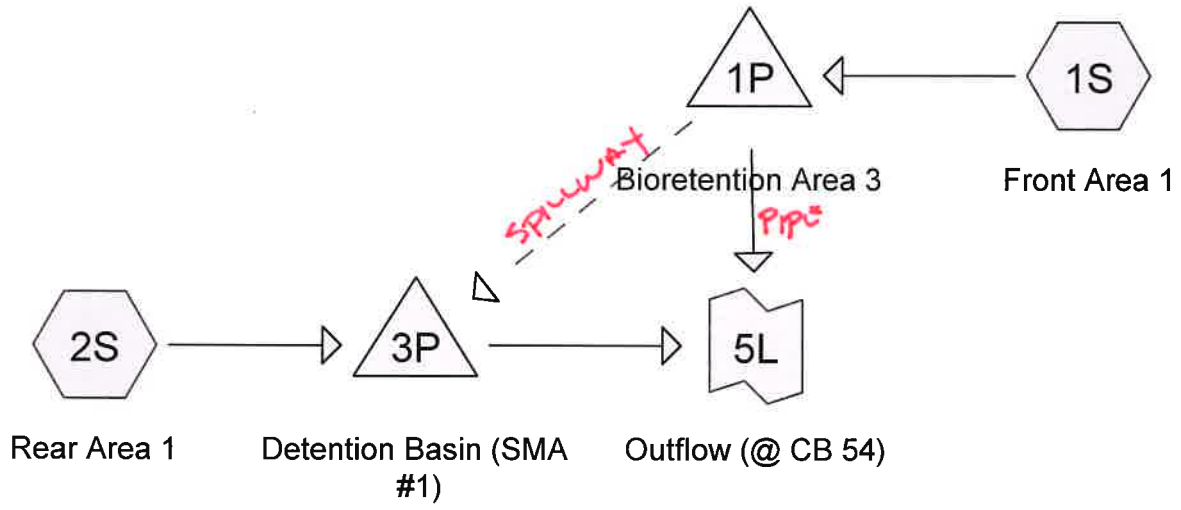
Proposed Runoff

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Proposed Runoff - East

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)


FRONT 2
A = 1.7 AC
(0.7 AC GREEN)
85
REAR 2
A = 1.5 AC
(0.5 AC GREEN)
105
120 LF PIPE
40 LF OVERLAND GRASS e 1%
REAR 2
A = 4.4 AC
(1.7 AC GREEN)
245 LF PIPE
600 LF PIPE
45 LF OVERLAND PUMP e 1.7%
55 LF OVERLAND PUMP e 2%
55 LF OVERLAND GRASS e 2%
90 LF OVERLAND GRASS e 2%
15 LF OVERLAND PUMP e 1.2%
37 LF OVERLAND GRASS e 1%
FRONT 1
A = 6.1 AC
(2.5 AC GREEN)
15
SITE PLAN
SCALE: 1"=80'
Proposed
Carmina Wood Morris
REVISIONS:
No. Description Date
PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York
Date: 3/24/21
Drawn by: C. Wood
Scale: As Noted
DRAWING NAME:
Grading Plan
DRAWING NO.
C-200
Project no.: 21.011



Subcat Reach Pond Link

Routing Diagram for 21.011 Proposed
Prepared by Hewlett-Packard Company, Printed 3/4/2021
HydroCAD® 10.00-18 s/n 05019 © 2016 HydroCAD Software Solutions LLC

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Events for Link 5L: Outflow (@ CB 54)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
1-Year	2.78	2.78	**0.00**
2-Year	2.86	2.86	0.00
5-Year	3.01	3.01	0.00
10-Year	3.16	3.16	0.00
25-Year	3.36	3.36	0.00
50-Year	3.48	3.48	0.00
100-Year	**3.60**	**3.60**	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Events for Pond 3P: Detention Basin (SMA #1)

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	6.05	0.10	0.10	0.00	575.23	13,685
2-Year	12.29	0.18	0.18	0.00	575.32	19,129
5-Year	20.08	0.33	0.33	0.00	575.46	28,218
10-Year	26.01	0.47	0.47	0.00	575.60	37,117
25-Year	34.94	0.64	0.64	0.00	575.83	51,964
50-Year	42.93	1.97	0.72	1.25	576.00	62,935
100-Year	**52.24**	**8.57**	**0.78**	**7.80**	**576.11**	**70,722**

TO DUDLEE RD

TO WETLANDS

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Events for Pond 1P: Bioretention Area 3

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	8.17	4.38	2.74	1.63	575.82	7,520
2-Year	10.57	8.19	2.79	5.41	575.91	8,359
5-Year	14.18	12.91	2.83	10.09	575.99	9,153
10-Year	17.46	16.45	2.85	13.60	576.04	9,672
25-Year	22.74	21.73	2.89	18.84	576.11	10,375
50-Year	27.50	26.43	2.91	23.52	576.17	10,954
100-Year	**33.05**	**31.92**	**2.94**	**28.98**	**576.23**	**11,585**

↑ TO DOUGE RD

↑ TO BASIN

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.500	80	>75% Grass cover, Good, HSG D (1S, 2S)
3.200	98	Paved parking, HSG D (1S, 2S)
2.800	98	Roofs, HSG D (1S, 2S)
10.500	**90**	**TOTAL AREA**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
10.500	HSG D	1S, 2S
0.000	Other	
10.500		**TOTAL AREA**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	4.500	0.000	4.500	>75% Grass cover, Good	1S, 2S
0.000	0.000	0.000	3.200	0.000	3.200	Paved parking	1S, 2S
0.000	0.000	0.000	2.800	0.000	2.800	Roofs	1S, 2S
0.000	**0.000**	**0.000**	**10.500**	**0.000**	**10.500**	**TOTAL AREA**	

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=0.98"
Flow Length=652' Tc=13.3 min CN=90 Runoff=8.17 cfs 0.496 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=1.04"
Flow Length=683' Tc=14.4 min CN=91 Runoff=6.05 cfs 0.382 af

Pond 1P: Bioretention Area 3 Peak Elev=575.82' Storage=7,520 cf Inflow=8.17 cfs 0.496 af
Primary=2.74 cfs 0.475 af Secondary=1.63 cfs 0.021 af Outflow=4.38 cfs 0.496 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.23' Storage=13,685 cf Inflow=6.05 cfs 0.403 af
Primary=0.10 cfs 0.249 af Secondary=0.00 cfs 0.000 af Outflow=0.10 cfs 0.249 af

Link 5L: Outflow (@ CB 54) Inflow=2.78 cfs 0.724 af
Primary=2.78 cfs 0.724 af

Total Runoff Area = 10.500 ac Runoff Volume = 0.878 af Average Runoff Depth = 1.00"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

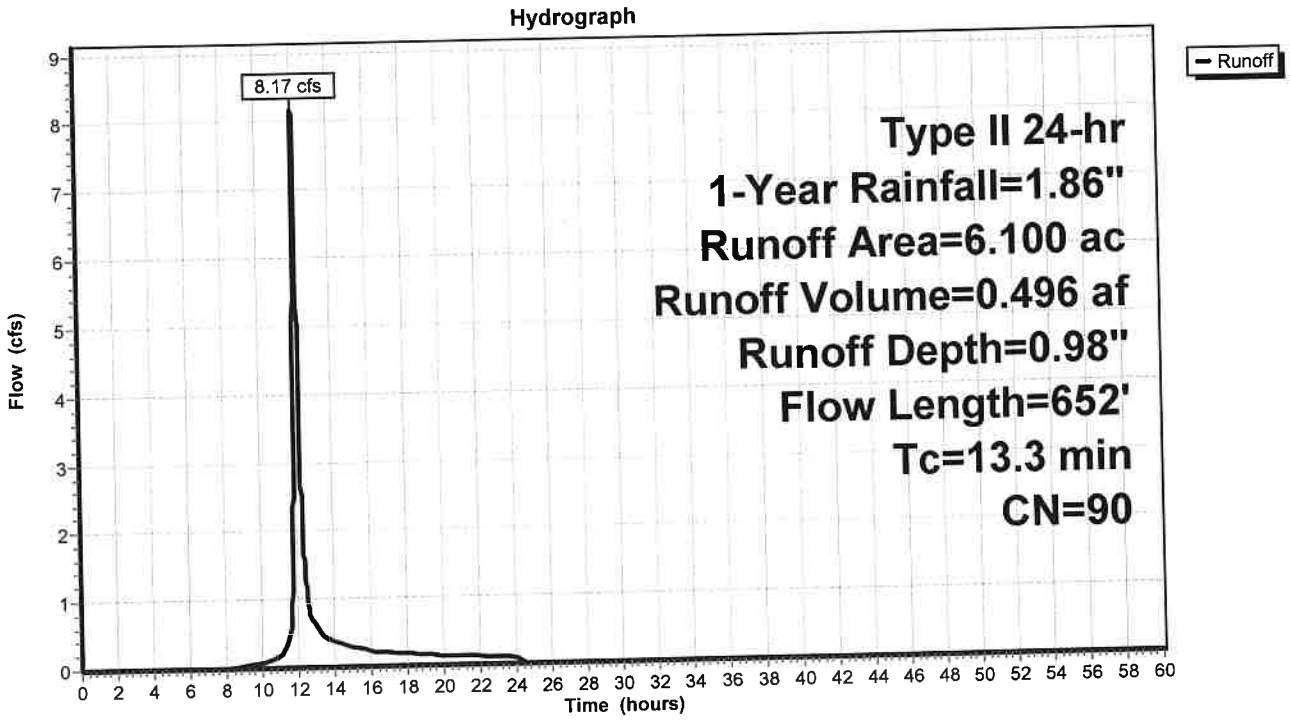
Runoff = 8.17 cfs @ 12.05 hrs, Volume= 0.496 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.00
9.00	0.27	0.00	0.02
10.00	0.34	0.01	0.07
11.00	0.44	0.03	0.20
12.00	1.23	0.48	**7.23**
13.00	1.44	0.63	**0.63**
14.00	1.53	0.70	0.37
15.00	1.59	0.75	0.29
16.00	1.64	0.79	0.23
17.00	1.68	0.83	0.20
18.00	1.71	0.85	0.17
19.00	1.74	0.88	0.15
20.00	1.77	0.90	0.13
21.00	1.79	0.92	0.12
22.00	1.82	0.94	0.12
23.00	1.84	0.96	0.11
24.00	**1.86**	**0.98**	0.11
25.00	1.86	0.98	0.00
26.00	1.86	0.98	0.00
27.00	1.86	0.98	0.00
28.00	1.86	0.98	0.00
29.00	1.86	0.98	0.00
30.00	1.86	0.98	0.00
31.00	1.86	0.98	0.00
32.00	1.86	0.98	0.00
33.00	1.86	0.98	0.00
34.00	1.86	0.98	0.00
35.00	1.86	0.98	0.00
36.00	1.86	0.98	0.00
37.00	1.86	0.98	0.00
38.00	1.86	0.98	0.00
39.00	1.86	0.98	0.00
40.00	1.86	0.98	0.00
41.00	1.86	0.98	0.00
42.00	1.86	0.98	0.00
43.00	1.86	0.98	0.00
44.00	1.86	0.98	0.00
45.00	1.86	0.98	0.00
46.00	1.86	0.98	0.00
47.00	1.86	0.98	0.00
48.00	1.86	0.98	0.00
49.00	1.86	0.98	0.00
50.00	1.86	0.98	0.00
51.00	1.86	0.98	0.00
52.00	1.86	0.98	0.00
53.00	1.86	0.98	0.00
54.00	1.86	0.98	0.00
55.00	1.86	0.98	0.00
56.00	1.86	0.98	0.00
57.00	1.86	0.98	0.00
58.00	1.86	0.98	0.00
59.00	1.86	0.98	0.00
60.00	1.86	0.98	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

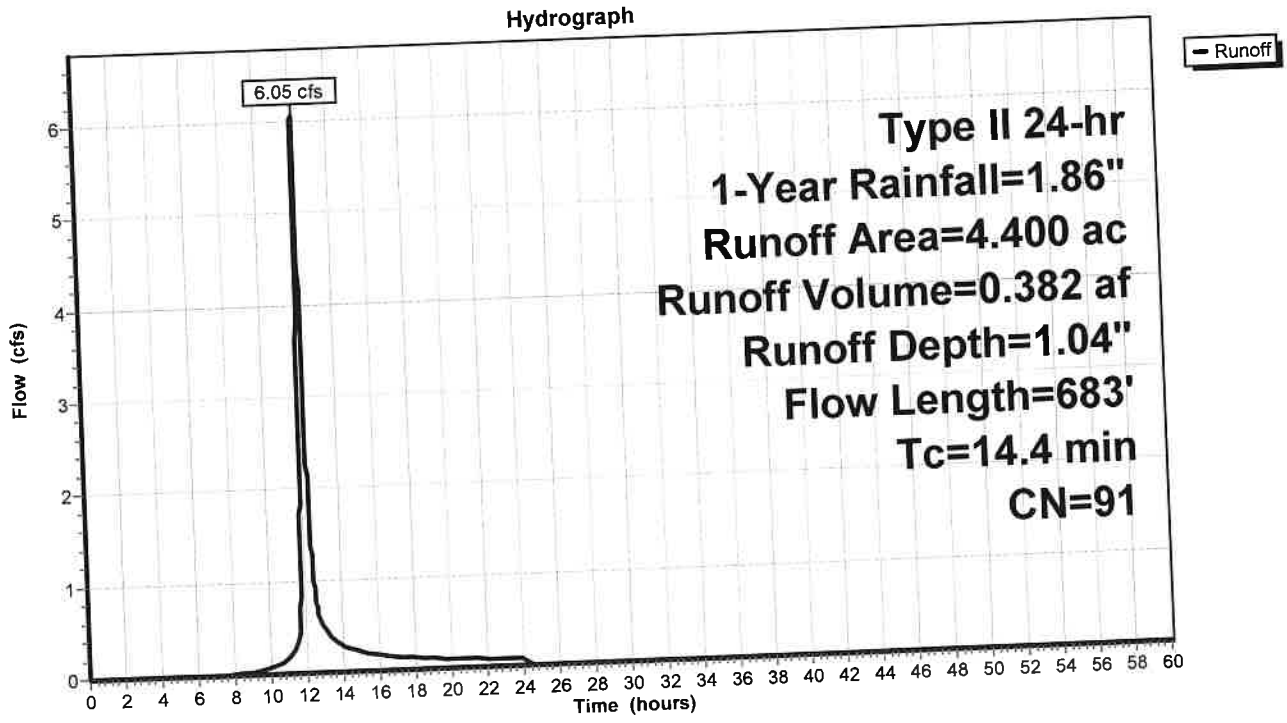
Runoff = 6.05 cfs @ 12.06 hrs, Volume= 0.382 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.01
9.00	0.27	0.01	0.03
10.00	0.34	0.02	0.06
11.00	0.44	0.05	0.17
12.00	1.23	0.53	**5.18**
13.00	1.44	0.69	**0.48**
14.00	1.53	0.76	0.28
15.00	1.59	0.81	0.21
16.00	1.64	0.85	0.17
17.00	1.68	0.89	0.15
18.00	1.71	0.92	0.13
19.00	1.74	0.94	0.11
20.00	1.77	0.97	0.10
21.00	1.79	0.99	0.09
22.00	1.82	1.01	0.09
23.00	1.84	1.02	0.08
24.00	**1.86**	**1.04**	0.08
25.00	1.86	1.04	0.00
26.00	1.86	1.04	0.00
27.00	1.86	1.04	0.00
28.00	1.86	1.04	0.00
29.00	1.86	1.04	0.00
30.00	1.86	1.04	0.00
31.00	1.86	1.04	0.00
32.00	1.86	1.04	0.00
33.00	1.86	1.04	0.00
34.00	1.86	1.04	0.00
35.00	1.86	1.04	0.00
36.00	1.86	1.04	0.00
37.00	1.86	1.04	0.00
38.00	1.86	1.04	0.00
39.00	1.86	1.04	0.00
40.00	1.86	1.04	0.00
41.00	1.86	1.04	0.00
42.00	1.86	1.04	0.00
43.00	1.86	1.04	0.00
44.00	1.86	1.04	0.00
45.00	1.86	1.04	0.00
46.00	1.86	1.04	0.00
47.00	1.86	1.04	0.00
48.00	1.86	1.04	0.00
49.00	1.86	1.04	0.00
50.00	1.86	1.04	0.00
51.00	1.86	1.04	0.00
52.00	1.86	1.04	0.00
53.00	1.86	1.04	0.00
54.00	1.86	1.04	0.00
55.00	1.86	1.04	0.00
56.00	1.86	1.04	0.00
57.00	1.86	1.04	0.00
58.00	1.86	1.04	0.00
59.00	1.86	1.04	0.00
60.00	1.86	1.04	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area =	6.100 ac,	54.10% Impervious,	Inflow Depth =	0.98"	for 1-Year event
Inflow =	8.17 cfs @	12.05 hrs,	Volume=	0.496 af	
Outflow =	4.38 cfs @	12.19 hrs,	Volume=	0.496 af,	Atten= 46%, Lag= 8.2 min
Primary =	2.74 cfs @	12.19 hrs,	Volume=	0.475 af	
Secondary =	1.63 cfs @	12.19 hrs,	Volume=	0.021 af	

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.82' @ 12.19 hrs Surf.Area= 9,695 sf Storage= 7,520 cf

Plug-Flow detention time= 319.4 min calculated for 0.496 af (100% of inflow)
Center-of-Mass det. time= 319.4 min (1,152.7 - 833.3)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

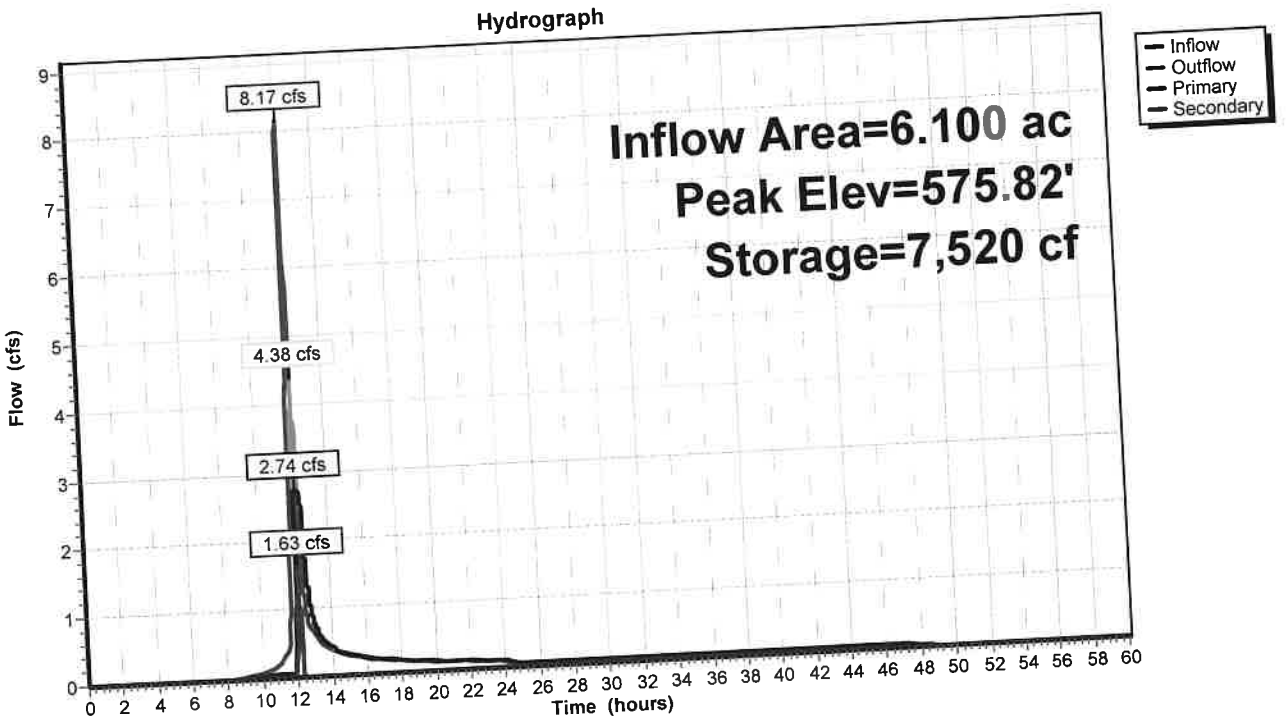
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.74 cfs @ 12.19 hrs HW=575.82' (Free Discharge)
↑—**1=8" pipe** (Barrel Controls 2.74 cfs @ 7.86 fps)
↑—**2=Grate** (Passes < 3.80 cfs potential flow)
↑—**3=Exfiltration** (Passes < 0.06 cfs potential flow)

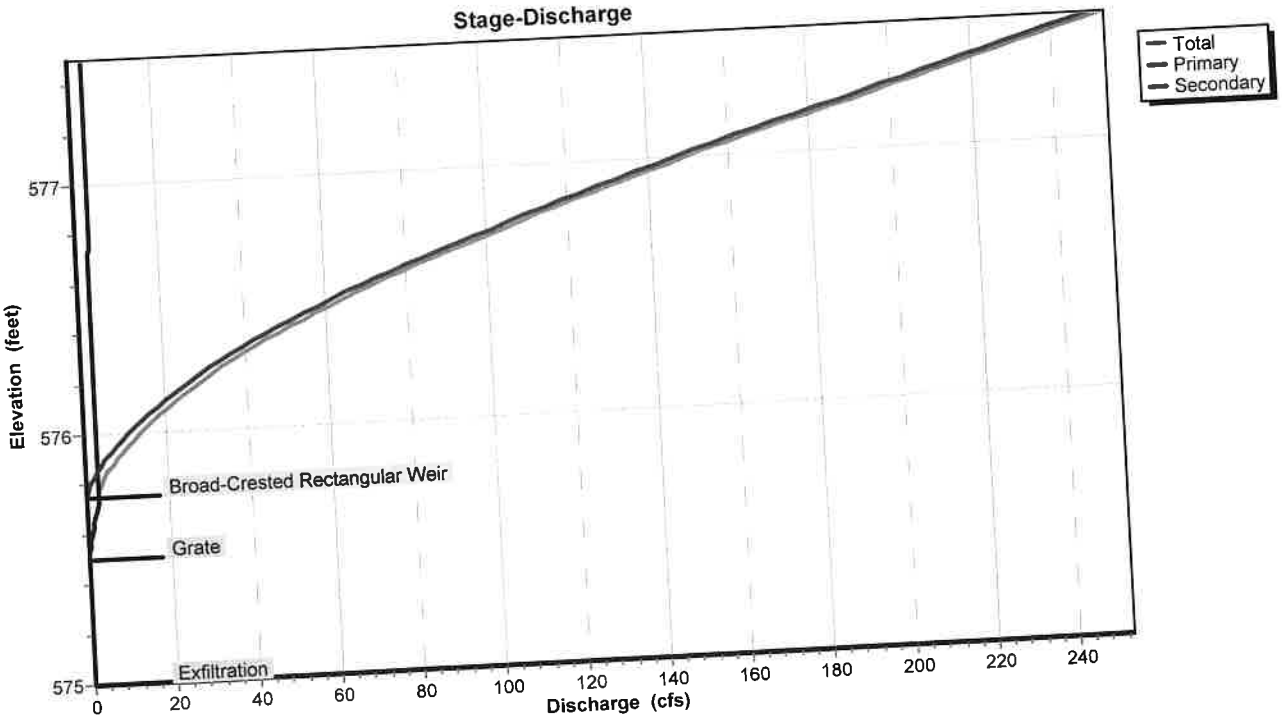
Secondary OutFlow Max=1.62 cfs @ 12.19 hrs HW=575.82' (Free Discharge)
↑—**4=Broad-Crested Rectangular Weir** (Weir Controls 1.62 cfs @ 0.77 fps)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

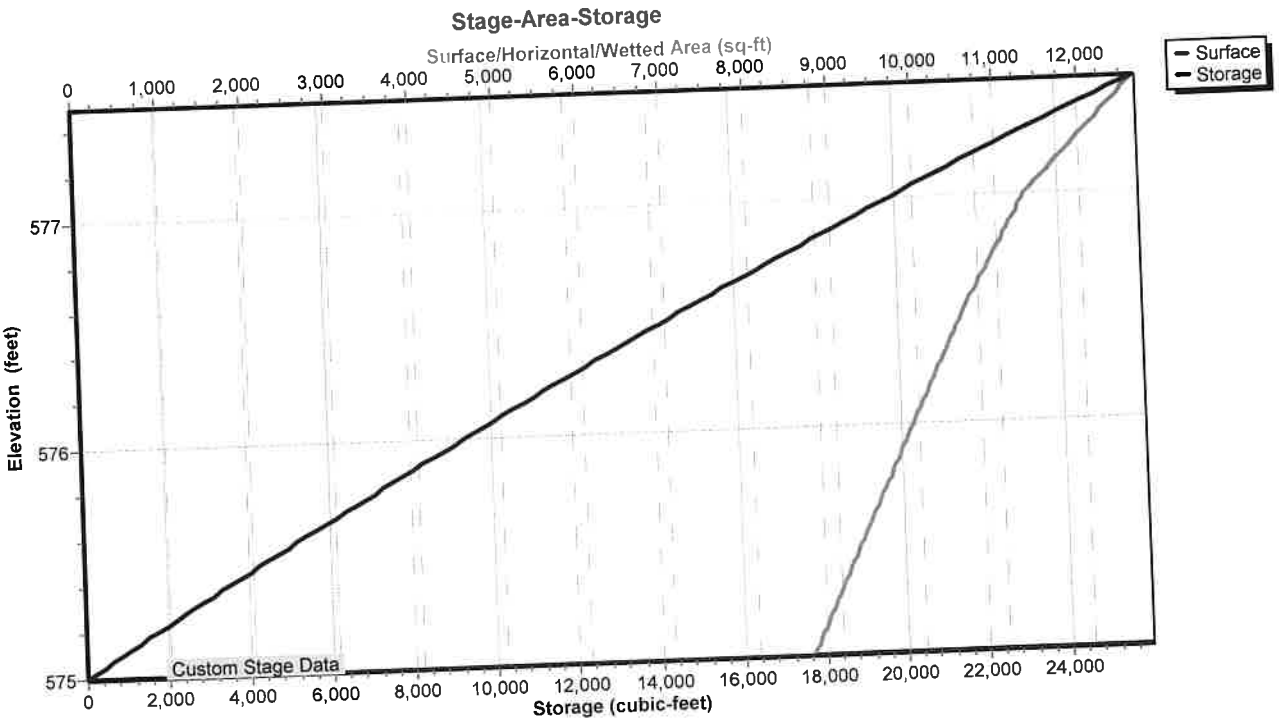


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.00	0	575.00	0.00	0.00	0.00
10.00	0.07	121	575.01	0.03	0.03	0.00
12.00	**7.23**	**4,533**	**575.51**	**0.08**	**0.08**	**0.00**
14.00	**0.37**	**5,004**	**575.56**	**0.42**	**0.42**	**0.00**
16.00	0.23	4,812	575.54	0.25	0.25	0.00
18.00	0.17	4,735	575.53	0.18	0.18	0.00
20.00	0.13	4,666	575.52	0.14	0.14	0.00
22.00	0.12	4,618	575.51	0.12	0.12	0.00
24.00	0.11	4,598	575.51	0.11	0.11	0.00
26.00	0.00	4,207	575.47	0.06	0.06	0.00
28.00	0.00	3,812	575.43	0.05	0.05	0.00
30.00	0.00	3,420	575.38	0.05	0.05	0.00
32.00	0.00	3,031	575.34	0.05	0.05	0.00
34.00	0.00	2,646	575.30	0.05	0.05	0.00
36.00	0.00	2,264	575.26	0.05	0.05	0.00
38.00	0.00	1,885	575.21	0.05	0.05	0.00
40.00	0.00	1,510	575.17	0.05	0.05	0.00
42.00	0.00	1,138	575.13	0.05	0.05	0.00
44.00	0.00	769	575.09	0.05	0.05	0.00
46.00	0.00	404	575.05	0.05	0.05	0.00
48.00	0.00	96	575.01	0.02	0.02	0.00
50.00	0.00	18	575.00	0.00	0.00	0.00
52.00	0.00	3	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 1.10" for 1-Year event
Inflow = 6.05 cfs @ 12.06 hrs, Volume= 0.403 af
Outflow = 0.10 cfs @ 19.66 hrs, Volume= 0.249 af, Atten= 98%, Lag= 455.7 min
Primary = 0.10 cfs @ 19.66 hrs, Volume= 0.249 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.23' @ 19.66 hrs Surf.Area= 60,952 sf Storage= 13,685 cf

Plug-Flow detention time= 1,134.7 min calculated for 0.249 af (62% of inflow)
Center-of-Mass det. time= 1,028.3 min (1,852.6 - 824.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

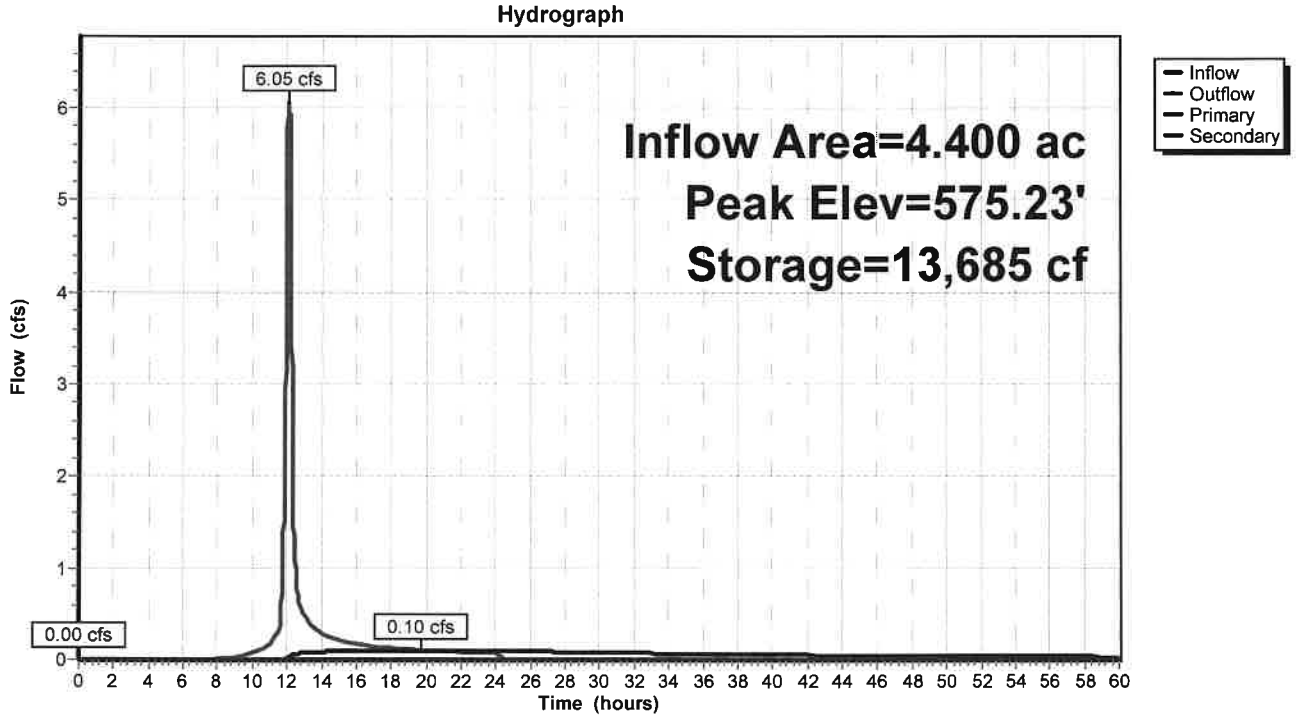
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.10 cfs @ 19.66 hrs HW=575.23' (Free Discharge)
↑**1=12" outlet pipe** (Passes 0.10 cfs of 1.85 cfs potential flow)
↑**2=low flow outlet pipe** (Barrel Controls 0.10 cfs @ 1.70 fps)
3=Grate (Controls 0.00 cfs)

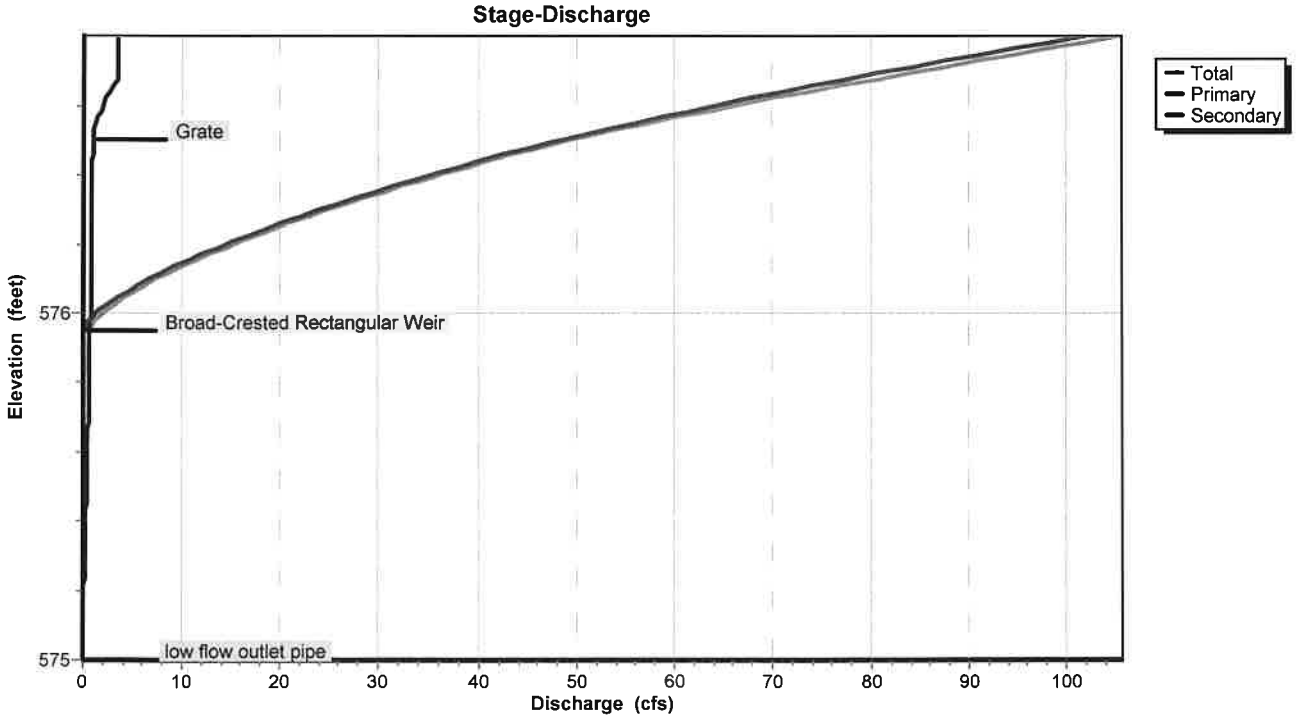
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
↑**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

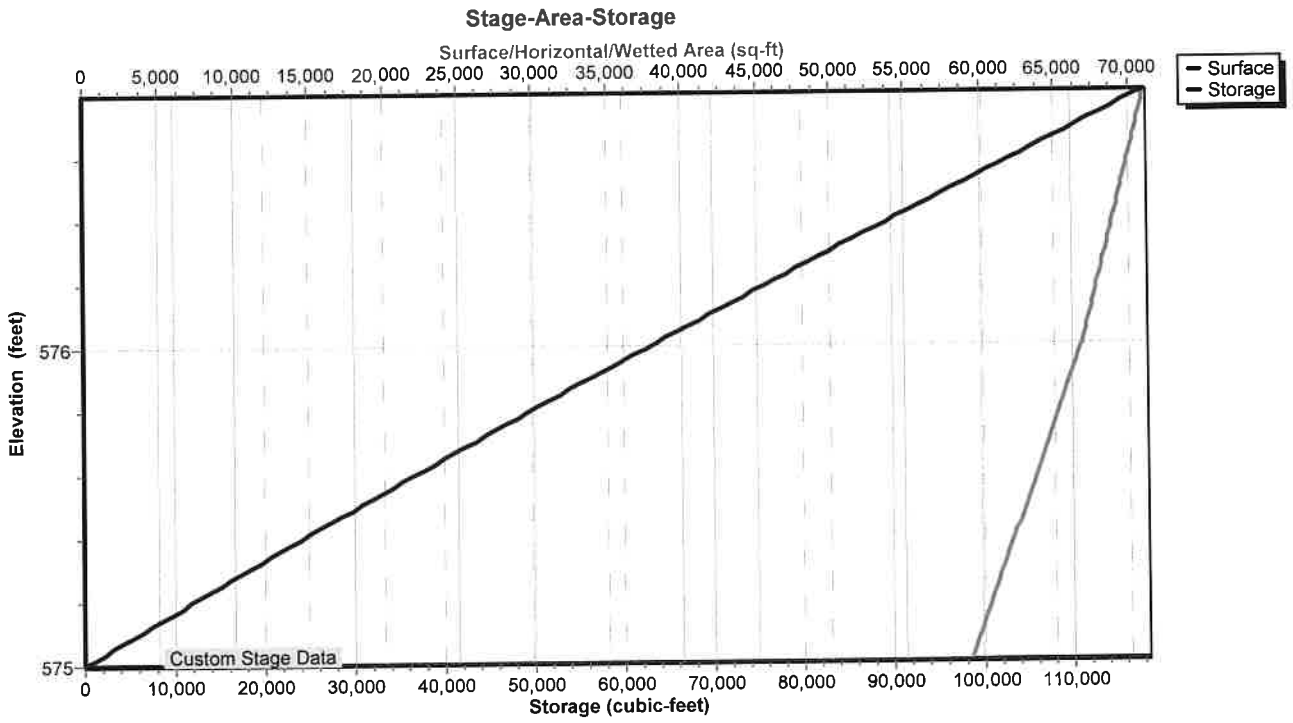


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.01	5	575.00	0.00	0.00	0.00
10.00	0.06	218	575.00	0.00	0.00	0.00
12.00	**5.18**	3,798	575.06	0.01	0.01	0.00
14.00	**0.28**	12,350	575.21	0.08	0.08	0.00
16.00	0.17	13,252	575.22	0.10	0.10	0.00
18.00	0.13	**13,599**	**575.23**	**0.10**	**0.10**	0.00
20.00	0.10	**13,682**	**575.23**	**0.10**	**0.10**	0.00
22.00	0.09	13,599	575.23	0.10	0.10	0.00
24.00	0.08	13,477	575.22	0.10	0.10	0.00
26.00	0.00	12,859	575.21	0.09	0.09	0.00
28.00	0.00	12,236	575.20	0.08	0.08	0.00
30.00	0.00	11,664	575.19	0.08	0.08	0.00
32.00	0.00	11,139	575.19	0.07	0.07	0.00
34.00	0.00	10,655	575.18	0.06	0.06	0.00
36.00	0.00	10,207	575.17	0.06	0.06	0.00
38.00	0.00	9,792	575.16	0.06	0.06	0.00
40.00	0.00	9,408	575.16	0.05	0.05	0.00
42.00	0.00	9,050	575.15	0.05	0.05	0.00
44.00	0.00	8,716	575.15	0.04	0.04	0.00
46.00	0.00	8,404	575.14	0.04	0.04	0.00
48.00	0.00	8,113	575.14	0.04	0.04	0.00
50.00	0.00	7,839	575.13	0.04	0.04	0.00
52.00	0.00	7,582	575.13	0.03	0.03	0.00
54.00	0.00	7,341	575.12	0.03	0.03	0.00
56.00	0.00	7,114	575.12	0.03	0.03	0.00
58.00	0.00	6,899	575.12	0.03	0.03	0.00
60.00	0.00	6,696	575.11	0.03	0.03	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

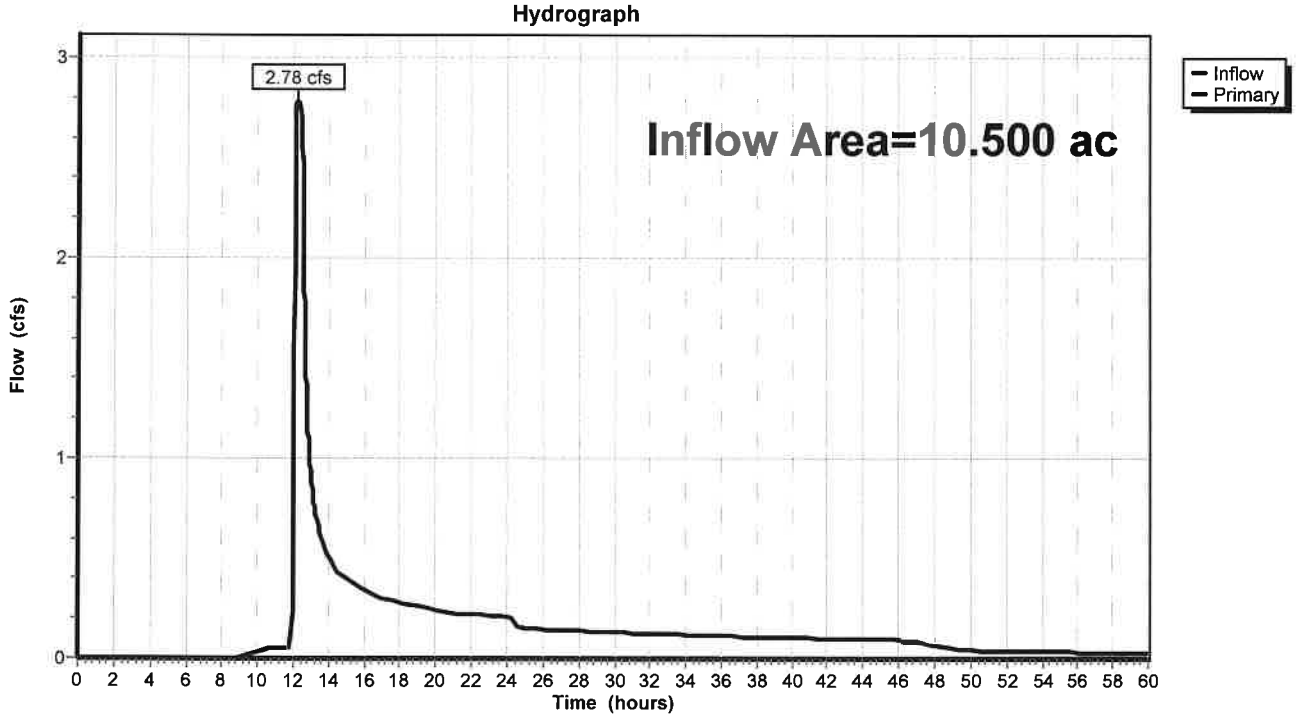
Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 0.83" for 1-Year event
Inflow = 2.78 cfs @ 12.22 hrs, Volume= 0.724 af
Primary = 2.78 cfs @ 12.22 hrs, Volume= 0.724 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.04	0.00	0.04
1.00	0.00	0.00	0.00	53.00	0.03	0.00	0.03
2.00	0.00	0.00	0.00	54.00	0.03	0.00	0.03
3.00	0.00	0.00	0.00	55.00	0.03	0.00	0.03
4.00	0.00	0.00	0.00	56.00	0.03	0.00	0.03
5.00	0.00	0.00	0.00	57.00	0.03	0.00	0.03
6.00	0.00	0.00	0.00	58.00	0.03	0.00	0.03
7.00	0.00	0.00	0.00	59.00	0.03	0.00	0.03
8.00	0.00	0.00	0.00	60.00	0.03	0.00	0.03
9.00	0.01	0.00	0.01				
10.00	0.03	0.00	0.03				
11.00	0.05	0.00	0.05				
12.00	**0.09**	0.00	**0.09**				
13.00	**0.91**	0.00	**0.91**				
14.00	0.51	0.00	0.51				
15.00	0.40	0.00	0.40				
16.00	0.34	0.00	0.34				
17.00	0.30	0.00	0.30				
18.00	0.28	0.00	0.28				
19.00	0.26	0.00	0.26				
20.00	0.24	0.00	0.24				
21.00	0.23	0.00	0.23				
22.00	0.22	0.00	0.22				
23.00	0.21	0.00	0.21				
24.00	0.21	0.00	0.21				
25.00	0.15	0.00	0.15				
26.00	0.15	0.00	0.15				
27.00	0.14	0.00	0.14				
28.00	0.14	0.00	0.14				
29.00	0.13	0.00	0.13				
30.00	0.13	0.00	0.13				
31.00	0.13	0.00	0.13				
32.00	0.12	0.00	0.12				
33.00	0.12	0.00	0.12				
34.00	0.12	0.00	0.12				
35.00	0.12	0.00	0.12				
36.00	0.11	0.00	0.11				
37.00	0.11	0.00	0.11				
38.00	0.11	0.00	0.11				
39.00	0.11	0.00	0.11				
40.00	0.10	0.00	0.10				
41.00	0.10	0.00	0.10				
42.00	0.10	0.00	0.10				
43.00	0.10	0.00	0.10				
44.00	0.10	0.00	0.10				
45.00	0.09	0.00	0.09				
46.00	0.09	0.00	0.09				
47.00	0.09	0.00	0.09				
48.00	0.06	0.00	0.06				
49.00	0.05	0.00	0.05				
50.00	0.04	0.00	0.04				
51.00	0.04	0.00	0.04				

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=1.27"
Flow Length=652' Tc=13.3 min CN=90 Runoff=10.57 cfs 0.644 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=1.34"
Flow Length=683' Tc=14.4 min CN=91 Runoff=7.75 cfs 0.491 af

Pond 1P: Bioretention Area 3 Peak Elev=575.91' Storage=8,359 cf Inflow=10.57 cfs 0.644 af
Primary=2.79 cfs 0.556 af Secondary=5.41 cfs 0.088 af Outflow=8.19 cfs 0.644 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.32' Storage=19,128 cf Inflow=12.29 cfs 0.579 af
Primary=0.18 cfs 0.400 af Secondary=0.00 cfs 0.000 af Outflow=0.18 cfs 0.400 af

Link 5L: Outflow (@ CB 54) Inflow=2.86 cfs 0.956 af
Primary=2.86 cfs 0.956 af

Total Runoff Area = 10.500 ac Runoff Volume = 1.135 af Average Runoff Depth = 1.30"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

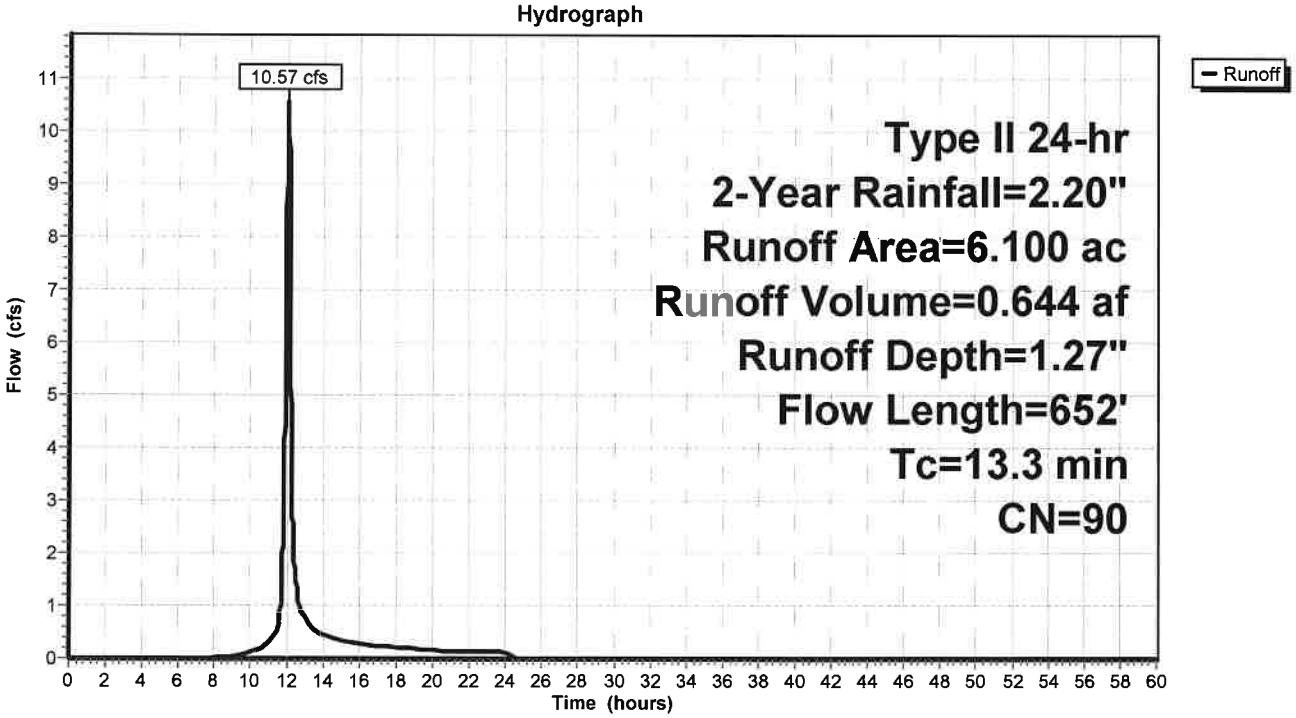
Runoff = 10.57 cfs @ 12.05 hrs, Volume= 0.644 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	2.20	1.27	0.00
1.00	0.02	0.00	0.00	53.00	2.20	1.27	0.00
2.00	0.05	0.00	0.00	54.00	2.20	1.27	0.00
3.00	0.08	0.00	0.00	55.00	2.20	1.27	0.00
4.00	0.11	0.00	0.00	56.00	2.20	1.27	0.00
5.00	0.14	0.00	0.00	57.00	2.20	1.27	0.00
6.00	0.18	0.00	0.00	58.00	2.20	1.27	0.00
7.00	0.22	0.00	0.00	59.00	2.20	1.27	0.00
8.00	0.26	0.00	0.02	60.00	2.20	1.27	0.00
9.00	0.32	0.01	0.06				
10.00	0.40	0.02	0.12				
11.00	0.52	0.06	0.30				
12.00	1.46	0.65	**9.45**				
13.00	1.70	0.84	**0.79**				
14.00	1.80	0.93	0.46				
15.00	1.88	0.99	0.36				
16.00	1.94	1.04	0.28				
17.00	1.98	1.08	0.24				
18.00	2.03	1.12	0.21				
19.00	2.06	1.15	0.19				
20.00	2.09	1.17	0.16				
21.00	2.12	1.20	0.15				
22.00	2.15	1.22	0.14				
23.00	2.18	1.24	0.14				
24.00	**2.20**	**1.27**	0.13				
25.00	2.20	1.27	0.00				
26.00	2.20	1.27	0.00				
27.00	2.20	1.27	0.00				
28.00	2.20	1.27	0.00				
29.00	2.20	1.27	0.00				
30.00	2.20	1.27	0.00				
31.00	2.20	1.27	0.00				
32.00	2.20	1.27	0.00				
33.00	2.20	1.27	0.00				
34.00	2.20	1.27	0.00				
35.00	2.20	1.27	0.00				
36.00	2.20	1.27	0.00				
37.00	2.20	1.27	0.00				
38.00	2.20	1.27	0.00				
39.00	2.20	1.27	0.00				
40.00	2.20	1.27	0.00				
41.00	2.20	1.27	0.00				
42.00	2.20	1.27	0.00				
43.00	2.20	1.27	0.00				
44.00	2.20	1.27	0.00				
45.00	2.20	1.27	0.00				
46.00	2.20	1.27	0.00				
47.00	2.20	1.27	0.00				
48.00	2.20	1.27	0.00				
49.00	2.20	1.27	0.00				
50.00	2.20	1.27	0.00				
51.00	2.20	1.27	0.00				

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

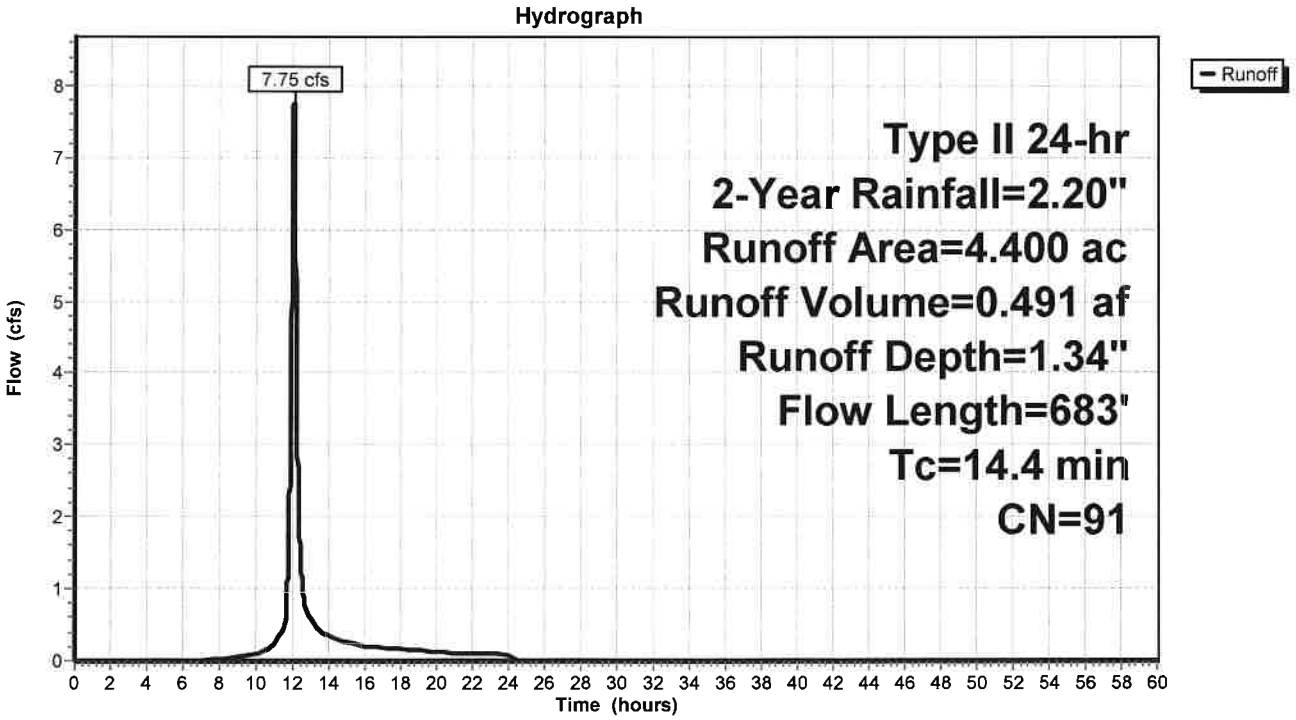
Runoff = 7.75 cfs @ 12.06 hrs, Volume= 0.491 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.05	0.00	0.00
3.00	0.08	0.00	0.00
4.00	0.11	0.00	0.00
5.00	0.14	0.00	0.00
6.00	0.18	0.00	0.00
7.00	0.22	0.00	0.00
8.00	0.26	0.00	0.02
9.00	0.32	0.01	0.06
10.00	0.40	0.03	0.10
11.00	0.52	0.08	0.25
12.00	1.46	0.71	**6.69**
13.00	1.70	0.90	**0.60**
14.00	1.80	0.99	0.35
15.00	1.88	1.06	0.27
16.00	1.94	1.11	0.21
17.00	1.98	1.15	0.18
18.00	2.03	1.19	0.16
19.00	2.06	1.22	0.14
20.00	2.09	1.25	0.12
21.00	2.12	1.27	0.11
22.00	2.15	1.30	0.10
23.00	2.18	1.32	0.10
24.00	**2.20**	**1.34**	0.10
25.00	2.20	1.34	0.00
26.00	2.20	1.34	0.00
27.00	2.20	1.34	0.00
28.00	2.20	1.34	0.00
29.00	2.20	1.34	0.00
30.00	2.20	1.34	0.00
31.00	2.20	1.34	0.00
32.00	2.20	1.34	0.00
33.00	2.20	1.34	0.00
34.00	2.20	1.34	0.00
35.00	2.20	1.34	0.00
36.00	2.20	1.34	0.00
37.00	2.20	1.34	0.00
38.00	2.20	1.34	0.00
39.00	2.20	1.34	0.00
40.00	2.20	1.34	0.00
41.00	2.20	1.34	0.00
42.00	2.20	1.34	0.00
43.00	2.20	1.34	0.00
44.00	2.20	1.34	0.00
45.00	2.20	1.34	0.00
46.00	2.20	1.34	0.00
47.00	2.20	1.34	0.00
48.00	2.20	1.34	0.00
49.00	2.20	1.34	0.00
50.00	2.20	1.34	0.00
51.00	2.20	1.34	0.00
52.00	2.20	1.34	0.00
53.00	2.20	1.34	0.00
54.00	2.20	1.34	0.00
55.00	2.20	1.34	0.00
56.00	2.20	1.34	0.00
57.00	2.20	1.34	0.00
58.00	2.20	1.34	0.00
59.00	2.20	1.34	0.00
60.00	2.20	1.34	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 1.27" for 2-Year event
Inflow = 10.57 cfs @ 12.05 hrs, Volume= 0.644 af
Outflow = 8.19 cfs @ 12.13 hrs, Volume= 0.644 af, Atten= 22%, Lag= 4.9 min
Primary = 2.79 cfs @ 12.13 hrs, Volume= 0.556 af
Secondary = 5.41 cfs @ 12.13 hrs, Volume= 0.088 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.91' @ 12.13 hrs Surf.Area= 9,805 sf Storage= 8,359 cf

Plug-Flow detention time= 252.3 min calculated for 0.644 af (100% of inflow)
Center-of-Mass det. time= 252.2 min (1,078.1 - 825.9)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

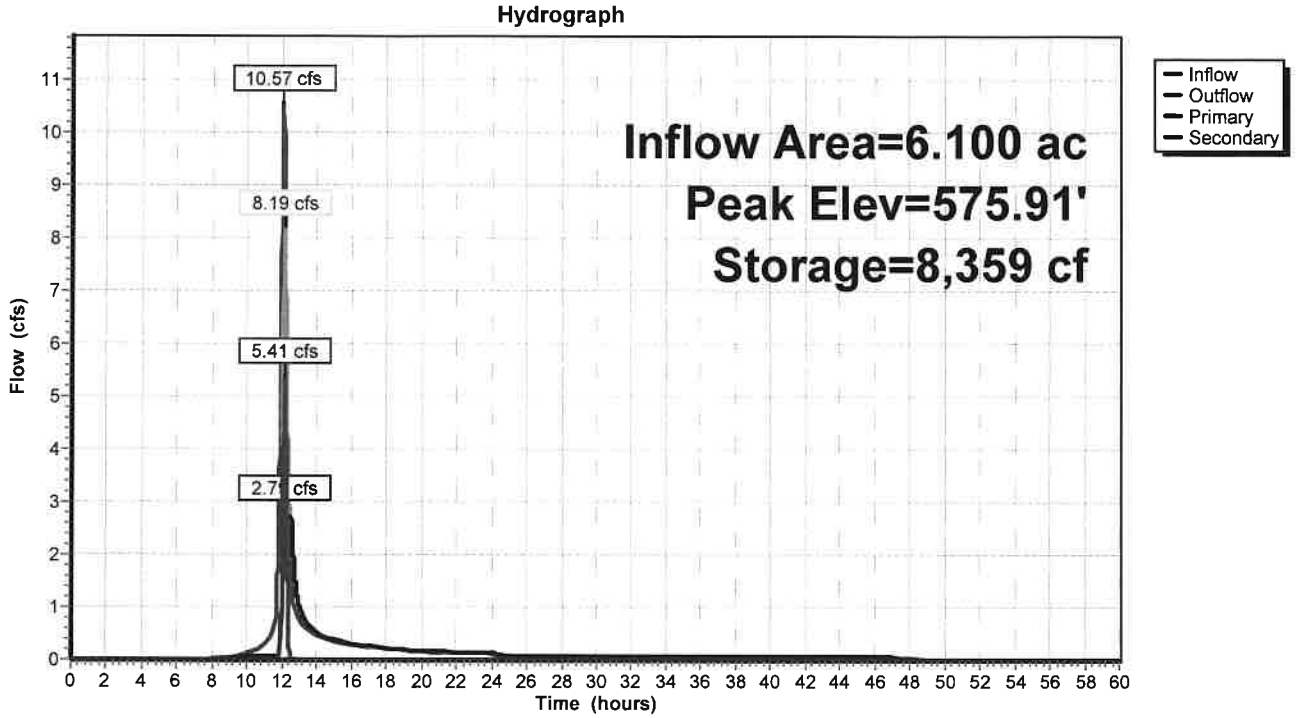
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.79 cfs @ 12.13 hrs HW=575.91' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.79 cfs @ 7.98 fps)
└**2=Grate** (Passes < 4.28 cfs potential flow)
└**3=Exfiltration** (Passes < 0.06 cfs potential flow)

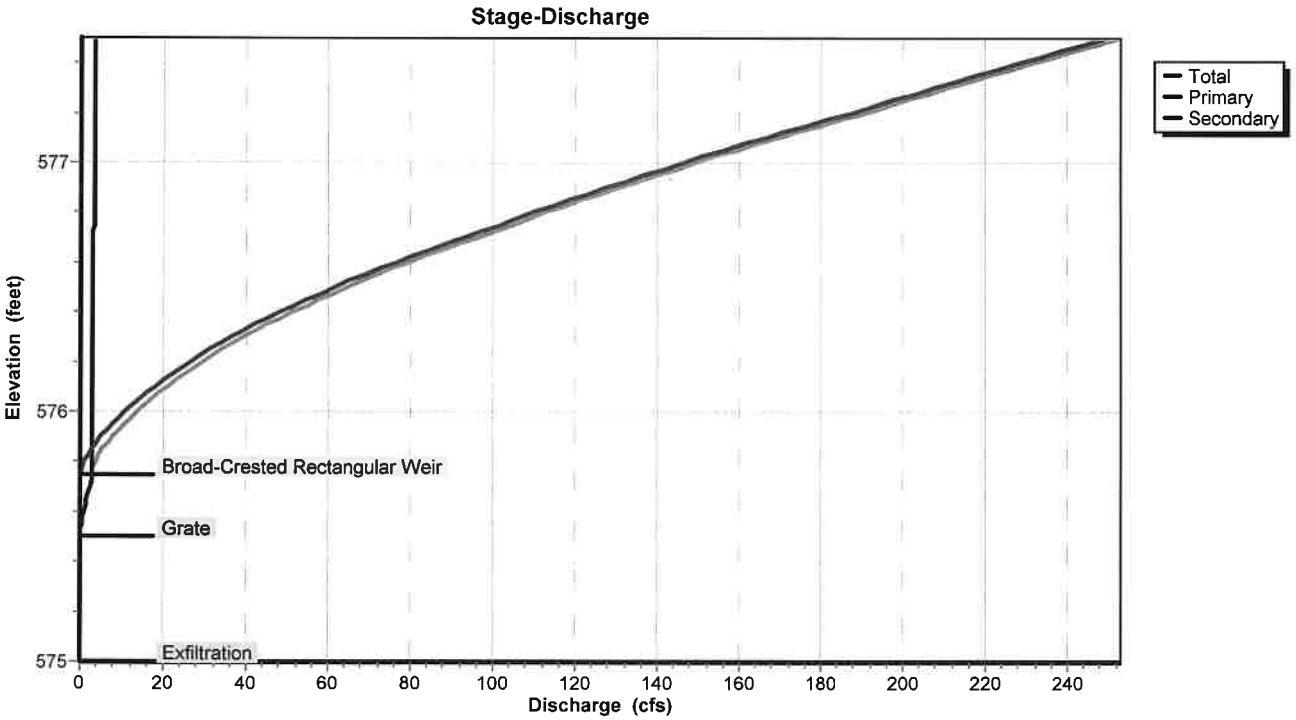
Secondary OutFlow Max=5.39 cfs @ 12.13 hrs HW=575.91' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 5.39 cfs @ 1.15 fps)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

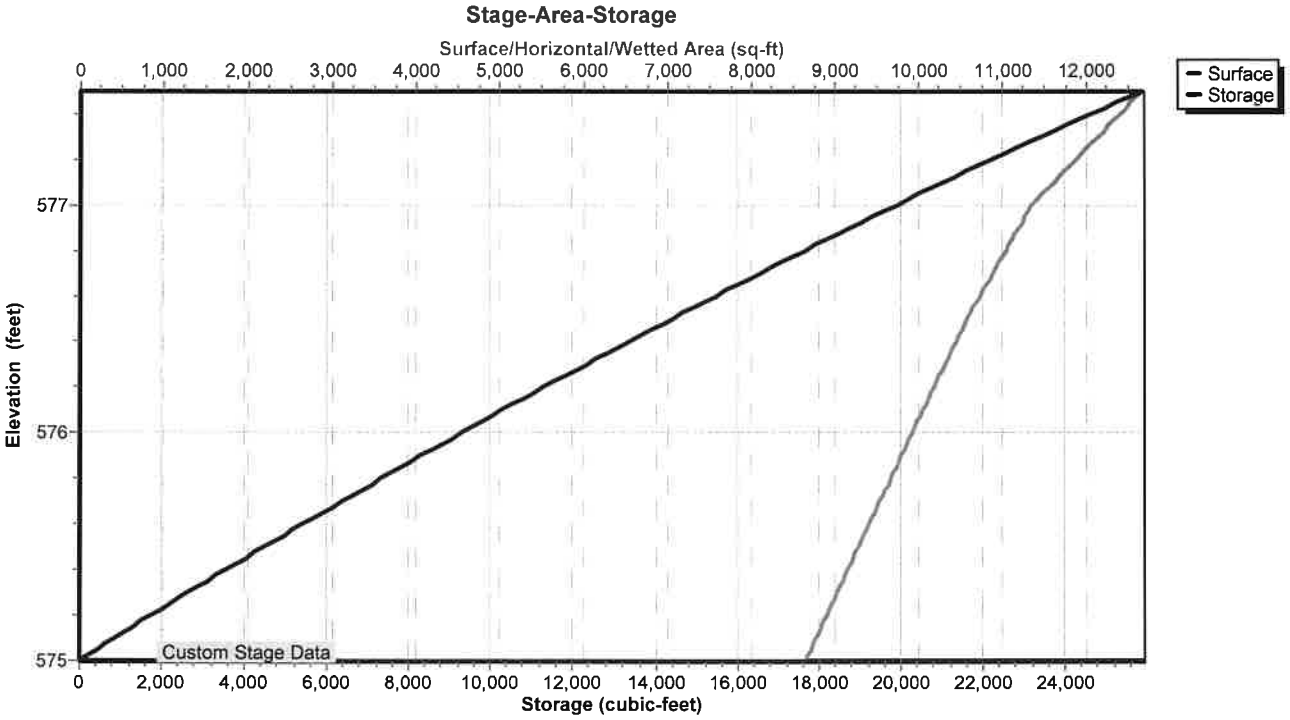


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.02	17	575.00	0.00	0.00	0.00
10.00	0.12	257	575.03	0.05	0.05	0.00
12.00	**9.45**	**6,253**	**575.69**	**2.30**	**2.30**	**0.00**
14.00	**0.46**	**5,096**	**575.57**	**0.52**	**0.52**	**0.00**
16.00	0.28	4,881	575.54	0.30	0.30	0.00
18.00	0.21	4,786	575.53	0.22	0.22	0.00
20.00	0.16	4,719	575.53	0.17	0.17	0.00
22.00	0.14	4,676	575.52	0.15	0.15	0.00
24.00	0.13	4,652	575.52	0.13	0.13	0.00
26.00	0.00	4,232	575.47	0.06	0.06	0.00
28.00	0.00	3,836	575.43	0.05	0.05	0.00
30.00	0.00	3,444	575.39	0.05	0.05	0.00
32.00	0.00	3,055	575.34	0.05	0.05	0.00
34.00	0.00	2,670	575.30	0.05	0.05	0.00
36.00	0.00	2,287	575.26	0.05	0.05	0.00
38.00	0.00	1,909	575.22	0.05	0.05	0.00
40.00	0.00	1,533	575.18	0.05	0.05	0.00
42.00	0.00	1,161	575.13	0.05	0.05	0.00
44.00	0.00	792	575.09	0.05	0.05	0.00
46.00	0.00	426	575.05	0.05	0.05	0.00
48.00	0.00	107	575.01	0.02	0.02	0.00
50.00	0.00	20	575.00	0.00	0.00	0.00
52.00	0.00	4	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 1.58" for 2-Year event
Inflow = 12.29 cfs @ 12.11 hrs, Volume= 0.579 af
Outflow = 0.18 cfs @ 17.01 hrs, Volume= 0.400 af, Atten= 99%, Lag= 293.7 min
Primary = 0.18 cfs @ 17.01 hrs, Volume= 0.400 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.32' @ 17.01 hrs Surf.Area= 61,630 sf Storage= 19,128 cf

Plug-Flow detention time= 1,051.7 min calculated for 0.400 af (69% of inflow)
Center-of-Mass det. time= 962.0 min (1,770.2 - 808.1)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

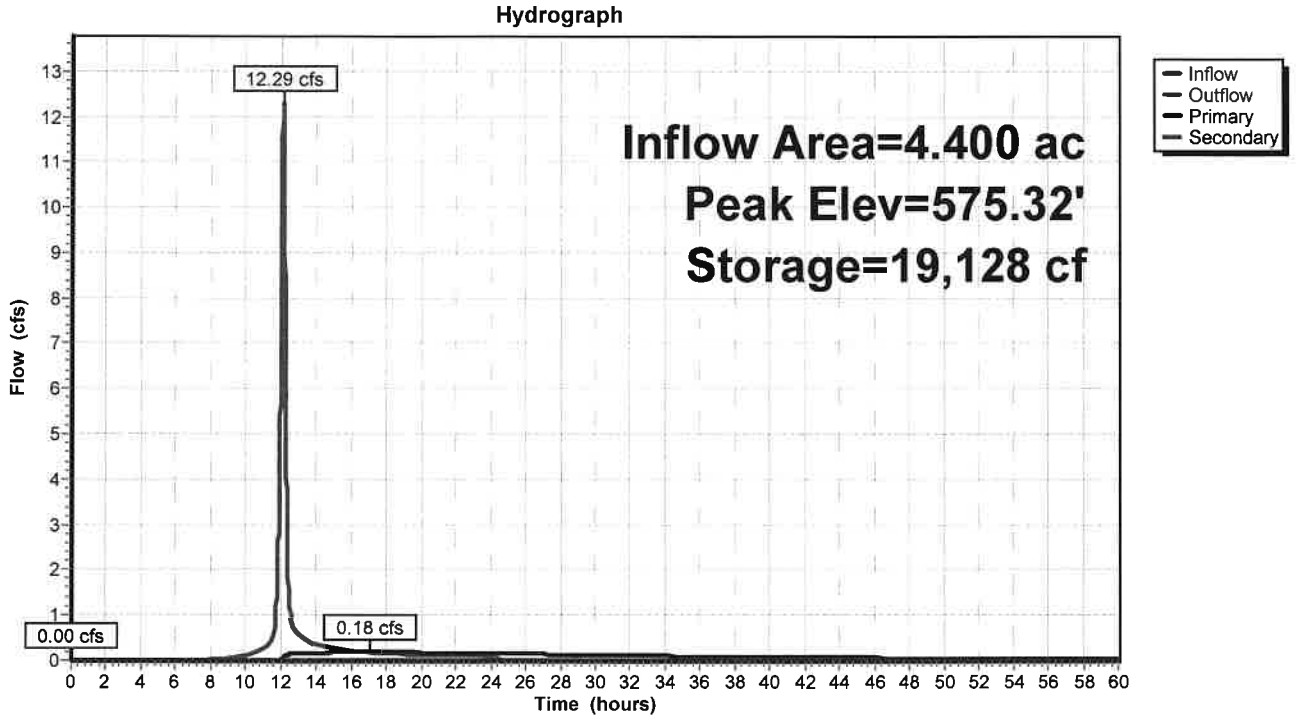
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.18 cfs @ 17.01 hrs HW=575.32' (Free Discharge)
└─**1=12" outlet pipe** (Passes 0.18 cfs of 1.87 cfs potential flow)
  ├─**2=low flow outlet pipe** (Barrel Controls 0.18 cfs @ 1.95 fps)
  └─**3=Grate** (Controls 0.00 cfs)

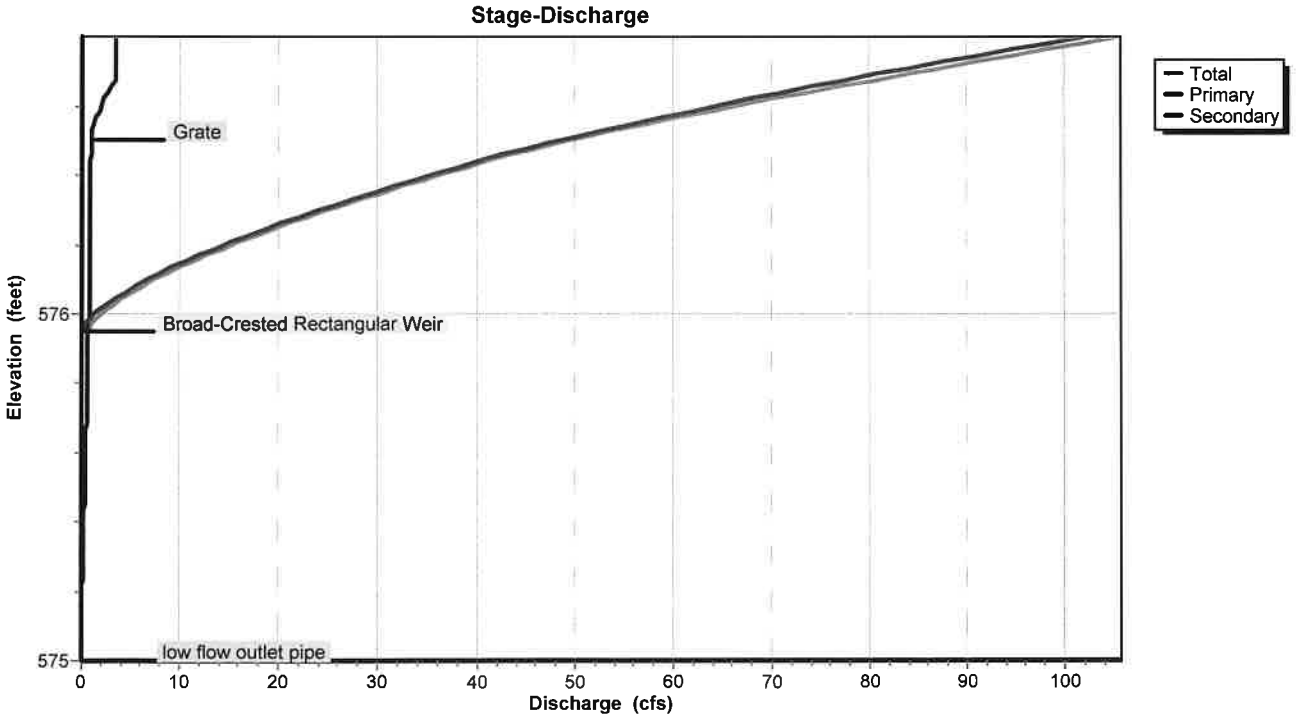
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

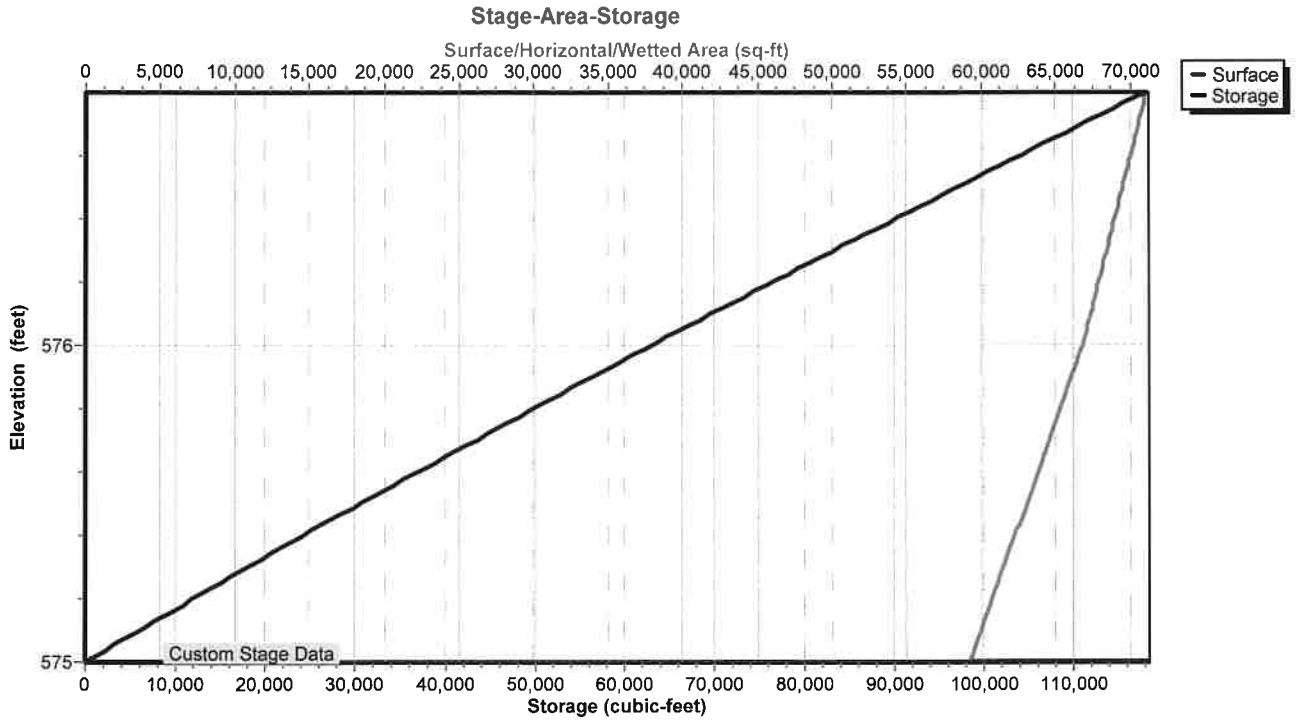


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.02	48	575.00	0.00	0.00	0.00
10.00	0.10	451	575.01	0.00	0.00	0.00
12.00	**6.69**	5,327	575.09	0.02	0.02	0.00
14.00	**0.35**	18,425	575.31	0.17	0.17	0.00
16.00	0.21	**19,087**	**575.32**	**0.18**	**0.18**	0.00
18.00	0.16	**19,093**	**575.32**	**0.18**	**0.18**	0.00
20.00	0.12	18,812	575.31	0.17	0.17	0.00
22.00	0.10	18,367	575.30	0.17	0.17	0.00
24.00	0.10	17,912	575.30	0.16	0.16	0.00
26.00	0.00	16,886	575.28	0.15	0.15	0.00
28.00	0.00	15,893	575.26	0.13	0.13	0.00
30.00	0.00	14,996	575.25	0.12	0.12	0.00
32.00	0.00	14,184	575.24	0.11	0.11	0.00
34.00	0.00	13,445	575.22	0.10	0.10	0.00
36.00	0.00	12,772	575.21	0.09	0.09	0.00
38.00	0.00	12,156	575.20	0.08	0.08	0.00
40.00	0.00	11,591	575.19	0.08	0.08	0.00
42.00	0.00	11,071	575.18	0.07	0.07	0.00
44.00	0.00	10,592	575.18	0.06	0.06	0.00
46.00	0.00	10,149	575.17	0.06	0.06	0.00
48.00	0.00	9,739	575.16	0.05	0.05	0.00
50.00	0.00	9,358	575.16	0.05	0.05	0.00
52.00	0.00	9,003	575.15	0.05	0.05	0.00
54.00	0.00	8,673	575.15	0.04	0.04	0.00
56.00	0.00	8,364	575.14	0.04	0.04	0.00
58.00	0.00	8,075	575.14	0.04	0.04	0.00
60.00	0.00	7,803	575.13	0.04	0.04	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

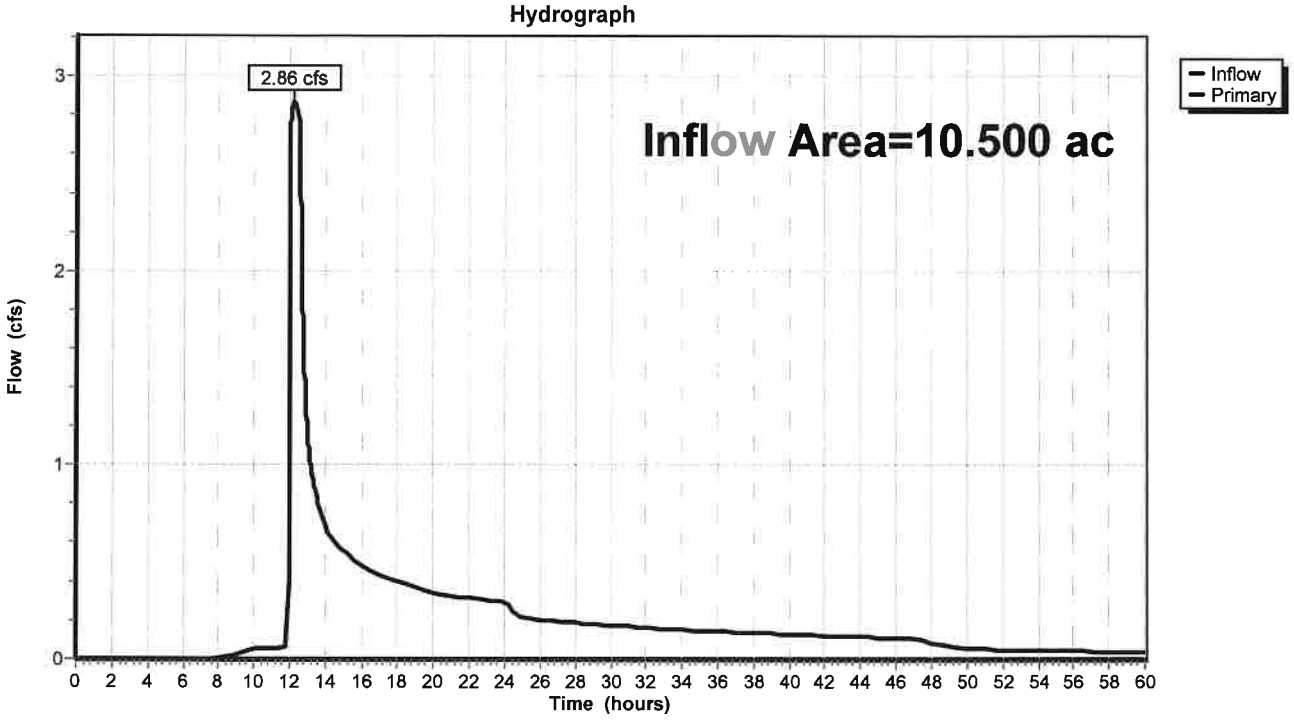
Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 1.09" for 2-Year event
Inflow = 2.86 cfs @ 12.23 hrs, Volume= 0.956 af
Primary = 2.86 cfs @ 12.23 hrs, Volume= 0.956 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.05	0.00	0.05
1.00	0.00	0.00	0.00	53.00	0.05	0.00	0.05
2.00	0.00	0.00	0.00	54.00	0.04	0.00	0.04
3.00	0.00	0.00	0.00	55.00	0.04	0.00	0.04
4.00	0.00	0.00	0.00	56.00	0.04	0.00	0.04
5.00	0.00	0.00	0.00	57.00	0.04	0.00	0.04
6.00	0.00	0.00	0.00	58.00	0.04	0.00	0.04
7.00	0.00	0.00	0.00	59.00	0.04	0.00	0.04
8.00	0.00	0.00	0.00	60.00	0.04	0.00	0.04
9.00	0.02	0.00	0.02				
10.00	0.05	0.00	0.05				
11.00	0.05	0.00	0.05				
12.00	**2.31**	0.00	**2.31**				
13.00	**1.18**	0.00	**1.18**				
14.00	0.69	0.00	0.69				
15.00	0.55	0.00	0.55				
16.00	0.48	0.00	0.48				
17.00	0.43	0.00	0.43				
18.00	0.40	0.00	0.40				
19.00	0.37	0.00	0.37				
20.00	0.34	0.00	0.34				
21.00	0.32	0.00	0.32				
22.00	0.31	0.00	0.31				
23.00	0.30	0.00	0.30				
24.00	0.29	0.00	0.29				
25.00	0.21	0.00	0.21				
26.00	0.20	0.00	0.20				
27.00	0.19	0.00	0.19				
28.00	0.19	0.00	0.19				
29.00	0.18	0.00	0.18				
30.00	0.17	0.00	0.17				
31.00	0.17	0.00	0.17				
32.00	0.16	0.00	0.16				
33.00	0.16	0.00	0.16				
34.00	0.15	0.00	0.15				
35.00	0.15	0.00	0.15				
36.00	0.14	0.00	0.14				
37.00	0.14	0.00	0.14				
38.00	0.13	0.00	0.13				
39.00	0.13	0.00	0.13				
40.00	0.13	0.00	0.13				
41.00	0.12	0.00	0.12				
42.00	0.12	0.00	0.12				
43.00	0.12	0.00	0.12				
44.00	0.11	0.00	0.11				
45.00	0.11	0.00	0.11				
46.00	0.11	0.00	0.11				
47.00	0.11	0.00	0.11				
48.00	0.08	0.00	0.08				
49.00	0.06	0.00	0.06				
50.00	0.06	0.00	0.06				
51.00	0.05	0.00	0.05				

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=1.71"
Flow Length=652' Tc=13.3 min CN=90 Runoff=14.18 cfs 0.870 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=1.79"
Flow Length=683' Tc=14.4 min CN=91 Runoff=10.29 cfs 0.658 af

Pond 1P: Bioretention Area 3 Peak Elev=575.99' Storage=9,153 cf Inflow=14.18 cfs 0.870 af
Primary=2.83 cfs 0.666 af Secondary=10.09 cfs 0.203 af Outflow=12.91 cfs 0.870 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.46' Storage=28,218 cf Inflow=20.08 cfs 0.861 af
Primary=0.33 cfs 0.652 af Secondary=0.00 cfs 0.000 af Outflow=0.33 cfs 0.652 af

Link 5L: Outflow (@ CB 54) Inflow=3.01 cfs 1.318 af
Primary=3.01 cfs 1.318 af

Total Runoff Area = 10.500 ac Runoff Volume = 1.527 af Average Runoff Depth = 1.75"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

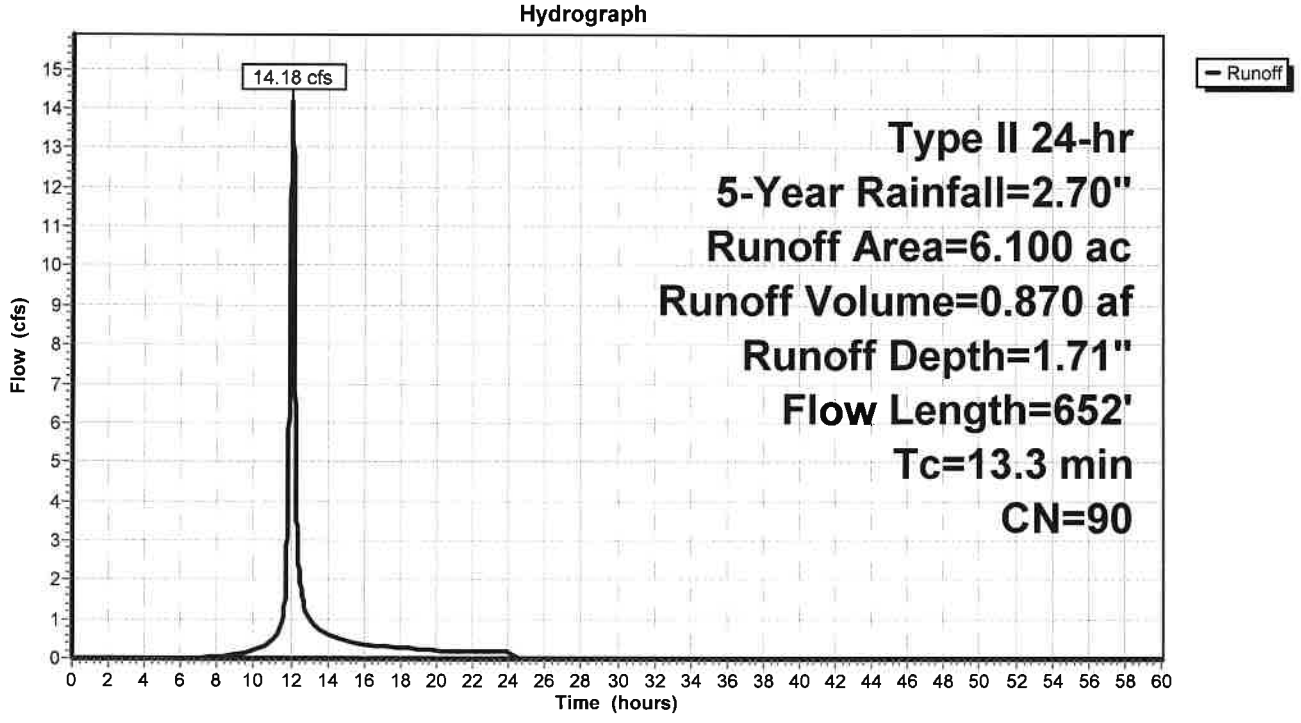
Runoff = 14.18 cfs @ 12.05 hrs, Volume= 0.870 af, Depth= 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.00
7.00	0.27	0.00	0.02
8.00	0.32	0.01	0.05
9.00	0.40	0.02	0.12
10.00	0.49	0.05	0.20
11.00	0.63	0.11	0.47
12.00	1.79	0.92	**12.79**
13.00	2.08	1.17	**1.02**
14.00	2.21	1.28	0.59
15.00	2.30	1.36	0.46
16.00	2.38	1.42	0.36
17.00	2.43	1.47	0.31
18.00	2.49	1.52	0.27
19.00	2.53	1.56	0.24
20.00	2.57	1.59	0.20
21.00	2.60	1.62	0.19
22.00	2.64	1.65	0.18
23.00	2.67	1.68	0.17
24.00	**2.70**	**1.71**	0.17
25.00	2.70	1.71	0.00
26.00	2.70	1.71	0.00
27.00	2.70	1.71	0.00
28.00	2.70	1.71	0.00
29.00	2.70	1.71	0.00
30.00	2.70	1.71	0.00
31.00	2.70	1.71	0.00
32.00	2.70	1.71	0.00
33.00	2.70	1.71	0.00
34.00	2.70	1.71	0.00
35.00	2.70	1.71	0.00
36.00	2.70	1.71	0.00
37.00	2.70	1.71	0.00
38.00	2.70	1.71	0.00
39.00	2.70	1.71	0.00
40.00	2.70	1.71	0.00
41.00	2.70	1.71	0.00
42.00	2.70	1.71	0.00
43.00	2.70	1.71	0.00
44.00	2.70	1.71	0.00
45.00	2.70	1.71	0.00
46.00	2.70	1.71	0.00
47.00	2.70	1.71	0.00
48.00	2.70	1.71	0.00
49.00	2.70	1.71	0.00
50.00	2.70	1.71	0.00
51.00	2.70	1.71	0.00
52.00	2.70	1.71	0.00
53.00	2.70	1.71	0.00
54.00	2.70	1.71	0.00
55.00	2.70	1.71	0.00
56.00	2.70	1.71	0.00
57.00	2.70	1.71	0.00
58.00	2.70	1.71	0.00
59.00	2.70	1.71	0.00
60.00	2.70	1.71	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

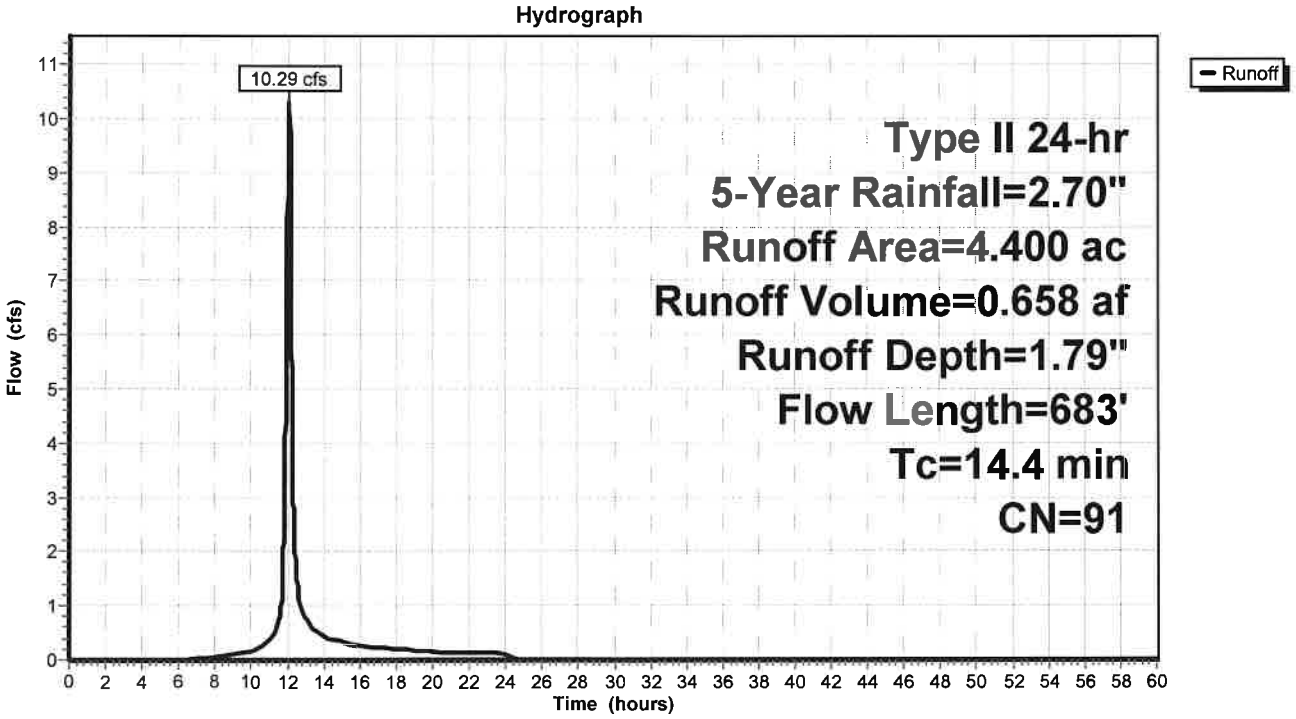
Runoff = 10.29 cfs @ 12.06 hrs, Volume= 0.658 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.00
7.00	0.27	0.00	0.03
8.00	0.32	0.01	0.05
9.00	0.40	0.03	0.10
10.00	0.49	0.07	0.17
11.00	0.63	0.13	0.37
12.00	1.79	0.98	**8.97**
13.00	2.08	1.24	**0.77**
14.00	2.21	1.35	0.44
15.00	2.30	1.43	0.34
16.00	2.38	1.50	0.27
17.00	2.43	1.55	0.23
18.00	2.49	1.60	0.20
19.00	2.53	1.64	0.18
20.00	2.57	1.67	0.15
21.00	2.60	1.71	0.14
22.00	2.64	1.74	0.13
23.00	2.67	1.77	0.13
24.00	**2.70**	**1.79**	0.12
25.00	2.70	1.79	0.00
26.00	2.70	1.79	0.00
27.00	2.70	1.79	0.00
28.00	2.70	1.79	0.00
29.00	2.70	1.79	0.00
30.00	2.70	1.79	0.00
31.00	2.70	1.79	0.00
32.00	2.70	1.79	0.00
33.00	2.70	1.79	0.00
34.00	2.70	1.79	0.00
35.00	2.70	1.79	0.00
36.00	2.70	1.79	0.00
37.00	2.70	1.79	0.00
38.00	2.70	1.79	0.00
39.00	2.70	1.79	0.00
40.00	2.70	1.79	0.00
41.00	2.70	1.79	0.00
42.00	2.70	1.79	0.00
43.00	2.70	1.79	0.00
44.00	2.70	1.79	0.00
45.00	2.70	1.79	0.00
46.00	2.70	1.79	0.00
47.00	2.70	1.79	0.00
48.00	2.70	1.79	0.00
49.00	2.70	1.79	0.00
50.00	2.70	1.79	0.00
51.00	2.70	1.79	0.00
52.00	2.70	1.79	0.00
53.00	2.70	1.79	0.00
54.00	2.70	1.79	0.00
55.00	2.70	1.79	0.00
56.00	2.70	1.79	0.00
57.00	2.70	1.79	0.00
58.00	2.70	1.79	0.00
59.00	2.70	1.79	0.00
60.00	2.70	1.79	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 1.71" for 5-Year event
Inflow = 14.18 cfs @ 12.05 hrs, Volume= 0.870 af
Outflow = 12.91 cfs @ 12.10 hrs, Volume= 0.870 af, Atten= 9%, Lag= 2.9 min
Primary = 2.83 cfs @ 12.10 hrs, Volume= 0.666 af
Secondary = 10.09 cfs @ 12.10 hrs, Volume= 0.203 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.99' @ 12.10 hrs Surf.Area= 9,908 sf Storage= 9,153 cf

Plug-Flow detention time= 193.1 min calculated for 0.869 af (100% of inflow)
Center-of-Mass det. time= 193.4 min (1,010.7 - 817.3)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

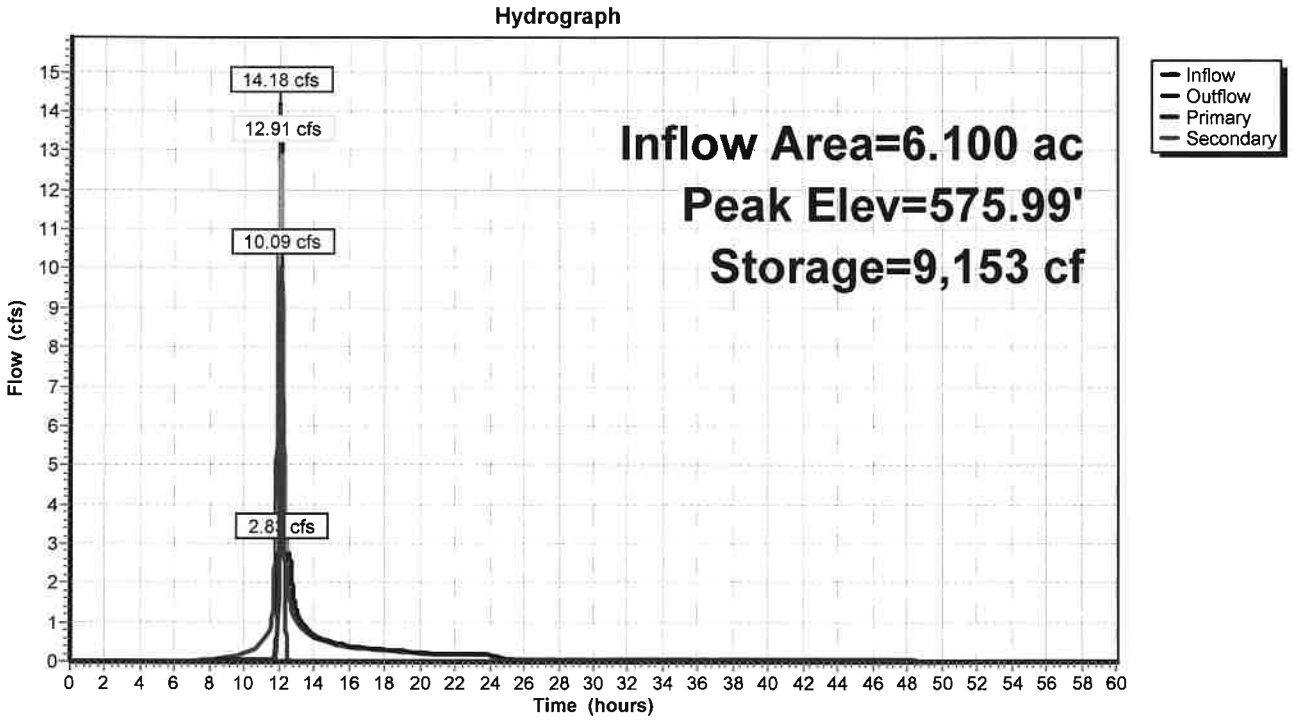
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.83 cfs @ 12.10 hrs HW=575.99' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.83 cfs @ 8.10 fps)
  ├**2=Grate** (Passes < 4.69 cfs potential flow)
  └**3=Exfiltration** (Passes < 0.06 cfs potential flow)

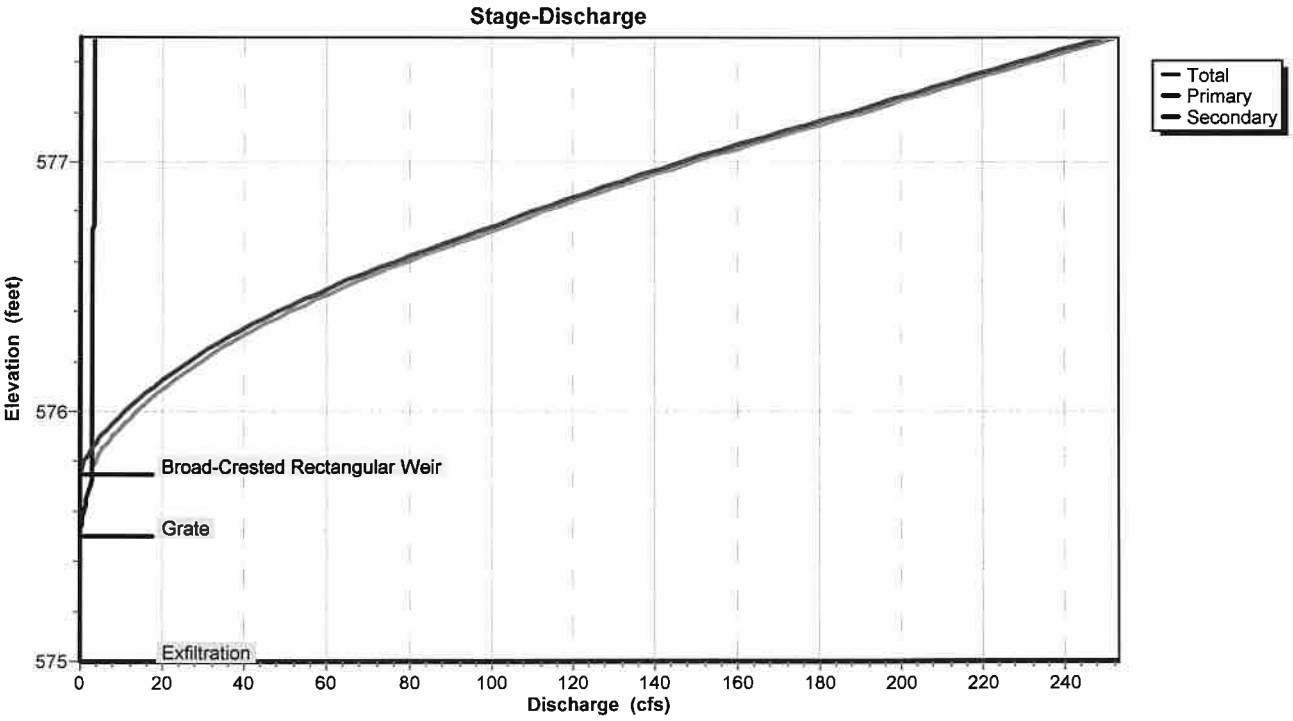
Secondary OutFlow Max=10.07 cfs @ 12.10 hrs HW=575.99' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 10.07 cfs @ 1.42 fps)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

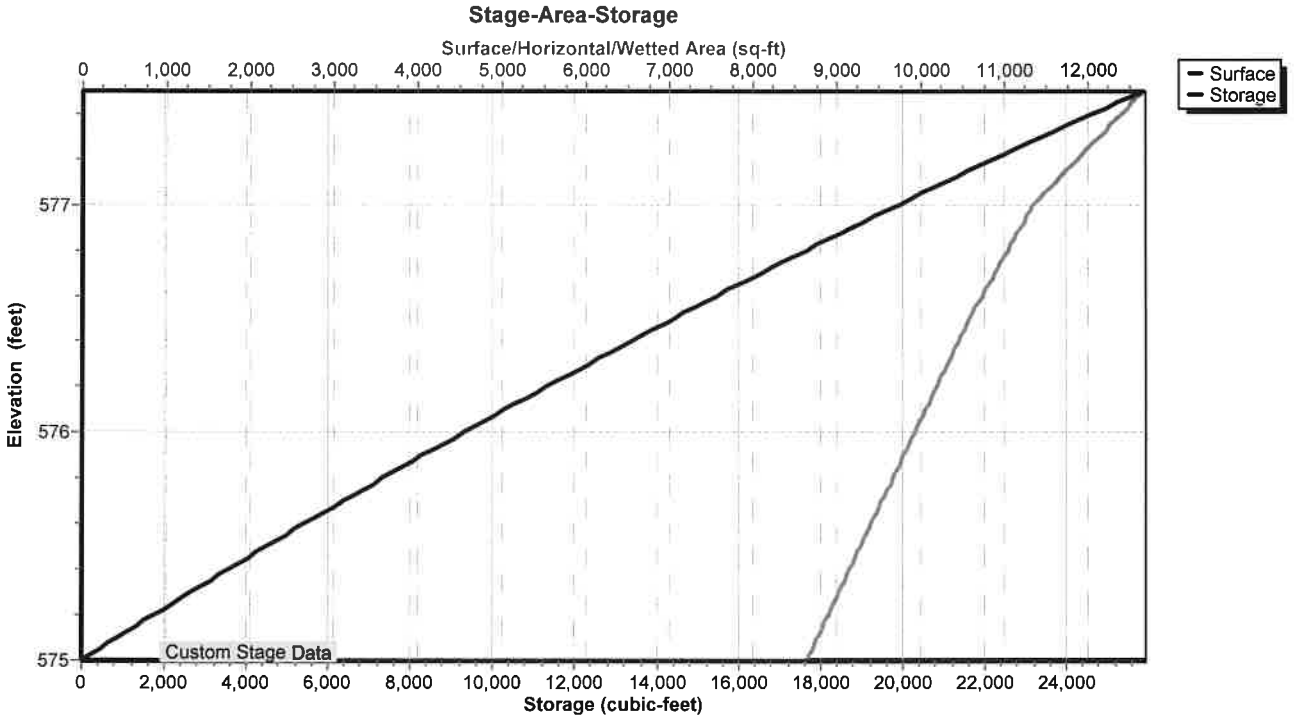


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.05	99	575.01	0.02	0.02	0.00
10.00	0.20	617	575.07	0.05	0.05	0.00
12.00	**12.79**	**8,183**	**575.89**	**7.28**	**2.78**	**4.50**
14.00	**0.59**	**5,218**	**575.58**	**0.66**	**0.66**	**0.00**
16.00	0.36	4,969	575.55	0.38	0.38	0.00
18.00	0.27	4,859	575.54	0.29	0.29	0.00
20.00	0.20	4,774	575.53	0.21	0.21	0.00
22.00	0.18	4,739	575.53	0.18	0.18	0.00
24.00	0.17	4,722	575.53	0.17	0.17	0.00
26.00	0.00	4,258	575.48	0.06	0.06	0.00
28.00	0.00	3,862	575.43	0.05	0.05	0.00
30.00	0.00	3,470	575.39	0.05	0.05	0.00
32.00	0.00	3,081	575.35	0.05	0.05	0.00
34.00	0.00	2,695	575.30	0.05	0.05	0.00
36.00	0.00	2,313	575.26	0.05	0.05	0.00
38.00	0.00	1,934	575.22	0.05	0.05	0.00
40.00	0.00	1,558	575.18	0.05	0.05	0.00
42.00	0.00	1,186	575.14	0.05	0.05	0.00
44.00	0.00	816	575.09	0.05	0.05	0.00
46.00	0.00	450	575.05	0.05	0.05	0.00
48.00	0.00	119	575.01	0.03	0.03	0.00
50.00	0.00	22	575.00	0.01	0.01	0.00
52.00	0.00	4	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 2.35" for 5-Year event
Inflow = 20.08 cfs @ 12.08 hrs, Volume= 0.861 af
Outflow = 0.33 cfs @ 15.13 hrs, Volume= 0.652 af, Atten= 98%, Lag= 182.5 min
Primary = 0.33 cfs @ 15.13 hrs, Volume= 0.652 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.46' @ 15.13 hrs Surf.Area= 62,747 sf Storage= 28,218 cf

Plug-Flow detention time= 974.3 min calculated for 0.652 af (76% of inflow)
Center-of-Mass det. time= 898.6 min (1,692.2 - 793.6)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

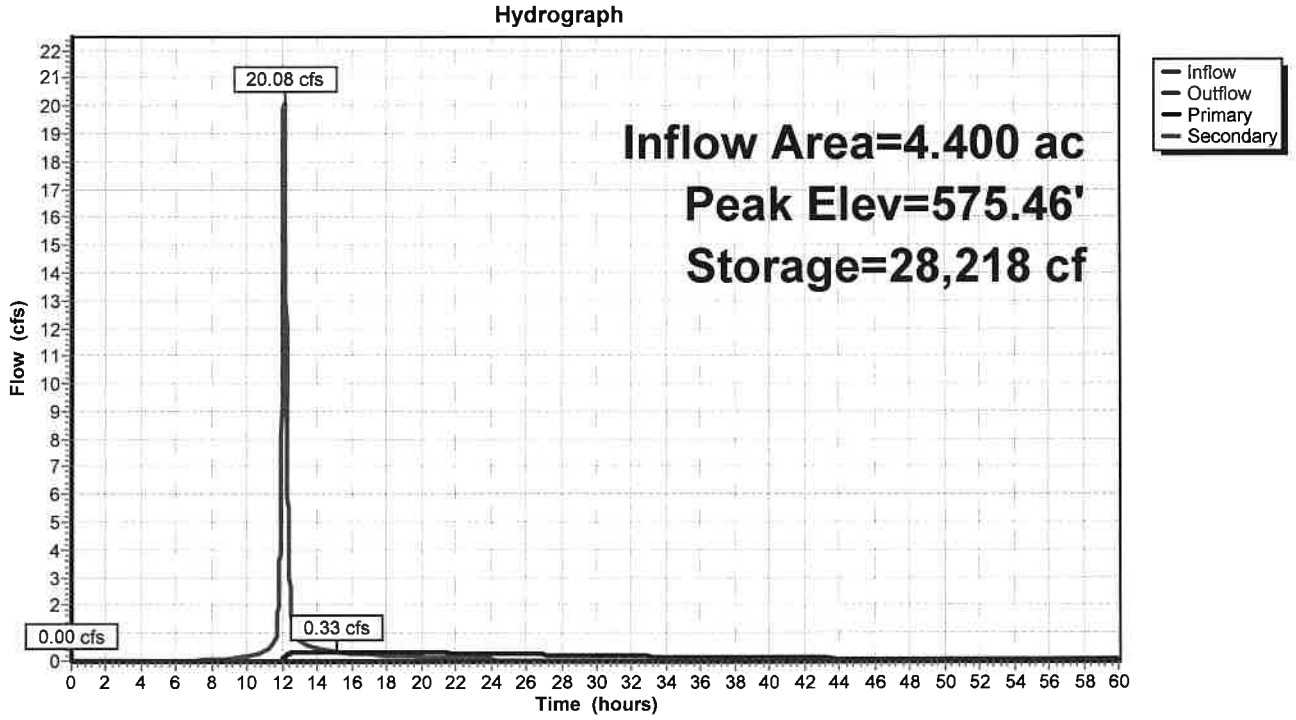
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.33 cfs @ 15.13 hrs HW=575.46' (Free Discharge)
↑**1=12" outlet pipe** (Passes 0.33 cfs of 2.02 cfs potential flow)
↑**2=low flow outlet pipe** (Barrel Controls 0.33 cfs @ 2.27 fps)
↑**3=Grate** (Controls 0.00 cfs)

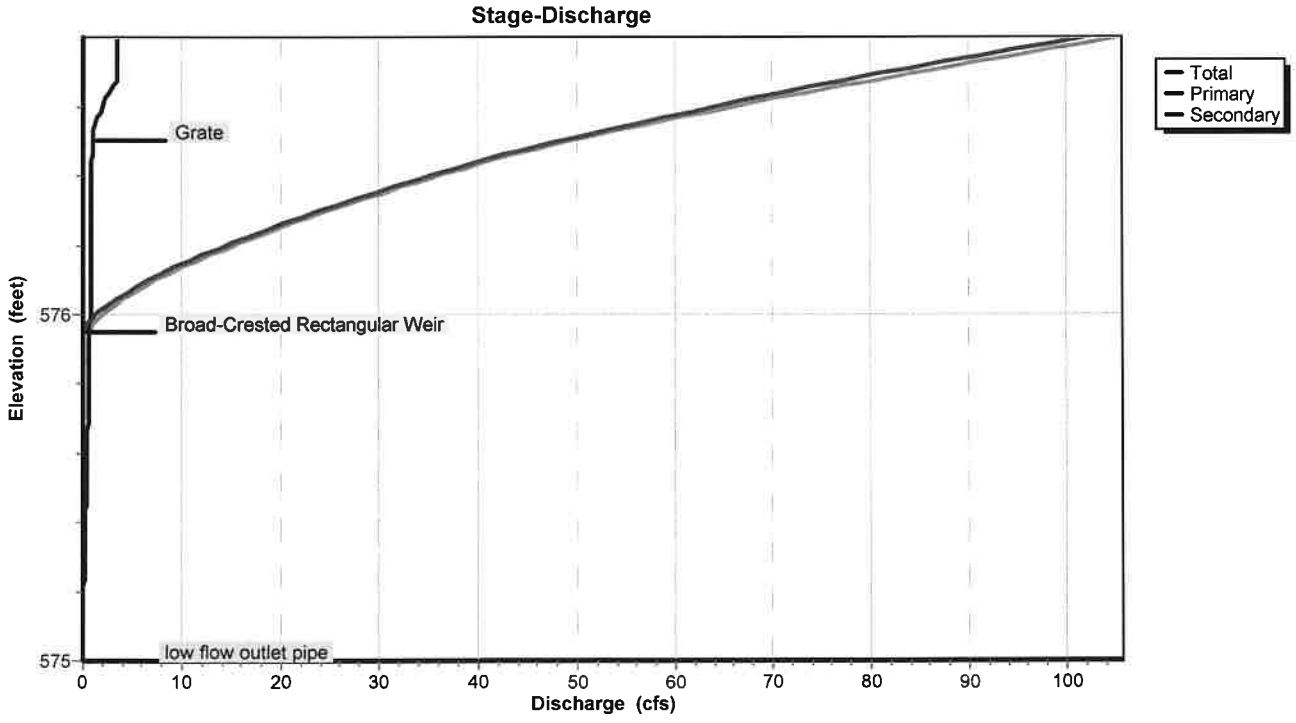
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
↑**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Pond 3P: Detention Basin (SMA #1)



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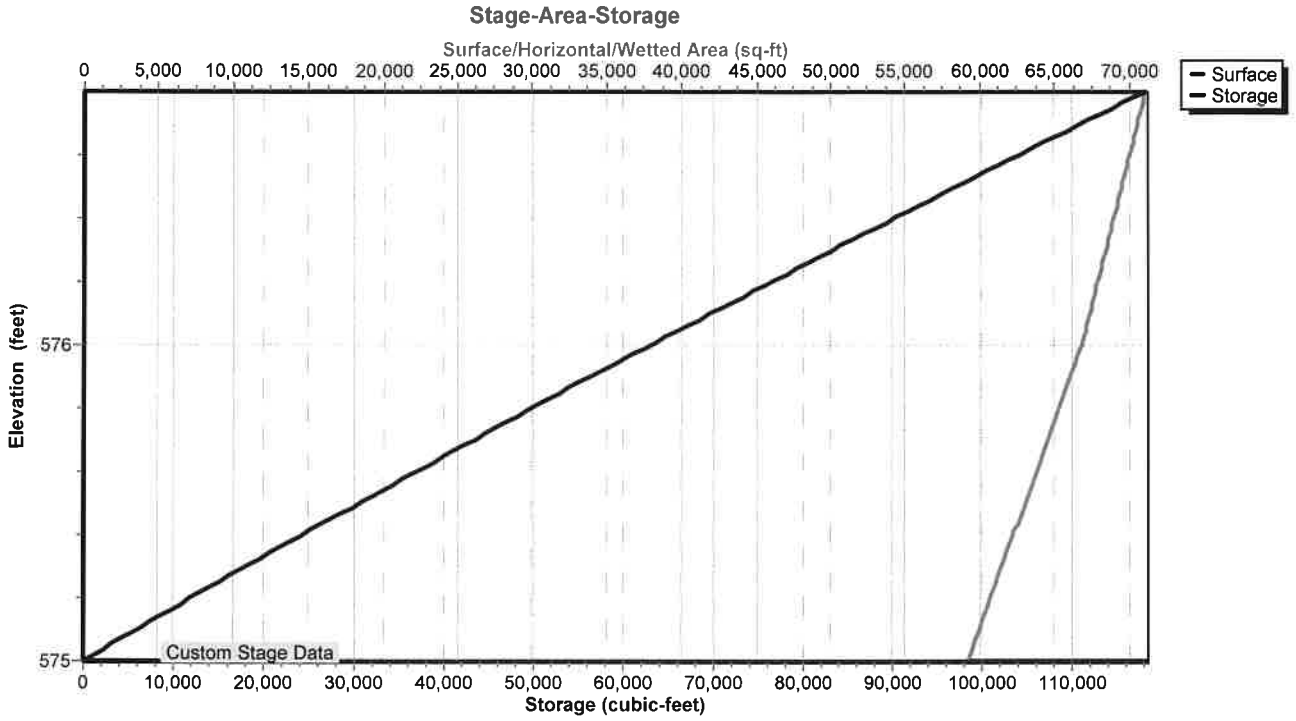
Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	1	575.00	0.00	0.00	0.00
8.00	0.05	186	575.00	0.00	0.00	0.00
10.00	0.17	912	575.02	0.00	0.00	0.00
12.00	**13.47**	8,186	575.14	0.04	0.04	0.00
14.00	**0.44**	**28,034**	**575.46**	**0.33**	**0.33**	0.00
16.00	0.27	**28,118**	**575.46**	**0.33**	**0.33**	0.00
18.00	0.20	27,442	575.45	0.32	0.32	0.00
20.00	0.15	26,479	575.43	0.30	0.30	0.00
22.00	0.13	25,382	575.42	0.28	0.28	0.00
24.00	0.12	24,337	575.40	0.26	0.26	0.00
26.00	0.00	22,633	575.37	0.24	0.24	0.00
28.00	0.00	21,033	575.35	0.21	0.21	0.00
30.00	0.00	19,609	575.32	0.19	0.19	0.00
32.00	0.00	18,338	575.30	0.17	0.17	0.00
34.00	0.00	17,199	575.29	0.15	0.15	0.00
36.00	0.00	16,175	575.27	0.13	0.13	0.00
38.00	0.00	15,251	575.25	0.12	0.12	0.00
40.00	0.00	14,415	575.24	0.11	0.11	0.00
42.00	0.00	13,655	575.23	0.10	0.10	0.00
44.00	0.00	12,964	575.22	0.09	0.09	0.00
46.00	0.00	12,331	575.21	0.08	0.08	0.00
48.00	0.00	11,752	575.20	0.08	0.08	0.00
50.00	0.00	11,220	575.19	0.07	0.07	0.00
52.00	0.00	10,729	575.18	0.07	0.07	0.00
54.00	0.00	10,276	575.17	0.06	0.06	0.00
56.00	0.00	9,856	575.16	0.06	0.06	0.00
58.00	0.00	9,467	575.16	0.05	0.05	0.00
60.00	0.00	9,105	575.15	0.05	0.05	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

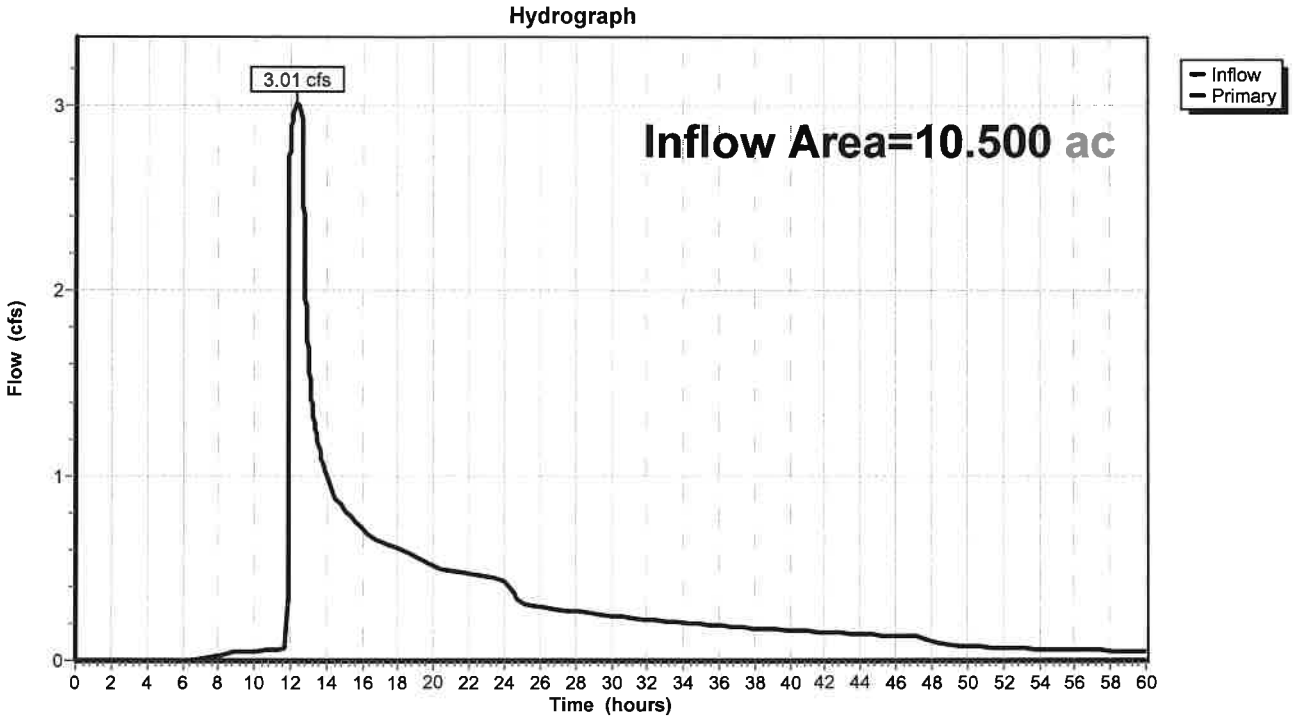
Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 1.51" for 5-Year event
Inflow = 3.01 cfs @ 12.34 hrs, Volume= 1.318 af
Primary = 3.01 cfs @ 12.34 hrs, Volume= 1.318 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.07	0.00	0.07
1.00	0.00	0.00	0.00	53.00	0.06	0.00	0.06
2.00	0.00	0.00	0.00	54.00	0.06	0.00	0.06
3.00	0.00	0.00	0.00	55.00	0.06	0.00	0.06
4.00	0.00	0.00	0.00	56.00	0.06	0.00	0.06
5.00	0.00	0.00	0.00	57.00	0.05	0.00	0.05
6.00	0.00	0.00	0.00	58.00	0.05	0.00	0.05
7.00	0.00	0.00	0.00	59.00	0.05	0.00	0.05
8.00	0.02	0.00	0.02	60.00	0.05	0.00	0.05
9.00	0.05	0.00	0.05				
10.00	0.05	0.00	0.05				
11.00	0.05	0.00	0.05				
12.00	**2.82**	0.00	**2.82**				
13.00	**1.62**	0.00	**1.62**				
14.00	0.99	0.00	0.99				
15.00	0.81	0.00	0.81				
16.00	0.71	0.00	0.71				
17.00	0.65	0.00	0.65				
18.00	0.60	0.00	0.60				
19.00	0.56	0.00	0.56				
20.00	0.51	0.00	0.51				
21.00	0.48	0.00	0.48				
22.00	0.47	0.00	0.47				
23.00	0.45	0.00	0.45				
24.00	0.43	0.00	0.43				
25.00	0.31	0.00	0.31				
26.00	0.29	0.00	0.29				
27.00	0.28	0.00	0.28				
28.00	0.26	0.00	0.26				
29.00	0.25	0.00	0.25				
30.00	0.24	0.00	0.24				
31.00	0.23	0.00	0.23				
32.00	0.22	0.00	0.22				
33.00	0.21	0.00	0.21				
34.00	0.20	0.00	0.20				
35.00	0.20	0.00	0.20				
36.00	0.19	0.00	0.19				
37.00	0.18	0.00	0.18				
38.00	0.17	0.00	0.17				
39.00	0.17	0.00	0.17				
40.00	0.16	0.00	0.16				
41.00	0.16	0.00	0.16				
42.00	0.15	0.00	0.15				
43.00	0.15	0.00	0.15				
44.00	0.14	0.00	0.14				
45.00	0.14	0.00	0.14				
46.00	0.13	0.00	0.13				
47.00	0.13	0.00	0.13				
48.00	0.10	0.00	0.10				
49.00	0.09	0.00	0.09				
50.00	0.08	0.00	0.08				
51.00	0.07	0.00	0.07				

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=2.12"
Flow Length=652' Tc=13.3 min CN=90 Runoff=17.46 cfs 1.079 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=2.21"
Flow Length=683' Tc=14.4 min CN=91 Runoff=12.59 cfs 0.811 af

Pond 1P: Bioretention Area 3 Peak Elev=576.04' Storage=9,672 cf Inflow=17.46 cfs 1.079 af
Primary=2.85 cfs 0.765 af Secondary=13.60 cfs 0.314 af Outflow=16.45 cfs 1.079 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.60' Storage=37,117 cf Inflow=26.01 cfs 1.125 af
Primary=0.47 cfs 0.892 af Secondary=0.00 cfs 0.000 af Outflow=0.47 cfs 0.892 af

Link 5L: Outflow (@ CB 54) Inflow=3.16 cfs 1.657 af
Primary=3.16 cfs 1.657 af

Total Runoff Area = 10.500 ac Runoff Volume = 1.890 af Average Runoff Depth = 2.16"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

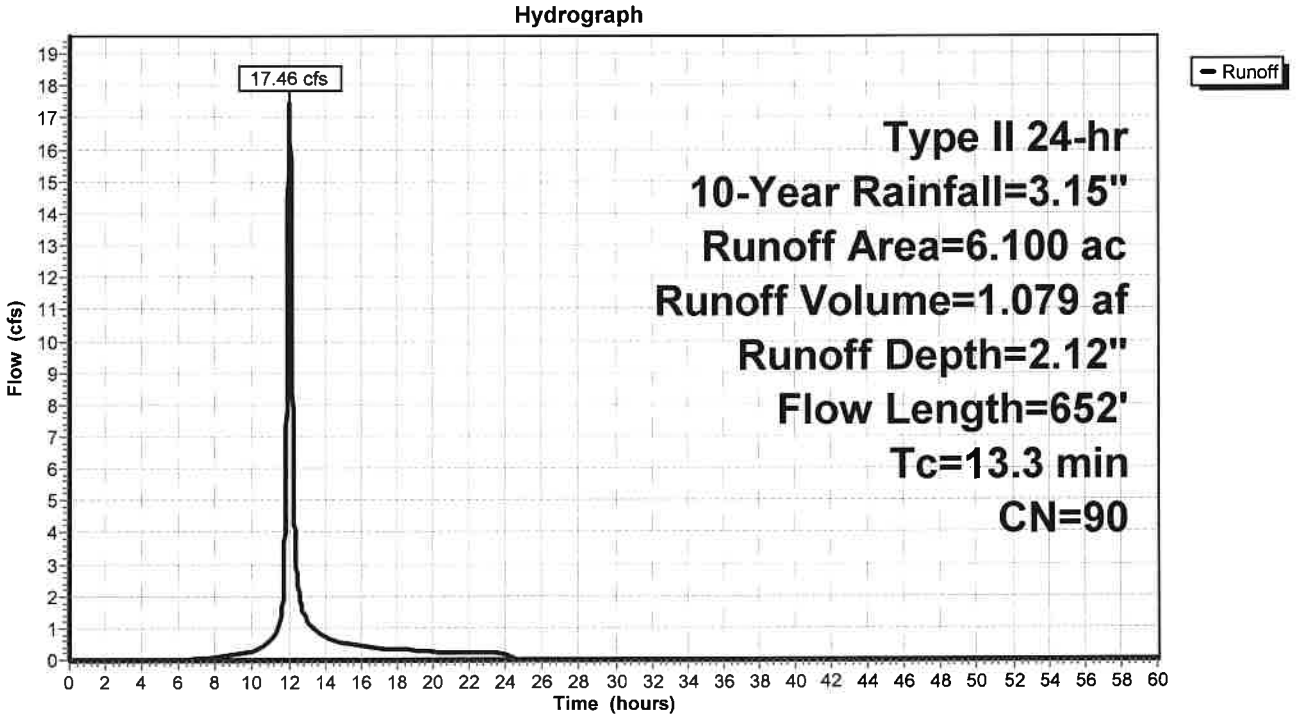
Runoff = 17.46 cfs @ 12.05 hrs, Volume= 1.079 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.07	0.00	0.00
3.00	0.11	0.00	0.00
4.00	0.15	0.00	0.00
5.00	0.20	0.00	0.00
6.00	0.25	0.00	0.01
7.00	0.31	0.01	0.05
8.00	0.38	0.02	0.09
9.00	0.46	0.04	0.18
10.00	0.57	0.08	0.28
11.00	0.74	0.16	0.63
12.00	2.09	1.17	**15.84**
13.00	2.43	1.47	**1.23**
14.00	2.58	1.61	0.71
15.00	2.69	1.70	0.55
16.00	2.77	1.78	0.43
17.00	2.84	1.84	0.37
18.00	2.90	1.89	0.33
19.00	2.95	1.94	0.28
20.00	3.00	1.98	0.24
21.00	3.04	2.02	0.22
22.00	3.08	2.06	0.22
23.00	3.11	2.09	0.21
24.00	**3.15**	**2.12**	0.20
25.00	3.15	2.12	0.00
26.00	3.15	2.12	0.00
27.00	3.15	2.12	0.00
28.00	3.15	2.12	0.00
29.00	3.15	2.12	0.00
30.00	3.15	2.12	0.00
31.00	3.15	2.12	0.00
32.00	3.15	2.12	0.00
33.00	3.15	2.12	0.00
34.00	3.15	2.12	0.00
35.00	3.15	2.12	0.00
36.00	3.15	2.12	0.00
37.00	3.15	2.12	0.00
38.00	3.15	2.12	0.00
39.00	3.15	2.12	0.00
40.00	3.15	2.12	0.00
41.00	3.15	2.12	0.00
42.00	3.15	2.12	0.00
43.00	3.15	2.12	0.00
44.00	3.15	2.12	0.00
45.00	3.15	2.12	0.00
46.00	3.15	2.12	0.00
47.00	3.15	2.12	0.00
48.00	3.15	2.12	0.00
49.00	3.15	2.12	0.00
50.00	3.15	2.12	0.00
51.00	3.15	2.12	0.00
52.00	3.15	2.12	0.00
53.00	3.15	2.12	0.00
54.00	3.15	2.12	0.00
55.00	3.15	2.12	0.00
56.00	3.15	2.12	0.00
57.00	3.15	2.12	0.00
58.00	3.15	2.12	0.00
59.00	3.15	2.12	0.00
60.00	3.15	2.12	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

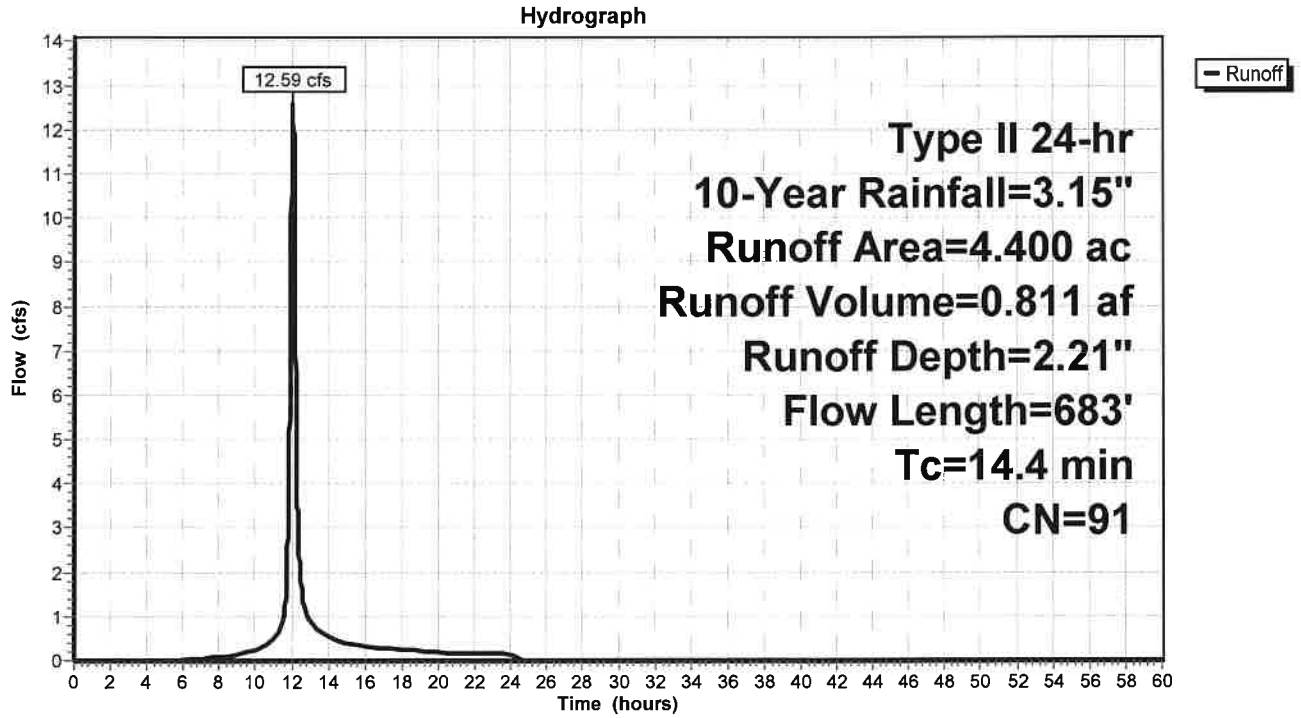
Runoff = 12.59 cfs @ 12.06 hrs, Volume= 0.811 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.07	0.00	0.00
3.00	0.11	0.00	0.00
4.00	0.15	0.00	0.00
5.00	0.20	0.00	0.00
6.00	0.25	0.00	0.02
7.00	0.31	0.01	0.05
8.00	0.38	0.03	0.08
9.00	0.46	0.06	0.15
10.00	0.57	0.10	0.23
11.00	0.74	0.19	0.49
12.00	2.09	1.24	**11.04**
13.00	2.43	1.55	**0.92**
14.00	2.58	1.69	0.53
15.00	2.69	1.78	0.40
16.00	2.77	1.86	0.32
17.00	2.84	1.92	0.27
18.00	2.90	1.98	0.24
19.00	2.95	2.03	0.21
20.00	3.00	2.07	0.18
21.00	3.04	2.11	0.16
22.00	3.08	2.14	0.16
23.00	3.11	2.18	0.15
24.00	**3.15**	**2.21**	0.15
25.00	3.15	2.21	0.00
26.00	3.15	2.21	0.00
27.00	3.15	2.21	0.00
28.00	3.15	2.21	0.00
29.00	3.15	2.21	0.00
30.00	3.15	2.21	0.00
31.00	3.15	2.21	0.00
32.00	3.15	2.21	0.00
33.00	3.15	2.21	0.00
34.00	3.15	2.21	0.00
35.00	3.15	2.21	0.00
36.00	3.15	2.21	0.00
37.00	3.15	2.21	0.00
38.00	3.15	2.21	0.00
39.00	3.15	2.21	0.00
40.00	3.15	2.21	0.00
41.00	3.15	2.21	0.00
42.00	3.15	2.21	0.00
43.00	3.15	2.21	0.00
44.00	3.15	2.21	0.00
45.00	3.15	2.21	0.00
46.00	3.15	2.21	0.00
47.00	3.15	2.21	0.00
48.00	3.15	2.21	0.00
49.00	3.15	2.21	0.00
50.00	3.15	2.21	0.00
51.00	3.15	2.21	0.00
52.00	3.15	2.21	0.00
53.00	3.15	2.21	0.00
54.00	3.15	2.21	0.00
55.00	3.15	2.21	0.00
56.00	3.15	2.21	0.00
57.00	3.15	2.21	0.00
58.00	3.15	2.21	0.00
59.00	3.15	2.21	0.00
60.00	3.15	2.21	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 2.12" for 10-Year event
Inflow = 17.46 cfs @ 12.05 hrs, Volume= 1.079 af
Outflow = 16.45 cfs @ 12.09 hrs, Volume= 1.079 af, Atten= 6%, Lag= 2.3 min
Primary = 2.85 cfs @ 12.09 hrs, Volume= 0.765 af
Secondary = 13.60 cfs @ 12.09 hrs, Volume= 0.314 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.04' @ 12.09 hrs Surf.Area= 9,976 sf Storage= 9,672 cf

Plug-Flow detention time= 160.8 min calculated for 1.079 af (100% of inflow)
Center-of-Mass det. time= 160.7 min (971.9 - 811.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

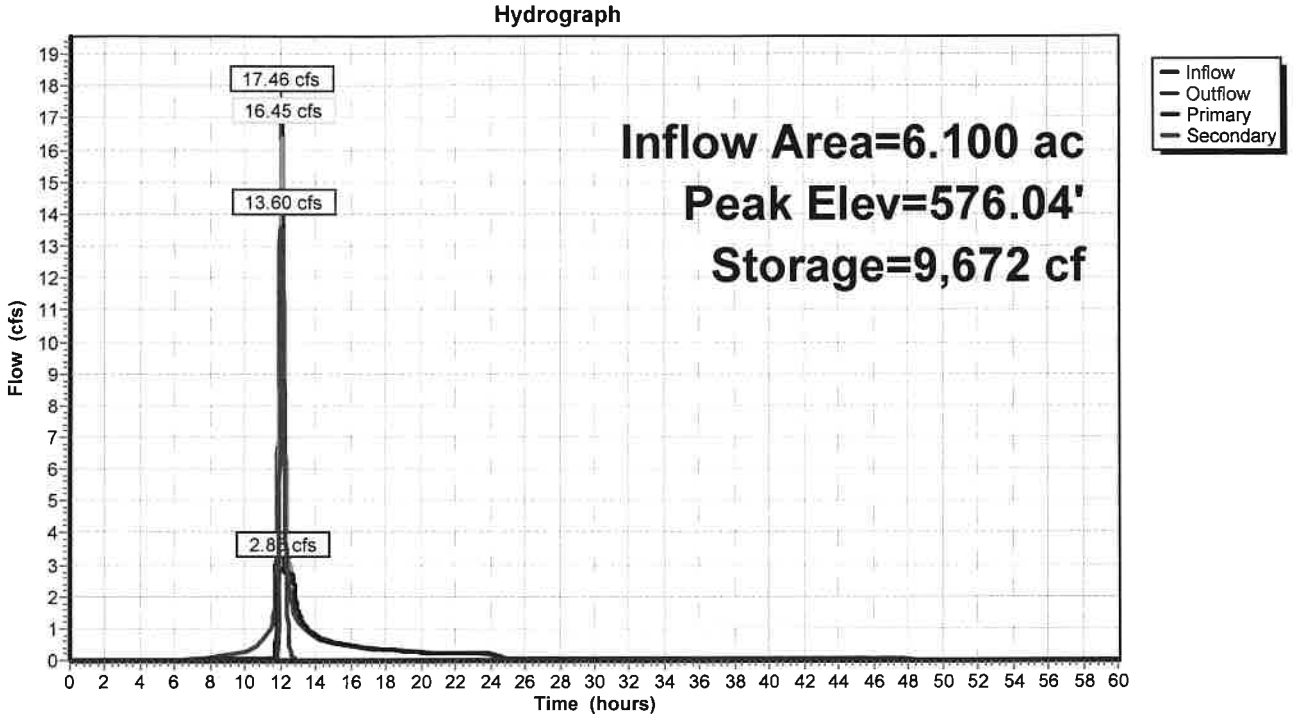
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.85 cfs @ 12.09 hrs HW=576.04' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.85 cfs @ 8.17 fps)
  └**2=Grate** (Passes < 4.93 cfs potential flow)
  └**3=Exfiltration** (Passes < 0.06 cfs potential flow)

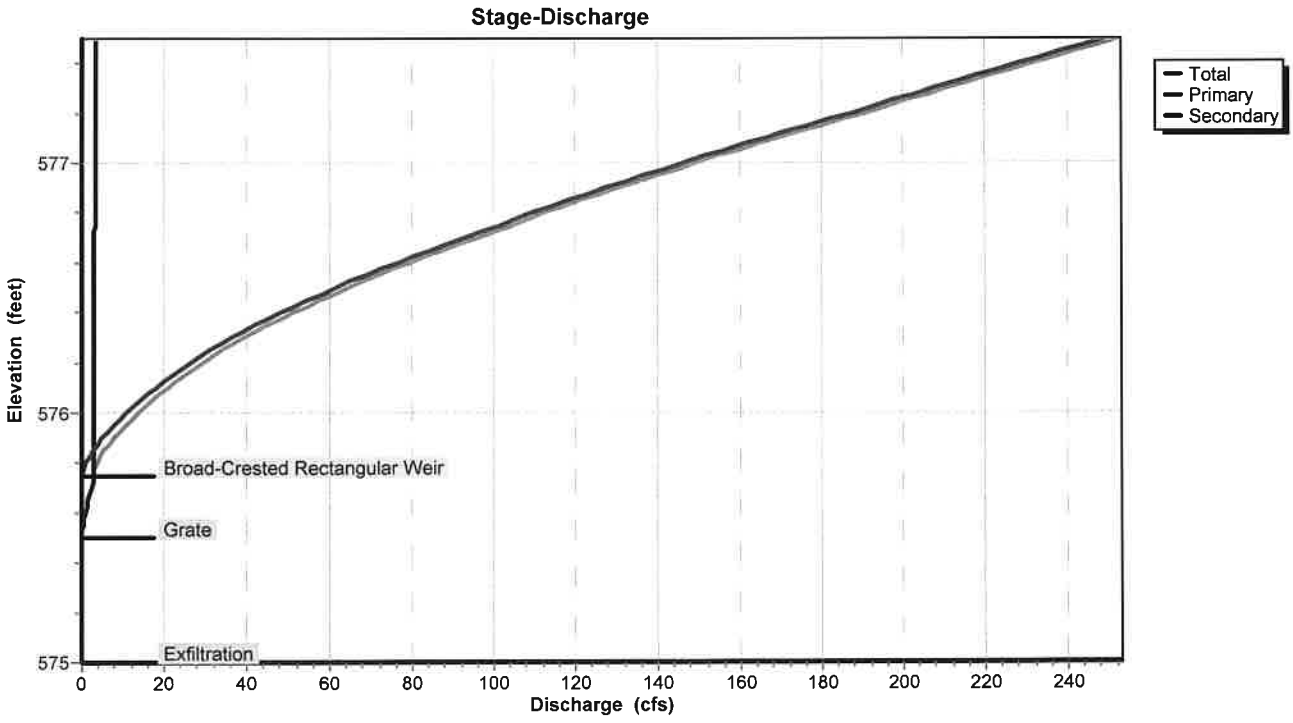
Secondary OutFlow Max=13.58 cfs @ 12.09 hrs HW=576.04' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 13.58 cfs @ 1.57 fps)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

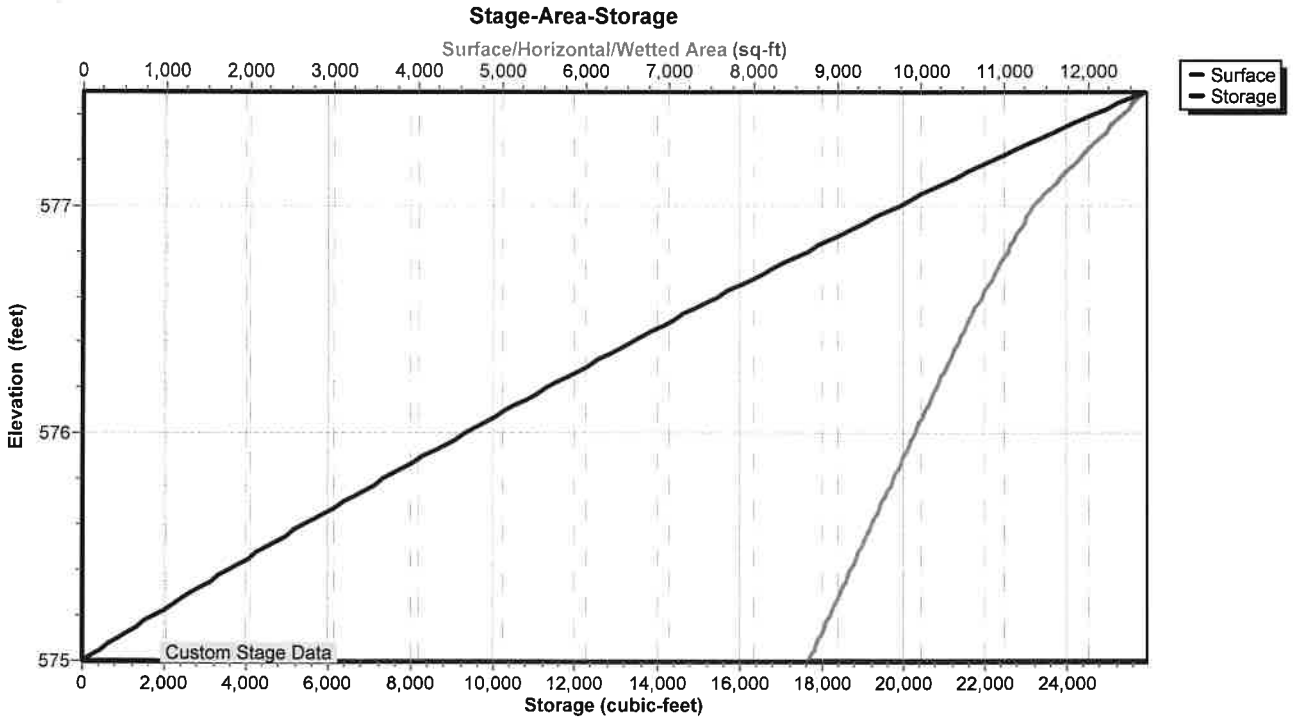


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.01	6	575.00	0.00	0.00	0.00
8.00	0.09	207	575.02	0.05	0.05	0.00
10.00	0.28	1,102	575.13	0.05	0.05	0.00
12.00	**15.84**	**9,006**	**575.97**	**11.97**	**2.82**	**9.15**
14.00	**0.71**	**5,320**	**575.59**	**0.79**	**0.79**	**0.00**
16.00	0.43	5,039	575.56	0.46	0.46	0.00
18.00	0.33	4,925	575.55	0.34	0.34	0.00
20.00	0.24	4,823	575.54	0.25	0.25	0.00
22.00	0.22	4,781	575.53	0.22	0.22	0.00
24.00	0.20	4,760	575.53	0.20	0.20	0.00
26.00	0.00	4,270	575.48	0.06	0.06	0.00
28.00	0.00	3,874	575.43	0.05	0.05	0.00
30.00	0.00	3,482	575.39	0.05	0.05	0.00
32.00	0.00	3,093	575.35	0.05	0.05	0.00
34.00	0.00	2,707	575.31	0.05	0.05	0.00
36.00	0.00	2,324	575.26	0.05	0.05	0.00
38.00	0.00	1,945	575.22	0.05	0.05	0.00
40.00	0.00	1,569	575.18	0.05	0.05	0.00
42.00	0.00	1,197	575.14	0.05	0.05	0.00
44.00	0.00	828	575.10	0.05	0.05	0.00
46.00	0.00	461	575.05	0.05	0.05	0.00
48.00	0.00	126	575.01	0.03	0.03	0.00
50.00	0.00	24	575.00	0.01	0.01	0.00
52.00	0.00	4	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 3.07" for 10-Year event
Inflow = 26.01 cfs @ 12.08 hrs, Volume= 1.125 af
Outflow = 0.47 cfs @ 14.32 hrs, Volume= 0.892 af, Atten= 98%, Lag= 134.6 min
Primary = 0.47 cfs @ 14.32 hrs, Volume= 0.892 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.60' @ 14.32 hrs Surf.Area= 63,820 sf Storage= 37,117 cf

Plug-Flow detention time= 942.6 min calculated for 0.892 af (79% of inflow)
Center-of-Mass det. time= 874.9 min (1,660.4 - 785.4)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

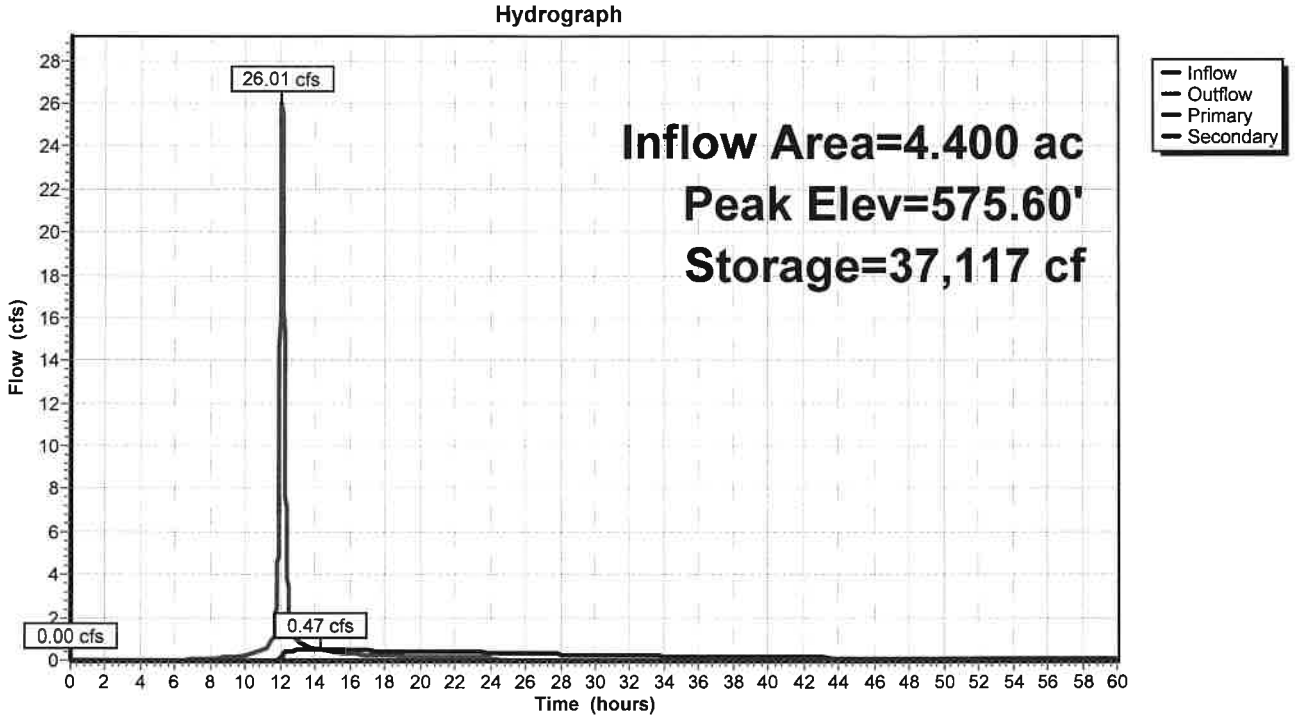
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.47 cfs @ 14.32 hrs HW=575.60' (Free Discharge)
└**1=12" outlet pipe** (Passes 0.47 cfs of 2.23 cfs potential flow)
  ├**2=low flow outlet pipe** (Barrel Controls 0.47 cfs @ 2.50 fps)
  └**3=Grate** (Controls 0.00 cfs)

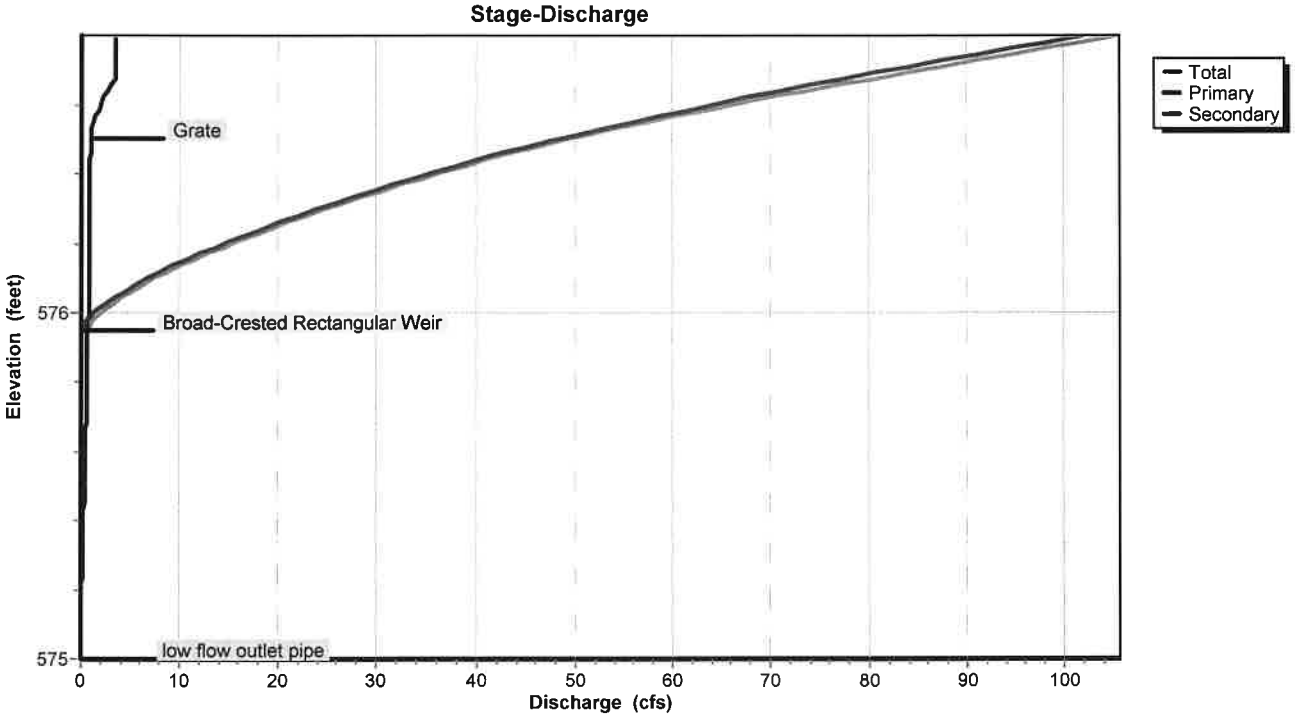
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

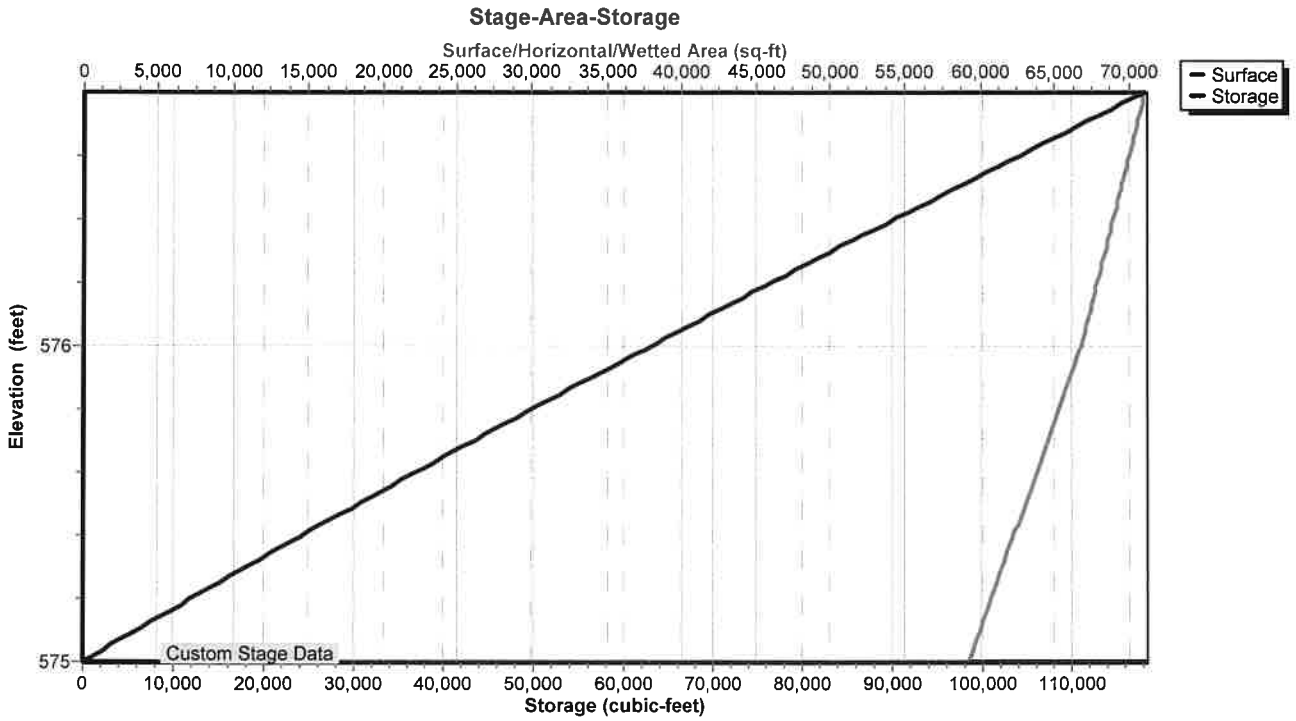


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.02	28	575.00	0.00	0.00	0.00
8.00	0.08	376	575.01	0.00	0.00	0.00
10.00	0.23	1,427	575.02	0.00	0.00	0.00
12.00	**20.19**	11,922	575.20	0.08	0.08	0.00
14.00	**0.53**	**37,087**	**575.60**	**0.47**	**0.47**	0.00
16.00	0.32	**36,669**	**575.60**	**0.46**	**0.46**	0.00
18.00	0.24	35,374	575.58	0.44	0.44	0.00
20.00	0.18	33,764	575.55	0.42	0.42	0.00
22.00	0.16	32,024	575.52	0.39	0.39	0.00
24.00	0.15	30,385	575.50	0.37	0.37	0.00
26.00	0.00	28,005	575.46	0.33	0.33	0.00
28.00	0.00	25,794	575.42	0.29	0.29	0.00
30.00	0.00	23,836	575.39	0.26	0.26	0.00
32.00	0.00	22,102	575.36	0.23	0.23	0.00
34.00	0.00	20,561	575.34	0.20	0.20	0.00
36.00	0.00	19,188	575.32	0.18	0.18	0.00
38.00	0.00	17,961	575.30	0.16	0.16	0.00
40.00	0.00	16,860	575.28	0.14	0.14	0.00
42.00	0.00	15,870	575.26	0.13	0.13	0.00
44.00	0.00	14,975	575.25	0.12	0.12	0.00
46.00	0.00	14,165	575.24	0.11	0.11	0.00
48.00	0.00	13,428	575.22	0.10	0.10	0.00
50.00	0.00	12,756	575.21	0.09	0.09	0.00
52.00	0.00	12,141	575.20	0.08	0.08	0.00
54.00	0.00	11,578	575.19	0.08	0.08	0.00
56.00	0.00	11,059	575.18	0.07	0.07	0.00
58.00	0.00	10,581	575.18	0.06	0.06	0.00
60.00	0.00	10,139	575.17	0.06	0.06	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

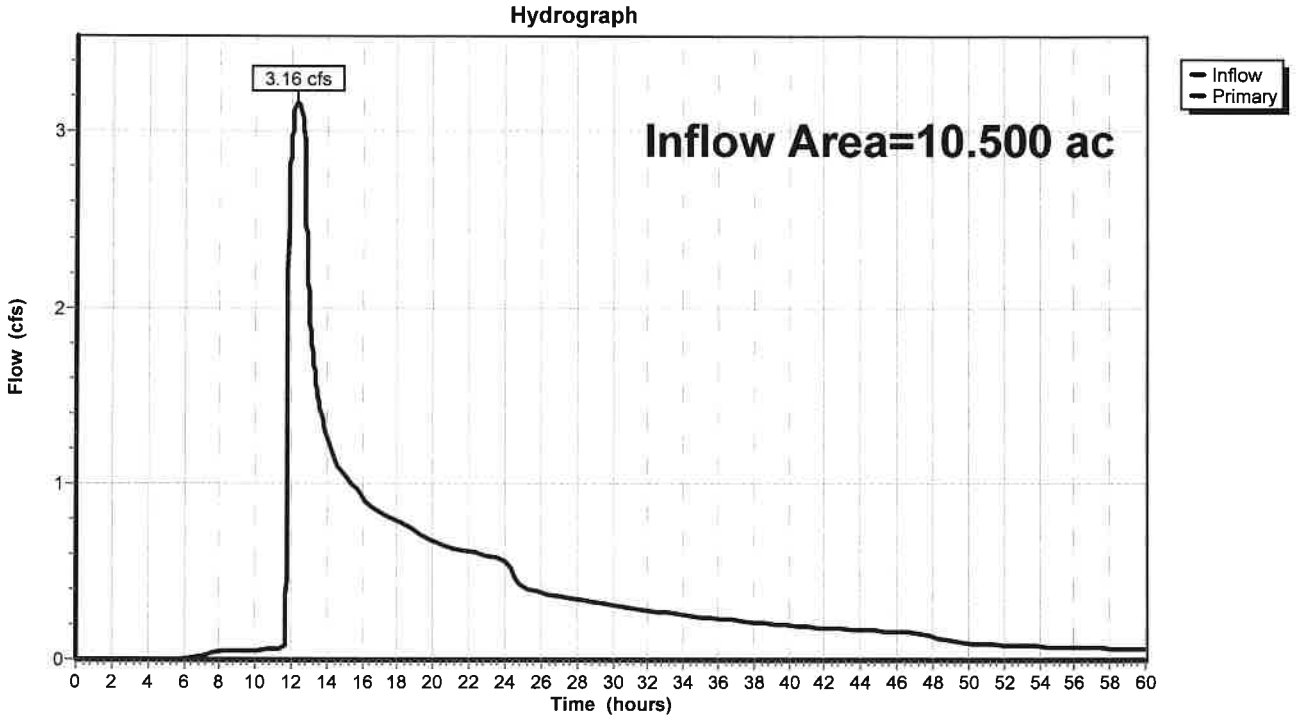
Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 1.89" for 10-Year event
Inflow = 3.16 cfs @ 12.39 hrs, Volume= 1.657 af
Primary = 3.16 cfs @ 12.39 hrs, Volume= 1.657 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.08	0.00	0.08
1.00	0.00	0.00	0.00	53.00	0.08	0.00	0.08
2.00	0.00	0.00	0.00	54.00	0.08	0.00	0.08
3.00	0.00	0.00	0.00	55.00	0.07	0.00	0.07
4.00	0.00	0.00	0.00	56.00	0.07	0.00	0.07
5.00	0.00	0.00	0.00	57.00	0.07	0.00	0.07
6.00	0.00	0.00	0.00	58.00	0.06	0.00	0.06
7.00	0.02	0.00	0.02	59.00	0.06	0.00	0.06
8.00	0.05	0.00	0.05	60.00	0.06	0.00	0.06
9.00	0.05	0.00	0.05				
10.00	0.05	0.00	0.05				
11.00	0.06	0.00	0.06				
12.00	**2.90**	0.00	**2.90**				
13.00	**2.02**	0.00	**2.02**				
14.00	1.26	0.00	1.26				
15.00	1.05	0.00	1.05				
16.00	0.92	0.00	0.92				
17.00	0.84	0.00	0.84				
18.00	0.78	0.00	0.78				
19.00	0.73	0.00	0.73				
20.00	0.67	0.00	0.67				
21.00	0.63	0.00	0.63				
22.00	0.61	0.00	0.61				
23.00	0.59	0.00	0.59				
24.00	0.57	0.00	0.57				
25.00	0.40	0.00	0.40				
26.00	0.38	0.00	0.38				
27.00	0.36	0.00	0.36				
28.00	0.34	0.00	0.34				
29.00	0.33	0.00	0.33				
30.00	0.31	0.00	0.31				
31.00	0.29	0.00	0.29				
32.00	0.28	0.00	0.28				
33.00	0.27	0.00	0.27				
34.00	0.26	0.00	0.26				
35.00	0.24	0.00	0.24				
36.00	0.23	0.00	0.23				
37.00	0.22	0.00	0.22				
38.00	0.21	0.00	0.21				
39.00	0.20	0.00	0.20				
40.00	0.20	0.00	0.20				
41.00	0.19	0.00	0.19				
42.00	0.18	0.00	0.18				
43.00	0.18	0.00	0.18				
44.00	0.17	0.00	0.17				
45.00	0.16	0.00	0.16				
46.00	0.16	0.00	0.16				
47.00	0.15	0.00	0.15				
48.00	0.13	0.00	0.13				
49.00	0.11	0.00	0.11				
50.00	0.09	0.00	0.09				
51.00	0.09	0.00	0.09				

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=2.80"
Flow Length=652' Tc=13.3 min CN=90 Runoff=22.74 cfs 1.421 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=2.89"
Flow Length=683' Tc=14.4 min CN=91 Runoff=16.27 cfs 1.061 af

Pond 1P: Bioretention Area 3 Peak Elev=576.11' Storage=10,375 cf Inflow=22.74 cfs 1.421 af
Primary=2.89 cfs 0.934 af Secondary=18.84 cfs 0.487 af Outflow=21.73 cfs 1.421 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.83' Storage=51,963 cf Inflow=34.94 cfs 1.548 af
Primary=0.64 cfs 1.276 af Secondary=0.00 cfs 0.000 af Outflow=0.64 cfs 1.276 af

Link 5L: Outflow (@ CB 54) Inflow=3.36 cfs 2.210 af
Primary=3.36 cfs 2.210 af

Total Runoff Area = 10.500 ac Runoff Volume = 2.482 af Average Runoff Depth = 2.84"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

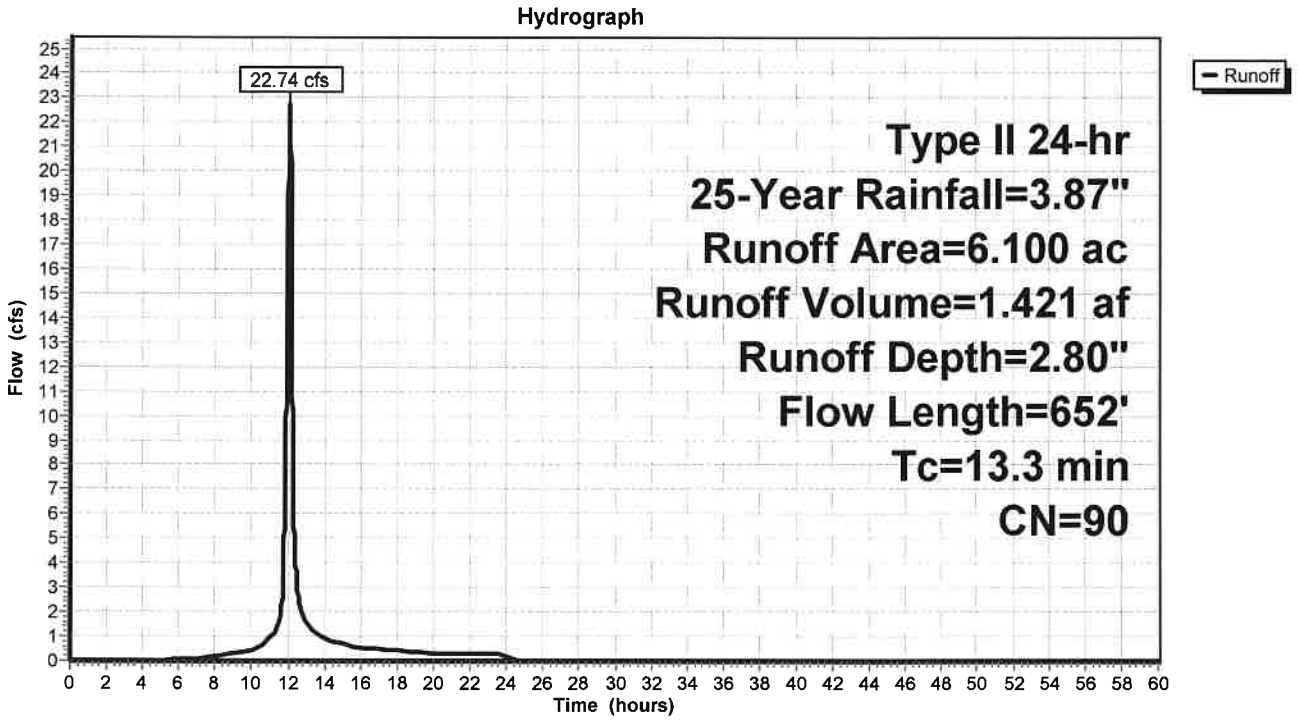
Runoff = 22.74 cfs @ 12.05 hrs, Volume= 1.421 af, Depth= 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.04	0.00	0.00
2.00	0.09	0.00	0.00
3.00	0.13	0.00	0.00
4.00	0.19	0.00	0.00
5.00	0.24	0.00	0.01
6.00	0.31	0.01	0.05
7.00	0.38	0.02	0.10
8.00	0.46	0.04	0.16
9.00	0.57	0.08	0.28
10.00	0.70	0.14	0.43
11.00	0.91	0.26	0.90
12.00	2.57	1.59	**20.75**
13.00	2.99	1.97	**1.57**
14.00	3.17	2.14	0.90
15.00	3.30	2.26	0.70
16.00	3.41	2.36	0.54
17.00	3.49	2.44	0.47
18.00	3.56	2.51	0.41
19.00	3.63	2.57	0.36
20.00	3.68	2.62	0.30
21.00	3.73	2.67	0.28
22.00	3.78	2.71	0.27
23.00	3.83	2.75	0.26
24.00	**3.87**	**2.80**	0.25
25.00	3.87	2.80	0.00
26.00	3.87	2.80	0.00
27.00	3.87	2.80	0.00
28.00	3.87	2.80	0.00
29.00	3.87	2.80	0.00
30.00	3.87	2.80	0.00
31.00	3.87	2.80	0.00
32.00	3.87	2.80	0.00
33.00	3.87	2.80	0.00
34.00	3.87	2.80	0.00
35.00	3.87	2.80	0.00
36.00	3.87	2.80	0.00
37.00	3.87	2.80	0.00
38.00	3.87	2.80	0.00
39.00	3.87	2.80	0.00
40.00	3.87	2.80	0.00
41.00	3.87	2.80	0.00
42.00	3.87	2.80	0.00
43.00	3.87	2.80	0.00
44.00	3.87	2.80	0.00
45.00	3.87	2.80	0.00
46.00	3.87	2.80	0.00
47.00	3.87	2.80	0.00
48.00	3.87	2.80	0.00
49.00	3.87	2.80	0.00
50.00	3.87	2.80	0.00
51.00	3.87	2.80	0.00
52.00	3.87	2.80	0.00
53.00	3.87	2.80	0.00
54.00	3.87	2.80	0.00
55.00	3.87	2.80	0.00
56.00	3.87	2.80	0.00
57.00	3.87	2.80	0.00
58.00	3.87	2.80	0.00
59.00	3.87	2.80	0.00
60.00	3.87	2.80	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

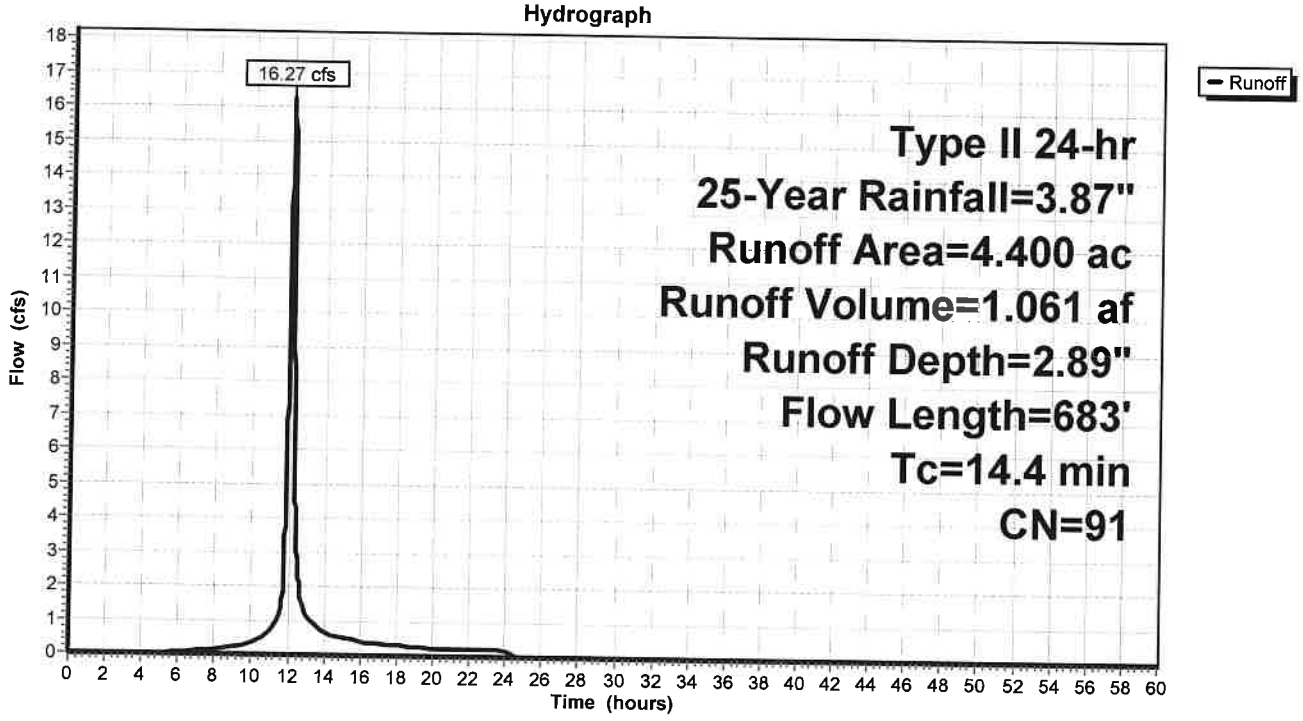
Runoff = 16.27 cfs @ 12.06 hrs, Volume= 1.061 af, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.04	0.00	0.00
2.00	0.09	0.00	0.00
3.00	0.13	0.00	0.00
4.00	0.19	0.00	0.00
5.00	0.24	0.00	0.02
6.00	0.31	0.01	0.05
7.00	0.38	0.03	0.09
8.00	0.46	0.06	0.13
9.00	0.57	0.10	0.23
10.00	0.70	0.17	0.34
11.00	0.91	0.30	0.69
12.00	2.57	1.67	**14.36**
13.00	2.99	2.06	**1.16**
14.00	3.17	2.23	0.67
15.00	3.30	2.36	0.51
16.00	3.41	2.45	0.40
17.00	3.49	2.53	0.34
18.00	3.56	2.60	0.30
19.00	3.63	2.66	0.26
20.00	3.68	2.72	0.22
21.00	3.73	2.76	0.21
22.00	3.78	2.81	0.20
23.00	3.83	2.85	0.19
24.00	**3.87**	**2.89**	0.18
25.00	3.87	2.89	0.00
26.00	3.87	2.89	0.00
27.00	3.87	2.89	0.00
28.00	3.87	2.89	0.00
29.00	3.87	2.89	0.00
30.00	3.87	2.89	0.00
31.00	3.87	2.89	0.00
32.00	3.87	2.89	0.00
33.00	3.87	2.89	0.00
34.00	3.87	2.89	0.00
35.00	3.87	2.89	0.00
36.00	3.87	2.89	0.00
37.00	3.87	2.89	0.00
38.00	3.87	2.89	0.00
39.00	3.87	2.89	0.00
40.00	3.87	2.89	0.00
41.00	3.87	2.89	0.00
42.00	3.87	2.89	0.00
43.00	3.87	2.89	0.00
44.00	3.87	2.89	0.00
45.00	3.87	2.89	0.00
46.00	3.87	2.89	0.00
47.00	3.87	2.89	0.00
48.00	3.87	2.89	0.00
49.00	3.87	2.89	0.00
50.00	3.87	2.89	0.00
51.00	3.87	2.89	0.00
52.00	3.87	2.89	0.00
53.00	3.87	2.89	0.00
54.00	3.87	2.89	0.00
55.00	3.87	2.89	0.00
56.00	3.87	2.89	0.00
57.00	3.87	2.89	0.00
58.00	3.87	2.89	0.00
59.00	3.87	2.89	0.00
60.00	3.87	2.89	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 2.80" for 25-Year event
Inflow = 22.74 cfs @ 12.05 hrs, Volume= 1.421 af
Outflow = 21.73 cfs @ 12.08 hrs, Volume= 1.421 af, Atten= 4%, Lag= 2.0 min
Primary = 2.89 cfs @ 12.08 hrs, Volume= 0.934 af
Secondary = 18.84 cfs @ 12.08 hrs, Volume= 0.487 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.11' @ 12.08 hrs Surf.Area= 10,069 sf Storage= 10,375 cf

Plug-Flow detention time= 127.9 min calculated for 1.421 af (100% of inflow)
Center-of-Mass det. time= 128.1 min (931.5 - 803.4)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

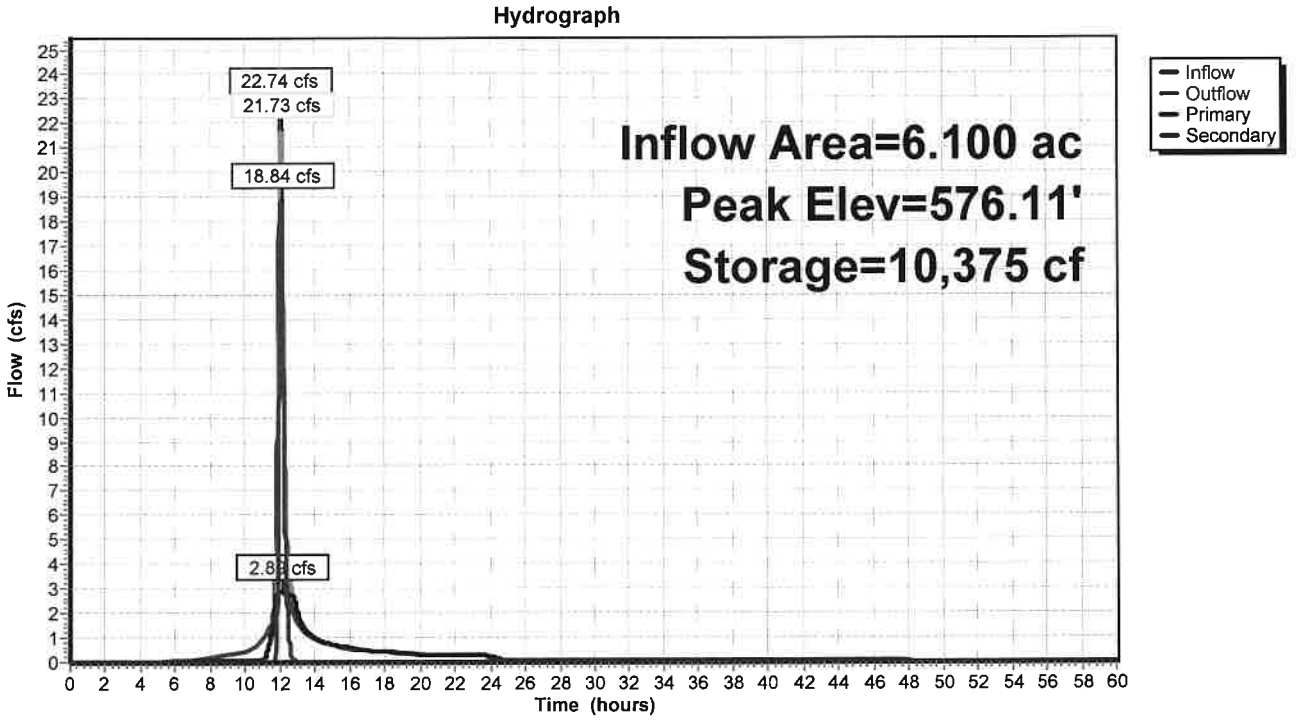
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.89 cfs @ 12.08 hrs HW=576.11' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.89 cfs @ 8.27 fps)
  └**2=Grate** (Passes < 5.25 cfs potential flow)
  └**3=Exfiltration** (Passes < 0.06 cfs potential flow)

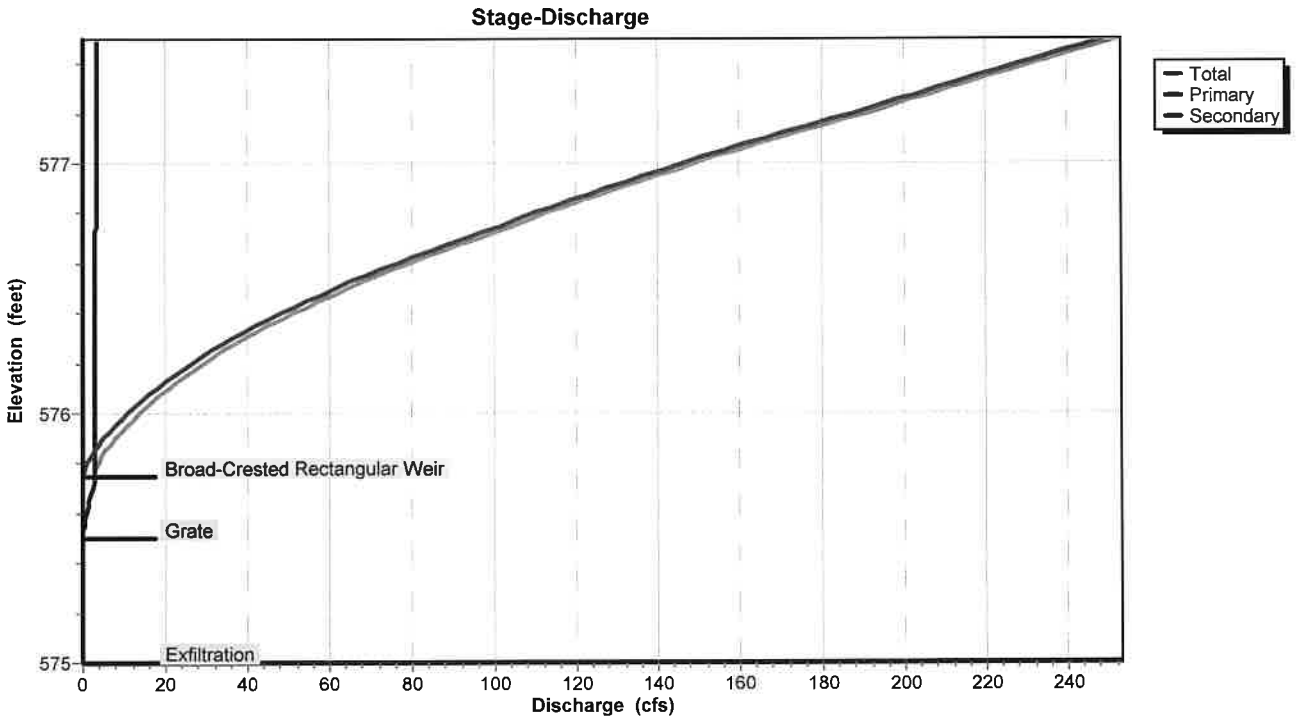
Secondary OutFlow Max=18.83 cfs @ 12.08 hrs HW=576.11' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 18.83 cfs @ 1.75 fps)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

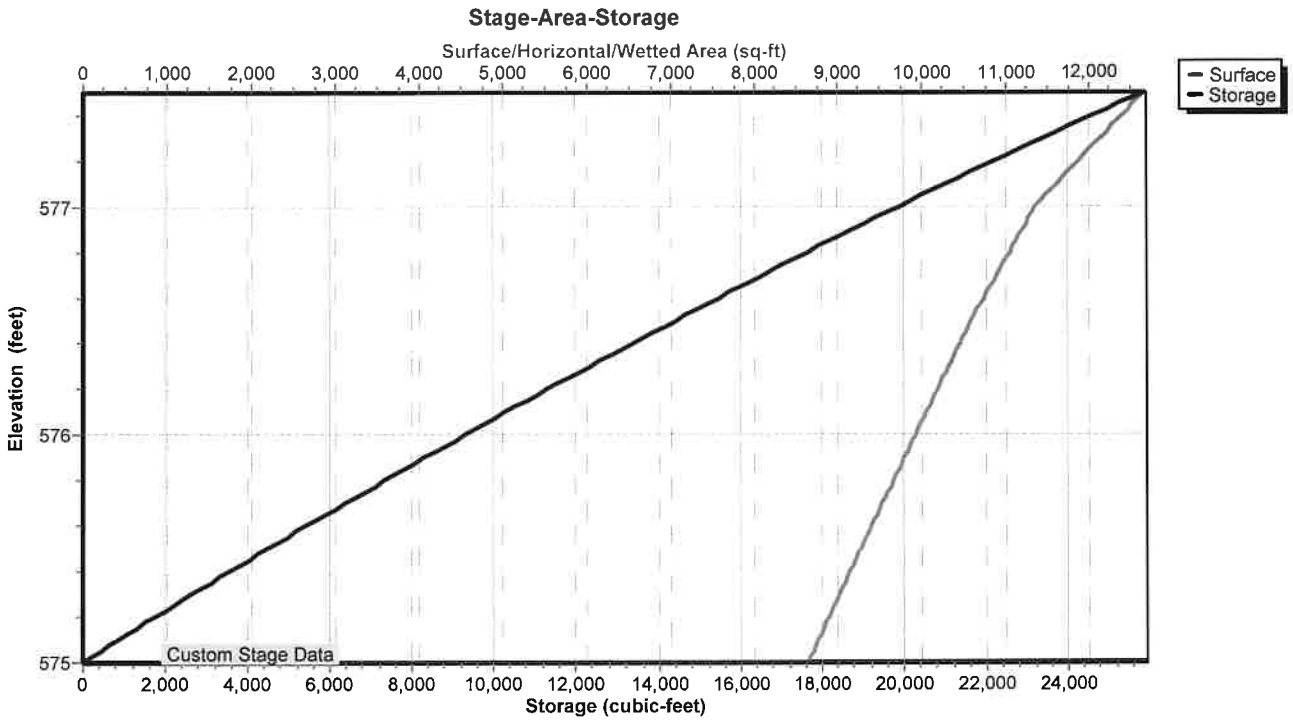


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.05	75	575.01	0.02	0.02	0.00
8.00	0.16	510	575.06	0.05	0.05	0.00
10.00	0.43	2,153	575.24	0.05	0.05	0.00
12.00	**20.75**	**9,748**	**576.05**	**16.99**	**2.86**	**14.14**
14.00	**0.90**	**5,469**	**575.61**	**1.00**	**1.00**	**0.00**
16.00	0.54	5,148	575.57	0.58	0.58	0.00
18.00	0.41	5,009	575.56	0.43	0.43	0.00
20.00	0.30	4,900	575.54	0.32	0.32	0.00
22.00	0.27	4,847	575.54	0.28	0.28	0.00
24.00	0.25	4,821	575.54	0.25	0.25	0.00
26.00	0.00	4,285	575.48	0.06	0.06	0.00
28.00	0.00	3,889	575.44	0.05	0.05	0.00
30.00	0.00	3,497	575.39	0.05	0.05	0.00
32.00	0.00	3,108	575.35	0.05	0.05	0.00
34.00	0.00	2,722	575.31	0.05	0.05	0.00
36.00	0.00	2,339	575.27	0.05	0.05	0.00
38.00	0.00	1,960	575.22	0.05	0.05	0.00
40.00	0.00	1,584	575.18	0.05	0.05	0.00
42.00	0.00	1,211	575.14	0.05	0.05	0.00
44.00	0.00	842	575.10	0.05	0.05	0.00
46.00	0.00	475	575.05	0.05	0.05	0.00
48.00	0.00	134	575.02	0.03	0.03	0.00
50.00	0.00	25	575.00	0.01	0.01	0.00
52.00	0.00	5	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 4.22" for 25-Year event
Inflow = 34.94 cfs @ 12.07 hrs, Volume= 1.548 af
Outflow = 0.64 cfs @ 14.10 hrs, Volume= 1.276 af, Atten= 98%, Lag= 121.4 min
Primary = 0.64 cfs @ 14.10 hrs, Volume= 1.276 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.83' @ 14.10 hrs Surf.Area= 65,573 sf Storage= 51,963 cf

Plug-Flow detention time= 951.6 min calculated for 1.276 af (82% of inflow)
Center-of-Mass det. time= 890.6 min (1,667.8 - 777.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

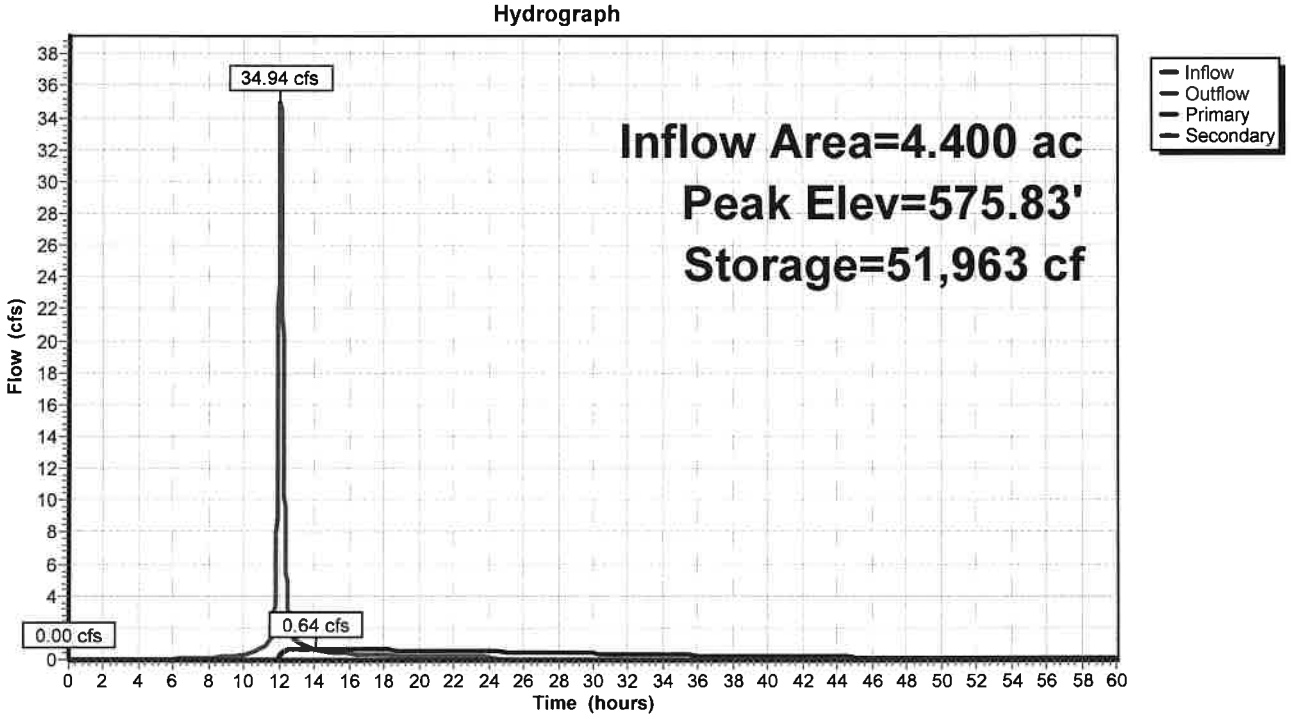
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.64 cfs @ 14.10 hrs HW=575.83' (Free Discharge)
↑—**1=12" outlet pipe** (Passes 0.64 cfs of 2.52 cfs potential flow)
↑—**2=low flow outlet pipe** (Inlet Controls 0.64 cfs @ 3.24 fps)
—**3=Grate** (Controls 0.00 cfs)

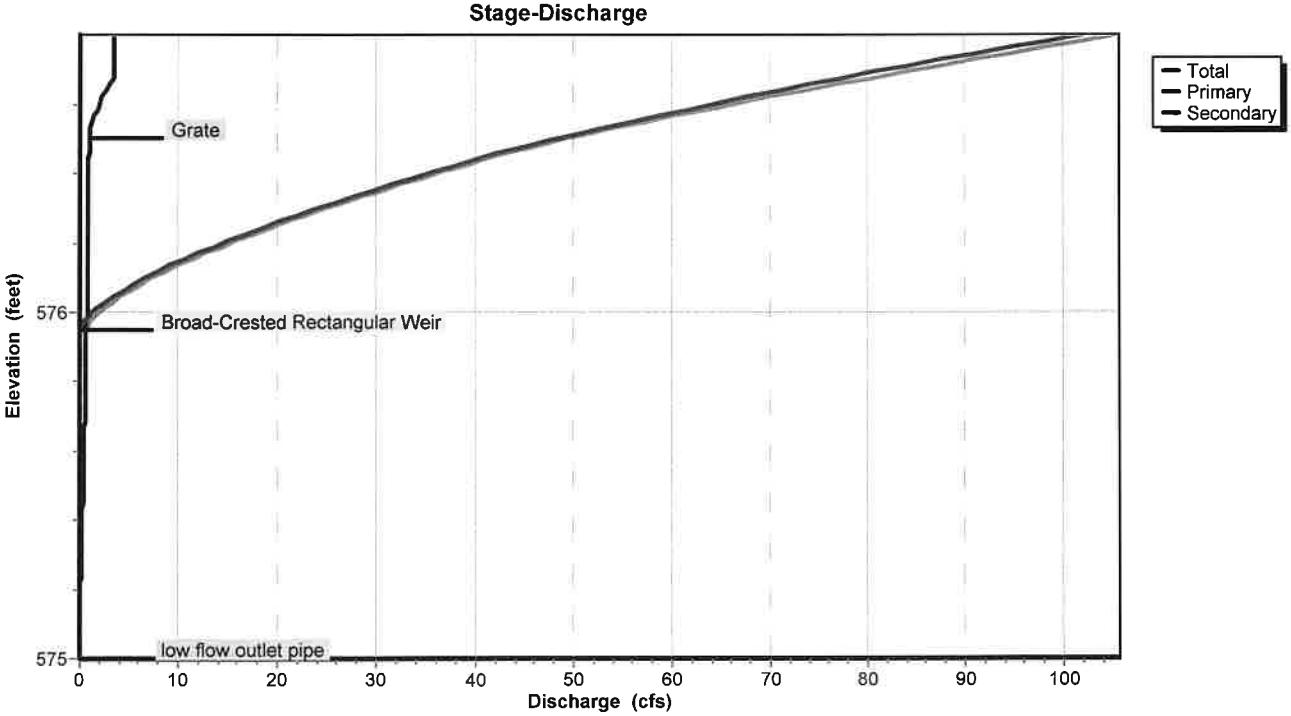
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
↑—**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

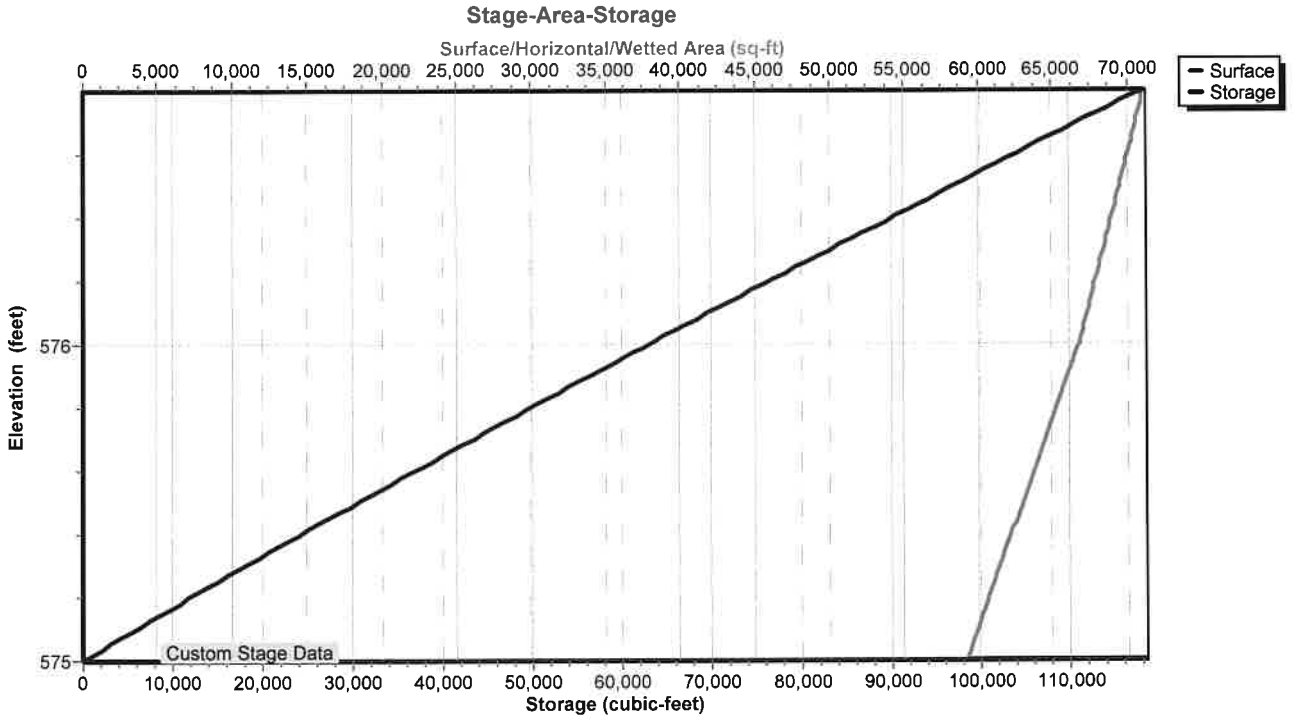


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.05	138	575.00	0.00	0.00	0.00
8.00	0.13	792	575.01	0.00	0.00	0.00
10.00	0.34	2,407	575.04	0.00	0.00	0.00
12.00	**28.50**	18,305	575.30	0.17	0.17	0.00
14.00	**0.67**	**51,959**	**575.83**	**0.64**	**0.64**	0.00
16.00	0.40	**51,083**	**575.82**	**0.63**	**0.63**	0.00
18.00	0.30	49,081	575.79	0.61	0.61	0.00
20.00	0.22	46,637	575.75	0.59	0.59	0.00
22.00	0.20	44,041	575.71	0.55	0.55	0.00
24.00	0.18	41,619	575.67	0.51	0.51	0.00
26.00	0.00	38,209	575.62	0.48	0.48	0.00
28.00	0.00	34,905	575.57	0.44	0.44	0.00
30.00	0.00	31,923	575.52	0.39	0.39	0.00
32.00	0.00	29,266	575.48	0.35	0.35	0.00
34.00	0.00	26,910	575.44	0.31	0.31	0.00
36.00	0.00	24,824	575.41	0.27	0.27	0.00
38.00	0.00	22,978	575.38	0.24	0.24	0.00
40.00	0.00	21,340	575.35	0.21	0.21	0.00
42.00	0.00	19,882	575.33	0.19	0.19	0.00
44.00	0.00	18,582	575.31	0.17	0.17	0.00
46.00	0.00	17,418	575.29	0.15	0.15	0.00
48.00	0.00	16,372	575.27	0.14	0.14	0.00
50.00	0.00	15,429	575.26	0.12	0.12	0.00
52.00	0.00	14,576	575.24	0.11	0.11	0.00
54.00	0.00	13,802	575.23	0.10	0.10	0.00
56.00	0.00	13,098	575.22	0.09	0.09	0.00
58.00	0.00	12,454	575.21	0.09	0.09	0.00
60.00	0.00	11,865	575.20	0.08	0.08	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

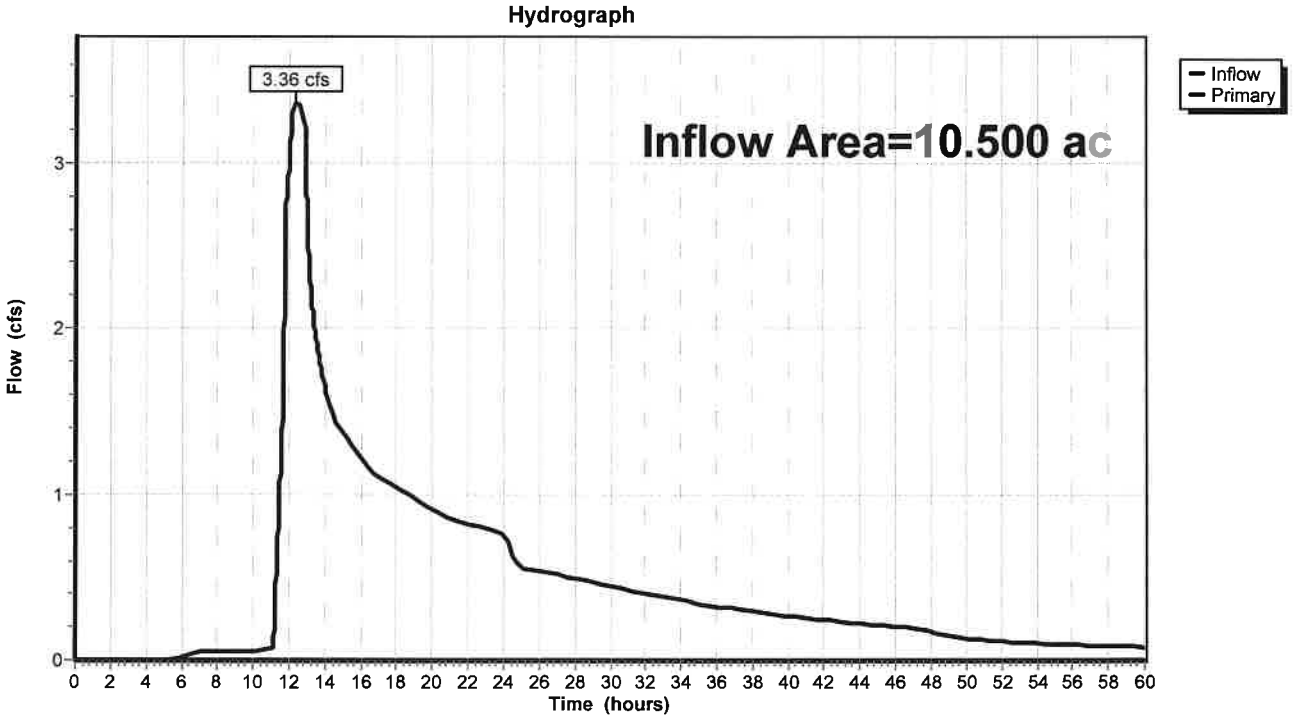
Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 2.53" for 25-Year event
Inflow = 3.36 cfs @ 12.37 hrs, Volume= 2.210 af
Primary = 3.36 cfs @ 12.37 hrs, Volume= 2.210 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.11	0.00	0.11
1.00	0.00	0.00	0.00	53.00	0.11	0.00	0.11
2.00	0.00	0.00	0.00	54.00	0.10	0.00	0.10
3.00	0.00	0.00	0.00	55.00	0.10	0.00	0.10
4.00	0.00	0.00	0.00	56.00	0.09	0.00	0.09
5.00	0.00	0.00	0.00	57.00	0.09	0.00	0.09
6.00	0.02	0.00	0.02	58.00	0.09	0.00	0.09
7.00	0.05	0.00	0.05	59.00	0.08	0.00	0.08
8.00	0.05	0.00	0.05	60.00	0.08	0.00	0.08
9.00	0.05	0.00	0.05				
10.00	0.06	0.00	0.06				
11.00	0.07	0.00	0.07				
12.00	**3.02**	0.00	**3.02**				
13.00	**2.64**	0.00	**2.64**				
14.00	1.63	0.00	1.63				
15.00	1.36	0.00	1.36				
16.00	1.21	0.00	1.21				
17.00	1.10	0.00	1.10				
18.00	1.04	0.00	1.04				
19.00	0.97	0.00	0.97				
20.00	0.91	0.00	0.91				
21.00	0.85	0.00	0.85				
22.00	0.82	0.00	0.82				
23.00	0.79	0.00	0.79				
24.00	0.76	0.00	0.76				
25.00	0.55	0.00	0.55				
26.00	0.53	0.00	0.53				
27.00	0.51	0.00	0.51				
28.00	0.49	0.00	0.49				
29.00	0.47	0.00	0.47				
30.00	0.45	0.00	0.45				
31.00	0.42	0.00	0.42				
32.00	0.40	0.00	0.40				
33.00	0.38	0.00	0.38				
34.00	0.36	0.00	0.36				
35.00	0.34	0.00	0.34				
36.00	0.33	0.00	0.33				
37.00	0.31	0.00	0.31				
38.00	0.29	0.00	0.29				
39.00	0.28	0.00	0.28				
40.00	0.27	0.00	0.27				
41.00	0.25	0.00	0.25				
42.00	0.24	0.00	0.24				
43.00	0.23	0.00	0.23				
44.00	0.22	0.00	0.22				
45.00	0.21	0.00	0.21				
46.00	0.20	0.00	0.20				
47.00	0.20	0.00	0.20				
48.00	0.17	0.00	0.17				
49.00	0.14	0.00	0.14				
50.00	0.13	0.00	0.13				
51.00	0.12	0.00	0.12				

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=3.41"
Flow Length=652' Tc=13.3 min CN=90 Runoff=27.50 cfs 1.736 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=3.52"
Flow Length=683' Tc=14.4 min CN=91 Runoff=19.58 cfs 1.290 af

Pond 1P: Bioretention Area 3 Peak Elev=576.17' Storage=10,953 cf Inflow=27.50 cfs 1.736 af
Primary=2.91 cfs 1.092 af Secondary=23.52 cfs 0.644 af Outflow=26.43 cfs 1.736 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=576.00' Storage=62,935 cf Inflow=42.93 cfs 1.933 af
Primary=0.72 cfs 1.504 af Secondary=1.25 cfs 0.131 af Outflow=1.97 cfs 1.635 af

Link 5L: Outflow (@ CB 54) Inflow=3.48 cfs 2.596 af
Primary=3.48 cfs 2.596 af

Total Runoff Area = 10.500 ac Runoff Volume = 3.026 af Average Runoff Depth = 3.46"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

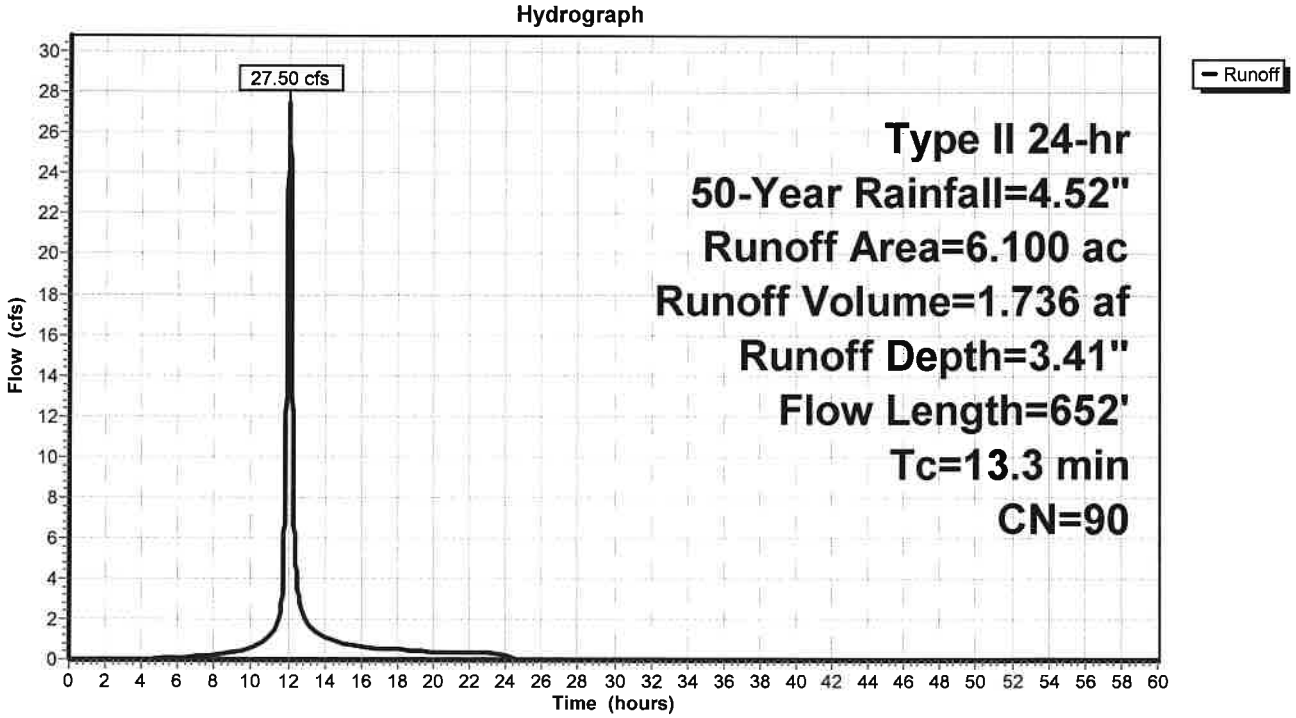
Runoff = 27.50 cfs @ 12.05 hrs, Volume= 1.736 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	4.52	3.41	0.00
1.00	0.05	0.00	0.00	53.00	4.52	3.41	0.00
2.00	0.10	0.00	0.00	54.00	4.52	3.41	0.00
3.00	0.16	0.00	0.00	55.00	4.52	3.41	0.00
4.00	0.22	0.00	0.00	56.00	4.52	3.41	0.00
5.00	0.28	0.00	0.04	57.00	4.52	3.41	0.00
6.00	0.36	0.02	0.09	58.00	4.52	3.41	0.00
7.00	0.45	0.04	0.16	59.00	4.52	3.41	0.00
8.00	0.54	0.07	0.23	60.00	4.52	3.41	0.00
9.00	0.66	0.13	0.39				
10.00	0.82	0.21	0.57				
11.00	1.06	0.36	1.16				
12.00	3.00	1.98	**25.18**				
13.00	3.49	2.44	**1.87**				
14.00	3.71	2.64	1.08				
15.00	3.86	2.78	0.83				
16.00	3.98	2.90	0.64				
17.00	4.08	2.99	0.55				
18.00	4.16	3.07	0.49				
19.00	4.24	3.15	0.42				
20.00	4.30	3.21	0.36				
21.00	4.36	3.26	0.33				
22.00	4.42	3.32	0.32				
23.00	4.47	3.37	0.31				
24.00	**4.52**	**3.41**	0.30				
25.00	4.52	3.41	0.00				
26.00	4.52	3.41	0.00				
27.00	4.52	3.41	0.00				
28.00	4.52	3.41	0.00				
29.00	4.52	3.41	0.00				
30.00	4.52	3.41	0.00				
31.00	4.52	3.41	0.00				
32.00	4.52	3.41	0.00				
33.00	4.52	3.41	0.00				
34.00	4.52	3.41	0.00				
35.00	4.52	3.41	0.00				
36.00	4.52	3.41	0.00				
37.00	4.52	3.41	0.00				
38.00	4.52	3.41	0.00				
39.00	4.52	3.41	0.00				
40.00	4.52	3.41	0.00				
41.00	4.52	3.41	0.00				
42.00	4.52	3.41	0.00				
43.00	4.52	3.41	0.00				
44.00	4.52	3.41	0.00				
45.00	4.52	3.41	0.00				
46.00	4.52	3.41	0.00				
47.00	4.52	3.41	0.00				
48.00	4.52	3.41	0.00				
49.00	4.52	3.41	0.00				
50.00	4.52	3.41	0.00				
51.00	4.52	3.41	0.00				

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

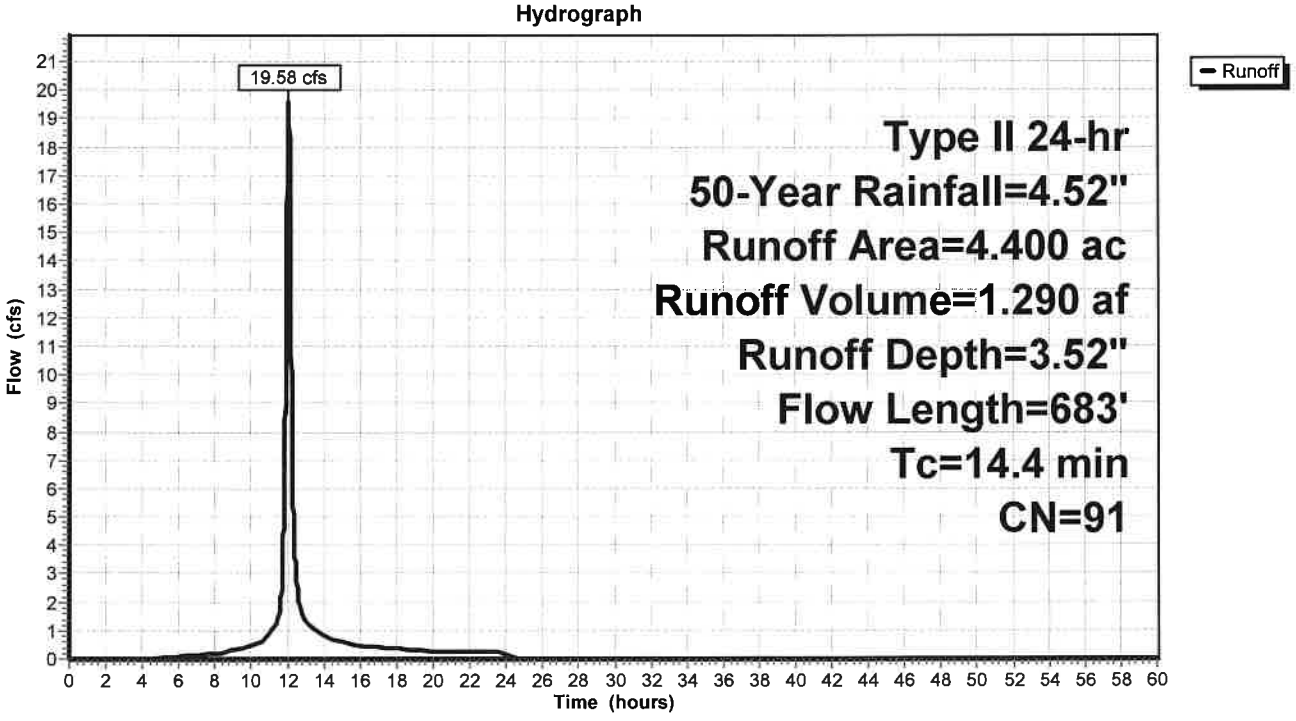
Runoff = 19.58 cfs @ 12.06 hrs, Volume= 1.290 af, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.10	0.00	0.00
3.00	0.16	0.00	0.00
4.00	0.22	0.00	0.00
5.00	0.28	0.01	0.04
6.00	0.36	0.02	0.08
7.00	0.45	0.05	0.13
8.00	0.54	0.09	0.19
9.00	0.66	0.15	0.31
10.00	0.82	0.24	0.44
11.00	1.06	0.40	0.88
12.00	3.00	2.07	**17.36**
13.00	3.49	2.53	**1.38**
14.00	3.71	2.74	0.79
15.00	3.86	2.88	0.60
16.00	3.98	3.00	0.47
17.00	4.08	3.09	0.40
18.00	4.16	3.17	0.36
19.00	4.24	3.25	0.31
20.00	4.30	3.31	0.26
21.00	4.36	3.36	0.24
22.00	4.42	3.42	0.23
23.00	4.47	3.47	0.22
24.00	**4.52**	**3.52**	0.21
25.00	4.52	3.52	0.00
26.00	4.52	3.52	0.00
27.00	4.52	3.52	0.00
28.00	4.52	3.52	0.00
29.00	4.52	3.52	0.00
30.00	4.52	3.52	0.00
31.00	4.52	3.52	0.00
32.00	4.52	3.52	0.00
33.00	4.52	3.52	0.00
34.00	4.52	3.52	0.00
35.00	4.52	3.52	0.00
36.00	4.52	3.52	0.00
37.00	4.52	3.52	0.00
38.00	4.52	3.52	0.00
39.00	4.52	3.52	0.00
40.00	4.52	3.52	0.00
41.00	4.52	3.52	0.00
42.00	4.52	3.52	0.00
43.00	4.52	3.52	0.00
44.00	4.52	3.52	0.00
45.00	4.52	3.52	0.00
46.00	4.52	3.52	0.00
47.00	4.52	3.52	0.00
48.00	4.52	3.52	0.00
49.00	4.52	3.52	0.00
50.00	4.52	3.52	0.00
51.00	4.52	3.52	0.00
52.00	4.52	3.52	0.00
53.00	4.52	3.52	0.00
54.00	4.52	3.52	0.00
55.00	4.52	3.52	0.00
56.00	4.52	3.52	0.00
57.00	4.52	3.52	0.00
58.00	4.52	3.52	0.00
59.00	4.52	3.52	0.00
60.00	4.52	3.52	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 3.41" for 50-Year event
Inflow = 27.50 cfs @ 12.05 hrs, Volume= 1.736 af
Outflow = 26.43 cfs @ 12.08 hrs, Volume= 1.736 af, Atten= 4%, Lag= 1.9 min
Primary = 2.91 cfs @ 12.08 hrs, Volume= 1.092 af
Secondary = 23.52 cfs @ 12.08 hrs, Volume= 0.644 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.17' @ 12.08 hrs Surf.Area= 10,144 sf Storage= 10,953 cf

Plug-Flow detention time= 109.3 min calculated for 1.736 af (100% of inflow)
Center-of-Mass det. time= 109.3 min (907.1 - 797.8)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

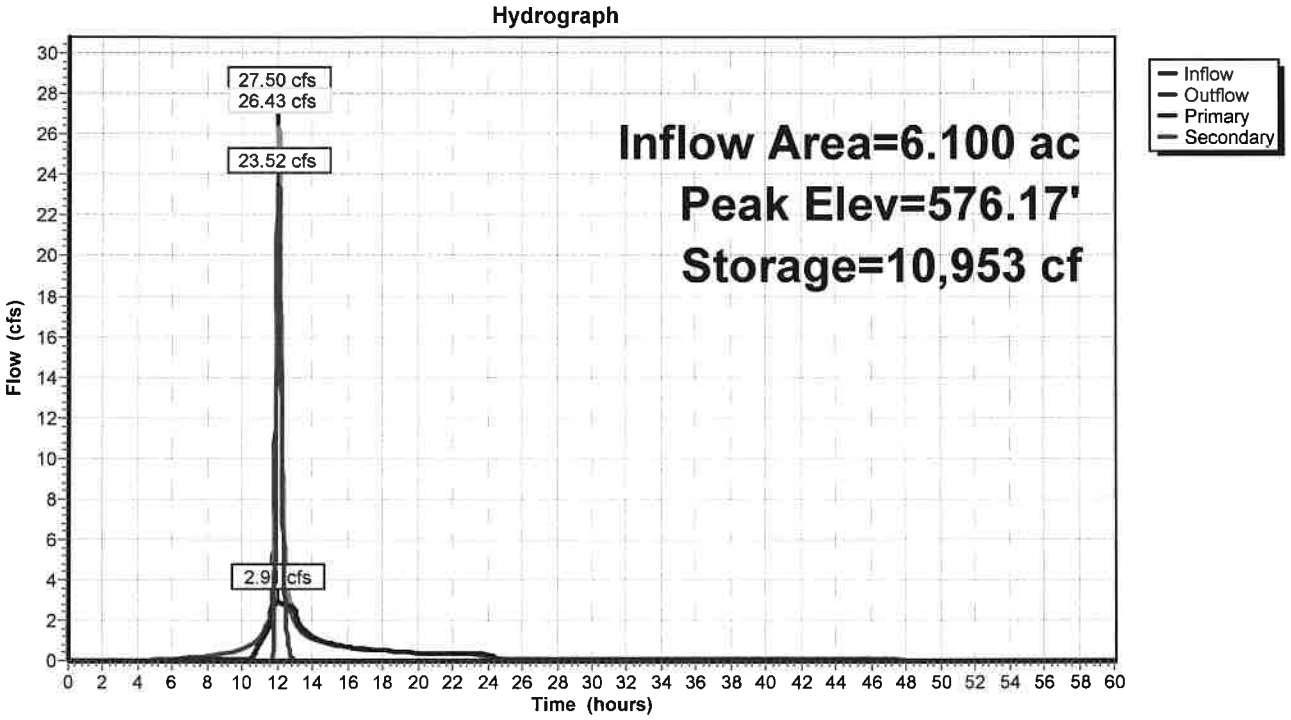
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.91 cfs @ 12.08 hrs HW=576.17' (Free Discharge)
└─**1=8" pipe** (Barrel Controls 2.91 cfs @ 8.34 fps)
  ├─**2=Grate** (Passes < 5.49 cfs potential flow)
  └─**3=Exfiltration** (Passes < 0.06 cfs potential flow)

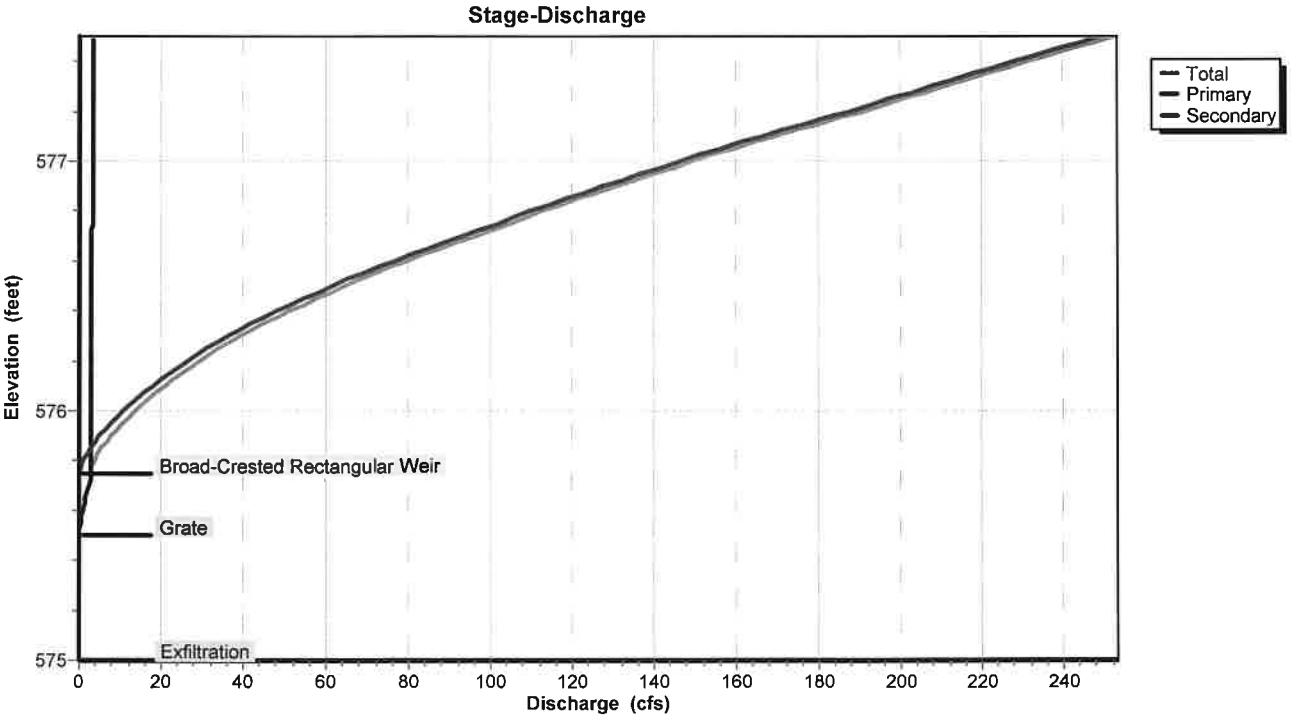
Secondary OutFlow Max=23.50 cfs @ 12.08 hrs HW=576.17' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 23.50 cfs @ 1.88 fps)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

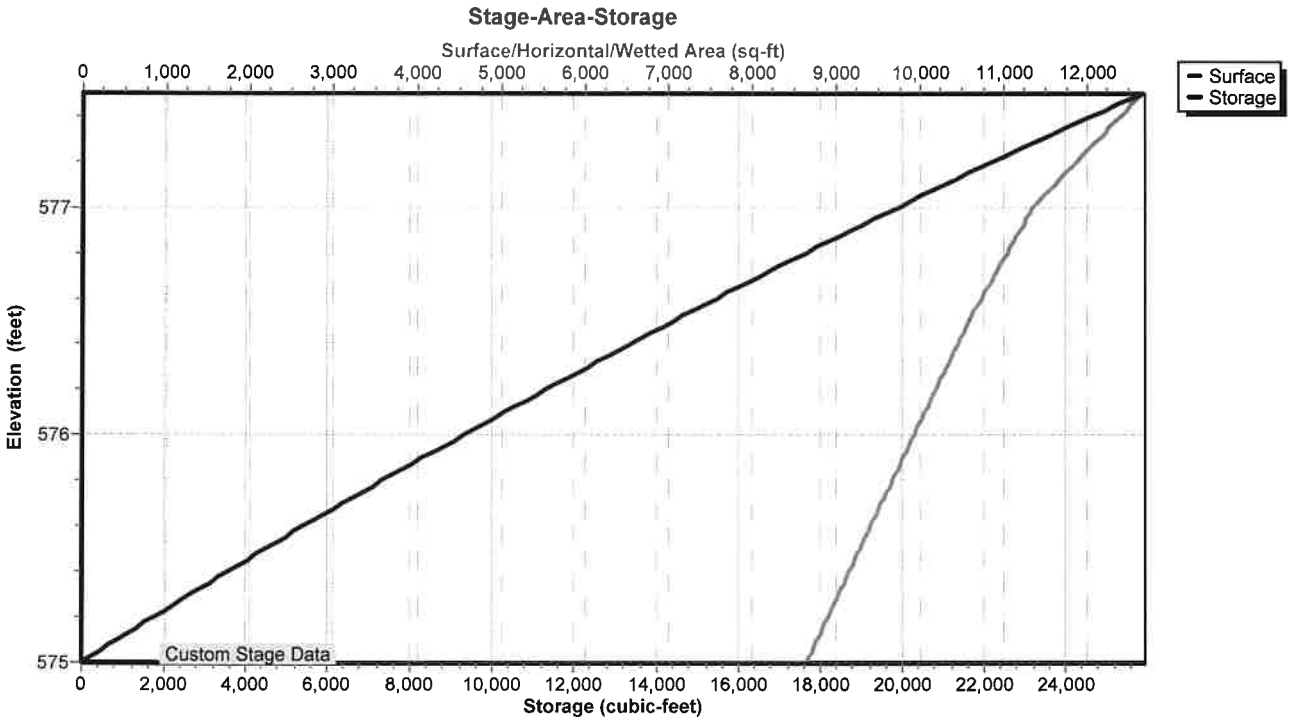


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.09	180	575.02	0.04	0.04	0.00
8.00	0.23	959	575.11	0.05	0.05	0.00
10.00	0.57	3,333	575.38	0.05	0.05	0.00
12.00	**25.18**	**10,302**	**576.10**	**21.15**	**2.88**	**18.27**
14.00	**1.08**	**5,594**	**575.62**	**1.18**	**1.18**	**0.00**
16.00	0.64	5,233	575.58	0.68	0.68	0.00
18.00	0.49	5,081	575.56	0.51	0.51	0.00
20.00	0.36	4,961	575.55	0.38	0.38	0.00
22.00	0.32	4,907	575.55	0.33	0.33	0.00
24.00	0.30	4,876	575.54	0.30	0.30	0.00
26.00	0.00	4,297	575.48	0.06	0.06	0.00
28.00	0.00	3,900	575.44	0.05	0.05	0.00
30.00	0.00	3,508	575.39	0.05	0.05	0.00
32.00	0.00	3,118	575.35	0.05	0.05	0.00
34.00	0.00	2,732	575.31	0.05	0.05	0.00
36.00	0.00	2,350	575.27	0.05	0.05	0.00
38.00	0.00	1,970	575.22	0.05	0.05	0.00
40.00	0.00	1,594	575.18	0.05	0.05	0.00
42.00	0.00	1,221	575.14	0.05	0.05	0.00
44.00	0.00	852	575.10	0.05	0.05	0.00
46.00	0.00	486	575.06	0.05	0.05	0.00
48.00	0.00	140	575.02	0.03	0.03	0.00
50.00	0.00	26	575.00	0.01	0.01	0.00
52.00	0.00	5	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 5.27" for 50-Year event
Inflow = 42.93 cfs @ 12.07 hrs, Volume= 1.933 af
Outflow = 1.97 cfs @ 12.73 hrs, Volume= 1.635 af, Atten= 95%, Lag= 39.8 min
Primary = 0.72 cfs @ 12.73 hrs, Volume= 1.504 af
Secondary = 1.25 cfs @ 12.73 hrs, Volume= 0.131 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.00' @ 12.73 hrs Surf.Area= 66,838 sf Storage= 62,935 cf

Plug-Flow detention time= 900.4 min calculated for 1.635 af (85% of inflow)
Center-of-Mass det. time= 844.0 min (1,616.3 - 772.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

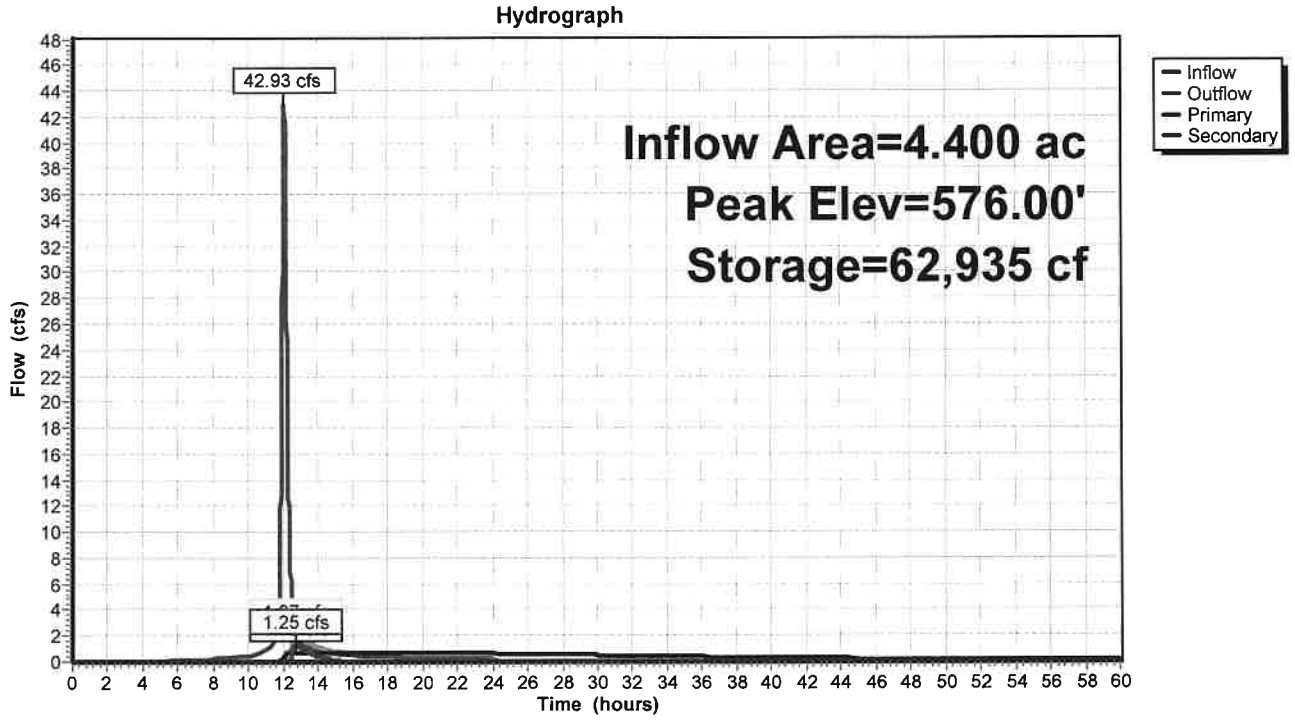
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.72 cfs @ 12.73 hrs HW=576.00' (Free Discharge)
↑—**1=12" outlet pipe** (Passes 0.72 cfs of 2.71 cfs potential flow)
↑—**2=low flow outlet pipe** (Inlet Controls 0.72 cfs @ 3.68 fps)
—**3=Grate** (Controls 0.00 cfs)

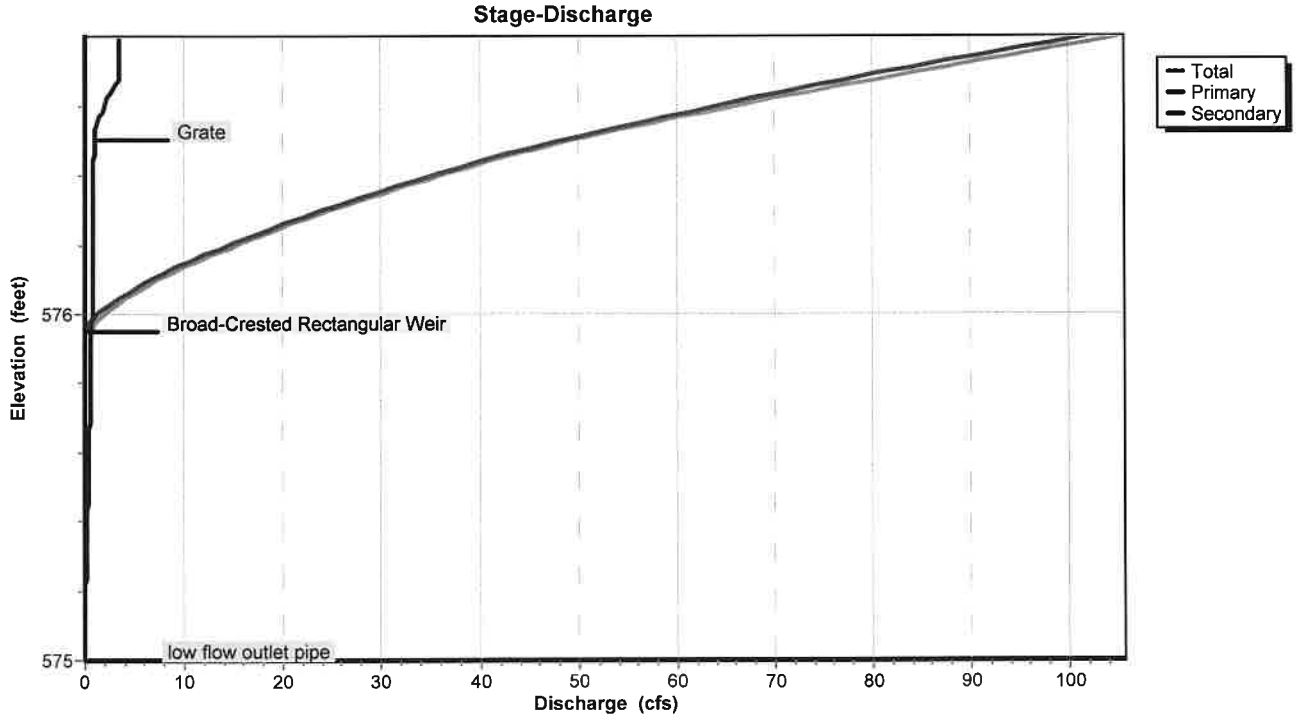
Secondary OutFlow Max=1.25 cfs @ 12.73 hrs HW=576.00' (Free Discharge)
↑—**4=Broad-Crested Rectangular Weir** (Weir Controls 1.25 cfs @ 0.64 fps)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

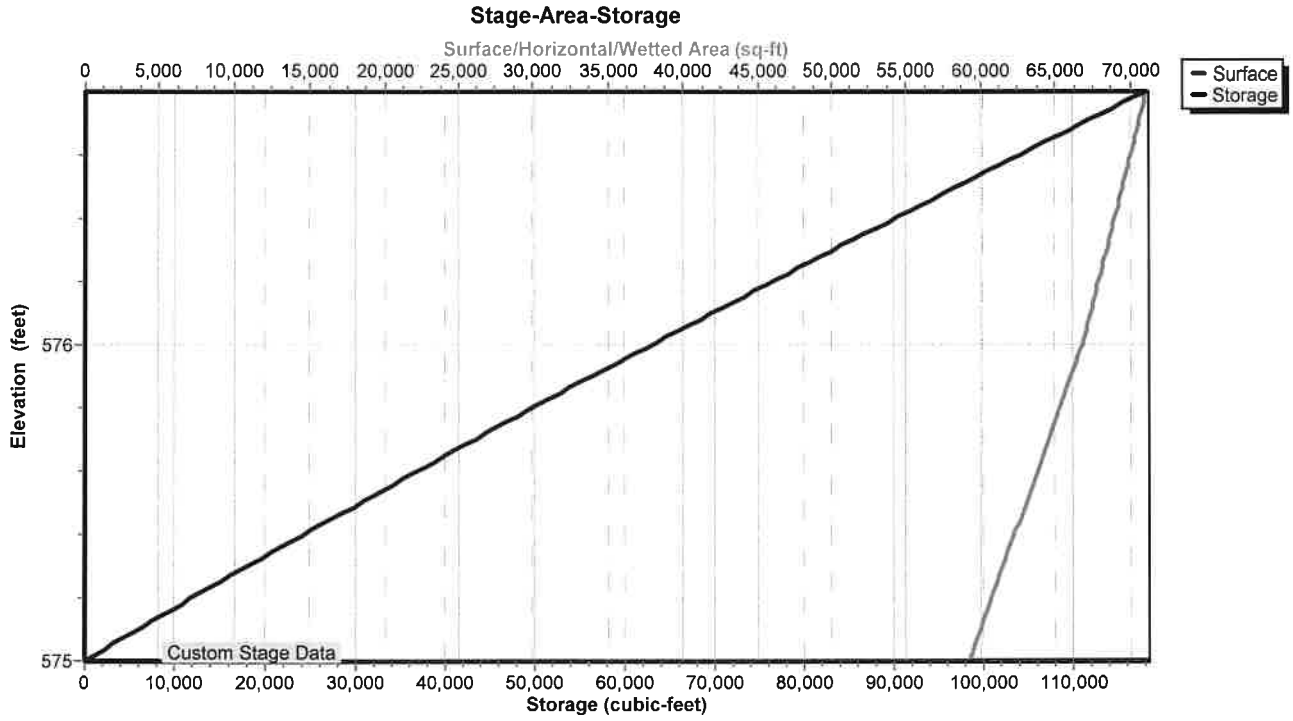


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	1	575.00	0.00	0.00	0.00
6.00	0.08	300	575.01	0.00	0.00	0.00
8.00	0.19	1,265	575.02	0.00	0.00	0.00
10.00	0.44	3,420	575.06	0.01	0.01	0.00
12.00	**35.63**	**24,163**	**575.40**	**0.26**	**0.26**	**0.00**
14.00	**0.79**	**61,204**	**575.97**	**1.11**	**0.71**	**0.40**
16.00	0.47	59,536	575.95	0.70	0.70	0.00
18.00	0.36	57,495	575.92	0.68	0.68	0.00
20.00	0.26	54,889	575.88	0.66	0.66	0.00
22.00	0.23	51,975	575.83	0.64	0.64	0.00
24.00	0.21	49,094	575.79	0.61	0.61	0.00
26.00	0.00	45,010	575.73	0.56	0.56	0.00
28.00	0.00	41,189	575.67	0.50	0.50	0.00
30.00	0.00	37,665	575.61	0.47	0.47	0.00
32.00	0.00	34,410	575.56	0.43	0.43	0.00
34.00	0.00	31,481	575.51	0.38	0.38	0.00
36.00	0.00	28,873	575.47	0.34	0.34	0.00
38.00	0.00	26,562	575.44	0.30	0.30	0.00
40.00	0.00	24,517	575.40	0.27	0.27	0.00
42.00	0.00	22,705	575.37	0.24	0.24	0.00
44.00	0.00	21,097	575.35	0.21	0.21	0.00
46.00	0.00	19,666	575.33	0.19	0.19	0.00
48.00	0.00	18,389	575.30	0.17	0.17	0.00
50.00	0.00	17,245	575.29	0.15	0.15	0.00
52.00	0.00	16,216	575.27	0.14	0.14	0.00
54.00	0.00	15,288	575.25	0.12	0.12	0.00
56.00	0.00	14,449	575.24	0.11	0.11	0.00
58.00	0.00	13,686	575.23	0.10	0.10	0.00
60.00	0.00	12,992	575.22	0.09	0.09	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

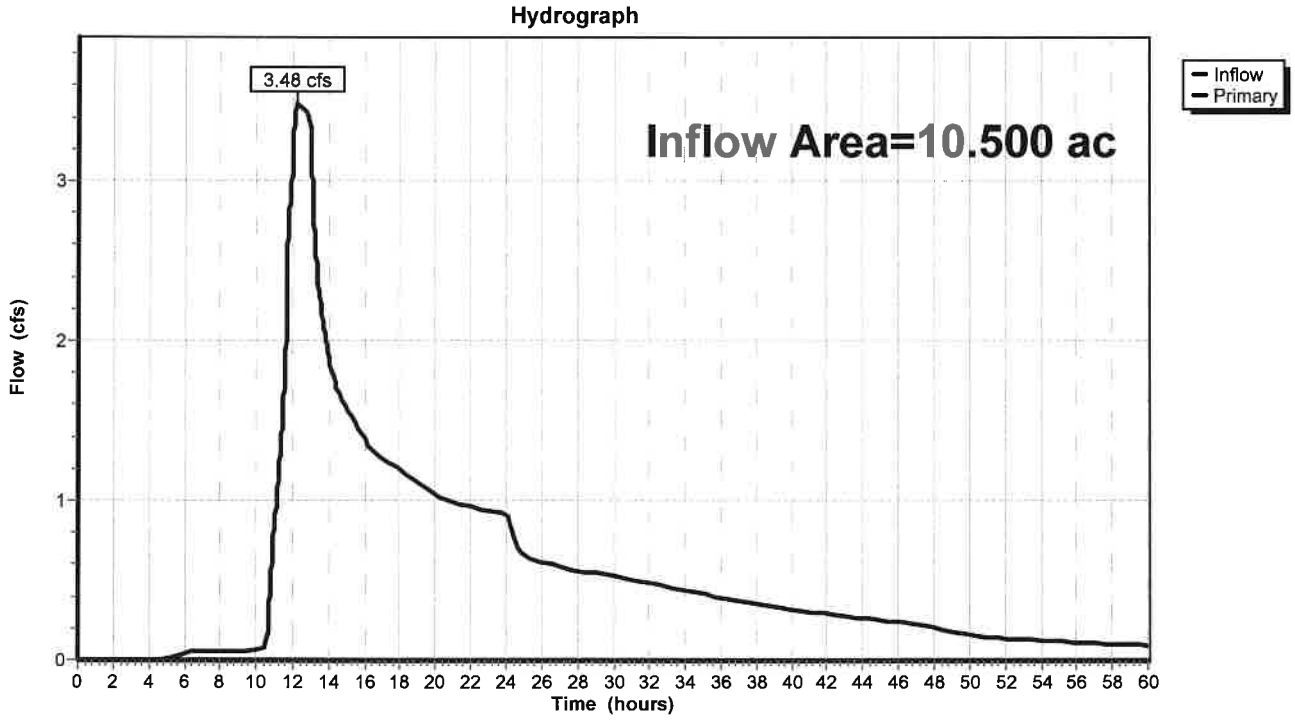
Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 2.97" for 50-Year event
Inflow = 3.48 cfs @ 12.21 hrs, Volume= 2.596 af
Primary = 3.48 cfs @ 12.21 hrs, Volume= 2.596 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.14	0.00	0.14
1.00	0.00	0.00	0.00	53.00	0.13	0.00	0.13
2.00	0.00	0.00	0.00	54.00	0.12	0.00	0.12
3.00	0.00	0.00	0.00	55.00	0.12	0.00	0.12
4.00	0.00	0.00	0.00	56.00	0.11	0.00	0.11
5.00	0.01	0.00	0.01	57.00	0.11	0.00	0.11
6.00	0.04	0.00	0.04	58.00	0.10	0.00	0.10
7.00	0.05	0.00	0.05	59.00	0.10	0.00	0.10
8.00	0.05	0.00	0.05	60.00	0.09	0.00	0.09
9.00	0.06	0.00	0.06				
10.00	0.06	0.00	0.06				
11.00	0.88	0.00	0.88				
12.00	**3.14**	0.00	**3.14**				
13.00	**3.25**	0.00	**3.25**				
14.00	1.89	0.00	1.89				
15.00	1.57	0.00	1.57				
16.00	1.38	0.00	1.38				
17.00	1.26	0.00	1.26				
18.00	1.19	0.00	1.19				
19.00	1.11	0.00	1.11				
20.00	1.04	0.00	1.04				
21.00	0.99	0.00	0.99				
22.00	0.96	0.00	0.96				
23.00	0.94	0.00	0.94				
24.00	0.91	0.00	0.91				
25.00	0.65	0.00	0.65				
26.00	0.62	0.00	0.62				
27.00	0.59	0.00	0.59				
28.00	0.56	0.00	0.56				
29.00	0.55	0.00	0.55				
30.00	0.53	0.00	0.53				
31.00	0.51	0.00	0.51				
32.00	0.48	0.00	0.48				
33.00	0.46	0.00	0.46				
34.00	0.44	0.00	0.44				
35.00	0.42	0.00	0.42				
36.00	0.39	0.00	0.39				
37.00	0.37	0.00	0.37				
38.00	0.35	0.00	0.35				
39.00	0.34	0.00	0.34				
40.00	0.32	0.00	0.32				
41.00	0.30	0.00	0.30				
42.00	0.29	0.00	0.29				
43.00	0.27	0.00	0.27				
44.00	0.26	0.00	0.26				
45.00	0.25	0.00	0.25				
46.00	0.24	0.00	0.24				
47.00	0.23	0.00	0.23				
48.00	0.20	0.00	0.20				
49.00	0.17	0.00	0.17				
50.00	0.16	0.00	0.16				
51.00	0.15	0.00	0.15				

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=4.15"
Flow Length=652' Tc=13.3 min CN=90 Runoff=33.05 cfs 2.108 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=4.25"
Flow Length=683' Tc=14.4 min CN=91 Runoff=23.44 cfs 1.560 af

Pond 1P: Bioretention Area 3 Peak Elev=576.23' Storage=11,585 cf Inflow=33.05 cfs 2.108 af
Primary=2.94 cfs 1.275 af Secondary=28.98 cfs 0.833 af Outflow=31.92 cfs 2.108 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=576.11' Storage=70,722 cf Inflow=52.24 cfs 2.392 af
Primary=0.78 cfs 1.554 af Secondary=7.80 cfs 0.534 af Outflow=8.57 cfs 2.088 af

Link 5L: Outflow (@ CB 54) Inflow=3.60 cfs 2.829 af
Primary=3.60 cfs 2.829 af

Total Runoff Area = 10.500 ac Runoff Volume = 3.668 af Average Runoff Depth = 4.19"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

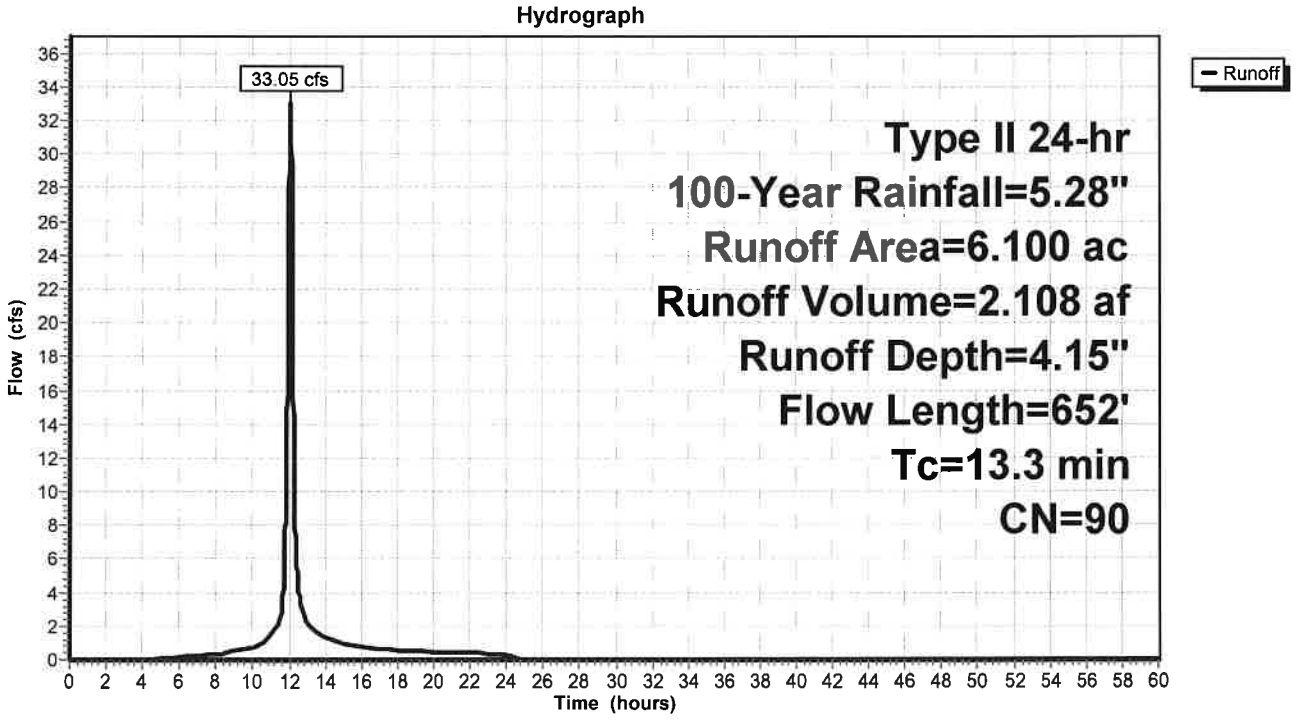
Runoff = 33.05 cfs @ 12.05 hrs, Volume= 2.108 af, Depth= 4.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.18	0.00	0.00
4.00	0.25	0.00	0.01
5.00	0.33	0.01	0.08
6.00	0.42	0.03	0.15
7.00	0.52	0.06	0.23
8.00	0.63	0.11	0.32
9.00	0.78	0.18	0.52
10.00	0.96	0.29	0.74
11.00	1.24	0.49	1.47
12.00	3.50	2.45	**30.36**
13.00	4.08	2.99	**2.21**
14.00	4.33	3.23	1.27
15.00	4.51	3.40	0.98
16.00	4.65	3.54	0.76
17.00	4.76	3.65	0.66
18.00	4.86	3.74	0.58
19.00	4.95	3.83	0.50
20.00	5.03	3.90	0.42
21.00	5.09	3.97	0.40
22.00	5.16	4.03	0.38
23.00	5.22	4.09	0.36
24.00	**5.28**	**4.15**	0.35
25.00	5.28	4.15	0.00
26.00	5.28	4.15	0.00
27.00	5.28	4.15	0.00
28.00	5.28	4.15	0.00
29.00	5.28	4.15	0.00
30.00	5.28	4.15	0.00
31.00	5.28	4.15	0.00
32.00	5.28	4.15	0.00
33.00	5.28	4.15	0.00
34.00	5.28	4.15	0.00
35.00	5.28	4.15	0.00
36.00	5.28	4.15	0.00
37.00	5.28	4.15	0.00
38.00	5.28	4.15	0.00
39.00	5.28	4.15	0.00
40.00	5.28	4.15	0.00
41.00	5.28	4.15	0.00
42.00	5.28	4.15	0.00
43.00	5.28	4.15	0.00
44.00	5.28	4.15	0.00
45.00	5.28	4.15	0.00
46.00	5.28	4.15	0.00
47.00	5.28	4.15	0.00
48.00	5.28	4.15	0.00
49.00	5.28	4.15	0.00
50.00	5.28	4.15	0.00
51.00	5.28	4.15	0.00
52.00	5.28	4.15	0.00
53.00	5.28	4.15	0.00
54.00	5.28	4.15	0.00
55.00	5.28	4.15	0.00
56.00	5.28	4.15	0.00
57.00	5.28	4.15	0.00
58.00	5.28	4.15	0.00
59.00	5.28	4.15	0.00
60.00	5.28	4.15	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

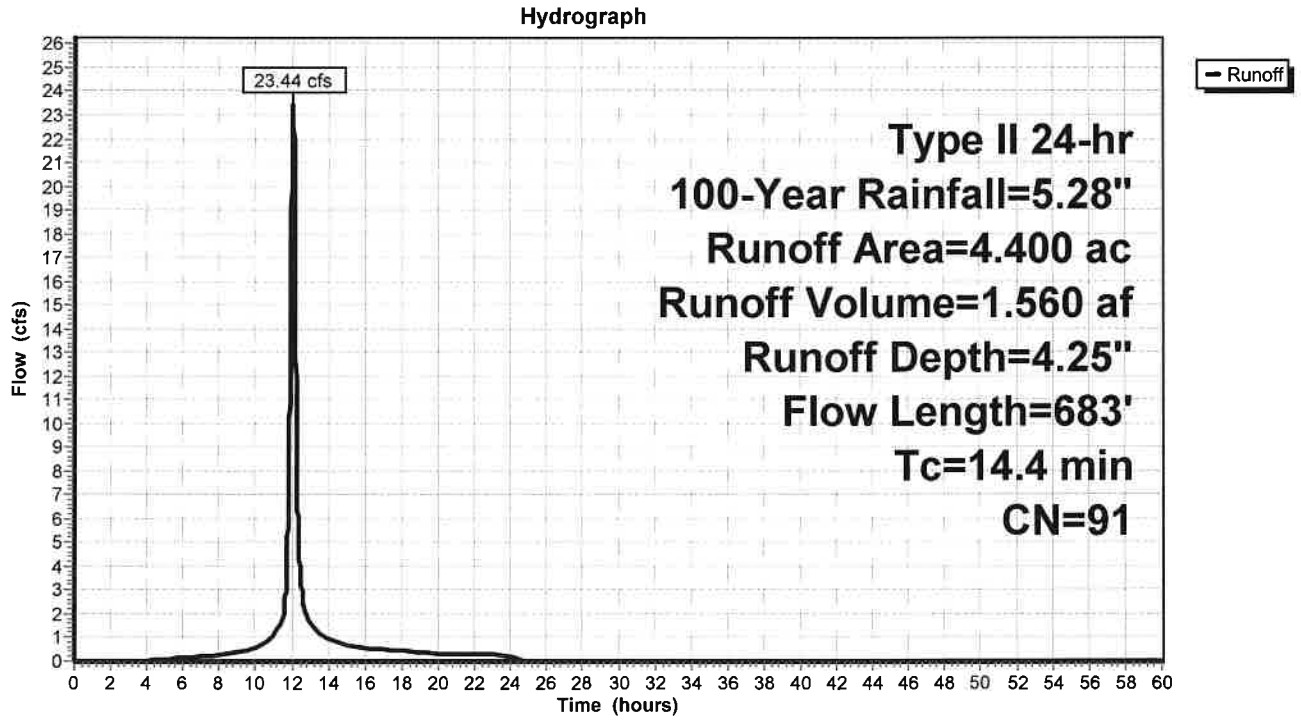
Runoff = 23.44 cfs @ 12.06 hrs, Volume= 1.560 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.18	0.00	0.00
4.00	0.25	0.00	0.02
5.00	0.33	0.02	0.07
6.00	0.42	0.04	0.13
7.00	0.52	0.08	0.19
8.00	0.63	0.13	0.25
9.00	0.78	0.21	0.41
10.00	0.96	0.33	0.57
11.00	1.24	0.54	1.10
12.00	3.50	2.54	**20.85**
13.00	4.08	3.09	**1.64**
14.00	4.33	3.33	0.94
15.00	4.51	3.50	0.71
16.00	4.65	3.64	0.56
17.00	4.76	3.75	0.48
18.00	4.86	3.85	0.42
19.00	4.95	3.93	0.36
20.00	5.03	4.01	0.31
21.00	5.09	4.07	0.29
22.00	5.16	4.14	0.28
23.00	5.22	4.20	0.26
24.00	**5.28**	**4.25**	0.25
25.00	5.28	4.25	0.00
26.00	5.28	4.25	0.00
27.00	5.28	4.25	0.00
28.00	5.28	4.25	0.00
29.00	5.28	4.25	0.00
30.00	5.28	4.25	0.00
31.00	5.28	4.25	0.00
32.00	5.28	4.25	0.00
33.00	5.28	4.25	0.00
34.00	5.28	4.25	0.00
35.00	5.28	4.25	0.00
36.00	5.28	4.25	0.00
37.00	5.28	4.25	0.00
38.00	5.28	4.25	0.00
39.00	5.28	4.25	0.00
40.00	5.28	4.25	0.00
41.00	5.28	4.25	0.00
42.00	5.28	4.25	0.00
43.00	5.28	4.25	0.00
44.00	5.28	4.25	0.00
45.00	5.28	4.25	0.00
46.00	5.28	4.25	0.00
47.00	5.28	4.25	0.00
48.00	5.28	4.25	0.00
49.00	5.28	4.25	0.00
50.00	5.28	4.25	0.00
51.00	5.28	4.25	0.00
52.00	5.28	4.25	0.00
53.00	5.28	4.25	0.00
54.00	5.28	4.25	0.00
55.00	5.28	4.25	0.00
56.00	5.28	4.25	0.00
57.00	5.28	4.25	0.00
58.00	5.28	4.25	0.00
59.00	5.28	4.25	0.00
60.00	5.28	4.25	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 4.15" for 100-Year event
Inflow = 33.05 cfs @ 12.05 hrs, Volume= 2.108 af
Outflow = 31.92 cfs @ 12.08 hrs, Volume= 2.108 af, Atten= 3%, Lag= 1.8 min
Primary = 2.94 cfs @ 12.08 hrs, Volume= 1.275 af
Secondary = 28.98 cfs @ 12.08 hrs, Volume= 0.833 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.23' @ 12.08 hrs Surf.Area= 10,226 sf Storage= 11,585 cf

Plug-Flow detention time= 93.7 min calculated for 2.108 af (100% of inflow)
Center-of-Mass det. time= 93.9 min (886.3 - 792.4)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

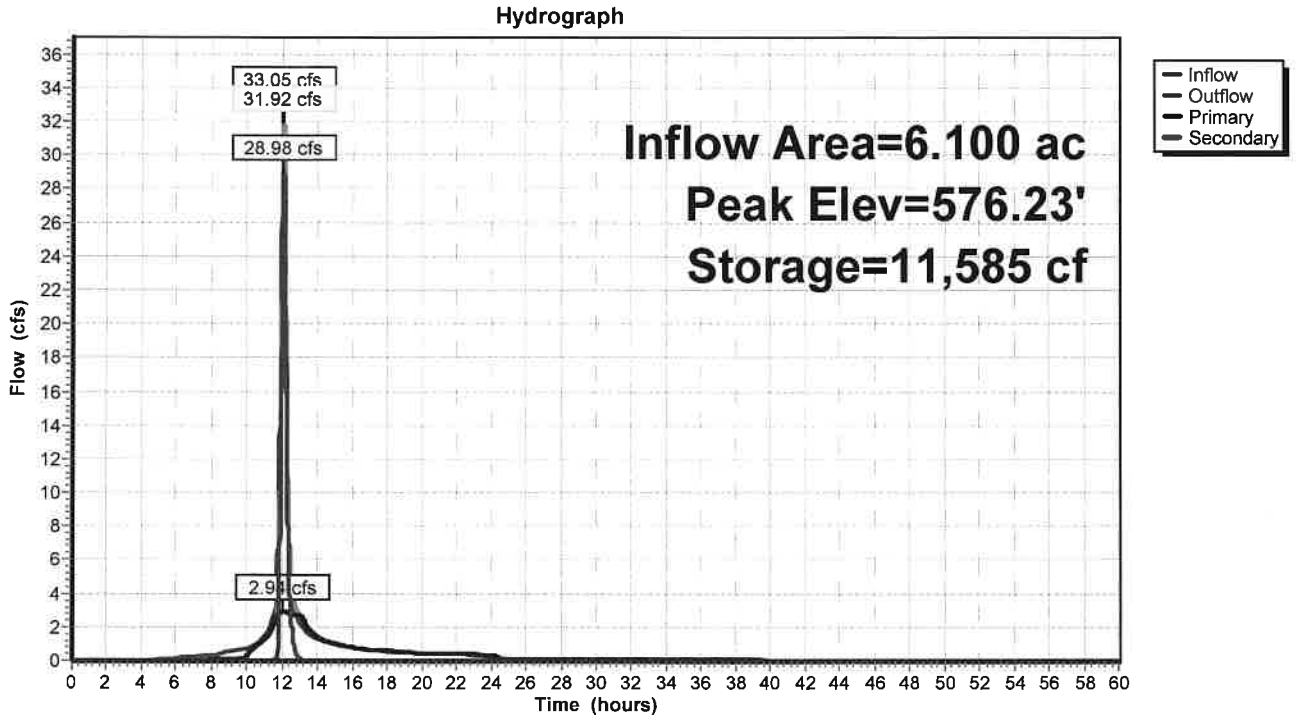
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.94 cfs @ 12.08 hrs HW=576.23' (Free Discharge)
└─**1=8" pipe** (Barrel Controls 2.94 cfs @ 8.43 fps)
  ├─**2=Grate** (Passes < 5.74 cfs potential flow)
  └─**3=Exfiltration** (Passes < 0.06 cfs potential flow)

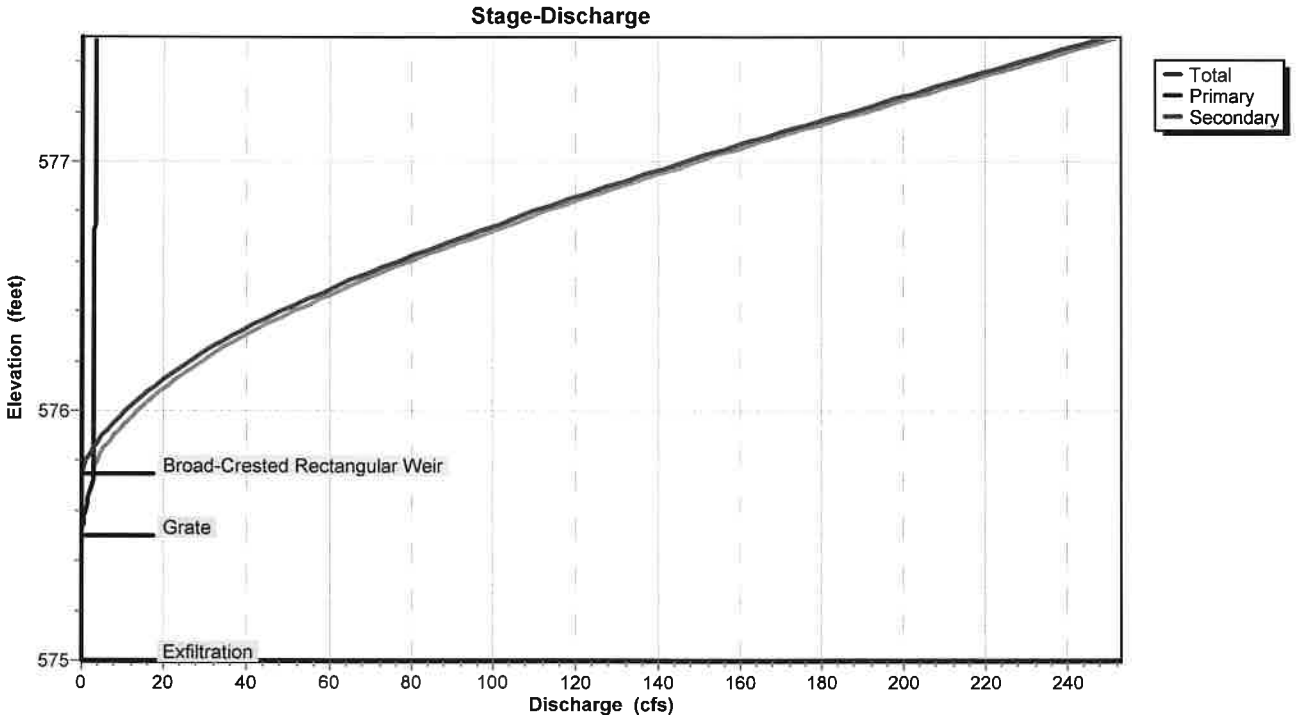
Secondary OutFlow Max=28.93 cfs @ 12.08 hrs HW=576.23' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 28.93 cfs @ 2.02 fps)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

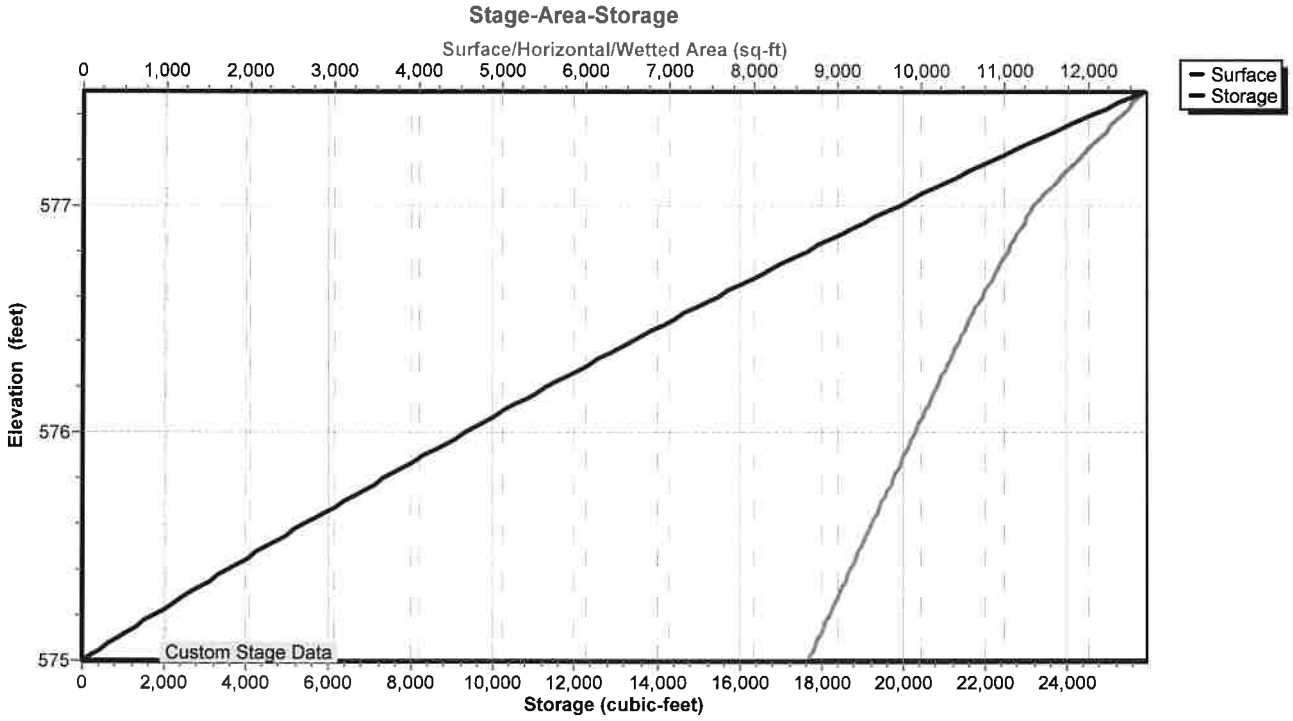


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.01	6	575.00	0.00	0.00	0.00
6.00	0.15	359	575.04	0.05	0.05	0.00
8.00	0.32	1,651	575.19	0.05	0.05	0.00
10.00	0.74	4,857	575.54	0.28	0.28	0.00
12.00	**30.36**	**10,896**	**576.16**	**25.95**	**2.91**	**23.04**
14.00	**1.27**	**5,731**	**575.63**	**1.39**	**1.39**	**0.00**
16.00	0.76	5,329	575.59	0.81	0.81	0.00
18.00	0.58	5,164	575.57	0.60	0.60	0.00
20.00	0.42	5,023	575.56	0.44	0.44	0.00
22.00	0.38	4,969	575.55	0.38	0.38	0.00
24.00	0.35	4,939	575.55	0.35	0.35	0.00
26.00	0.00	4,307	575.48	0.06	0.06	0.00
28.00	0.00	3,911	575.44	0.05	0.05	0.00
30.00	0.00	3,518	575.40	0.05	0.05	0.00
32.00	0.00	3,129	575.35	0.05	0.05	0.00
34.00	0.00	2,743	575.31	0.05	0.05	0.00
36.00	0.00	2,360	575.27	0.05	0.05	0.00
38.00	0.00	1,981	575.23	0.05	0.05	0.00
40.00	0.00	1,604	575.18	0.05	0.05	0.00
42.00	0.00	1,232	575.14	0.05	0.05	0.00
44.00	0.00	862	575.10	0.05	0.05	0.00
46.00	0.00	496	575.06	0.05	0.05	0.00
48.00	0.00	147	575.02	0.03	0.03	0.00
50.00	0.00	28	575.00	0.01	0.01	0.00
52.00	0.00	5	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 6.52" for 100-Year event
Inflow = 52.24 cfs @ 12.07 hrs, Volume= 2.392 af
Outflow = 8.57 cfs @ 12.41 hrs, Volume= 2.088 af, Atten= 84%, Lag= 20.7 min
Primary = 0.78 cfs @ 12.41 hrs, Volume= 1.554 af
Secondary = 7.80 cfs @ 12.41 hrs, Volume= 0.534 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.11' @ 12.41 hrs Surf.Area= 67,462 sf Storage= 70,722 cf

Plug-Flow detention time= 739.0 min calculated for 2.088 af (87% of inflow)
Center-of-Mass det. time= 688.7 min (1,456.5 - 767.8)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

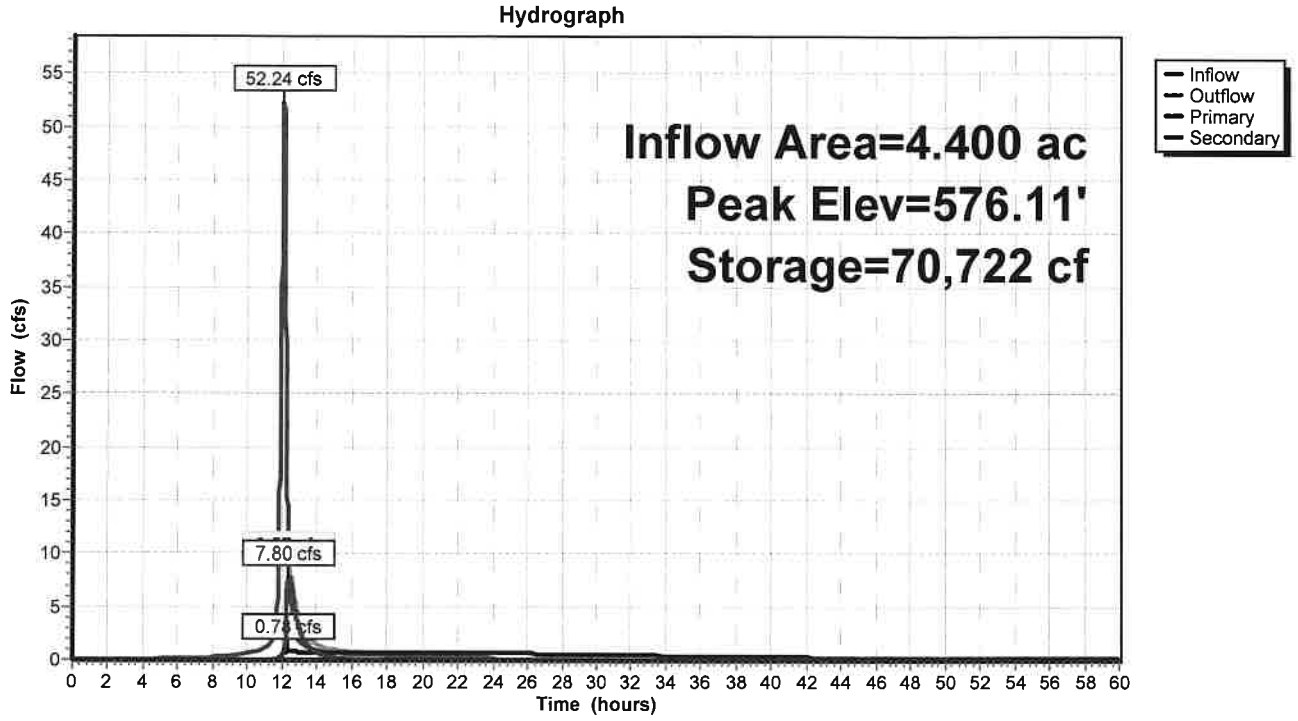
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.78 cfs @ 12.41 hrs HW=576.11' (Free Discharge)
└─**1=12" outlet pipe** (Passes 0.78 cfs of 2.84 cfs potential flow)
  ├─**2=low flow outlet pipe** (Inlet Controls 0.78 cfs @ 3.95 fps)
  └─**3=Grate** (Controls 0.00 cfs)

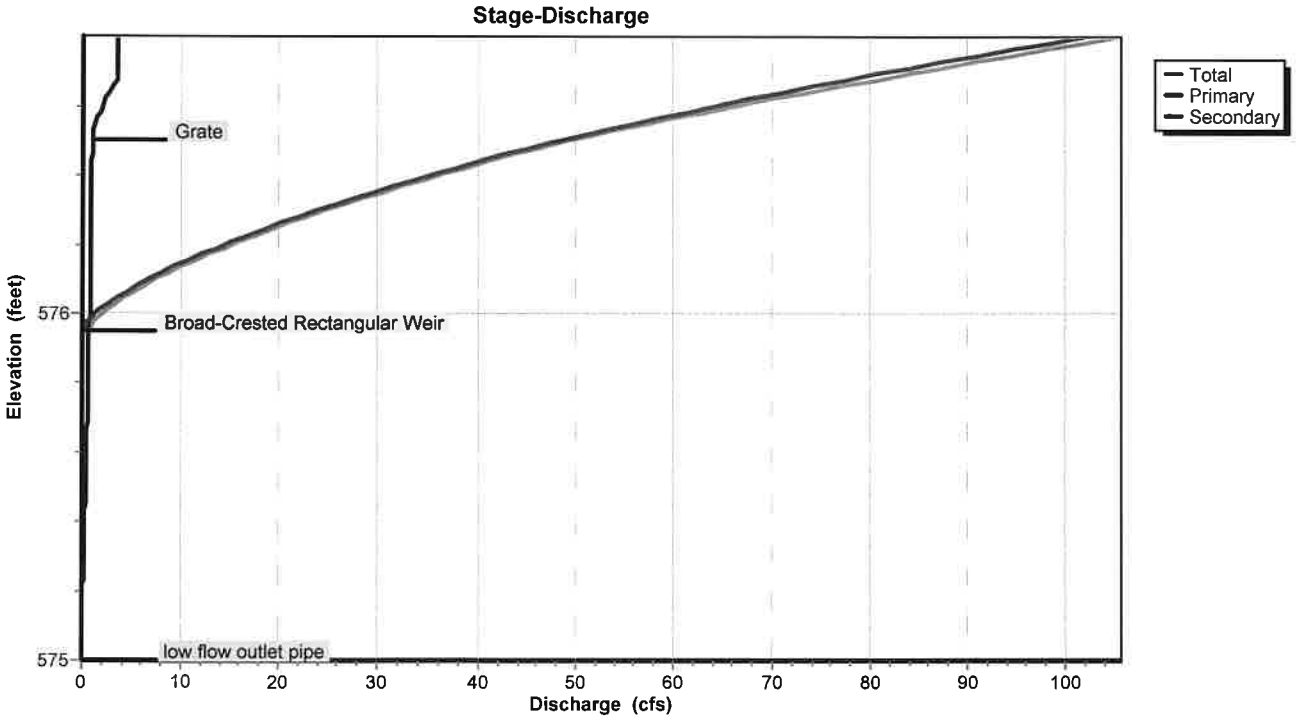
Secondary OutFlow Max=7.79 cfs @ 12.41 hrs HW=576.11' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 7.79 cfs @ 1.18 fps)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

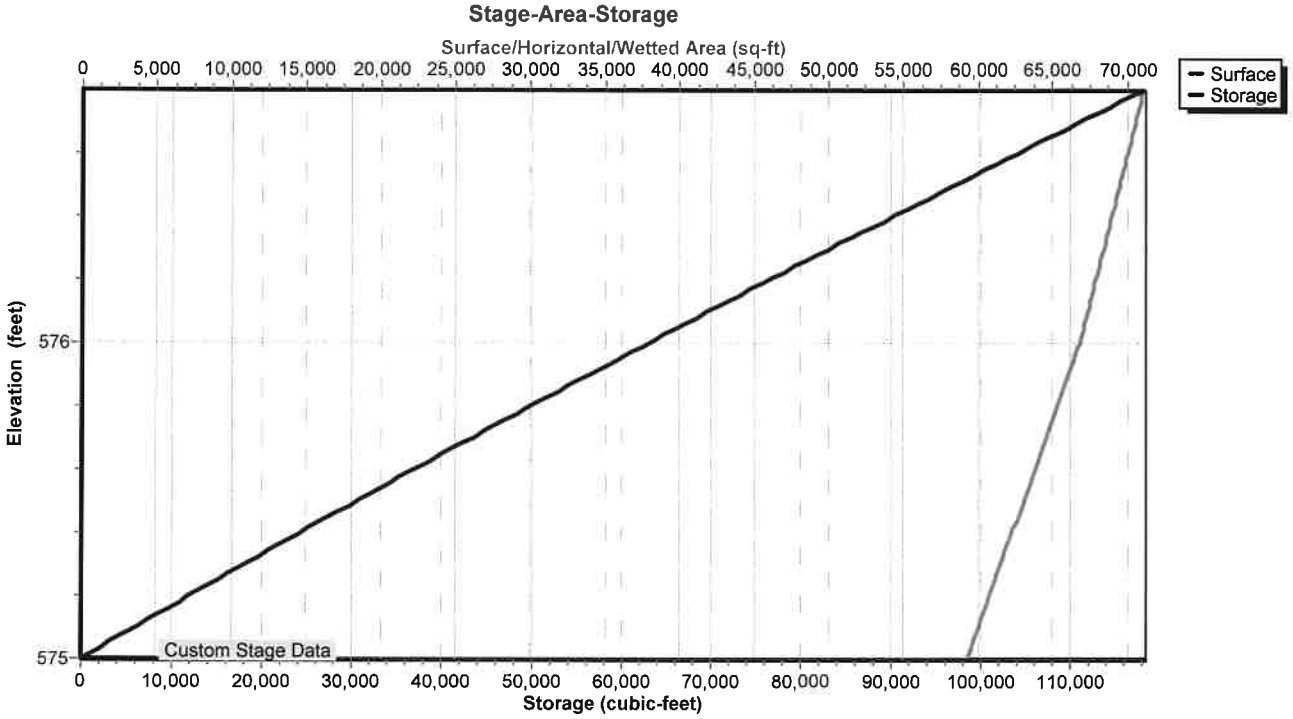


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.02	25	575.00	0.00	0.00	0.00
6.00	0.13	556	575.01	0.00	0.00	0.00
8.00	0.25	1,914	575.03	0.00	0.00	0.00
10.00	0.57	4,720	575.08	0.01	0.01	0.00
12.00	**43.89**	**31,253**	**575.51**	**0.38**	**0.38**	**0.00**
14.00	**0.94**	**61,894**	**575.98**	**1.43**	**0.71**	**0.72**
16.00	0.56	59,972	575.95	0.73	0.70	0.03
18.00	0.42	58,398	575.93	0.69	0.69	0.00
20.00	0.31	56,130	575.90	0.67	0.67	0.00
22.00	0.28	53,450	575.86	0.65	0.65	0.00
24.00	0.25	50,762	575.81	0.63	0.63	0.00
26.00	0.00	46,581	575.75	0.59	0.59	0.00
28.00	0.00	42,588	575.69	0.52	0.52	0.00
30.00	0.00	38,979	575.63	0.49	0.49	0.00
32.00	0.00	35,609	575.58	0.45	0.45	0.00
34.00	0.00	32,555	575.53	0.40	0.40	0.00
36.00	0.00	29,827	575.49	0.36	0.36	0.00
38.00	0.00	27,407	575.45	0.32	0.32	0.00
40.00	0.00	25,264	575.42	0.28	0.28	0.00
42.00	0.00	23,368	575.39	0.25	0.25	0.00
44.00	0.00	21,686	575.36	0.22	0.22	0.00
46.00	0.00	20,191	575.33	0.20	0.20	0.00
48.00	0.00	18,858	575.31	0.17	0.17	0.00
50.00	0.00	17,665	575.29	0.16	0.16	0.00
52.00	0.00	16,594	575.28	0.14	0.14	0.00
54.00	0.00	15,630	575.26	0.13	0.13	0.00
56.00	0.00	14,758	575.25	0.12	0.12	0.00
58.00	0.00	13,967	575.23	0.10	0.10	0.00
60.00	0.00	13,248	575.22	0.10	0.10	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

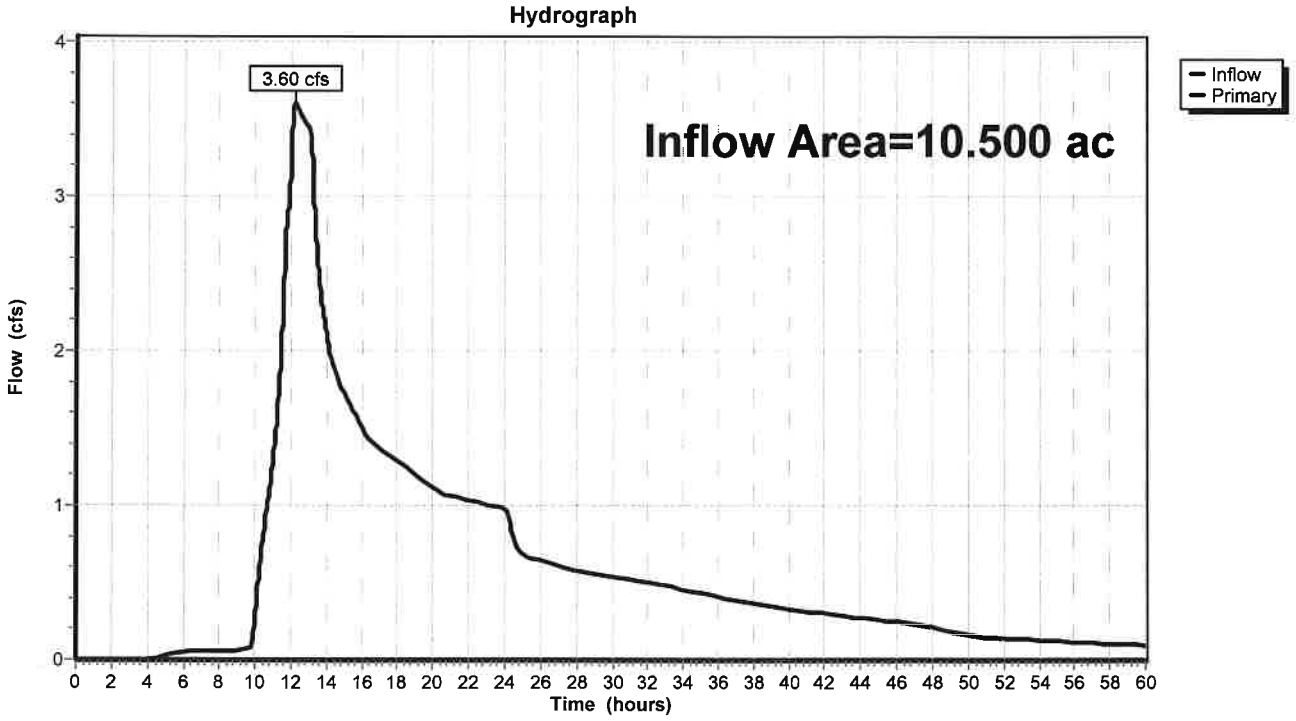
Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 3.23" for 100-Year event
Inflow = 3.60 cfs @ 12.19 hrs, Volume= 2.829 af
Primary = 3.60 cfs @ 12.19 hrs, Volume= 2.829 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

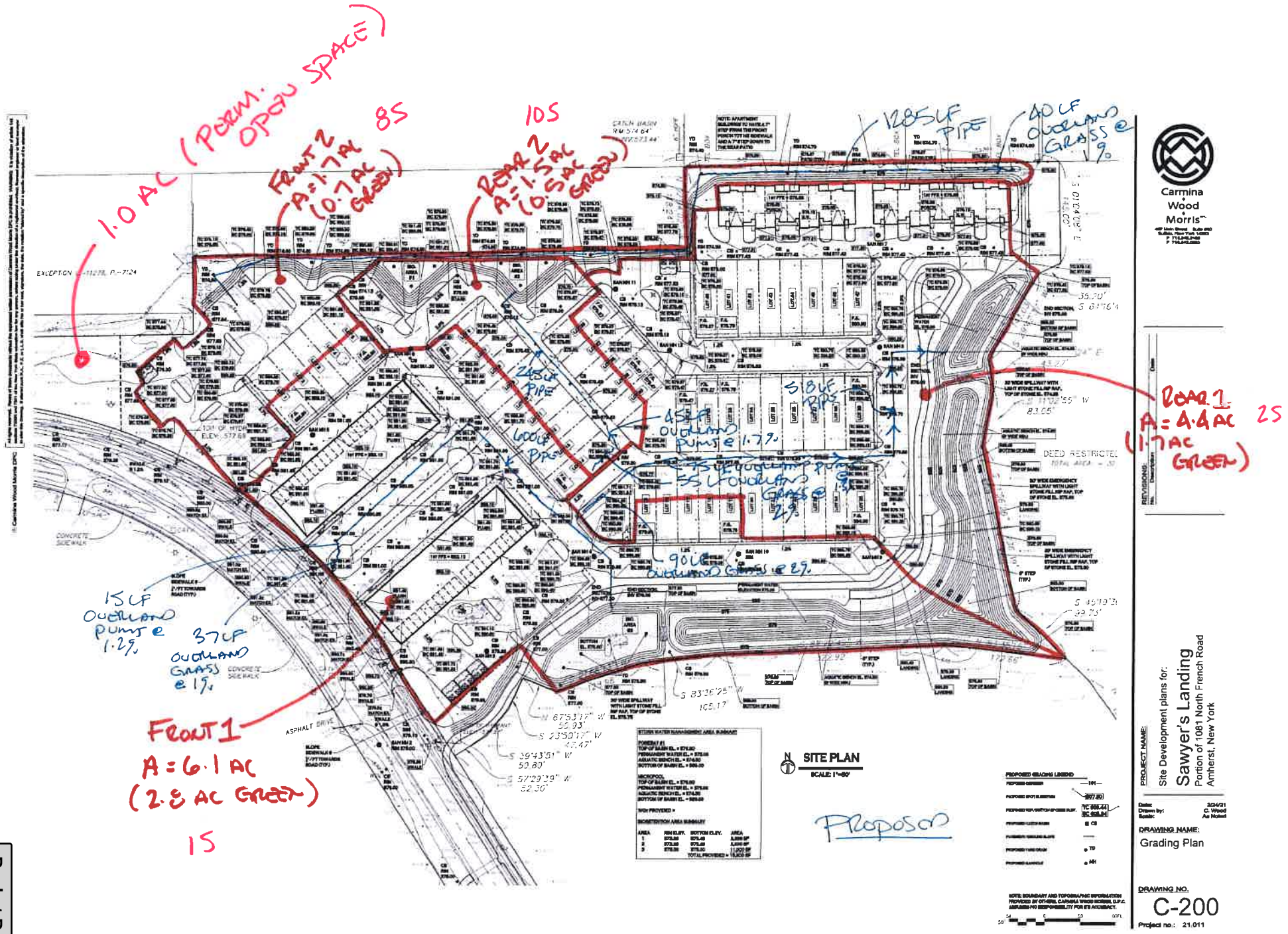
Hydrograph for Link 5L: Outflow (@ CB 54)

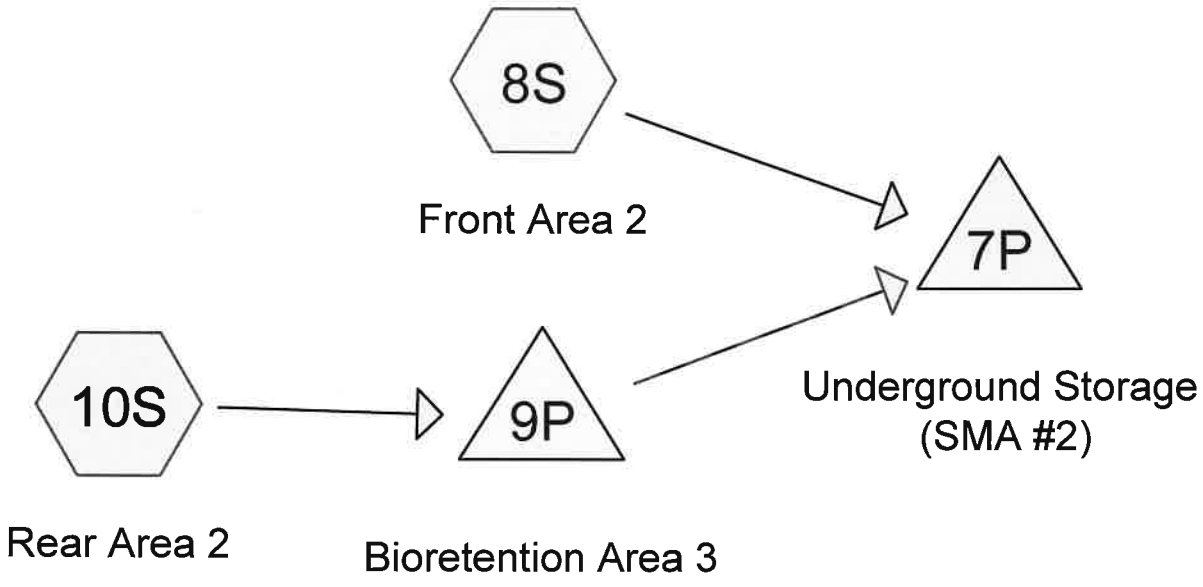
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.14	0.00	0.14
1.00	0.00	0.00	0.00	53.00	0.13	0.00	0.13
2.00	0.00	0.00	0.00	54.00	0.13	0.00	0.13
3.00	0.00	0.00	0.00	55.00	0.12	0.00	0.12
4.00	0.00	0.00	0.00	56.00	0.12	0.00	0.12
5.00	0.03	0.00	0.03	57.00	0.11	0.00	0.11
6.00	0.05	0.00	0.05	58.00	0.10	0.00	0.10
7.00	0.05	0.00	0.05	59.00	0.10	0.00	0.10
8.00	0.05	0.00	0.05	60.00	0.10	0.00	0.10
9.00	0.06	0.00	0.06				
10.00	0.30	0.00	0.30				
11.00	1.31	0.00	1.31				
12.00	**3.29**	0.00	**3.29**				
13.00	**3.44**	0.00	**3.44**				
14.00	2.10	0.00	2.10				
15.00	1.72	0.00	1.72				
16.00	1.51	0.00	1.51				
17.00	1.37	0.00	1.37				
18.00	1.29	0.00	1.29				
19.00	1.20	0.00	1.20				
20.00	1.11	0.00	1.11				
21.00	1.06	0.00	1.06				
22.00	1.03	0.00	1.03				
23.00	1.01	0.00	1.01				
24.00	0.98	0.00	0.98				
25.00	0.68	0.00	0.68				
26.00	0.64	0.00	0.64				
27.00	0.61	0.00	0.61				
28.00	0.58	0.00	0.58				
29.00	0.55	0.00	0.55				
30.00	0.54	0.00	0.54				
31.00	0.52	0.00	0.52				
32.00	0.50	0.00	0.50				
33.00	0.48	0.00	0.48				
34.00	0.45	0.00	0.45				
35.00	0.43	0.00	0.43				
36.00	0.41	0.00	0.41				
37.00	0.39	0.00	0.39				
38.00	0.37	0.00	0.37				
39.00	0.35	0.00	0.35				
40.00	0.33	0.00	0.33				
41.00	0.32	0.00	0.32				
42.00	0.30	0.00	0.30				
43.00	0.28	0.00	0.28				
44.00	0.27	0.00	0.27				
45.00	0.26	0.00	0.26				
46.00	0.25	0.00	0.25				
47.00	0.24	0.00	0.24				
48.00	0.21	0.00	0.21				
49.00	0.18	0.00	0.18				
50.00	0.16	0.00	0.16				
51.00	0.15	0.00	0.15				

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Proposed Runoff - West

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)


1.0 AC (PERM. OPEN SPACE)
FRONT 2
A=1.7AC
(0.7AC GREEN)
85
REAR 2
A=1.5AC
(0.5AC GREEN)
105
1285LF PIPE
40LF OVERLAND GRASS @ 1%
245LF PIPE
600LF PIPE
45LF OVERLAND PUMP @ 1.7%
518LF PIPE
35LF OVERLAND PUMP
35LF OVERLAND GRASS @ 1.5%
90LF OVERLAND GRASS @ 2%
REAR 1
A=4.4AC
(1.7AC GREEN)
25
15LF OVERLAND PUMP @ 1.2%
37LF OVERLAND GRASS @ 1%
FRONT 1
A=6.1AC
(2.8AC GREEN)
15
SITE PLAN
SCALE: 1"=80'
PROPOSED
Carmina Wood Morris
PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York
DRAWING NAME:
Grading Plan
DRAWING NO.
C-200
Project no.: 21.011



Subcat Reach Pond Link

Routing Diagram for 21.011 Proposed
Prepared by Hewlett-Packard Company, Printed 3/4/2021
HydroCAD® 10.00-18 s/n 05019 © 2016 HydroCAD Software Solutions LLC

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Events for Pond 7P: Underground Storage

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	2.40	0.33	570.29	4,537
2-Year	4.15	0.68	570.46	5,990
5-Year	7.03	1.05	570.79	8,639
10-Year	9.17	1.28	571.13	11,342
25-Year	11.11	1.61	571.73	15,804
50-Year	12.80	3.61	572.23	18,836
100-Year	**14.92**	**4.83**	**572.92**	**21,772**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.200	80	>75% Grass cover, Good, HSG D (8S, 10S)
1.200	98	Paved parking, HSG D (8S, 10S)
0.800	98	Roofs, HSG D (8S, 10S)
3.200	**91**	**TOTAL AREA**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
3.200	HSG D	8S, 10S
0.000	Other	
3.200		**TOTAL AREA**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchmer Numbers
0.000	0.000	0.000	1.200	0.000	1.200	>75% Grass cover, Good	8S, 10S
0.000	0.000	0.000	1.200	0.000	1.200	Paved parking	8S, 10S
0.000	0.000	0.000	0.800	0.000	0.800	Roofs	8S, 10S
0.000	**0.000**	**0.000**	**3.200**	**0.000**	**3.200**	**TOTAL AREA**	

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=1.04"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=2.36 cfs 0.148 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=1.11"
Flow Length=345' Tc=9.1 min CN=92 Runoff=2.63 cfs 0.139 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=570.29' Storage=4,537 cf Inflow=2.40 cfs 0.287 af
Outflow=0.33 cfs 0.243 af

Pond 9P: Bioretention Area 3 Peak Elev=574.54' Storage=2,922 cf Inflow=2.63 cfs 0.139 af
Outflow=0.43 cfs 0.139 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.287 af Average Runoff Depth = 1.08"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

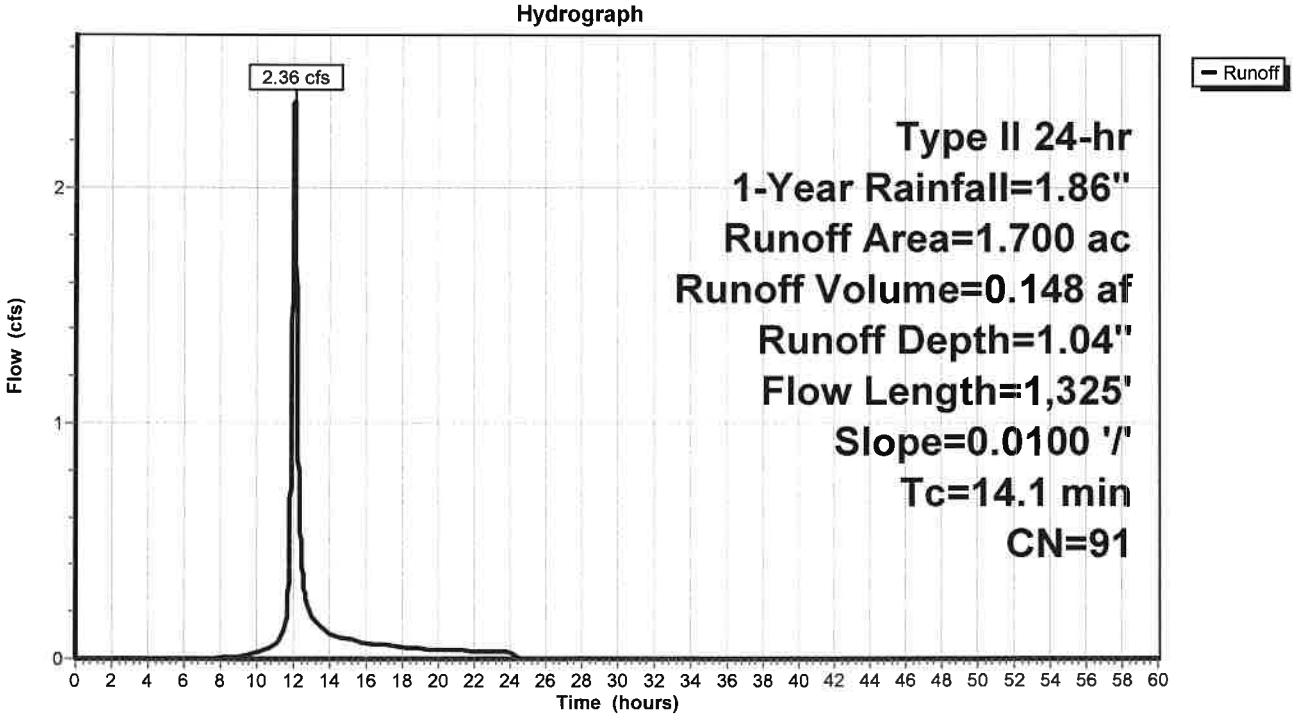
Runoff = 2.36 cfs @ 12.06 hrs, Volume= 0.148 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.00
9.00	0.27	0.01	0.01
10.00	0.34	0.02	0.02
11.00	0.44	0.05	0.07
12.00	1.23	0.53	**2.04**
13.00	1.44	0.69	**0.18**
14.00	1.53	0.76	0.11
15.00	1.59	0.81	0.08
16.00	1.64	0.85	0.07
17.00	1.68	0.89	0.06
18.00	1.71	0.92	0.05
19.00	1.74	0.94	0.04
20.00	1.77	0.97	0.04
21.00	1.79	0.99	0.03
22.00	1.82	1.01	0.03
23.00	1.84	1.02	0.03
24.00	**1.86**	**1.04**	0.03
25.00	1.86	1.04	0.00
26.00	1.86	1.04	0.00
27.00	1.86	1.04	0.00
28.00	1.86	1.04	0.00
29.00	1.86	1.04	0.00
30.00	1.86	1.04	0.00
31.00	1.86	1.04	0.00
32.00	1.86	1.04	0.00
33.00	1.86	1.04	0.00
34.00	1.86	1.04	0.00
35.00	1.86	1.04	0.00
36.00	1.86	1.04	0.00
37.00	1.86	1.04	0.00
38.00	1.86	1.04	0.00
39.00	1.86	1.04	0.00
40.00	1.86	1.04	0.00
41.00	1.86	1.04	0.00
42.00	1.86	1.04	0.00
43.00	1.86	1.04	0.00
44.00	1.86	1.04	0.00
45.00	1.86	1.04	0.00
46.00	1.86	1.04	0.00
47.00	1.86	1.04	0.00
48.00	1.86	1.04	0.00
49.00	1.86	1.04	0.00
50.00	1.86	1.04	0.00
51.00	1.86	1.04	0.00
52.00	1.86	1.04	0.00
53.00	1.86	1.04	0.00
54.00	1.86	1.04	0.00
55.00	1.86	1.04	0.00
56.00	1.86	1.04	0.00
57.00	1.86	1.04	0.00
58.00	1.86	1.04	0.00
59.00	1.86	1.04	0.00
60.00	1.86	1.04	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

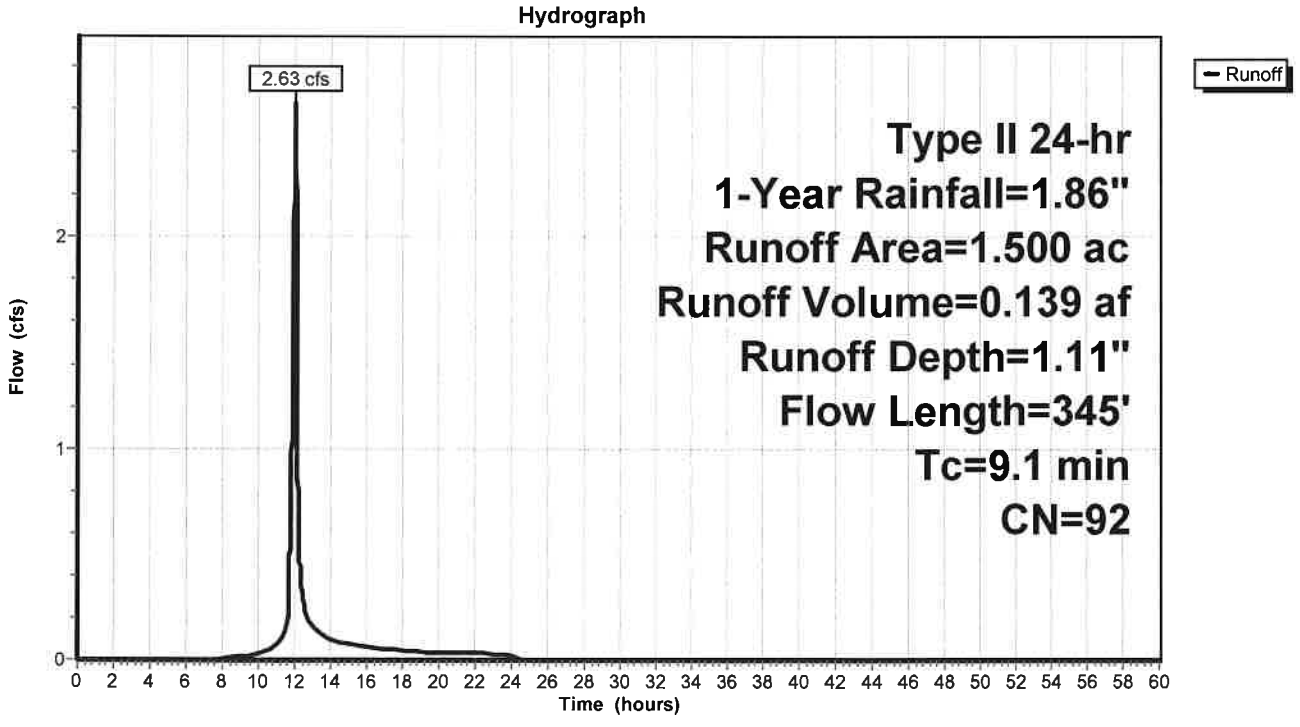
Runoff = 2.63 cfs @ 12.01 hrs, Volume= 0.139 af, Depth= 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.01
9.00	0.27	0.01	0.02
10.00	0.34	0.03	0.03
11.00	0.44	0.06	0.07
12.00	1.23	0.58	**2.63**
13.00	1.44	0.75	**0.16**
14.00	1.53	0.82	0.09
15.00	1.59	0.88	0.07
16.00	1.64	0.92	0.06
17.00	1.68	0.95	0.05
18.00	1.71	0.98	0.04
19.00	1.74	1.01	0.04
20.00	1.77	1.03	0.03
21.00	1.79	1.05	0.03
22.00	1.82	1.07	0.03
23.00	1.84	1.09	0.03
24.00	**1.86**	**1.11**	0.03
25.00	1.86	1.11	0.00
26.00	1.86	1.11	0.00
27.00	1.86	1.11	0.00
28.00	1.86	1.11	0.00
29.00	1.86	1.11	0.00
30.00	1.86	1.11	0.00
31.00	1.86	1.11	0.00
32.00	1.86	1.11	0.00
33.00	1.86	1.11	0.00
34.00	1.86	1.11	0.00
35.00	1.86	1.11	0.00
36.00	1.86	1.11	0.00
37.00	1.86	1.11	0.00
38.00	1.86	1.11	0.00
39.00	1.86	1.11	0.00
40.00	1.86	1.11	0.00
41.00	1.86	1.11	0.00
42.00	1.86	1.11	0.00
43.00	1.86	1.11	0.00
44.00	1.86	1.11	0.00
45.00	1.86	1.11	0.00
46.00	1.86	1.11	0.00
47.00	1.86	1.11	0.00
48.00	1.86	1.11	0.00
49.00	1.86	1.11	0.00
50.00	1.86	1.11	0.00
51.00	1.86	1.11	0.00
52.00	1.86	1.11	0.00
53.00	1.86	1.11	0.00
54.00	1.86	1.11	0.00
55.00	1.86	1.11	0.00
56.00	1.86	1.11	0.00
57.00	1.86	1.11	0.00
58.00	1.86	1.11	0.00
59.00	1.86	1.11	0.00
60.00	1.86	1.11	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 1.08" for 1-Year event
Inflow = 2.40 cfs @ 12.06 hrs, Volume= 0.287 af
Outflow = 0.33 cfs @ 13.18 hrs, Volume= 0.243 af, Atten= 86%, Lag= 67.2 min
Primary = 0.33 cfs @ 13.18 hrs, Volume= 0.243 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 570.29' @ 13.18 hrs Surf.Area= 10,145 sf Storage= 4,537 cf

Plug-Flow detention time= 493.3 min calculated for 0.243 af (85% of inflow)
Center-of-Mass det. time= 283.3 min (1,405.6 - 1,122.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

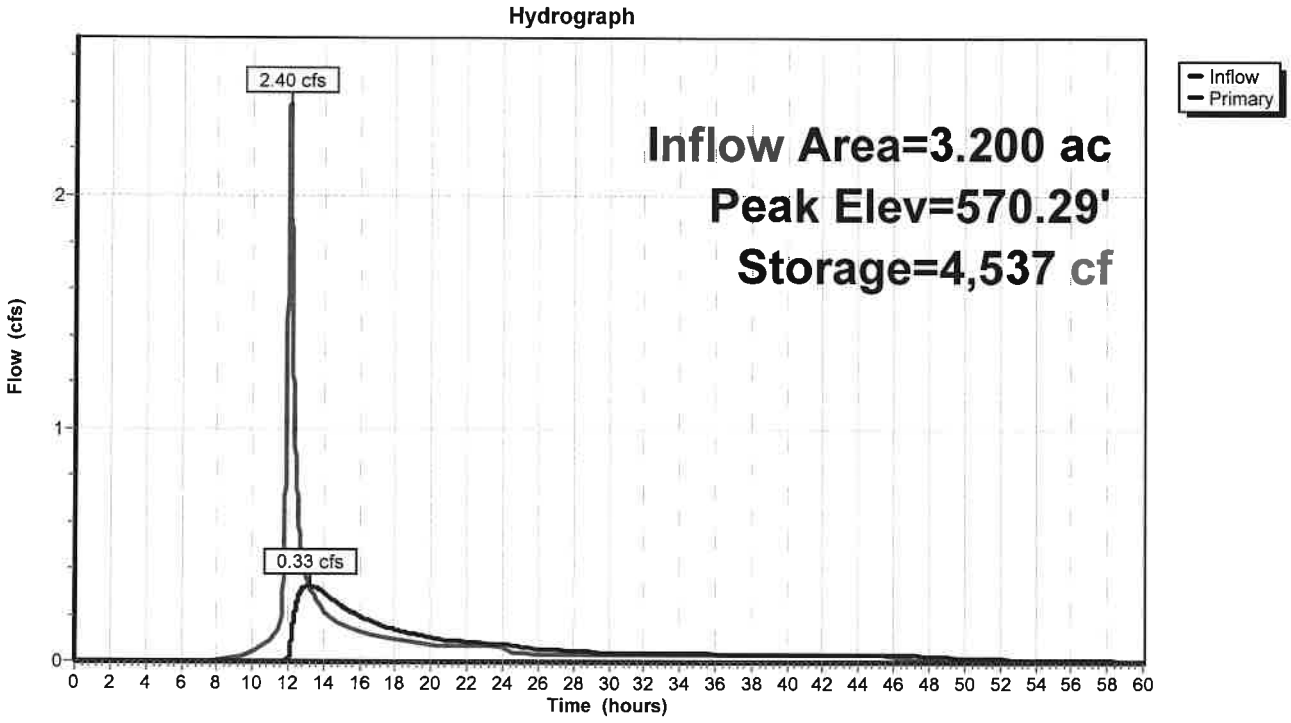
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

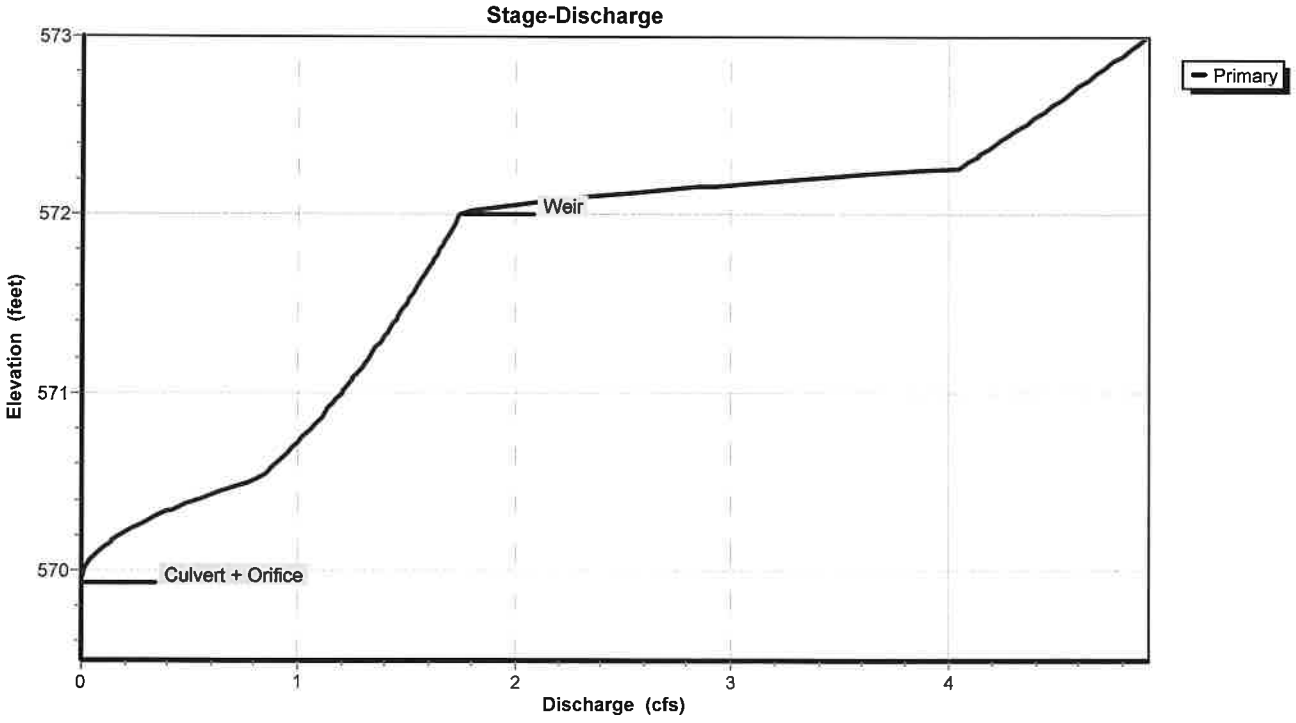
Primary OutFlow Max=0.32 cfs @ 13.18 hrs HW=570.29' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.32 cfs @ 1.88 fps)
  ├**2=Orifice** (Passes 0.32 cfs of 0.56 cfs potential flow)
  └**3=Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

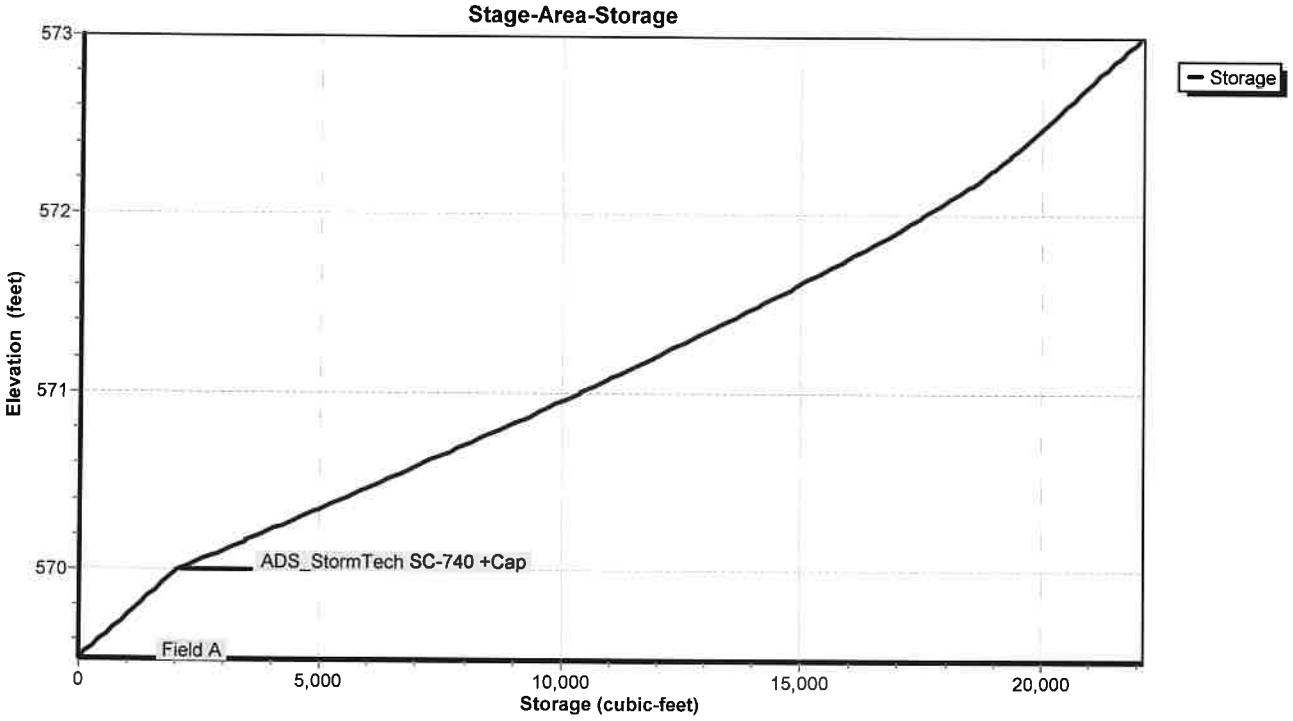


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.00	0	569.50	0.00
8.00	0.00	4	569.50	0.00
10.00	0.04	139	569.53	0.00
12.00	**2.08**	**1,735**	**569.93**	**0.00**
14.00	**0.22**	**4,393**	**570.28**	**0.30**
16.00	0.13	3,835	570.21	0.20
18.00	0.10	3,452	570.17	0.14
20.00	0.07	3,194	570.14	0.10
22.00	0.07	3,023	570.12	0.08
24.00	0.06	2,931	570.10	0.07
26.00	0.03	2,737	570.08	0.06
28.00	0.03	2,618	570.07	0.05
30.00	0.03	2,550	570.06	0.04
32.00	0.03	2,506	570.06	0.04
34.00	0.03	2,476	570.05	0.04
36.00	0.03	2,453	570.05	0.03
38.00	0.03	2,436	570.05	0.03
40.00	0.03	2,422	570.05	0.03
42.00	0.03	2,410	570.04	0.03
44.00	0.03	2,399	570.04	0.03
46.00	0.03	2,388	570.04	0.03
48.00	0.01	2,288	570.03	0.02
50.00	0.00	2,166	570.02	0.02
52.00	0.00	2,066	570.00	0.01
54.00	0.00	1,993	569.99	0.01
56.00	0.00	1,945	569.98	0.01
58.00	0.00	1,910	569.97	0.00
60.00	0.00	1,885	569.96	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)
569.50	0
569.55	203
569.60	406
569.65	609
569.70	812
569.75	1,014
569.80	1,217
569.85	1,420
569.90	1,623
569.95	1,826
570.00	2,029
570.05	2,459
570.10	2,889
570.15	3,318
570.20	3,746
570.25	4,173
570.30	4,598
570.35	5,022
570.40	5,444
570.45	5,865
570.50	6,284
570.55	6,701
570.60	7,116
570.65	7,529
570.70	7,940
570.75	8,349
570.80	8,756
570.85	9,160
570.90	9,562
570.95	9,962
571.00	10,359
571.05	10,754
571.10	11,145
571.15	11,534
571.20	11,919
571.25	12,301
571.30	12,680
571.35	13,056
571.40	13,428
571.45	13,797
571.50	14,161
571.55	14,522
571.60	14,879
571.65	15,230
571.70	15,577
571.75	15,917
571.80	16,252
571.85	16,582
571.90	16,906
571.95	17,224
572.00	17,535
572.05	17,838
572.10	18,133
572.15	18,417
572.20	18,690
572.25	18,946
572.30	19,188
572.35	19,417
572.40	19,637
572.45	19,850
572.50	20,057
572.55	20,260
572.60	20,463
572.65	20,665
572.70	20,868
572.75	21,071
572.80	21,274
572.85	21,477
572.90	21,680
572.95	21,883
573.00	**22,086**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 1.11" for 1-Year event
Inflow = 2.63 cfs @ 12.01 hrs, Volume= 0.139 af
Outflow = 0.43 cfs @ 12.29 hrs, Volume= 0.139 af, Atten= 84%, Lag= 17.0 min
Primary = 0.43 cfs @ 12.29 hrs, Volume= 0.139 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.54' @ 12.29 hrs Surf.Area= 5,881 sf Storage= 2,922 cf

Plug-Flow detention time= 615.0 min calculated for 0.139 af (100% of inflow)
Center-of-Mass det. time= 615.0 min (1,433.7 - 818.7)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

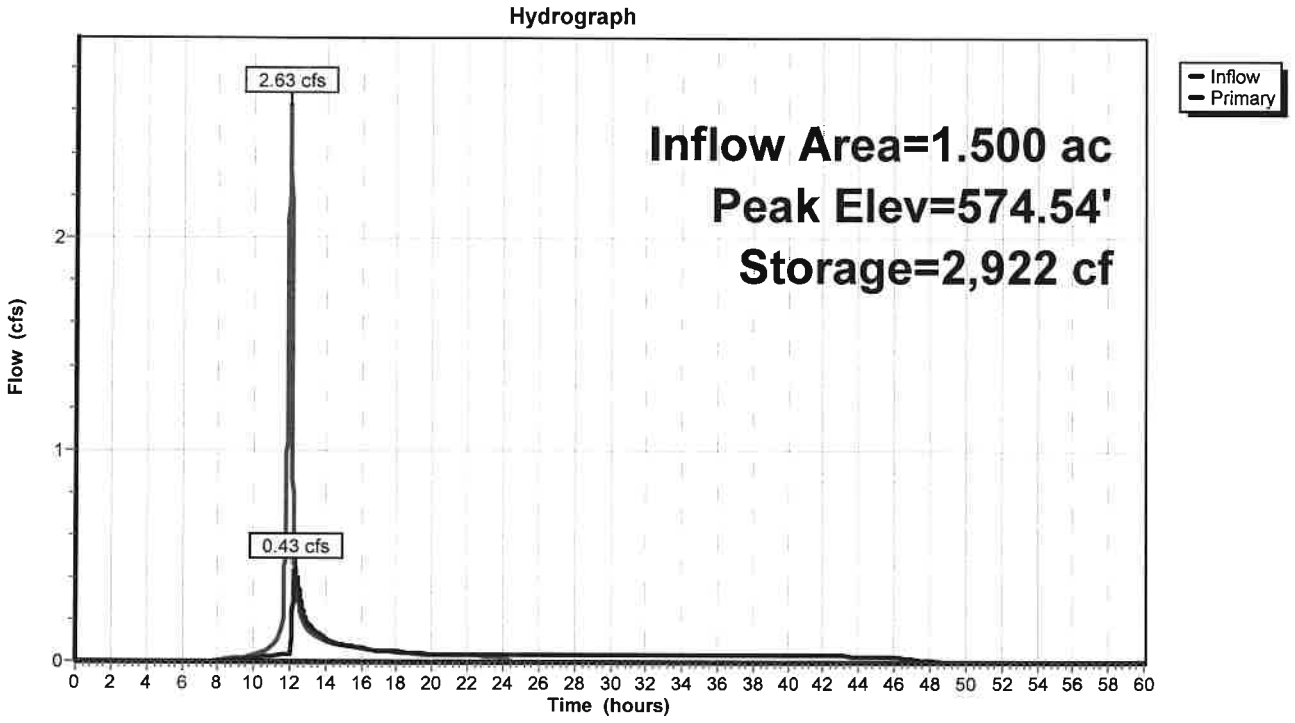
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

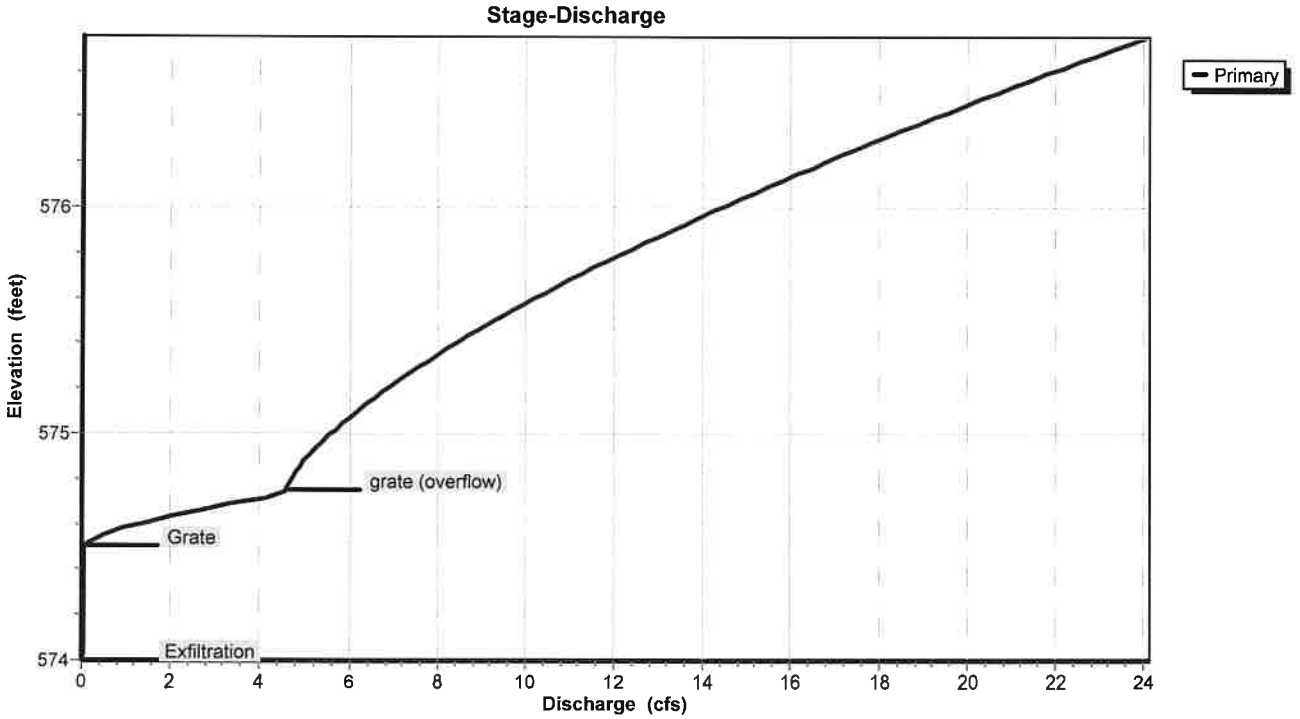
Primary OutFlow Max=0.42 cfs @ 12.29 hrs HW=574.54' (Free Discharge)
- **1=8" pipe** (Passes 0.42 cfs of 4.43 cfs potential flow)
  - **2=Grate** (Weir Controls 0.39 cfs @ 0.69 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

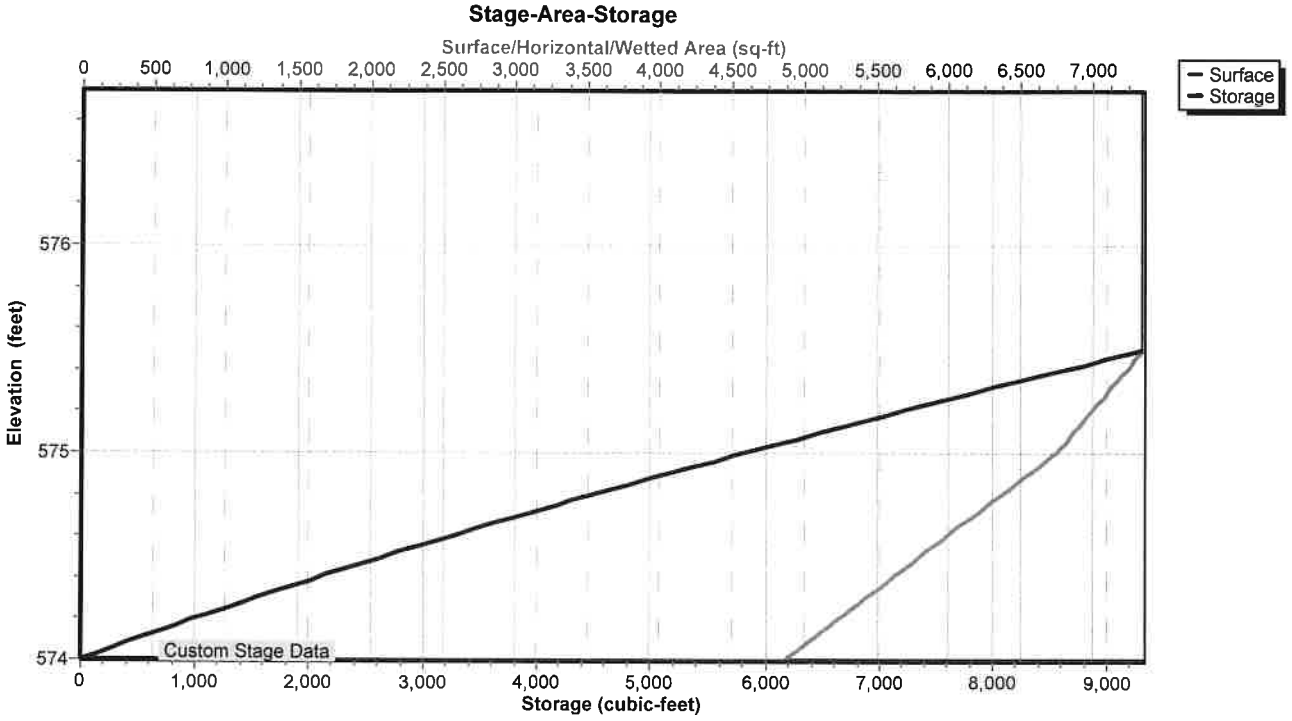


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.00	0	574.00	0.00
8.00	0.01	9	574.00	0.00
10.00	0.03	70	574.01	0.01
12.00	**2.63**	**1,806**	**574.35**	**0.03**
14.00	**0.09**	**2,731**	**574.51**	**0.11**
16.00	0.06	2,688	574.50	0.06
18.00	0.04	2,673	574.50	0.05
20.00	0.03	2,662	574.50	0.03
22.00	0.03	2,636	574.50	0.03
24.00	0.03	2,594	574.49	0.03
26.00	0.00	2,362	574.45	0.03
28.00	0.00	2,119	574.40	0.03
30.00	0.00	1,881	574.36	0.03
32.00	0.00	1,647	574.32	0.03
34.00	0.00	1,417	574.28	0.03
36.00	0.00	1,190	574.23	0.03
38.00	0.00	968	574.19	0.03
40.00	0.00	750	574.15	0.03
42.00	0.00	536	574.11	0.03
44.00	0.00	326	574.07	0.03
46.00	0.00	120	574.02	0.03
48.00	0.00	26	574.01	0.01
50.00	0.00	6	574.00	0.00
52.00	0.00	1	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=1.34"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=3.03 cfs 0.190 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=1.42"
Flow Length=345' Tc=9.1 min CN=92 Runoff=3.32 cfs 0.177 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=570.46' Storage=5,990 cf Inflow=4.15 cfs 0.367 af
Outflow=0.68 cfs 0.324 af

Pond 9P: Bioretention Area 3 Peak Elev=574.60' Storage=3,274 cf Inflow=3.32 cfs 0.177 af
Outflow=1.41 cfs 0.177 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.367 af Average Runoff Depth = 1.38"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

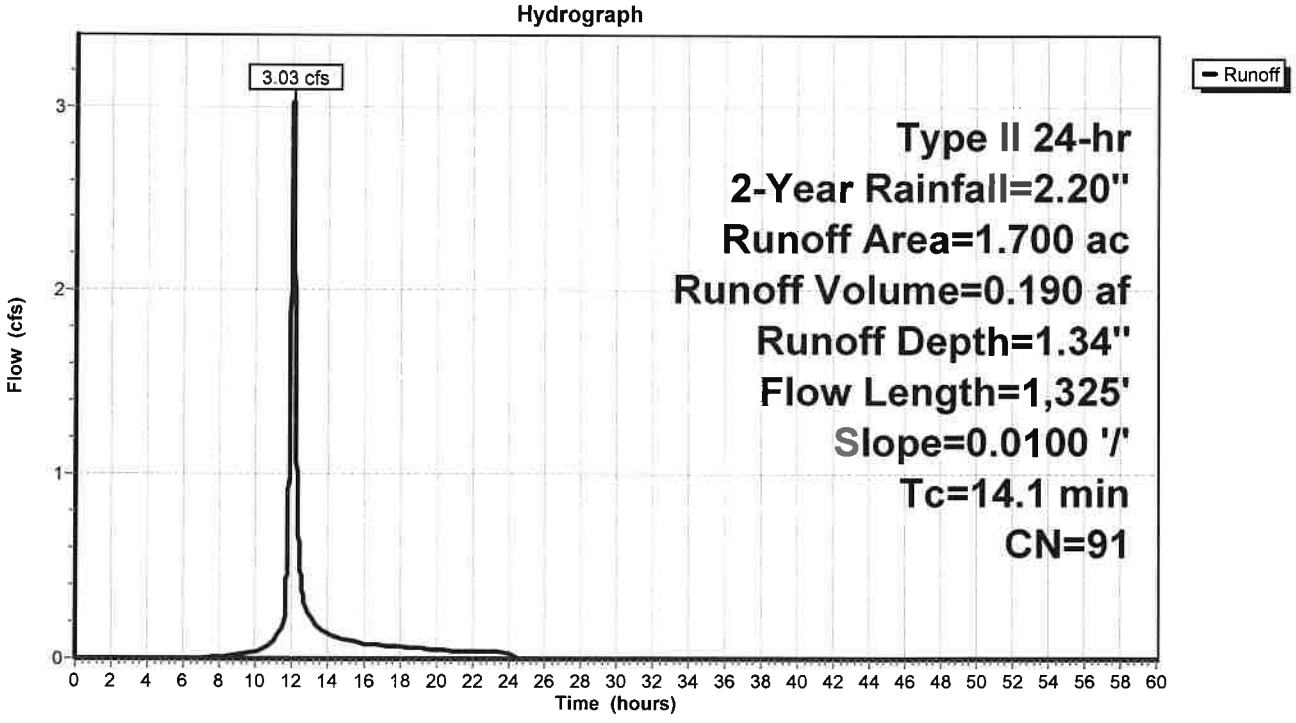
Runoff = 3.03 cfs @ 12.06 hrs, Volume= 0.190 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass**
					Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.05	0.00	0.00
3.00	0.08	0.00	0.00
4.00	0.11	0.00	0.00
5.00	0.14	0.00	0.00
6.00	0.18	0.00	0.00
7.00	0.22	0.00	0.00
8.00	0.26	0.00	0.01
9.00	0.32	0.01	0.02
10.00	0.40	0.03	0.04
11.00	0.52	0.08	0.10
12.00	1.46	0.71	**2.64**
13.00	1.70	0.90	**0.23**
14.00	1.80	0.99	0.13
15.00	1.88	1.06	0.10
16.00	1.94	1.11	0.08
17.00	1.98	1.15	0.07
18.00	2.03	1.19	0.06
19.00	2.06	1.22	0.05
20.00	2.09	1.25	0.05
21.00	2.12	1.27	0.04
22.00	2.15	1.30	0.04
23.00	2.18	1.32	0.04
24.00	**2.20**	**1.34**	0.04
25.00	2.20	1.34	0.00
26.00	2.20	1.34	0.00
27.00	2.20	1.34	0.00
28.00	2.20	1.34	0.00
29.00	2.20	1.34	0.00
30.00	2.20	1.34	0.00
31.00	2.20	1.34	0.00
32.00	2.20	1.34	0.00
33.00	2.20	1.34	0.00
34.00	2.20	1.34	0.00
35.00	2.20	1.34	0.00
36.00	2.20	1.34	0.00
37.00	2.20	1.34	0.00
38.00	2.20	1.34	0.00
39.00	2.20	1.34	0.00
40.00	2.20	1.34	0.00
41.00	2.20	1.34	0.00
42.00	2.20	1.34	0.00
43.00	2.20	1.34	0.00
44.00	2.20	1.34	0.00
45.00	2.20	1.34	0.00
46.00	2.20	1.34	0.00
47.00	2.20	1.34	0.00
48.00	2.20	1.34	0.00
49.00	2.20	1.34	0.00
50.00	2.20	1.34	0.00
51.00	2.20	1.34	0.00
52.00	2.20	1.34	0.00
53.00	2.20	1.34	0.00
54.00	2.20	1.34	0.00
55.00	2.20	1.34	0.00
56.00	2.20	1.34	0.00
57.00	2.20	1.34	0.00
58.00	2.20	1.34	0.00
59.00	2.20	1.34	0.00
60.00	2.20	1.34	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

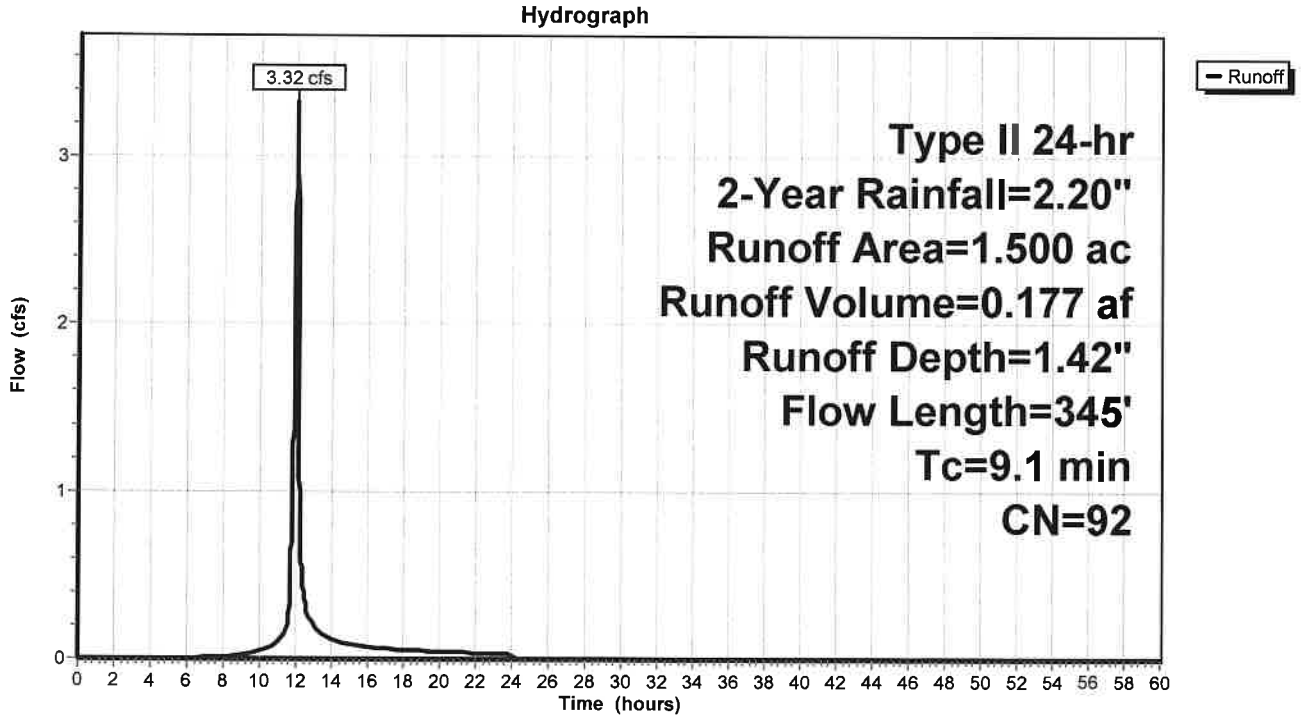
Runoff = 3.32 cfs @ 12.00 hrs, Volume= 0.177 af, Depth= 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	2.20	1.42	0.00
1.00	0.02	0.00	0.00	53.00	2.20	1.42	0.00
2.00	0.05	0.00	0.00	54.00	2.20	1.42	0.00
3.00	0.08	0.00	0.00	55.00	2.20	1.42	0.00
4.00	0.11	0.00	0.00	56.00	2.20	1.42	0.00
5.00	0.14	0.00	0.00	57.00	2.20	1.42	0.00
6.00	0.18	0.00	0.00	58.00	2.20	1.42	0.00
7.00	0.22	0.00	0.01	59.00	2.20	1.42	0.00
8.00	0.26	0.01	0.01	60.00	2.20	1.42	0.00
9.00	0.32	0.02	0.03				
10.00	0.40	0.05	0.04				
11.00	0.52	0.10	0.10				
12.00	1.46	0.77	**3.32**				
13.00	1.70	0.97	0.20				
14.00	1.80	1.06	0.12				
15.00	1.88	1.13	0.09				
16.00	1.94	1.18	0.07				
17.00	1.98	1.22	0.06				
18.00	2.03	1.26	0.05				
19.00	2.06	1.29	0.05				
20.00	2.09	1.32	0.04				
21.00	2.12	1.35	0.04				
22.00	2.15	1.37	0.04				
23.00	2.18	1.40	0.03				
24.00	**2.20**	**1.42**	0.03				
25.00	2.20	1.42	0.00				
26.00	2.20	1.42	0.00				
27.00	2.20	1.42	0.00				
28.00	2.20	1.42	0.00				
29.00	2.20	1.42	0.00				
30.00	2.20	1.42	0.00				
31.00	2.20	1.42	0.00				
32.00	2.20	1.42	0.00				
33.00	2.20	1.42	0.00				
34.00	2.20	1.42	0.00				
35.00	2.20	1.42	0.00				
36.00	2.20	1.42	0.00				
37.00	2.20	1.42	0.00				
38.00	2.20	1.42	0.00				
39.00	2.20	1.42	0.00				
40.00	2.20	1.42	0.00				
41.00	2.20	1.42	0.00				
42.00	2.20	1.42	0.00				
43.00	2.20	1.42	0.00				
44.00	2.20	1.42	0.00				
45.00	2.20	1.42	0.00				
46.00	2.20	1.42	0.00				
47.00	2.20	1.42	0.00				
48.00	2.20	1.42	0.00				
49.00	2.20	1.42	0.00				
50.00	2.20	1.42	0.00				
51.00	2.20	1.42	0.00				

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 1.38" for 2-Year event
Inflow = 4.15 cfs @ 12.10 hrs, Volume= 0.367 af
Outflow = 0.68 cfs @ 12.65 hrs, Volume= 0.324 af, Atten= 84%, Lag= 33.2 min
Primary = 0.68 cfs @ 12.65 hrs, Volume= 0.324 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 570.46' @ 12.65 hrs Surf.Area= 10,145 sf Storage= 5,990 cf

Plug-Flow detention time= 401.0 min calculated for 0.324 af (88% of inflow)
Center-of-Mass det. time= 229.7 min (1,287.9 - 1,058.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

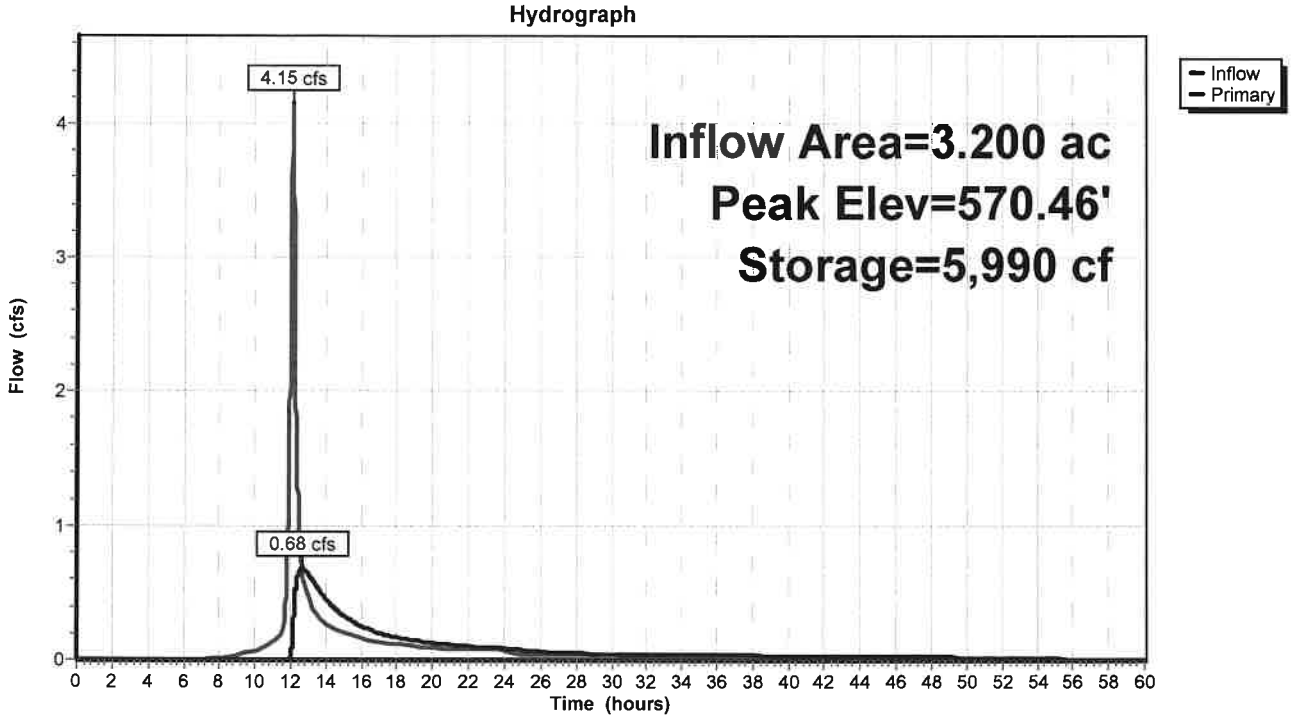
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

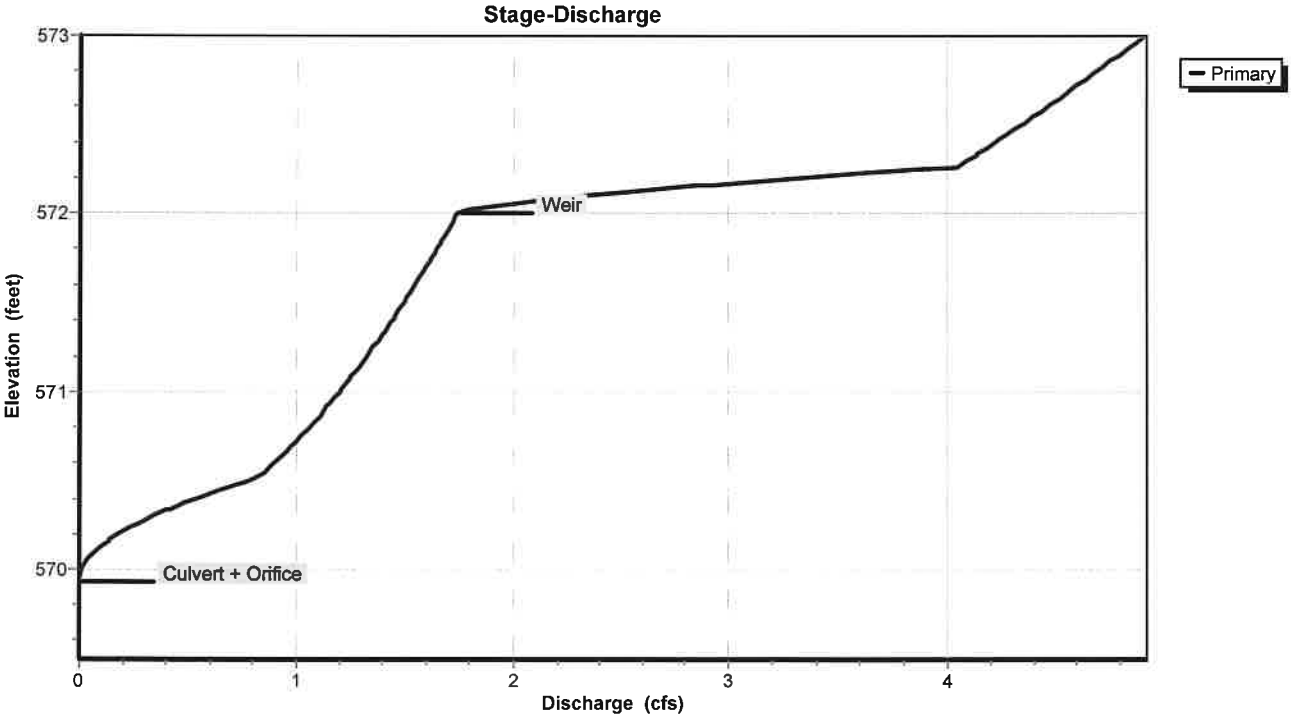
Primary OutFlow Max=0.68 cfs @ 12.65 hrs HW=570.46' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.68 cfs @ 2.31 fps)
└**2=Orifice** (Passes 0.68 cfs of 0.76 cfs potential flow)
└**3=Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

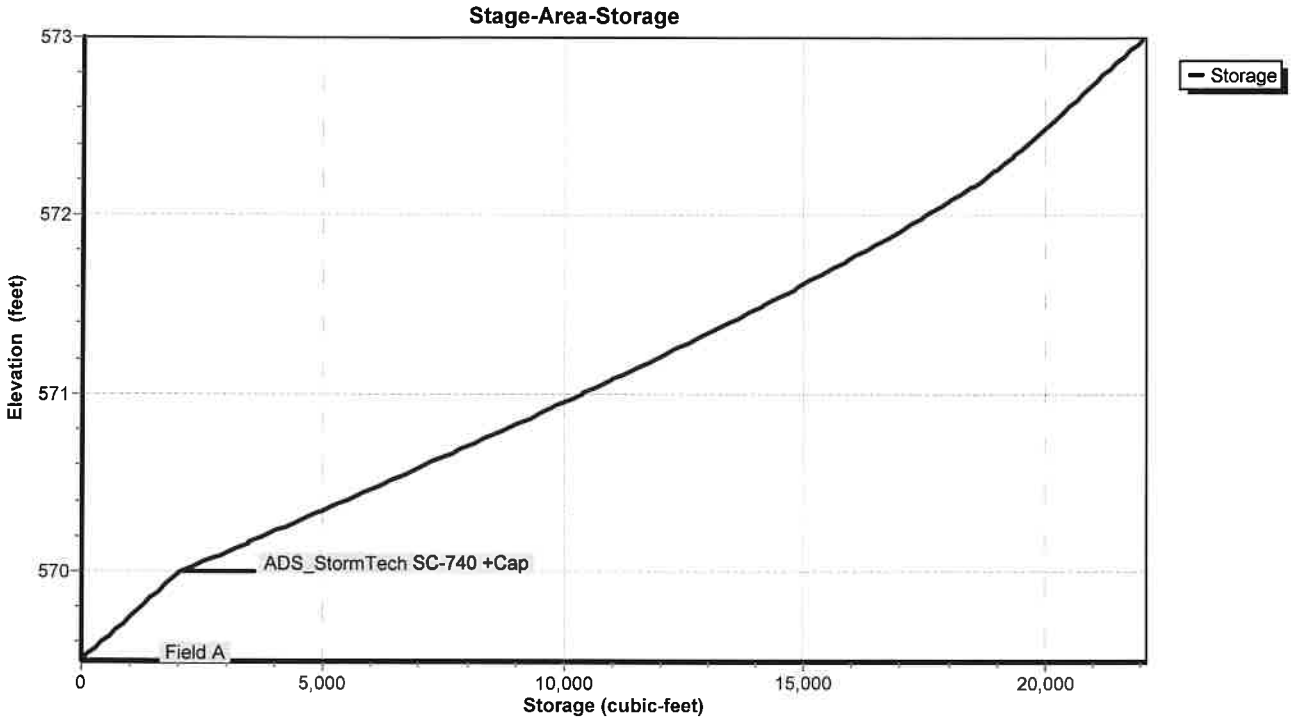


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.00	0	569.50	0.00
8.00	0.01	32	569.51	0.00
10.00	0.06	286	569.57	0.00
12.00	**2.68**	**2,414**	**570.04**	**0.03**
14.00	**0.27**	**5,111**	**570.36**	**0.45**
16.00	0.16	4,155	570.25	0.25
18.00	0.12	3,660	570.19	0.17
20.00	0.09	3,359	570.15	0.12
22.00	0.08	3,149	570.13	0.10
24.00	0.07	3,029	570.12	0.09
26.00	0.03	2,788	570.09	0.06
28.00	0.03	2,647	570.07	0.05
30.00	0.03	2,566	570.06	0.04
32.00	0.03	2,517	570.06	0.04
34.00	0.03	2,484	570.05	0.04
36.00	0.03	2,459	570.05	0.03
38.00	0.03	2,441	570.05	0.03
40.00	0.03	2,426	570.05	0.03
42.00	0.03	2,413	570.04	0.03
44.00	0.03	2,402	570.04	0.03
46.00	0.03	2,392	570.04	0.03
48.00	0.01	2,323	570.03	0.03
50.00	0.00	2,199	570.02	0.02
52.00	0.00	2,091	570.01	0.01
54.00	0.00	2,010	570.00	0.01
56.00	0.00	1,957	569.98	0.01
58.00	0.00	1,919	569.97	0.00
60.00	0.00	1,891	569.97	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)
569.50	0
569.55	203
569.60	406
569.65	609
569.70	812
569.75	1,014
569.80	1,217
569.85	1,420
569.90	1,623
569.95	1,826
570.00	2,029
570.05	2,459
570.10	2,889
570.15	3,318
570.20	3,746
570.25	4,173
570.30	4,598
570.35	5,022
570.40	5,444
570.45	5,865
570.50	6,284
570.55	6,701
570.60	7,116
570.65	7,529
570.70	7,940
570.75	8,349
570.80	8,756
570.85	9,160
570.90	9,562
570.95	9,962
571.00	10,359
571.05	10,754
571.10	11,145
571.15	11,534
571.20	11,919
571.25	12,301
571.30	12,680
571.35	13,056
571.40	13,428
571.45	13,797
571.50	14,161
571.55	14,522
571.60	14,879
571.65	15,230
571.70	15,577
571.75	15,917
571.80	16,252
571.85	16,582
571.90	16,906
571.95	17,224
572.00	17,535
572.05	17,838
572.10	18,133
572.15	18,417
572.20	18,690
572.25	18,946
572.30	19,188
572.35	19,417
572.40	19,637
572.45	19,850
572.50	20,057
572.55	20,260
572.60	20,463
572.65	20,665
572.70	20,868
572.75	21,071
572.80	21,274
572.85	21,477
572.90	21,680
572.95	21,883
573.00	**22,086**

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 1.42" for 2-Year event
Inflow = 3.32 cfs @ 12.00 hrs, Volume= 0.177 af
Outflow = 1.41 cfs @ 12.13 hrs, Volume= 0.177 af, Atten= 58%, Lag= 7.6 min
Primary = 1.41 cfs @ 12.13 hrs, Volume= 0.177 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.60' @ 12.13 hrs Surf.Area= 5,993 sf Storage= 3,274 cf

Plug-Flow detention time= 499.6 min calculated for 0.177 af (100% of inflow)
Center-of-Mass det. time= 499.8 min (1,311.6 - 811.8)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

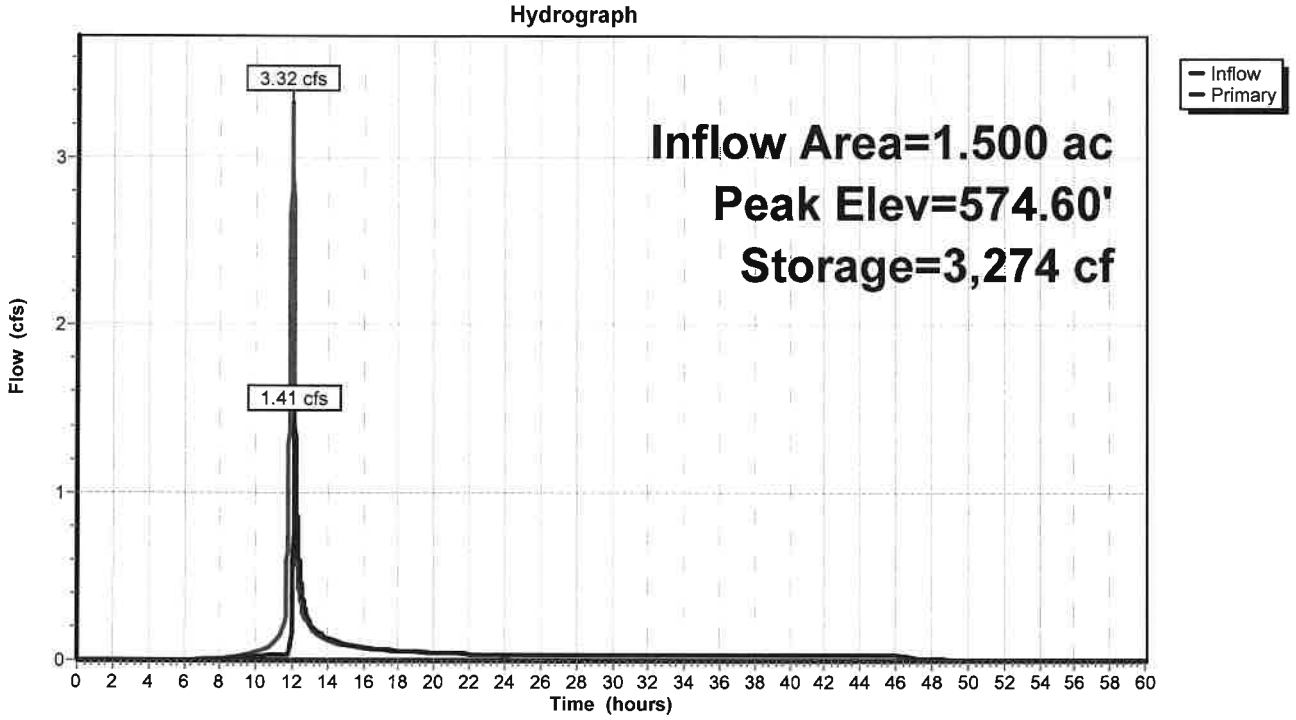
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

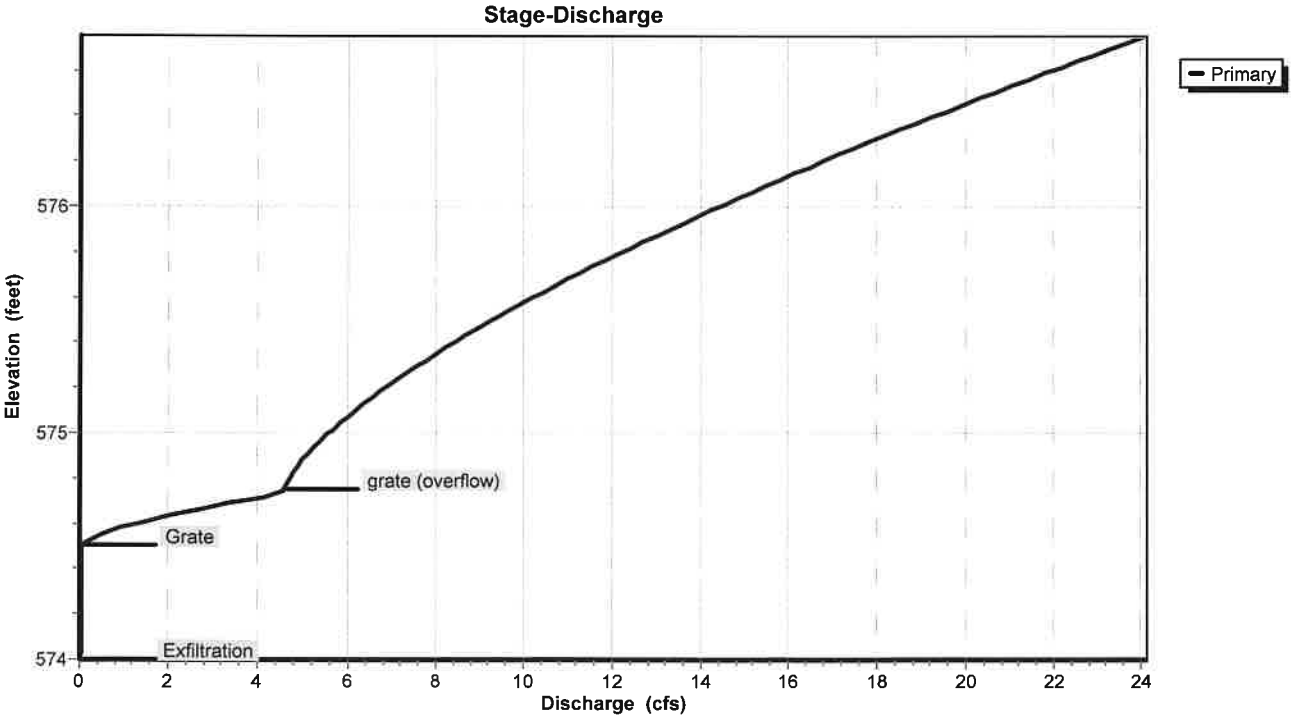
Primary OutFlow Max=1.41 cfs @ 12.13 hrs HW=574.60' (Free Discharge)
- **1=8" pipe** (Passes 1.41 cfs of 4.48 cfs potential flow)
  - **2=Grate** (Weir Controls 1.37 cfs @ 1.05 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

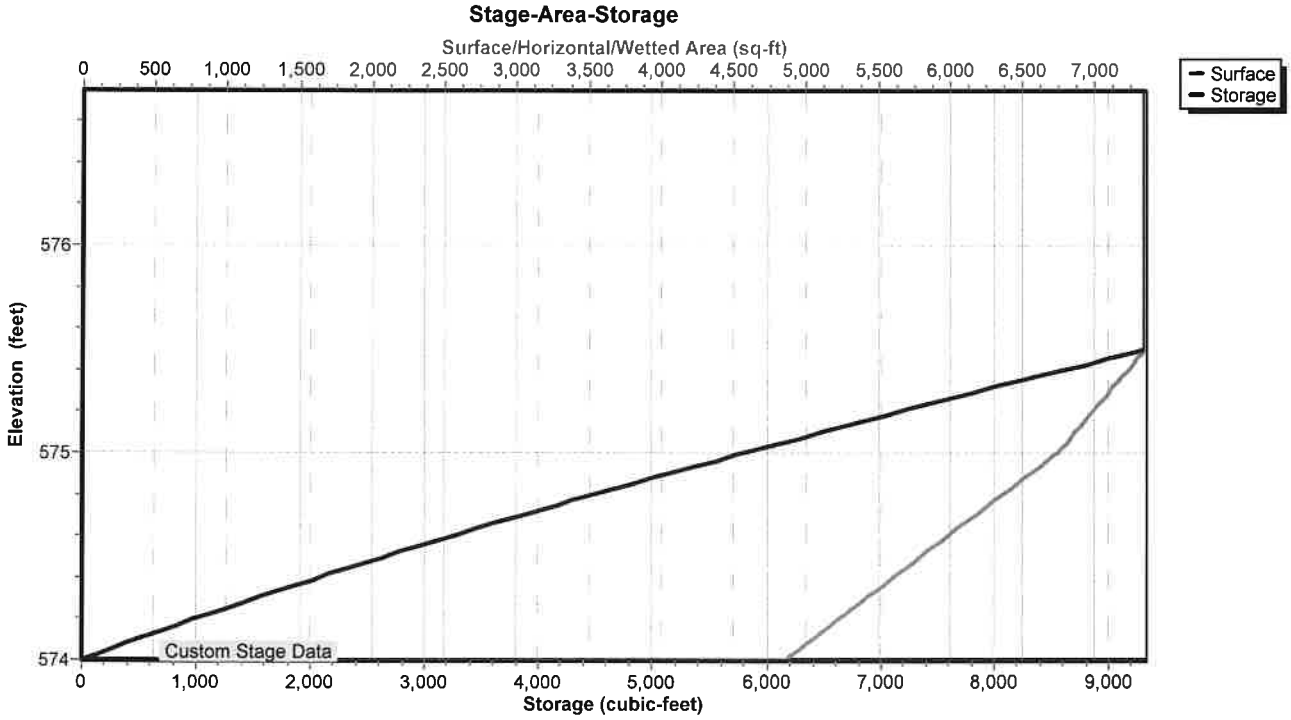


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.00	0	574.00	0.00
8.00	0.01	26	574.01	0.01
10.00	0.04	116	574.02	0.02
12.00	**3.32**	**2,442**	**574.46**	**0.03**
14.00	0.12	**2,754**	**574.52**	**0.13**
16.00	0.07	2,701	574.51	0.08
18.00	0.05	2,683	574.50	0.06
20.00	0.04	2,669	574.50	0.04
22.00	0.04	2,664	574.50	0.04
24.00	0.03	2,661	574.50	0.03
26.00	0.00	2,430	574.46	0.03
28.00	0.00	2,186	574.42	0.03
30.00	0.00	1,947	574.37	0.03
32.00	0.00	1,712	574.33	0.03
34.00	0.00	1,480	574.29	0.03
36.00	0.00	1,253	574.25	0.03
38.00	0.00	1,030	574.20	0.03
40.00	0.00	810	574.16	0.03
42.00	0.00	595	574.12	0.03
44.00	0.00	384	574.08	0.03
46.00	0.00	176	574.04	0.03
48.00	0.00	40	574.01	0.01
50.00	0.00	9	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=1.79"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=4.02 cfs 0.254 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=1.88"
Flow Length=345' Tc=9.1 min CN=92 Runoff=4.35 cfs 0.235 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=570.79' Storage=8,639 cf Inflow=7.03 cfs 0.489 af
Outflow=1.05 cfs 0.446 af

Pond 9P: Bioretention Area 3 Peak Elev=574.68' Storage=3,708 cf Inflow=4.35 cfs 0.235 af
Outflow=3.06 cfs 0.235 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.489 af Average Runoff Depth = 1.83"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

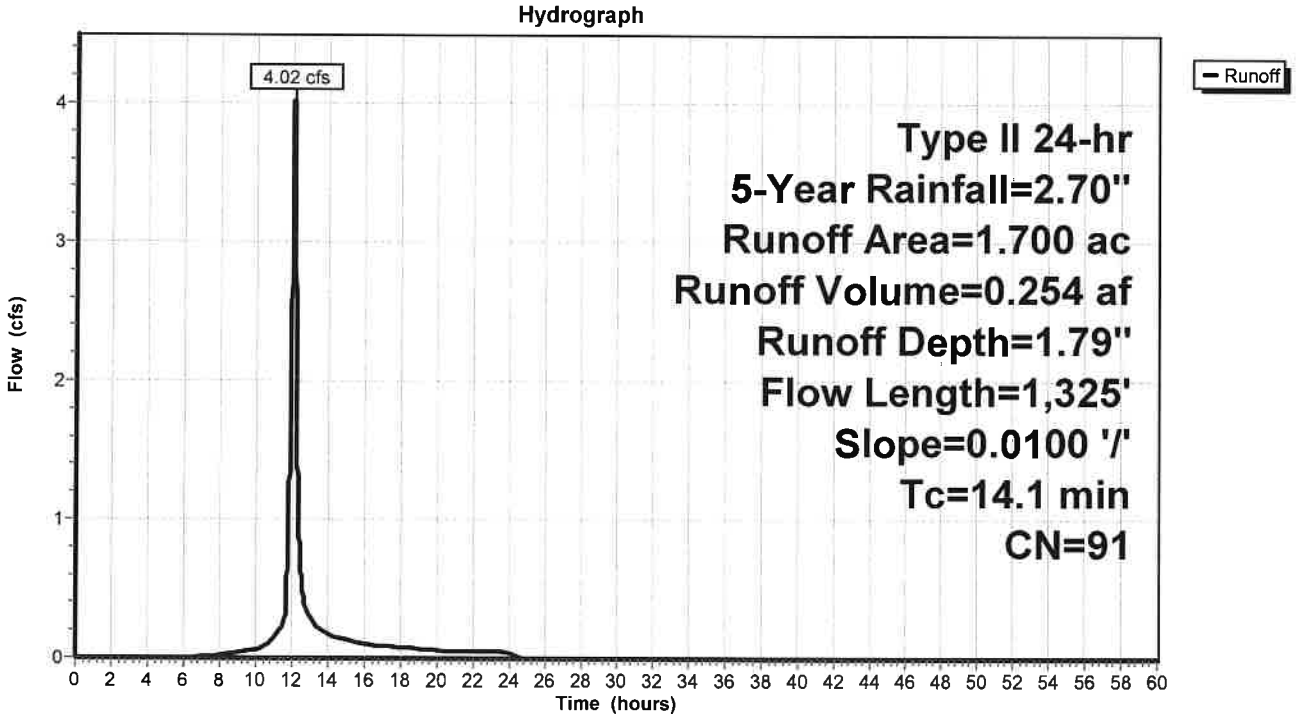
Runoff = 4.02 cfs @ 12.06 hrs, Volume= 0.254 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.00
7.00	0.27	0.00	0.01
8.00	0.32	0.01	0.02
9.00	0.40	0.03	0.04
10.00	0.49	0.07	0.06
11.00	0.63	0.13	0.14
12.00	1.79	0.98	**3.54**
13.00	2.08	1.24	**0.30**
14.00	2.21	1.35	0.17
15.00	2.30	1.43	0.13
16.00	2.38	1.50	0.10
17.00	2.43	1.55	0.09
18.00	2.49	1.60	0.08
19.00	2.53	1.64	0.07
20.00	2.57	1.67	0.06
21.00	2.60	1.71	0.05
22.00	2.64	1.74	0.05
23.00	2.67	1.77	0.05
24.00	**2.70**	**1.79**	0.05
25.00	2.70	1.79	0.00
26.00	2.70	1.79	0.00
27.00	2.70	1.79	0.00
28.00	2.70	1.79	0.00
29.00	2.70	1.79	0.00
30.00	2.70	1.79	0.00
31.00	2.70	1.79	0.00
32.00	2.70	1.79	0.00
33.00	2.70	1.79	0.00
34.00	2.70	1.79	0.00
35.00	2.70	1.79	0.00
36.00	2.70	1.79	0.00
37.00	2.70	1.79	0.00
38.00	2.70	1.79	0.00
39.00	2.70	1.79	0.00
40.00	2.70	1.79	0.00
41.00	2.70	1.79	0.00
42.00	2.70	1.79	0.00
43.00	2.70	1.79	0.00
44.00	2.70	1.79	0.00
45.00	2.70	1.79	0.00
46.00	2.70	1.79	0.00
47.00	2.70	1.79	0.00
48.00	2.70	1.79	0.00
49.00	2.70	1.79	0.00
50.00	2.70	1.79	0.00
51.00	2.70	1.79	0.00
52.00	2.70	1.79	0.00
53.00	2.70	1.79	0.00
54.00	2.70	1.79	0.00
55.00	2.70	1.79	0.00
56.00	2.70	1.79	0.00
57.00	2.70	1.79	0.00
58.00	2.70	1.79	0.00
59.00	2.70	1.79	0.00
60.00	2.70	1.79	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

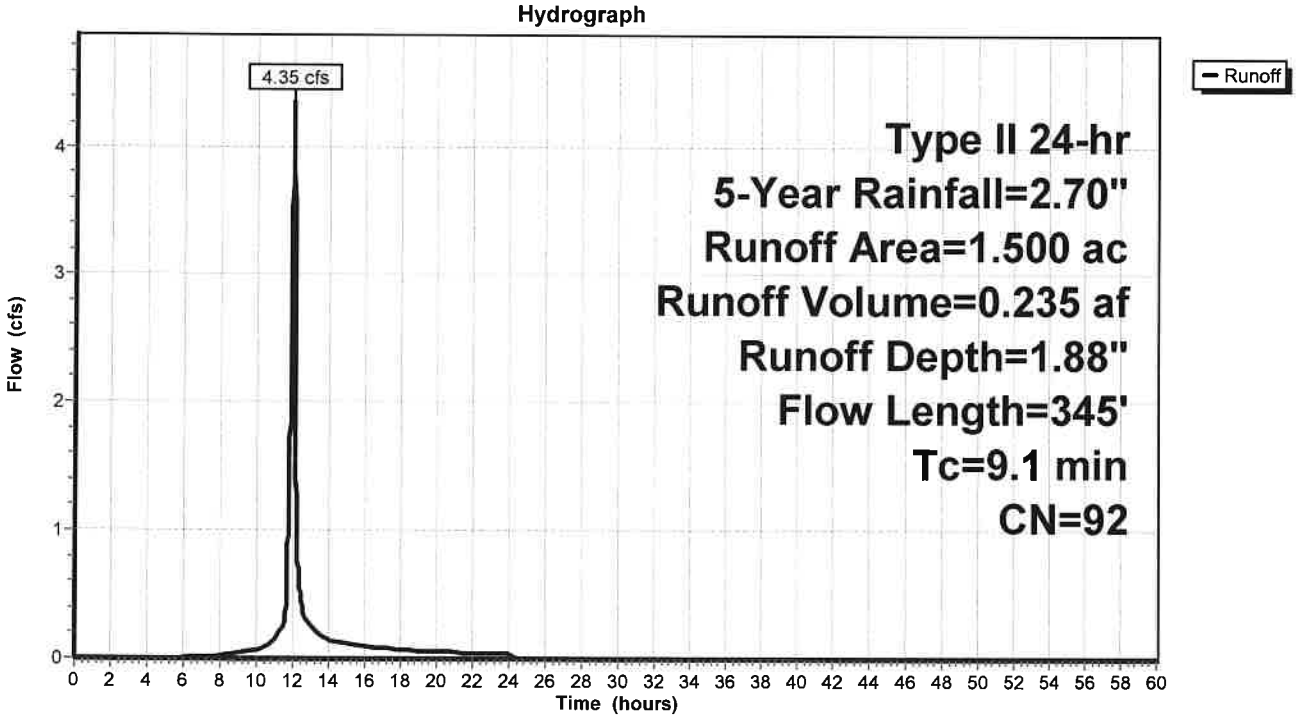
Runoff = 4.35 cfs @ 12.00 hrs, Volume= 0.235 af, Depth= 1.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.01
7.00	0.27	0.01	0.01
8.00	0.32	0.02	0.02
9.00	0.40	0.05	0.04
10.00	0.49	0.08	0.07
11.00	0.63	0.16	0.15
12.00	1.79	1.05	**4.35**
13.00	2.08	1.31	0.25
14.00	2.21	1.43	0.15
15.00	2.30	1.51	0.12
16.00	2.38	1.58	0.09
17.00	2.43	1.63	0.08
18.00	2.49	1.68	0.07
19.00	2.53	1.72	0.06
20.00	2.57	1.76	0.05
21.00	2.60	1.79	0.05
22.00	2.64	1.82	0.05
23.00	2.67	1.85	0.04
24.00	**2.70**	**1.88**	0.04
25.00	2.70	1.88	0.00
26.00	2.70	1.88	0.00
27.00	2.70	1.88	0.00
28.00	2.70	1.88	0.00
29.00	2.70	1.88	0.00
30.00	2.70	1.88	0.00
31.00	2.70	1.88	0.00
32.00	2.70	1.88	0.00
33.00	2.70	1.88	0.00
34.00	2.70	1.88	0.00
35.00	2.70	1.88	0.00
36.00	2.70	1.88	0.00
37.00	2.70	1.88	0.00
38.00	2.70	1.88	0.00
39.00	2.70	1.88	0.00
40.00	2.70	1.88	0.00
41.00	2.70	1.88	0.00
42.00	2.70	1.88	0.00
43.00	2.70	1.88	0.00
44.00	2.70	1.88	0.00
45.00	2.70	1.88	0.00
46.00	2.70	1.88	0.00
47.00	2.70	1.88	0.00
48.00	2.70	1.88	0.00
49.00	2.70	1.88	0.00
50.00	2.70	1.88	0.00
51.00	2.70	1.88	0.00
52.00	2.70	1.88	0.00
53.00	2.70	1.88	0.00
54.00	2.70	1.88	0.00
55.00	2.70	1.88	0.00
56.00	2.70	1.88	0.00
57.00	2.70	1.88	0.00
58.00	2.70	1.88	0.00
59.00	2.70	1.88	0.00
60.00	2.70	1.88	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 1.83" for 5-Year event
Inflow = 7.03 cfs @ 12.07 hrs, Volume= 0.489 af
Outflow = 1.05 cfs @ 12.55 hrs, Volume= 0.446 af, Atten= 85%, Lag= 29.0 min
Primary = 1.05 cfs @ 12.55 hrs, Volume= 0.446 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 570.79' @ 12.55 hrs Surf.Area= 10,145 sf Storage= 8,639 cf

Plug-Flow detention time= 321.6 min calculated for 0.446 af (91% of inflow)
Center-of-Mass det. time= 190.4 min (1,183.7 - 993.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

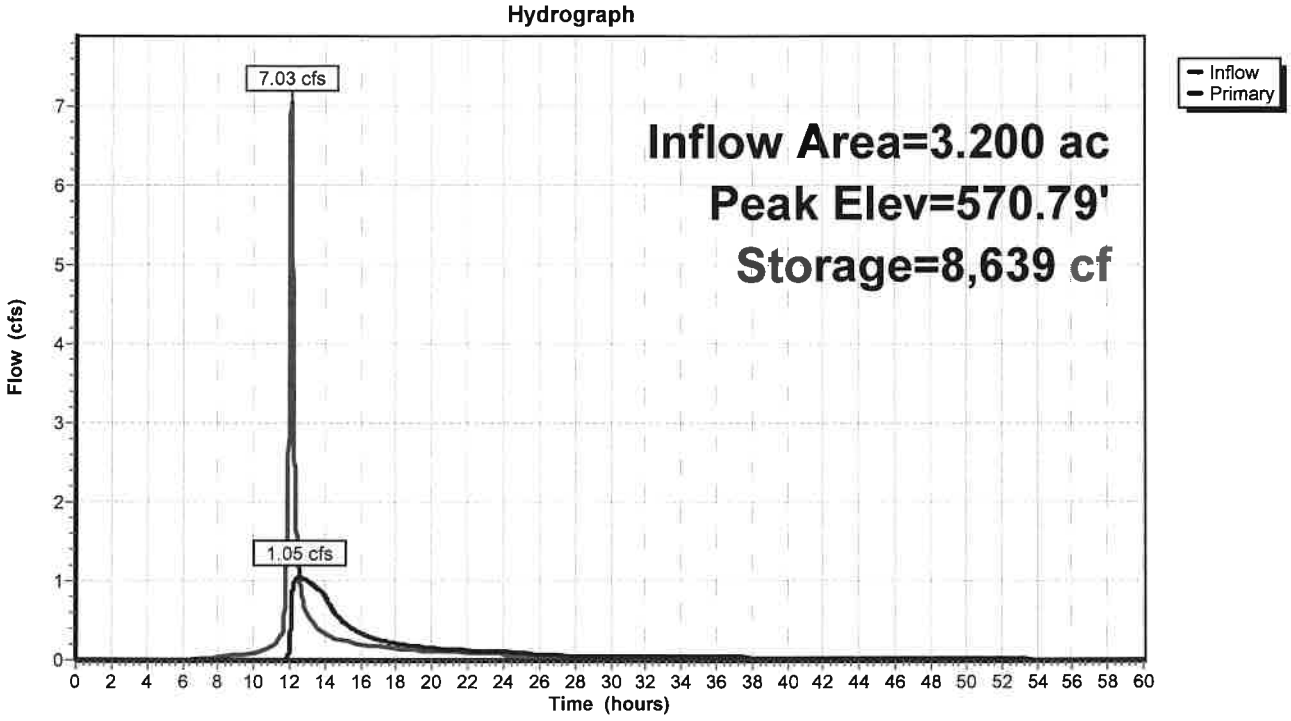
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

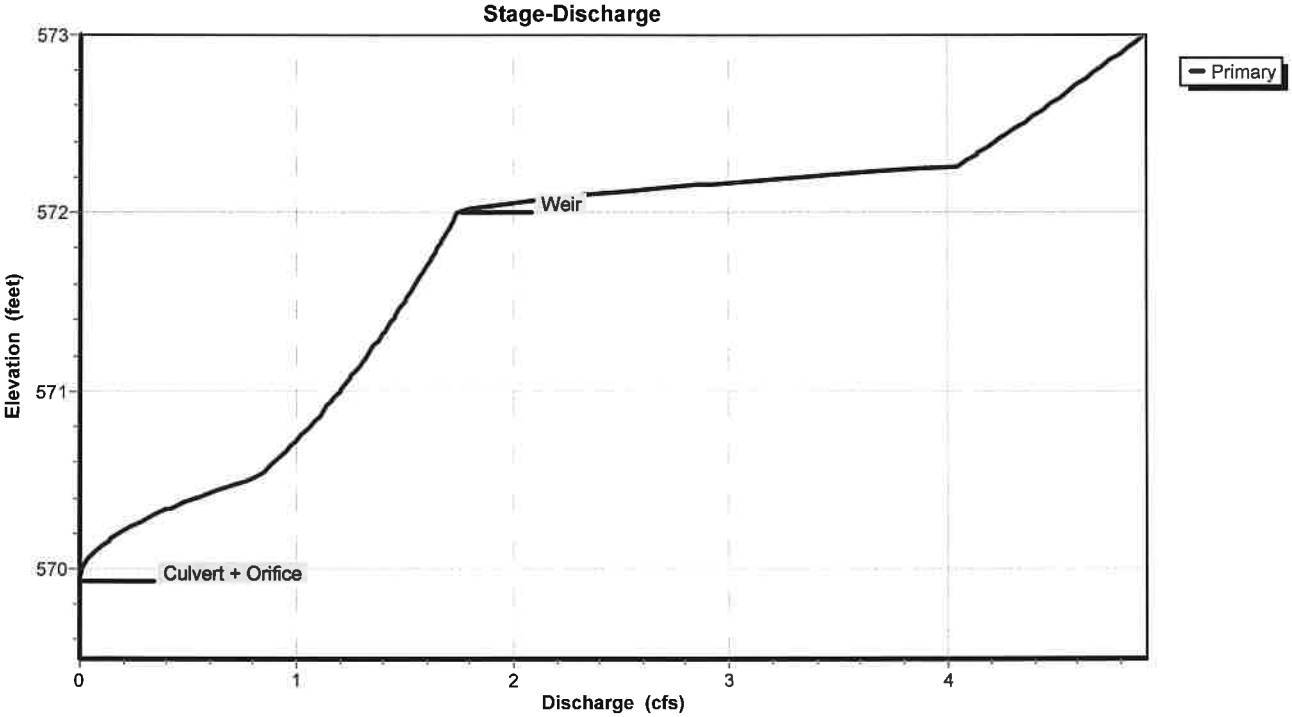
Primary OutFlow Max=1.05 cfs @ 12.55 hrs HW=570.79' (Free Discharge)
↑—**1=Culvert** (Passes 1.05 cfs of 1.53 cfs potential flow)
↑—**2=Orifice** (Orifice Controls 1.05 cfs @ 4.00 fps)
—**3=Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

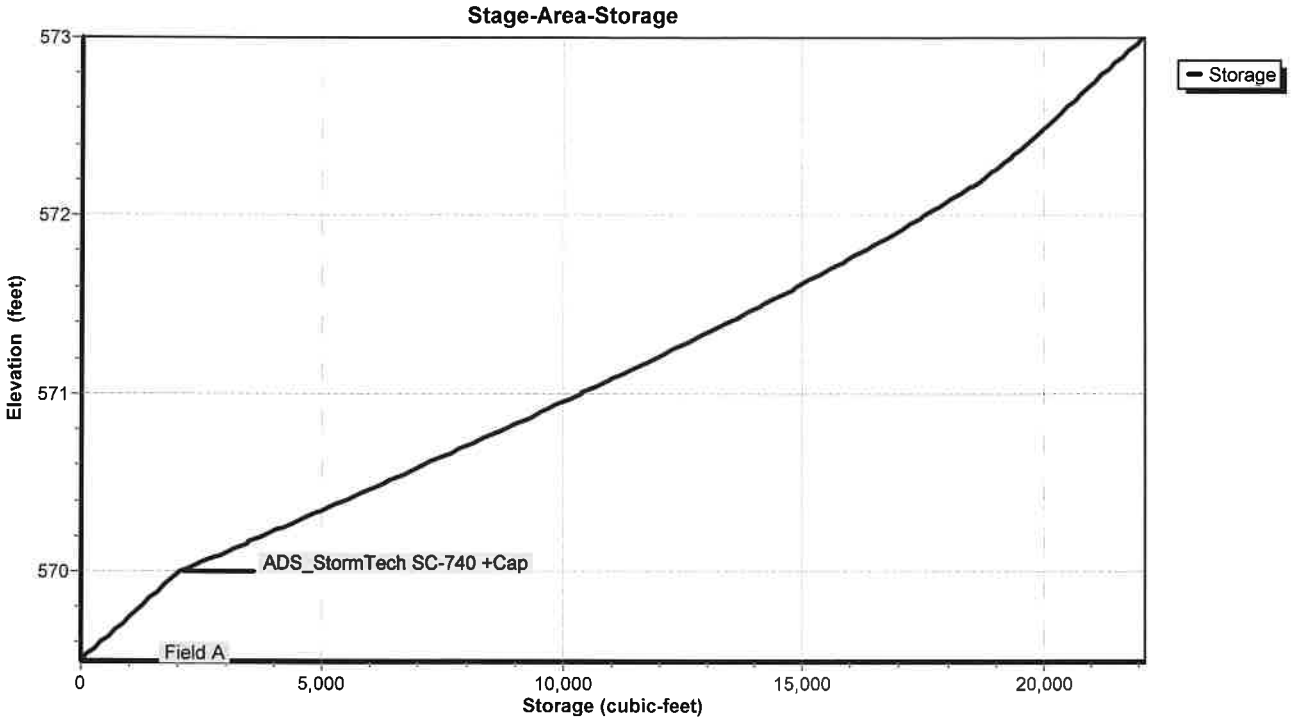


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.00	2	569.50	0.00
8.00	0.03	119	569.53	0.00
10.00	0.09	566	569.64	0.00
12.00	**5.13**	**3,593**	**570.18**	**0.16**
14.00	**0.33**	**6,444**	**570.52**	**0.81**
16.00	0.20	4,602	570.30	0.34
18.00	0.15	3,932	570.22	0.21
20.00	0.11	3,570	570.18	0.15
22.00	0.10	3,332	570.15	0.12
24.00	0.09	3,200	570.14	0.10
26.00	0.03	2,873	570.10	0.07
28.00	0.03	2,693	570.08	0.05
30.00	0.03	2,592	570.07	0.04
32.00	0.03	2,532	570.06	0.04
34.00	0.03	2,493	570.05	0.04
36.00	0.03	2,465	570.05	0.03
38.00	0.03	2,445	570.05	0.03
40.00	0.03	2,428	570.05	0.03
42.00	0.03	2,415	570.04	0.03
44.00	0.03	2,403	570.04	0.03
46.00	0.03	2,393	570.04	0.03
48.00	0.01	2,328	570.03	0.03
50.00	0.00	2,203	570.02	0.02
52.00	0.00	2,095	570.01	0.01
54.00	0.00	2,013	570.00	0.01
56.00	0.00	1,959	569.98	0.01
58.00	0.00	1,920	569.97	0.00
60.00	0.00	1,892	569.97	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 1.88" for 5-Year event
Inflow = 4.35 cfs @ 12.00 hrs, Volume= 0.235 af
Outflow = 3.06 cfs @ 12.08 hrs, Volume= 0.235 af, Atten= 30%, Lag= 4.6 min
Primary = 3.06 cfs @ 12.08 hrs, Volume= 0.235 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.68' @ 12.08 hrs Surf.Area= 6,129 sf Storage= 3,708 cf

Plug-Flow detention time= 384.2 min calculated for 0.235 af (100% of inflow)
Center-of-Mass det. time= 384.1 min (1,187.9 - 803.8)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

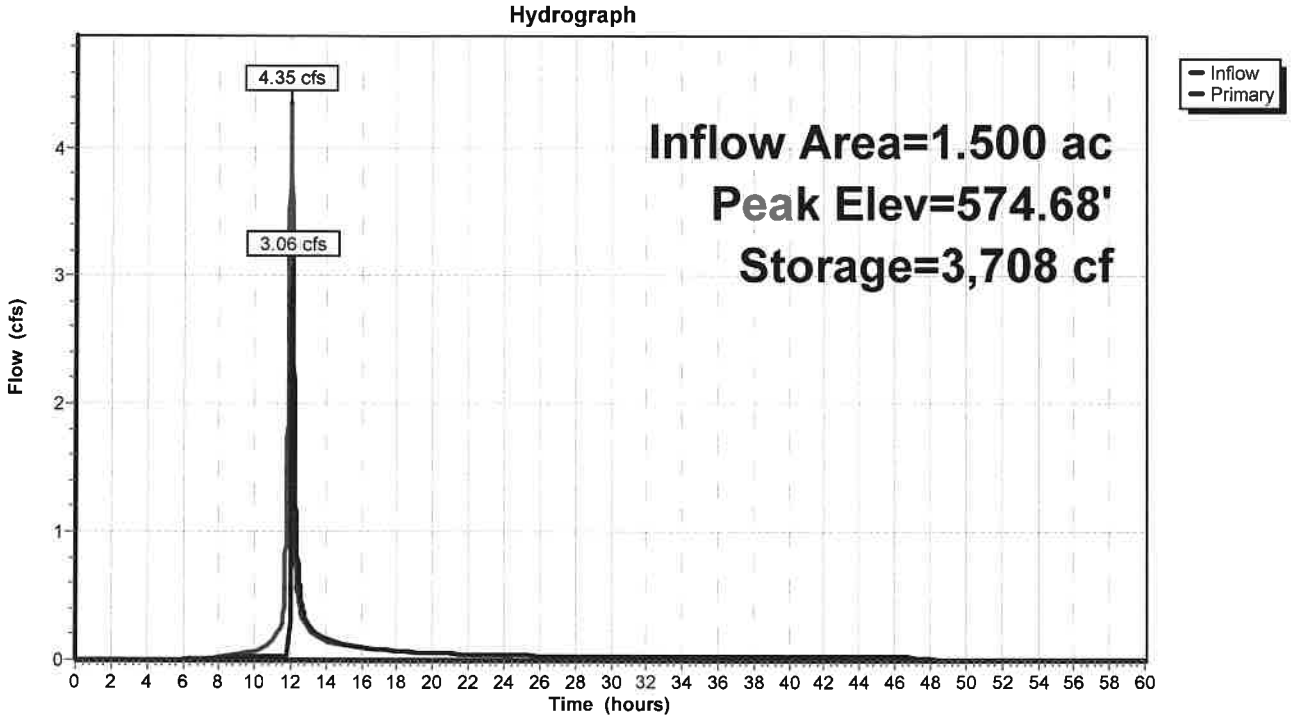
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

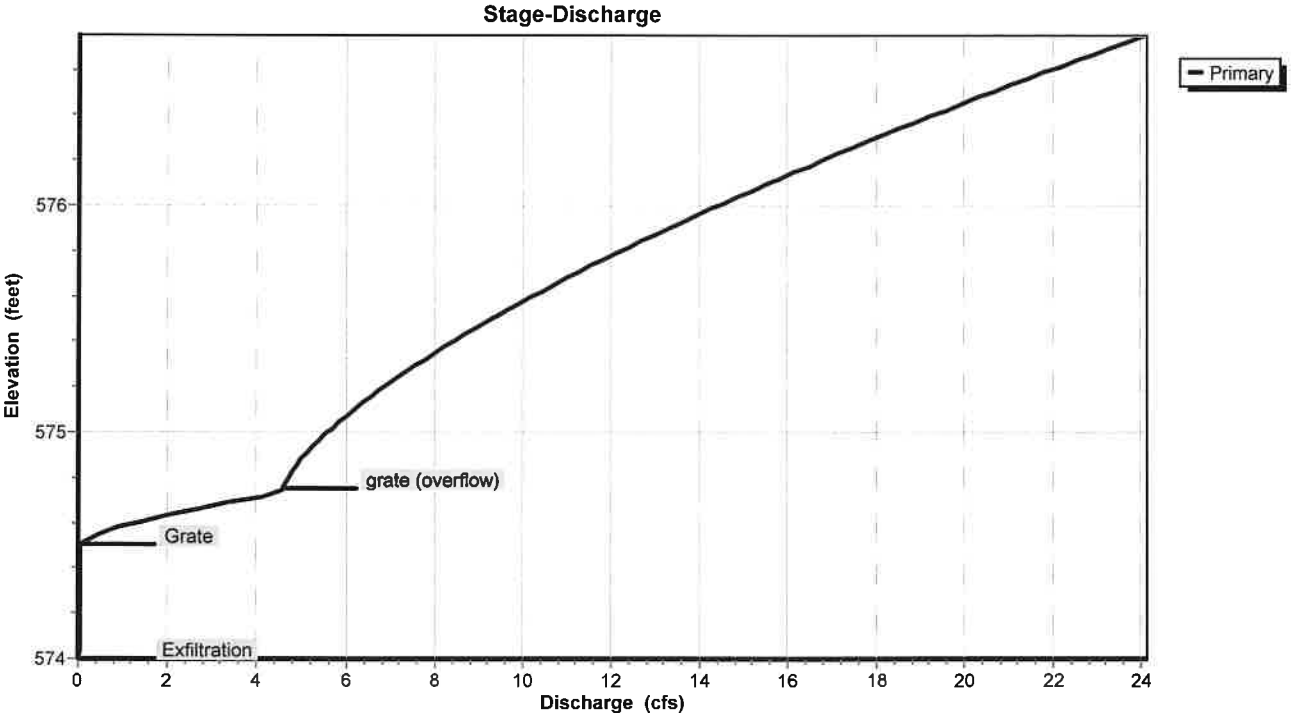
Primary OutFlow Max=3.05 cfs @ 12.08 hrs HW=574.68' (Free Discharge)
- **1=8" pipe** (Passes 3.05 cfs of 4.54 cfs potential flow)
  - **2=Grate** (Weir Controls 3.02 cfs @ 1.37 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

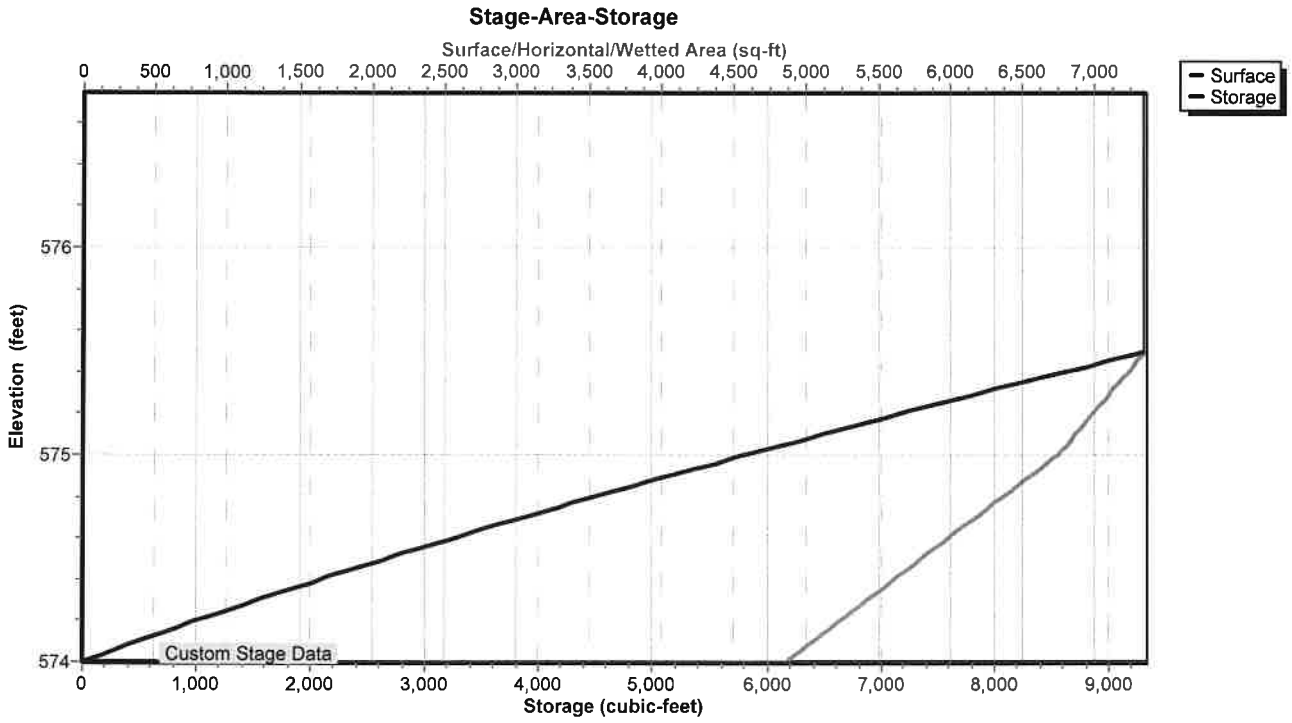


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.01	6	574.00	0.00
8.00	0.02	61	574.01	0.01
10.00	0.07	208	574.04	0.03
12.00	**4.35**	**3,326**	**574.61**	**1.59**
14.00	0.15	**2,783**	**574.52**	**0.16**
16.00	0.09	2,721	574.51	0.10
18.00	0.07	2,697	574.51	0.07
20.00	0.05	2,679	574.50	0.05
22.00	0.05	2,673	574.50	0.05
24.00	0.04	2,670	574.50	0.04
26.00	0.00	2,439	574.46	0.03
28.00	0.00	2,196	574.42	0.03
30.00	0.00	1,956	574.38	0.03
32.00	0.00	1,720	574.33	0.03
34.00	0.00	1,489	574.29	0.03
36.00	0.00	1,262	574.25	0.03
38.00	0.00	1,038	574.21	0.03
40.00	0.00	819	574.16	0.03
42.00	0.00	603	574.12	0.03
44.00	0.00	392	574.08	0.03
46.00	0.00	184	574.04	0.03
48.00	0.00	42	574.01	0.01
50.00	0.00	9	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=2.21"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=4.91 cfs 0.313 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=2.30"
Flow Length=345' Tc=9.1 min CN=92 Runoff=5.28 cfs 0.288 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=571.13' Storage=11,342 cf Inflow=9.17 cfs 0.601 af
Outflow=1.28 cfs 0.558 af

Pond 9P: Bioretention Area 3 Peak Elev=574.72' Storage=4,001 cf Inflow=5.28 cfs 0.288 af
Outflow=4.27 cfs 0.288 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.601 af Average Runoff Depth = 2.25"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

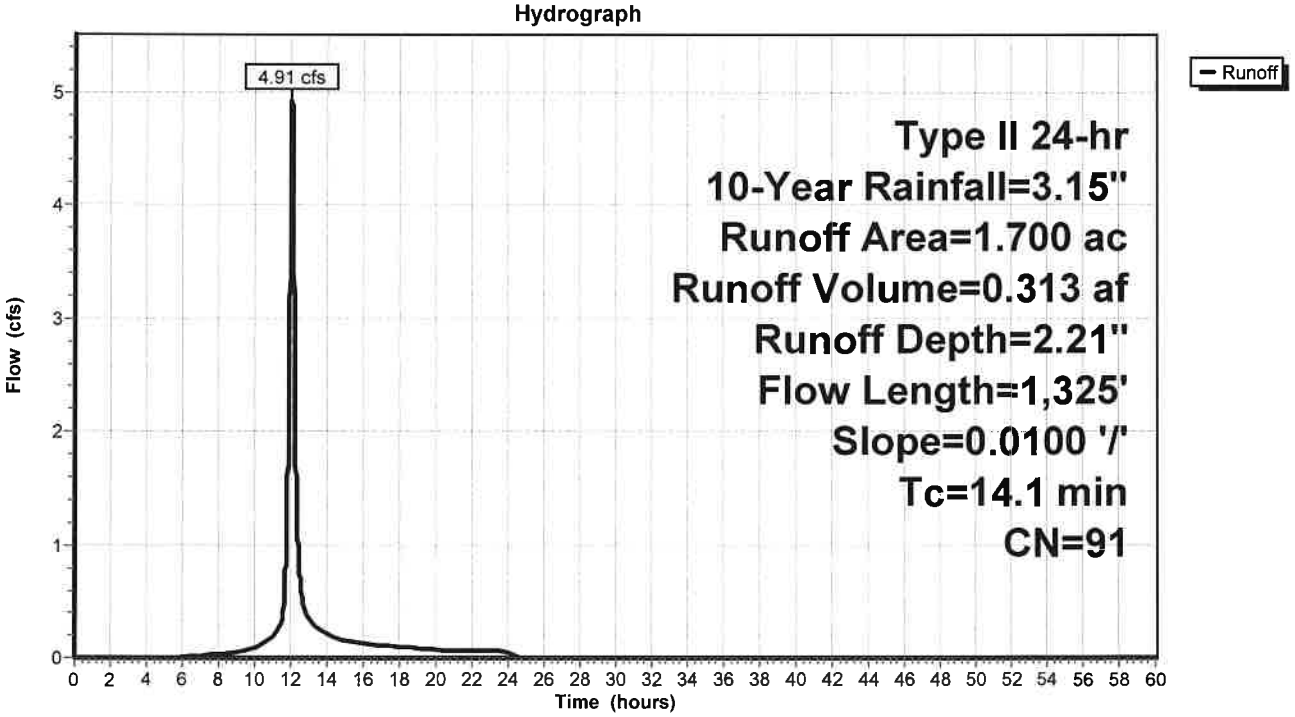
Runoff = 4.91 cfs @ 12.05 hrs, Volume= 0.313 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.15	2.21	0.00
1.00	0.03	0.00	0.00	53.00	3.15	2.21	0.00
2.00	0.07	0.00	0.00	54.00	3.15	2.21	0.00
3.00	0.11	0.00	0.00	55.00	3.15	2.21	0.00
4.00	0.15	0.00	0.00	56.00	3.15	2.21	0.00
5.00	0.20	0.00	0.00	57.00	3.15	2.21	0.00
6.00	0.25	0.00	0.01	58.00	3.15	2.21	0.00
7.00	0.31	0.01	0.02	59.00	3.15	2.21	0.00
8.00	0.38	0.03	0.03	60.00	3.15	2.21	0.00
9.00	0.46	0.06	0.06				
10.00	0.57	0.10	0.09				
11.00	0.74	0.19	0.19				
12.00	2.09	1.24	**4.35**				
13.00	2.43	1.55	**0.35**				
14.00	2.58	1.69	0.20				
15.00	2.69	1.78	0.16				
16.00	2.77	1.86	0.12				
17.00	2.84	1.92	0.11				
18.00	2.90	1.98	0.09				
19.00	2.95	2.03	0.08				
20.00	3.00	2.07	0.07				
21.00	3.04	2.11	0.06				
22.00	3.08	2.14	0.06				
23.00	3.11	2.18	0.06				
24.00	**3.15**	**2.21**	0.06				
25.00	3.15	2.21	0.00				
26.00	3.15	2.21	0.00				
27.00	3.15	2.21	0.00				
28.00	3.15	2.21	0.00				
29.00	3.15	2.21	0.00				
30.00	3.15	2.21	0.00				
31.00	3.15	2.21	0.00				
32.00	3.15	2.21	0.00				
33.00	3.15	2.21	0.00				
34.00	3.15	2.21	0.00				
35.00	3.15	2.21	0.00				
36.00	3.15	2.21	0.00				
37.00	3.15	2.21	0.00				
38.00	3.15	2.21	0.00				
39.00	3.15	2.21	0.00				
40.00	3.15	2.21	0.00				
41.00	3.15	2.21	0.00				
42.00	3.15	2.21	0.00				
43.00	3.15	2.21	0.00				
44.00	3.15	2.21	0.00				
45.00	3.15	2.21	0.00				
46.00	3.15	2.21	0.00				
47.00	3.15	2.21	0.00				
48.00	3.15	2.21	0.00				
49.00	3.15	2.21	0.00				
50.00	3.15	2.21	0.00				
51.00	3.15	2.21	0.00				

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

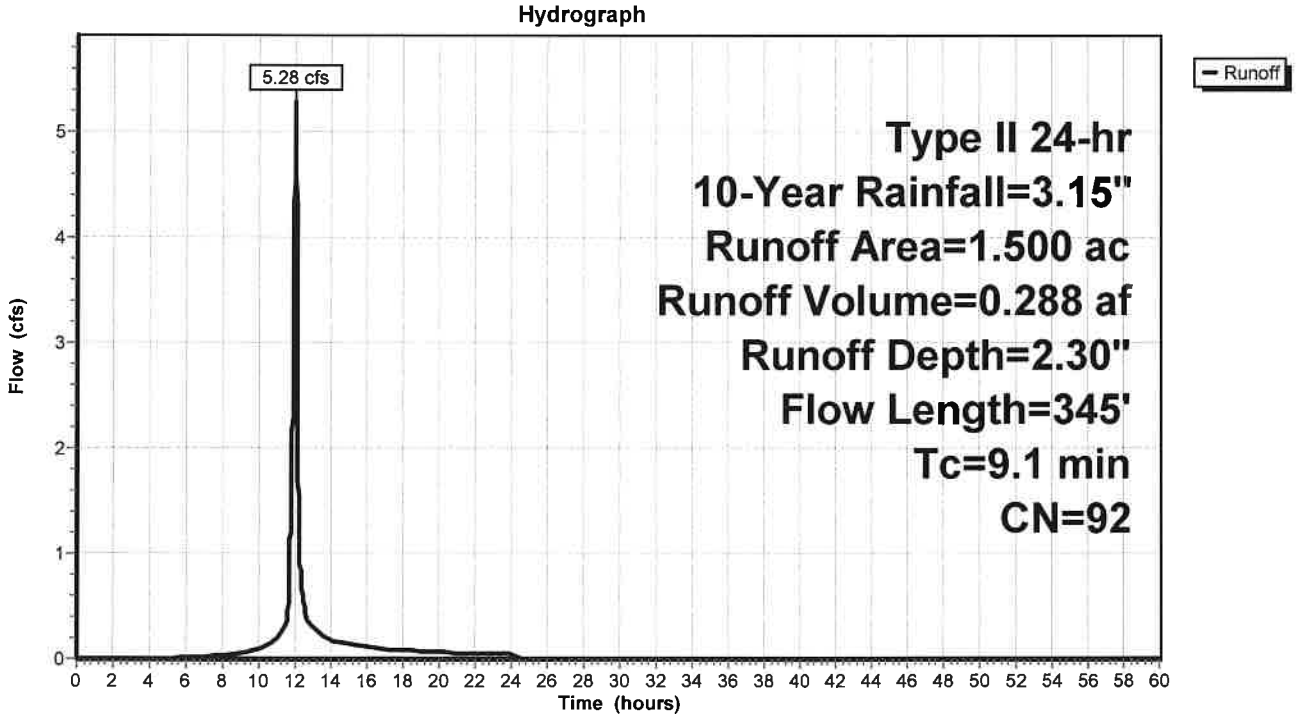
Runoff = 5.28 cfs @ 12.00 hrs, Volume= 0.288 af, Depth= 2.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.15	2.30	0.00
1.00	0.03	0.00	0.00	53.00	3.15	2.30	0.00
2.00	0.07	0.00	0.00	54.00	3.15	2.30	0.00
3.00	0.11	0.00	0.00	55.00	3.15	2.30	0.00
4.00	0.15	0.00	0.00	56.00	3.15	2.30	0.00
5.00	0.20	0.00	0.00	57.00	3.15	2.30	0.00
6.00	0.25	0.01	0.01	58.00	3.15	2.30	0.00
7.00	0.31	0.02	0.02	59.00	3.15	2.30	0.00
8.00	0.38	0.04	0.03	60.00	3.15	2.30	0.00
9.00	0.46	0.07	0.06				
10.00	0.57	0.12	0.09				
11.00	0.74	0.22	0.20				
12.00	2.09	1.32	**5.27**				
13.00	2.43	1.63	0.30				
14.00	2.58	1.77	0.18				
15.00	2.69	1.87	0.14				
16.00	2.77	1.95	0.11				
17.00	2.84	2.01	0.09				
18.00	2.90	2.07	0.08				
19.00	2.95	2.12	0.07				
20.00	3.00	2.16	0.06				
21.00	3.04	2.20	0.06				
22.00	3.08	2.23	0.05				
23.00	3.11	2.27	0.05				
24.00	**3.15**	**2.30**	0.05				
25.00	3.15	2.30	0.00				
26.00	3.15	2.30	0.00				
27.00	3.15	2.30	0.00				
28.00	3.15	2.30	0.00				
29.00	3.15	2.30	0.00				
30.00	3.15	2.30	0.00				
31.00	3.15	2.30	0.00				
32.00	3.15	2.30	0.00				
33.00	3.15	2.30	0.00				
34.00	3.15	2.30	0.00				
35.00	3.15	2.30	0.00				
36.00	3.15	2.30	0.00				
37.00	3.15	2.30	0.00				
38.00	3.15	2.30	0.00				
39.00	3.15	2.30	0.00				
40.00	3.15	2.30	0.00				
41.00	3.15	2.30	0.00				
42.00	3.15	2.30	0.00				
43.00	3.15	2.30	0.00				
44.00	3.15	2.30	0.00				
45.00	3.15	2.30	0.00				
46.00	3.15	2.30	0.00				
47.00	3.15	2.30	0.00				
48.00	3.15	2.30	0.00				
49.00	3.15	2.30	0.00				
50.00	3.15	2.30	0.00				
51.00	3.15	2.30	0.00				

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 2.25" for 10-Year event
Inflow = 9.17 cfs @ 12.06 hrs, Volume= 0.601 af
Outflow = 1.28 cfs @ 12.54 hrs, Volume= 0.558 af, Atten= 86%, Lag= 29.2 min
Primary = 1.28 cfs @ 12.54 hrs, Volume= 0.558 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 571.13' @ 12.54 hrs Surf.Area= 10,145 sf Storage= 11,342 cf

Plug-Flow detention time= 284.1 min calculated for 0.558 af (93% of inflow)
Center-of-Mass det. time= 176.3 min (1,132.0 - 955.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

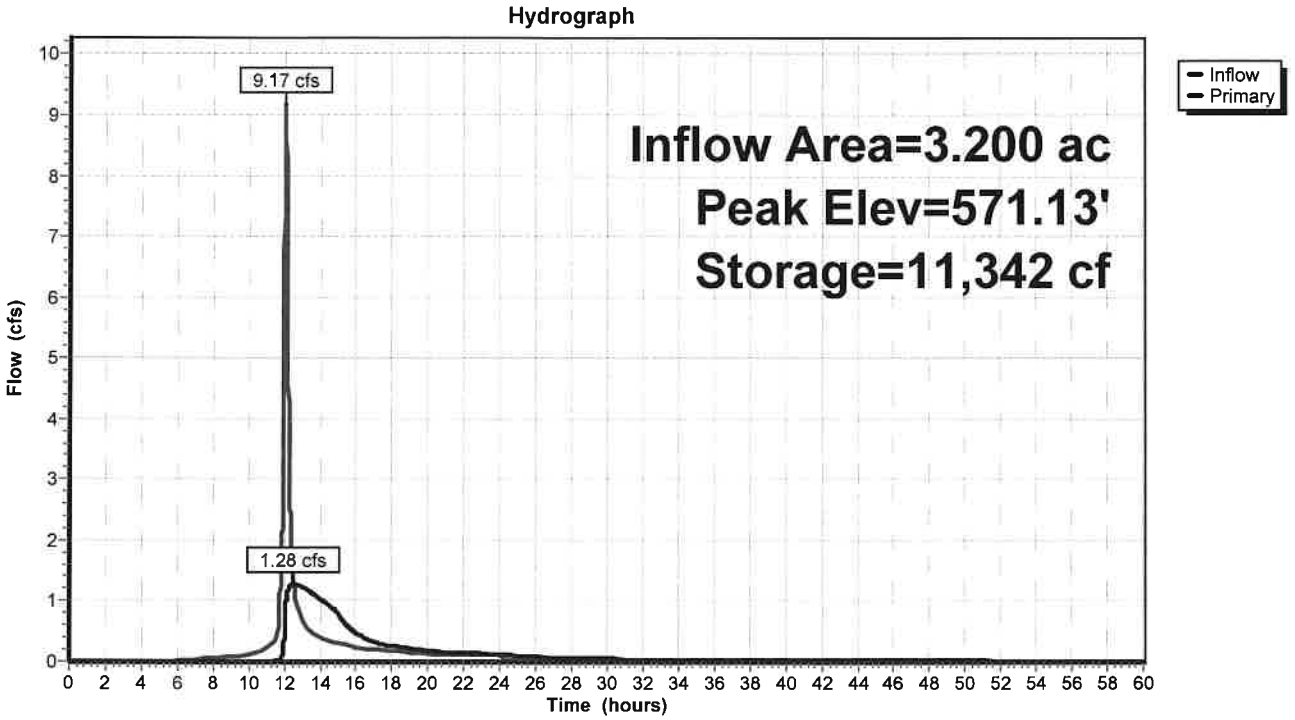
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

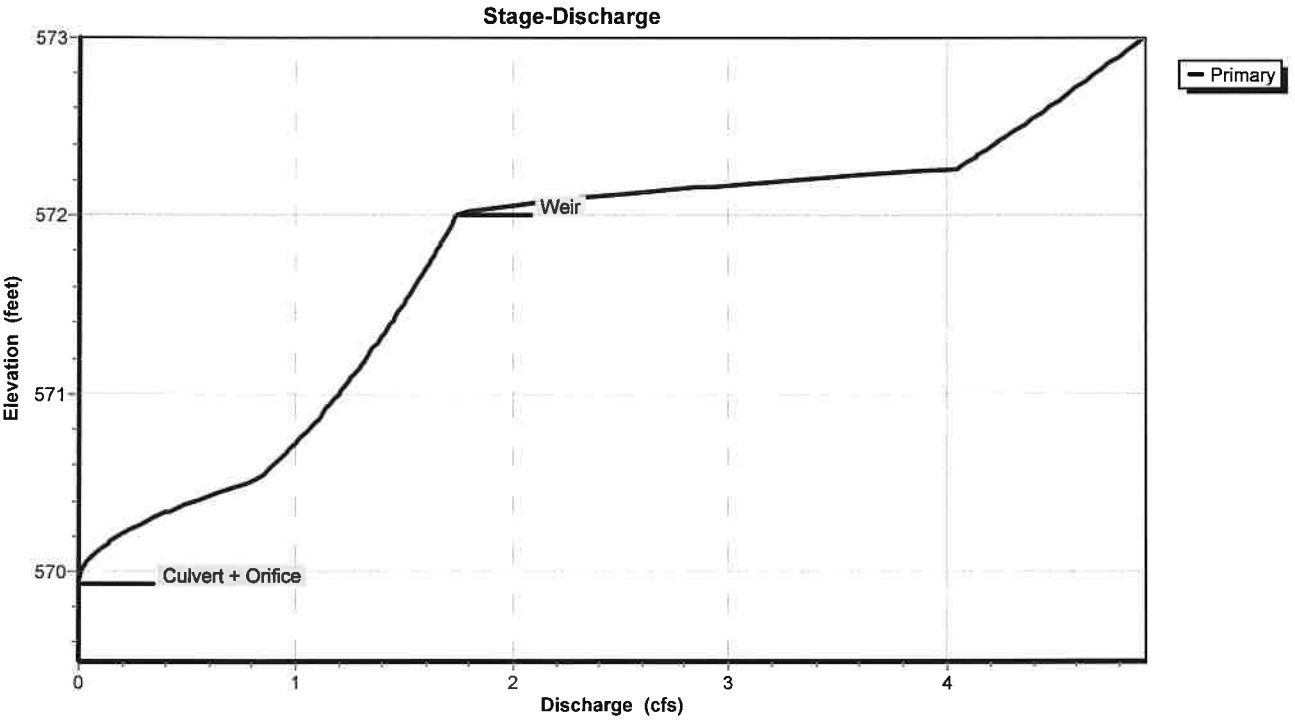
Primary OutFlow Max=1.28 cfs @ 12.54 hrs HW=571.13' (Free Discharge)
└**1=Culvert** (Passes 1.28 cfs of 2.37 cfs potential flow)
  ├**2=Orifice** (Orifice Controls 1.28 cfs @ 4.88 fps)
  └**3=Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

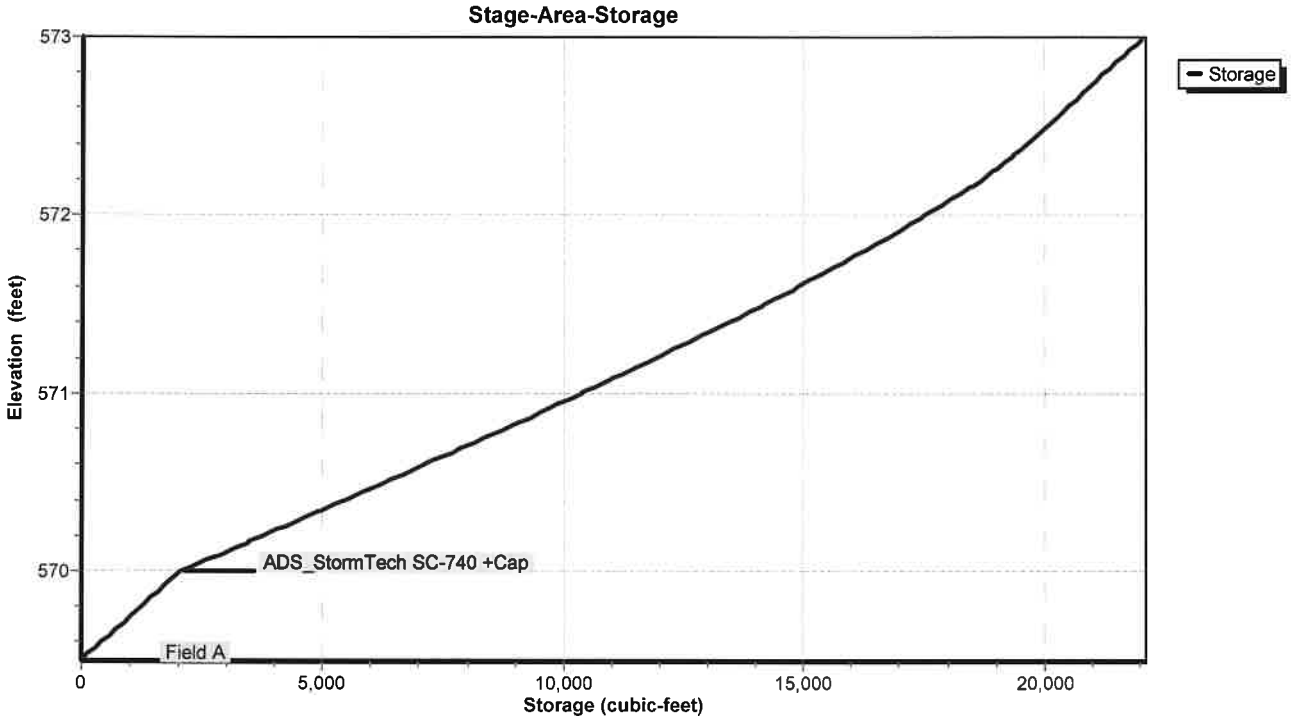


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.01	18	569.50	0.00
8.00	0.05	241	569.56	0.00
10.00	0.12	846	569.71	0.00
12.00	**7.80**	**5,030**	**570.35**	**0.43**
14.00	**0.39**	**8,504**	**570.77**	**1.03**
16.00	0.24	5,183	570.37	0.47
18.00	0.18	4,195	570.25	0.26
20.00	0.13	3,754	570.20	0.18
22.00	0.12	3,484	570.17	0.14
24.00	0.11	3,343	570.15	0.12
26.00	0.03	2,942	570.11	0.08
28.00	0.03	2,728	570.08	0.05
30.00	0.03	2,611	570.07	0.05
32.00	0.03	2,544	570.06	0.04
34.00	0.03	2,500	570.05	0.04
36.00	0.03	2,470	570.05	0.03
38.00	0.03	2,448	570.05	0.03
40.00	0.03	2,430	570.05	0.03
42.00	0.03	2,416	570.05	0.03
44.00	0.03	2,404	570.04	0.03
46.00	0.03	2,393	570.04	0.03
48.00	0.01	2,331	570.04	0.03
50.00	0.00	2,206	570.02	0.02
52.00	0.00	2,098	570.01	0.01
54.00	0.00	2,015	570.00	0.01
56.00	0.00	1,960	569.98	0.01
58.00	0.00	1,921	569.97	0.00
60.00	0.00	1,893	569.97	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 2.30" for 10-Year event
Inflow = 5.28 cfs @ 12.00 hrs, Volume= 0.288 af
Outflow = 4.27 cfs @ 12.06 hrs, Volume= 0.288 af, Atten= 19%, Lag= 3.5 min
Primary = 4.27 cfs @ 12.06 hrs, Volume= 0.288 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.72' @ 12.06 hrs Surf.Area= 6,219 sf Storage= 4,001 cf

Plug-Flow detention time= 318.6 min calculated for 0.288 af (100% of inflow)
Center-of-Mass det. time= 318.8 min (1,116.8 - 798.1)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

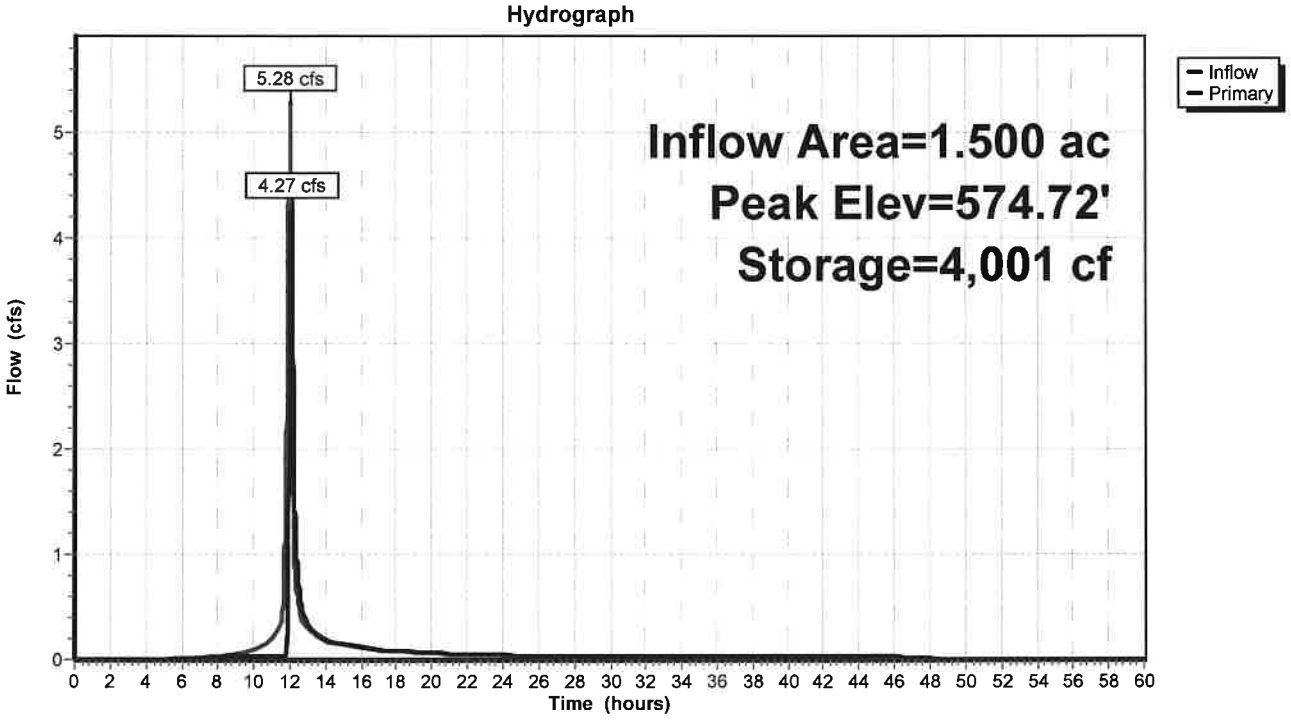
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

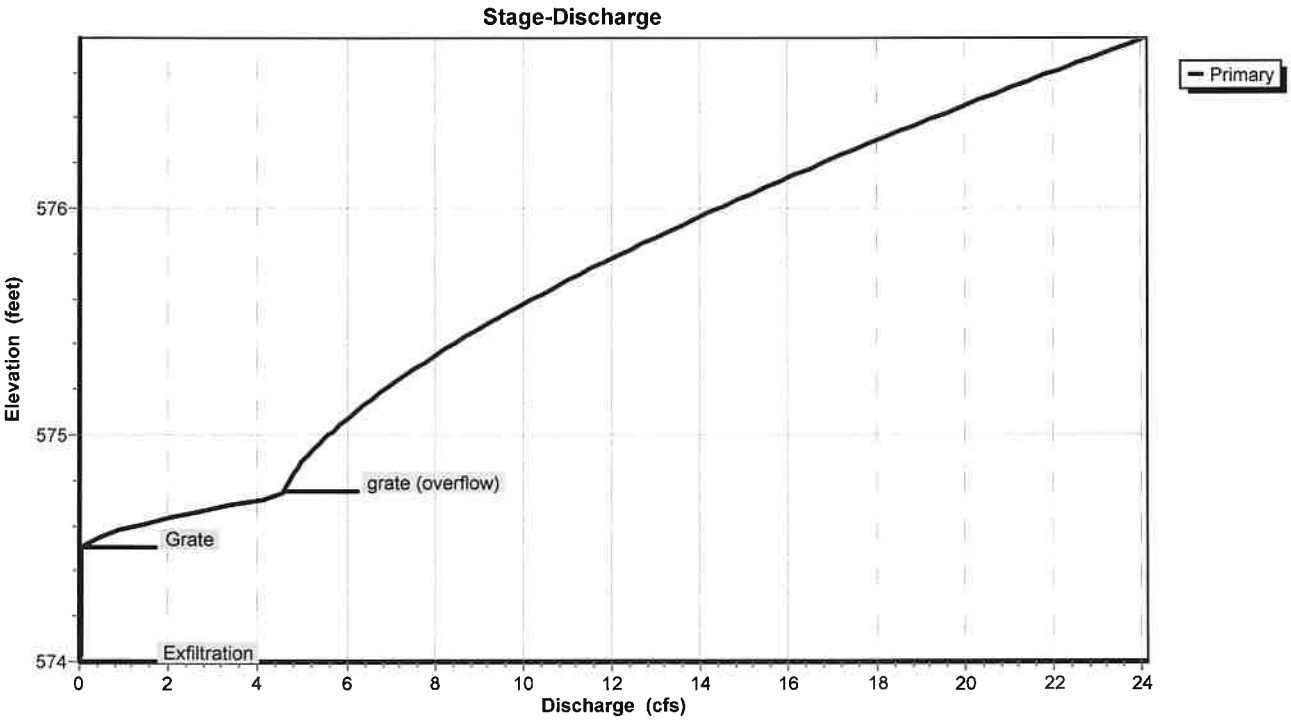
Primary OutFlow Max=4.36 cfs @ 12.06 hrs HW=574.72' (Free Discharge)
- **1=8" pipe** (Passes 4.36 cfs of 4.57 cfs potential flow)
  - **2=Grate** (Weir Controls 4.32 cfs @ 1.54 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

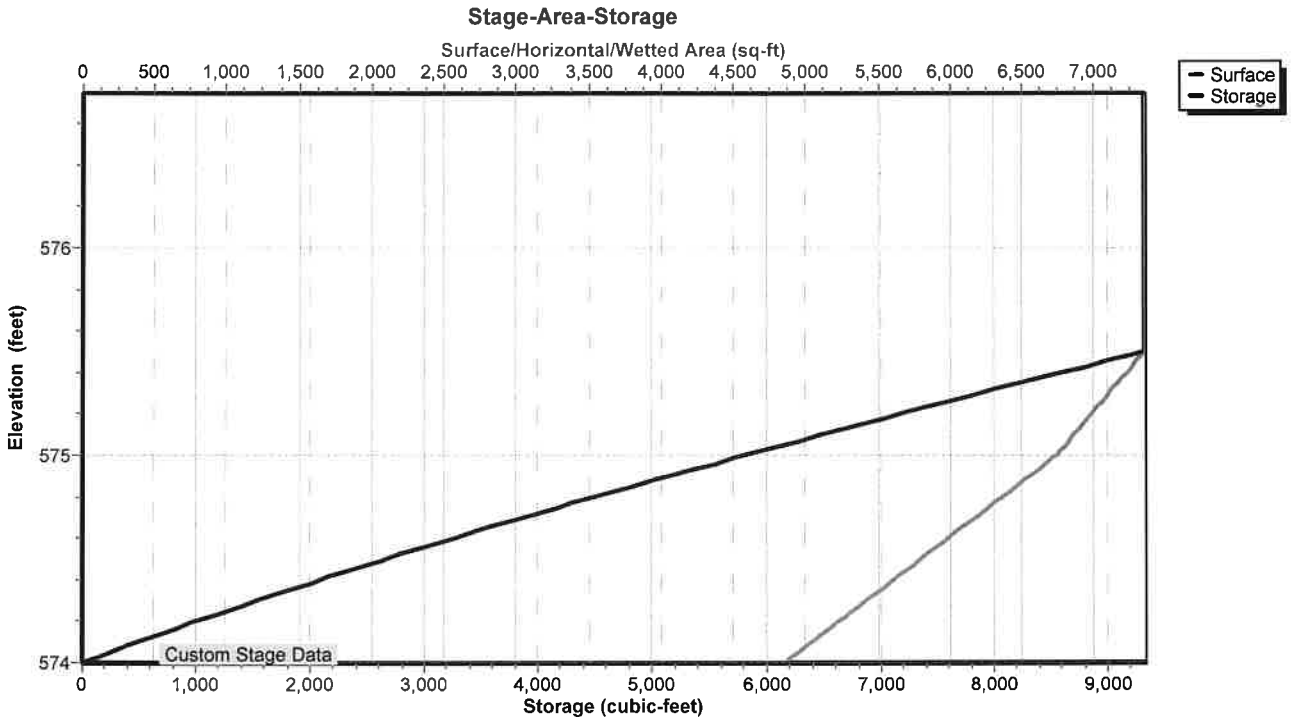


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.01	21	574.00	0.00
8.00	0.03	99	574.02	0.02
10.00	0.09	335	574.07	0.03
12.00	**5.27**	**3,799**	**574.69**	**3.45**
14.00	0.18	**2,801**	**574.52**	**0.19**
16.00	0.11	2,738	574.51	0.12
18.00	0.08	2,710	574.51	0.09
20.00	0.06	2,689	574.50	0.06
22.00	0.05	2,681	574.50	0.06
24.00	0.05	2,677	574.50	0.05
26.00	0.00	2,445	574.46	0.03
28.00	0.00	2,201	574.42	0.03
30.00	0.00	1,961	574.38	0.03
32.00	0.00	1,726	574.33	0.03
34.00	0.00	1,494	574.29	0.03
36.00	0.00	1,267	574.25	0.03
38.00	0.00	1,043	574.21	0.03
40.00	0.00	824	574.16	0.03
42.00	0.00	608	574.12	0.03
44.00	0.00	397	574.08	0.03
46.00	0.00	189	574.04	0.03
48.00	0.00	44	574.01	0.01
50.00	0.00	10	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=2.89"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=6.35 cfs 0.410 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=2.99"
Flow Length=345' Tc=9.1 min CN=92 Runoff=6.75 cfs 0.374 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=571.73' Storage=15,804 cf Inflow=11.11 cfs 0.784 af
Outflow=1.61 cfs 0.740 af

Pond 9P: Bioretention Area 3 Peak Elev=574.82' Storage=4,638 cf Inflow=6.75 cfs 0.374 af
Outflow=4.78 cfs 0.374 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.784 af Average Runoff Depth = 2.94"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

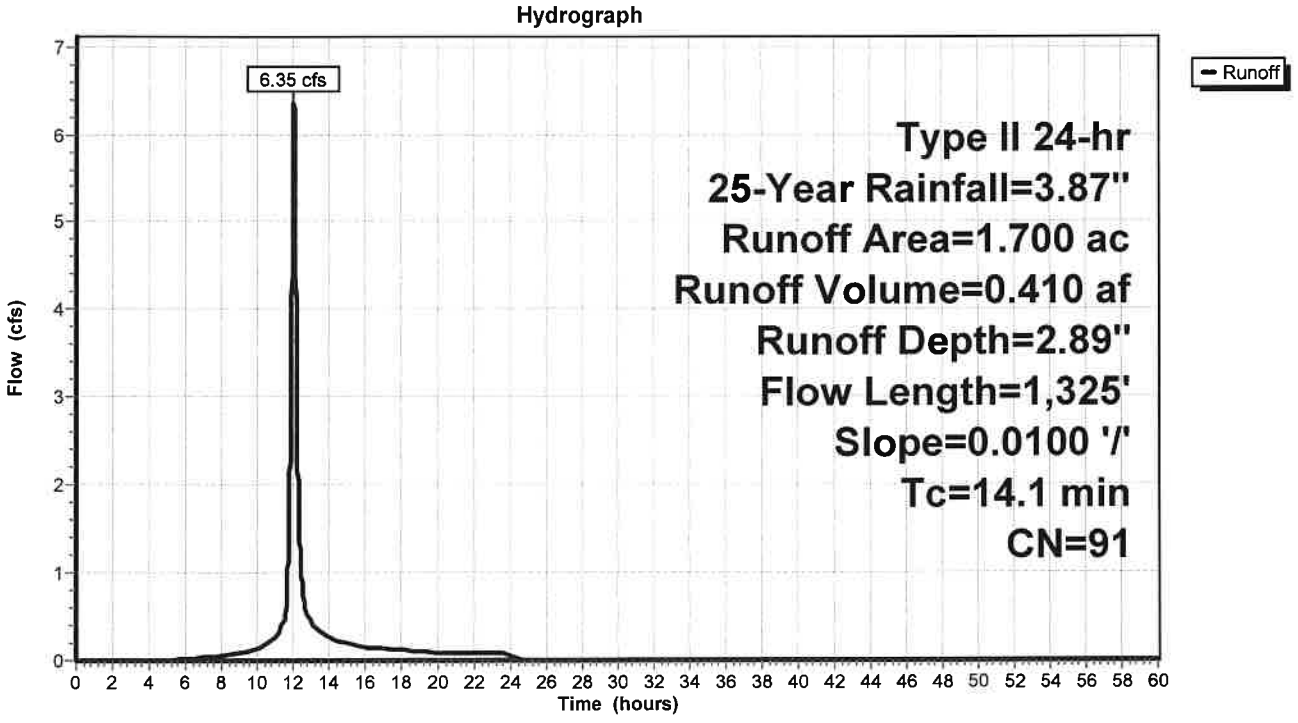
Runoff = 6.35 cfs @ 12.05 hrs, Volume= 0.410 af, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.04	0.00	0.00
2.00	0.09	0.00	0.00
3.00	0.13	0.00	0.00
4.00	0.19	0.00	0.00
5.00	0.24	0.00	0.01
6.00	0.31	0.01	0.02
7.00	0.38	0.03	0.04
8.00	0.46	0.06	0.05
9.00	0.57	0.10	0.09
10.00	0.70	0.17	0.13
11.00	0.91	0.30	0.27
12.00	2.57	1.67	**5.66**
13.00	2.99	2.06	**0.45**
14.00	3.17	2.23	0.26
15.00	3.30	2.36	0.20
16.00	3.41	2.45	0.15
17.00	3.49	2.53	0.13
18.00	3.56	2.60	0.12
19.00	3.63	2.66	0.10
20.00	3.68	2.72	0.09
21.00	3.73	2.76	0.08
22.00	3.78	2.81	0.08
23.00	3.83	2.85	0.07
24.00	**3.87**	**2.89**	0.07
25.00	3.87	2.89	0.00
26.00	3.87	2.89	0.00
27.00	3.87	2.89	0.00
28.00	3.87	2.89	0.00
29.00	3.87	2.89	0.00
30.00	3.87	2.89	0.00
31.00	3.87	2.89	0.00
32.00	3.87	2.89	0.00
33.00	3.87	2.89	0.00
34.00	3.87	2.89	0.00
35.00	3.87	2.89	0.00
36.00	3.87	2.89	0.00
37.00	3.87	2.89	0.00
38.00	3.87	2.89	0.00
39.00	3.87	2.89	0.00
40.00	3.87	2.89	0.00
41.00	3.87	2.89	0.00
42.00	3.87	2.89	0.00
43.00	3.87	2.89	0.00
44.00	3.87	2.89	0.00
45.00	3.87	2.89	0.00
46.00	3.87	2.89	0.00
47.00	3.87	2.89	0.00
48.00	3.87	2.89	0.00
49.00	3.87	2.89	0.00
50.00	3.87	2.89	0.00
51.00	3.87	2.89	0.00
52.00	3.87	2.89	0.00
53.00	3.87	2.89	0.00
54.00	3.87	2.89	0.00
55.00	3.87	2.89	0.00
56.00	3.87	2.89	0.00
57.00	3.87	2.89	0.00
58.00	3.87	2.89	0.00
59.00	3.87	2.89	0.00
60.00	3.87	2.89	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

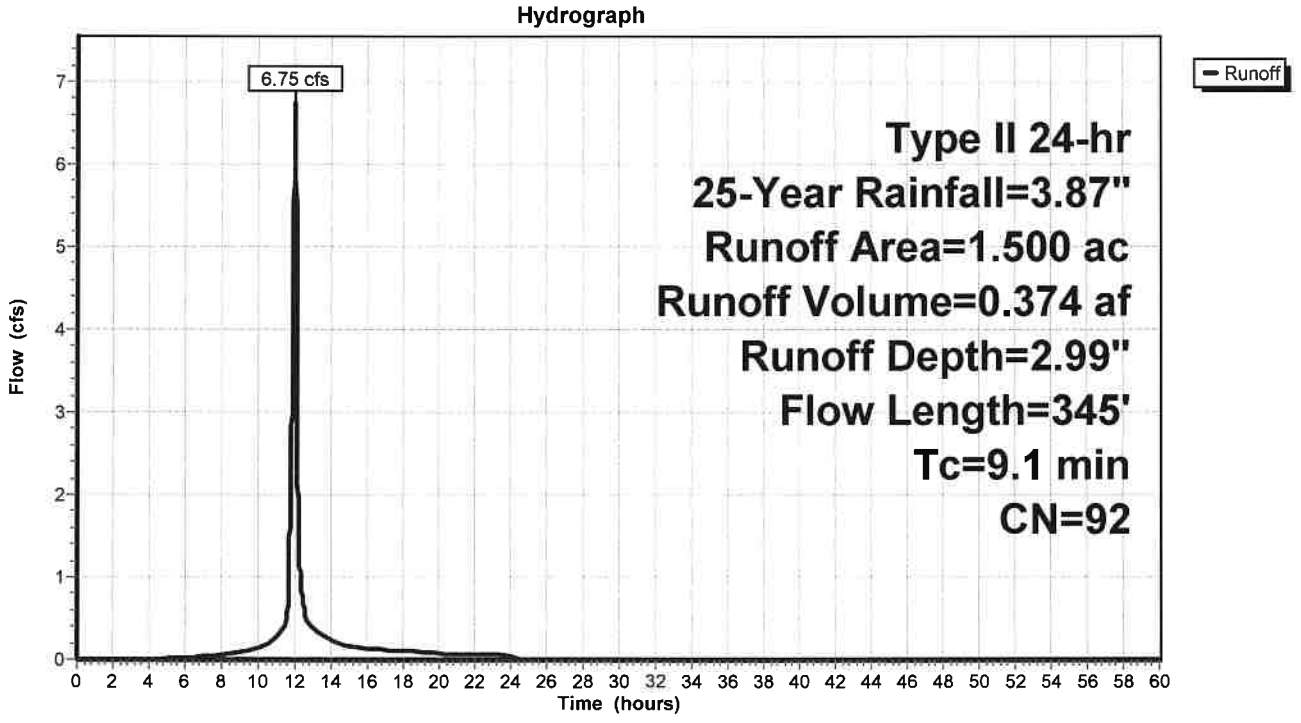
Runoff = 6.75 cfs @ 12.00 hrs, Volume= 0.374 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.04	0.00	0.00
2.00	0.09	0.00	0.00
3.00	0.13	0.00	0.00
4.00	0.19	0.00	0.00
5.00	0.24	0.01	0.01
6.00	0.31	0.02	0.02
7.00	0.38	0.04	0.04
8.00	0.46	0.07	0.05
9.00	0.57	0.12	0.09
10.00	0.70	0.20	0.13
11.00	0.91	0.34	0.27
12.00	2.57	1.75	**6.75**
13.00	2.99	2.15	0.38
14.00	3.17	2.33	0.22
15.00	3.30	2.45	0.17
16.00	3.41	2.55	0.13
17.00	3.49	2.63	0.12
18.00	3.56	2.70	0.10
19.00	3.63	2.76	0.09
20.00	3.68	2.81	0.08
21.00	3.73	2.86	0.07
22.00	3.78	2.91	0.07
23.00	3.83	2.95	0.07
24.00	**3.87**	**2.99**	0.06
25.00	3.87	2.99	0.00
26.00	3.87	2.99	0.00
27.00	3.87	2.99	0.00
28.00	3.87	2.99	0.00
29.00	3.87	2.99	0.00
30.00	3.87	2.99	0.00
31.00	3.87	2.99	0.00
32.00	3.87	2.99	0.00
33.00	3.87	2.99	0.00
34.00	3.87	2.99	0.00
35.00	3.87	2.99	0.00
36.00	3.87	2.99	0.00
37.00	3.87	2.99	0.00
38.00	3.87	2.99	0.00
39.00	3.87	2.99	0.00
40.00	3.87	2.99	0.00
41.00	3.87	2.99	0.00
42.00	3.87	2.99	0.00
43.00	3.87	2.99	0.00
44.00	3.87	2.99	0.00
45.00	3.87	2.99	0.00
46.00	3.87	2.99	0.00
47.00	3.87	2.99	0.00
48.00	3.87	2.99	0.00
49.00	3.87	2.99	0.00
50.00	3.87	2.99	0.00
51.00	3.87	2.99	0.00
52.00	3.87	2.99	0.00
53.00	3.87	2.99	0.00
54.00	3.87	2.99	0.00
55.00	3.87	2.99	0.00
56.00	3.87	2.99	0.00
57.00	3.87	2.99	0.00
58.00	3.87	2.99	0.00
59.00	3.87	2.99	0.00
60.00	3.87	2.99	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 2.94" for 25-Year event
Inflow = 11.11 cfs @ 12.06 hrs, Volume= 0.784 af
Outflow = 1.61 cfs @ 12.54 hrs, Volume= 0.740 af, Atten= 85%, Lag= 29.2 min
Primary = 1.61 cfs @ 12.54 hrs, Volume= 0.740 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 571.73' @ 12.54 hrs Surf.Area= 10,145 sf Storage= 15,804 cf

Plug-Flow detention time= 252.2 min calculated for 0.740 af (94% of inflow)
Center-of-Mass det. time= 168.6 min (1,084.7 - 916.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

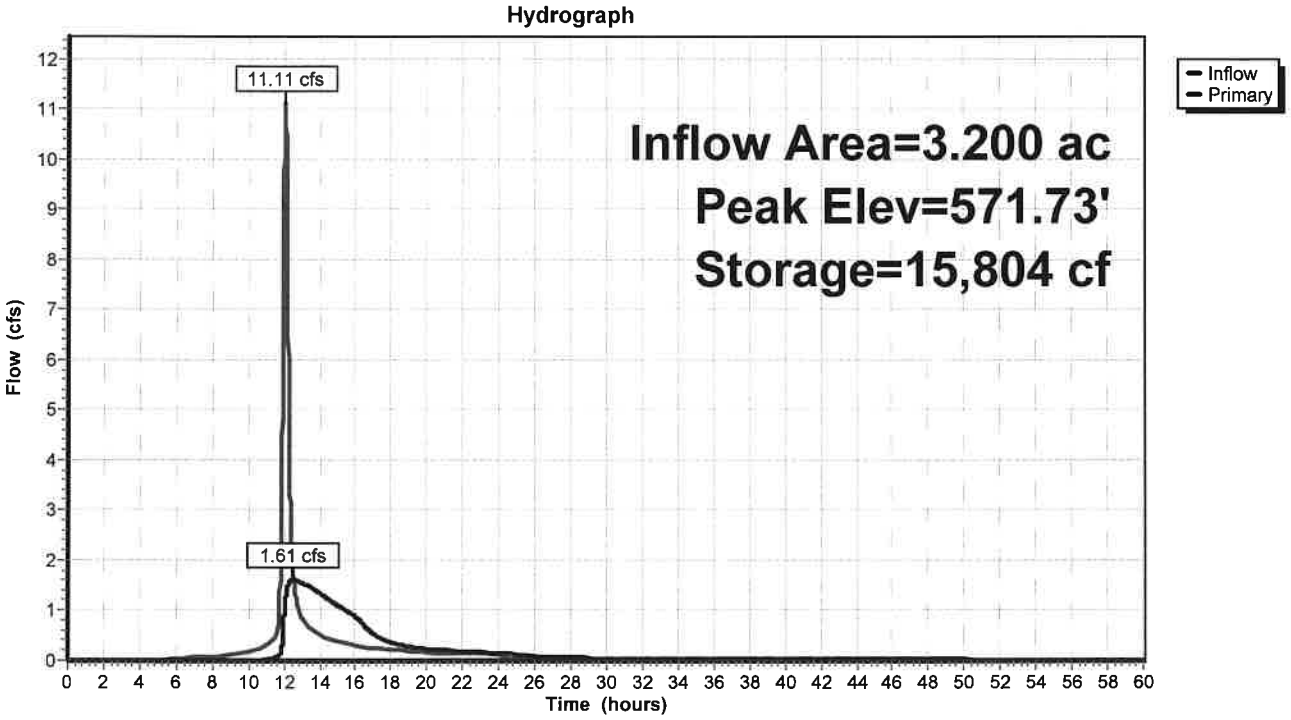
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

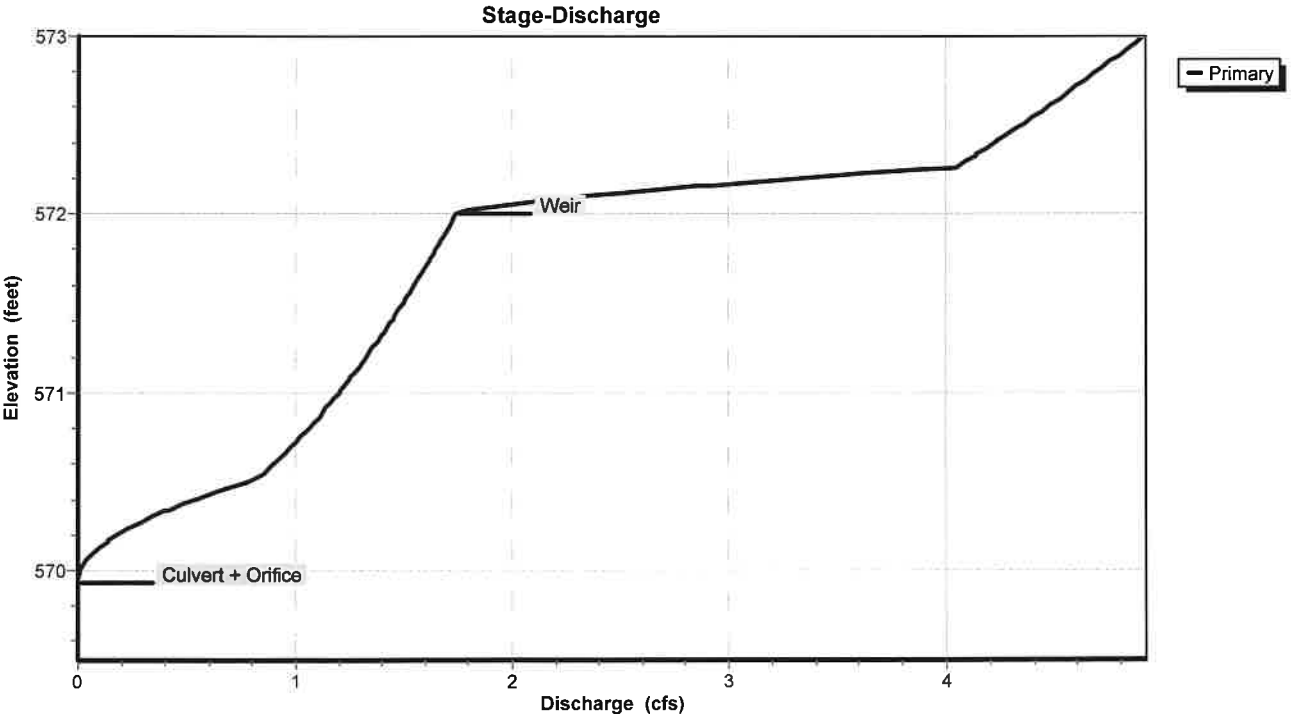
Primary OutFlow Max=1.61 cfs @ 12.54 hrs HW=571.73' (Free Discharge)
└**1=Culvert** (Passes 1.61 cfs of 3.29 cfs potential flow)
  ├**2=Orifice** (Orifice Controls 1.61 cfs @ 6.16 fps)
  └**3=Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

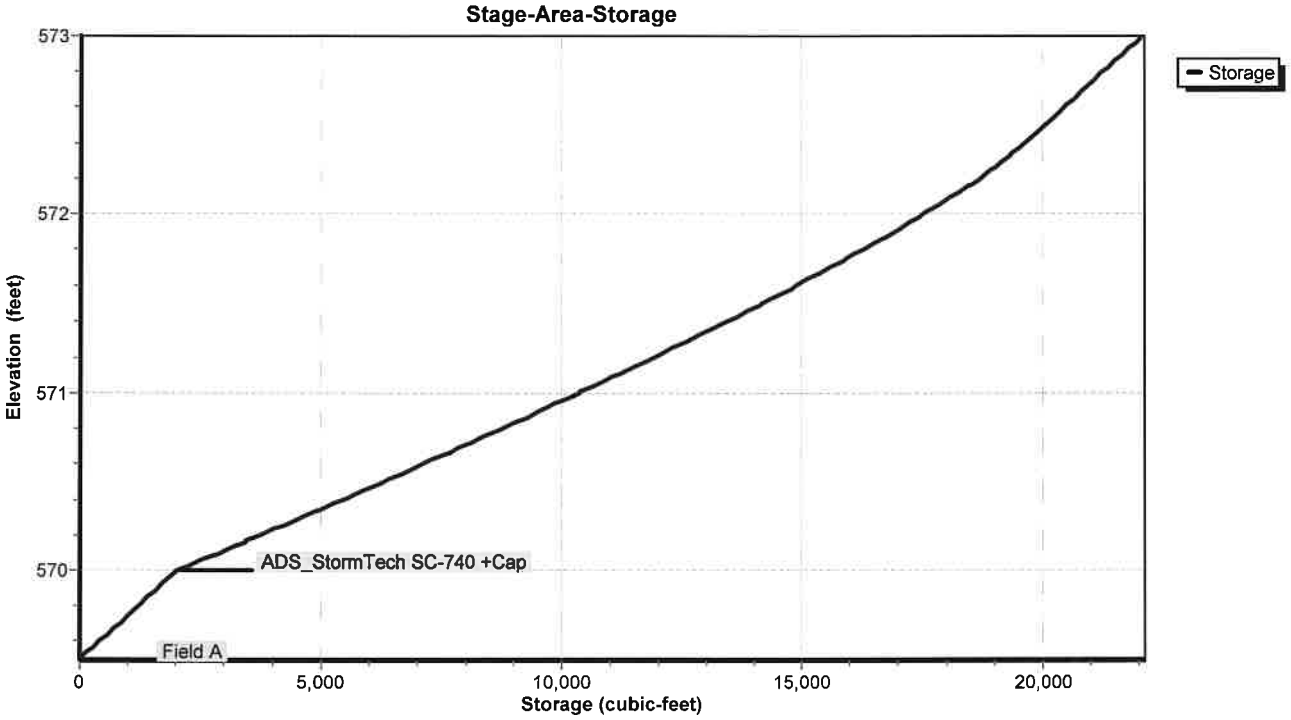


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.03	85	569.52	0.00
8.00	0.08	499	569.62	0.00
10.00	0.16	1,337	569.83	0.00
12.00	**10.28**	**7,562**	**570.65**	**0.94**
14.00	**0.49**	**12,132**	**571.23**	**1.34**
16.00	0.30	6,914	570.58	0.87
18.00	0.22	4,703	570.31	0.36
20.00	0.16	4,045	570.24	0.23
22.00	0.15	3,711	570.20	0.17
24.00	0.13	3,549	570.18	0.15
26.00	0.03	3,038	570.12	0.09
28.00	0.03	2,775	570.09	0.06
30.00	0.03	2,637	570.07	0.05
32.00	0.03	2,558	570.06	0.04
34.00	0.03	2,510	570.06	0.04
36.00	0.03	2,476	570.05	0.04
38.00	0.03	2,451	570.05	0.03
40.00	0.03	2,433	570.05	0.03
42.00	0.03	2,418	570.05	0.03
44.00	0.03	2,405	570.04	0.03
46.00	0.03	2,394	570.04	0.03
48.00	0.01	2,335	570.04	0.03
50.00	0.00	2,210	570.02	0.02
52.00	0.00	2,101	570.01	0.01
54.00	0.00	2,017	570.00	0.01
56.00	0.00	1,961	569.98	0.01
58.00	0.00	1,922	569.97	0.00
60.00	0.00	1,894	569.97	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 2.99" for 25-Year event
Inflow = 6.75 cfs @ 12.00 hrs, Volume= 0.374 af
Outflow = 4.78 cfs @ 12.08 hrs, Volume= 0.374 af, Atten= 29%, Lag= 4.5 min
Primary = 4.78 cfs @ 12.08 hrs, Volume= 0.374 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.82' @ 12.08 hrs Surf.Area= 6,409 sf Storage= 4,638 cf

Plug-Flow detention time= 252.6 min calculated for 0.374 af (100% of inflow)
Center-of-Mass det. time= 252.8 min (1,043.6 - 790.7)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

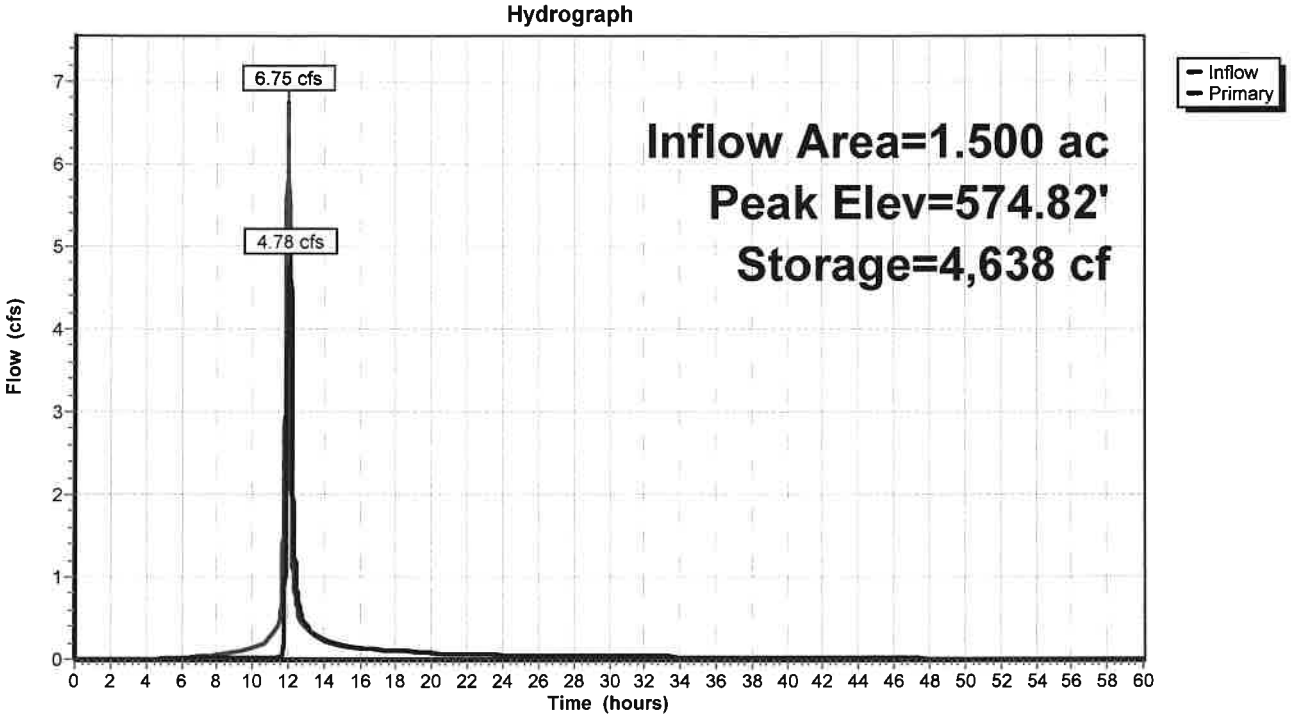
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

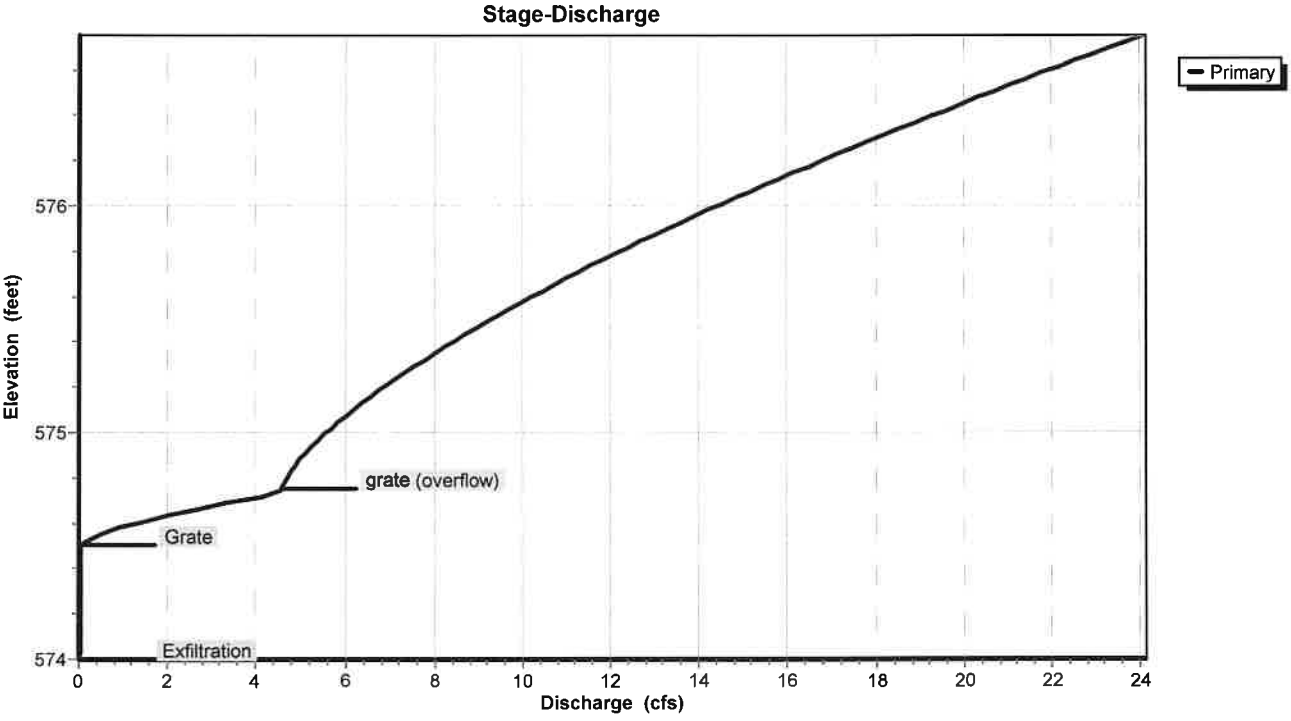
Primary OutFlow Max=4.78 cfs @ 12.08 hrs HW=574.82' (Free Discharge)
- **1=8" pipe** (Barrel Controls 4.65 cfs @ 5.92 fps)
  - **2=Grate** (Passes < 5.74 cfs potential flow)
  - **3=Exfiltration** (Passes < 0.04 cfs potential flow)
- **4=grate (overflow)** (Orifice Controls 0.13 cfs @ 0.87 fps)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

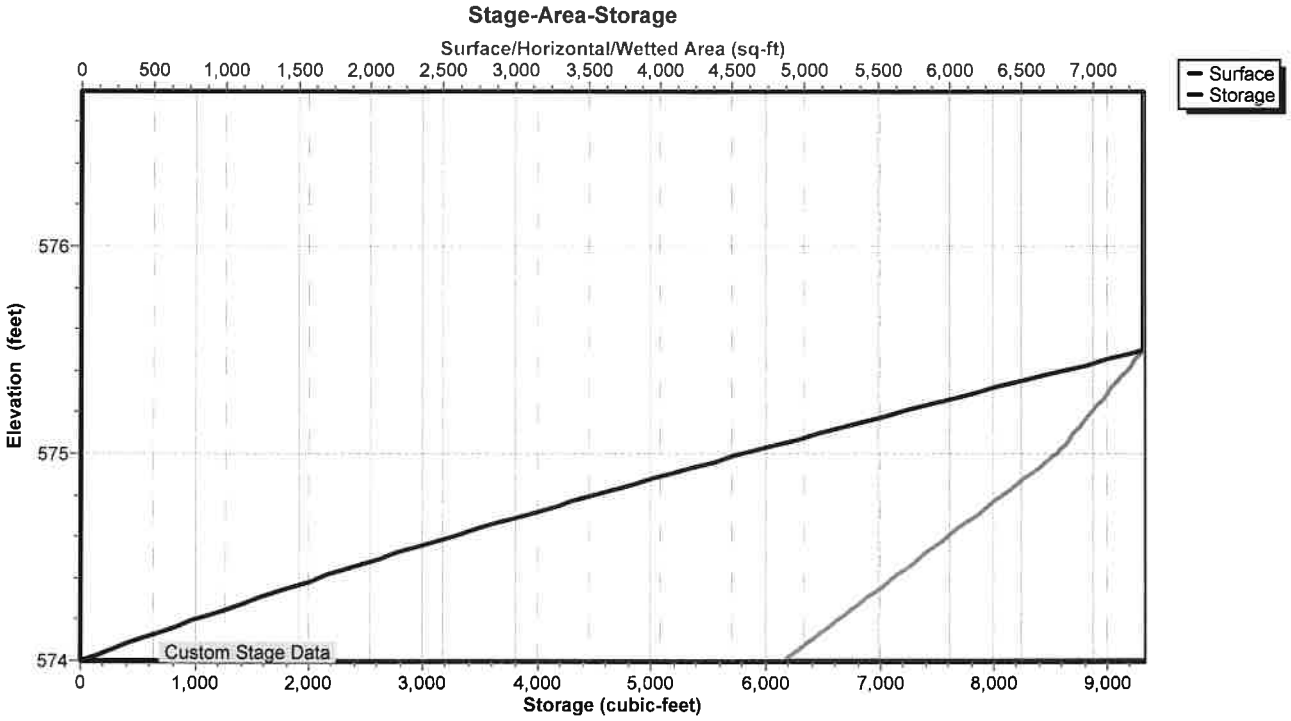


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.02	55	574.01	0.01
8.00	0.05	177	574.04	0.03
10.00	0.13	612	574.12	0.03
12.00	**6.75**	**4,265**	**574.77**	**4.62**
14.00	0.22	**2,825**	**574.53**	**0.24**
16.00	0.13	2,765	574.52	0.14
18.00	0.10	2,730	574.51	0.11
20.00	0.08	2,704	574.51	0.08
22.00	0.07	2,694	574.51	0.07
24.00	0.06	2,689	574.50	0.06
26.00	0.00	2,452	574.46	0.03
28.00	0.00	2,208	574.42	0.03
30.00	0.00	1,968	574.38	0.03
32.00	0.00	1,733	574.34	0.03
34.00	0.00	1,501	574.29	0.03
36.00	0.00	1,273	574.25	0.03
38.00	0.00	1,050	574.21	0.03
40.00	0.00	830	574.17	0.03
42.00	0.00	614	574.12	0.03
44.00	0.00	403	574.08	0.03
46.00	0.00	195	574.04	0.03
48.00	0.00	46	574.01	0.01
50.00	0.00	10	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=3.52"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=7.64 cfs 0.498 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=3.62"
Flow Length=345' Tc=9.1 min CN=92 Runoff=8.07 cfs 0.453 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=572.23' Storage=18,837 cf Inflow=12.80 cfs 0.951 af
Outflow=3.61 cfs 0.907 af

Pond 9P: Bioretention Area 3 Peak Elev=574.93' Storage=5,333 cf Inflow=8.07 cfs 0.453 af
Outflow=5.22 cfs 0.453 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.951 af Average Runoff Depth = 3.57"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

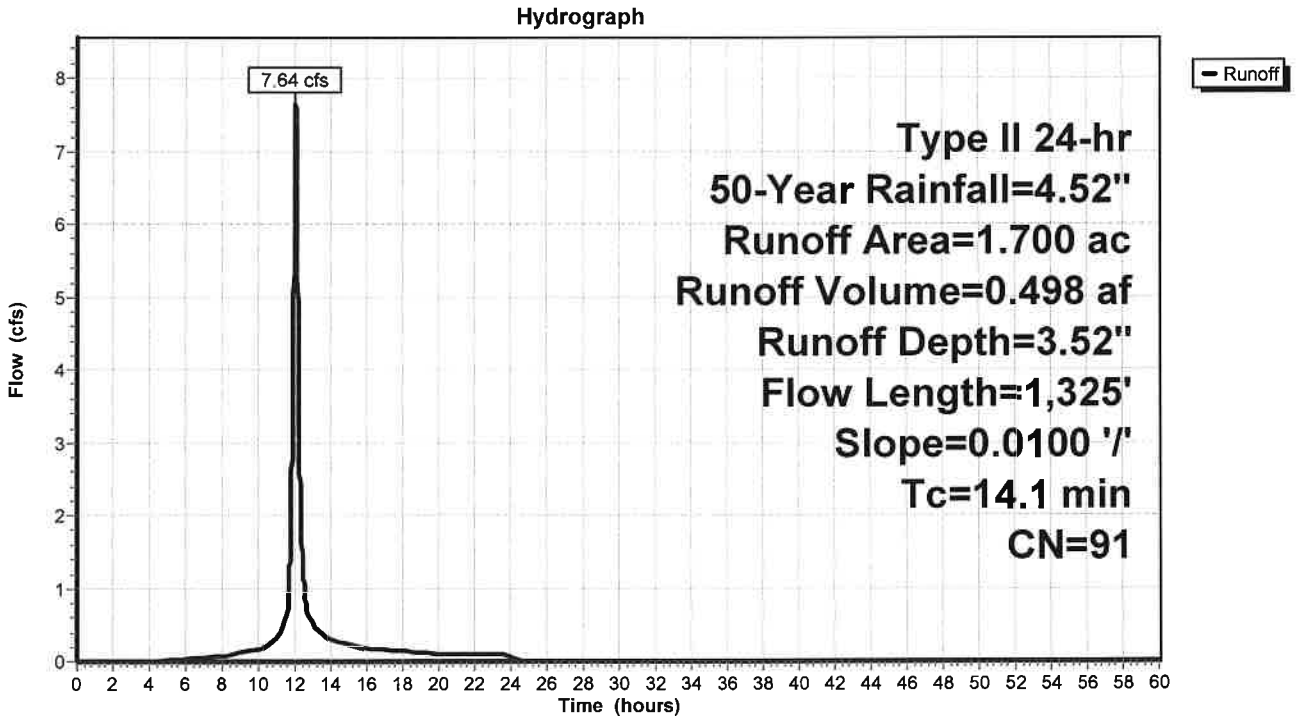
Runoff = 7.64 cfs @ 12.05 hrs, Volume= 0.498 af, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.10	0.00	0.00
3.00	0.16	0.00	0.00
4.00	0.22	0.00	0.00
5.00	0.28	0.01	0.02
6.00	0.36	0.02	0.03
7.00	0.45	0.05	0.05
8.00	0.54	0.09	0.07
9.00	0.66	0.15	0.12
10.00	0.82	0.24	0.17
11.00	1.06	0.40	0.34
12.00	3.00	2.07	**6.84**
13.00	3.49	2.53	**0.53**
14.00	3.71	2.74	0.30
15.00	3.86	2.88	0.23
16.00	3.98	3.00	0.18
17.00	4.08	3.09	0.16
18.00	4.16	3.17	0.14
19.00	4.24	3.25	0.12
20.00	4.30	3.31	0.10
21.00	4.36	3.36	0.09
22.00	4.42	3.42	0.09
23.00	4.47	3.47	0.09
24.00	**4.52**	**3.52**	0.08
25.00	4.52	3.52	0.00
26.00	4.52	3.52	0.00
27.00	4.52	3.52	0.00
28.00	4.52	3.52	0.00
29.00	4.52	3.52	0.00
30.00	4.52	3.52	0.00
31.00	4.52	3.52	0.00
32.00	4.52	3.52	0.00
33.00	4.52	3.52	0.00
34.00	4.52	3.52	0.00
35.00	4.52	3.52	0.00
36.00	4.52	3.52	0.00
37.00	4.52	3.52	0.00
38.00	4.52	3.52	0.00
39.00	4.52	3.52	0.00
40.00	4.52	3.52	0.00
41.00	4.52	3.52	0.00
42.00	4.52	3.52	0.00
43.00	4.52	3.52	0.00
44.00	4.52	3.52	0.00
45.00	4.52	3.52	0.00
46.00	4.52	3.52	0.00
47.00	4.52	3.52	0.00
48.00	4.52	3.52	0.00
49.00	4.52	3.52	0.00
50.00	4.52	3.52	0.00
51.00	4.52	3.52	0.00
52.00	4.52	3.52	0.00
53.00	4.52	3.52	0.00
54.00	4.52	3.52	0.00
55.00	4.52	3.52	0.00
56.00	4.52	3.52	0.00
57.00	4.52	3.52	0.00
58.00	4.52	3.52	0.00
59.00	4.52	3.52	0.00
60.00	4.52	3.52	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

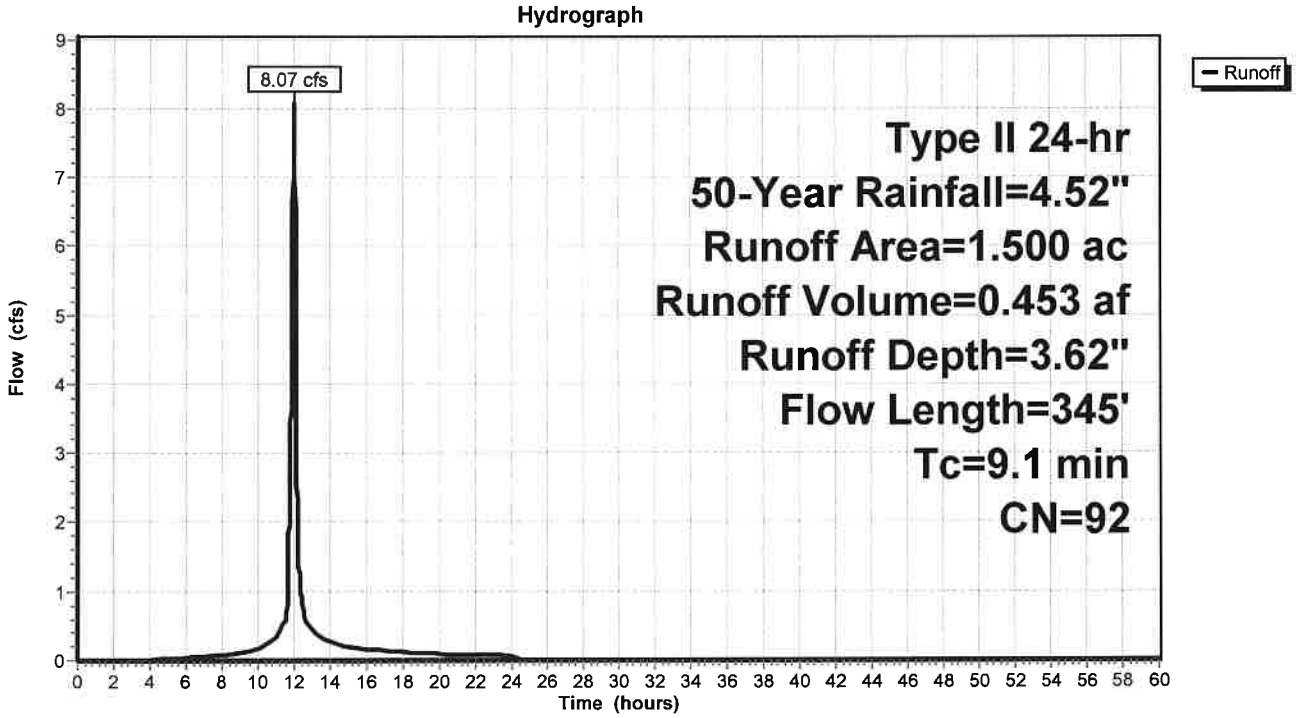
Runoff = 8.07 cfs @ 12.00 hrs, Volume= 0.453 af, Depth= 3.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	4.52	3.62	0.00
1.00	0.05	0.00	0.00	53.00	4.52	3.62	0.00
2.00	0.10	0.00	0.00	54.00	4.52	3.62	0.00
3.00	0.16	0.00	0.00	55.00	4.52	3.62	0.00
4.00	0.22	0.00	0.01	56.00	4.52	3.62	0.00
5.00	0.28	0.01	0.02	57.00	4.52	3.62	0.00
6.00	0.36	0.03	0.04	58.00	4.52	3.62	0.00
7.00	0.45	0.07	0.06	59.00	4.52	3.62	0.00
8.00	0.54	0.11	0.07	60.00	4.52	3.62	0.00
9.00	0.66	0.18	0.12				
10.00	0.82	0.27	0.17				
11.00	1.06	0.45	0.34				
12.00	3.00	2.16	**8.07**				
13.00	3.49	2.63	0.45				
14.00	3.71	2.83	0.26				
15.00	3.86	2.98	0.20				
16.00	3.98	3.10	0.16				
17.00	4.08	3.19	0.14				
18.00	4.16	3.28	0.12				
19.00	4.24	3.35	0.11				
20.00	4.30	3.41	0.09				
21.00	4.36	3.47	0.08				
22.00	4.42	3.52	0.08				
23.00	4.47	3.57	0.08				
24.00	**4.52**	**3.62**	0.07				
25.00	4.52	3.62	0.00				
26.00	4.52	3.62	0.00				
27.00	4.52	3.62	0.00				
28.00	4.52	3.62	0.00				
29.00	4.52	3.62	0.00				
30.00	4.52	3.62	0.00				
31.00	4.52	3.62	0.00				
32.00	4.52	3.62	0.00				
33.00	4.52	3.62	0.00				
34.00	4.52	3.62	0.00				
35.00	4.52	3.62	0.00				
36.00	4.52	3.62	0.00				
37.00	4.52	3.62	0.00				
38.00	4.52	3.62	0.00				
39.00	4.52	3.62	0.00				
40.00	4.52	3.62	0.00				
41.00	4.52	3.62	0.00				
42.00	4.52	3.62	0.00				
43.00	4.52	3.62	0.00				
44.00	4.52	3.62	0.00				
45.00	4.52	3.62	0.00				
46.00	4.52	3.62	0.00				
47.00	4.52	3.62	0.00				
48.00	4.52	3.62	0.00				
49.00	4.52	3.62	0.00				
50.00	4.52	3.62	0.00				
51.00	4.52	3.62	0.00				

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 3.57" for 50-Year event
Inflow = 12.80 cfs @ 12.06 hrs, Volume= 0.951 af
Outflow = 3.61 cfs @ 12.36 hrs, Volume= 0.907 af, Atten= 72%, Lag= 17.7 min
Primary = 3.61 cfs @ 12.36 hrs, Volume= 0.907 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 572.23' @ 12.36 hrs Surf.Area= 10,145 sf Storage= 18,837 cf

Plug-Flow detention time= 228.3 min calculated for 0.907 af (95% of inflow)
Center-of-Mass det. time= 158.8 min (1,051.4 - 892.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

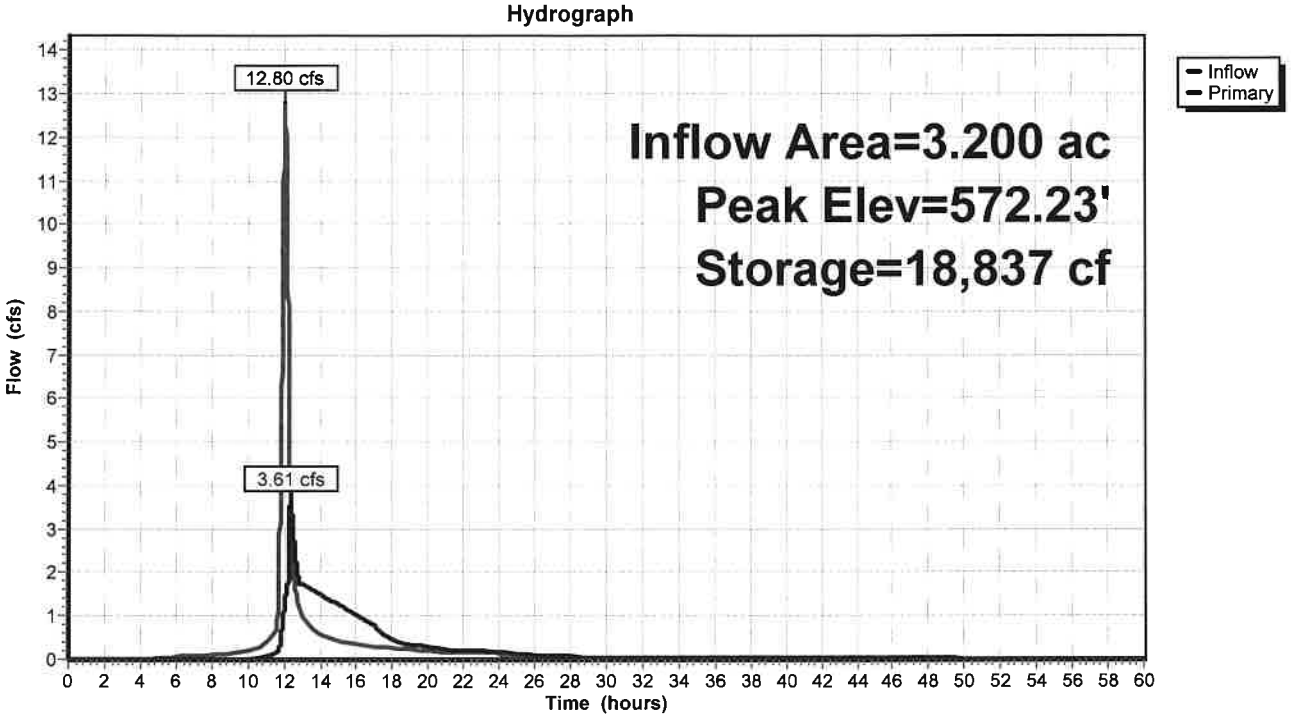
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

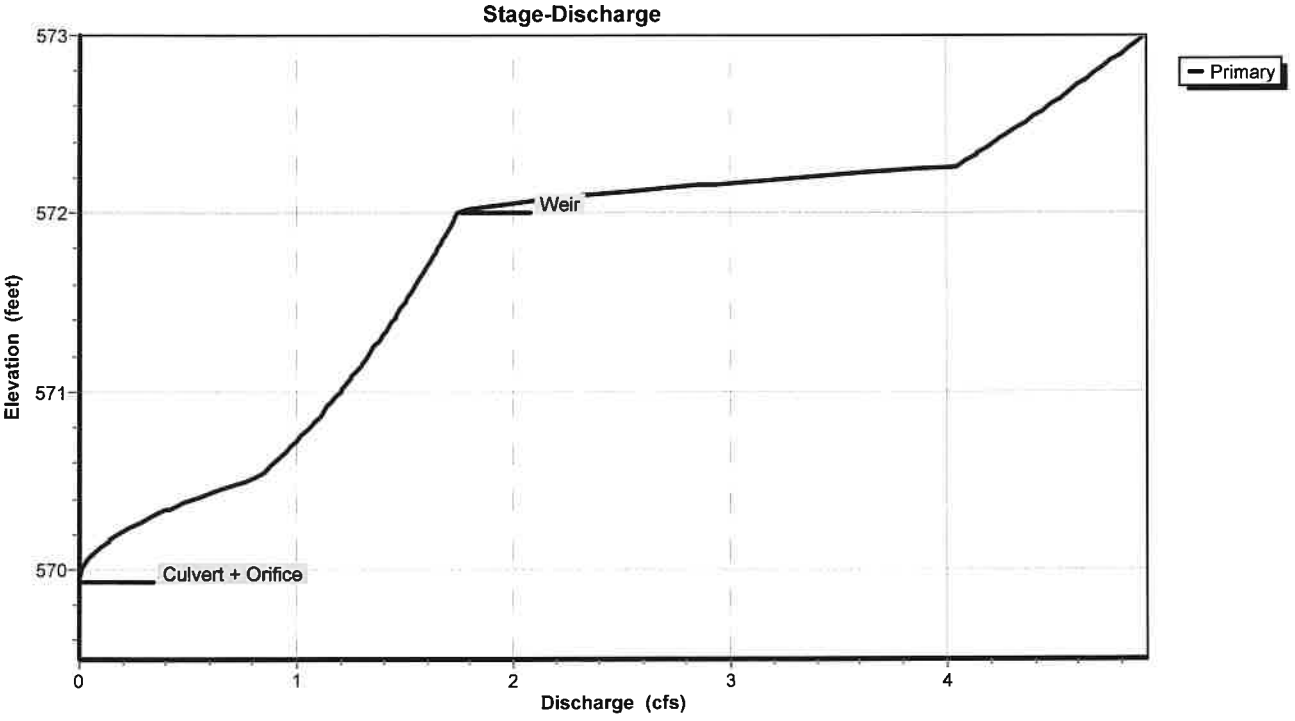
Primary OutFlow Max=3.60 cfs @ 12.36 hrs HW=572.23' (Free Discharge)
└**1=Culvert** (Passes 3.60 cfs of 4.00 cfs potential flow)
  ├**2=Orifice** (Orifice Controls 1.84 cfs @ 7.03 fps)
  └**3=Weir** (Weir Controls 1.76 cfs @ 1.56 fps)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

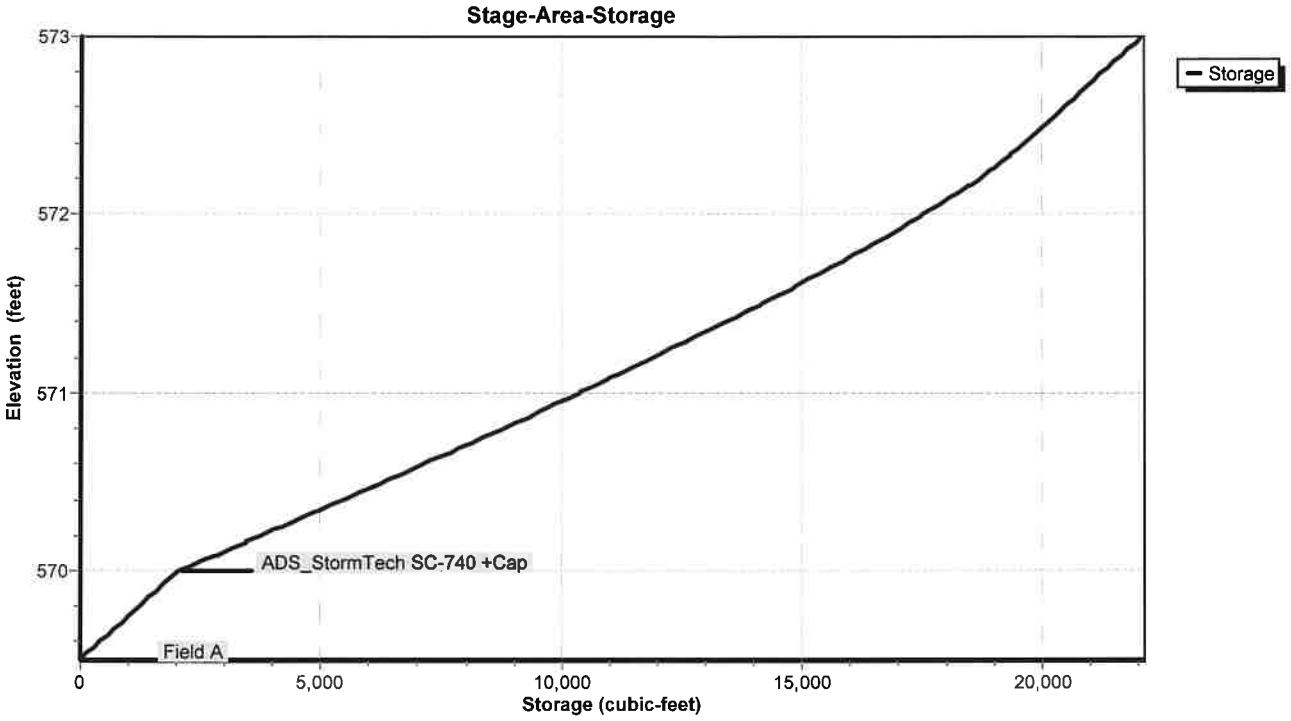


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	1	569.50	0.00
6.00	0.05	184	569.55	0.00
8.00	0.10	755	569.69	0.00
10.00	0.20	1,811	569.95	0.00
12.00	**11.66**	**9,752**	**570.92**	**1.15**
14.00	**0.59**	**14,219**	**571.51**	**1.50**
16.00	0.35	8,385	570.75	1.02
18.00	0.26	5,166	570.37	0.47
20.00	0.19	4,282	570.26	0.27
22.00	0.17	3,893	570.22	0.20
24.00	0.16	3,718	570.20	0.18
26.00	0.03	3,113	570.13	0.09
28.00	0.03	2,810	570.09	0.06
30.00	0.03	2,657	570.07	0.05
32.00	0.03	2,569	570.06	0.04
34.00	0.03	2,516	570.06	0.04
36.00	0.03	2,480	570.05	0.04
38.00	0.03	2,454	570.05	0.03
40.00	0.03	2,435	570.05	0.03
42.00	0.03	2,419	570.05	0.03
44.00	0.03	2,406	570.04	0.03
46.00	0.03	2,395	570.04	0.03
48.00	0.01	2,338	570.04	0.03
50.00	0.00	2,213	570.02	0.02
52.00	0.00	2,103	570.01	0.01
54.00	0.00	2,018	570.00	0.01
56.00	0.00	1,962	569.98	0.01
58.00	0.00	1,923	569.97	0.00
60.00	0.00	1,894	569.97	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 3.62" for 50-Year event
Inflow = 8.07 cfs @ 12.00 hrs, Volume= 0.453 af
Outflow = 5.22 cfs @ 12.09 hrs, Volume= 0.453 af, Atten= 35%, Lag= 5.1 min
Primary = 5.22 cfs @ 12.09 hrs, Volume= 0.453 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.93' @ 12.09 hrs Surf.Area= 6,611 sf Storage= 5,333 cf

Plug-Flow detention time= 214.9 min calculated for 0.453 af (100% of inflow)
Center-of-Mass det. time= 215.2 min (1,000.7 - 785.5)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

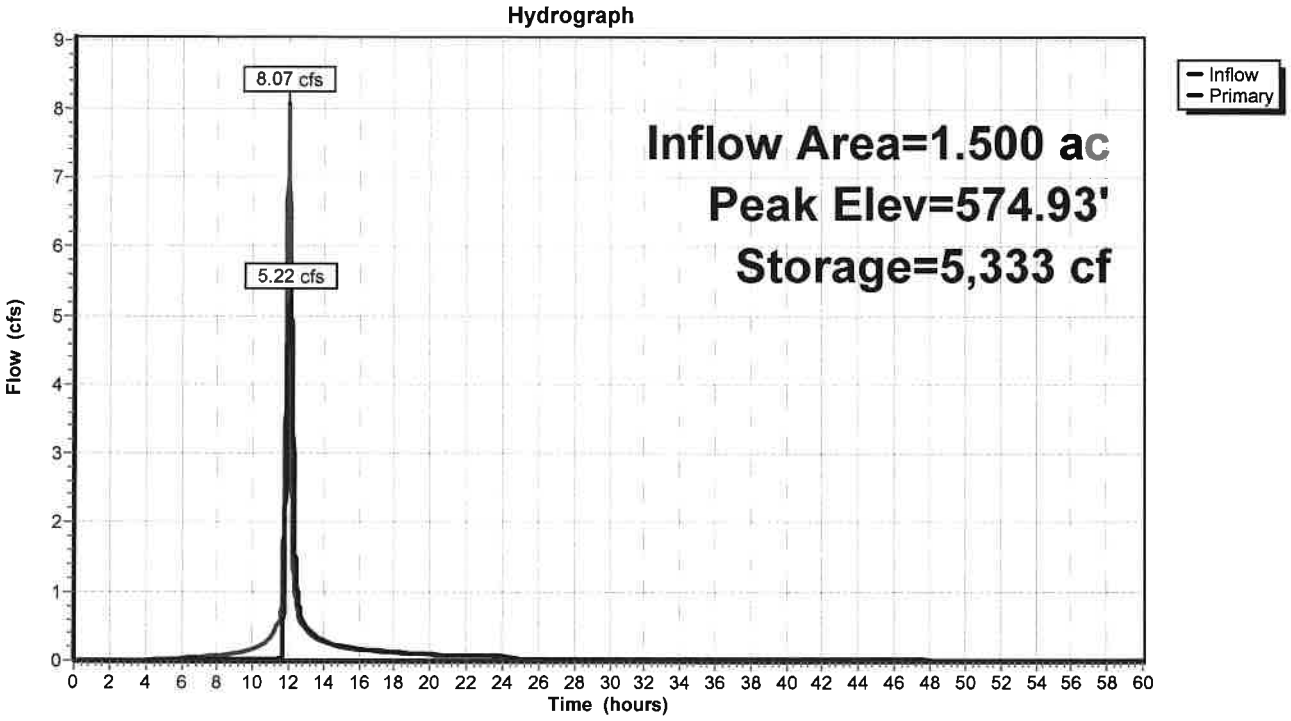
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

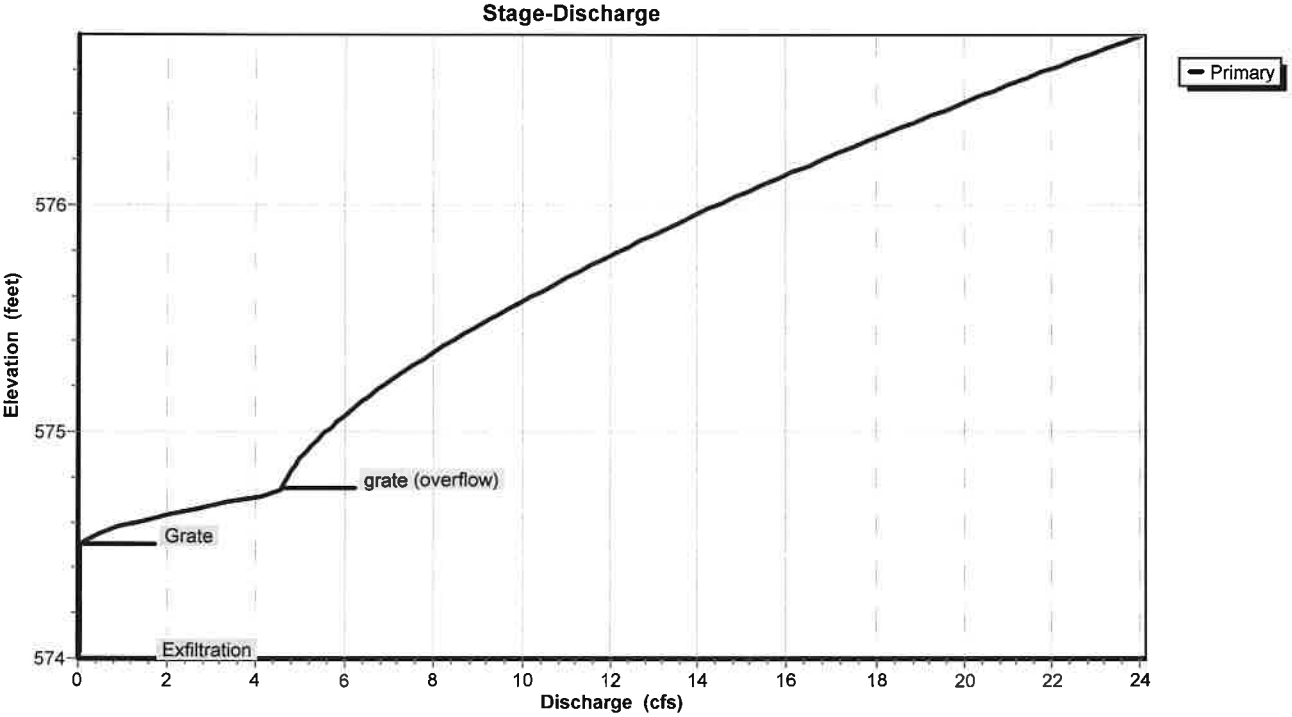
Primary OutFlow Max=5.22 cfs @ 12.09 hrs HW=574.93' (Free Discharge)
- **1=8" pipe** (Barrel Controls 4.73 cfs @ 6.02 fps)
  - **2=Grate** (Passes < 6.61 cfs potential flow)
  - **3=Exfiltration** (Passes < 0.04 cfs potential flow)
- **4=grate (overflow)** (Orifice Controls 0.49 cfs @ 1.36 fps)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

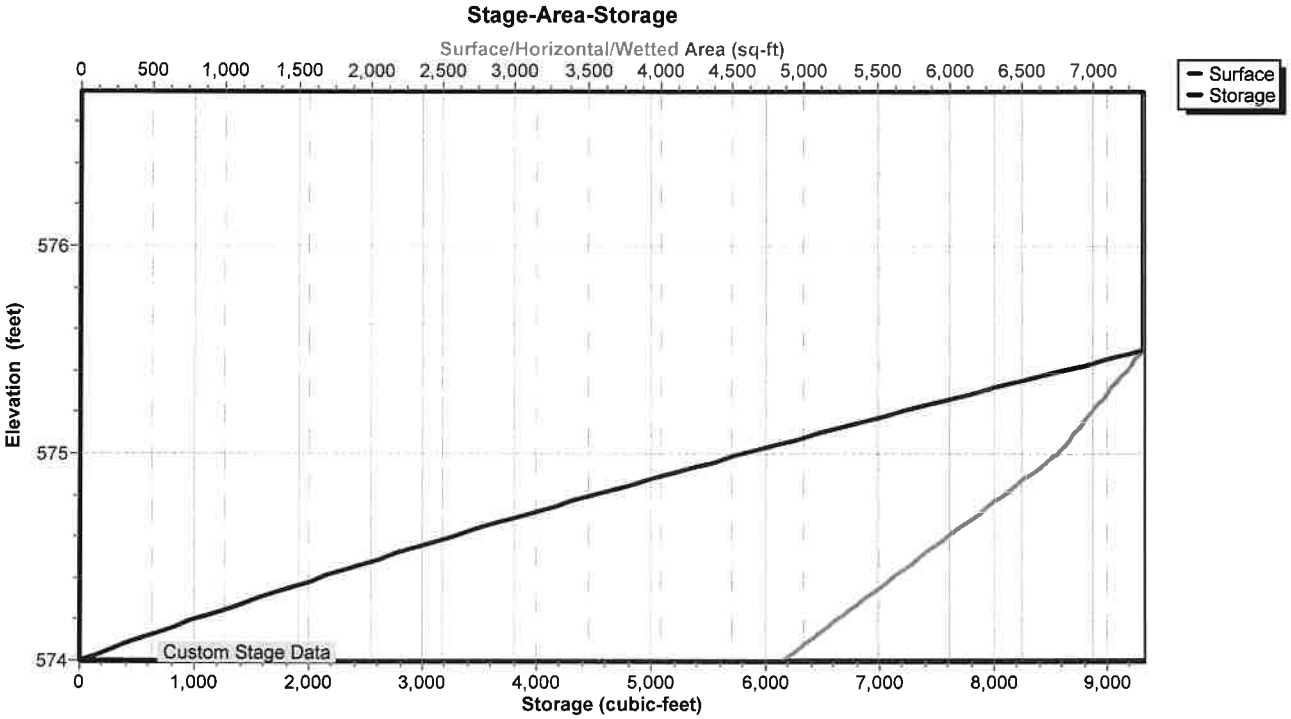


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.01	6	574.00	0.00
6.00	0.04	95	574.02	0.02
8.00	0.07	296	574.06	0.03
10.00	0.17	928	574.18	0.03
12.00	**8.07**	**4,720**	**574.84**	**4.83**
14.00	0.26	**2,846**	**574.53**	**0.28**
16.00	0.16	2,787	574.52	0.17
18.00	0.12	2,748	574.51	0.13
20.00	0.09	2,717	574.51	0.09
22.00	0.08	2,706	574.51	0.08
24.00	0.07	2,699	574.51	0.07
26.00	0.00	2,457	574.46	0.03
28.00	0.00	2,213	574.42	0.03
30.00	0.00	1,974	574.38	0.03
32.00	0.00	1,738	574.34	0.03
34.00	0.00	1,506	574.29	0.03
36.00	0.00	1,278	574.25	0.03
38.00	0.00	1,055	574.21	0.03
40.00	0.00	835	574.17	0.03
42.00	0.00	619	574.12	0.03
44.00	0.00	407	574.08	0.03
46.00	0.00	199	574.04	0.03
48.00	0.00	47	574.01	0.01
50.00	0.00	10	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=4.25"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=9.15 cfs 0.603 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=4.36"
Flow Length=345' Tc=9.1 min CN=92 Runoff=9.61 cfs 0.545 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=572.92' Storage=21,772 cf Inflow=14.92 cfs 1.148 af
Outflow=4.83 cfs 1.105 af

Pond 9P: Bioretention Area 3 Peak Elev=575.05' Storage=6,150 cf Inflow=9.61 cfs 0.545 af
Outflow=5.89 cfs 0.545 af

Total Runoff Area = 3.200 ac Runoff Volume = 1.148 af Average Runoff Depth = 4.31"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

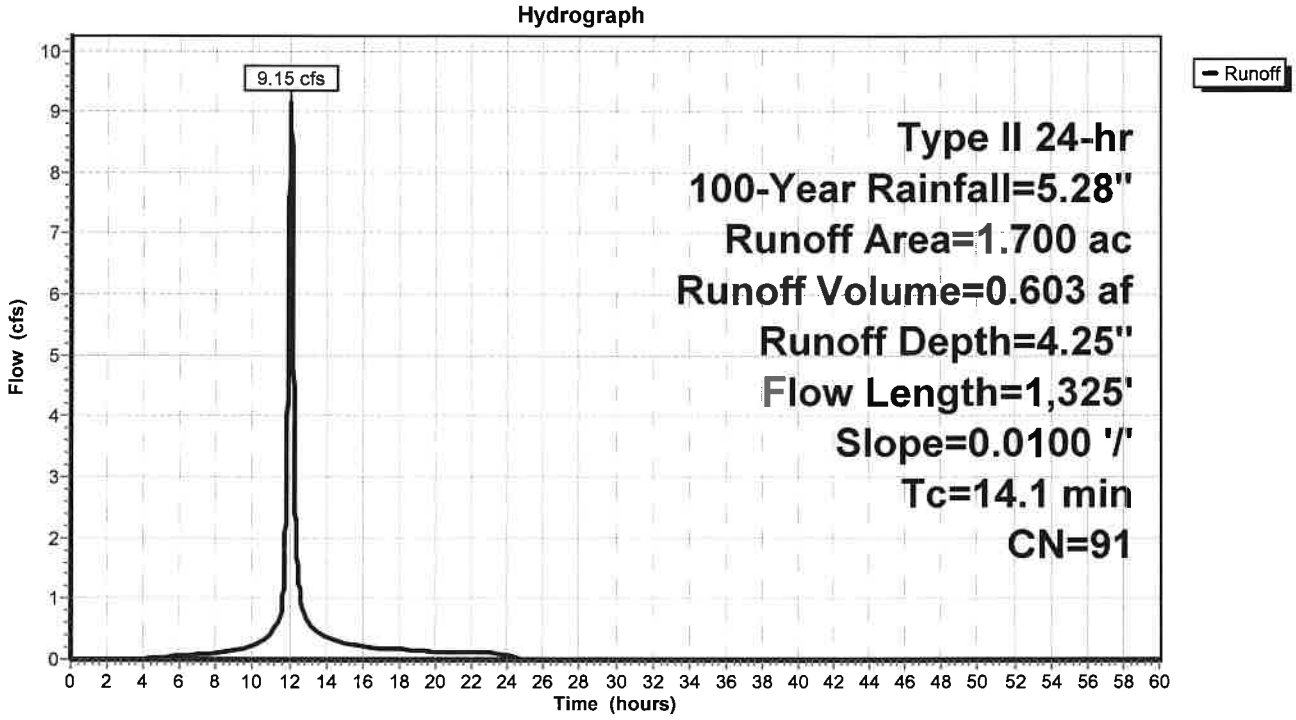
Runoff = 9.15 cfs @ 12.05 hrs, Volume= 0.603 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.28	4.25	0.00
1.00	0.06	0.00	0.00	53.00	5.28	4.25	0.00
2.00	0.12	0.00	0.00	54.00	5.28	4.25	0.00
3.00	0.18	0.00	0.00	55.00	5.28	4.25	0.00
4.00	0.25	0.00	0.01	56.00	5.28	4.25	0.00
5.00	0.33	0.02	0.03	57.00	5.28	4.25	0.00
6.00	0.42	0.04	0.05	58.00	5.28	4.25	0.00
7.00	0.52	0.08	0.07	59.00	5.28	4.25	0.00
8.00	0.63	0.13	0.10	60.00	5.28	4.25	0.00
9.00	0.78	0.21	0.16				
10.00	0.96	0.33	0.22				
11.00	1.24	0.54	0.43				
12.00	3.50	2.54	**8.21**				
13.00	4.08	3.09	**0.63**				
14.00	4.33	3.33	0.36				
15.00	4.51	3.50	0.28				
16.00	4.65	3.64	0.21				
17.00	4.76	3.75	0.18				
18.00	4.86	3.85	0.16				
19.00	4.95	3.93	0.14				
20.00	5.03	4.01	0.12				
21.00	5.09	4.07	0.11				
22.00	5.16	4.14	0.11				
23.00	5.22	4.20	0.10				
24.00	**5.28**	**4.25**	0.10				
25.00	5.28	4.25	0.00				
26.00	5.28	4.25	0.00				
27.00	5.28	4.25	0.00				
28.00	5.28	4.25	0.00				
29.00	5.28	4.25	0.00				
30.00	5.28	4.25	0.00				
31.00	5.28	4.25	0.00				
32.00	5.28	4.25	0.00				
33.00	5.28	4.25	0.00				
34.00	5.28	4.25	0.00				
35.00	5.28	4.25	0.00				
36.00	5.28	4.25	0.00				
37.00	5.28	4.25	0.00				
38.00	5.28	4.25	0.00				
39.00	5.28	4.25	0.00				
40.00	5.28	4.25	0.00				
41.00	5.28	4.25	0.00				
42.00	5.28	4.25	0.00				
43.00	5.28	4.25	0.00				
44.00	5.28	4.25	0.00				
45.00	5.28	4.25	0.00				
46.00	5.28	4.25	0.00				
47.00	5.28	4.25	0.00				
48.00	5.28	4.25	0.00				
49.00	5.28	4.25	0.00				
50.00	5.28	4.25	0.00				
51.00	5.28	4.25	0.00				

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

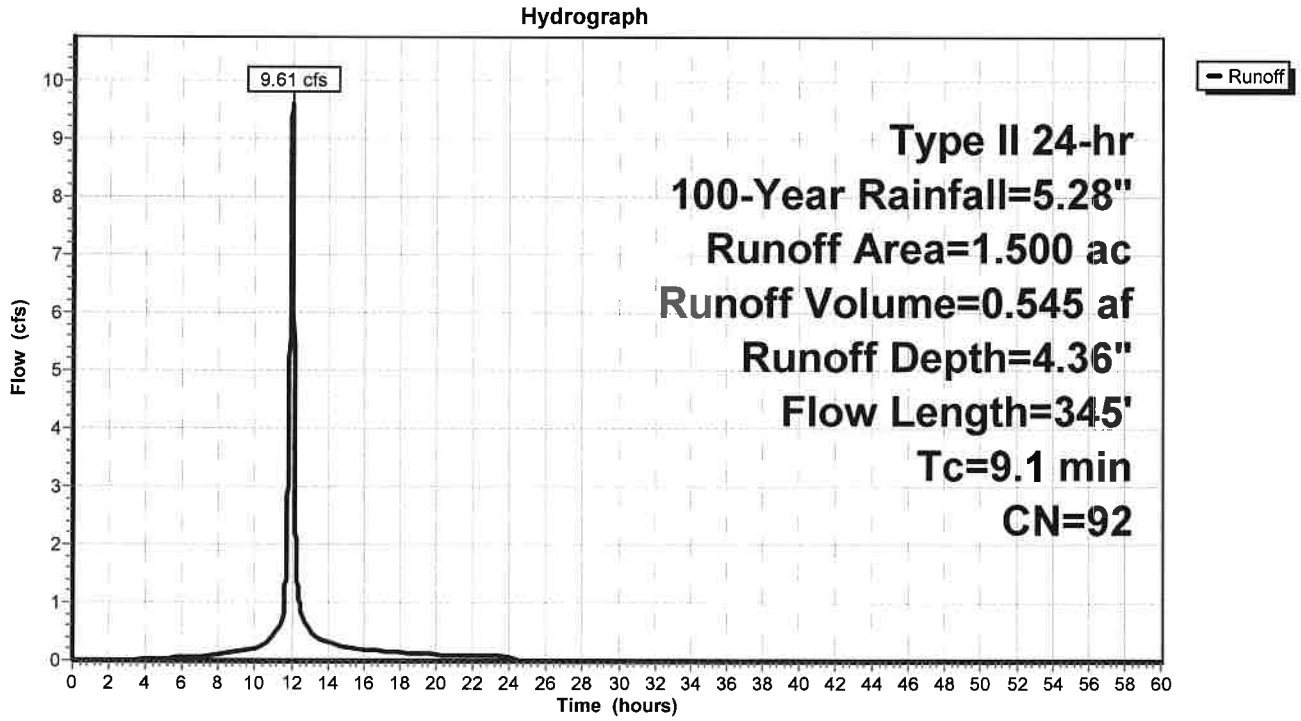
Runoff = 9.61 cfs @ 12.00 hrs, Volume= 0.545 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.18	0.00	0.00
4.00	0.25	0.01	0.02
5.00	0.33	0.02	0.03
6.00	0.42	0.06	0.05
7.00	0.52	0.10	0.08
8.00	0.63	0.16	0.10
9.00	0.78	0.25	0.16
10.00	0.96	0.37	0.22
11.00	1.24	0.59	0.42
12.00	3.50	2.64	**9.61**
13.00	4.08	3.19	0.53
14.00	4.33	3.44	0.31
15.00	4.51	3.61	0.24
16.00	4.65	3.74	0.19
17.00	4.76	3.86	0.16
18.00	4.86	3.96	0.14
19.00	4.95	4.04	0.12
20.00	5.03	4.12	0.10
21.00	5.09	4.18	0.10
22.00	5.16	4.24	0.09
23.00	5.22	4.30	0.09
24.00	**5.28**	**4.36**	0.09
25.00	5.28	4.36	0.00
26.00	5.28	4.36	0.00
27.00	5.28	4.36	0.00
28.00	5.28	4.36	0.00
29.00	5.28	4.36	0.00
30.00	5.28	4.36	0.00
31.00	5.28	4.36	0.00
32.00	5.28	4.36	0.00
33.00	5.28	4.36	0.00
34.00	5.28	4.36	0.00
35.00	5.28	4.36	0.00
36.00	5.28	4.36	0.00
37.00	5.28	4.36	0.00
38.00	5.28	4.36	0.00
39.00	5.28	4.36	0.00
40.00	5.28	4.36	0.00
41.00	5.28	4.36	0.00
42.00	5.28	4.36	0.00
43.00	5.28	4.36	0.00
44.00	5.28	4.36	0.00
45.00	5.28	4.36	0.00
46.00	5.28	4.36	0.00
47.00	5.28	4.36	0.00
48.00	5.28	4.36	0.00
49.00	5.28	4.36	0.00
50.00	5.28	4.36	0.00
51.00	5.28	4.36	0.00
52.00	5.28	4.36	0.00
53.00	5.28	4.36	0.00
54.00	5.28	4.36	0.00
55.00	5.28	4.36	0.00
56.00	5.28	4.36	0.00
57.00	5.28	4.36	0.00
58.00	5.28	4.36	0.00
59.00	5.28	4.36	0.00
60.00	5.28	4.36	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 4.31" for 100-Year event
Inflow = 14.92 cfs @ 12.06 hrs, Volume= 1.148 af
Outflow = 4.83 cfs @ 12.36 hrs, Volume= 1.105 af, Atten= 68%, Lag= 18.1 min
Primary = 4.83 cfs @ 12.36 hrs, Volume= 1.105 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 572.92' @ 12.36 hrs Surf.Area= 10,145 sf Storage= 21,772 cf

Plug-Flow detention time= 201.7 min calculated for 1.105 af (96% of inflow)
Center-of-Mass det. time= 143.6 min (1,016.5 - 873.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

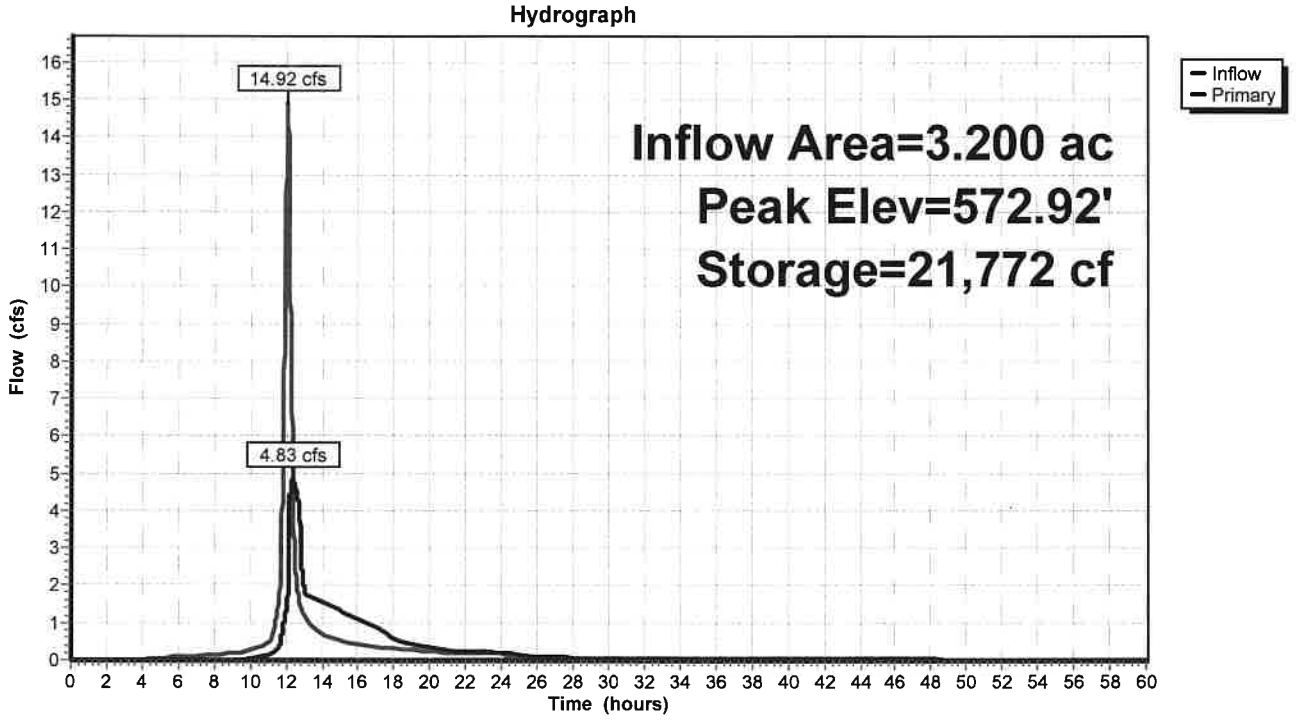
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

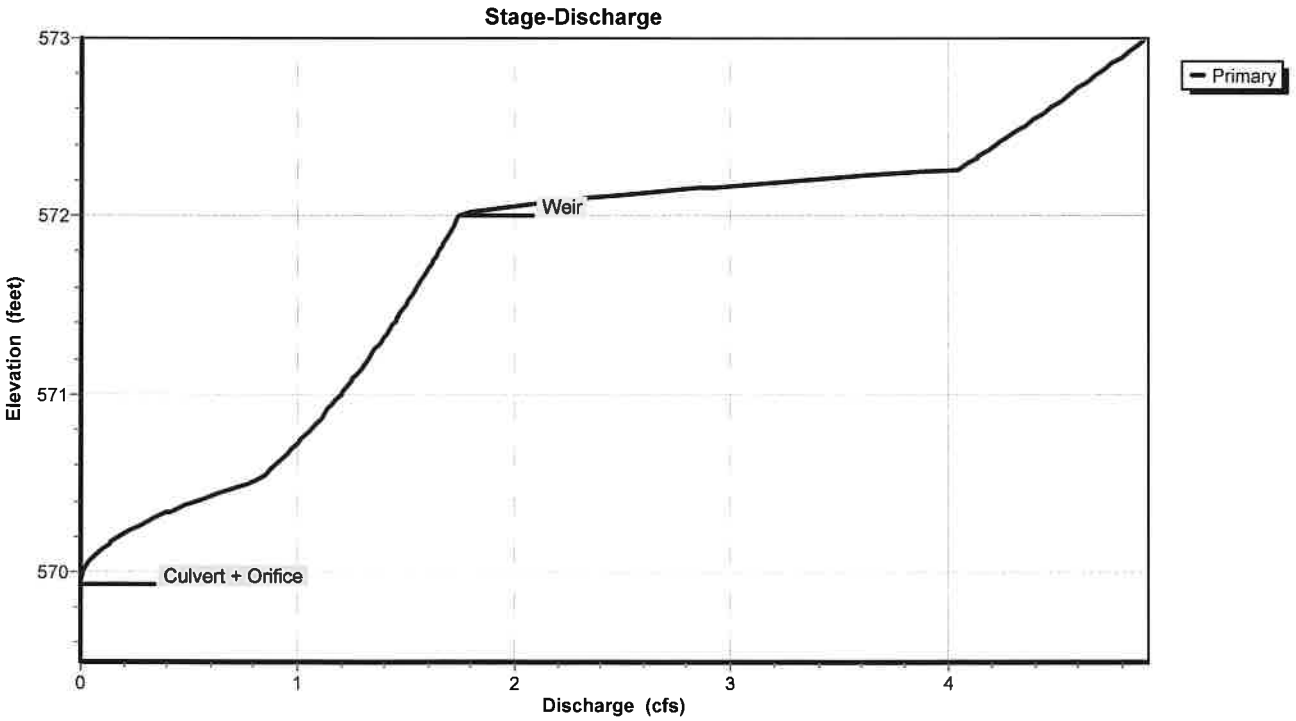
Primary OutFlow Max=4.83 cfs @ 12.36 hrs HW=572.92' (Free Discharge)
↑**1=Culvert** (Barrel Controls 4.83 cfs @ 6.16 fps)
↑**2=Orifice** (Passes < 2.12 cfs potential flow)
3=Weir (Passes < 13.95 cfs potential flow)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

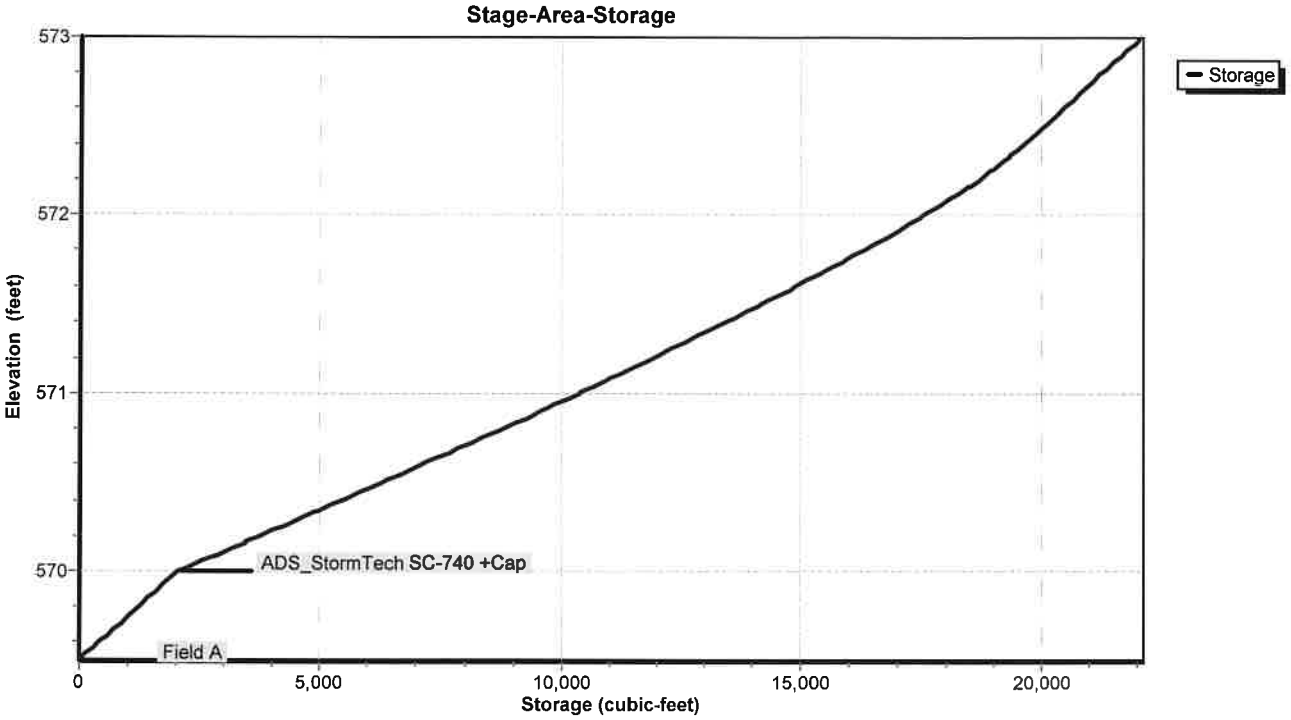


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.01	16	569.50	0.00
6.00	0.08	340	569.58	0.00
8.00	0.13	1,076	569.77	0.00
10.00	0.25	2,364	570.04	0.03
12.00	**13.40**	**12,150**	**571.23**	**1.34**
14.00	**0.69**	**15,059**	**571.63**	**1.56**
16.00	0.41	9,280	570.86	1.10
18.00	0.31	5,592	570.42	0.57
20.00	0.23	4,514	570.29	0.32
22.00	0.20	4,084	570.24	0.24
24.00	0.19	3,896	570.22	0.21
26.00	0.03	3,188	570.13	0.10
28.00	0.03	2,846	570.09	0.07
30.00	0.03	2,675	570.08	0.05
32.00	0.03	2,579	570.06	0.04
34.00	0.03	2,522	570.06	0.04
36.00	0.03	2,484	570.05	0.04
38.00	0.03	2,457	570.05	0.03
40.00	0.03	2,436	570.05	0.03
42.00	0.03	2,420	570.05	0.03
44.00	0.03	2,407	570.04	0.03
46.00	0.03	2,395	570.04	0.03
48.00	0.01	2,341	570.04	0.03
50.00	0.00	2,216	570.02	0.02
52.00	0.00	2,105	570.01	0.01
54.00	0.00	2,020	570.00	0.01
56.00	0.00	1,963	569.98	0.01
58.00	0.00	1,923	569.97	0.00
60.00	0.00	1,895	569.97	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 4.36" for 100-Year event
Inflow = 9.61 cfs @ 12.00 hrs, Volume= 0.545 af
Outflow = 5.89 cfs @ 12.09 hrs, Volume= 0.545 af, Atten= 39%, Lag= 5.5 min
Primary = 5.89 cfs @ 12.09 hrs, Volume= 0.545 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.05' @ 12.09 hrs Surf.Area= 6,805 sf Storage= 6,150 cf

Plug-Flow detention time= 184.7 min calculated for 0.545 af (100% of inflow)
Center-of-Mass det. time= 185.0 min (965.5 - 780.5)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

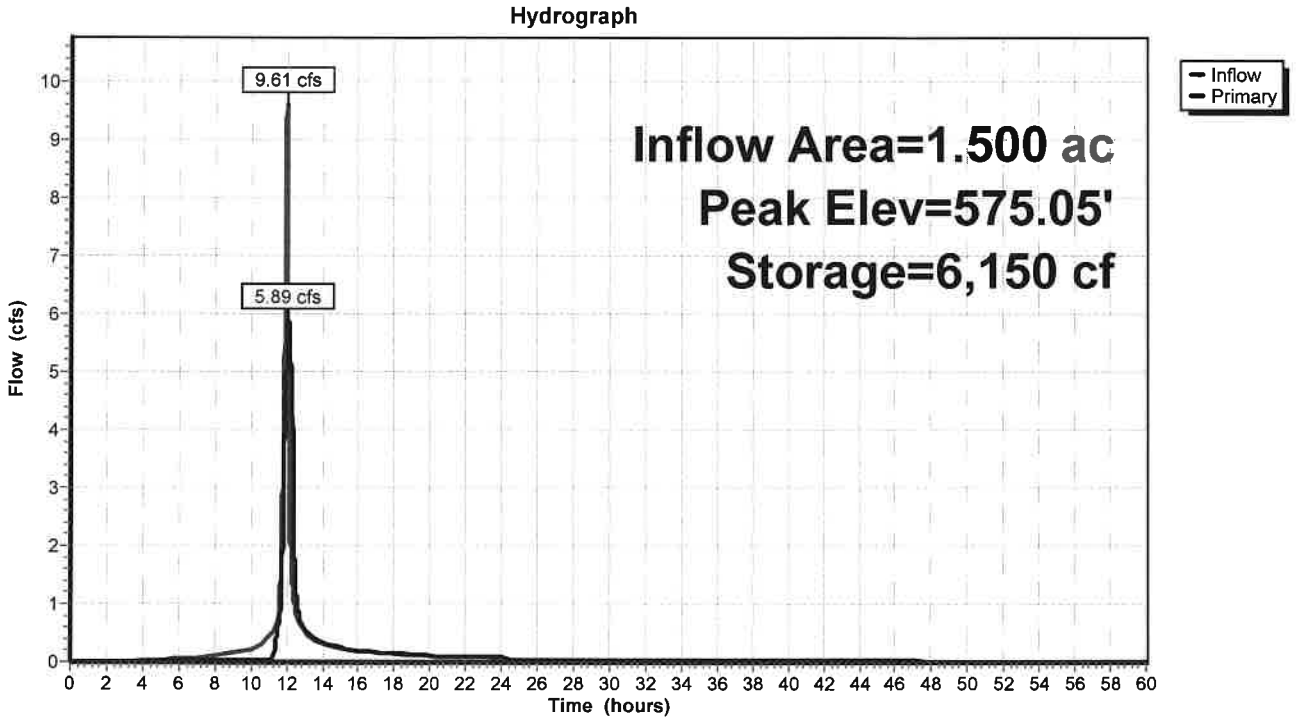
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

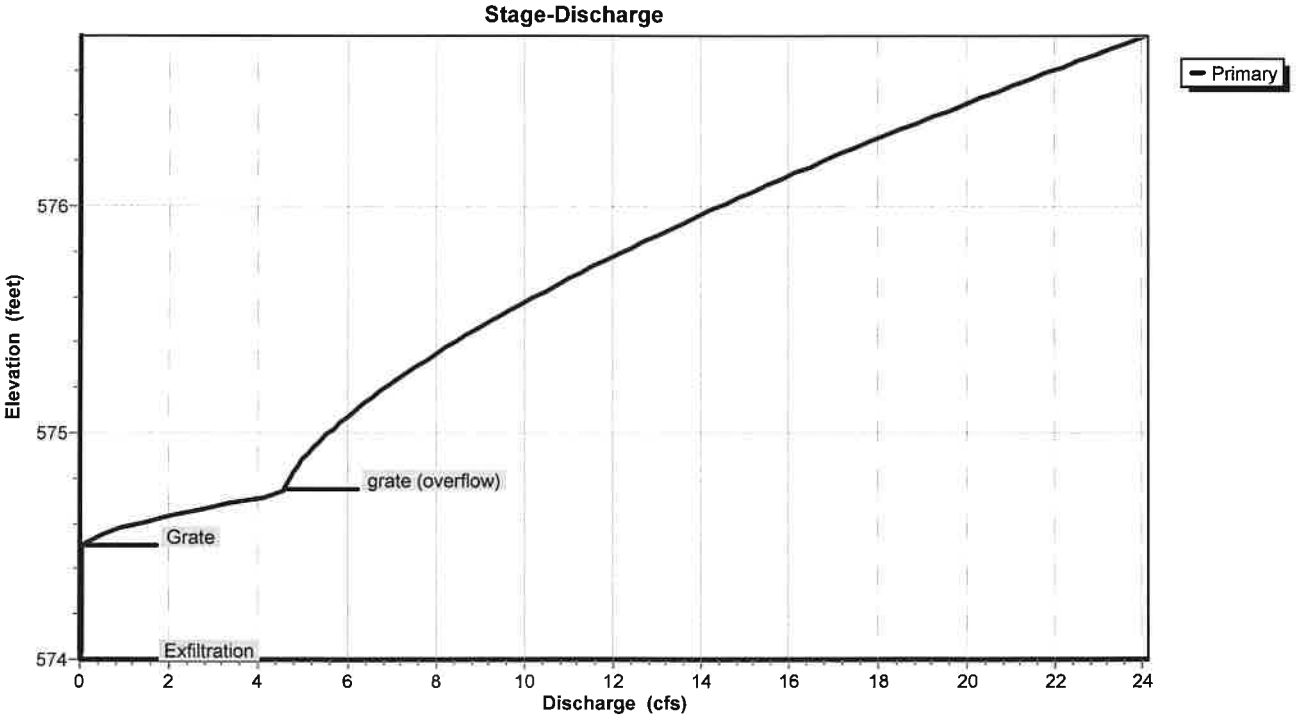
Primary OutFlow Max=5.88 cfs @ 12.09 hrs HW=575.05' (Free Discharge)
- **1=8" pipe** (Barrel Controls 4.82 cfs @ 6.14 fps)
  - **2=Grate** (Passes < 7.49 cfs potential flow)
  - **3=Exfiltration** (Passes < 0.04 cfs potential flow)
- **4=grate (overflow)** (Orifice Controls 1.06 cfs @ 1.76 fps)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

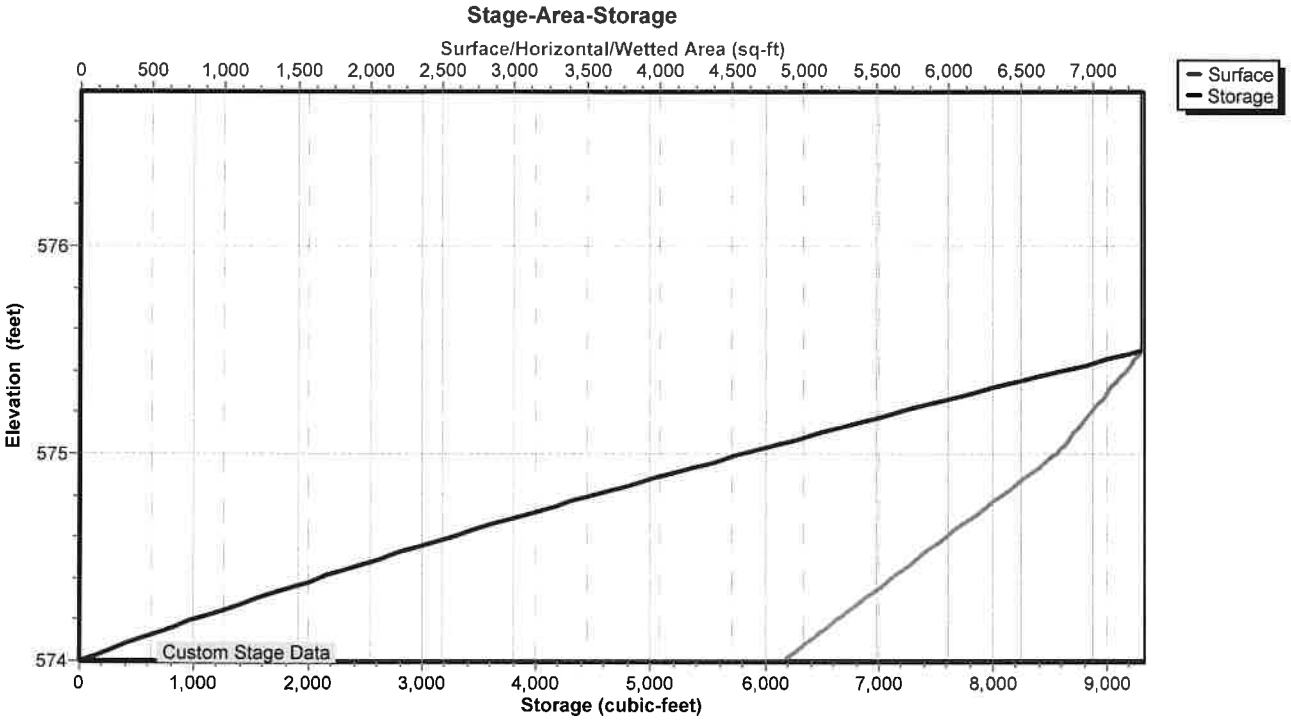


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.02	22	574.00	0.00
6.00	0.05	149	574.03	0.03
8.00	0.10	484	574.10	0.03
10.00	0.22	1,353	574.27	0.03
12.00	**9.61**	**5,288**	**574.92**	**5.19**
14.00	0.31	**2,872**	**574.54**	**0.33**
16.00	0.19	2,803	574.52	0.19
18.00	0.14	2,769	574.52	0.15
20.00	0.10	2,732	574.51	0.11
22.00	0.09	2,719	574.51	0.10
24.00	0.09	2,712	574.51	0.09
26.00	0.00	2,463	574.47	0.03
28.00	0.00	2,219	574.42	0.03
30.00	0.00	1,979	574.38	0.03
32.00	0.00	1,743	574.34	0.03
34.00	0.00	1,511	574.29	0.03
36.00	0.00	1,283	574.25	0.03
38.00	0.00	1,059	574.21	0.03
40.00	0.00	839	574.17	0.03
42.00	0.00	624	574.13	0.03
44.00	0.00	412	574.08	0.03
46.00	0.00	204	574.04	0.03
48.00	0.00	49	574.01	0.01
50.00	0.00	11	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	1	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Green Infrastructure & Water Quality Calculations

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Version 1.7
Last Updated: 2/22/21

Total Water Quality Volume Calculation
WQv(acre-feet) = [(P)(Rv)(A)] /12

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?.....	

Design Point:	1	
P=	1.00	*inch*

Breakdown of Subcatchments

Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Rv	WQv *(ft^3)*	Description
1	6.10	3.30	54%	0.54	11,888	
2	1.00	0.00	0%	0.05	182	
3	4.40	2.70	61%	0.60	9,620	
4	1.70	1.00	59%	0.58	3,576	
5	1.50	1.00	67%	0.65	3,539	
6						
7						
8						
9						
10						
Subtotal (1-30)	14.70	8.00	54%	0.54	**28,804**	**Subtotal 1**
Total	14.70	8.00	54%	0.54	**28,804**	**Initial WQv**

Identify Runoff Reduction Techniques By Area

Technique	Total Contributing Area *(Acre)*	Contributing Impervious Area *(Acre)*	Notes
Conservation of Natural Areas	1.00	0.00	*minimum 10,000 sf*
Riparian Buffers	0.00	0.00	*maximum contributing length 75 feet to 150 feet*
Filter Strips	0.00	0.00	
Tree Planting	0.00	0.00	*Up to 100 sf directly connected impervious area may be subtracted per tree*
Total	**1.00**	**0.00**	

Recalculate WQv after application of Area Reduction Techniques

	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Runoff Coefficient Rv	WQv *(ft^3)*
"<<Initial WQv"	14.70	8.00	54%	0.54	28,804
Subtract Area	-1.00	0.00			
WQv adjusted after Area Reductions	**13.70**	**8.00**	58%	0.58	28,623
Disconnection of Rooftops		0.00			
Adjusted WQv after Area Reduction and Rooftop Disconnect	13.70	8.00	58%	0.58	**28,623**
WQv reduced by Area Reduction techniques					182

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Total Water Quality Volume Calculation

WQv(acre-feet) = [(P)(Rv)(A)] /12

All Subcatchments						
Catchment	**Total Area** *(Acres)*	**Impervious Cover** *(Acres)*	**Percent Impervious** *%*	**Runoff Coefficient** *Rv*	**WQv** *(ft^3)*	**Description**
1	6.10	3.30	0.54	0.54	11888.25	
2	1.00	0.00	0.00	0.05	182	
3	4.40	2.70	0.61	0.60	9619.50	
4	1.70	1.00	0.59	0.58	3575.55	
5	1.50	1.00	0.67	0.65	3539.25	
6						
7						
8						
9						
10						
11						
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Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor &

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
1	6.10	3.30	0.54	0.54	11888.25	1.00	
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	54%	0.54	11,888	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information			
Soil Group	D		
Soil Infiltration Rate	0.00	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		11,888	*ft^3*	
Enter Depth of Soil Media	*df*	1.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**8916**	***ft^2***	

Determine Actual Bio-Retention Area			
Filter Width	100	*ft*	
Filter Length	110	*ft*	
Filter Area	11000	*ft^2*	
Actual Volume Provided	14667	*ft^3*	

Determine Runoff Reduction				
Is the Bioretention contributing flow to another practice?			Select Practice	
RRv	5,867			
RRv applied	**5,867**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	6,022	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	
Volume Directed	0	*ft^3*	This volume is directed another practice	
Sizing √	OK		*Check to be sure Area provided ≥ Af*	

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Bioretention Worksheet

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor & Schueler, 1996)

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
5	1.50	1.00	0.67	0.65	3539.25	1.00	
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	67%	0.65	3,539	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information			
Soil Group	D		
Soil Infiltration Rate	0.00	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		3,539	*ft^3*	
Enter Depth of Soil Media	*df*	1.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**2654**	***ft^2***	

Determine Actual Bio-Retention Area			
Filter Width	49	*ft*	
Filter Length	100	*ft*	
Filter Area	4900	*ft^2*	
Actual Volume Provided	6533	*ft^3*	

Determine Runoff Reduction				
Is the Bioretention contributing flow to another practice?		No	Select Practice	
RRv	2,613			
RRv applied	**2,613**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	926	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	
Volume Directed	0	*ft^3*	This volume is directed another practice	
Sizing √	OK		*Check to be sure Area provided ≥ Af*	

(For use on HSG C or D Soils with underdrains)

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Conservation of Natural Areas

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice

Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (ft^3)	Precipitation (in)	Description
2	1.00	0.00	0.00	0.05	181.50	1.00	

Design Elements

Is Contiguous Area ≥ 10,000 ft2?	*Yes*
Will limits of disturbance be clearly shown on all construction drawings and marked in field/project development site with structural barriers?	*Yes*
Is the Conservation area located in an acceptable conservation easement instrument that ensures perpetual protection of proposed area?	*Yes*
Does the easement specify how the natural area vegetation will be managed and boundaries will be marked?	*Yes*
Does the conservation area receive runoff from other contributing areas?	*No*
Does Conservation Area drain to a Design Point?	*No*
Is Sheet Flow to Riparian Buffer or another area based practice already being Used for this area?	*No*

Are All Criteria in Section 5.3.1 Met?	*Yes*

Area Reduction Adjustments

Subtract	***1.00***	***Acres from Total Area***
Subtract	***0.00***	***Acres from Total Impervious Area***

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Minimum RRv

Enter the Soils Data for the site		
Soil Group	Acres	S
A		55%
B		40%
C		30%
D	**17.40**	20%
Total Area	17.4	
Calculate the Minimum RRv		
S =	**0.20**	
Impervious =	8.00	*acre*
Precipitation	1	*in*
Rv	0.95	
Minimum RRv	**5,518**	***ft3***
	0.13	af

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

NOI QUESTIONS

#	NOI Question	Reported Value	
		cf	af
28	Total Water Quality Volume (WQv) Required	28804	*0.661*
30	Total RRV Provided	8662	*0.199*
31	Is RRv Provided ≥WQv Required?	No	
32	Minimum RRv	5518	*0.127*
32a	Is RRv Provided ≥ Minimum RRv Required?	Yes	
33a	Total WQv Treated	159626	*3.664*
34	Sum of Volume Reduced & Treated	168287	*3.863*
34	Sum of Volume Reduced and Treated	168287	*3.863*
35	Is Sum RRv Provided and WQv Provided ≥WQv Required?	Yes	

Apply Peak Flow Attenuation			
36	Channel Protection	*Cpv*	
37	Overbank	*Qp*	
37	Extreme Flood Control	*Qf*	
	Are Quantity Control requirements met?		

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Runoff Reduction Volume and Treated volumes						
	Runoff Reduction Techiques/Standard SMPs		Total Contributing Area	Total Contributing Impervious Area	WQv Reduced (RRv)	WQv Treated
			(acres)	(acres)	cf	cf
Area/Volume Reduction	Conservation of Natural Areas	RR-1	1.00	0.00		
	Sheetflow to Riparian Buffers/Filter Strips	RR-2	0.00	0.00		
	Tree Planting/Tree Pit	RR-3	0.00	0.00		
	Disconnection of Rooftop Runoff	RR-4		0.00		
	Vegetated Swale	RR-5	0.00	0.00	0	
	Rain Garden	RR-6	0.00	0.00	0	
	Stormwater Planter	RR-7	0.00	0.00	0	
	Rain Barrel/Cistern	RR-8	0.00	0.00	0	
	Porous Pavement	RR-9	0.00	0.00	0	
	Green Roof (Intensive & Extensive)	RR-10	0.00	0.00	0	
Standard SMPs w/RRv Capacity	Infiltration Trench	I-1	0.00	0.00	0	0
	Infiltration Basin	I-2	0.00	0.00	0	0
	Dry Well	I-3	0.00	0.00	0	0
	Underground Infiltration System	I-4	0.00			
	Bioretention & Infiltration Bioretention	F-5	7.60	4.30	8480	6948
	Dry swale	O-1	0.00	0.00	0	0
Standard SMPs	Micropool Extended Detention (P-1)	P-1				
	Wet Pond (P-2)	P-2				
	Wet Extended Detention (P-3)	P-3				
	Multiple Pond system (P-4)	P-4				
	Pocket Pond (p-5)	P-5	9.8	3.40		152678.000
	Surface Sand filter (F-1)	F-1				
	Underground Sand filter (F-2)	F-2				
	Perimeter Sand Filter (F-3)	F-3				
	Organic Filter (F-4	F-4				
	Shallow Wetland (W-1)	W-1				
	Extended Detention Wetland (W-2	W-2				
	Pond/Wetland System (W-3)	W-3				
	Pocket Wetland (W-4)	W-4				
	Wet Swale (O-2)	O-2				
Totals by Area Reduction →			1.00	0.00	182	
Totals by Volume Reduction →			0.00	0.00	0	
Totals by Standard SMP w/RRV →			7.60	4.30	8480	6948
Totals by Standard SMP →			9.80	3.40		152678
Totals (Area + Volume + all SMPs) →			18.40	7.70	8,662	159,626
	Impervious Cover √	error				

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 6P: WQv

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
563.00	710	0
563.15	776	111
563.30	843	233
563.45	909	364
563.60	975	506
563.75	1,042	657
563.90	1,108	818
564.05	1,181	989
564.20	1,267	1,173
564.35	1,353	1,369
564.50	1,439	1,579
564.65	1,524	1,801
564.80	1,610	2,036
564.95	1,696	2,284
565.10	1,796	2,546
565.25	1,901	2,823
565.40	2,007	3,116
565.55	2,113	3,425
565.70	2,219	3,750
565.85	2,324	4,090
566.00	2,430	4,447
566.15	2,561	4,821
566.30	2,692	5,215
566.45	2,822	5,629
566.60	2,953	6,062
566.75	3,084	6,515
566.90	3,215	6,987
567.05	3,356	7,479
567.20	3,519	7,995
567.35	3,681	8,535
567.50	3,844	9,100
567.65	4,007	9,688
567.80	4,169	10,301
567.95	4,332	10,939
568.10	4,731	11,613
568.25	5,249	12,361
568.40	5,767	13,188
568.55	6,285	14,091
568.70	6,802	15,073
568.85	7,320	16,132
569.00	7,838	17,269
569.15	8,402	18,487
569.30	8,965	19,790
569.45	9,529	21,177
569.60	10,093	22,648
569.75	10,657	24,204
569.90	11,220	25,845
570.05	11,796	27,571
570.20	12,398	29,385
570.35	13,000	31,290
570.50	13,601	33,285
570.65	14,202	35,371
570.80	14,804	37,546
570.95	15,406	39,812
571.10	16,056	42,170
571.25	16,731	44,629
571.40	17,406	47,189
571.55	18,081	49,851
571.70	18,756	52,614
571.85	19,431	55,478
572.00	20,106	58,443
572.15	20,820	61,512
572.30	21,534	64,689
572.45	22,248	67,973
572.60	22,961	71,363
572.75	23,675	74,861
572.90	24,389	78,466
573.05	25,107	82,178
573.20	25,834	85,998
573.35	26,561	89,928
573.50	27,288	93,967
573.65	28,014	98,114
573.80	28,741	102,371
573.95	29,468	106,737
574.10	32,660	111,335
574.25	37,086	116,565
574.40	41,511	122,460
574.55	45,937	129,019
574.70	50,362	136,241
574.85	54,788	144,127
575.00	**59,213**	**152,678**

WQv

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Appendix O

NYSDEC Stormwater Management Inspection Lists

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Bioretetion Areas (F-5)



Description: Shallow stormwater basin or landscaped area which utilizes engineered soils and vegetation to capture and treat runoff. The practice is often located in parking lot islands, and can also be used to treat residential areas.

KEY CONSIDERATIONS

CONVEYANCE

- Provide overflow for the 10-year storm to the conveyance system.
- Conveyance to the system is typically overland flow delivered to the surface of the system, typically through curb cuts or over a concrete lip.

PRETREATMENT

- Pretreatment consists of a grass channel or grass filter strip, a gravel diaphragm, and a mulch layer, sized based on the methodologies described in Section 6.4.2.

TREATMENT

- Treatment area should have a four foot deep planting soil bed, a surface mulch layer, and a 6" ponding layer.
- Size the treatment area using equations provided in Chapter 6.

LANDSCAPING

- Detailed landscaping plan required.

MAINTENANCE

- Inspect and repair/replace treatment area components
- Stone drop (at least 6") provided at the inlet
- Remulch annually

STORMWATER MANAGEMENT SUITABILITY

- [X] Water Quality
- [ ] Channel Protection
- [ ] Overbank Flood Protection
- [ ] Extreme Flood Protection

Accepts Hotspot Runoff: *Yes*
(requires impermeable liner)

IMPLEMENTATION CONSIDERATIONS

- [M] Capital Cost
- [M] Maintenance Burden

Residential
Subdivision Use: *Yes*

High Density/Ultra-Urban: *Yes*

Drainage Area: *5 acres max.*

Soils: *Planting soils must meet specified criteria; No restrictions on surrounding soils*

Other Considerations:

- *Use of native plants is recommended*

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	Key: **L**=Low **M**=Medium **H**=High **POLLUTANT REMOVAL** G Phosphorus G Nitrogen G Metals - Cadmium, Copper, Lead, and Zinc removal F Pathogens – Coliform, Streptococci, E.Coli removal Key: **G**=Good **F**=Fair **P**=Poor

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Bioretention Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
1. Pre-Construction		
Pre-construction meeting		
Runoff diverted		
Facility area cleared		
If designed as exfilter, soil testing for permeability		
Facility location staked out		
2. Excavation		
Size and location		
Lateral slopes completely level		
If designed as exfilter, ensure that excavation does not compact susoils.		
Longitudinal slopes within design range		

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CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
3. Structural Components		
Stone diaphragm installed correctly		
Outlets installed correctly		
Underdrain		
Pretreatment devices installed		
Soil bed composition and texture		
4. Vegetation		
Complies with planting specs		
Topsoil adequate in composition and placement		
Adequate erosion control measures in place		
5. Final Inspection		
Dimensions		
Proper stone diaphragm		
Proper outlet		
Soil/ filter bed permeability testing		
Effective stand of vegetation and stabilization		
Construction generated sediments removed		
Contributing watershed stabilized before flow is diverted to the practice		

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Comments:

Actions to be Taken:

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Bioretention Operation, Maintenance and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Bioretention and contributing areas clean of debris		
No dumping of yard wastes into practice		
Litter (branches, etc.) have been removed		
2. Vegetation (Monthly)		
Plant height not less than design water depth		
Fertilized per specifications		
Plant composition according to approved plans		
No placement of inappropriate plants		
Grass height not greater than 6 inches		
No evidence of erosion		
3. Check Dams/Energy Dissipaters/Sumps (Annual, After Major Storms)		
No evidence of sediment buildup		

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MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
Sumps should not be more than 50% full of sediment		
No evidence of erosion at downstream toe of drop structure		
4. Dewatering (Monthly)		
Dewaters between storms		
No evidence of standing water		
5. Sediment Deposition (Annual)		
Swale clean of sediments		
Sediments should not be > 20% of swale design depth		
6. Outlet/Overflow Spillway (Annual, After Major Storms)		
Good condition, no need for repair		
No evidence of erosion		
No evidence of any blockages		
7. Integrity of Filter Bed (Annual)		
Filter bed has not been blocked or filled inappropriately		

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Comments:

Actions to be Taken:

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Amended Part 1 of Full EAF - Site Plan Application - Mixed-Use Project - Site "A" of Muir Woods
Date: December 1, 2021

Full Environmental Assessment Form Part 1 - Project and Setting

Prepared By: Sean Hopkins, Esq. Hopkins Sorgi & McCarthy PLLC 5500 Main Street, Suite 343 Williamsville, NY 14221
Tel: 716.510-4338
E-mail: shopkins@hsmlegal.com

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project: Proposed Mixed-Use Project - Site A of Muir Woods		
Project Location (describe, and attach a general location map): Portion of 1081 North French Road - Town of Amherst - Erie County		
Brief Description of Proposed Action (include purpose or need): The proposed action consists of an amendment of the Findings Statement issued by the Town of Amherst Town Board ("Town Board") on October 19, 2020 pursuant to the State Environmental Quality Review Act ("SEQRA") to accommodate the updated layout for the proposed mixed-use project to be on Site "A" of the overall Muir Woods Project Site. The layout of the mixed-use project is depicted on the Overall Site Plan [Drawing C-100] prepared by Carmina Wood Morris DPC. The residential density of the project has been increased from 204 units to 258 units. The action has been defined broadly to include all required discretionary approvals and permits as well as all site improvements including the proposed mixed-use and residential buildings, driveway connections to Dodge Road, access aisles, parking spaces, driveways, wetland impacts, lighting, landscaping, an on-site storm water management improvements, sanitary sewer and water lines and connections and all other required utility improvements. The project purpose is to develop Site "A" of overall Muir Woods Project Site as a mixed-use project in a manner consistent with the Overall Site Plan for the project prepared by Carmina Wood Morris DPC prepared by Carmina Wood Morris DPC. The project is a Type I action pursuant to SEQRA and the Town Board issued an Amended Findings Statement pursuant to SEQRA on September 27, 2021 based on the increase of the number of residential units from		
Name of Applicant/Sponsor: Sawyers Landing LLC c/o Sean Hopkins, Esq.	Telephone: 716.510-4338 E-Mail: shopkins@hsmlegal.com	
Address: 5500 Main Street, Suite 343		
City/PO: Williamsville, NY	State: NY	Zip Code: 14221
Project Contact (if not same as sponsor; give name and title/role):	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:
Property Owner (if not same as sponsor): Ciminelli Muir Woods, LLC c/o Adam Faeth, Esq.	Telephone: 716.631-8000 E-Mail: afaeth@ciminelli.com	
Address: 50 Fountain Plaza, Suite 500		
City/PO: Buffalo	State: NY	Zip Code: 14202

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B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees ☑Yes ☐No	Town Board - Amended Findings Statement	Approved on September 27, 2021
b. City, Town or Village Planning Board or Commission ☑Yes ☐No	Planning Board - Site Plan Approval and Subdivision Approval	February 22, 2021
c. City, Town or Village Zoning Board of Appeals ☐Yes ☑No		
d. Other local agencies ☑Yes ☐No	Building Department - Building Permits; Town of Amherst IDA [PILOT, etc.	To be determined
e. County agencies ☑Yes ☐No	Highway Work Permit - ECDPW; Water - ECWA	To be determined
f. Regional agencies ☐Yes ☑No		
g. State agencies ☑Yes ☐No	NYSDEC - Amended Wetland Permit; DSCA Approval and SPDES Permit	Amended wetland permit issued on 12/24/20 - DSCA & SPDES - To be determined
h. Federal agencies ☑Yes ☐No	USACE - Amended Wetland Permit	Issued on 02/25/21

i. Coastal Resources.
i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐Yes ☑No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☑Yes ☐No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☑Yes ☐No

If Yes, identify the plan(s):
NYS Heritage Areas:West Erie Canal Corridor [Note: The project will not have any impacts on the West Erie Canal Corridor.]

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes ☑No

If Yes, identify the plan(s):

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C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
Site "A" of the Muir Woods property is zoned New Community District - Neighborhood District ("NCD-ND") pursuant to the Town of Amherst Zoning Map.

b. Is the use permitted or allowed by a special or conditional use permit? ☐ Yes ☑ No

c. Is a zoning change requested as part of the proposed action? ☐ Yes ☑ No
If Yes,
i. What is the proposed new zoning for the site?

C.4. Existing community services.

a. In what school district is the project site located? Sweet Home Central School District

b. What police or other public protection forces serve the project site?
Town of Amherst Police Department

c. Which fire protection and emergency medical services serve the project site?
Volunteer Fire Department

d. What parks serve the project site?
Various Town Parks including Nature View Park

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)? Mixed-use project consisting of commercial space and various residential unit types.

b. a. Total acreage of the site of the proposed action? 17.424 acres
b. Total acreage to be physically disturbed? 17 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 326 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % Units:

d. Is the proposed action a subdivision, or does it include a subdivision? ☑ Yes ☐ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
33 lots
ii. Is a cluster/conservation layout proposed? ☐ Yes ☐ No
iii. Number of lots proposed? 33 lots
iv. Minimum and maximum proposed lot sizes? Minimum 3300 sf Maximum 7.25 acres

e. Will the proposed action be constructed in multiple phases? ☑ Yes ☐ No
i. If No, anticipated period of construction: _____ months
ii. If Yes:
- Total number of phases anticipated 3-4
- Anticipated commencement date of phase 1 (including demolition) May month 2022 year
- Anticipated completion date of final phase Oct month 2025 year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases:
The infrastructure necessary for each phase will be installed to ensure compliance with applicable technical standards including those for stormwater management.

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f. Does the project include new residential uses? ☑ Yes ☐ No

If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase		49		100
At completion of all phases		49		209

The build-out of the residential components will be based on market conditions.

g. Does the proposed action include new non-residential construction (including expansions)? ☑ Yes ☐ No

If Yes, There will be 15,000 sq. ft. of commercial space in each of the two mixed-use buildings.

i. Total number of structures 2

ii. Dimensions (in feet) of largest proposed structure: 55' height; 80' width; and 225' length

iii. Approximate extent of building space to be heated or cooled: 30,000 square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☑ Yes ☐ No

If Yes,

i. Purpose of the impoundment: Storm water management

ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☑ Other specify: Storm water runoff from impervious surfaces.

iii. If other than water, identify the type of impounded/contained liquids and their source.

N/A

iv. Approximate size of the proposed impoundment. Volume: _____ million gallons; surface area: 1.5 acres

v. Dimensions of the proposed dam or impounding structure: N/A height; _____ length

vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):

Impoundment area is an excavation consisting of earth fill.

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐ Yes ☑ No

If Yes:

i .What is the purpose of the excavation or dredging?

ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?

- Volume (specify tons or cubic yards):
- Over what duration of time?

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.

iv. Will there be onsite dewatering or processing of excavated materials? ☐ Yes ☐ No

If yes, describe.

v. What is the total area to be dredged or excavated? _____ acres

vi. What is the maximum area to be worked at any one time? _____ acres

vii. What would be the maximum depth of excavation or dredging? _____ feet

viii. Will the excavation require blasting? ☐ Yes ☐ No

ix. Summarize site reclamation goals and plan:

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☑ Yes ☐ No

If Yes:

i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): The proposed mixed-use project will result in 4.89 acres of impacts to federal wetlands (reduction of 7.87 acres), 1.20 acres of impacts to NYSDEC Freshwater Wetlands (reduction of 8.26 acres) and 3.65 acres of impacts to regulated 100 ft. Adjacent Areas of of the NYSDEC Freshwater Wetlands (reduction of .55 acres).

[Note: Copies of the Amended Wetland Permit Issued by the United States Army Corps of Engineers ("USACE") dated February 25, 2021 and the Amended Wetland Permit Issued by the New York State Department of Environmental Conservation ("NYSDEC") dated December 24, 2020 have previously been submitted to the Planning Department.]

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ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

iii. Will the proposed action cause or result in disturbance to bottom sediments? ☐Yes ☑No
If Yes, describe:

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☑No
If Yes:

- acres of aquatic vegetation proposed to be removed:
- expected acreage of aquatic vegetation remaining after project completion:
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access):
- proposed method of plant removal:
- if chemical/herbicide treatment will be used, specify product(s):

v. Describe any proposed reclamation/mitigation following disturbance:

c. Will the proposed action use, or create a new demand for water? ☑Yes ☐No
If Yes:

i. Total anticipated water usage/demand per day: 56,760 gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑Yes ☐No
If Yes:

- Name of district or service area: ECWA Consolidated Water District
- Does the existing public water supply have capacity to serve the proposal? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No
- Do existing lines serve the project site? ☑Yes ☐No

iii. Will line extension within an existing district be necessary to supply the project? ☐Yes ☑No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project:
- Source(s) of supply for the district:

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐Yes ☐No
If, Yes:

- Applicant/sponsor for new district:
- Date application submitted or anticipated:
- Proposed source(s) of supply for new district:

v. If a public water supply will not be used, describe plans to provide water supply for the project:

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑Yes ☐No
If Yes:

i. Total anticipated liquid waste generation per day: 56,760 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each):
Sanitary wastewater

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑Yes ☐No
If Yes:

- Name of wastewater treatment plant to be used: Tonawanda Creek Wastewater Treatment Plant
- Name of district: Town of Amherst Consolidated Sanitary Sewer District
- Does the existing wastewater treatment plant have capacity to serve the project? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No

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- Do existing sewer lines serve the project site? ☑Yes ☐No
- Will a line extension within an existing district be necessary to serve the project? ☐Yes ☑No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☑No

If Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑Yes ☐No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or 8.0 acres (impervious surface)

_____ Square feet or 17.42 acres (parcel size)

ii. Describe types of new point sources. Parking lots and roof tops

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

Stormwater runoff will be conveyed into the on-site stormwater management system to be installed per the applicable stringent stormwater quality and quantity standards of the NYS Department of Environmental Conservation ("NYSDEC")

- If to surface waters, identify receiving water bodies or wetlands: NYSDEC & Federal wetlands on the east portion of the site
- Will stormwater runoff flow to adjacent properties? ☐Yes ☑No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☑Yes ☐No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☑No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:

- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

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h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? ☐Yes ☑No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐Morning ☐Evening ☐Weekend ☐Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): _____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☑Yes ☐No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: _____

To be determined

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):

National Grid

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐Yes ☑No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 7:00 to 7:00
- Saturday: 8:00 to 6:00
- Sunday: As needed
- Holidays: Not Applicable

ii. During Operations:

- Monday - Friday: 8:00 to 11:00
- Saturday: 8:00 to 11:00
- Sunday: 8:00 to 10:00
- Holidays: 8:00 to 10:00

The hours of operation during "During Operations" as listed above apply to the first floor commercial space in the two mixed-use buildings. The hours are estimates since the tenants that will lease the first floor commercial space including both office and retail tenants have not yet been identified.

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m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

Construction activities will include the use of construction equipment during daytime hours that will exceed ambient background noise levels. The construction related noise impacts are a temporary unavoidable impact.

ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☑ No

Describe: _____

n. Will the proposed action have outdoor lighting? ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

Lighting will be installed in compliance with the lighting standards contained in the Town of Amherst Zoning Code. There will not be any lighting spillover onto contiguous properties. A Photometric Plan [Drawing LP-100] has been included with the updated engineered plans.

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☑ No

Describe: _____

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures: _____

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored _____

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally, describe the proposed storage facilities: _____

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☑ Yes ☐ No

If Yes:

i. Describe proposed treatment(s):

Potential use of lawn fertilizer and pesticides on maintained portions of property in accordance with applicable standards for application and use of lawn fertilizer and pesticides.

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☑ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☑ Yes ☐ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: 2 tons per week (unit of time)
- Operation : 2 tons per week (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: wood and metal waste may be recycled by the contract at their discretion
- Operation: Town of Amherst recycling program will be followed

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: approved NYSDEC landfill via contractor or private disposal company
- Operation: approved NYSDEC landfill via private disposal company

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s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☑ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)
☑ Forest ☐ Agriculture ☐ Aquatic ☑ Other (specify): Wetlands

ii. If mix of uses, generally describe:

There are mixture of uses in the vicinity of the Project Site including residential uses to the north in the Bucyrus Heights Subdivision, an elementary school, apartments and office buildings on Sweet Home Road and permanent open space to the east of Site "A".

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	0	8.0	+ 8.0
• Forested	12.17	1.87	-10.3
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	0	0	0
• Agricultural (includes active orchards, field, greenhouse etc.)	0	0	0
• Surface water features (lakes, ponds, streams, rivers, etc.)	0	0	0
• Wetlands (freshwater or tidal)	16.3	10.2	- 6.1
• Non-vegetated (bare rock, earth or fill)	0	0	0
• Other Describe: Greenspace, Landscaping, Pond	0	8.4	+8.4

The chart above includes Permanent Open to be donated to the Town of Amherst consisting of approximately 9.6 acres.]

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c. Is the project site presently used by members of the community for public recreation? ☐Yes ☑No
i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☑Yes ☐No
If Yes,
i. Identify Facilities:
1. Heritage Heights Elementary School (Sweet Home School District- 2545 Sweet Home Road); 2. Creative Play Learning Center (Private Day Care Facility- 647 Dodge Road); and 3. Four Seasons Child Care & Preschool (Private Day Care Facility- 1639 North French Road).

e. Does the project site contain an existing dam? ☐Yes ☑No
If Yes:
i. Dimensions of the dam and impoundment:
- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____
iii. Provide date and summarize results of last inspection:
_____
_____

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐Yes ☑No
If Yes:
i. Has the facility been formally closed? ☐Yes ☐No
- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:
_____
_____
iii. Describe any development constraints due to the prior solid waste activities: _____
_____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐Yes ☑No
If Yes:
i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:
_____
_____

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐Yes ☑No
If Yes:
i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐Yes ☐No
☐ Yes – Spills Incidents database — Provide DEC ID number(s): _____
☐ Yes – Environmental Site Remediation database — Provide DEC ID number(s): _____
☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures: _____
_____
_____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐Yes ☑No
If yes, provide DEC ID number(s): _____

iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):
_____
_____

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v. Is the project site subject to an institutional control limiting property uses? ☐ Yes ☑ No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐ Yes ☐ No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? >5 feet

b. Are there bedrock outcroppings on the project site? ☐ Yes ☑ No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____ %

c. Predominant soil type(s) present on project site:

Getzville silt loam	94 %
Swormville clay loam	6 %
	%

d. What is the average depth to the water table on the project site? Average: >5 feet

e. Drainage status of project site soils:
☐ Well Drained: _____ % of site
☐ Moderately Well Drained: _____ % of site
☑ Poorly Drained 100 % of site

f. Approximate proportion of proposed action site with slopes:
☑ 0-10%: 100 % of site
☐ 10-15%: _____ % of site
☐ 15% or greater: _____ % of site

g. Are there any unique geologic features on the project site? ☐ Yes ☑ No
If Yes, describe: _____

h. Surface water features.
i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☑ Yes ☐ No
ii. Do any wetlands or other waterbodies adjoin the project site? ☑ Yes ☐ No
If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.
iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑ Yes ☐ No
iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name Federal Waters, NYS Wetland Approximate Size NYS Wetland (in a...
- Wetland No. (if regulated by DEC) TE-33

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐ Yes ☑ No
If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐ Yes ☑ No

j. Is the project site in the 100-year Floodplain? ☐ Yes ☑ No

k. Is the project site in the 500-year Floodplain? ☑ Yes ☐ No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐ Yes ☑ No
If Yes:
i. Name of aquifer: _____

The proposed mixed-use project will result in 4.89 acres of impacts to federal wetlands (reduction of 7.87 acres), 1.20 acres of impacts to NYSDEC Freshwater Wetlands (reduction of 8.26 acres) and 3.65 acres of impacts to regulated 100 ft. Adjacent Areas of NYSDEC Freshwater Wetlands (reduction of .55 acres).

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m. Identify the predominant wildlife species that occupy or use the project site:
Typical suburban species

n. Does the project site contain a designated significant natural community? ☐Yes ☑No
If Yes:
i. Describe the habitat/community (composition, function, and basis for designation):
ii. Source(s) of description or evaluation:
iii. Extent of community/habitat:
- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐Yes ☑No
If Yes:
i. Species and listing (endangered or threatened):

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☑Yes ☐No
If Yes:
i. Species and listing:
Spiny Softshell - The Project Sponsor does not believe that Spiny Softshell is present on Site A of the Muir Woods property.

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐Yes ☑No
If yes, give a brief description of how the proposed action may affect that use:

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐Yes ☑No
If Yes, provide county plus district name/number:

b. Are agricultural lands consisting of highly productive soils present? ☐Yes ☑No
i. If Yes: acreage(s) on project site?
ii. Source(s) of soil rating(s):

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐Yes ☑No
If Yes:
i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature
ii. Provide brief description of landmark, including values behind designation and approximate size/extent:

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐Yes ☑No
If Yes:
i. CEA name:
ii. Basis for designation:
iii. Designating agency and date:

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? ☑ Yes ☐ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: Eligible property:Heritage Heights Elementary School

iii. Brief description of attributes on which listing is based:

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☑ Yes ☐ No [No impact letter issued by SHPO on October 10, 2001.]

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s):

ii. Basis for identification:

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☐ Yes ☑ No

If Yes:

i. Identify resource:

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.):

iii. Distance between project and resource: _____ miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation:

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

No impact letter issued by SHPO on October 10, 2001 provided at Attachment "A" of this Amended Part 1 of the Full EAF.

G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name Sawyers Landing LLC Date December 1, 2021

Signature _____ Title Attorney for Project Sponsor

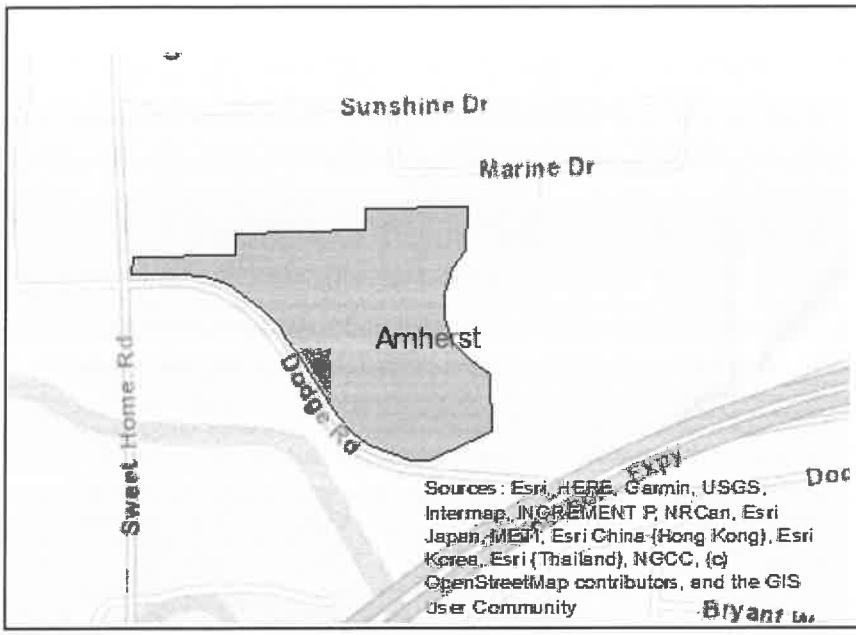
Sean W. Hopkins, Esq.

PRINT FORM

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

EAF Mapper Summary Report

Thursday, June 18, 2020 8:50 AM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.



B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Yes - Digital mapping data are not available for all Special Planning Districts. Refer to EAF Workbook.
C.2.b. [Special Planning District - Name]	NYS Heritage Areas:West Erie Canal Corridor
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	Yes
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.iv [Surface Water Features - Wetlands Name]	Federal Waters, NYS Wetland
E.2.h.iv [Surface Water Features - Wetlands Size]	NYS Wetland (in acres):34.6
E.2.h.iv [Surface Water Features - DEC Wetlands Number]	TE-33
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	No

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E.2.k. [500 Year Floodplain]	Yes
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	No
E.2.o. [Endangered or Threatened Species]	No
E.2.p. [Rare Plants or Animals]	Yes
E.2.p. [Rare Plants or Animals - Name]	Spiny Softshell
E.3.a. [Agricultural District]	No
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Yes - Digital mapping data for archaeological site boundaries are not available. Refer to EAF Workbook.
E.3.e.ii [National or State Register of Historic Places or State Eligible Sites - Name]	Eligible property:Heritage Heights Elementary School
E.3.f. [Archeological Sites]	Yes
E.3.i. [Designated River Corridor]	No

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

TOWN OF AMHERST ATTACHMENT
State Environmental Quality Review
ENVIRONMENTAL ASSESSMENT FORM
Proposed Mixed-Use Project - Portion of 1081 North French Road

1. For each applicable category of proposed new structures, including additions to existing structures, provide the following information for all soil types on the project site (*according to Soil Survey of Erie County, NY; Table 11, Building Site Development, pp 294-305):*

Soil Name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Getzville Silt Loam	Severe	Severe	Severe	Severe	Moderate
Swormville Clay Loam	Severe	Severe	Severe	Severe	Severe

2. If the Soil survey indicates either "severe" or "moderate" suitability for the proposed types of construction, a geotechnical and hydrological analysis based on one test per 3.5 acres of project area must be provided (per Town Board resolution, 3/17/03, amended 6/16/03).

   _____ Geotechnical report attached _____ Not applicable

   [Note: 3 copies of the comprehensive Geotechnical Report for the entire overall Muir Woods Property previously submitted.

3. Is your property located: On Youngs Road between Dodge and Klein Roads? □ Yes x No
   On Wehrle Dr. between Spindrift Dr. and Oakwood Rd? □ Yes x No

   If so, the property may be within an area of the Town that is affected by a moratorium on connections to the sanitary sewer system.

4. Are there alternative locations on the site for this project? □ Yes x No

5. Location and size of real property owned by petitioner within one (1) mile of subject proposal:
   __Not Applicable

6. Are you aware of current or future plans or intentions by others in the Town of Amherst to develop property within 1000± ft. of the present project request: ☒ Yes ☒ No

   Describe A student housing community is proposed on property to the east of the Project Site commonly referred to as Site "B" of Muir Woods.

   (Potential environmental impacts from adjacent or nearby projects undergoing the approval process will receive a coordinated environmental review to determine cumulative effects on common receivers (e.g. traffic and drainage corridors) and other relevant environmental concerns.)

7. Maximum number of vehicular trips to be generated per peak hour upon completion of project 120-130
   Source: Copies of the Traffic Impact Study prepared by SRF Associates DPC dated August 3, 2020 were previously submitted.

8. Will blasting occur during construction? □ Yes ☒ No

9. Does the project propose to connect and be tributary to the public sanitary sewer system? ☒ Yes □ No

10. Proposed net additional gallons per day (gpd) of sanitary sewer discharge upon completion of project:
    56,760 average flow 227,040 peak flow.
    (Average flows of 2,500 gpd or greater will require an Engineer's Report that includes a detailed downstream sewer capacity analysis and the identification of and commitment to required I/I offset work during peak wastewater flow conditions.)

11. Based on the Town's *2011 Reconnaissance Level Survey of Historic Resources,* is your property 'blue-rated' for historic significance? x Yes □ No
    [There are not any buildings located on the Project Site.]
    [Note: A copy of the No Impact Determination letter issued by SHPO has previously been submitted.]

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Attachment "A" of Part 1 of Full Environmental Assessment Form - No Impact Determination Letter Issued by Ruth Pierpont, Director, New York State Office of Parks, Recreation and Historic Preservation, dated October 10, 2001

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189
518-237-8643

NEW YORK STATE
Bernadette Castro
Commissioner

October 10, 2001

Carolyn A. Pierce
CCRG
105 Robie Avenue
Buffalo, New York 14214

Dear Ms. Pierce:

Re: SEQRA
Muir Woods Mixed-Use Development
Amherst/Erie County
01PR0345

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Parks, Recreation and Historic Preservation Law, Section 14.09.

Based upon this review, it is the OPRHP's opinion that your project will have No Impact upon cultural resources in or eligible for inclusion in the State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Director

RLP:cmp

RECEIVED
OCT 16 2001
CIMINELLI DEVELOPMENT COMPANY, INC.

Attachment: SP-2021-05_application_021722 (23057 : Sp-2021-05)

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York
SITE DEVELOPMENT DRAWINGS

AGENCIES

ENGINEERING DEPARTMENT
NAME/TITLE: JEFFERY BURROUGHS, P.E. – TOWN ENGINEER
COMPANY/DEPT: TOWN OF AMHERST ENGINEERING DEPARTMENT
ADDRESS: 1100 NORTH FOREST ROAD
WILLIAMSVILLE, NEW YORK 14221

TELEPHONE 716–631–7154

PLANNING & ZONING DEPARTMENT
NAME/TITLE: DANIEL HOWARD – PLANNING DIRECTOR
COMPANY/DEPT: TOWN OF AMHERST PLANNING DEPARTMENT
ADDRESS: 5583 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221

TELEPHONE 716–631–7051

LAND SURVEYOR
NAME/TITLE: GPI ENGINEERING, LANDSCAPE ARCHITECTURE SURVEYING, LLP
COMPANY/DEPT: 4950 GENESEE STREET, SUITE 100
ADDRESS: BUFFALO, NEW YORK 14225

TELEPHONE 716–633–4844

UTILITIES

NATURAL GAS
COMPANY/DEPT:. NATIONAL FUEL GAS CORP.
ADDRESS: 6363 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221

TELEPHONE 716–857–7000

TELEPHONE COMPANY
COMPANY/DEPT: VERIZON
ADDRESS: 65 FRANKLIN STREET
BUFFALO, NEW YORK 14203

TELEPHONE 716–840–8748

CABLE COMPANY
COMPANY/DEPT: TIME WARNER
ADDRESS: 789 CHURCH ROAD
WEST SENECA, NEW YORK

TELEPHONE 716–558–8615

ELECTRIC COMPANY
COMPANY/DEPT: NATIONAL GRID
ADDRESS: 144 KENSINGTON AVENUE
BUFFALO, NEW YORK 14214

TELEPHONE 716–236–2738

WATER
COMPANY/DEPT:. ERIE COUNTY WATER AUTHORITY
ADDRESS: 3030 UNION ROAD
CHEEKTOWAGA, NEW YORK 14227

TELEPHONE 716–684–1510

DIG SAFELY NEW YORK

TELEPHONE 1–800–962–7962

OWNER/DEVELOPER

NAME: Sawyer's Landing LLC
ADDRESS 43 Central Ave Suite #300
Lancaster, NY 14086

TELEPHONE 716 818-0207

ENGINEER

Carmina • Wood • Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

December 2021

DWG NO.	DRAWING TITLE
–	COVER SHEET
–	TOPOGRAPHIC MAP
–	BOUNDARY SURVEY
C–001	DEMOLITION & EROSION CONTROL PLAN
C–002	DEMOLITION & EROSION CONTROL DETAILS
C–100	OVERALL SITE PLAN
C–101	SITE PLAN
C–102	PARCEL MAP
C–103	SITE DETAILS
C–104	SITE DETAILS
C–200	GRADING PLAN
C–300	STORM DRAINAGE PLAN
C–301	STORM DRAINAGE DETAILS
C–302	STORM DRAINAGE DETAILS
C–303	STORM DRAINAGE DETAILS
C–400	UTILITY PLAN
C–401	SANITARY SEWER DETAILS
C–402	SANITARY SEWER DETAILS
C–403	SANITARY SEWER GENERAL NOTES
C–404	WATER DETAILS
C–405	WATER DETAILS
C–406	WATER DETAILS & NOTES
C–407	INSULATED ENCLOSURE DETAIL
L–100	LANDSCAPE PLAN
LP–100	PHOTOMETRIC PLAN
TT–100	FIRE TRUCK PLAN

Attachment: SP-2021-05_drawings_021722 (23057 : Sp-2021-05)

NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE.
● SET OR EX. 5/8" REBAR

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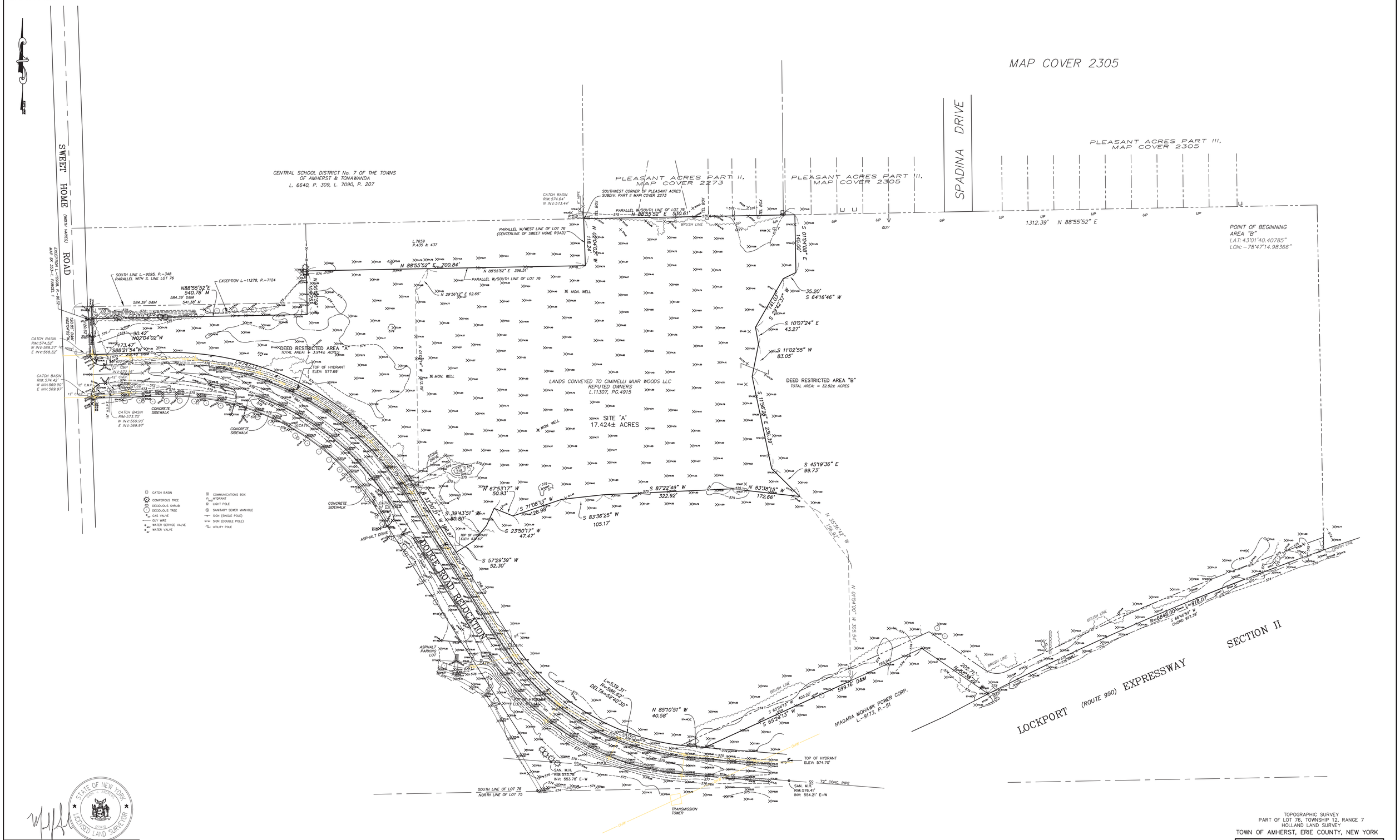

DATE	REVISION/TYPE

TOPOGRAPHIC SURVEY
PART OF LOT 76, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK

GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE
4950 GENESEE STREET, SUITE 100
BUFFALO, NEW YORK 14225
(716) 633-4844 FAX 633-4940

Job No. 2013062-SITE A Date: DECEMBER 22, 2020
Scale: 1" = 100' TAX No. 40.08-3-13.1 (PART OF)

Attachment: SP-2021-05_drawings_021722 (23057 : Sp-2021-05)

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF SECTION 7209 PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

SWEET HOME (WIDTH VARIES) ROAD

CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA
L. 6640, P. 309, L. 7090, P. 207

PLEASANT ACRES PART II, MAP COVER 2273

PLEASANT ACRES PART III, MAP COVER 2305

SOUTHWEST CORNER OF PLEASANT ACRES SUBDIV. PART II MAP COVER 2273

P.O.B.

TEL BOX

UP

GUY

N 88°55'52" E 530.61'
PARALLEL W/SOUTH LINE OF LOT 76

PARALLEL W/WEST LINE OF LOT 76
(CENTERLINE OF SWEET HOME ROAD)

N 02°04'02" W
118.24'

L.7659
P.435 & 437

N 88°55'52" E 700.84'

N 88°55'52" E 396.51'

PARALLEL W/SOUTH LINE OF LOT 76

N 29°36'12" E 62.65'

S 01°04'08" E
145.00'

35.20'
S 64°16'46" W

141.03'
S 29°42'37" W

S 10°07'24" E
43.27'

S 11°02'55" W
83.05'

S 11°56'26" E 236.39'

S 45°19'36" E
99.73'

N 83°38'15" W
172.66'

S 87°22'49" W
322.92'

S 83°36'25" W
105.17'

S 71°08'13" W
128.98'

N 67°53'17" W
50.93'

S 39°43'51" W
50.80'

S 23°50'17" W
47.47'

N 32°30'21" W 198.87'

N 32°30'21" W 457.24'

S 57°29'39" W
52.30'

258.37'

PT

N 35°36'42" W
156.92'

N 01°04'00" W 305.54'

195.94'

599.16' D&M

S 65°24'13" W 403.22'

S 65°24'13" W

L=539.31'
R=586.62'
DELTA=52°40'30"

N 85°10'51" W
40.58'

SOUTH LINE OF LOT 76
NORTH LINE OF LOT 75

NIAGARA MOHAWK POWER CORP.
L.-9173, P.-51

SOUTH LINE L.-9095, P.-348
PARALLEL WITH S. LINE LOT 76

EXCEPTION L.-11278, P.-7124

584.39' D&M
541.38' M

N88°55'52"E
540.78' M

N 00°55'59" W
109.75'

EXCEPTION L.-10808, P.-9632
MAP SK 353-1, PARCEL 1

120.85' D&M
N02°04'02"W

120.52'

N02°04'02"W
90.42'

173.47'
S88°21'54"W
216.48' D&M

DEED RESTRICTED AREA "A"
TOTAL AREA: = 3.914± ACRES

N 01°03'14" W 512.76'

LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC
REPUTED OWNERS
L.11307, PG.4915

SITE 'A'
17.424± ACRES

DEED RESTRICTED AREA "B"
TOTAL AREA: = 32.52± ACRES

DODGE ROAD RELOCATION

L=747.17

R=724.00

STATE OF NEW YORK
MARK J. ANDREWS
LICENSED LAND SURVEYOR
050455

DATE	REVISION/TYPE
12/4/20	REVISE PARCEL BOUNDARY

NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE.

● SET OR EX. 5/8" REBAR

SURVEY OF
PART OF LOT 76, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK

GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE
4950 GENESEE STREET, SUITE 100
BUFFALO, NEW YORK 14225
(716) 633-4844 FAX 633-4940

Job No. 2013062-SITE A Date: JUNE 27, 2019
Scale: 1" = 100' TAX No.

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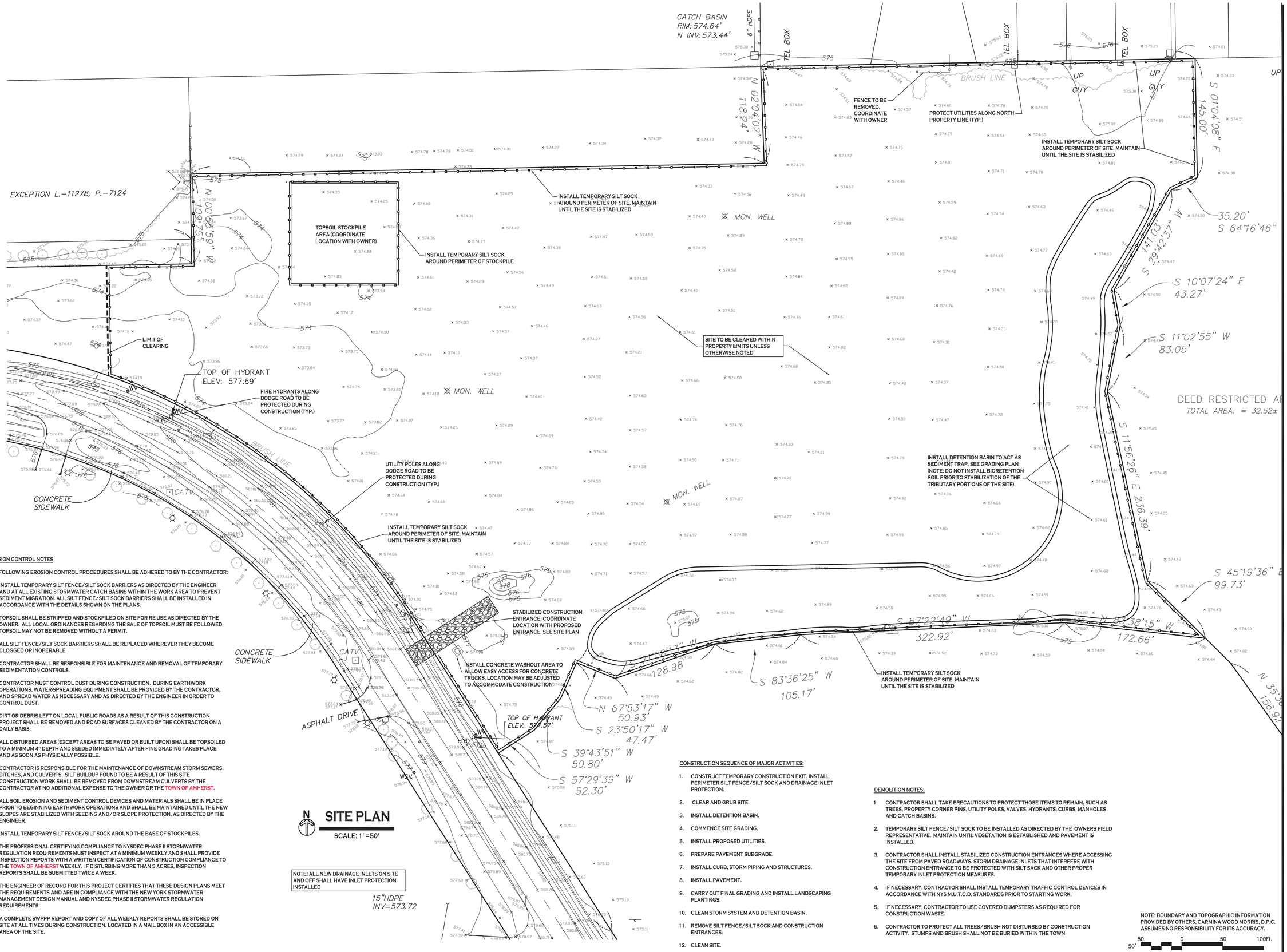

EROSION CONTROL NOTES

THE FOLLOWING EROSION CONTROL PROCEDURES SHALL BE ADHERED TO BY THE CONTRACTOR:

1. INSTALL TEMPORARY SILT FENCE/SILT SOCK BARRIERS AS DIRECTED BY THE ENGINEER AND AT ALL EXISTING STORMWATER CATCH BASINS WITHIN THE WORK AREA TO PREVENT SEDIMENT MIGRATION. ALL SILT FENCE/SILT SOCK BARRIERS SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS SHOWN ON THE PLANS.
2. TOPSOIL SHALL BE STRIPPED AND STOCKPILED ON SITE FOR RE-USE AS DIRECTED BY THE OWNER. ALL LOCAL ORDINANCES REGARDING THE SALE OF TOPSOIL MUST BE FOLLOWED. TOPSOIL MAY NOT BE REMOVED WITHOUT A PERMIT.
3. ALL SILT FENCE/SILT SOCK BARRIERS SHALL BE REPLACED WHEREVER THEY BECOME CLOGGED OR INOPERABLE.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE AND REMOVAL OF TEMPORARY SEDIMENTATION CONTROLS.
5. CONTRACTOR MUST CONTROL DUST DURING CONSTRUCTION. DURING EARTHWORK OPERATIONS, WATER-SPREADING EQUIPMENT SHALL BE PROVIDED BY THE CONTRACTOR, AND SPREAD WATER AS NECESSARY AND AS DIRECTED BY THE ENGINEER IN ORDER TO CONTROL DUST.
6. DIRT OR DEBRIS LEFT ON LOCAL PUBLIC ROADS AS A RESULT OF THIS CONSTRUCTION PROJECT SHALL BE REMOVED AND ROAD SURFACES CLEANED BY THE CONTRACTOR ON A DAILY BASIS.
7. ALL DISTURBED AREAS (EXCEPT AREAS TO BE PAVED OR BUILT UPON) SHALL BE TOPSOILED TO A MINIMUM 4" DEPTH AND SEEDED IMMEDIATELY AFTER FINE GRADING TAKES PLACE AND AS SOON AS PHYSICALLY POSSIBLE.
8. CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE OF DOWNSTREAM STORM SEWERS, DITCHES, AND CULVERTS. SILT BUILDUP FOUND TO BE A RESULT OF THIS SITE CONSTRUCTION WORK SHALL BE REMOVED FROM DOWNSTREAM CULVERTS BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER OR THE TOWN OF AMHERST.
9. ALL SOIL EROSION AND SEDIMENT CONTROL DEVICES AND MATERIALS SHALL BE IN PLACE PRIOR TO BEGINNING EARTHWORK OPERATIONS AND SHALL BE MAINTAINED UNTIL THE NEW SLOPES ARE STABILIZED WITH SEEDING AND/OR SLOPE PROTECTION, AS DIRECTED BY THE ENGINEER.
10. INSTALL TEMPORARY SILT FENCE/SILT SOCK AROUND THE BASE OF STOCKPILES.
11. THE PROFESSIONAL CERTIFYING COMPLIANCE TO NYSDEC PHASE II STORMWATER REGULATION REQUIREMENTS MUST INSPECT AT A MINIMUM WEEKLY AND SHALL PROVIDE INSPECTION REPORTS WITH A WRITTEN CERTIFICATION OF CONSTRUCTION COMPLIANCE TO THE TOWN OF AMHERST WEEKLY. IF DISTURBING MORE THAN 5 ACRES, INSPECTION REPORTS SHALL BE SUBMITTED TWICE A WEEK.
12. THE ENGINEER OF RECORD FOR THIS PROJECT CERTIFIES THAT THESE DESIGN PLANS MEET THE REQUIREMENTS AND ARE IN COMPLIANCE WITH THE NEW YORK STORMWATER MANAGEMENT DESIGN MANUAL AND NYSDEC PHASE II STORMWATER REGULATION REQUIREMENTS.
13. A COMPLETE SWPPP REPORT AND COPY OF ALL WEEKLY REPORTS SHALL BE STORED ON SITE AT ALL TIMES DURING CONSTRUCTION, LOCATED IN A MAIL BOX IN AN ACCESSIBLE AREA OF THE SITE.

CONSTRUCTION SEQUENCE OF MAJOR ACTIVITIES:

1. CONSTRUCT TEMPORARY CONSTRUCTION EXIT, INSTALL PERIMETER SILT FENCE/SILT SOCK AND DRAINAGE INLET PROTECTION.
2. CLEAR AND GRUB SITE.
3. INSTALL DETENTION BASIN.
4. COMMENCE SITE GRADING.
5. INSTALL PROPOSED UTILITIES.
6. PREPARE PAVEMENT SUBGRADE.
7. INSTALL CURB, STORM PIPING AND STRUCTURES.
8. INSTALL PAVEMENT.
9. CARRY OUT FINAL GRADING AND INSTALL LANDSCAPING PLANTINGS.
10. CLEAN STORM SYSTEM AND DETENTION BASIN.
11. REMOVE SILT FENCE/SILT SOCK AND CONSTRUCTION ENTRANCES.
12. CLEAN SITE.

DEMOLITION NOTES:

1. CONTRACTOR SHALL TAKE PRECAUTIONS TO PROTECT THOSE ITEMS TO REMAIN, SUCH AS TREES, PROPERTY CORNER PINS, UTILITY POLES, VALVES, HYDRANTS, CURBS, MANHOLES AND CATCH BASINS.
2. TEMPORARY SILT FENCE/SILT SOCK TO BE INSTALLED AS DIRECTED BY THE OWNERS FIELD REPRESENTATIVE. MAINTAIN UNTIL VEGETATION IS ESTABLISHED AND PAVEMENT IS INSTALLED.
3. CONTRACTOR SHALL INSTALL STABILIZED CONSTRUCTION ENTRANCES WHERE ACCESSING THE SITE FROM PAVED ROADWAYS. STORM DRAINAGE INLETS THAT INTERFERE WITH CONSTRUCTION ENTRANCE TO BE PROTECTED WITH SILT SACK AND OTHER PROPER TEMPORARY INLET PROTECTION MEASURES.
4. IF NECESSARY, CONTRACTOR SHALL INSTALL TEMPORARY TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH NYS M.U.T.C.D. STANDARDS PRIOR TO STARTING WORK.
5. IF NECESSARY, CONTRACTOR TO USE COVERED DUMPSTERS AS REQUIRED FOR CONSTRUCTION WASTE.
6. CONTRACTOR TO PROTECT ALL TREES/BRUSH NOT DISTURBED BY CONSTRUCTION ACTIVITY. STUMPS AND BRUSH SHALL NOT BE BURIED WITHIN THE TOWN.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

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STATE OF NEW YORK · CHRISTOPHER WOOD · 076394 · LICENSED PROFESSIONAL ENGINEER

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Demolition & Erosion Control Plan

DRAWING NO.
C-001

Project no.: 21-011

Attachment: SP-2021-05_drawings_021722 (23057 : Sp-2021-05)
Packet Pg. 2948
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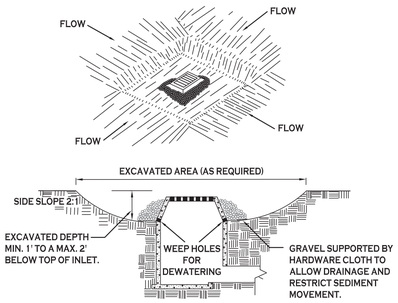


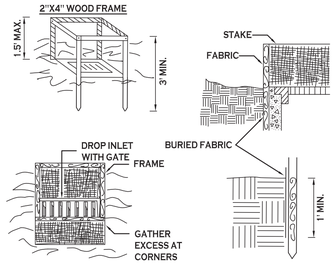
CONSTRUCTION SPECIFICATIONS

1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER EXCAVATION.
2. GRADE APPROACH TO THE INLET UNIFORMLY AROUND THE BASIN.
3. WEEP HOLES SHALL BE PROTECTED BY GRAVEL.
4. UPON STABILIZATION OF CONTRIBUTING DRAINAGE AREA, SEAL WEEP HOLES, FILL BASIN WITH STABLE SOIL TO FINAL GRADE, COMPACT IT PROPERLY AND STABILIZE WITH PERMANENT SEEDING.

   MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 1

NOT TO SCALE



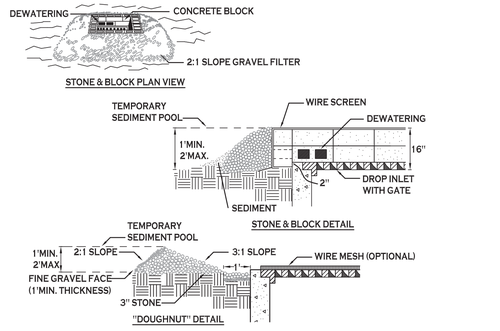
CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2" x 4" WOOD OR EQUIVALENT. METAL WITH A MINIMUM LENGTH OF 3 FEET.
4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2" x 4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.

   MAXIMUN DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 2

NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

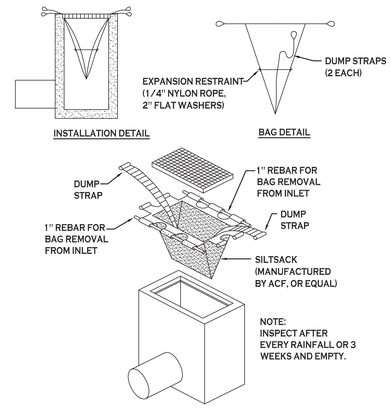
1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE FOR DEWATERING. FOUNDATION SHALL BE 2 INCHES MINIMUM BELOW REST OF INLET AND BLOCKS SHALL BE PLACED AGAINST INLET FOR SUPPORT.
2. HARDWARE CLOTH OR 1/2" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.
3. USE CLEAN STONE OR GRAVEL 1/2-3/4 INCH IN DIAMETER PLACED 2 INCHES BELOW TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER.
4. FOR STONE STRUCTURES ONLY, A 1 FOOT THICK LAYER OF THE FILTER STONE WILL BE PLACED AGAINST THE 3 INCH STONE AS SHOWN ON THE DRAWINGS.

   MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 3

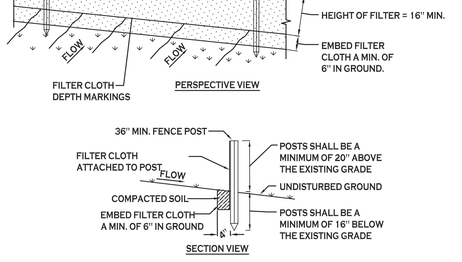
NOT TO SCALE

NOTE: INSTALL ONE OF THE INLET PROTECTION OPTIONS SHOWN PRIOR TO CONSTRUCTION



SILT SACK DETAIL

NOT TO SCALE

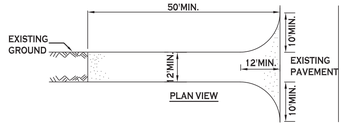


CONSTRUCTION SPECIFICATIONS

1. WOVEN FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
3. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

SILT FENCE DETAIL

NOT TO SCALE

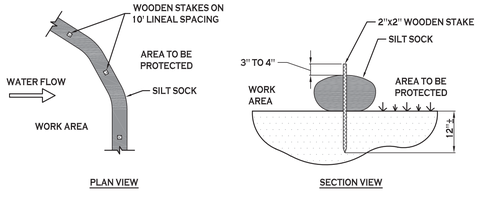


CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

STABILIZED CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE



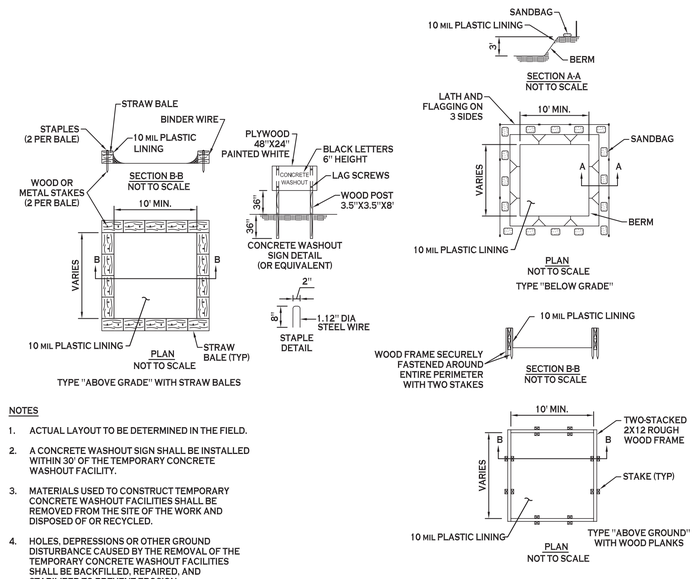
NOTES:

CONTRACTOR SHALL INSPECT AND MAINTAIN SILT SOCK AS NEEDED DURING THE DURATION OF CONSTRUCTION PROJECT.

CONTRACTOR SHALL REMOVE SEDIMENT COLLECTED AT THE BASE OF THE SILT SOCK WHEN IT HAS REACHED ½ OF THE EXPOSED HEIGHT OF THE SILT SOCK. ALTERNATIVELY, RATHER THAN CREATE A SOIL DISTURBING ACTIVITY, THE ENGINEER MAY CALL FOR ADDITIONAL SILT SOCK TO BE ADDED AT AREAS OF HIGH SEDIMENTATION, PLACED IMMEDIATELY ON TOP OF THE EXISTING SEDIMENT LADEN SILT SOCK.

SILT SOCK DETAIL

NOT TO SCALE



CONCRETE WASHOUT DETAIL

NOT TO SCALE

NOTES

1. ACTUAL LAYOUT TO BE DETERMINED IN THE FIELD.
2. A CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30' OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
3. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF OR RECYCLED.
4. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE BACKFILLED, REPAIRED, AND STABILIZED TO PREVENT EROSION.

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STATE OF NEW YORK CHRISTOPHER WOOD 076394 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Demolition & Erosion Control Details

DRAWING NO.

C-002

Project no.: 21-011

Attachment: SP-2021-05_drawings_021722 (23057 : Sp-2021-05)

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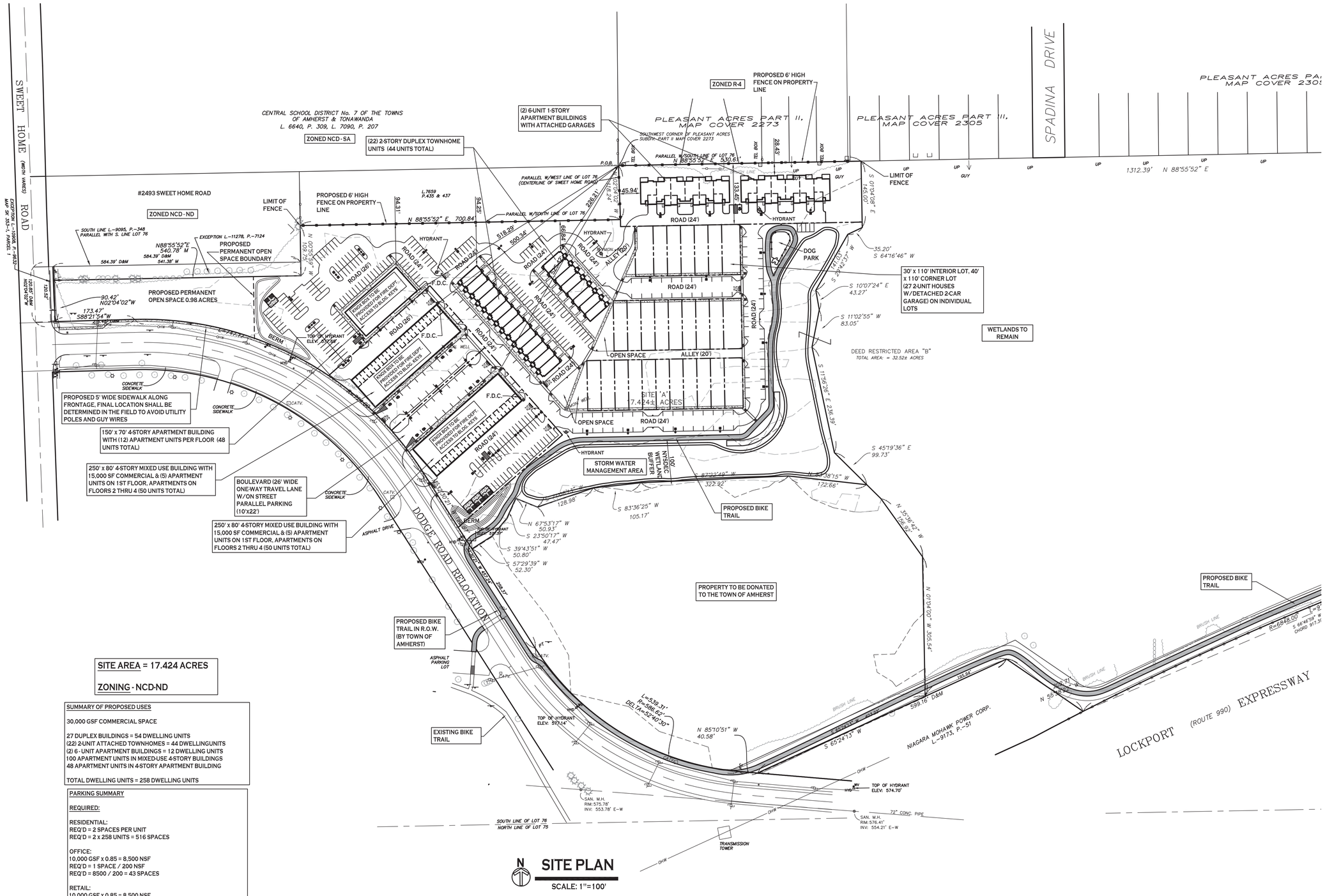

N

SITE PLAN

SCALE: 1"=100'

SITE AREA = 17.424 ACRES

ZONING - NCD-ND

SUMMARY OF PROPOSED USES

30,000 GSF COMMERCIAL SPACE

27 DUPLEX BUILDINGS = 54 DWELLING UNITS
(22) 2-UNIT ATTACHED TOWNHOMES = 44 DWELLINGUNITS
(2) 6 - UNIT APARTMENT BUILDINGS = 12 DWELLING UNITS
100 APARTMENT UNITS IN MIXED-USE 4-STORY BUILDINGS
48 APARTMENT UNITS IN 4-STORY APARTMENT BUILDING

TOTAL DWELLING UNITS = 258 DWELLING UNITS

PARKING SUMMARY

REQUIRED:

RESIDENTIAL:
REQ'D = 2 SPACES PER UNIT
REQ'D = 2 x 258 UNITS = 516 SPACES

OFFICE:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 1 SPACE / 200 NSF
REQ'D = 8500 / 200 = 43 SPACES

RETAIL:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 5.5 SPACES / 1,000 NSF
REQ'D = 8500 / 1000 x 5.5 = 47 SPACES

RESTAURANT:
REQ'D = 1 SPACE / 3 SEATS + 1 SPACE / 100 SF TAKE OUT AREA
REQ'D = 100 SEAT / 3 + 500 SF / 100 = 38 SPACES

TOTAL REQ'D = 644 SPACES

PROVIDED:

134 PARALLEL PARKING SPACES
256 9'x19' SPACES *
40 GARAGE SPACES IN 4-STORY BLDGS
64 GARAGE SPACES IN DETACHED GARAGES
494 TOTAL SPACES

* INCLUDES SPACES IN FRONT OF APARTMENT GARAGES

WETLAND SUMMARY

FEDERAL IMPACTS PROPOSED = 6.089 AC
FEDERAL IMPACTS PREVIOUSLY PROPOSED = 13.01 AC
DECREASE = 6.921 AC (53% DECREASE)

NYSDEC IMPACTS PROPOSED = 1.20 AC
NYSDEC IMPACTS PREVIOUSLY PROPOSED = 9.46 AC
DECREASE = 8.26 AC (87% DECREASE)

NYSDEC BUFFER IMPACT PROPOSED = 3.65 AC
NYSDEC BUFFER IMPACTS PREVIOUSLY PROPOSED = 4.20 AC
DECREASE = 0.55 AC (13% DECREASE)

NOTE: NYSDEC IMPACTS INCLUDES FEDERAL WETLAND IMPACT OVERLAP AREAS

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

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STATE OF NEW YORK CHRISTOPHER WOOD 076394 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Overall Site Plan

DRAWING NO.

C-100

Project no.: 21 011

Attachment: SP-2021-05_drawings_021722 (23057 : Sp-2021-05)

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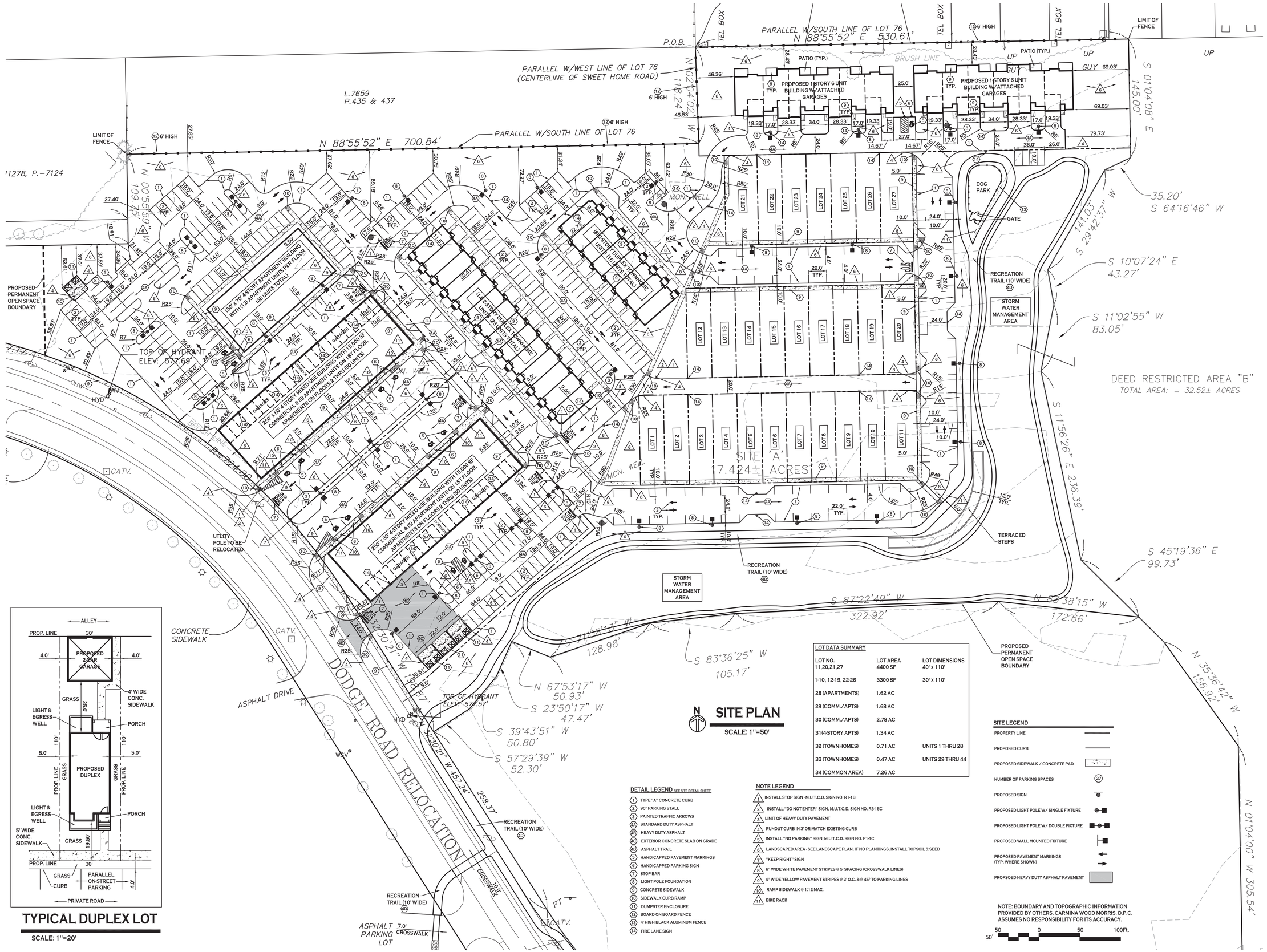

TYPICAL DUPLEX LOT

SCALE: 1"=20'

SITE PLAN

SCALE: 1"=50'

LOT DATA SUMMARY		
LOT NO. 11,20,21,27	LOT AREA 4400 SF	LOT DIMENSIONS 40' x 110'
1-10, 12-19, 22-26	3300 SF	30' x 110'
28 (APARTMENTS)	1.62 AC	
29 (COMM./APTS)	1.68 AC	
30 (COMM./APTS)	2.78 AC	
31(4-STORY APTS)	1.34 AC	
32 (TOWNHOMES)	0.71 AC	UNITS 1 THRU 28
33 (TOWNHOMES)	0.47 AC	UNITS 29 THRU 44
34 (COMMON AREA)	7.26 AC	

DETAIL LEGEND SEE SITE DETAIL SHEET

1. TYPE "A" CONCRETE CURB
2. 90° PARKING STALL
3. PAINTED TRAFFIC ARROWS
4A. STANDARD DUTY ASPHALT
4B. HEAVY DUTY ASPHALT
4C. EXTERIOR CONCRETE SLAB ON GRADE
4D. ASPHALT TRAIL
5. HANDICAPPED PAVEMENT MARKINGS
6. HANDICAPPED PARKING SIGN
7. STOP BAR
8. LIGHT POLE FOUNDATION
9. CONCRETE SIDEWALK
10. SIDEWALK CURB RAMP
11. DUMPSTER ENCLOSURE
12. BOARD ON BOARD FENCE
13. 4' HIGH BLACK ALUMINUM FENCE
14. FIRE LANE SIGN

NOTE LEGEND

1. INSTALL STOP SIGN - M.U.T.C.D. SIGN NO. R1-1 B
2. INSTALL "DO NOT ENTER" SIGN, M.U.T.C.D. SIGN NO. R3-15C
3. LIMIT OF HEAVY DUTY PAVEMENT
4. RUNOUT CURB IN 3' OR MATCH EXISTING CURB
5. INSTALL "NO PARKING" SIGN, M.U.T.C.D. SIGN NO. P1-1C
6. LANDSCAPED AREA - SEE LANDSCAPE PLAN. IF NO PLANTINGS, INSTALL TOPSOIL & SEED
7. "KEEP RIGHT" SIGN
8. 6" WIDE WHITE PAVEMENT STRIPES @ 5' SPACING (CROSSWALK LINES)
9. 4" WIDE YELLOW PAVEMENT STRIPES @ 2' O.C. & @ 45° TO PARKING LINES
10. RAMP SIDEWALK @ 1:12 MAX.
11. BIKE RACK

SITE LEGEND

- PROPERTY LINE
- PROPOSED CURB
- PROPOSED SIDEWALK / CONCRETE PAD
- NUMBER OF PARKING SPACES (27)
- PROPOSED SIGN
- PROPOSED LIGHT POLE W/ SINGLE FIXTURE
- PROPOSED LIGHT POLE W/ DOUBLE FIXTURE
- PROPOSED WALL MOUNTED FIXTURE
- PROPOSED PAVEMENT MARKINGS (TYP. WHERE SHOWN)
- PROPSOED HEAVY DUTY ASPHALT PAVEMENT

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

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STATE OF NEW YORK CHRISTOPHER WOOD 076394 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Site Plan

DRAWING NO.

C-101

Project no.: 21-011

Attachment: SP-2021-05_021722 (23057 : Sp-2021-05)

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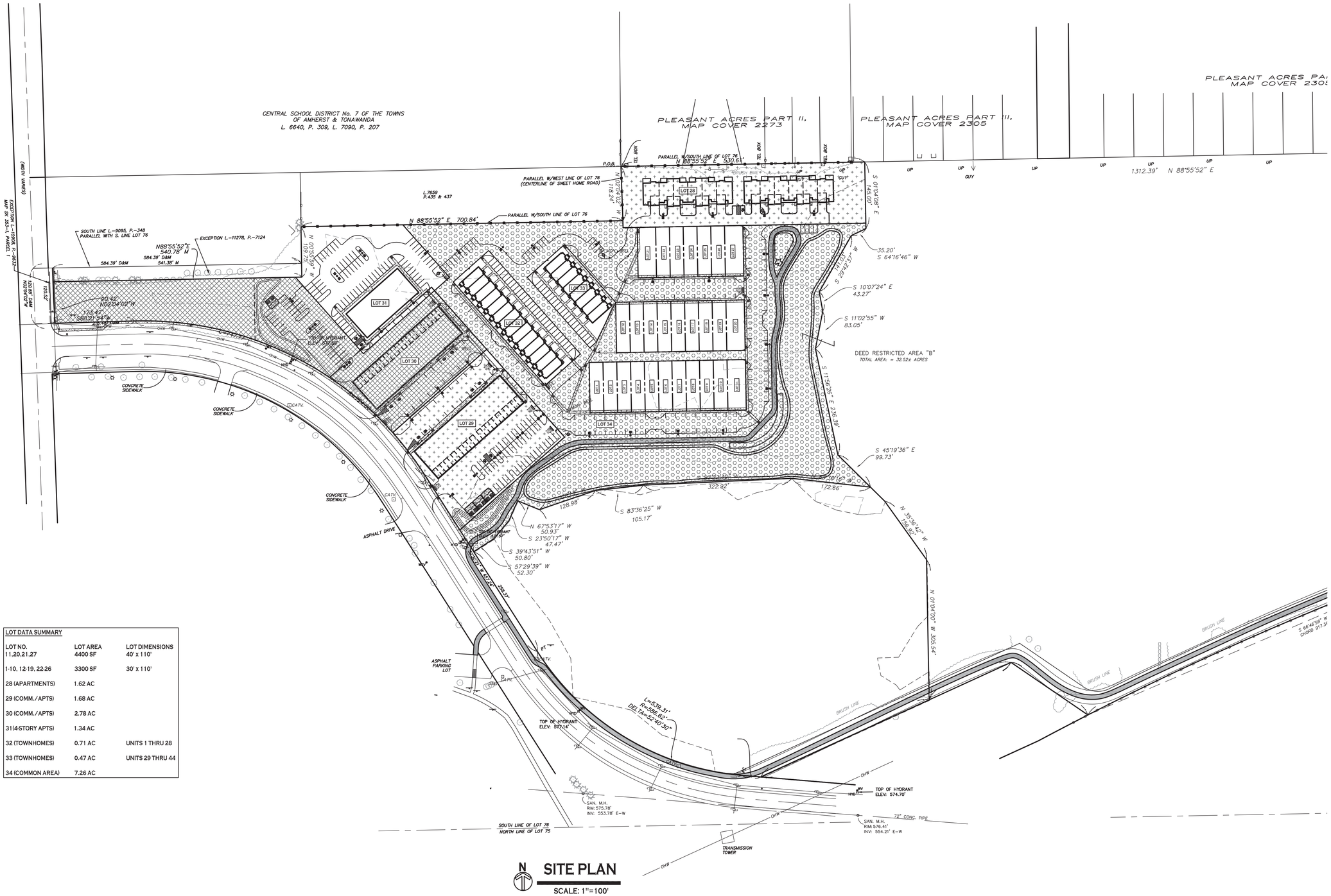

SITE PLAN

SCALE: 1"=100'

LOT DATA SUMMARY		
LOT NO.	LOT AREA	LOT DIMENSIONS
11,20,21,27	4400 SF	40' x 110'
1-10, 12-19, 22-26	3300 SF	30' x 110'
28 (APARTMENTS)	1.62 AC	
29 (COMM./APTS)	1.68 AC	
30 (COMM./APTS)	2.78 AC	
31 (4-STORY APTS)	1.34 AC	
32 (TOWNHOMES)	0.71 AC	UNITS 1 THRU 28
33 (TOWNHOMES)	0.47 AC	UNITS 29 THRU 44
34 (COMMON AREA)	7.26 AC	

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100' 100 0 100 200Ft.

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STATE OF NEW YORK CHRISTOPHER WOOD 076304 PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Parcel Map

DRAWING NO.

C-102

Project no.: 21011

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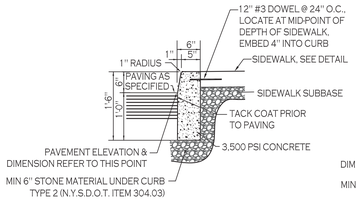
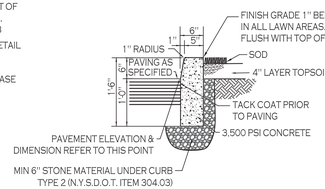


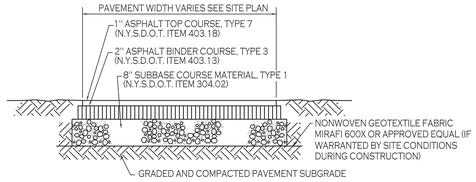
ABUTTING SIDEWALK



ABUTTING LANDSCAPE/GRASS

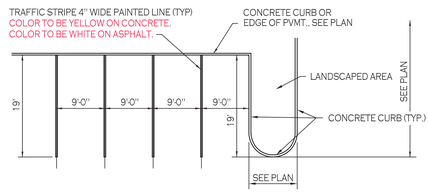
NOTES:
1. CONTROL JOINTS TO BE 2" DEEP AT 15'-0" O.C. - SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
2. WHERE THE CURB DROPS (IS FLUSH WITH ASPHALT) THE DEPTH OF CURB BELOW GRADE SHALL BE INCREASED TO 1'-6" AND OTHER DIMENSIONS ADJUSTED ACCORDINGLY.

TYPE "A" CONCRETE CURB - 1

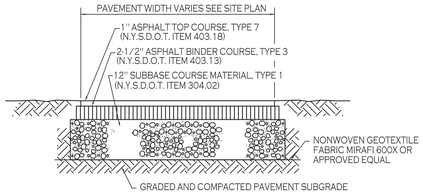


NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 401-3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304-3.

STANDARD DUTY ASPHALT SECTION - 4A

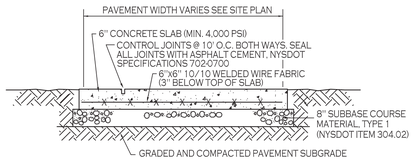


90° PARKING STALL LAYOUT - 2



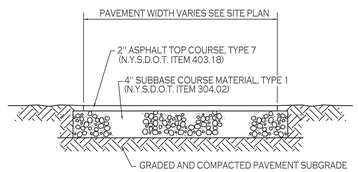
NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 401-3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304-3.

HEAVY DUTY ASPHALT SECTION - 4B



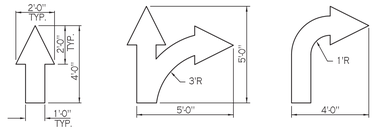
NOTE: CONCRETE PAVEMENT MATERIAL SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 501 AND CONSTRUCTION METHODS SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 502-3.

EXTERIOR CONCRETE SLAB-ON-GRADE SECTION - 4C

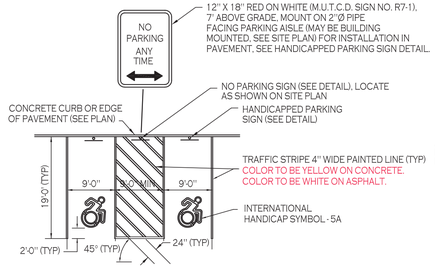


NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 401-3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304-3.

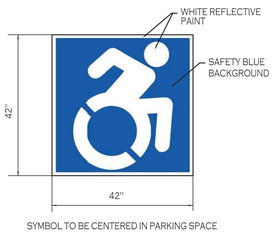
ASPHALT TRAIL SECTION - 4D



PAINTED TRAFFIC ARROWS - 3

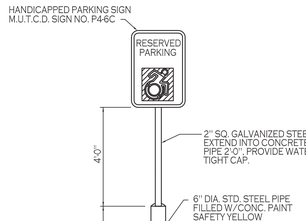


HANDICAPPED PAVEMENT MARKINGS & SIGNAGE - 5



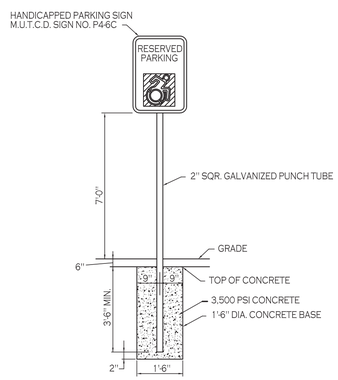
SYMBOL TO BE CENTERED IN PARKING SPACE

INTERNATIONAL HANDICAP SYMBOL - 5A



HANDICAPPED PARKING SIGN - 6

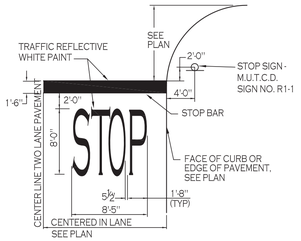
INSTALLED IN PAVEMENT



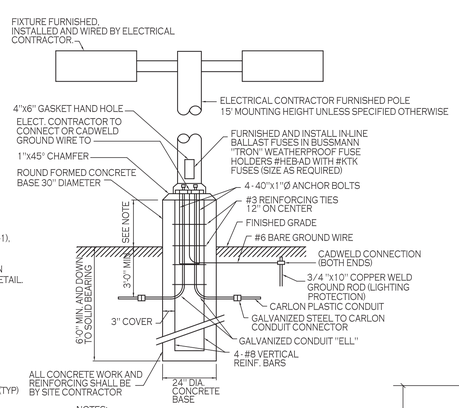
NOTES:
1. HANDICAPPED PARKING SIGN SHALL CONFORM WITH CURRENT STATE AND LOCAL CODES AND REGULATIONS.

HANDICAP PARKING SIGNS - 6

INSTALLED IN GRASS/LANDSCAPED AREA



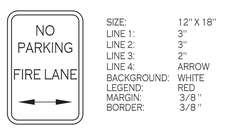
STOP BAR DETAIL - 7



NOTES:
1. FOR LOCATIONS OF FOUNDATIONS SEE SITE PLAN
2. FOR LIGHT FIXTURE ORDERING INFORMATION SEE SITE LIGHTING PLAN
3. LIGHT POLE BASE EXPOSURE ABOVE GRADE SHALL BE:
   IN CURBED ISLANDS: 6" ABOVE TOP OF CURB ELEVATION
   IN PAVEMENT: 3" ABOVE GRADE
   IN NONCURBED GRASS AREAS: 6" ABOVE GRADE

LIGHT POLE FOUNDATION - 8

USE FOR 15' MOUNTING HEIGHT L.E.D. FIXTURES

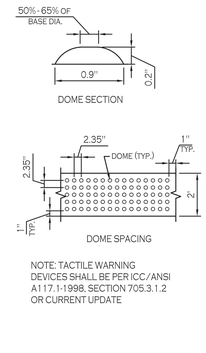


SIZE:	12" X 18"
LINE 1:	3"
LINE 2:	3"
LINE 3:	2"
LINE 4:	ARROW
BACKGROUND:	WHITE
LEGEND:	RED
MARGIN:	3/8"
BORDER:	3/8"

INSTALLATION

1) SIGNS SHALL BE LOCATED ON THE RIGHT SIDE OF THE ROADWAY FACING APPROACHING TRAFFIC.
2) SIGNS SHALL BE INSTALLED APPROXIMATELY TWO FEET OFF OF PAVEMENT EDGE OR FACE OF CURB.
3) THE HEIGHT OF THE SIGN SHALL BE A MINIMUM OF SEVEN (7) FEET, MEASURED FROM THE BOTTOM OF THE SIGN TO THE GROUND.
4) ALL SIGNS SHALL BE INSTALLED FACING TRAFFIC AT AN ANGLE OF BETWEEN 30 AND 45 DEGREES WITH A LINE PARALLEL TO THE FLOW OF TRAFFIC. THE SIGN LEGENDS SHALL INCLUDE SINGLE-HEADED ARROWS POINTING IN THE DIRECTION OF THE REGULATION IF THE SIGNS ARE AT THE END OF THE ZONE, OR DOUBLE-HEADED ARROWS POINTING IN BOTH DIRECTIONS IF THE SIGNS ARE AT INTERMEDIATE POINTS WITHIN A ZONE.
5) BUILDING MOUNT WHERE REQUIRED @ 50' O.C..

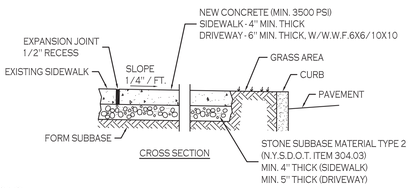
FIRE LANE SIGN - 14



DOME SECTION

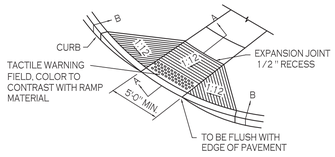
DOME SPACING

NOTE: TACTILE WARNING DEVICES SHALL BE PER ICC/ANSI A117.1-1998, SECTION 705.3.1.2 OR CURRENT UPDATE

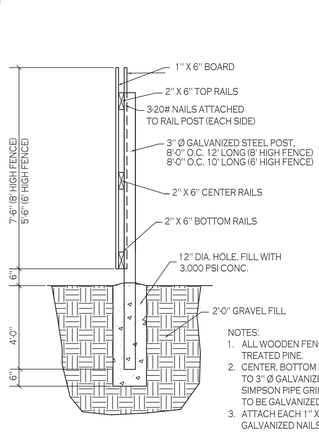


NOTES:
1. CONTROL JOINTS TO BE AT 5'-0" O.C., BOTH WAYS WHERE APPLICABLE. SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
2. CONCRETE SIDEWALK AND DRIVEWAY MATERIAL SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 501 AND CONSTRUCTION METHODS SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 608-3.
3. SUBBASE GRADE SHALL FOLLOW THE PROPOSED GRADE OF THE SIDEWALK AND SLOPE AWAY FROM BUILDING WHERE APPLICABLE, PROVIDE CONTINUOUS STONE PATH TO CURB UNDERDRAIN WHERE PROVIDED.
4. FULL DEPTH EXPANSION JOINTS SHALL BE INSTALLED EVERY 20' O.C., BOTHWAYS WHERE APPLICABLE. SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
5. SEE CURB DETAIL FOR DOWLING REQUIREMENTS WHERE ABUTTING CURB.
6. INSTALL 6" LONG #3 DOWELS @ 12" O.C. WHERE SIDEWALK ABUTS A BUILDING WALL AT AN ENTRANCE, THICKEN SIDEWALK TO 6" AT BUILDING WALL AND INSTALL DOWEL CENTERED IN THE 6" DEPTH. DOWELS AND THICKENING OF SIDEWALK SHALL EXTEND 18" EITHER SIDE OF ENTRANCE.
7. INSTALL 1/2" PREMOLDED EXPANSION JOINT WITH BACKER ROD & SEALANT WHERE SIDEWALK ABUTS BUILDING OR OTHER STRUCTURE.

CONCRETE SIDEWALK - 9

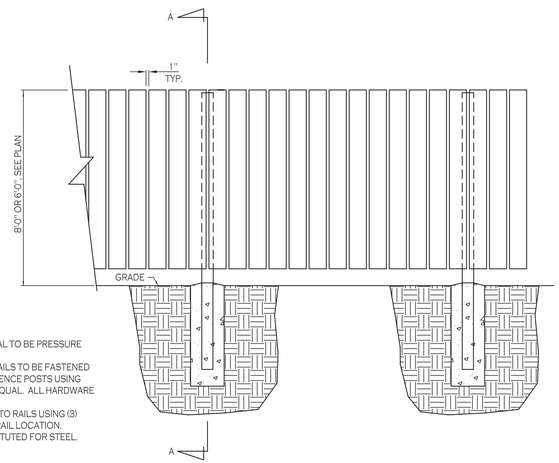


SIDEWALK CURB RAMP - 10



SECTION A-A

NOTES:
1. ALL WOODEN FENCE MATERIAL TO BE PRESSURE TREATED PINE.
2. CENTER, BOTTOM AND TOP RAILS TO BE FASTENED TO 3" Ø GALVANIZED STEEL FENCE POSTS USING SIMPSON PIPE GRIP TIES OR EQUAL. ALL HARDWARE TO BE GALVANIZED.
3. ATTACH EACH 1" X 6" BOARD TO RAILS USING (3) GALVANIZED NAILS AT EACH RAIL LOCATION.
4. WOOD POSTS CAN BE SUBSTITUTED FOR STEEL.



BOARD ON BOARD FENCE FENCE - 12

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CHRISTOPHER WOOD 076304 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Site Details

DRAWING NO.

C-103

Project no.: 21-011

1.m

Attachment: SP-2021-05_drawings_021722 (23057 : Sp-2021-05)

Packet Pg. 2953

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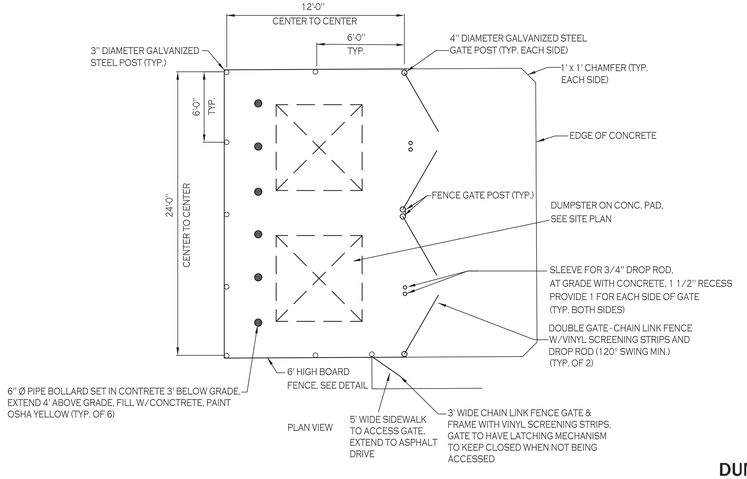
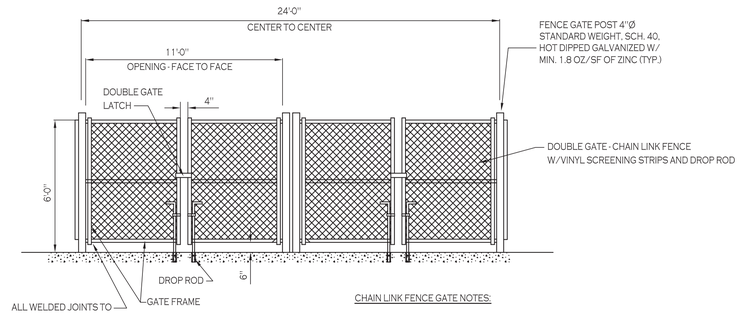


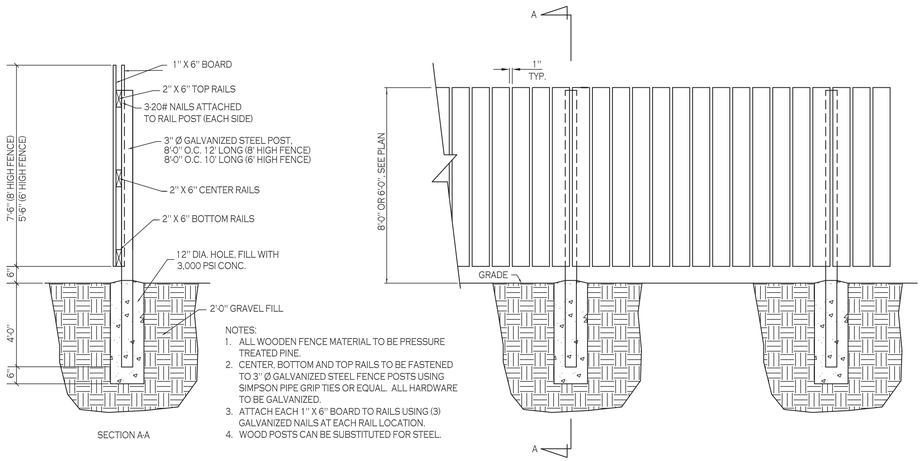


FRONT VIEW

DUMPSTER ENCLOSURE - 11

CHAIN LINK FENCE GATE NOTES:

1. GATE POST FOOTINGS TO BE MIN. 36" DEEP x (4x) POST DIAMETER, EXTEND POST TO WITHIN 6" OF BOTTOM.
2. GATE FRAMES TO BE 2" SQ. GALVANIZED STEEL, WEIGHING 2.60 LB/FT IN ACCORDANCE WITH ASTM F 900.
3. CHAIN LINK FENCE FABRIC SHALL BE 2" MESH, 9 GAUGE, ZINC COATED STEEL CORE WIRE. INSTALL MESH WITH HOOK BOLTS AND TENSION BARS ON ALL 4 SIDES, ATTACH AT 15" MAX.
4. DOUBLE GATE LATCH TO BE FORKED TYPE CAPABLE OF RETAINING GATE IN CLOSED POSITION AND HAVE PROVISION FOR PAD LOCK. LATCH SHALL BE OPERABLE FROM EITHER SIDE OF GATE.
5. ALL HARDWARE TO BE HOT DIPPED GALVANIZED STEEL TO SUIT GATE SIZE.



NOTES:
1. ALL WOODEN FENCE MATERIAL TO BE PRESSURE TREATED PINE.
2. CENTER, BOTTOM AND TOP RAILS TO BE FASTENED TO 3" Ø GALVANIZED STEEL FENCE POSTS USING SIMPSON PIPE GRIP TIES OR EQUAL. ALL HARDWARE TO BE GALVANIZED.
3. ATTACH EACH 1" X 6" BOARD TO RAILS USING (3) GALVANIZED NAILS AT EACH RAIL LOCATION.
4. WOOD POSTS CAN BE SUBSTITUTED FOR STEEL.

BOARD ON BOARD FENCE FENCE - FOR DUMPSTER ENCLOSURE

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STATE OF NEW YORK
CHRISTOPHER WOOD
076304
LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Site
Details

DRAWING NO.
C-104
Project no.: 21-011

Attachment: SP-2021-05_drawings_021722 (23057 : Sp-2021-05)

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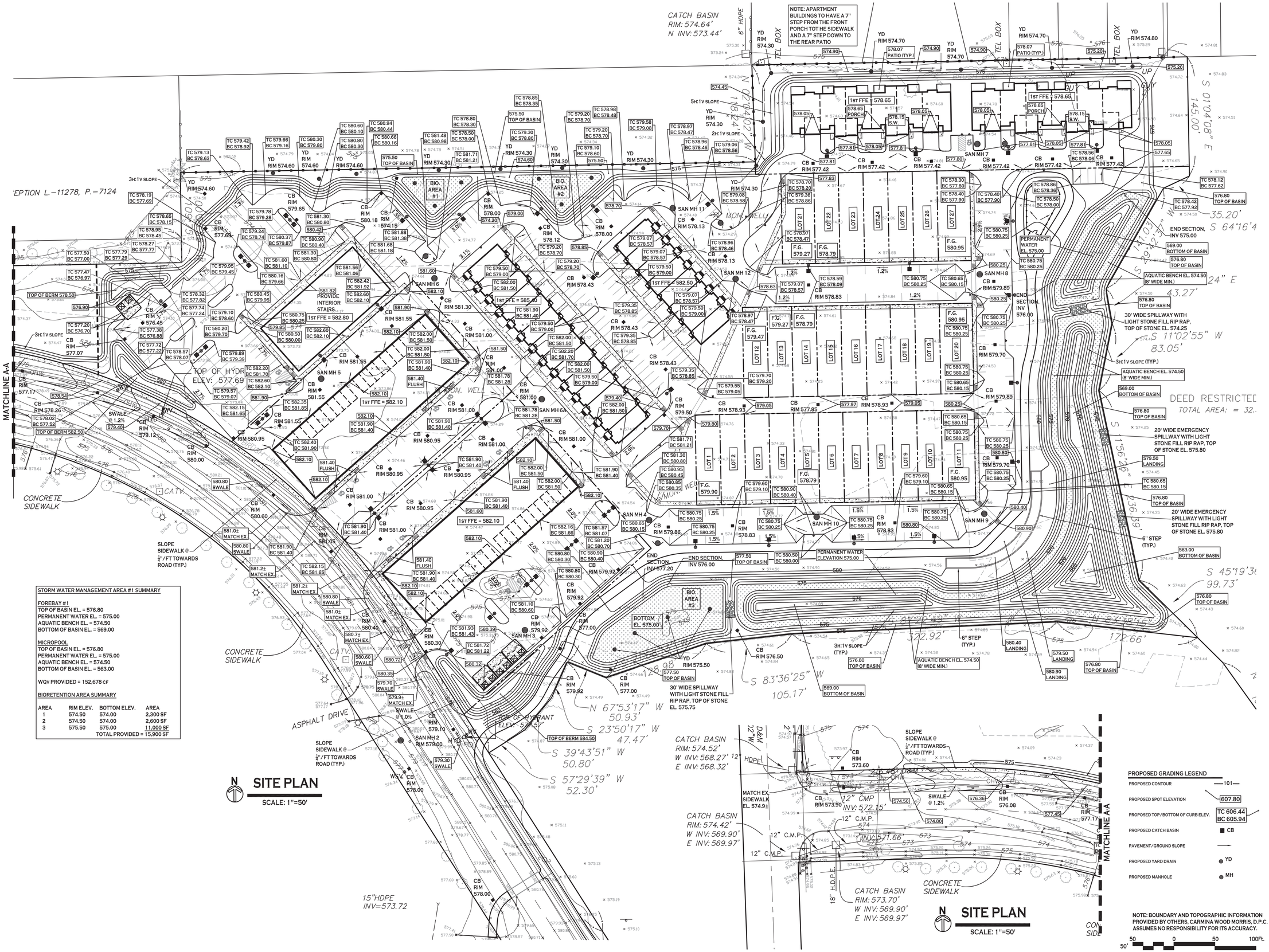

STORM WATER MANAGEMENT AREA #1 SUMMARY

FOREBAY #1
TOP OF BASIN EL. = 576.80
PERMANENT WATER EL. = 575.00
AQUATIC BENCH EL. = 574.50
BOTTOM OF BASIN EL. = 569.00

MICROPOOL
TOP OF BASIN EL. = 576.80
PERMANENT WATER EL. = 575.00
AQUATIC BENCH EL. = 574.50
BOTTOM OF BASIN EL. = 563.00

WQv PROVIDED = 152,678 CF

BIORETENTION AREA SUMMARY

AREA	RIM ELEV.	BOTTOM ELEV.	AREA
1	574.50	574.00	2,300 SF
2	574.50	574.00	2,600 SF
3	575.50	575.00	11,000 SF
		TOTAL PROVIDED =	15,900 SF

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CHRISTOPHER WOOD
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LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Grading Plan

DRAWING NO.
C-200

Project no.: 21 011

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS. CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

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Packet Pg. 2955

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MATCHLINE AA (SEE SHT. C-301)

EXCEPTION L.–11278, P.–7124

NOTE: PIPE RUNS ALONG THE NORTH PROPERTY LINES SHALL BE 6" PERFORATED HDPE (FRENCH DRAIN)

NOTE: ROOF DOWNSPOUTS FOR THE (2) APARTMENT BUILDINGS TO BE TIED INTO THE STORM SYSTEM SOUTH OF THE BUILDINGS

STORM WATER MANAGEMENT AREA #2

STORM WATER MANAGEMENT AREA #1

BIO. AREA #1

BIO. AREA #2

BIO. AREA #3

TOP OF HYDRANT ELEV: 577.69'

TOP OF HYDRANT ELEV: 577.57'

CONCRETE SIDEWALK

ASPHALT DRIVE

ASPHALT PARKING

BRUSHY LINE

MON. WELL

CATV.

HYD.

WSV

FORBAY #1

MICROPOOL

NOTE: INSTALL END SECTION WITH LIGHT STONE FILL RIP RAP ON ALL DISCHARGES INTO BIORETENTION AREAS

NOTE: INSTALL END SECTION WITH LIGHT STONE FILL RIP RAP ON ALL DISCHARGES INTO BIORETENTION AREAS

DUPLEX NOTES:
1. HOUSE ROOF LEADERS TO CONNECT TO THE STORM SYSTEM IN FRONT OF THE HOUSE. IF NO STORM SEWER DIRECTLY IN FRONT OF THE HOUSE, ROOF LEADERS TO CONNECT TO THE ALLEY STORM SEWER.
2. GARAGE ROOF LEADERS TO TIE INTO THE STORM SYSTEM IN THE ALLEY.

MATCHLINE B-B (SEE SHT. C-301)

N

PLAN

SCALE: 1"=50'

STORM CB/MH SUMMARY

NO.	RIM	INV	NOTES
1	580.95	579.08	
2	581.55	578.91	
3	581.55	578.71	
4	581.55	578.53	
5	581.55	578.31	
6	581.30	578.03	
7	581.00	577.93	
8	581.00	577.78 NW&SE, 578.38 SW	
9	581.00	577.59 NW&SE, 578.38 SW	
10	581.00	577.31	
11	579.86	576.42	
12	578.83	576.96	
12A	578.83	576.56	
13	581.00	579.13	
14	580.95	578.93	
15	580.95	578.75	
16	581.00	578.58	
17	581.00	579.13	
18	580.95	578.93	
19	580.95	578.75	
20	581.00	578.58	
21	579.92	578.05	
21A	580.30	578.43	
22	579.92	577.86	
23	579.92	577.67	
24	579.92	577.42	
25	579.50	577.63	
26	578.93	577.06	
27	577.85	576.79	
28	578.93	576.52	
29	579.89	576.35 N&W, 577.82 S	
29A	579.70	578.03	
30	578.13	576.26	
31	-	-	
32	578.13	575.59	
33	578.83	575.48	
34	579.89	575.14 E&W, 576.21 S	
35	579.70	576.28	
36	577.42	575.75	
37	577.42	575.63	
38	577.42	575.52	
39	577.42	575.40	
40	577.42	575.26	
41	577.42	575.11	
42	-	-	
43	578.00	576.13	
44	578.43	576.56	
45	578.43	576.34	
46	578.43	576.11	
47	578.12	575.89	
47A	580.00	578.13	
48	580.18	578.01	
48A	579.65	570.75	
49	577.69	575.82	
50	-	-	
51	576.30	574.43	
52	577.07	SEE DETAIL	OUTLET STRUCTURE
53	576.50	574.95 E, 574.00 W	OUTLET STRUCTURE
54	577.00	573.78 W, 572.43 N&W	
55	577.00	572.29	
56	574.75	571.41	

STORM WATER MANAGEMENT AREA #1 SUMMARY

STORM EVENT	PRIMARY DISCHARGE *	SPILLWAY DISCHARGE **	ELEVATION
1 YR	2.78 CFS	0 CFS	575.23
2 YR	2.86 CFS	0 CFS	575.32
5 YR	3.01 CFS	0 CFS	575.46
10 YR	3.16 CFS	0 CFS	575.60
25 YR	3.36 CFS	0 CFS	575.83
50 YR	3.48 CFS	1.25 CFS	576.00
100 YR	3.60 CFS	7.80 CFS	576.11

* PRIMARY DISCHARGE IS TO DODGE ROAD FROM THE BASIN AND THE BIORETENTION AREA #3

** SPILLWAY DISCHARGE IS TO THE WETLANDS TO THE EAST

STORM WATER MANAGEMENT AREA #2 SUMMARY

STORM EVENT	EXISTING DISCHARGE	PROPOSED DISCHARGE	ELEVATION
1 YR	0.87 CFS	0.33 CFS	570.29
2 YR	1.34 CFS	0.68 CFS	570.46
5 YR	2.14 CFS	1.05 CFS	570.79
10 YR	2.94 CFS	1.28 CFS	571.13
25 YR	4.34 CFS	1.61 CFS	571.73
50 YR	5.69 CFS	3.61 CFS	572.23
100 YR	7.33 CFS	4.83 CFS	572.92

UNDERGROUND DETENTION SUMMARY

(286) ADS STORMTECH SC-740 CHAMBERS
TOP OF STONE ELEV. = 573.00
TOP OF CHAMBER ELEV. = 572.50
BOTTOM OF CHAMBER ELEV. = 570.00
BOTTOM OF STONE ELEV. = 569.50
TOTAL STORAGE = 18,574 CF

PROPOSED UTILITY LEGEND

PROPOSED STORM SEWER	ST
PROPOSED SANITARY SEWER	6"SA
PROPOSED WATERLINE	1"W
PROPOSED CATCH BASIN	CB
PROPOSED YARD DRAIN	YD
PROPOSED MANHOLE	MH
PROPOSED HYDRANT ASSEMBLY	
PROPOSED GATE VALVE	GV

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

1.m

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STATE OF NEW YORK CHRISTOPHER WOOD 076394 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Storm Drainage Plan

DRAWING NO.

C-300

Project no.: 21-011

Attachment: SP-2021-05_021722 (23057 : Sp-2021-05)

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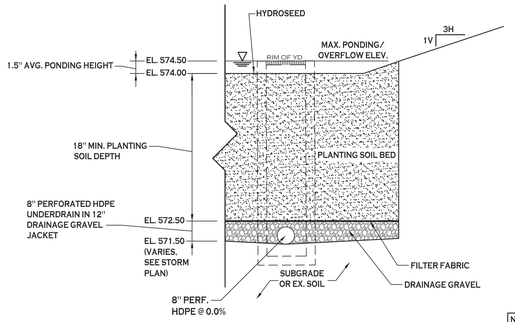
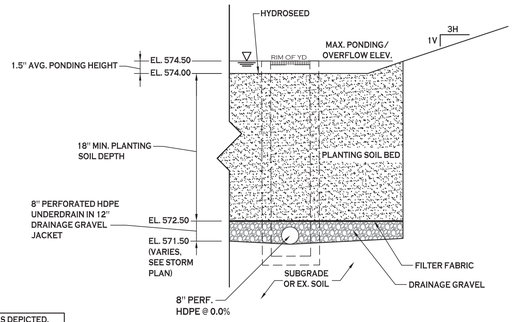
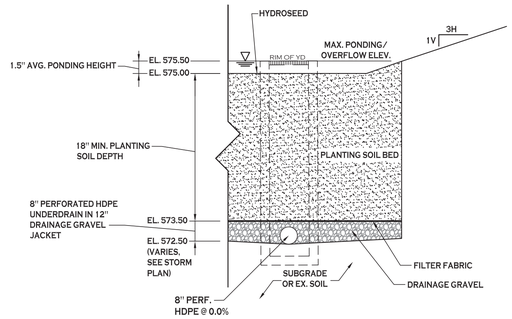


BIORETENTION AREA #1



BIORETENTION AREA #2

NOTE: AS DEPICTED, YARD DRAIN RIM ELEVATIONS ARE TO BE SET 6" ABOVE PROPOSED GRADE IN BIORETENTION AREAS.



BIORETENTION AREA #3

NOTES:
1. FILTER FABRIC TO BE NON-WOVEN CLASS 'C', MIRAFI 180-N OR APPROVED EQUIVALENT
2. MULCH TO BE SHREDDED HARDWOOD, AGED 12 MONTHS MIN.
3. DRAINAGE GRAVEL TO MEET AASHTO M-43. NO.67, SIZE 0.25" TO 0.75"
4. CONTRACTOR TO PROVIDE PLANTING SOIL SUBMITTAL SPECIFICATION FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.

NOTE: PLANTING SOIL SHALL BE LOAM/SAND MIX CONTAINING A MINIMUM OF 35 TO 60% SAND BY VOLUME AND LESS THAN 25% CLAY. SOIL SHOULD FALL WITHIN USCS TYPES SM OR ML WITH PERMEABILITY OF AT LEAST 0.5 FEET PER DAY. SOIL SHOULD BE FREE FROM STONES, STUMPS, ROOTS OR OTHER WOODY MATERIAL OVER 1" IN DIAMETER. PLACEMENT OF THE PLANTING SOIL SHOULD BE IN LIFTS OF 12" TO 18", LOOSELY COMPACTED.

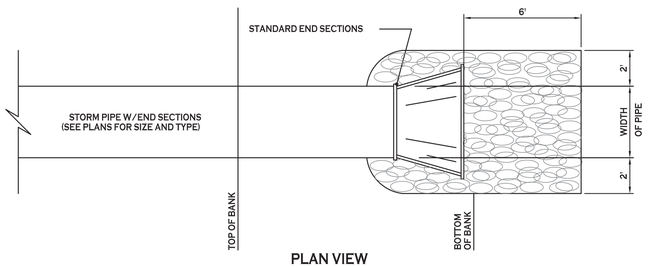
CHARACTERISTICS SHALL BE:
PH RANGE: 5.2 - 7.00
ORGANIC MATTER: 1.5 - 4.0%
MAGNESIUM: 35 LBS PER ACRE MIN.
PHOSPHORUS: 75 LBS PER ACRE MIN.
POTASSIUM: 85 LBS PER ACRE MIN.
SOLUBLE SALTS: 500 PPM
CLAY: 10 TO 25%
SILT: 30 TO 55%
SAND: 35 TO 60%

BIO-RETENTION AREA SEEDING SPEC (NORTHEAST WETLAND GRASS SEED MIX):

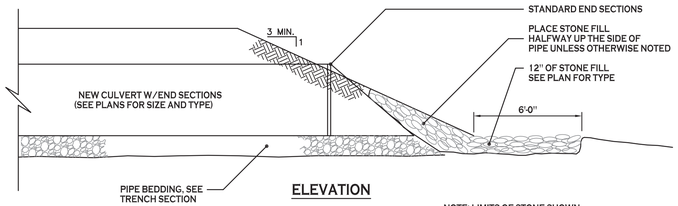
SEED MIXTURE	VARIETY	PERCENT BY NO. OF SEEDS
CREEPING BENTGRASS	AGROSTIS STOLONIFERA	63.0
ROUGH BLUEGRASS	POA TRIVIALIS	17.0
MEADOW FOXTAIL	ALOPECURUS ARUNDINACEUS	11.0
ANNUAL RYEGRASS	LOLIUM MULTIFLORUM	4.5
DEERTONGUE	PANICUM CLANDESTINUM	4.5

BIORETENTION AREA - TYPICAL SECTIONS

NOT TO SCALE



PLAN VIEW

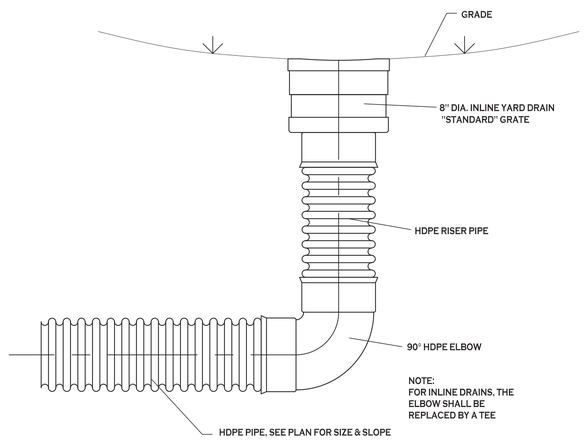


ELEVATION

NOTE: LIMITS OF STONE SHOWN ARE MINIMUMS, PLAN MAY INDICATE GREATER LIMITS

TYPICAL PIPE OUTLET W/ END SECTION & RIP RAP

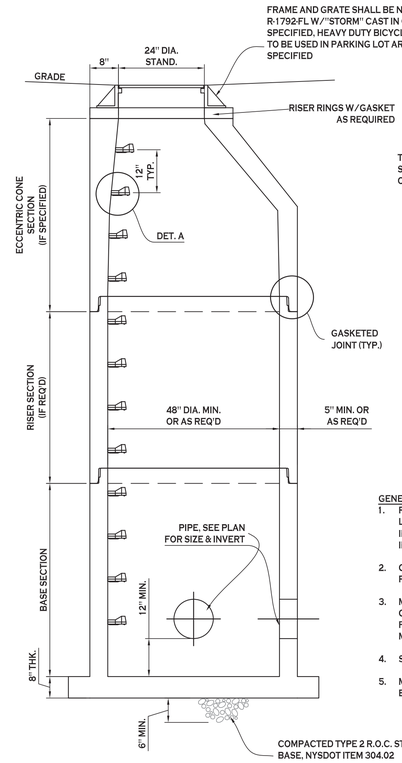
NOT TO SCALE



NOTE:
FOR INLINE DRAINS, THE ELBOW SHALL BE REPLACED BY A TEE

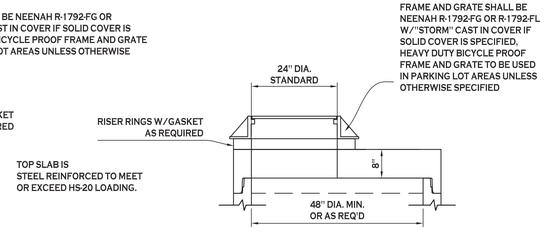
NOTE:
SEE TYPICAL TRENCH SECTION FOR BEDDING REQUIREMENTS

TYPICAL YARD DRAIN DETAIL



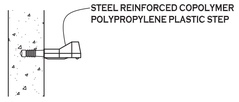
TYPICAL STORM MANHOLE DETAIL

NOT TO SCALE



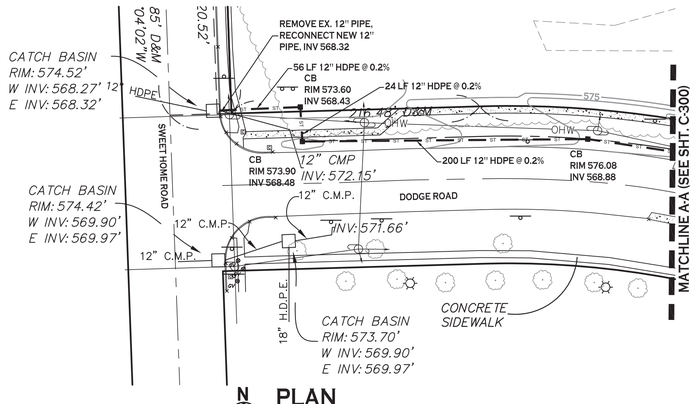
NOTE: ECCENTRIC CONE SECTION SHALL BE USED UNLESS DEPTH WARRANTS TOP SLAB PER MANUFACTURER

ALTERNATE TOP SLAB



DETAIL A

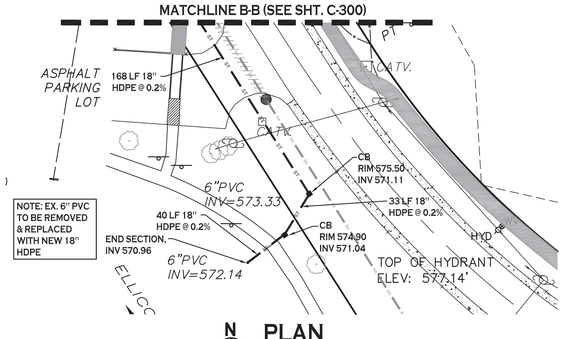
GENERAL NOTES:
1. REINFORCED STEEL TO CONFORM TO LATEST A.S.T.M. A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) IN BASE SLAB.
2. CONCRETE COMPRESSIVE STRENGTH - 4000 PSI MINIMUM.
3. MANHOLE DESIGN SPECIFICATIONS TO CONFORM TO LATEST A.S.T.M. C478 SPEC. FOR PRE-CAST REINFORCED CON-CRETE MANHOLE SECTIONS.
4. SINGLE POUR MONOLITHIC BASE SECTION.
5. MANHOLE TO BE COATED ON OUTSIDE WITH BITUMASTIC SEALER.



N

PLAN

SCALE: 1"=50'



N

PLAN

SCALE: 1"=50'

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STATE OF NEW YORK
CHRISTOPHER WOOD
076394
LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Storm Drainage Details

DRAWING NO.

C-301

Project no.: 21-011

Attachment: SP-2021-05_drawings_021722 (23057 : Sp-2021-05)

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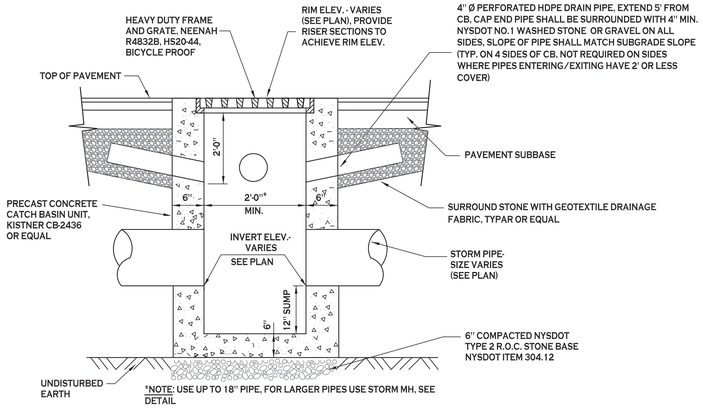
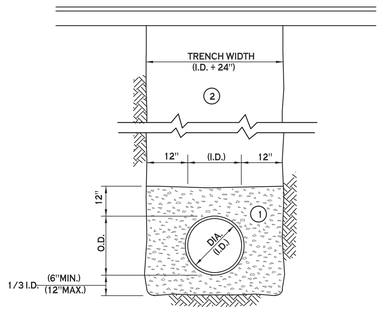


TYPICAL PRECAST CATCH BASIN

NOT TO SCALE



NOTES:

A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.

C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT 1985 EDITION)

(1) NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

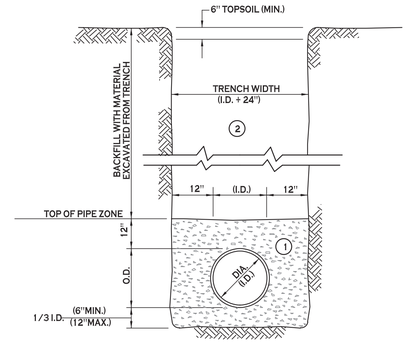
NO SLAG SHALL BE ALLOWED FOR MATERIAL (1)

(2) TYPE 2 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 304-2.02 TYPE 2. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN TWO INCHES AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL (2)

STORM SEWER TRENCH SECTION IN PAVED AREAS

NOT TO SCALE



NOTES:

A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.

C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT 1985 EDITION)

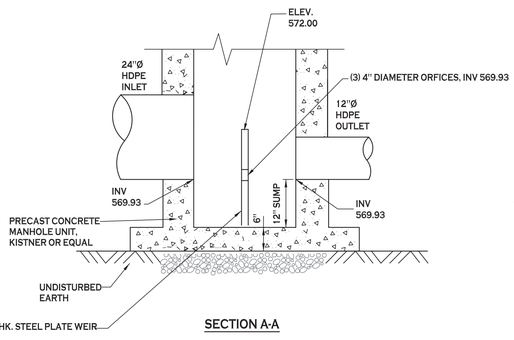
(1) NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL (1)

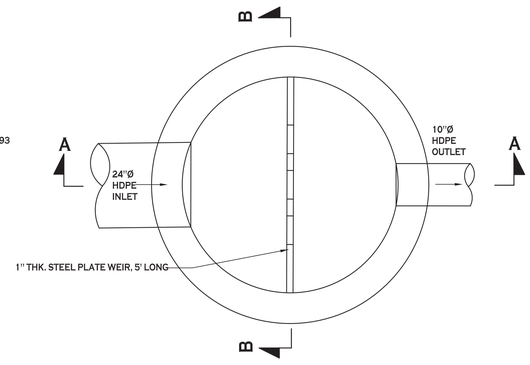
(2) BACKFILL MATERIAL SHALL BE NATIVE SOIL CONTAINING NO UNSUITABLE MATERIAL COMPACTED IN 6" LIFTS.

STORM SEWER TRENCH SECTION IN UNPAVED AREAS

NOT TO SCALE



SECTION A-A



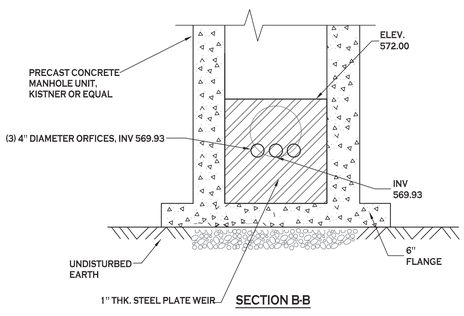
PLAN

NOTES:
1. FASTEN STEEL PLATE TO CB WALL WITH ANGLE CLIPS AND BOLTS
2. STEEL PLATE, ANGLE CLIPS, AND BOLTS TO BE HOT DIPPED GALVANIZED

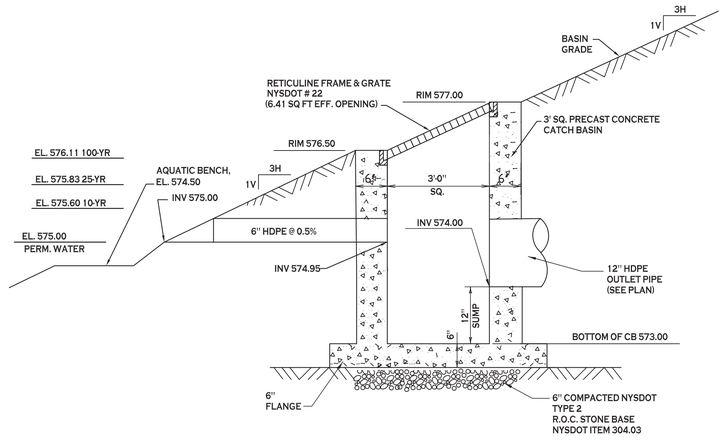
*NOTE: USE 5'-0" I.D. MANHOLE

OUTLET CONTROL STRUCTURE - CB 52

NOT TO SCALE



SECTION B-B



DETENTION BASIN OUTLET STRUCTURE - CB 53

N.T.S.

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STATE OF NEW YORK CHRISTOPHER M. GUY 076394 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Storm Drainage Details

DRAWING NO.

C-302

Project no.: 21-011

Attachment: SP-2021-05_drawings_021722 (23057 : Sp-2021-05)

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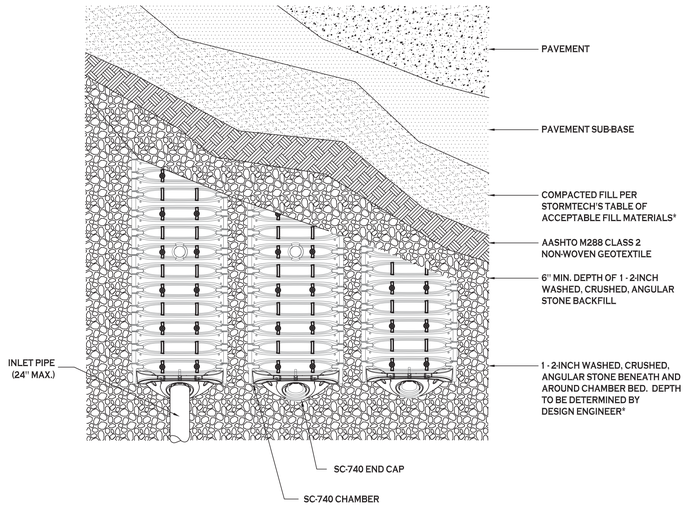
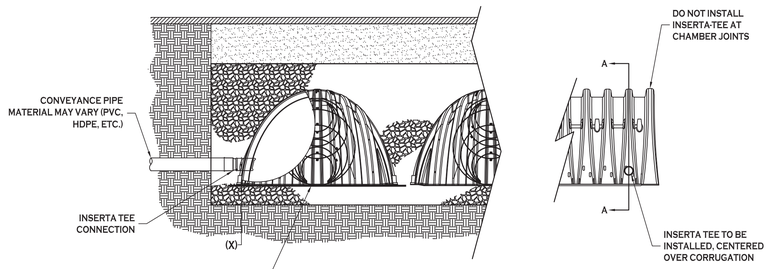


STORMTECH SC-740 CHAMBER SYSTEM
PLAN VIEW DETAIL
NOT TO SCALE

*SEE STORMTECH'S DESIGN MANUAL



SECTION A-A

SIDE VIEW

NOTE:
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

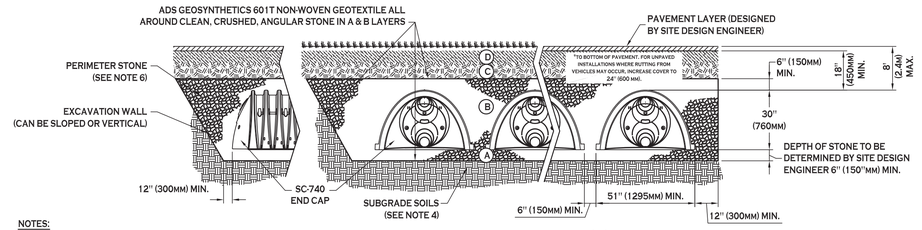
CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
MC-3500	12" (300 mm)	6" (150 mm)
MC-4500	12" (300 mm)	8" (200 mm)
INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON		

INSERTA TEE DETAIL
NOT TO SCALE

ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION/DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LATER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 LBS (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 LBS (89 kN).
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. [2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



NOTES:
1. SC-740 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
6. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

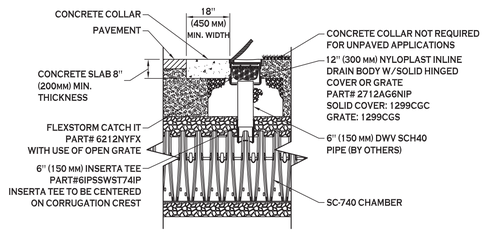
INSPECTION AND MAINTENANCE
STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
A. INSPECTION PORTS (IF PRESENT)
A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
B. ALL ISOLATOR ROWS
B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES:
1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



SC-740 6" INSPECTION PORT DETAIL
NOT TO SCALE

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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: 2/24/21
Scale: As Noted

DRAWING NAME:
Storm Drainage Details

DRAWING NO.
C-303

Project no.: 21011

Attachment: SP-2021-05_drawings_021722 (23057 : Sp-2021-05)

Packet Pg. 2959

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EXCEPTION L.–11278, P.–7124

F.F.E. = 582.80

F.F.E. = 582.10

F.F.E. = 578.65

F.F.E. = 578.65

8" D.I. COMBINED WATER SERVICE FROM MAIN IN AND THROUGH ENCLOSURE

INSULATED METER AND RPZ ENCLOSURE

8" G.V. (BY ECWA)

EX. 12" WATER MAIN

INSTALL 12"x12"x8" TEE (BY ECWA)

CONCRETE SIDEWALK

ELEVATION OF EXISTING HYDRANTS ALONG DODGE ROAD TO BE ADJUSTED TO ACCOMMODATE FILLING OF THE SITE. COORDINATE WITH ECWA

UTILITY POLES AND GUY WIRES ALONG DODGE ROAD TO BE EVALUATED AND ADJUSTED TO ACCOMMODATE FILLING OF THE SITE. COORDINATE WITH UTILITY COMPANIES

UTILITY POLE TO BE RELOCATED, COORDINATE WITH UTILITY COMPANIES

HYDRANT ASSEMBLY

8" G.V. (TYP. OF 3)

FDC

SAN MH 6

SAN MH 5

INVERT 577.80

C.O. TRAP & VENT, VENT UP THROUGH BUILDING WALL

TOP OF HYDRANT ELEV: 577.69'

25 LF 6" SDR-35 PVC @ 1.0% MIN.

(BALF 8" SDR35 PVC PRIVATE SANITARY MAIN @ 0.4%)

8" AWWA C-900 PVC PRIVATE WATER MAIN

25 LF 6" SDR-35 PVC @ 1.0% MIN. (RESIDENTIAL LATERAL)

C.O. TRAP & VENT, VENT UP THROUGH BUILDING WALL

INSTALL FITTINGS AND BLOCKING (TYP.)

INVERT 577.60

25 LF 6" SDR-35 PVC @ 1.0% MIN. (COMMERCIAL LATERAL)

6" G.V.

6" AWWA C-900 PVC COMB. SERVICE, SPLIT INTO FIRE AND DOM. INSIDE BLDG (TYP. 4-STORY BLDGS)

FDC

87 LF 6" SDR-35 PVC @ 1.0% MIN. (RESIDENTIAL LATERAL)

C.O. TRAP & VENT, VENT UP THROUGH BUILDING WALL

87 LF 6" SDR-35 PVC @ 1.0% MIN. (COMMERCIAL LATERAL)

WYE CONNECT

SAN MH 3

197 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

SAN MH 11

SAN MH 12

SAN MH 6A

SAN MH 4

SAN MH 10

SAN MH 9

SAN MH 8

SAN MH 7

MON. WELL

SEE NOTE FOR WATER AND SEWER SERVICE TO TOWNHOME BUILDING

745 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

159 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

298 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

292 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

204 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

204 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

202 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

202 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

322 LF 8" SDR-35 PVC PUBLIC SANITARY MAIN @ 0.4%

8" AWWA C-900 PVC PRIVATE WATER MAIN

8" AWWA C-900 PVC PRIVATE WATER MAIN

8" AWWA C-900 PVC PRIVATE WATER MAIN

INSTALL FITTINGS AND BLOCKING (TYP.)

INSTALL C.O., TRAP & VENT

INV 574.15

6" SDR-35 PVC SANITARY LATERAL @ 1.0% MIN.

INV 574.15

2" TYPE "K" COPPER WATER SERVICE

2" TAP & CURB STOP BOX

HYDRANT ASSEMBLY

8" G.V. HYDRANT ASSEMBLY

INSTALL FITTINGS AND BLOCKING (TYP.)

159 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

292 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

8" AWWA C-900 PRIVATE WATER MAIN

LOT 1 LOT 2 LOT 3 LOT 4 LOT 5 LOT 6 LOT 7 LOT 8 LOT 9 LOT 10 LOT 11

LOT 12 LOT 13 LOT 14 LOT 15 LOT 16 LOT 17 LOT 18 LOT 19 LOT 20

LOT 21 LOT 22 LOT 23 LOT 24 LOT 25 LOT 26 LOT 27

INSTALL SELECT FILL ACROSS ROAD

INSTALL SELECT FILL ACROSS DRIVEWAY

15"HDPE INV=573.72

ASPHALT DRIVE

ASPHALT PARKING LOT

PARKING LOT

CONCRETE SIDEWALK

CATV.

HYD.

W.V.

W.M.

OHW

TOP OF HYDRANT ELEV: 577.57'

TOP OF HYDRANT ELEV: 577.14'

6"PVC INV=573.33

6"PVC INV=572.14

ELLICOTT CREEK DIVERSION CHANNEL

CORE DRILL & CONNECT TO EX. MANHOLE INV 562.37, INSTALL INSIDE DROP

SAN. M.H. RIM: 575.78' INV: 553.78' E–W

MATCHLINE A-A

MATCHLINE A-A

NOTE: AN EXTERIOR GREASE TRAP SIZED IN ACCORDANCE WITH THE TOWN OF AMHERST CRITERIA MUST BE PROVIDED FOR ANY RESTAURANT

TOWNHOME NOTES:

1. ALL TOWNHOMES TO HAVE A ¾" TYPE "K" COPPER WATER SERVICE WITH 4.5' MIN. COVER

2. ALL TOWNHOMES TO HAVE A 4" SDR-35 PVC SANITARY SEWER LATERAL @ 1.0% MIN. WITH 4' MON. COVER

3. ALL TOWNHOME UNITS TO HAVE A NFPA 13D FIRE SUPPRESSION SYSTEM (SPRINKLER SYSTEM).

DUPLEX NOTES:

1. ALL DUPLEXES TO HAVE A ¾" TYPE "K" COPPER WATER SERVICE, SEE DETAIL

2. ALL DUPLEXES TO HAVE A 4" SDR-35 PVC SANITARY SEWER LATERAL, SEE DETAIL

3. ALL DUPLEX UNITS TO HAVE A NFPA 13D FIRE SUPPRESSION SYSTEM (SPRINKLER SYSTEM).

SANITARY MANHOLE CHART

SAN MH	RIM	INV IN	INV OUT
1	580.00	563.64	563.54
2	579.00	565.03	564.93
3	580.40	565.94	565.84
4	580.20	566.85 (E) 573.98 (W)	566.75
5	581.80	576.67	576.50
6	581.45	575.76	575.66
6A	581.15	574.87	574.77
7	577.90	-	571.00
8	580.15	569.96 (W) 570.36 (N)	569.86
9	580.35	568.69	568.59
10	578.40	567.77	567.67
11	578.50	-	571.83
12	578.45	571.25	571.15

N

PLAN

SCALE: 1"=50'

N

PLAN

SCALE: 1"=50'

ALLEY

NOTE: COORDINATE UTILITY ENTRY POINTS WITH ARCHITECTURAL PLANS

1ST FFE = FINISHED GRADE + 4'

PROPOSED DUPLEX

INV = BASEMENT FFE - 2'

COORDINATE CONNECTION POINT WITH UTILITY CO.'S

¾" TYPE "K" COPPER WATER SERVICE

¾" CURB STOP & BOX

INSTALL C.O., TRAP & VENT

4" SDR-35 PVC SANITARY LATERAL @ 1.0% MIN.

WYE CONNECT

8" PRIVATE SEWER MAIN

TAP WATER MAIN

8" PRIVATE WATER MAIN

TYPICAL DUPLEX LOT

SCALE: 1"=20'

PROPOSED UTILITY LEGEND

PROPOSED STORM SEWER	ST
PROPOSED SANITARY SEWER	6"SA
PROPOSED WATERLINE	1"W
PROPOSED CATCH BASIN	CB
PROPOSED YARD DRAIN	YD
PROPOSED MANHOLE	MH
PROPOSED HYDRANT ASSEMBLY	
PROPOSED GATE VALVE	GV

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

1.m

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STATE OF NEW YORK CHRISTOPHER WOOD 076394 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Utility Plan

DRAWING NO.

C-400

Project no.: 21-011

Attachment: SP-2021-05_drawings_021722 (23057 : Sp-2021-05)

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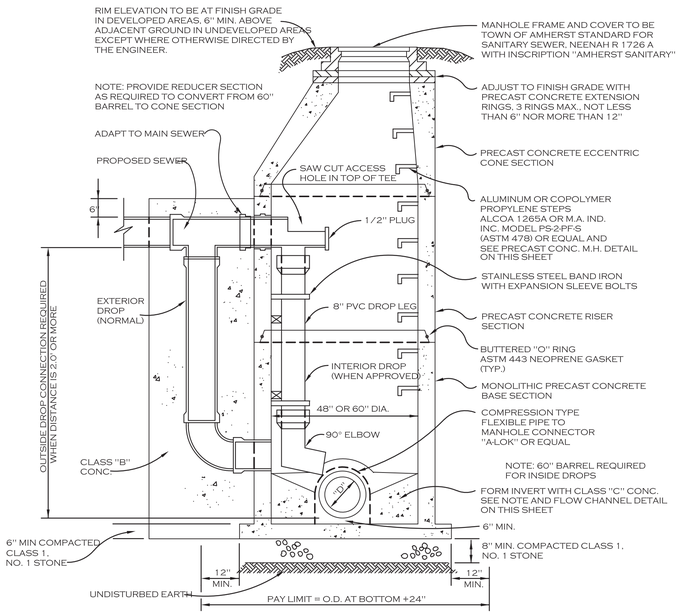
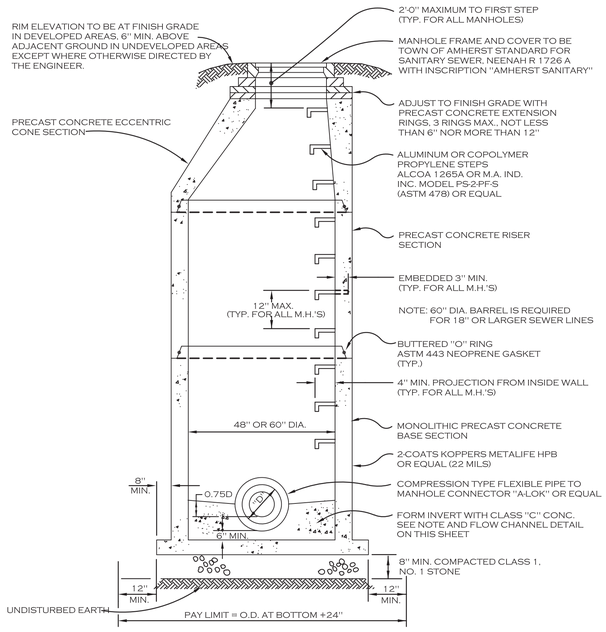
NOTIFY UNITED UNDERGROUND LOCATING SERVICE (U.U.L.S.) 72 HOURS BEFORE STARTING THE JOB

NOTIFY SUN OIL PIPELINE CORPORATION 72 HOURS BEFORE EXCAVATING (SEE DRAWING NO. 18)

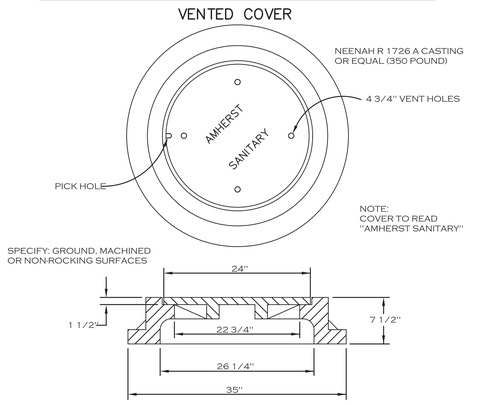
PRECAST CONCRETE DROP MANHOLE



PRECAST CONCRETE MANHOLE

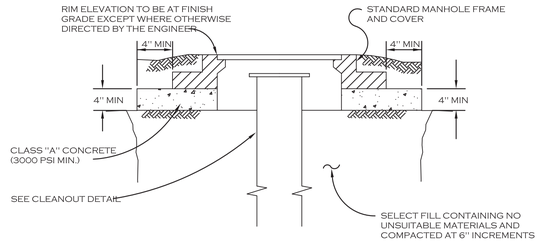


STANDARD MANHOLE FRAME AND COVER



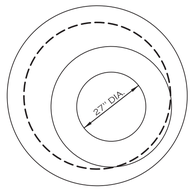
CLEANOUT WITH STANDARD MANHOLE FRAME AND COVER

(TO BE USED IN LOCATIONS ONLY AS APPROVED BY TOWN ENGINEER)

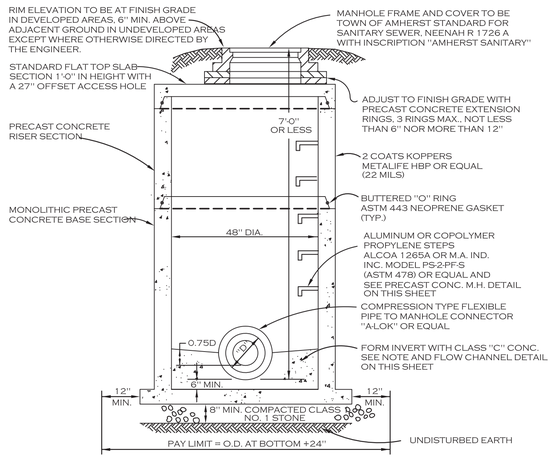


NOTE:
CLEANOUT NOT TO BE INSTALLED WHEN DISTANCE FROM M.H. EXCEEDS 150

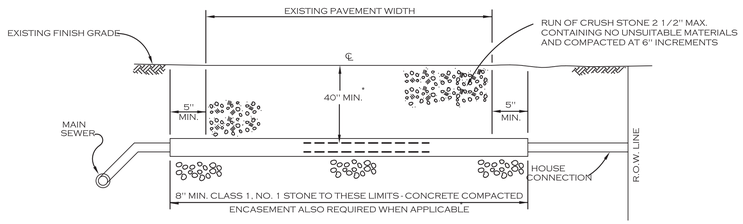
FLAT TOP MANHOLE ASSEMBLY



NOTE:
TO BE USED WHEN LOWEST INVERT TO RIM MEASUREMENT IS 7'-0" OR LESS

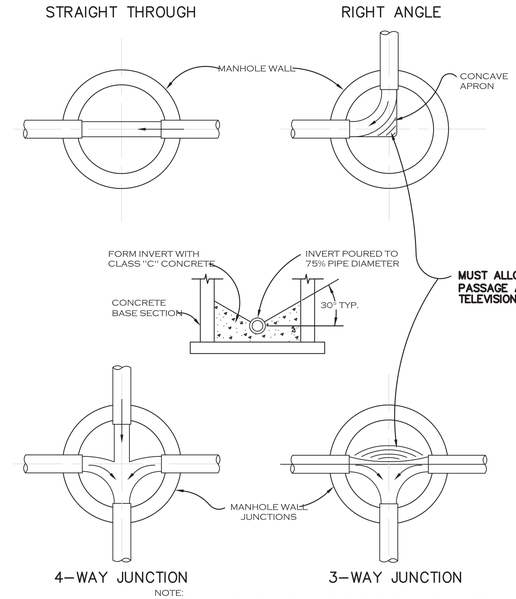


SANITARY TYPICAL PAVEMENT CROSSING FOR HOUSE CONNECTION



WHEN DEPTH FROM TOP OF HOUSE CONNECTION PIPE TO SURFACE IS LESS THAN 6.0 FEET, A CONCRETE ENCASEMENT WILL BE REQUIRED TO THE LIMITS SHOWN (SEE WATER CROSSING DETAIL SAN. SEWERS DWG. #4 - PG. #2 OF 4)

FLOW CHANNEL DETAIL SANITARY SEWERS



NOTE:
FLOW CHANNELS MUST ALLOW PLACEMENT, REMOVAL AND PASSAGE OF T.V. CAMERAS. THE CAMERA DIMENSIONS ARE APPROXIMATELY 26" LONG x 6 1/2" SQUARE. A BLOCK OF WOOD OF THESE DIMENSIONS MAY BE USED TO SIMULATE THE SIZE OF THE CAMERA. THIS WILL SIMPLIFY THE FORMATION OF FLOW CHANNELS AND INVERTS.

DEPTH OF ALL CHANNELS TO BE 75% OF PIPE DIAMETER.

FINISH ALL CHANNELS AT PROPER GRADE AS TO ALLOW SMOOTH & UN-OBSTRUCTED FLOW ALL INVERTS TO BE FLUSH WITH THE INSIDES.

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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: 12/1/21
Scale: As Noted

DRAWING NAME:
Sanitary Sewer Details

DRAWING NO.
C-401

Project no.: 21-011

Attachment: SP-2021-05_drawings_021722 (23057 : Sp-2021-05)

Packet Pg. 2961

1.m

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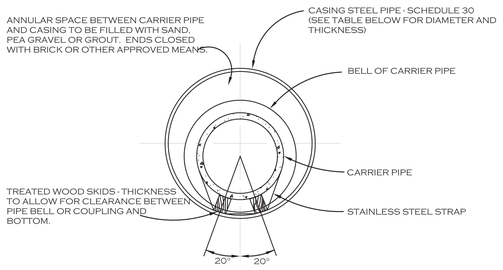
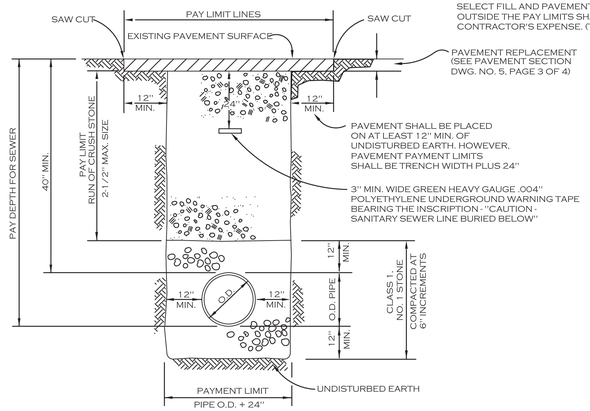
TOWN ROAD CROSSING BY JACKING AND BORING METHOD 8"–24" DIAMETER CARRIER PIPE



SCHEDULE FOR DIAMETER AND THICKNESS OF CASING PIPE

CARRIER PIPE DIAMETER	CASING PIPE DIAMETER	CASING PIPE WALL THICKNESS
8"	16" OR 20"	0.375
10"	20"	0.375
12"	24"	0.375
15"	27"	0.375 MIN.
18"	30"	0.375
21"	36"	0.469
24"	42"	0.469

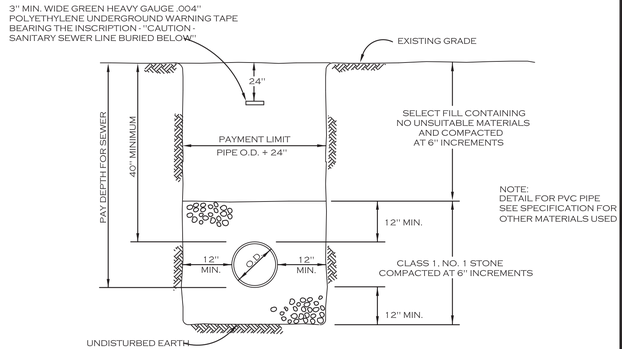
TYPICAL TRENCH DETAIL – TOWN ROAD CROSSING FOR MAIN SEWERS & HOUSE AND BUILDING CONNECTIONS



NOTE:
WHERE THE CONTRACTOR EXCAVATES BEYOND THE PAY LIMITS SHOWN; SELECT FILL AND PAVEMENT, SIDEWALK & DRIVEWAY REPLACEMENT OUTSIDE THE PAY LIMITS SHALL BE FURNISHED AND PLACED AT THE CONTRACTOR'S EXPENSE. (TYP.)

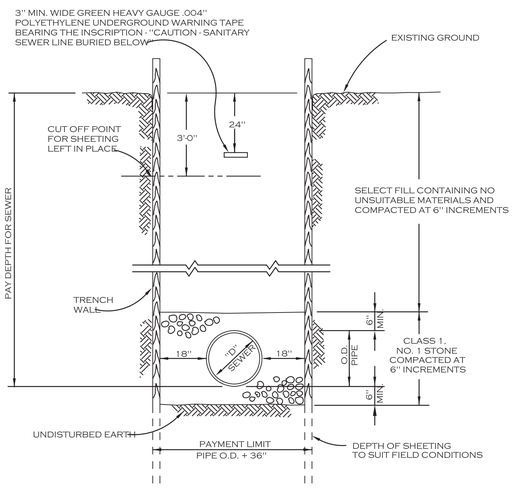
NOTE:
IF CONCRETE ENCASEMENT IS REQUIRED, IT SHALL BE INSTALLED IN PLACE OF (AND TO THE DIMENSIONS OF) THE PIPE BEDDING AND COVER TO 12" MIN. ABOVE AND BELOW THE PIPE (SEE WATER CROSSING DETAIL ON THIS SHEET)

TYPICAL EARTH TRENCH DETAIL UNPAVED AND UNTRAVELED AREAS

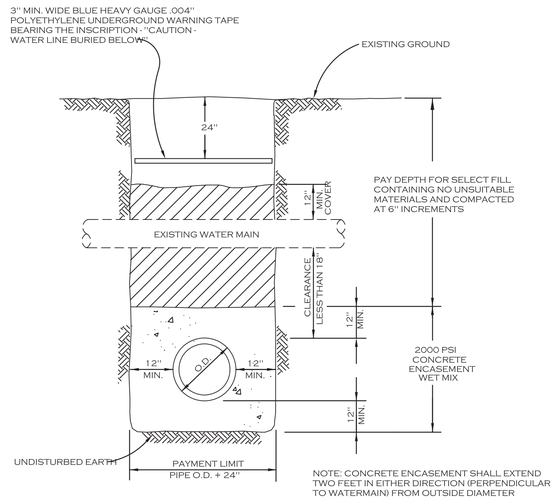


NOTE:
DETAIL FOR PVC PIPE SEE SPECIFICATION FOR OTHER MATERIALS USED

SHEETED TRENCH DETAIL

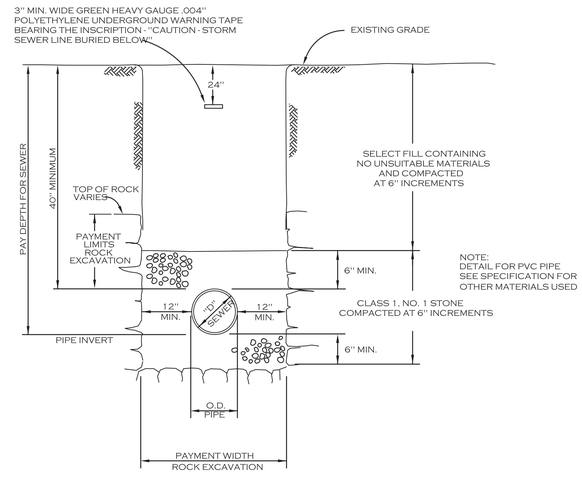


WATER CROSSING DETAIL CLEARANCE LESS THAN 18"



NOTE: CONCRETE ENCASEMENT SHALL EXTEND TWO FEET IN EITHER DIRECTION (PERPENDICULAR TO WATERMAIN) FROM OUTSIDE DIAMETER OF WATERMAIN.

TYPICAL ROCK TRENCH DETAIL



NOTE:
DETAIL FOR PVC PIPE SEE SPECIFICATION FOR OTHER MATERIALS USED

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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Sanitary Sewer Details

DRAWING NO.
C-402

Project no.: 21-011

1.m
Attachment: SP-2021-05_drawings_021722 (23057 : Sp-2021-05)
Packet Pg. 2962

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GENERAL NOTES:

01. THE CONTRACTOR SHALL COMPLY WITH THE TOWN OF AMHERST STANDARD DRAWINGS AND SPECIFICATIONS.

02. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE PROJECT ENGINEER AND THE TOWN OF AMHERST ENG. DEPT. OF ANY HAZARDOUS SUBSTANCE ENCOUNTERED DURING THE CONSTRUCTION OF THE WORK. HE SHALL AT HIS EXPENSE, CONFORM TO ALL LAWS, RULES, REGULATIONS AND DIRECTIONS AS PROMULGATED BY THE UNITED STATES DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, THE NEW YORK STATE DEPARTMENT OF HEALTH AND ANY SUCH LOCAL RULES, ORDINANCES AND LAWS WHEN ENCOUNTERING OR WORKING WITH ANY SUCH HAZARDOUS SUBSTANCE.

03. THE CONTRACTOR SHALL COMPLY IN ALL RESPECTS TO THE INDUSTRIAL CODE PART (RULE NO.) 53 RELATING TO CONSTRUCTION, EXCAVATION AND DEMOLITION OPERATIONS AT OR NEAR UNDERGROUND FACILITIES, AS ISSUED BY THE STATE OF NEW YORK DEPARTMENT OF LABOR, BOARD OF STANDARD AND APPEALS.

04. SINCE THE ERIE COUNTY WATER AUTHORITY OPERATES AND MAINTAINS THE EXISTING WATER LINES, THEY ARE TO BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE OF THE START OF CONSTRUCTION. ALL EXISTING VALVES ARE TO BE OPERATED BY THE ERIE COUNTY WATER AUTHORITY PERSONNEL.

05. THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AHEAD OF THE PIPE LAYING OPERATION, SO THAT, IF MINOR ADJUSTMENTS MUST BE MADE IN ELEVATION AND/OR ALIGNMENT DUE TO INTERFERENCE FROM THESE UTILITIES, SAID CHANGES CAN BE MADE IN ADVANCE OF THE WORK.

06. WHERE SUCH FACILITIES ARE UNDER THE SUPERVISION OF A PROFESSIONAL ENGINEER, HE SHALL CERTIFY TO THE ENGINEERING DEPARTMENT OF THE TOWN OF AMHERST THAT SAID FACILITIES AS CONSTRUCTED WERE SUPERVISED BY HIMSELF (HERSELF) AND THAT THE WORKS HAVE BEEN FULLY COMPLETED IN ACCORDANCE WITH THE APPROVED ENGINEERING REPORTS, PLANS, SPECIFICATIONS, CONTRACT DOCUMENTS AND ANY AND ALL ADDENDA TO SAME.

07. THE CONSTRUCTION OF THE FACILITIES SHALL BE UNDER THE SUPERVISION OF A PERSON OR FIRM QUALIFIED TO PRACTICE PROFESSIONAL ENGINEERING IN NEW YORK STATE UNDER THE EDUCATION LAW OF THE STATE, WHENEVER ENGINEERING SERVICES ARE REQUIRED BY SUCH LAW FOR SUCH PURPOSES.

08. A WRITTEN CERTIFICATE OF CONSTRUCTION COMPLIANCE, INCLUDING THE RESULTS OF HYDROSTATIC LEAKAGE TESTS, MADE BY THE PROFESSIONAL ENGINEER SUPERVISING THE CONSTRUCTION, SHALL BE SUBMITTED TO THE ERIE COUNTY DEPART. OF ENVIRONMENT PLANNING AND NEW YORK DEPARTMENT OF ENVIRONMENTAL CONSERVATION WITHIN THIRTY (30) DAYS AFTER CONSTRUCTION COMPLETION.

09. UNSUITABLE MATERIALS SUCH AS FROZEN ORGANIC AND/OR VEGETABLE MATERIAL, DEBRIS, TREES, LUMBER, LARGE STONES OR CLODS (6.0" OR LARGER), MUCK, PEAT, ORGANIC SILT WILL NOT BE ACCEPTABLE FILL AND CERTAIN MAN-MADE DEPOSITS OF INDUSTRIAL WASTE, SLUDGE OR LANDFILL MAY ALSO BE DETERMINED AS UNSUITABLE HAZARDOUS MATERIAL.

10. THE COMPACTION OF ALL MATERIALS WILL OCCUR AT 6" INCREMENTS.

11. VERIFICATION OF ALL EXISTING EASEMENTS IS THE RESPONSIBILITY OF THE DESIGN ENGINEER AND THEY MUST BE SHOWN ALONG WITH ALL PROPOSED EASEMENTS ON PLAN DRAWINGS.

12. SHOULD A FLUID CONDITION BE ENCOUNTERED AT THE TRENCH BOTTOM, THE CONTRACTOR IS TO INSTALL ADDITIONAL STONE CRADLE AS ORDERED BY THE ENGINEER.

13. ALL PIPE CROSSING UNDER PAVED AREAS ARE TO BE BACKFILLED TO SUBGRADE WITH COMPACTED SELECT MATERIAL TO FIVE (5) FEET OUTSIDE THE PAVEMENT EDGES.

14. THE CONTRACTOR SHALL RETAIN THE SERVICES OF A QUALIFIED TREE EXPERT TO REMOVE, WHERE NECESSARY, BRANCHES WHICH INTERFERE WITH THE CONSTRUCTION OPERATION, OR REPAIR TREES HAVING SUFFERED DAMAGE BY CONSTRUCTION ACTIVITIES. THE COST INVOLVED IN THE ABOVE IS TO BE INCLUDED IN THE VARIOUS ITEMS OF THE CONTRACT.

15. SEWERS SHALL BE LAID AT LEAST TEN (10) FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATERMAIN. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE. IN CASES WHERE IT IS NOT PRACTICAL TO MAINTAIN A TEN FOOT SEPARATION, THE APPROPRIATE REVIEWING AGENCY MAY ALLOW DEVIATION ON A CASE-BY-CASE BASIS, IF SUPPORTED BY DATA FROM THE DESIGN ENGINEER. SUCH DEVIATION MAY ALLOW INSTALLATION OF THE SEWER CLOSER TO A WATERMAIN, PROVIDED THAT THE WATERMAIN IS IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF LOCATED ON ONE SIDE OF THE SEWER AND AT AN ELEVATION SO THE BOTTOM OF THE WATERMAIN IS AT LEAST 18" (46CM) ABOVE THE TOP OF THE SEWER.

16. SEWERS CROSSING WATERMAINS SHALL BE LAID TO PROVIDE MINIMUM VERTICAL DISTANCE OF 18" (46CM) BETWEEN THE OUTSIDE OF A WATERMAIN AND THE OUTSIDE OF THE SEWER. THIS SHALL BE THE CASE WHERE THE WATERMAIN IS EITHER ABOVE OR BELOW THE SEWER. THE CROSSING SHALL BE ARRANGED SO THAT THE SEWER JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE WATERMAIN JOINTS. WHERE A WATERMAIN CROSSES UNDER A SEWER, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER, TO PREVENT DAMAGE TO THE WATERMAIN.

17. WHEN IT IS IMPOSSIBLE TO OBTAIN PROPER HORIZONTAL AND VERTICAL SEPARATION AS STIPULATED ABOVE, THE SEWER SHALL BE DESIGNED AND CONSTRUCTED EQUAL TO WATER PIPE AND SHALL BE PRESSURE TESTED AS TO ASSURE WATERTIGHTNESS PRIOR TO BACKFILLING.

18. THE PIPE SHALL BE P.V.C. SEWER PIPE CONFORMING TO THE LATEST REVISIONS OF ASTM DESIGNATION D-3034, SDR-35, INSTALLED IN ACCORDANCE WITH ASTM.

19. THE MANHOLE COVERS ARE TO BEAR THE INSCRIPTION "AMHERST SANITARY".

SANITARY SEWER TESTING METHODS

GENERAL NOTES

(A) LEAKAGE TESTS

01. THE TEST PERIOD WHEREIN THE MEASUREMENTS ARE TAKEN SHALL NOT BE LESS THAN 24 HOURS, REGARDLESS OF THE TEST METHOD USED.

02. THE TOTAL LEAKAGE OF ANY SECTION TESTED BY ANY TEST METHOD SHALL NOT EXCEED THE RATE OF 200 GALLONS PER MILE OF PIPE PER 24 HOURS PER INCH OF NOMINAL PIPE DIAMETER.

03. MANHOLES SHALL BE CONSIDERED AS SECTIONS OF 48" DIAMETER PIPE AND THE EQUIVALENT LEAKAGE ALLOWANCE SHALL BE COMPUTED PER NOTE 02 USING THE SUBMERGED HEIGHT OF MANHOLE AS THE LENGTH.

04. WHEN MANHOLES ARE TESTED SEPARATELY, ALL PIPE OPENINGS SHALL BE PLUGGED AND THE TEST PROCEDURES AND CRITERIA SHALL BE APPLIED IN THE SAME MANNER AS FOR TESTS INVOLVING ONLY THE PIPE OR A COMBINATION OF PIPE AND MANHOLES.

(B) INFILTRATION TEST CRITERIA FOR USE

01. THIS TEST METHOD MAY ONLY BE USED WHEN GROUND WATER LEVELS ARE AT LEAST TWO (2) FEET ABOVE THE TOP OF THE PIPE FOR THE ENTIRE LENGTH OF THE SECTION TO BE TESTED DURING THE ENTIRE PERIOD OF THE TESTS.

02. GROUND WATER LEVELS MAY BE MEASURED IN AN OPEN TRENCH OR IN STANDPIPES PREVIOUSLY PLACED IN BACKFILLED TRENCHES DURING BACKFILLING.

03. THE NUMBER OF STANDPIPES REQUIRED AND LOCATION OF THE SAME ARE TO BE AS ORDERED BY THE ENGINEER. STANDPIPES MAY BE OF ANY PIPE MATERIAL BUT MUST BE OF SUCH DIAMETER (2-1/2" MINIMUM) AS TO PERMIT THE INSERTION OF A RULE OR LEVEL ROD. CRUSHED STONE SHALL BE PLACED AROUND THE LOWER OPEN ENDS OF THE STANDPIPES.

04. STANDPIPES ARE TO BE REMOVED AT THE SATISFACTORY COMPLETION OF THE TESTS.

05. IF IN LIEU OF STANDPIPES, THE TRENCH IS TO BE LEFT OPEN FOR GROUND WATER OBSERVATION, THE LENGTH OF UNBACKFILLED TRENCH AT ANY ONE TIME MAY HAVE TO BE LIMITED FOR REASONS OF SAFETY.

(C) EXFILTRATION TEST CRITERIA FOR USE

01. THIS TEST CONSISTS OF FILLING THE PIPE WITH WATER TO PROVIDE A HEAD OF AT LEAST TWO (2) FEET ABOVE THE TOP OF THE PIPE OR ABOVE GROUND WATER WHICHEVER IS HIGHER AT THE HIGHEST POINT OF THE PIPE LINE UNDER TEST, AND THEN MEASURING THE LOSS OF WATER TO MAINTAIN THE ORIGINAL LEVEL.

02. IN THIS TEST THE PIPE LINE MUST BE FILLED WITH WATER AND ALLOWED TO REMAIN SO FILLED FOR AT LEAST 24 HOURS PRIOR TO TAKING MEASUREMENTS.

03. REGARDING GROUND WATER MEASUREMENTS: SEE NOTES 02 THROUGH 05 ABOVE.

04. REGARDING THE TEST STANDPIPE: THERE MUST BE SOME POSITIVE METHOD OF RELEASING ENTRAPPED AIR IN THE SEWER PRIOR TO TAKING MEASUREMENTS.

(D) DEFLECTION TEST FOR PVC SEWER PIPE

01. DEFLECTION TESTS SHALL BE PERFORMED ON ALL FLEXIBLE GRAVITY SEWER PIPE. TESTS SHALL BE CONDUCTED AFTER THE FINAL BACKFILL HAS BEEN IN PLACE FOR AT LEAST 30 DAYS.

02. NO PIPE SHALL EXCEED DEFLECTION OF 5%. DEFLECTION GAGE MAY BE BORROWED FROM THE TOWN ENGINEER FOR 8" AND 10" PIPE. THE DEFLECTION TEST MUST BE EXECUTED AFTER 30 DAYS OF PLACEMENT OF FINAL BACKFILL. THE TEST WILL ALSO BE DONE WITHOUT MECHANICAL PULLING DEVICES.

MANHOLE PLACEMENT AND MAINTENANCE
DURING CONSTRUCTION AND DEVELOPMENT

CONTRACTOR AND/OR DEVELOPERS SHALL CONSTRUCT ALL MANHOLE STRUCTURES IN ACCORDANCE WITH THE TOWN OF AMHERST STANDARD SPECIFICATIONS OR THE SPECIFICATIONS OF THE DESIGN ENGINEER WHEN REQUIRED BY THE TOWN.

ALL MANHOLES ARE TO BE DESIGNED AND FURNISHED WITH RIM ELEVATIONS AT FINAL FINISHED GRADES. THE CONTRACTOR, DEVELOPER, OR HOME BUILDER SHALL BE RESPONSIBLE FOR ALL CORRECTIONS, ADJUSTMENTS, AND MODIFICATIONS NEEDED FOR RAISING, LOWERING, OR REPLACING ANY AND ALL MANHOLES AS PROPOSED FOR THE FACILITY.

ALL AS-BUILT STATIONING, LINE AND GRADE IMPROVEMENTS, INVERT AND RIM ELEVATIONS, "Y" LOCATIONS, INSPECTION REPORTS, ROADWAY OR STREET NAMES, RIGHT-OF-WAY WIDTHS, AND EASEMENT LINES SHALL BE FURNISHED TO THE TOWN ON A SET OF MYLAR DRAWINGS PRIOR TO TAP-IN APPROVAL, PIP ACCEPTANCE, AND/OR RELEASE OF FINAL PAYMENT.

ALL MANHOLE STRUCTURES SHALL BE MADE ACCESSIBLE TO THE TOWN OF AMHERST TELEVISION/MAINTENANCE CREWS. THE CONTRACTOR AND/OR DEVELOPER SHALL PROVIDE A DRY, WELL COMPACTED, STABLE SURFACE FREE FROM SHOW AND OBSTRUCTIONS FOR SAFE AND OPEN ACCESS WITH TOWN VEHICLES. SHOULD THE CONTRACTOR AND/OR DEVELOPER WISH TV INSPECTIONS DURING WET WEATHER/WET SOFT SOIL CONDITIONS, HE SHALL PROVIDE ALL NECESSARY GRANULAR BACKFILL, DISTRIBUTED AND COMPACTED TO SUPPLY ACCESS TO EACH MANHOLE. THE CONTRACTOR AND/OR DEVELOPER SHALL BEAR ALL COSTS OF TOWING, DOWN TIME, CREW TIME, AND DAMAGE ALONG WITH RESTORATION, SHOULD SUCH ACCESSWAYS FAIL.

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STATE OF NEW YORK
CHRISTOPHER NOCE
076394
LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Sanitary Sewer General Notes

DRAWING NO.
C-403

Project no.: 21-011

Attachment: SP-2021-05_drawings_021722 (23057 : Sp-2021-05)

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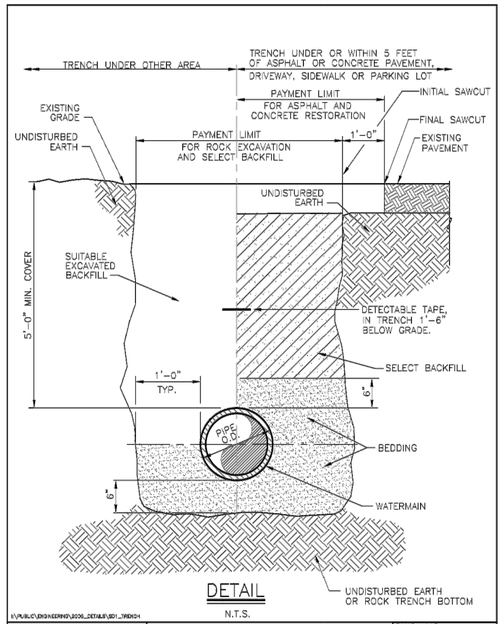
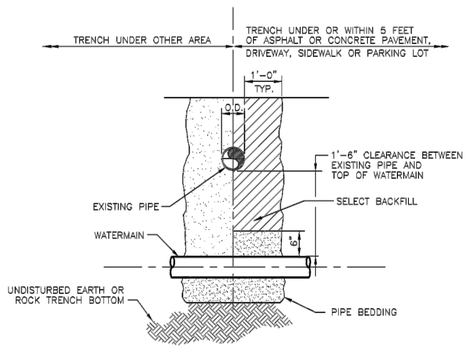


DETAIL
N.T.S.

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD1_TRENCH

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TRENCH THROUGH 12–INCH DIAMETER WATERMAIN	DWG. NO. SD1	
		DATE 4/28/92	REVISED 10/05



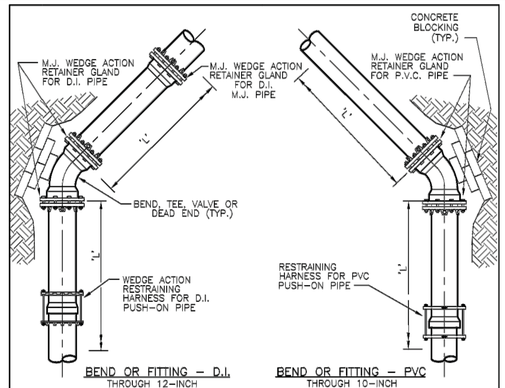
NOTES:

1. ALL EXISTING UTILITIES MUST BE SUPPORTED DURING CONSTRUCTION OF THE NEW WATERMAIN.
2. WHEN CROSSING A SEWERLINE WITH A NEW WATERMAIN, ONE FULL PIPE LENGTH (18 FT. MIN.) SHALL BE USED AT THE POINT OF CROSSING. THE WATERMAIN SHALL BE PLACED SO THAT BOTH JOINT ENDS ARE AS FAR AS POSSIBLE FROM THE EXISTING SEWERLINE.

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD2_PIPE_CROSSING

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL PIPE CROSSING	DWG. NO. SD2	
		DATE 4/28/92	REVISED 10/05



BEND OR FITTING – D.I.
THROUGH 12–INCH

BEND OR FITTING – PVC
THROUGH 10–INCH

RESTRAINED JOINT SCHEDULE					
PIPE SIZE	PIPE TYPE	11.25° ELBOW 'L'	22.5° ELBOW 'L'	45° ELBOW 'L'	TEE BRANCH, 90° BEND, VALVE OR DEAD END 'L'
6"	PVC	13'	25'	50'	120' MIN.
8"	PVC	15'	30'	59'	122' MIN.
8"	D.I.P.	15'	30'	59'	122' MIN.

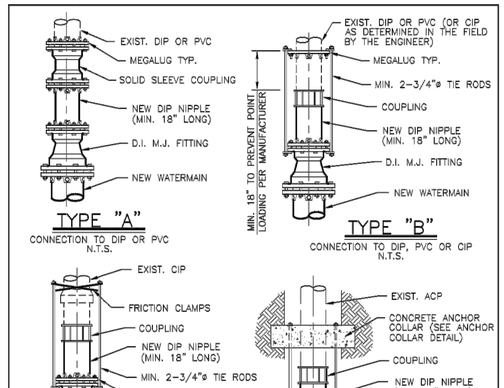
NOTES:

1. DIMENSION 'L' REPRESENTS THE LENGTH OF RESTRAINED PIPE REQUIRED IN FEET EACH SIDE OF THE PIPE FITTING.

PLAN
N.T.S.

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD4_REST._JOINT_SCHED

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL RESTRAINED JOINT SCHEDULE	DWG. NO. SD4	
		DATE 4/28/92	REVISED 10/05



TYPE "A"
CONNECTION TO DIP OR PVC
N.T.S.

TYPE "B"
CONNECTION TO DIP, PVC OR CIP
N.T.S.

TYPE "C"
CONNECTION TO CIP
N.T.S.

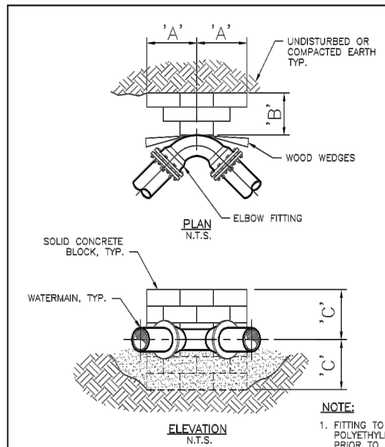
TYPE "D"
CONNECTION TO ACP
N.T.S.

NOTES:

1. VALVES AND TEES MAY BE HARNESSED SIMILARLY.
2. HARNESSING IS FOR RESISTANCE TO INTERNAL PRESSURE–PIPE ITSELF MUST BE SUPPORTED ON FIRM BEDDING AND CAREFULLY BACKFILLED.
3. COAT ALL EXPOSED SURFACES OF HARNESS ASSEMBLY WITH BITUMINOUS COATING.
4. TIE RODS SHALL BE PLACED ON SIDES OF PIPE.

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD5_CONN_EXIST_WMAIN

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TYPICAL CONNECTION TO EXISTING WATERMAIN THROUGH 12–INCH DIAMETER WATERMAIN	DWG. NO. SD5	
		DATE 3/05	REVISED 10/05



ELEVATION
N.T.S.

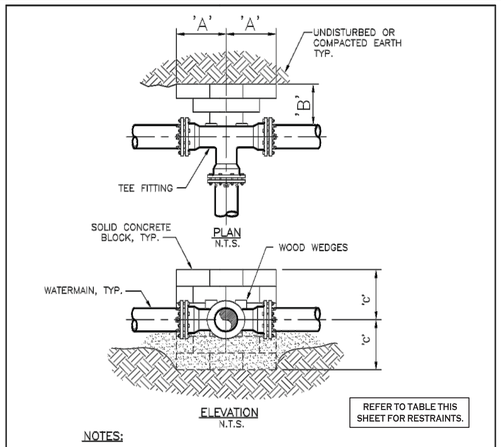
NOTE:

1. FITTING TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.

DIMENSION SCHEDULE												
PIPE SIZE	11.25° ELBOW			22.5° ELBOW			45° ELBOW			90° ELBOW		
	'A'	'B'	'C'	'A'	'B'	'C'	'A'	'B'	'C'	'A'	'B'	'C'
8"	1.5'	1.5'	2.5'	2.5'	1.5'	2.5'	3.0'	1.5'	3.5'	3.5'	1.5'	5.0'

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD6_THRUST_BLOCKS_ELBOW

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR ELBOW FITTING	DWG. NO. SD6	
		DATE 4/28/92	REVISED 10/05



ELEVATION
N.T.S.

REFER TO TABLE THIS SHEET FOR RESTRAINTS.

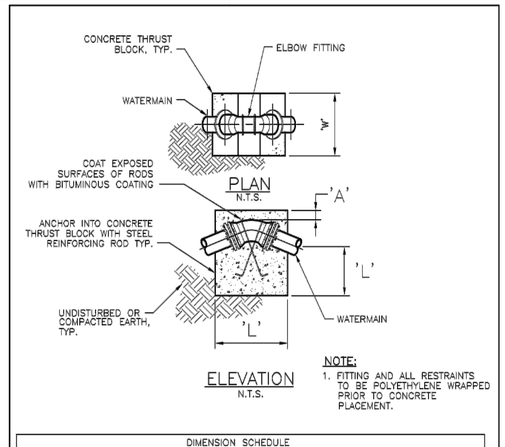
NOTES:

1. THRUST BLOCK REQUIRED FOR TEES, HYDRANT LATERAL TEES AND TAPPING SLEEVE INSTALLATIONS.
2. FITTING TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.

BRANCH TEE SIZE	DIMENSION SCHEDULE 'A'	'B'	'C'
6"	1'-0"	1'-0"	0'-6"
8"	1'-6"	1'-0"	0'-6"

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD7_THRUST_BLOCKS_TEE

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR TEE OR "DEAD END" FITTING	DWG. NO. SD7	
		DATE 4/28/92	REVISED 10/05



ELEVATION
N.T.S.

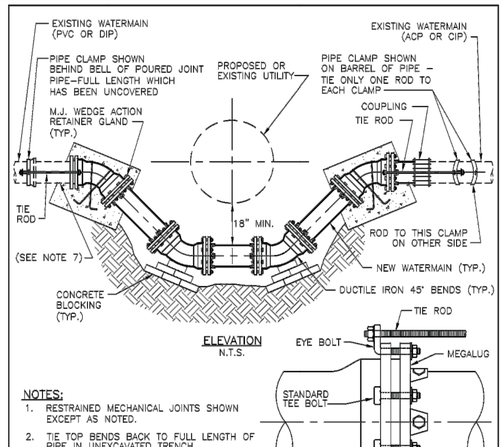
NOTE:

1. FITTING AND ALL RESTRAINTS TO BE POLYETHYLENE WRAPPED PRIOR TO CONCRETE PLACEMENT.

DIMENSION SCHEDULE													
PIPE SIZE	PIPE TYPE	11.25° ELBOW				22.5° ELBOW				45° ELBOW			
		'A'	'W'	'L'	ROD ø	'A'	'W'	'L'	ROD ø	'A'	'W'	'L'	ROD ø
8"	D.I.P	12"	1'-0"	1'-0"	1/2"	12"	1'-9"	1'-9"	1/2"	1'-6"	2'-0"	2'-0"	1/2"

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD8_THRUST_BLOCKS_VBEND

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR VERTICAL BEND	DWG. NO. SD8	
		DATE 4/28/92	REVISED 10/05



ELEVATION
N.T.S.

NOTES:

1. RESTRAINED MECHANICAL JOINTS SHOWN EXCEPT AS NOTED.
2. TIE TOP BENDS BACK TO FULL LENGTH OF PIPE IN UNEXCAVATED TRENCH.
3. VALVES, TEES AND HYDRANTS MAY BE HARNESSED SIMILARLY.
4. HARNESSING IS FOR RESISTANCE TO INTERNAL PRESSURES–PIPE ITSELF MUST BE SUPPORTED ON FIRM BEDDING AND CAREFULLY BACKFILLED.
5. COAT ALL EXPOSED SURFACES OF HARNESS ASSEMBLY WITH BITUMINOUS COATING.
6. TIE RODS SHALL BE PLACED ON SIDES OF PIPE.
7. IF EXISTING PIPE IS CIP OR PVC, CONNECT TO NEW FITTING ONLY WHEN ALLOWED BY ENGINEER.

TIE ROD SCHEDULE			
PIPE SIZE	PIPE TYPE	ROD ø	NUMBER OF RODS
8"	PVC	3/4"	2

I:\PUBLIC\ENGINEERING\2006_DETAILS\SD10_HARN_OFFSET_EXIST_WMAIN

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL HARNESSING DETAILS–INSTALL OFFSET IN EXISTING WATERMAIN	DWG. NO. SD10	
		DATE 6/00	REVISED 10/05

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STATE OF NEW YORK CHRISTOPHER WOOD 076384 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Water Details

DRAWING NO.

C-404

Project no.: 21-011

1.m

Attachment: SP-2021-05_drawings_021722 (23057 : Sp-2021-05)

Packet Pg. 2964

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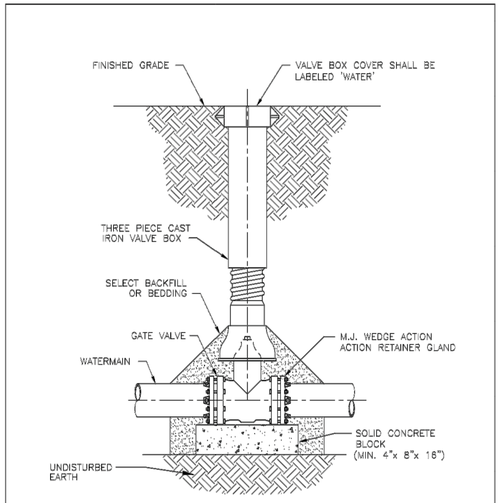
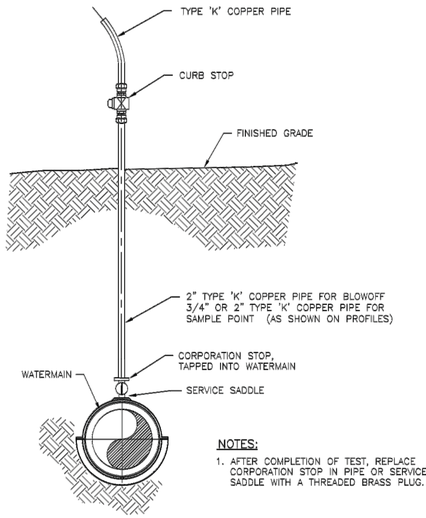


NOTES:
1. VALVE SHALL NOT SUPPORT VALVE BOX.
2. GATE VALVE SHALL BE INSTALLED LEVEL.
3. VALVE BOX SHALL BE PLUMB TO GRADE, WITH OPERATING NUT CENTERED IN BOX.

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT EDWA DETAILS\SD11_GATE_VALVE_SET

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GATE VALVE SETTING	DWG. NO. SD11	
		DATE 4/28/92	REVISED 02/17

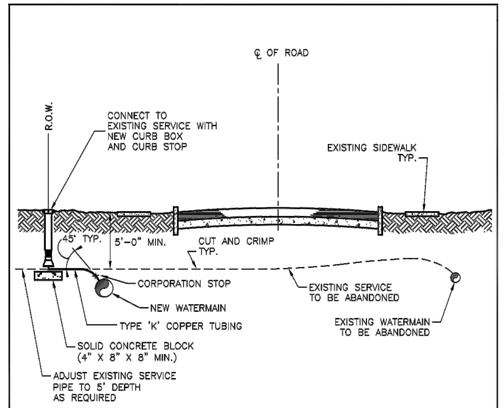


NOTES:
1. AFTER COMPLETION OF TEST, REPLACE CORPORATION STOP IN PIPE OR SERVICE SADDLE WITH A THREADED BRASS PLUG.

ELEVATION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT EDWA DETAILS\SD17_TEMP_BO_SAMP_PT

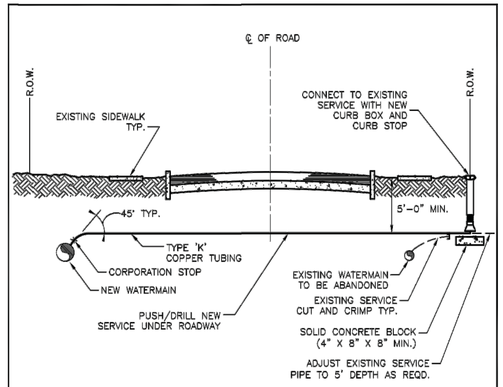
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TEMPORARY BLOW-OFF/SAMPLING POINT	DWG. NO. SD17	
		DATE 4/28/92	REVISED 10/05



NOTES:
1. EXISTING SERVICES SHALL BE CRIMPED AND ABANDONED IN PLACE.
2. SERVICE SADDLES SHALL BE USED UNDER THE FOLLOWING CONDITIONS:
   A. WHEN SERVICES ARE PLACED ON 4" OR SMALLER PIPES.
   B. WHEN SERVICES LARGER THAN 1" ARE PLACED ON A 6" PIPE.
   C. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON AN 8" PIPE.
   D. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON DUCTILE IRON PIPE.
   E. WHEN TAPPING ALL PLASTIC (PVC) PIPE.
   F. WHEN TAPPING ALL ASBESTOS-CEMENT PIPE.
3. CURB BOXES SHALL NOT BE PLACED IN SIDEWALKS, DRIVEWAYS, OR CURB RAMPS.
4. UNIONS ON COPPER TUBING ARE NOT ALLOWED UNLESS APPROVED BY ECWA PRIOR TO INSTALLATION.

I:\PUBLIC\ENGINEERING\CURRENT EDWA DETAILS\SD15_WS_SERV_REPLACE

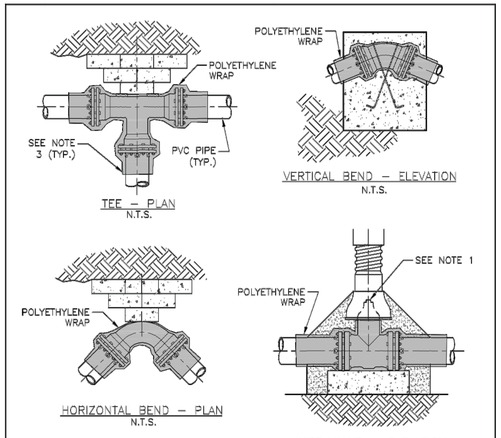
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL NEAR SIDE SERVICE REPLACEMENT/INSTALLATION	DWG. NO. SD15	
		DATE 4/92	REVISED 09/16



NOTES:
1. EXISTING SERVICES SHALL BE CRIMPED AND ABANDONED IN PLACE.
2. SERVICE SADDLES SHALL BE USED UNDER THE FOLLOWING CONDITIONS:
   A. WHEN SERVICES ARE PLACED ON 4" OR SMALLER PIPES.
   B. WHEN SERVICES LARGER THAN 1" ARE PLACED ON A 6" PIPE.
   C. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON AN 8" PIPE.
   D. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON DUCTILE IRON PIPE.
   E. WHEN TAPPING ALL PLASTIC (PVC) PIPE.
   F. WHEN TAPPING ALL ASBESTOS-CEMENT PIPE.
3. CURB BOXES SHALL NOT BE PLACED IN SIDEWALKS, DRIVEWAYS, OR CURB RAMPS.
4. USE POLYETHYLENE FOR 3/4" AND 1" SERVICES GREATER THAN 100 FEET IN LENGTH, AND FOR 1-1/2" AND 2" SERVICES GREATER THAN 60 FEET IN LENGTH. ALL POLYETHYLENE SERVICES SHALL INCLUDE A TRACER WIRE FOR DETECTION BY ECWA FORCES.
5. UNIONS ON COPPER TUBING ARE NOT ALLOWED UNLESS APPROVED BY ECWA PRIOR TO INSTALLATION.

I:\PUBLIC\ENGINEERING\CURRENT EDWA DETAILS\SD16_FS_SERV_REPLACE

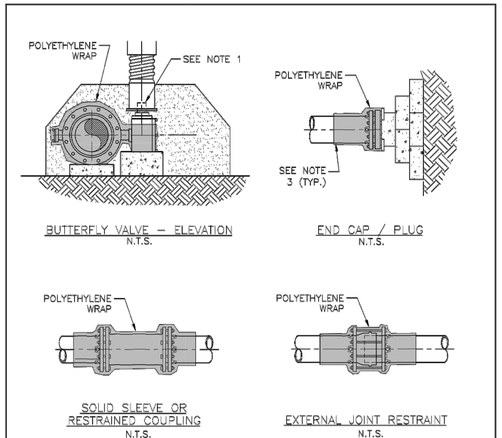
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL FAR SIDE SERVICE REPLACEMENT/INSTALLATION	DWG. NO. SD16	
		DATE 4/92	REVISED 09/16



NOTES:
1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP IS NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PIPE (OR POLYWRAP IF DIP) WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT EDWA DETAILS\SD39A_POLYWRAPPING_FITTINGS

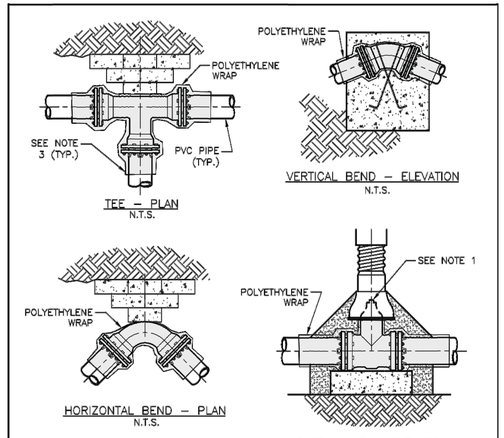
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING CAST/DUCTILE IRON FITTINGS	DWG. NO. SD39A	
		DATE 3/18	REVISED 12/18



NOTES:
1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PIPE. (OR POLYWRAP IF DIP) WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT EDWA DETAILS\SD39B_POLYWRAPPING_FITTINGS

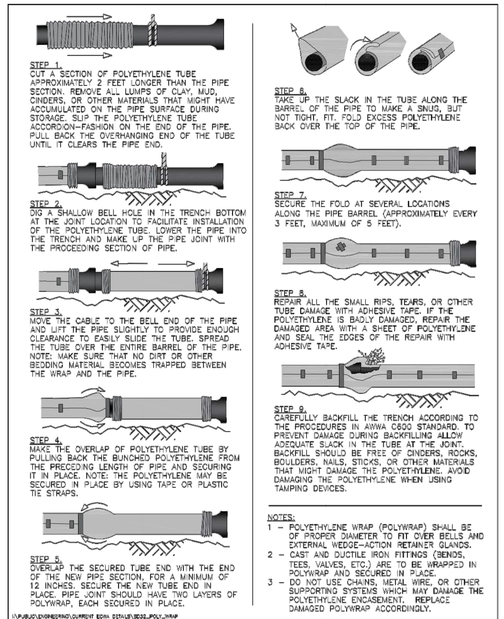
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING CAST/DUCTILE IRON FITTINGS	DWG. NO. SD39B	
		DATE 12/18	REVISED



NOTES:
1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON GATE VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PVC PIPE WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT EDWA DETAILS\SD39_POLYWRAPPING_FITTINGS

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING DUCTILE IRON FITTINGS ON PVC PIPE	DWG. NO. SD39	
		DATE 3/18	REVISED



NOTES:
1 – POLYETHYLENE WRAP (POLYWRAP) SHALL BE OF PROPER DIAMETER TO FIT OVER BELLS AND EXTERNAL WEDGE-ACTION RETAINER GLANDS.
2 – CAST AND DUCTILE IRON FITTINGS (BENDS, TEES, VALVES, ETC.) ARE TO BE WRAPPED IN POLYWRAP AND SECURED IN PLACE.
3 – DO NOT USE CHAINS, METAL WIRE, OR OTHER SUPPORTING SYSTEMS WHICH MAY DAMAGE THE POLYETHYLENE ENCASEMENT. REPLACE DAMAGED POLYWRAP ACCORDINGLY.

I:\PUBLIC\ENGINEERING\CURRENT EDWA DETAILS\SD32_POLY_WRAP

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYETHYLENE ENCASEMENT OF DUCTILE IRON PIPE	DWG. NO. SD32	
		DATE 08/16	REVISED 02/19

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STATE OF NEW YORK CHRISTOPHER WOOD 076364 LICENSED PROFESSIONAL ENGINEER

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Water Details

DRAWING NO.
C-405

Project no.: 21-011

Attachment: SP-2021-05_drawings_021722 (23057 : Sp-2021-05)

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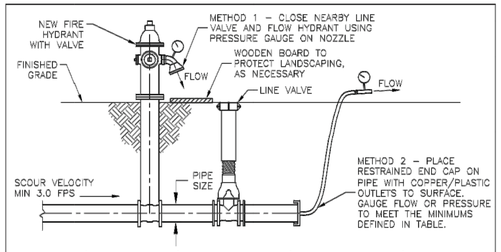


PIPE SIZE (IN)	REQUIRED FLOW (GPM)	METHOD 1 HYDRANT FLOW		METHOD 2 END CAP FLOW	
		2 1/2" NOZZLE PRESSURE (PSI)	4" NOZZLE PRESSURE (PSI)	2" I.D. PRESSURE (PSI)	3" I.D. PRESSURE (PSI)
6	275	7	1	7	2
8	500	9	2	22	5
10	750	20	4	50	10
12	1100	44	7	–	22
16	1900	–	20	–	62
20	3000	–	50	–	–

I.D. = INNER DIAMETER

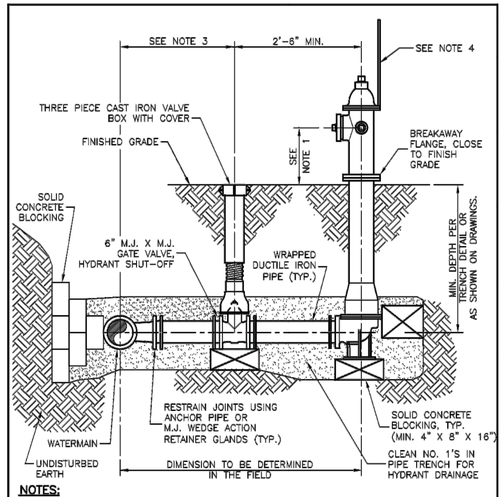
NOTES:

1. TO OBTAIN SCOUR VELOCITY (3.0 FPS) IN THE WATERLINE, CONTRACTOR SHALL ACHIEVE FLOWRATE AT NOZZLE DEFINED IN TABLE. PRESSURE GAUGE USED SHALL SHOW A HIGHER PRESSURE THAN THE MINIMUMS DEFINED IN THE TABLE.
2. OUTLET PRESSURE MEASURED BY PITOT GAUGE.
3. ENGINEER SHALL PROVIDE CALCULATIONS IF CONNECTIONS ARE OTHER THAN THOSE SHOWN, IF MULTIPLE CONNECTIONS ARE USED, OR AS REQUESTED BY ECWA.
4. TO FLUSH THREE PIPE VOLUMES, MINIMUM FLUSHING TIME (IN SECONDS) EQUALS THE LENGTH OF PIPE BEING FLUSHED, IN FEET.

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD36_WATERLINE_FLUSHING

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL WATERLINE FLUSHING	DWG. NO. SD36	
		DATE 6/16	REVISED 3/18



NOTES:

1. CENTERLINE OF THE LOWEST NOZZLE TO FINISHED GRADE SHALL BE A MIN. OF 15" & MAX. OF 18".
2. HYDRANT RISER SHALL BE INSTALLED PLUMB.
3. VALVE BOX SHALL NOT BE PLACED IN PAVEMENT.
4. RELOCATE HYDRANT MARKER (IF PRESENT), FOR WATERLINE REPLACEMENT PROJECTS ONLY.
5. HYDRANT FACE TO BE A MINIMUM OF 3' FROM THE BACK FACE OF ALL CURBS OR A MINIMUM OF 5' FROM ALL EDGES OF PAVEMENT (IF NO CURB).

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD13_HYD_INST

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL FIRE HYDRANT INSTALLATION	DWG. NO. SD13	
		DATE 6/00	REVISED 11/16

NOTES

1. All elevations refer to USGS NAVD83 datum.
2. The CONTRACTOR shall obtain necessary permits and furnish copies to the ENGINEER prior to commencing work.
3. The CONTRACTOR'S work area shall be confined to the limits of the right-of-ways and easements. The CONTRACTOR shall obtain any additional easements or work releases should the CONTRACTOR require additional area to accommodate his operations.
4. The CONTRACTOR shall provide maintenance and protection of traffic in accordance with the Erie County Highway Department standards and the NYSDOT Manual of Uniform Traffic Control Devices.
5. The locations and depths of existing underground utilities as shown on the plans and profiles are approximate. Other underground utilities not shown may be encountered. The CONTRACTOR shall perform test pits to verify the location and elevation of utilities at interconnections and crossings as shown, directed, or required. The CONTRACTOR shall excavate in advance of the pipe laying operation and expose all existing underground utilities to prevent damage during construction and to determine required changes in grade necessary to install the watermain to avoid conflicts.
6. The CONTRACTOR shall install those measures required to limit erosion of areas disturbed by the work. Clearing shall be performed on an as-needed basis, phased to reduce erosion and visual impact.
7. Blasting will not be permitted.
8. No more than one connection may be made to any existing watermain prior to testing, disinfection, and approval of the Waterline Installation Completed Works Approval Report(s) by the Erie County Water Authority and the Erie County Health Department.
9. The Erie County Water Authority shall only operate existing valves and fire hydrants, including newly installed valves and fire hydrants that have been placed into service. The CONTRACTOR is advised that watertight conditions may not exist when existing valves are closed.
10. The CONTRACTOR shall have all equipment, manpower, and materials required on site and ready for use prior to commencing any shut-down or removing any existing facilities from service. The CONTRACTOR shall notify all affected customers in writing of any shut-down at least 48 hours in advance. The CONTRACTOR shall notify the appropriate fire stations 48 hours in advance prior to taking any fire hydrants out of service. Any fire hydrants not in service shall be bagged in burlap or plastic. Any shut-down shall be limited to 4 consecutive hours. It may be necessary to schedule shut-downs at night, weekends, or other off hours so as to not affect schools, businesses or other customers, as determined by the ENGINEER. Shut-down requests shall be submitted to the Erie County Water Authority a minimum of 5 business days in advance of the requested shut-down date.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD29_GENERAL_NOTES

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GENERAL NOTES	DWG. NO. SD29	
		DATE 3/05	REVISED 7/17

11. All watermain piping shall be installed with a minimum of 5'-0" of cover.
12. All watermain piping shall be installed with a minimum of 1'-6" of vertical clearance and 10'-0" of horizontal clearance from sanitary and storm piping, measured from the outside of the pipes at the point of crossing.
13. If the material at the design grade is unsuitable as determined by the ENGINEER, the CONTRACTOR, when ordered in writing, shall excavate additional material to the depth necessary and shall backfill to the proposed grade with the select granular material.
14. The installation of 90 degree bends in the watermain is not allowed, unless approved by the Erie County Water Authority.
15. Thrust restraint for watermain piping through 12-inch diameter shall consist of thrust blocks and pipe joint restraint.
16. The CONTRACTOR shall notify the owner of any utility pole in advance of any excavation work that will take place within 5'-0" of the utility pole. The CONTRACTOR shall include the cost of temporary pole support in the appropriate bid item.Where utility poles are required to be supported during construction, the CONTRACTOR shall make all necessary arrangements with the utility company.
17. If materials are encountered during the construction that are suspected of being contaminated, the CONTRACTOR shall immediately notify the NYSDEC for direction regarding testing, separation, containment, and disposal procedures.
18. Existing fire hydrants removed during construction and not reinstalled as part of the work shall be scheduled and returned to the Erie County Water Authority Service Center, 3030 Union Road, Cheektowaga, New York 14227.
19. The CONTRACTOR shall cold patch all trench excavations in traveled areas including roads, driveways, sidewalks, and parking areas.
20. The CONTRACTOR shall not restrict access for school buses or any emergency vehicles.
21. The use of existing fire hydrants for any reason is prohibited without prior approval of the Erie County Water Authority. This includes newly installed fire hydrants that have been placed into service.
22. The CONTRACTOR shall submit procedures for testing and disinfection of the watermain to the ENGINEER for review prior to the start of testing.
23. The CONTRACTOR shall be present and assist in the Final Walk inspection. The CONTRACTOR shall provide sufficient personnel and equipment to demonstrate to the ENGINEER that all valves, fire hydrants, and curb stops operate as required.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD30_GENERAL_NOTES

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GENERAL NOTES	DWG. NO. SD30	
		DATE 3/05	REVISED 7/17

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REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Water Details & Notes

DRAWING NO.
C-406

Project no.: 21-011

Attachment: SP-2021-05_drawings_021722 (23057 : Sp-2021-05)

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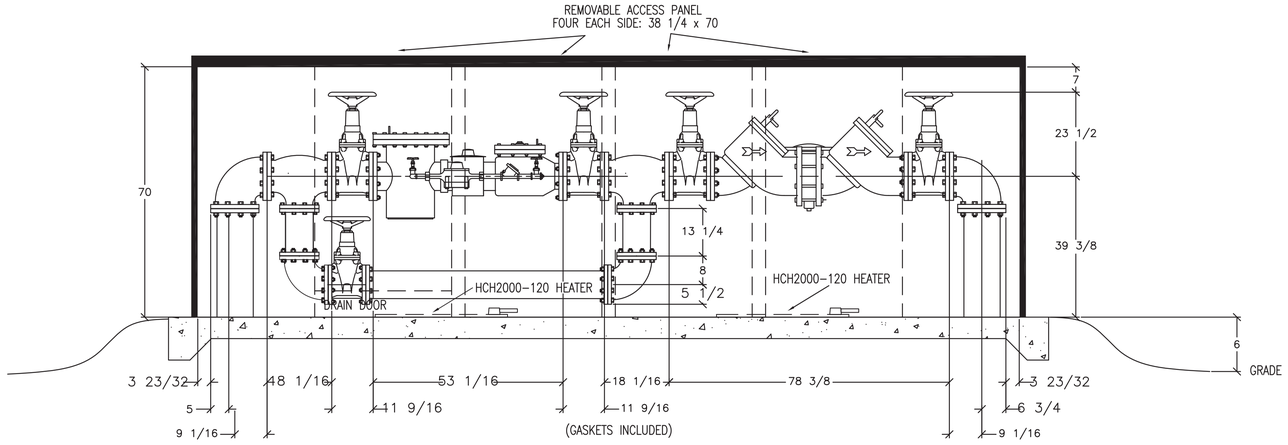

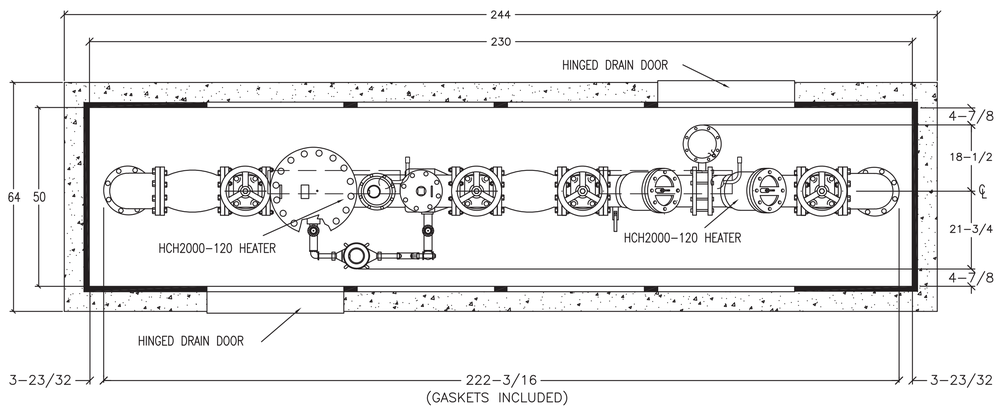

NOTES:

1. BACKFLOW PREVENTER DIMENSIONS FURNISHED BY WATTS
2. ALL DIMENSIONS ARE IN INCHES
3. WALL & INSULATION THICKNESS IS 1 1/2"
4. ROOF & INSULATION THICKNESS IS 3"
5. ENCLOSURE SHOWN IS SAFE-T-COVER MODEL 1000D-ALC00-17
6. EXTERIOR ENCLOSURE DIMENSIONS: 53"W x 233"L x 73" H
7. CONCRETE PAD IS 64"W x 244"L x 6"THK W/W.W.F. 6X6/10X10
8. METER SHOWN: 8" PROTECTUS III, SPOOL PIECE & METER SUPPLIED BY ECWA, VERIFY DIMENSIONS PRIOR TO ORDERING
9. RPZ SHOWN: 8" WATTS 909 NRS
10. CONTRACTOR TO INSTALL ELECTRIC SERVICE TO ENCLOSURE, COORDINATE SOURCE WITH OWNER
11. INSTALL A 120V GFI OUTLET IN THE ENCLOSURE
12. HEATERS TO HAVE THERMOSTAT CONTROL
13. ALL PIPING WITHIN THE ENCLOSURE SHALL BE DUCTILE IRON

LEGEND:

REMOVABLE ACCESS PANEL 38 1/4"W x 70"H w/DRAIN DOOR

REMOVABLE ACCESS PANEL 38 1/4"W x 70"H

8"METER & RPZ INSULATED ENCLOSURE

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STATE OF NEW YORK
CHRISTOPHER WOOD
076394
LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Insulated
Enclosure Detail

DRAWING NO.
C-407

Project no.: 21-011

Attachment: SP-2021-05_drawings_021722 (23057 : Sp-2021-05)

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NOTE:
PETITIONER AND PETITIONER'S CONTRACTOR SHALL TAKE ALL REASONABLE MEASURE TO PROTECT EXISTING TREES WHICH ARE TO BE PRESERVED FROM ALL POSSIBLE TYPES OF ROOT, TRUNK, AND LIMB DAMAGE; INCLUDING BUT NOT LIMITED TO, RETAINING WALLS WHICH PREVENT FILLING ON TOP OF ROOTS OR EXCAVATING TREE ROOTS AS REQUIRED BY §203-7-2-3 B (3) OF TOWN CODE.

PROPOSED 1-STORY 6 UNIT BUILDING W/ ATTACHED GARAGES

PROPOSED 1-STORY 6 UNIT BUILDING W/ ATTACHED GARAGES

150' x 70' 4-STORY APARTMENT BUILDING WITH (10) APARTMENT UNITS PER FLOOR (40 UNITS TOTAL)

(4) 2-STORY DUPLEX TOWNHOME UNITS (8 UNITS TOTAL)

(8) 2-STORY DUPLEX TOWNHOME UNITS (16 UNITS TOTAL)

225' x 80' 4-STORY MIXED USE BUILDING WITH 15,000 SF COMMERCIAL & (5) APARTMENT UNITS ON 1ST FLOOR, APARTMENTS ON FLOORS 2 THRU (50 UNITS)

225' x 80' 4-STORY MIXED USE BUILDING WITH 15,000 SF COMMERCIAL & (5) APARTMENT UNITS ON 1ST FLOOR, APARTMENTS ON FLOORS 2 THRU (50 UNITS)

LOT 1 LOT 2 LOT 3 LOT 4 LOT 5 LOT 6 LOT 7 LOT 8 LOT 9 LOT 10 LOT 11

LOT 12 LOT 13 LOT 14 LOT 15 LOT 16 LOT 17 LOT 18 LOT 19 LOT 20

LOT 21 LOT 22 LOT 23 LOT 24 LOT 25 LOT 26 LOT 27

PROPOSED TOWNHOUSE UNITS - SEE 'DETAIL-A' ON THIS SHEET FOR TYPICAL PLANTING DETAIL

PROPOSED DUPLEX LOTS - SEE 'DETAIL-B' ON THIS SHEET FOR TYPICAL PLANTING DETAIL

SITE 'A'
17.424± ACRES

DOG PARK

RECREATION TRAIL (10' WIDE)

STORM WATER MANAGEMENT AREA

TERRACED STEPS

STORM WATER MANAGEMENT AREA

RECREATION TRAIL (10' WIDE)

RECREATION TRAIL (10' WIDE)

DEED RESTRICTED AREA "B"
TOTAL AREA: = 32.52± ACRES

PARALLEL W/SOUTH LINE OF LOT 76
N 88°55'52" E 930.61'

PARALLEL W/SOUTH LINE OF LOT 76
N 88°55'52" E 700.84'

PARALLEL W/WEST LINE OF LOT 76 (CENTERLINE OF SWEET HOME ROAD)

L.7659 P.435 & 437

L.-11278, P.-7124

P.O.B.

N 02°12'22" W 118.34'

S 01°04'08" E 145.0'

S 64°16'46" W 35.20'

S 10°07'24" E 43.27'

S 11°02'55" W 83.05'

S 11°56'26" E 236.32'

S 87°22'49" W 322.92'

N 88°38'15" W 172.66'

S 45°19'36" E 99.73'

N 35°36'42" W 156.92'

N 01°04'00" W 305.54'

S 83°36'29" W 105.17'

N 67°53'17" W 50.93'

S 23°50'17" W 47.47'

S 39°43'51" W 50.80'

S 57°29'39" W 52.30'

S 57°29'39" W 259.27'

N 32°30'21" W 128.98'

DODGE ROAD RELOCATION

ASPHALT DRIVE

CONCRETE SIDEWALK

ASPHALT PARKING LOT

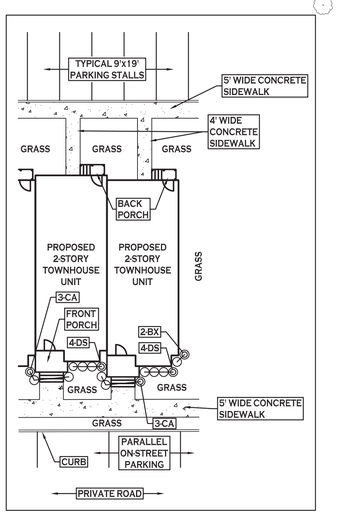
CATV.

WSV

HYD

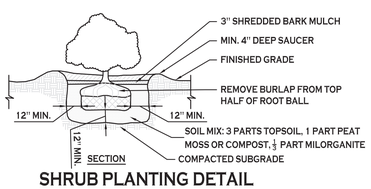
IRON WELL

MONUMENT

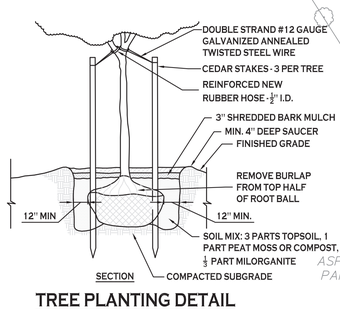


TYP. TOWNHOUSE LOT (DETAIL-A)

SCALE: 1"=20'



SHRUB PLANTING DETAIL



TREE PLANTING DETAIL

PLANTING NOTES:

1. ALL INTERIOR LANDSCAPED AREAS SHALL HAVE A MINIMUM PLANTING SOIL DEPTH OF THREE (3) FEET AND BE FREE FROM ALL FORMS OF CONSTRUCTION DEBRIS AND FOREIGN MATERIAL.
2. ALL TREE PIT SAUCERS, SHRUB BEDS, ORNAMENTAL GRASS BEDS, AND PERENNIAL FLOWER BEDS SHALL RECEIVE "PREEN" HERBICIDE AND THREE (3) INCHES DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
3. ALL SEASONAL FLOWER BEDS SHALL BE A MINIMUM OF TWELVE (12) INCHES DEEP WITH A WELL-BLENDED MIXTURE OF 50% PEAT MOSS. SEASONAL FLOWER BEDS SHALL RECEIVE "PREEN" HERBICIDE. NO MULCH SHALL BE INSTALLED IN THE SEASONAL FLOWER BEDS. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
4. ALL DECIDUOUS AND EVERGREEN TREES SHALL BE STAKED WITH THREE (3) TREE STAKES AS PER TREE PLANTING DETAIL.

PLANTING SCHEDULE - SAWYER'S LANDING, NORTH FRENCH ROAD, AMHERST NY

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		DECIDUOUS TREES			
CM	17	ACER X FREEMANII 'CELZAM'	CELEBRATION MAPLE	2 1/2" – 3" CAL.	B&B, 25' WIDE
CO	1	CELTIS OCCIDENTALIS	HACKBERRY	2 1/2" – 3" CAL.	B&B
AF	12	ACER X FREEMANII 'JEFFERSRED'	AUTUMN BLAZE MAPLE	2 1/2" – 3" CAL.	B&B
BN	21	BETULA NIGRA 'CULLY'	HERITAGE RIVER BIRCH	10'–12' HT.	B&B, MULTI-STEM (3-BOLE MIN)
AH	8	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2 1/2" – 3" CAL.	B&B
GT	5	GLEDITSIA TRIACANTHOS INERMIS 'SKYCOLE"	SKYLINE HONEYLOCUST	2 1/2" – 3" CAL.	B&B
NS	6	NYSSA SYLVATICA 'WILDFIRE'	WILDFIRE BLACK GUM	2 1/2" – 3" CAL.	B&B
QR	22	QUERCUS RUBRA	NORTHERN RED OAK	2 1/2" – 3" CAL.	B&B
UA	17	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2 1/2" – 3" CAL.	B&B
		SMALL/ORNAMENTAL TREES			
AC	10	AMELANCHIER CANADENSIS	SERVICEBERRY	8' – 10' HT.	B&B, MULTI-STEM
AG	7	AMELANCHIER GRANDIFLORA 'AUTUMN BRILLIANCE'	APPLE SERVICEBERRY	1–3/4" – 2" CAL.	B&B
CC	10	CERCIS CANADENSIS	EASTERN REDBUD	8' – 10' HT.	B&B, MULTI-STEM
KP	3	KOELREUTERIA PANICULATA	GOLDEN RAIN TREE		
MA	23	MALUS 'ADIRONDACK'	ADIRONDACK CRABAPPLE	1–3/4" – 2" CAL.	B&B
MP	13	MALUS 'PRAIRIFIRE'	PRAIRIFIRE CRABAPPLE	1–3/4" – 2" CAL.	B&B
MR	15	MALUS "ROYAL RAINDROPS"	ROYAL RAINDROP CRABAPPLE	1–3/4" – 2" CAL.	
PS	3	PRUNUS CERASIFERA 'THUNDERCLOUD'	THUNDERCLOUD PLUM	1–3/4" – 2" CAL.	B&B, DUPLEX LOTS 33–49
		EVERGREEN TREES			
CF	69	ABIES CONCOLOR	CONCOLOR FIR	5' MIN. HT.	FULL TO GROUND
PG	83	PICEA GLAUCA	WHITE SPRUCE	5' MIN. HT.	FULL TO GROUND
PP	49	PICEA PUNGENS 'GLAUCA'	COLORADO BLUE SPRUCE	5' MIN. HT.	FULL TO GROUND
		SHRUBS			
BX	56	BUXUS "GREEN VELVET"	GREEN VELVET BOXWOOD	24" HT. MIN.	NO. 5 CONT.
CS	24	CORNUS SERICEA 'FARROW'	ARCTIC FIRE RED TWIG DOGWOOD	24" MIN. HT.	NO. 5 CONT.
DS	34	DIERVILLA SPLENDENS 'G2X88544'	KODIAK ORANGE DIERVILLA	24" MIN. HT.	NO. 5 CONT.
FX	18	FORSYTHIA X INTERMEDIA 'KOLGOLD'	MAGICAL GOLD FORSYTHIA	24" MIN. HT.	NO. 5 CONT.
SJ	60	SPIRAEA BUMALDA "GOLD MOUND"	GOLD MOUND SPIREA	NO. 3 CONT.	
		ORNAMENTAL GRASS			
CA	58	CALAMAGROSTIS X ACUTIFOLIA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	NO. 2 CONT.	
PA	29	PENNISETUM ALOPECUROIDES	FOUNTAIN GRASS	NO. 2 CONT.	SEE NOTE 1

LANDSCAPE NOTES:

1. ORNAMENTAL GRASSES SHOULD BE PRUNED BACK IN LATE FALL OR EARLY SPRING TO ALLOW FOR NEW FOLIAGE TO GROW IN SPRING.
2. ALL PLANTING BEDS & TREE PLANTING PITS SHALL RECEIVE A MINIMUM 3-INCH DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH.
3. ALL EVERGREEN TREES SHALL BE MEASURED FROM THE BOTTOM OF LEADER.

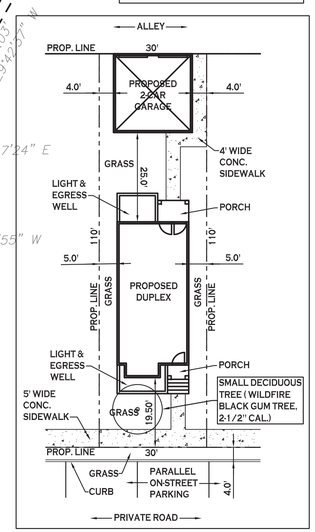
N

SITE PLAN

SCALE: 1"=50'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS. CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.



TYP. DUPLEX LOT (DETAIL-B)

SCALE: 1"=20'

ROBERT C. WALTER
REGISTERED LANDSCAPE ARCHITECT
MEMBER AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS
2765 DODGE ROAD, EAST AMHERST N.Y. 14051-2113
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ROBERT C. WALTER REGISTERED LANDSCAPE ARCHITECT NO. 001186 STATE OF NEW YORK

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Landscape Plan

DRAWING NO.

L-100

Project no.: 21-011

Attachment: SP-2021-05_drawings_021722 (23057 : Sp-2021-05)

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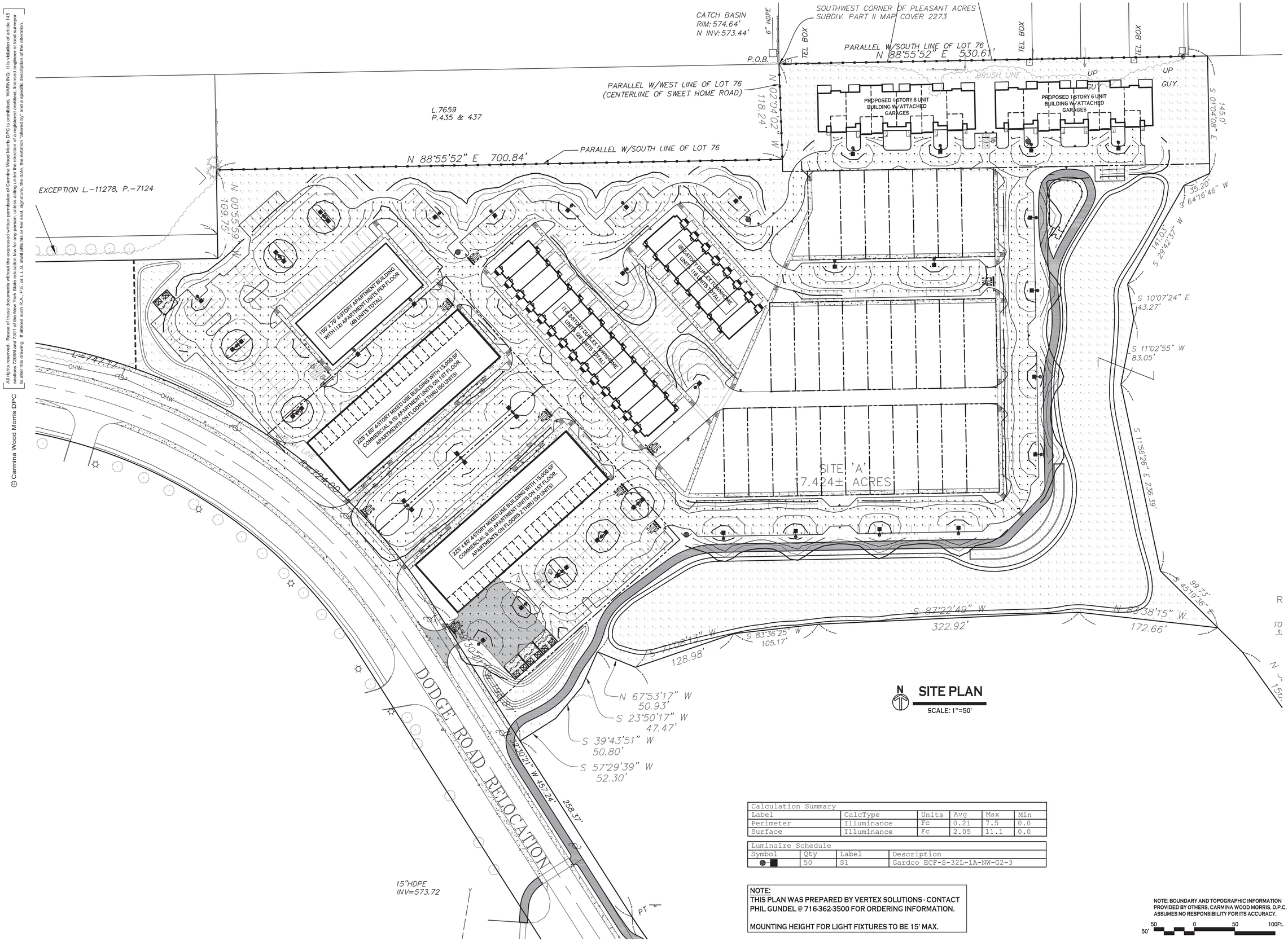

N **SITE PLAN**

SCALE: 1"=50'

Calculation Summary					
Label	CalcType	Units	Avg	Max	Min
Perimeter	Illuminance	Fc	0.21	7.5	0.0
Surface	Illuminance	Fc	2.05	11.1	0.0

Luminaire Schedule			
Symbol	Qty	Label	Description
	50	S1	Gardco ECF-S-32L-1A-NW-G2-3

NOTE:
THIS PLAN WAS PREPARED BY VERTEX SOLUTIONS - CONTACT PHIL GUNDEL @ 716-362-3500 FOR ORDERING INFORMATION.

MOUNTING HEIGHT FOR LIGHT FIXTURES TO BE 15' MAX.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

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STATE OF NEW YORK CHRISTOPHER WOOD 076394 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Site Photometric Plan

DRAWING NO.

LP-100

Project no.: 21-011

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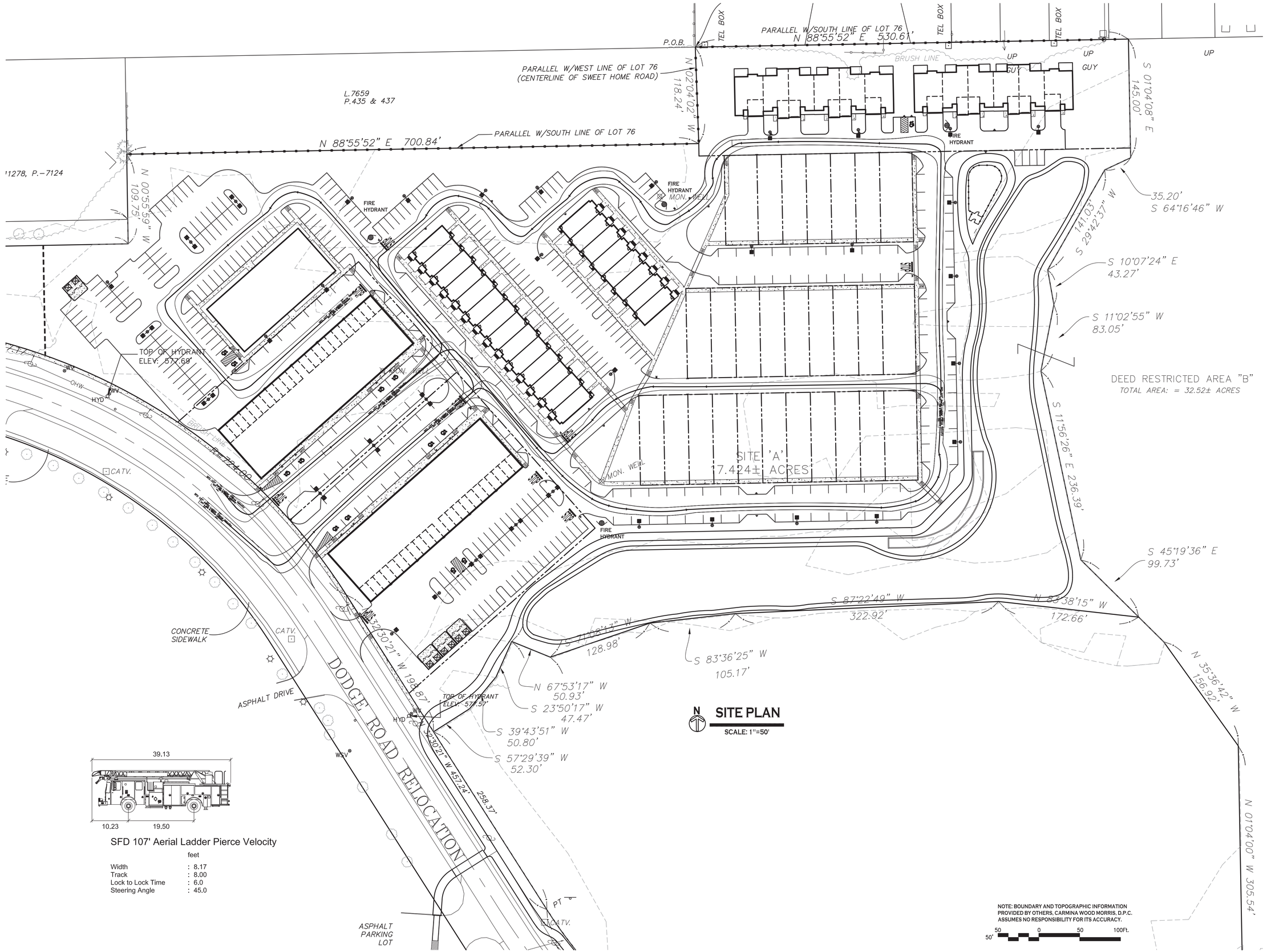

N **SITE PLAN**

SCALE: 1"=50'

SFD 107' Aerial Ladder Pierce Velocity

	feet
Width	: 8.17
Track	: 8.00
Lock to Lock Time	: 6.0
Steering Angle	: 45.0

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50' 50 0 50 100Ft.

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STATE OF NEW YORK
CHRISTOPHER WOOD
076394
LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Fire Truck Plan

DRAWING NO.

TT-100

Project no.: 21-011

1.m

Attachment: SP-2021-05_drawings_021722 (23057 : Sp-2021-05)

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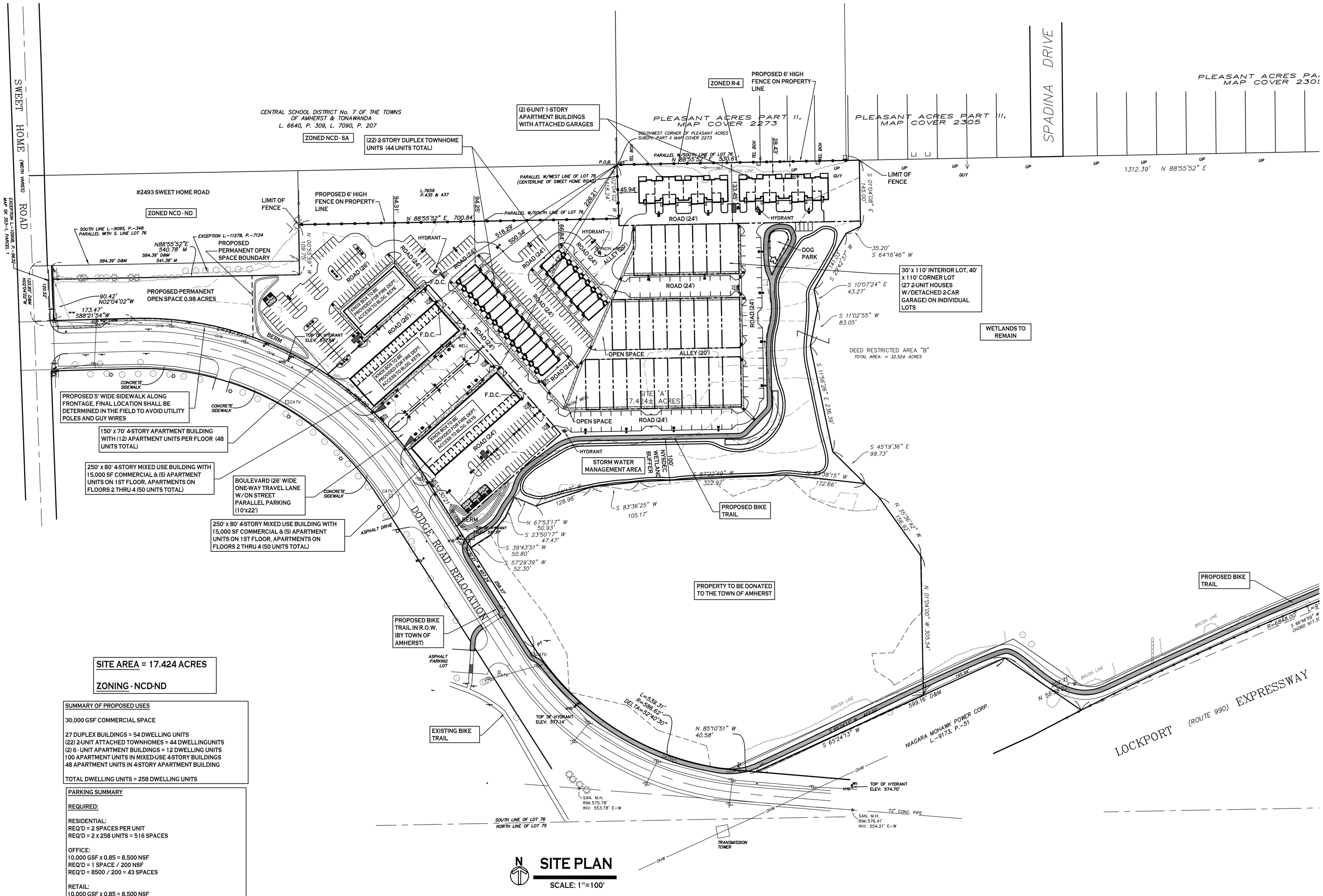

SITE AREA = 17.424 ACRES

ZONING - NCD-ND

SUMMARY OF PROPOSED USES

30,000 GSF COMMERCIAL SPACE

27 DUPLEX BUILDINGS = 54 DWELLING UNITS
(22) 2-UNIT ATTACHED TOWNHOMES = 44 DWELLINGUNITS
(2) 6 - UNIT APARTMENT BUILDINGS = 12 DWELLING UNITS
100 APARTMENT UNITS IN MIXED-USE 4-STORY BUILDINGS
48 APARTMENT UNITS IN 4-STORY APARTMENT BUILDING

TOTAL DWELLING UNITS = 258 DWELLING UNITS

PARKING SUMMARY

REQUIRED:

RESIDENTIAL:
REQ'D = 2 SPACES PER UNIT
REQ'D = 2 x 258 UNITS = 516 SPACES

OFFICE:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 1 SPACE / 200 NSF
REQ'D = 8500 / 200 = 43 SPACES

RETAIL:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 5.5 SPACES / 1,000 NSF
REQ'D = 8500 / 1000 x 5.5 = 47 SPACES

RESTAURANT:
REQ'D = 1 SPACE / 3 SEATS + 1 SPACE / 100 SF TAKE OUT AREA
REQ'D = 100 SEAT / 3 + 500 SF / 100 = 38 SPACES

TOTAL REQ'D = 644 SPACES

PROVIDED:

134 PARALLEL PARKING SPACES
256 9'x19' SPACES *
40 GARAGE SPACES IN 4-STORY BLDGS
64 GARAGE SPACES IN DETACHED GARAGES
494 TOTAL SPACES

* INCLUDES SPACES IN FRONT OF APARTMENT GARAGES

WETLAND SUMMARY

FEDERAL IMPACTS PROPOSED = 6.089 AC
FEDERAL IMPACTS PREVIOUSLY PROPOSED = 13.01 AC
DECREASE = 6.921 AC (53% DECREASE)

NYSDEC IMPACTS PROPOSED = 1.20 AC
NYSDEC IMPACTS PREVIOUSLY PROPOSED = 9.46 AC
DECREASE = 8.26 AC (87% DECREASE)

NYSDEC BUFFER IMPACT PROPOSED = 3.65 AC
NYSDEC BUFFER IMPACTS PREVIOUSLY PROPOSED = 4.20 AC
DECREASE = 0.55 AC (13% DECREASE)

NOTE: NYSDEC IMPACTS INCLUDES FEDERAL WETLAND IMPACT OVERLAP AREAS

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100' 100 0 100 200Ft.

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Overall Site Plan

DRAWING NO.

C-100

Project no.: 21.011

Attachment: SP-2021-05_drawings_021722 (2357 : SP-2021-05)

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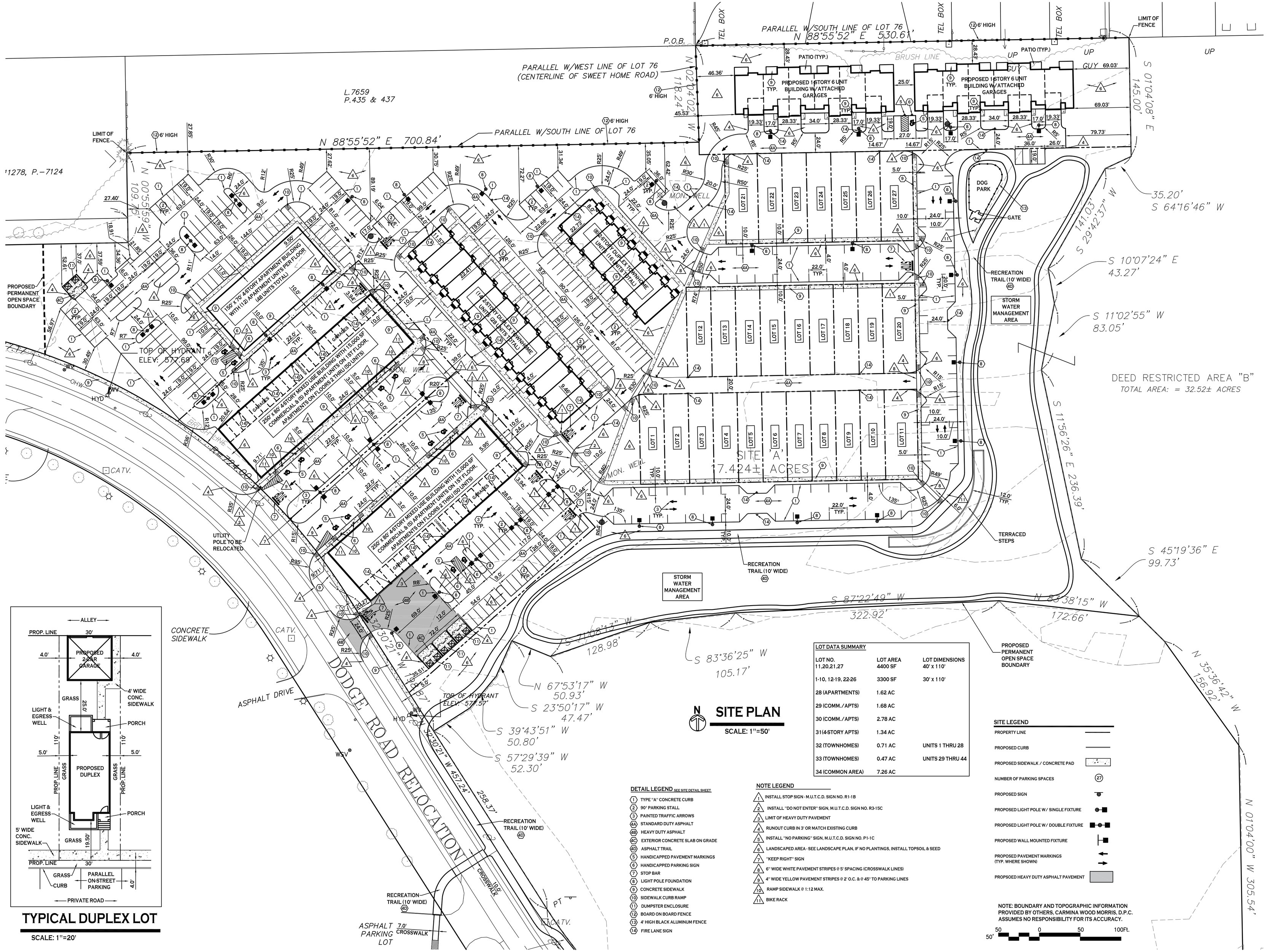

TYPICAL DUPLEX LOT

SCALE: 1"=20'

SITE PLAN

SCALE: 1"=50'

LOT DATA SUMMARY		
LOT NO. 11,20,21,27	LOT AREA 4400 SF	LOT DIMENSIONS 40' x 110'
1-10, 12-19, 22-26	3300 SF	30' x 110'
28 (APARTMENTS)	1.62 AC	
29 (COMM./APTS)	1.68 AC	
30 (COMM./APTS)	2.78 AC	
31(4-STORY APTS)	1.34 AC	
32 (TOWNHOMES)	0.71 AC	UNITS 1 THRU 28
33 (TOWNHOMES)	0.47 AC	UNITS 29 THRU 44
34 (COMMON AREA)	7.26 AC	

DETAIL LEGEND SEE SITE DETAIL SHEET

1. TYPE "A" CONCRETE CURB
2. 90° PARKING STALL
3. PAINTED TRAFFIC ARROWS
4A. STANDARD DUTY ASPHALT
4B. HEAVY DUTY ASPHALT
4C. EXTERIOR CONCRETE SLAB ON GRADE
4D. ASPHALT TRAIL
5. HANDICAPPED PAVEMENT MARKINGS
6. HANDICAPPED PARKING SIGN
7. STOP BAR
8. LIGHT POLE FOUNDATION
9. CONCRETE SIDEWALK
10. SIDEWALK CURB RAMP
11. DUMPSTER ENCLOSURE
12. BOARD ON BOARD FENCE
13. 4' HIGH BLACK ALUMINUM FENCE
14. FIRE LANE SIGN

NOTE LEGEND

1. INSTALL STOP SIGN - M.U.T.C.D. SIGN NO. R1-1 B
2. INSTALL "DO NOT ENTER" SIGN, M.U.T.C.D. SIGN NO. R3-15C
3. LIMIT OF HEAVY DUTY PAVEMENT
4. RUNOUT CURB IN 3' OR MATCH EXISTING CURB
5. INSTALL "NO PARKING" SIGN, M.U.T.C.D. SIGN NO. P1-1C
6. LANDSCAPED AREA - SEE LANDSCAPE PLAN, IF NO PLANTINGS, INSTALL TOPSOIL & SEED
7. "KEEP RIGHT" SIGN
8. 6" WIDE WHITE PAVEMENT STRIPES @ 5' SPACING (CROSSWALK LINES)
9. 4" WIDE YELLOW PAVEMENT STRIPES @ 2' O.C. & @ 45° TO PARKING LINES
10. RAMP SIDEWALK @ 1:12 MAX.
11. BIKE RACK

SITE LEGEND

- PROPERTY LINE
- PROPOSED CURB
- PROPOSED SIDEWALK / CONCRETE PAD
- NUMBER OF PARKING SPACES (27)
- PROPOSED SIGN
- PROPOSED LIGHT POLE W/ SINGLE FIXTURE
- PROPOSED LIGHT POLE W/ DOUBLE FIXTURE
- PROPOSED WALL MOUNTED FIXTURE
- PROPOSED PAVEMENT MARKINGS (TYP. WHERE SHOWN)
- PROPSOED HEAVY DUTY ASPHALT PAVEMENT

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 0 50 100Ft.

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Site Plan

DRAWING NO.

C-101

Project no.: 21.011

Packet Pg. 2972

DRAFT (2/17/2022)
TOWN OF AMHERST
PLANNING BOARD
SITE PLAN RESOLUTION
SP-2021-05

PETITIONER

Sawyer's Landing LLC

c/o Sean Hopkins, Esq.
5500 Main Street, Suite 343
Williamsville, NY 14221

PROPERTY LOCATION

1081 North French Road (portion) (NCD)

WHEREAS, the Town of Amherst Planning Board on Thursday, May 20, 2021 and ~~January 13~~ **February 17**, 2022 held public hearings on a Site Plan for a mixed-use development, and

WHEREAS, the Planning Board reviewed the plans and specifications for the proposed project, and

WHEREAS, the Site Plan was referred to the Town's various review agencies, and

WHEREAS, in accordance with Section 8-7-8 of the Zoning Ordinance, the Planning Board finds that:

A. The site plan includes usable space for active and passive recreation, including pedestrian connections.

B. The site plan includes open space lands for public ownership and use offered for dedication or other disposition to the Town or other public entity.

C. School sites and facilities are adequate to accommodate the proposed site plan.

D. The site plan does not include the extension of roadways to adjacent property.

WHEREAS, in accordance with Section 8-7-9 of the Zoning Ordinance, the Planning Board finds that:

A. The proposed site plan is consistent with the development plan if one is required.

B. The proposed site plan is consistent with the purpose and specific requirements of the Zoning Ordinance and generally consistent with the policies of the Comprehensive Plan.

C. Adequate services and utilities will be available prior to occupancy.

D. The site plan is consistent with all other applicable laws.

Attachment: SP-2021-05_draft resolution_021722 (23057 : Sp-2021-05)

DRAFT (2/17/2022)
TOWN OF AMHERST
PLANNING BOARD
SITE PLAN RESOLUTION
SP-2021-05

PETITIONER	PROPERTY LOCATION
Sawyer's Landing LLC	1081 North French Road (portion) (NCD)

E. Pursuant to Local Law #3-82, as amended, the Planning Board has determined that the requirements of SEQR are complete and that the subject proposal is not expected to have a significant adverse effect on the environment. The previously undertaken SEQR process included a DEIS, FEIS and culminated in the Town Board's issuance of a SEQR Findings Statement on December 17, 2007. Lead Agency was re-established for review of the proposed amendment to the Findings Statement to allow the proposed mixed-use development, and the Findings Statement was revised on September 27, 2021.

F. Wetland permits were issued for this project by NYSDEC on December 17, 2019 and the US Army Corps of Engineers under Section 404 of the Clean Water Act on December 12, 2019. Both permits authorize work on the project until November 30, 2024.

NOW THEREFORE BE IT FURTHER RESOLVED that the Planning Board, in accordance with Section 8-7 of the Zoning Ordinance **approves/denies** said Site Plan subject to the following conditions:

1. That the consideration of signs is specifically excluded from this approval as they require a separate review and approval by the Town.

2. That all dumpsters/trash containers and all mechanical equipment, utility structures, multiple meter boards, generators, and similar appurtenances, including those which are mounted on any part of a primary structure shall be appropriately screened with a fence, wall, and/or landscaping. Provide gate on dumpster enclosure that shall be closed whenever dumpster is not being serviced, enclosure shall be high enough to screen the dumpster(s) within.

3. That as-built record drawings, including location of utilities, be provided to the Engineering Department prior to issuance of a Certificate of Occupancy by the Building Department.

The foregoing resolution was adopted by the Town of Amherst Planning Board, _____; moved by _____; seconded by _____; ayes _, noes _; absent - ____.

_____ _____
Robert J. Gilmour, Chair Date

Attachment: SP-2021-05_draft resolution_021722 (23057 : Sp-2021-05)

DRAFT (2/17/2022)
TOWN OF AMHERST
PLANNING BOARD
SITE PLAN RESOLUTION
SP-2021-05

PETITIONER	PROPERTY LOCATION
Sawyer's Landing LLC	1081 North French Road (portion) (NCD)

SM/ac
X:\Current_Planning\Files\Site Plans\2021\SP-2021-05_(1081 N_FrenchRd_NCD)_2021\SP-2021-05_draft resolution_021722.doc

cc: Town Clerk
Commissioner of Building
Town Engineer
Fire Chiefs
Traffic/Safety
Highway Superintendent
ECDEP
NYSDOT
NYSDEC
Sean Hopkins, Hopkins Sorgi & McCarthy, 5500 Main St., Suite 343, Williamsville, NY 14221
William Severyn, Severyn Development, 43 Central Ave. Suite 300, Lancaster, NY 14086
Adam Faeth, Ciminelli Real Estate Corp., 50 Fountain Plaza, Suite 500, Buffalo, NY 14202
Chris Wood, Carmina Wood Morris, 487 Main St, Suite 500, Buffalo, NY 14203
David Sutton, Sutton Architects, 5409 Main St, 2nd Floor, Williamsville, NY 14221

Approved Plan: _____
Received: _____

Attachment: SP-2021-05_draft resolution_021722 (23057 : Sp-2021-05)

Amherst

Town of Amherst Planning Department *Erie County, New York*

Brian J. Kulpa
Supervisor
Daniel C. Howard, AICP
Planning Director
Daniel J. Ulatowski, AICP
Assistant Planning Director

February 24, 2022

Sawyer's Landing LLC
c/o Sean W. Hopkins, Esq.
Hopkins Sorgi & McCarthy
5500 Main Street, Suite 343
Williamsville, New York 14221

SUBJECT: MAJOR SITE PLAN REVIEW, **SP-2021-05**; PROPOSED SAWYERS LANDING MIXED-USE DEVELOPMENT; PROPERTY LOCATED AT **1081 NORTH FRENCH ROAD (PORTION) (MUIR WOODS SITE A) NCD.**

Dear Mr. Hopkins:

At its meeting of February 17, 2022 the Planning Board voted to **adjourn** the subject site plan at your request.

This request will be placed on the Planning Board agenda for the April 21, 2022 meeting.

Please submit revised plans or required materials by Monday, March 28, 2022 so they may be reviewed prior to the meeting.

Should you have any questions regarding the Planning Board's decision, please do not hesitate to call us.

Very truly yours,

for: Daniel C. Howard, AICP
Planning Director

DH/ac
X:\Current_Planning\Files\Site Plans\2021\SP-2021-05_(1081 N_FrenchRd_NCD)_2021\SP-2021-05_Adjournment Letter_021722.doc
cc: William Severyn, Severyn Development, 43 Central Ave. Suite 300, Lancaster, NY 14086
Adam Faeth, Ciminelli Real Estate Corp., 50 Fountain Plaza, Suite 500, Buffalo, NY 14202
Chris Wood, Carmina Wood Morris, 487 Main St, Suite 500, Buffalo, NY 14203
David Sutton, Sutton Architects, 5409 Main St, 2nd Floor, Williamsville, NY 14221

Attachment: SP-2021-05 adjournment letter 021721 (23057 : Sp-2021-05)

Application for Site Plan Approval 1021 North French Road [Including Subdivision of Project Site] - Proposed Mixed-Use Project - Site "A" of Muir Woods Property
Applicant: Sawyers Landing LLC

Prepared By: Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221
Tel: 510-4338
E-mail: shopkins@hsr-legal.com

TOWN OF AMHERST PLANNING DEPARTMENT

Application for Major Site Plan Review

For Official Use

File #: SP-2021-05 **Acreage** 17.42 **Fee $** 13,315.00

Address Verified by Assessor's Office
VERIFIED BY DATE

Site Plan Review

		Fill In Applicable Fees
1 acre or less	$1,250.00	$1,250.00
Each Additional acre or fraction thereof	$ 650.00/acre	$11,050.00
Amendments to Site Plans	$1,200.00	
Request for Relief of / or Change to Conditions of Site Plan Approval	$1,200.00	
Request for Extension of Site Plan Approval	$ 450.00	
Stormwater Pollution Prevention Plan		
1-4.99 Acres	$ 500.00	
5-10 Acres	$ 750.00	
>10 Acres	$1,000.00	$1,000.00
Affidavit Fee for Public Hearing	$ 15.00	$15.00
	TOTAL FEE:	$ 13,315.00

Materials Received by Planning Department
RECEIVED BY DATE

RECEIVED FEB 22 2021 TOWN OF AMHERST PLANNING DEPT.

Materials Accepted by Town Clerk & Fee Paid
ACCEPTED BY DATE

To Be Completed By Applicant

Petitioner: Name: Sawyers Landing LLC c/o Sean W. Hopkins, Esq.

Address: 5500 Main Street, Suite 343

Williamsville, New York 14221

city state zip code

Phone: 510-4338 Fax: _____ E Mail: shopkins@hsr-legal.com

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Representative (Architect, Engineer, Landscape Architect, Surveyor, or Attorney):

Name: Christopher Wood, P.E.

Address: Carmina Wood Morris DPC

483 Main Street, Suite 600

Buffalo (city) New York (state) 14203 (zip code)

Phone: 842-3165 [Ext. 103] Fax: 842-0263

E Mail: cwood@cwm-ae.com

Project Location (must be verified by Town Assessor's Office):

Address: Portion of 1081 North French Road

SBL No(s): 40.08-3-13.1/A

Project Name: Proposed Mixed-Use Project

Project Description:

See attached Exhibit "2" for Project Description. The layout of the proposed mixed-use project to be located on the New Community District - General Commercial ("NCD-GC") zoned property at 1081 North French Road as depicted on the Overall Site Plan [Drawing C-100] prepared by Carmina Wood Morris DPC. A reduced size copy of the Overall Site Plan is provided at Exhibit "3". and a reduced size copy of the Site Plan [Drawing C-101] is provided at Exhibit "4". The proposed mixed-use project includes the subdivision of the 17.42 acre Project Site into 52 parcels as depicted on the Parcel Map [Drawing C-102] prepared by Carmina Wood Morris DPC. A reduced size copy of the Parcel Map [Drawing C-102] is provided at Exhibit "5".

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

If this petition is an amendment to a previously approved site plan, please describe the proposed changes (include type and size of existing structures and number of existing parking spaces):

Not Applicable.

Gross Floor Area (non-residential):	0 existing	30,000 sq. ft. proposed	30,000 sq. ft. total
Number of Residential Units:	0 existing	206 proposed	206 total
Number of Parking Spaces:	0 existing	505 proposed	505 total

Acreage of Parcel: 17.42 Acres

Frontage on Public Roads: The proposed parcel will have approximately 1,120 ft. on Dodge Road and approximately 120 ft. of frontage on Sweet Home Road.

Existing Zoning District(s) NCD-GC

[Note: A completed Part 1 of the Full Environmental Assessment Form prepared pursuant to the State Environmental Quality Review Act ("SEQRA") is attached as Exhibit "1" of this Site Plan Application.]

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Town of Amherst Planning Department 5583 Main Street Williamsville-NY-14221
(716) 631-7051- Fax: (716) 631-7153

Exhibit 1 – Part 1 of the Full Environmental Assessment Form prepared pursuant to the State Environmental Quality Review Act ("SEQRA") with attached Page 5[a] and Attachments "A" and "B"

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Full Environmental Assessment Form
Part 1 - Project and Setting

Prepared By: Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221
Tel: 716.510-4338
E-mail: shopkins@hsr-legal.com

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project: Proposed Mixed-Use Project - Site A of Muir Woods		
Project Location (describe, and attach a general location map): Portion of 1081 North French Road - Town of Amherst - Erie County		
Brief Description of Proposed Action (include purpose or need): The proposed action consists of a request for Site Plan Approval [including the subdivision of the Project Site] for a mixed use project consisting of 2 four story mixed-use buildings [15,000 sq. ft of commercial space and 50 units per building], 47 two-family town homes on individual lots and 2 single-story apartment buildings [6 units per building] along with all related site improvements depicted on the fully engineered plans prepared by Carmina Wood Morris DPC. A reduced size copy of the Overall Site Plan [Drawing C-100] is provided at Exhibit "3". The action has been defined broadly to include all required discretionary approvals and permits as well as all site improvements including the proposed driveway connections to Dodge Road, access aisles, parking spaces, driveways, wetland impacts, lighting, landscaping, on-site storm water management improvements, sanitary sewer and water lines and connections and all other required utility improvements. The project purpose is to develop Site "A" of overall Muir Woods Project Site as a mixed-use project. The proposed mixed-use project is a Type I action pursuant to SEQRA and the Town Board issued an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") on October 19, 2020 to allow mixed-use development of the Project Site. On October 19, 2020, the Town Board also adopted a resolution to amend the Town's Comprehensive to designate the Project Site as appropriate for mixed-use.		
Name of Applicant/Sponsor: Sawyers Landing LLC c/o Sean Hopkins, Esq.	Telephone: 716.510-4338 E-Mail: shopkins@hsr-legal.com	
Address: 5500 Main Street, Suite 343		
City/PO: Williamsville, NY	State: NY	Zip Code: 14221
Project Contact (if not same as sponsor; give name and title/role):	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:
Property Owner (if not same as sponsor): Ciminelli Muir Woods, LLC c/o Adam Faeth, Esq.	Telephone: 716.631-8000 E-Mail: afaeth@ciminelli.com	
Address: 50 Fountain Plaza, Suite 500		
City/PO: Buffalo	State: NY	Zip Code: 14202

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees ☑Yes ☐No	Sewage Works Corporation and PIPs	To be determined
b. City, Town or Village Planning Board or Commission ☑Yes ☐No	Planning Board - Site Plan Approval [includes Subdivision Approval - 52 lots]	February 22, 2021
c. City, Town or Village Zoning Board of Appeals ☐Yes ☑No		
d. Other local agencies ☑Yes ☐No	Building Department - Building Permits; Amherst IDA [PILOT, etc.]	To be determined
e. County agencies ☑Yes ☐No	ECPDW - Highway Work Permit; ECWA - Water; ECHD - Sewer and Water	To be determined
f. Regional agencies ☐Yes ☑No		
g. State agencies ☑Yes ☐No	NYSDEC - Amended Wetland Permit; DSCA Approval, Sewage Work Corp. & SPDES Permit	Amended Wetland Permit issued on 12/24/20; To be determined.
h. Federal agencies ☑Yes ☐No	USACE - Amended Wetland Permit [Pending]	July 1, 2020

i. Coastal Resources.

i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐Yes ☑No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☑Yes ☐No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☑Yes ☐No

If Yes, identify the plan(s):

NYS Heritage Areas:West Erie Canal Corridor [Note: The project will not have any impacts on the West Erie Canal Corridor.]

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes ☑No

If Yes, identify the plan(s):

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
Site "A" of the Muir Woods property is zoned New Community District - Neighborhood District ("NCD-ND") pursuant to the Town of Amherst Zoning Map.

b. Is the use permitted or allowed by a special or conditional use permit? ☐ Yes ☑ No

c. Is a zoning change requested as part of the proposed action? ☐ Yes ☑ No
If Yes,
i. What is the proposed new zoning for the site?

C.4. Existing community services.

a. In what school district is the project site located? Sweet Home Central School District

b. What police or other public protection forces serve the project site?
Town of Amherst Police Department

c. Which fire protection and emergency medical services serve the project site?
Volunteer Fire Department

d. What parks serve the project site?
Various Town Parks including Nature View Park

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)?Mixed-use project consisting of 2 four-story buildings with 15,000 sq. ft. of 1st floor commercial space and 50 apartments per building; 47 two-family townhomes; and two six-unit single-story apartment buildings.

b. a. Total acreage of the site of the proposed action? 28.47 acres
b. Total acreage to be physically disturbed? 17.0 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 326 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % Units:

d. Is the proposed action a subdivision, or does it include a subdivision? ☑ Yes ☐ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
The 45 two-family townhome buildings will consist of individual lots and mixed-use buildings may consist of separate parcels.
ii. Is a cluster/conservation layout proposed? ☐ Yes ☐ No
iii. Number of lots proposed? 52 [47 lots for the two-family townhomes]
iv. Minimum and maximum proposed lot sizes? Minimum 3300 sf Maximum 6.81 Acres

e. Will the proposed action be constructed in multiple phases? ☑ Yes ☐ No
i. If No, anticipated period of construction: ____ months
ii. If Yes:
- Total number of phases anticipated 3-4
- Anticipated commencement date of phase 1 (including demolition) Fall month 2021 year
- Anticipated completion date of final phase July month 2024 year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases:
The infrastructure necessary for each phase will be installed to ensure compliance with applicable technical standards including those for stormwater management.

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

f. Does the project include new residential uses? ☑ Yes ☐ No
If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase		20		50
At completion of all phases		47		112

The build-out of the residential components will be based on market conditions.

g. Does the proposed action include new non-residential construction (including expansions)? ☑ Yes ☐ No
If Yes, There will be 15,000 sq. ft. of commercial space in each of the two 4-story mixed-use buildings.
i. Total number of structures 2
ii. Dimensions (in feet) of largest proposed structure: 55' height; 80' width; and 225' length
iii. Approximate extent of building space to be heated or cooled: 30,000 square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☑ Yes ☐ No
If Yes,
i. Purpose of the impoundment: Storm water management
ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☑ Other specify: Storm water runoff from impervious surfaces.
iii. If other than water, identify the type of impounded/contained liquids and their source.
N/A
iv. Approximate size of the proposed impoundment. Volume: ____ million gallons; surface area: 1.5 acres
v. Dimensions of the proposed dam or impounding structure: N/A height; ____ length
vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):
Impoundment area is an excavation consisting of earth fill.

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐ Yes ☑ No
If Yes:
i. What is the purpose of the excavation or dredging?
ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?
- Volume (specify tons or cubic yards):
- Over what duration of time?

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.
iv. Will there be onsite dewatering or processing of excavated materials? ☐ Yes ☐ No
If yes, describe.
v. What is the total area to be dredged or excavated? ____ acres
vi. What is the maximum area to be worked at any one time? ____ acres
vii. What would be the maximum depth of excavation or dredging? ____ feet
viii. Will the excavation require blasting? ☐ Yes ☐ No
ix. Summarize site reclamation goals and plan:

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☑ Yes ☐ No
If Yes:
i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): The proposed mixed-use project will result in 4.89 acres of impacts to federal wetlands (reduction of 7.87 acres), 1.20 acres of impacts to NYSDEC Freshwater Wetlands (reduction of 8.26 acres) and 3.65 acres of impacts to regulated 100 ft. Adjacent Areas of of the NYSDEC Freshwater Wetlands (reduction of .55 acres).

[The New York State Department of Environmental Conservation issued an Amended Wetland Permit on December 24, 2020. A copy of the Amended Wetland Permit is provided at Exhibit "8".]

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

iii. Will the proposed action cause or result in disturbance to bottom sediments? ☐Yes ☑No
If Yes, describe:

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☑No
If Yes:

- acres of aquatic vegetation proposed to be removed:
- expected acreage of aquatic vegetation remaining after project completion:
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access):
- proposed method of plant removal:
- if chemical/herbicide treatment will be used, specify product(s):

v. Describe any proposed reclamation/mitigation following disturbance:

c. Will the proposed action use, or create a new demand for water? ☑Yes ☐No
If Yes:

i. Total anticipated water usage/demand per day: 50,820 gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑Yes ☐No
If Yes:

- Name of district or service area: ECWA Consolidated Water District
- Does the existing public water supply have capacity to serve the proposal? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No
- Do existing lines serve the project site? ☑Yes ☐No

iii. Will line extension within an existing district be necessary to supply the project? ☐Yes ☑No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project:
- Source(s) of supply for the district:

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐Yes ☐No
If, Yes:

- Applicant/sponsor for new district:
- Date application submitted or anticipated:
- Proposed source(s) of supply for new district:

v. If a public water supply will not be used, describe plans to provide water supply for the project:

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑Yes ☐No
If Yes:

i. Total anticipated liquid waste generation per day: 50,820 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each):
Sanitary wastewater

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑Yes ☐No
If Yes:

- Name of wastewater treatment plant to be used: Tonawanda Creek Wastewater Treatment Plant
- Name of district: Town of Amherst Consolidated Sanitary Sewer District
- Does the existing wastewater treatment plant have capacity to serve the project? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

- Do existing sewer lines serve the project site? ☑Yes ☐No
- Will a line extension within an existing district be necessary to serve the project? ☐Yes ☑No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☑No

If Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑Yes ☐No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or 8.0 acres (impervious surface)

_____ Square feet or 28.47 acres (parcel size)

ii. Describe types of new point sources. Parking lots and roof tops

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

Stormwater runoff will be conveyed into the on-site stormwater management system to be installed per the applicable stringent stormwater quality and quantity standards of the NYS Department of Environmental Conservation ("NYSDEC")

- If to surface waters, identify receiving water bodies or wetlands: NYSDEC & Federal wetlands on the east portion of the Project Site.
- Will stormwater runoff flow to adjacent properties? ☐Yes ☑No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☑Yes ☐No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☑No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:

- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

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h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? ☐Yes ☑No A Traffic Impact Study was prepared by SRF Associates DPC dated August 3, 2020 and 4 copies have been submitted with the Site Plan Application dated February 22, 2020.

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐Weekend ☐ Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): _____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☑Yes ☐No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: _____

To be determined

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):

National Grid

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐Yes ☑No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 7:00 to 7:00
- Saturday: 8:00 to 6:00
- Sunday: As needed
- Holidays: Not Applicable

ii. During Operations:

- Monday - Friday: 8:00 to 11:00
- Saturday: 8:00 to 11:00
- Sunday: 8:00 to 10:00
- Holidays: 8:00 to 10:00

The hours of operation during "During Operations" as listed above apply to the first floor commercial space in the two mixed-use buildings. The hours are estimates since the tenants that will lease the first floor commercial space including both office and retail tenants have not yet been identified.

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m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

Construction activities will include the use of construction equipment during daytime hours that will exceed ambient background noise levels. The construction related noise impacts are a temporary unavoidable impact.

ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☑ No

Describe:

n. Will the proposed action **have outdoor lighting?** ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

Lighting will be installed in compliance with the lighting standards contained in the Town of Amherst Zoning Code. There will not be any lighting spillover onto contiguous properties.

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☑ No

Describe:

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures:

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally, describe the proposed storage facilities:

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☑ Yes ☐ No

If Yes:

i. Describe proposed treatment(s):

Potential use of lawn fertilizer and pesticides on maintained portions of property in accordance with applicable standards for application and use of lawn fertilizer and pesticides.

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☑ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☑ Yes ☐ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: 2 tons per week (unit of time)
- Operation : 2 tons per week (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: wood and metal waste may be recycled by the contract at their discretion
- Operation: Town of Amherst recycling program will be followed

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: approved NYSDEC landfill via contractor or private disposal company
- Operation: approved NYSDEC landfill via private disposal company

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s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☑ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)
☑ Forest ☐ Agriculture ☐ Aquatic ☑ Other (specify): Wetlands

ii. If mix of uses, generally describe:

There are mixture of uses in the vicinity of the Project Site including residential uses to the north in the Bucyrus Heights Subdivision, an elementary school, apartments and office buildings on Sweet Home Road and permanent open space to the east of Site "A".

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	0	8.0	+ 8.0
• Forested	12.17	1.87	-10.3
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	0	0	0
• Agricultural (includes active orchards, field, greenhouse etc.)	0	0	0
• Surface water features (lakes, ponds, streams, rivers, etc.)	0	0	0
• Wetlands (freshwater or tidal)	16.3	10.2	- 6.1
• Non-vegetated (bare rock, earth or fill)	0	0	0
• Other Describe: Greenspace, Landscaping, Pond	0	8.4	+8.4

The categories as listed above include the large wetland area subject to the jurisdiction of both the NYSDEC and USACE consisting of approximately 9.81 acres that was previously approved for development by the Town Board that will consist of Permanent Open Space to be donated to the Town of Amherst.

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c. Is the project site presently used by members of the community for public recreation? ☐Yes ☑No
i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☑Yes ☐No
If Yes,
i. Identify Facilities:
1. Heritage Heights Elementary School (Sweet Home School District- 2545 Sweet Home Road); 2. Creative Play Learning Center (Private Day Care Facility- 647 Dodge Road); and 3. Four Seasons Child Care & Preschool (Private Day Care Facility- 1639 North French Road).

e. Does the project site contain an existing dam? ☐Yes ☑No
If Yes:
i. Dimensions of the dam and impoundment:
- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____
iii. Provide date and summarize results of last inspection:
_____
_____

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐Yes ☑No
If Yes:
i. Has the facility been formally closed? ☐Yes ☐No
- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:
_____
_____

iii. Describe any development constraints due to the prior solid waste activities: _____
_____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐Yes ☑No
If Yes:
i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:
_____
_____

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐Yes ☑No
If Yes:
i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐Yes ☐No
☐ Yes – Spills Incidents database — Provide DEC ID number(s): _____
☐ Yes – Environmental Site Remediation database — Provide DEC ID number(s): _____
☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures: _____
_____
_____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐Yes ☑No
If yes, provide DEC ID number(s): _____

iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):
_____
_____

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v. Is the project site subject to an institutional control limiting property uses? ☐ Yes ☑ No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐ Yes ☐ No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? >5 feet

b. Are there bedrock outcroppings on the project site? ☐ Yes ☑ No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____ %

c. Predominant soil type(s) present on project site:

Getzville silt loam	94 %
Swormville clay loam	6 %
	%

d. What is the average depth to the water table on the project site? Average: >5 feet

e. Drainage status of project site soils:
☐ Well Drained: _____ % of site
☐ Moderately Well Drained: _____ % of site
☑ Poorly Drained 100 % of site

f. Approximate proportion of proposed action site with slopes:
☑ 0-10%: 100 % of site
☐ 10-15%: _____ % of site
☐ 15% or greater: _____ % of site

g. Are there any unique geologic features on the project site? ☐ Yes ☑ No
If Yes, describe: _____

h. Surface water features.
i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☑ Yes ☐ No
ii. Do any wetlands or other waterbodies adjoin the project site? ☑ Yes ☐ No
If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.
iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑ Yes ☐ No
iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name Federal Waters, NYS Wetland Approximate Size NYS Wetland (in a...
- Wetland No. (if regulated by DEC) TE-33

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐ Yes ☑ No
If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐ Yes ☑ No

j. Is the project site in the 100-year Floodplain? ☐ Yes ☑ No

k. Is the project site in the 500-year Floodplain? ☑ Yes ☐ No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐ Yes ☑ No
If Yes:
i. Name of aquifer: _____

The proposed mixed-use project will result in 4.89 acres of impacts to federal wetlands (reduction of 7.87 acres), 1.20 acres of impacts to NYSDEC Freshwater Wetlands (reduction of 8.26 acres) and 3.65 acres of impacts to regulated 100 ft. Adjacent Areas of NYSDEC Freshwater Wetlands (reduction of .55 acres). A copy of the Amended Wetland Permit issued by the New York State Department of Environmental Conservation authorizing the impacts to the NYSDEC Freshwater Wetlands and the regulated 100 ft. Adjacent Area to accommodate the proposed mixed-use project on Site A of the Muir Woods property is provided at Attachment "A" of this Part 1 of the Full Environmental Assessment Form.

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m. Identify the predominant wildlife species that occupy or use the project site:
Typical suburban species

n. Does the project site contain a designated significant natural community? ☐Yes ☑No
If Yes:
i. Describe the habitat/community (composition, function, and basis for designation):
ii. Source(s) of description or evaluation:
iii. Extent of community/habitat:
- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐Yes ☑No
If Yes:
i. Species and listing (endangered or threatened):

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☑Yes ☐No
If Yes:
i. Species and listing:
Spiny Softshell - The Project Sponsor does not believe that Spiny Softshell is present on Site A of the Muir Woods property.

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐Yes ☑No
If yes, give a brief description of how the proposed action may affect that use:

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐Yes ☑No
If Yes, provide county plus district name/number:

b. Are agricultural lands consisting of highly productive soils present? ☐Yes ☑No
i. If Yes: acreage(s) on project site?
ii. Source(s) of soil rating(s):

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐Yes ☑No
If Yes:
i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature
ii. Provide brief description of landmark, including values behind designation and approximate size/extent:

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐Yes ☑No
If Yes:
i. CEA name:
ii. Basis for designation:
iii. Designating agency and date:

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e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? ☑ Yes ☐ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: Eligible property:Heritage Heights Elementary School

iii. Brief description of attributes on which listing is based:

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☑ Yes ☐ No

[Ccopy of the No Impact Determination letter issued by the NYSOPRP dated October 10, 2001 is provided at Attachment "B".]

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s):

ii. Basis for identification:

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☐ Yes ☑ No

If Yes:

i. Identify resource:

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.):

iii. Distance between project and resource: _____ miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation:

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

Documentation evaluating potential adverse environmental impacts pursuant to the State Environmental Quality Review Act ("SEQRA") including the fully engineered plans prepared by Carmina Wood Morris DPC have been submitted with the Site Plan Application.

G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name: Sawyers Landing LLC Date: February 22, 2021

Signature _____ Title Attorney for Project Sponsor

Sean W. Hopkins, Esq.

PRINT FORM

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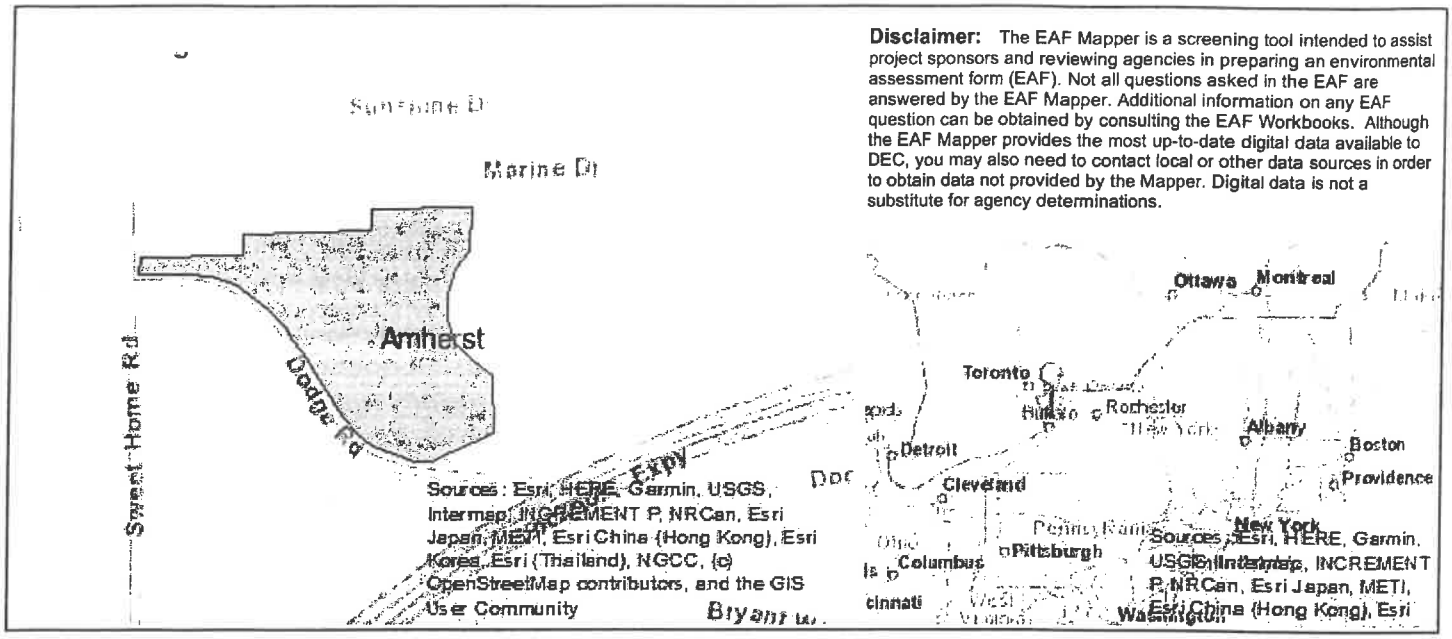
EAF Mapper Summary Report

Thursday, June 18, 2020 8:50 AM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.

B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Yes - Digital mapping data are not available for all Special Planning Districts. Refer to EAF Workbook.
C.2.b. [Special Planning District - Name]	NYS Heritage Areas:West Erie Canal Corridor
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	Yes
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.iv [Surface Water Features - Wetlands Name]	Federal Waters, NYS Wetland
E.2.h.iv [Surface Water Features - Wetlands Size]	NYS Wetland (in acres):34.6
E.2.h.iv [Surface Water Features - DEC Wetlands Number]	TE-33
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	No

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E.2.k. [500 Year Floodplain]	Yes
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	No
E.2.o. [Endangered or Threatened Species]	No
E.2.p. [Rare Plants or Animals]	Yes
E.2.p. [Rare Plants or Animals - Name]	Spiny Softshell
E.3.a. [Agricultural District]	No
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Yes - Digital mapping data for archaeological site boundaries are not available. Refer to EAF Workbook.
E.3.e.ii [National or State Register of Historic Places or State Eligible Sites - Name]	Eligible property:Heritage Heights Elementary School
E.3.f. [Archeological Sites]	Yes
E.3.i. [Designated River Corridor]	No

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TOWN OF AMHERST ATTACHMENT
State Environmental Quality Review
ENVIRONMENTAL ASSESSMENT FORM
Proposed Mixed-Use Project - Portion of 1081 North French Road

1. For each applicable category of proposed new structures, including additions to existing structures, provide the following information for all soil types on the project site (*according to Soil Survey of Erie County, NY; Table 11, Building Site Development, pp 294-305):*

Soil Name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Getzville Silt Loam	Severe	Severe	Severe	Severe	Moderate
Swormville Clay Loam	Severe	Severe	Severe	Severe	Severe

2. If the Soil survey indicates either "severe" or "moderate" suitability for the proposed types of construction, a geotechnical and hydrological analysis based on one test per 3.5 acres of project area must be provided (per Town Board resolution, 3/17/03, amended 6/16/03).

   _____ Geotechnical report attached _____ Not applicable

   [Note: 3 copies of the Geotechnical Report that has been ordered for the relevant portion of 1081 North French Road to be developed as a mixed-use project will be submitted to the Planning Department. A comprehensive Geotechnical Report for the entire overall Muir Woods Property was previously submitted.

3. Is your property located: On Youngs Road between Dodge and Klein Roads? ☐ Yes ■ No
   On Wehrle Dr. between Spindrift Dr. and Oakwood Rd? ☐ Yes ■ No

   If so, the property may be within an area of the Town that is affected by a moratorium on connections to the sanitary sewer system.

4. Are there alternative locations on the site for this project? ☐ Yes ■ No

5. Location and size of real property owned by petitioner within one (1) mile of subject proposal:
   X Not Applicable

6. Are you aware of current or future plans or intentions by others in the Town of Amherst to develop property within 1000± ft. of the present project request: ■ Yes No

   Describe A student housing community is proposed on property to the east of the Project Site commonly referred to as Site "B" of Muir Woods.

   (Potential environmental impacts from adjacent or nearby projects undergoing the approval process will receive a coordinated environmental review to determine cumulative effects on common receivers (e.g. traffic and drainage corridors) and other relevant environmental concerns.)

7. Maximum number of vehicular trips to be generated per peak hour upon completion of project 106
   Source: Traffic Impact Study prepared by SRF Associates DPC dated August 3, 2020. 3 copies of the Traffic Impact Study have been submitted with the Site Plan Application.
8. Will blasting occur during construction? ☐ Yes ■ No

9. Does the project propose to connect and be tributary to the public sanitary sewer system? ■ Yes ☐ No

10. Proposed net additional gallons per day (gpd) of sanitary sewer discharge upon completion of project:
    50,820 average flow 203,280 peak flow.

    (Average flows of 2,500 gpd or greater will require an Engineer's Report that includes a detailed downstream sewer capacity analysis and the identification of and commitment to required I/I offset work during peak wastewater flow conditions.)

11. Based on the Town's *2011 Reconnaissance Level Survey of Historic Resources,* is your property 'blue-rated' for historic significance? Yes ■ No
    [There are not any buildings located on the Project Site.]

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Attachment "A" of Part 1 of Full Environmental Assessment Form - Amended Wetland Permit Issued by the New York State Separtment of Environmental Conservation dated December 24, 2020

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

PERMIT

Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
Ciminelli Muir Woods LLC
50 Fountain Plaza, Suite 500
Buffalo, NY 14202
(716) 631-8000

Facility:
MUIR WOODS DEVELOPMENT
1121 N French Rd
Amherst, NY 14228

Facility Location: in AMHERST in ERIE COUNTY
Facility Principal Reference Point: NYTM-E: 191.586 NYTM-N: 4770.823
Latitude: 43°01'38.9" Longitude: 78°47'07.2"

Authorized Activity: Construction of a mixed-use project named "Muir Woods" consisting of approximately two 4-story mixed-use buildings consisting of commercial space and residential units, 90 two-family townhouses and 2 six-unit apartment buildings, approximately 133 detached single-family residential units and 515 cottage-style and apartment-style housing units with various amenities; and gas, electric, sanitary, potable water and storm water (the necessary infrastructure), while maintaining open space on approximately 224 acres in the Audubon New Community District. The Muir Woods project property is a 326 acre site bounded by the Lockport Expressway (Interstate Route 990) and Dodge Road on the south, Sweet Home Road on the west, North French Road on the north and Campbell Boulevard on the east. The project will result in permanent impacts to approximately 2.39 acres of State regulated wetlands (TE-22, TE-23 and TE-34), and 11.38 acres of State regulated 100 foot wide wetland adjacent area. As mitigation for those impacts the project includes creation of 19.58 acres of in-kind and out-of-kind wetlands on-site, in six areas, to replace the functions and benefits of the impacted wetlands. There will be 4.3 acres of stream channel enhancement on-site as mitigation for State wetland regulated adjacent area impacts. The project also includes construction at 520 Campbell Road property as detailed on plan sheets referenced in Natural Resource Condition No. 4.

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Permit Authorizations

Freshwater Wetlands - Under Article 24
Permit ID 9-1422-00398/00001

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

Water Quality Certification - Under Section 401 - Clean Water Act
Permit ID 9-1422-00398/00002

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: DAVID S DENK, Regional Permit Administrator
Address: NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY 14203 -2915

Authorized Signature: David S. Denk Digitally signed by David S. Denk DN: cn=David S. Denk, o=NYS DEC, ou=Div. of Env. Permits, email=david.denk@dec.ny.gov, c=US Date: 2020.12.24 10:29:47 -05'00' Date ___/___/___

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: FRESHWATER WETLANDS; WATER QUALITY CERTIFICATION

1. **No Work Prior to Approval of Legal Instrument for Preservation of Undeveloped Areas of Site** No work authorized by this permit may begin until the Department approves a legal instrument, such as a deed restriction and/or conservation easement, that will preserve in perpetuity the natural resource values of the undeveloped areas of the site. This condition does not apply to the 520 Campbell Boulevard property.

2. **Declaration of Restrictions 520 Campbell Boulevard Property** A Declaration of Restrictions permanently prohibiting any future development of the 6.88 acres of jurisdictional federal wetlands and portion of the upland area on 520 Campbell Boulevard as depicted on the Wetland Restriction Exhibit Map must be incorporated into the deeds for lots 1 – 12 and 21. By 60 days after Water Quality Certification issuance, the permittee shall file with the real property records of the Erie County Clerk`s Office, the deed for each applicable lot containing this notice. The permittee shall within two weeks following the filing of the deed(s) submit proof of filing from the County Clerk's Office

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

showing the Liber and page number at which the deed notice was filed and the date of filing for one of the affected lots to: Regional Permit Administrator, NYSDEC Region 9 Headquarters, 270 Michigan Ave, Buffalo, NY 14203-2915.

3. **Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by Ciminelli Development Company, Inc. and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009.

4. **Conformance with Plans Site B** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include the "Concept Plan - Muir Woods" dated 08 November 2019 amended to show Conifer Planting Area (attached).

5. **Conformance with Plans - 520 Campbell Boulevard** All activities authorized by this permit for the 520 Campbell Boulevard property must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans include those sheets entitled: The Preserve at Muir Woods (DEC Planting Exhibit, DEC Earthwork Exhibit and the Wetland Restriction Exhibit) by Greenman-Pedersen, Inc. dated May 2018.

6. **Conformance with Plans Site A** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include Drawing C-100 dated July 20, 2020 and received by this Department on August 10, 2020.

7. **Future Phases** Prior to development of Muir Woods Sites A and B, the permittee must obtain specific approval of engineered plans for Sites A and B to ensure compliance with the terms and condition of this permit, the approved wetland mitigation plans and the most current Findings Statement for the overall Muir Woods Project issued pursuant to the State Environmental Quality Review Act. The permittee shall submit the engineered plans for the development of Sites A and B for review by the Department simultaneous with submission of such engineered plans to the Town of Amherst. If required by the Department, the permittee shall make any necessary modifications to the engineered plans to ensure compliance with the terms and conditions of this permit, the approved wetland mitigation plans and the most current Findings Statement.

8. **Permit Conditions Prevail over Plans** If any condition of this permit conflicts with the approved plans noted in Condition Number 1, the permit conditions shall prevail over the plans unless specific written approval for such a change is obtained from this Department prior to implementation.

9. **Pre-construction Meeting to Review Permit** Prior to commencing work at the project site, the permittee shall schedule a pre-construction meeting with Department staff (Contact: Mr. David Denk, Regional Permit Administrator, NYSDEC, Division of Environmental Permits, Telephone : 716/851- 7165 and/or Mr. Charles P. Rosenburg, NYSDEC, Division of Fish and Wildlife, Telephone: 716/851-7010) and selected contractors to review the conditions contained in this permit.

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

10. Mark Areas of No Disturbance on the Muir Woods Site Grade stakes and/or other appropriate measures (substantial contractor fencing, perhaps in combination with necessary silt fencing) shall be used to ensure that no equipment enters identified areas of no disturbance within the immediate area under construction (i.e.- Site A, Site B, Site C or Site D) on the Muir Woods project site. Boundaries of the on-site mitigation areas shall likewise be marked to define the limits of that work.

11. Install Controls Along Limits of Disturbance Before any soil is disturbed within a specific Site Development Area, as detailed in Condition #6 above, the permittee shall install securely anchored silt fencing and/or continuous staked hay bales along the limits-of-disturbance as shown on the plans or drawings referenced in this permit. Such erosion and sedimentation controls shall be maintained until unpaved portions of the subject site are stabilized by a self-sustaining cover of vegetation that is adequate to prevent erosion and sedimentation on and off the site. Sediment which has accumulated at the controls shall be removed periodically as necessary during the construction period. Before the controls are removed, the permittee shall remove all sediment that has accumulated at the controls.

12. Work Within Ares Depicted on Plans All construction activity, including operation of machinery, excavation, filling, grading, clearing of vegetation, disposal of waste, street paving and stockpiling of material must take place within the Site Development Areas or mitigation areas as depicted on the project plans referenced by this permit. Construction activity is prohibited within areas to be left in a natural condition or locations on the property not within the Site Development Areas or mitigation areas designated by this permit. Disturbance to the wetlands and their regulated 100 foot wide adjacent areas shall be strictly limited to the work areas identified in the plans, and specifically the MAP SHOWING WETLAND IMPACT AREAS - NEW YORK STATE WETLANDS, and APPENDIX M - PROPOSED ON-SITE MITIGATION PLAN.

13. Invasive Species (Non-Native Vegetation) To prevent the unintentional introduction or spread of invasive species, the permittee must ensure that all construction equipment is cleaned of mud, seeds, vegetation and other debris before entering any approved Site Development Areas within State regulated wetlands or their 100 foot wide adjacent areas, as well as all on-site wetland mitigation areas.

14. Prevention of Invasive Species The permittee shall prevent the establishment of invasive species (purple loosestrife, Phragmites, reed canary-grass, Japanese knotweed, glossy buckthorn and common buckthorn) across all disturbed areas within the wetland mitigation area for five growing seasons. If any of these invasive species become established, monitoring and treatment may be extended for an additional 5 years at the Department's discretion.

15. Wetland Mitigation is Mandatory Completion of all freshwater wetland mitigation is mandatory regardless of whether or not construction proceeds to completion. The required mitigation must be completed by the expiration date of this permit. Mitigation will be subject to remediation, if necessary, pursuant to Condition #16 below. All mitigation areas shall be monitored for a period of ten (10) years or until the mitigation is deemed successful by this Department. Monitoring reports shall be prepared for the first four (4) years after construction of the mitigation areas and every other year (years 6, 8 and 10) thereafter. This Department may, at its discretion, modify the 10-year monitoring period and/or monitoring report requirement at any time. Monitoring reports shall be submitted to Mr. Charles P. Rosenburg, Habitat Manager, NYSDEC, Bureau of Ecosystem Health, 270 Michigan Avenue, Buffalo, NY 14203-2915 Telephone: 716/851-7024.

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

16. **On-Site Mitigation to be in Accordance with Mitigation Plan** The on-site mitigation shall be in accordance with Appendix M - Proposed On-Site Wetland Mitigation for Muir Woods prepared by Earth Dimensions, Inc. revised May 25, 2009 and with the modifications shown in Exhibit 22 of the July 20, 2020 application binder.

17. **Planting Row of Native Conifers** The permittee shall plant a row of native conifer trees in the location shown on the attached plan. The tree plantings must be a minimum of 6 feet tall, spaced 15 feet apart, and must be planted no later than October 15th following the completion of construction of the adjacent apartment units.

18. **Survival Rate for Mitigation Plantings** The permittee shall prepare a care, maintenance, inspection, and replacement schedule for the tree and shrub plantings described in the mitigation plan to ensure an 85% survival rate for five growing seasons. This condition includes all on-site landscape "buffer" plantings.

19. **Herbicides, Pesticides in Wetland or Adjacent Area** The use of herbicides and other pesticides in State regulated wetlands or their 100 foot wide adjacent areas is a regulated activity and may only be conducted pursuant to a valid Article 33 Pesticides Permit.

20. **Requirement for SPDES General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities** Since development of the Muir Woods site in the Town of Amherst will involve land disturbance of one (1) or more acres, the permittee is required to obtain coverage under State Pollutant Discharge Elimination System (SPDES) General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities. A Notice of Intent (NOI) is required to be sent to NYSDEC, Division of Water, 625 Broadway, 4th Floor, Albany, New York 12233-3505, Telephone: 518/402-8111 and approved before construction commences. Alternatively, an eNOI may be filed electronically as described on the Department's website. The General Permit GP-0-15-002 and NOI form are available on the Department's website at www.dec.state.ny.us.

21. **Visibly Turbid Discharges Prohibited** Visibly turbid discharges from project dewatering operations, excavation and grading activities are strictly prohibited to any "water body" (pond, wetland, stream or water course). Any such discharges shall be (1) retained in an appropriately maintained upland settling basin, filtered through crushed stone, sand, filter fabric fences, hay bales etc., or (2) directed to a grassy area sufficiently distant from any water body to preclude such entry.

22. **Stockpiling of Soil** Stockpiling of excavated soil is prohibited at locations within any portion of the TE-22, TE-23 and TE-34 Wetlands or their regulated 100 foot wide adjacent areas, or within any mapped 100-year floodplain beyond the Site Development Areas or mitigation areas identified in the plans.

23. **Stabilize Disturbed Areas** All areas of soil disturbance resulting from this project shall be seeded with an appropriate perennial grass seed and mulched with straw, or hydro-seeded. Mulch shall be maintained until suitable vegetative cover is established.

24. **Temporary Mulch, Final Seeding** If seeding is impracticable due to the time of year, a temporary mulch shall be applied and final seeding shall be performed at the earliest opportunity when weather conditions favor germination and growth.

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25. **Disposal of Material** Any non-merchantable tree and brush debris, demolition debris, excess construction materials, and/or excess excavated materials shall be immediately and completely disposed of on an approved upland site more than 100 feet from any regulated freshwater wetland. These materials shall be suitably stabilized so as not to re-enter any water body, wetland, or wetland adjacent area; and must be disposed of in accordance with all local, state, and federal statutes, regulations, or ordinances.

26. **Placement of Interpretive Signs Required** Permanent interpretive signs shall be placed at various wetland boundary locations throughout the Muir Woods project site . The permittee shall submit a proposal for the signs to the Department for approval. The interpretive signs shall be a minimum of 12 inches by 12 inches and shall be placed on permanent posts.

27. **Annual Project Inspection / Meeting** The permittee shall schedule an annual inspection/meeting to update Department staff on project progress and compliance with conditions of this permit for the on-site wetland mitigation area.

28. **Wetland Monuments** Monuments shall be placed every 200 feet along the outer edge of the wetland preservation areas. The monuments shall be 30" long, 5/8" rebar and cap embedded flush and in the center of the top exposed surface of concrete in a minimum 4 inch diameter, 4.5 foot long section of PVC Schedule 40 drain pipe filled with concrete, extending vertically1.5 to 2 feet above existing grade at each location. The caps shall say "Conservation Area Marker, Do Not Disturb". These monuments are to be permanently maintained.

29. **Wetland Boundaries** The boundaries of the TE-22, TE-23 and TE-34 Wetlands shall be fixed for the period of this permit (expires November 30, 2024). At that time, new boundary delineations for those wetlands will be required by this Department (to be performed or confirmed by a Department Biologist). Since project activities will be subject to the updated wetland boundary delineations and pertinent regulations at that time, any future permit modification (if necessary) would be reviewed based on the updated delineations and pertinent regulations. As such, modifications to the current project plan may be necessary depending upon the updated wetland delineations and permit regulations in effect at that time.

30. **State Not Liable for Damage** The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

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31. **State May Order Removal or Alteration of Work** If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

32. **State May Require Site Restoration** If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may lawfully require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.

33. **Precautions Against Contamination of Waters** All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. **Water Quality Certification** The authorized project, as conditioned pursuant to the Certificate, complies with Section 301, 302, 303, 306, and 307 of the Federal Water Pollution Control Act, as amended and as implemented by the limitations, standards, and criteria of state statutory and regulatory requirements set forth in 6 NYCRR Section 608.9(a). The authorized project, as conditioned, will also comply with applicable New York State water quality standards, including but not limited to effluent limitations, best usages and thermal discharge criteria, as applicable, as set forth in 6 NYCRR Parts 701, 702, 703, and 704.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. **Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. **Relationship of this Permit to Other Department Orders and Determinations** Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. **Applications For Permit Renewals, Modifications or Transfers** The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY14203 -2915

4. **Submission of Renewal Application** The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Freshwater Wetlands, Water Quality Certification.

5. **Permit Modifications, Suspensions and Revocations by the Department** The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

a. materially false or inaccurate statements in the permit application or supporting papers;

b. failure by the permittee to comply with any terms or conditions of the permit;

c. exceeding the scope of the project as described in the permit application;

d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;

e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. **Permit Transfer** Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification
The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit
The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits
The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights
This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Attachment "B" of Part 1 of Full Environmental Assessment Form - No Impact Determination Letter Issued by Ruth Pierpont, Director, New York State Office of Parks, Recreation and Historic Preservation, dated October 10, 2001

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

NEW YORK STATE
Bernadette Castro
Commissioner

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189

518-237-8643

October 10, 2001

Carolyn A. Pierce
CCRG
105 Robie Avenue
Buffalo, New York 14214

Dear Ms. Pierce:

Re: SEQRA
Muir Woods Mixed-Use Development
Amherst/Erie County
01PR0345

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Parks, Recreation and Historic Preservation Law, Section 14.09.

Based upon this review, it is the OPRHP's opinion that your project will have No Impact upon cultural resources in or eligible for inclusion in the State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Director

RLP:cmp

RECEIVED
OCT 16 2001
CIMINELLI DEVELOPMENT COMPANY, INC.

An Equal Opportunity/Affirmative Action Agency
printed on recycled paper

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Exhibit 2 – Description of the Proposed Mixed-Use Project on a Portion of 1081 North French Road [Site "A" of the Muir Woods Property]

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

EXHIBIT 2 OF SITE PLAN APPLICATION

DESCRIPTION OF PROPOSED MIXED-USE PROJECT TO BE LOCATION ON A PORTION OF 1081 NORTH FRENCH ROAD [SITE "A" OF MUIR WOODS PROPERTY]

The proposed project consists of a mixed-use project on a portion of 1081 North French Road [Site "A" of Muir Woods Property] (the "Project Site"). The Project Site is properly zoned for the proposed mixed-use project. The mixed-use project consists of 2 four-story mixed-use buildings [15,000 sq. ft. of 1st floor commercial space and 50 units per building], 47 two-family town homes on individual lots, and 2 single-story apartment buildings [6 units per building] along with all related site improvements depicted on the fully engineered plans prepared by Christopher Wood, P.E. of Carmina Wood Morris DPC submitted with this Site Plan Application. A reduced size copy of the Overall Site Plan [Drawing C-100] is provided at Exhibit "3". The Elevation Plans as prepared by Sutton Architecture PLLC are provided at Exhibit "8". The fully engineered plans for the mixed-use project consist of the following:

- Cover Sheet;
- Topographic Survey;
- Boundary Survey;
- Demolition & Erosion Control Plan [Drawing C-001];
- Demolition & Erosion Control Details Plan [Drawing C-002];
- Overall Site Plan [Drawing C-100];
- Site Plan [Drawing C-101];
- Parcel Map [Drawing C-102];
- Site Details Plan [Drawing C-103];
- Site Details Plan [Drawing C-104];
- Grading Plan [Drawing C-200];
- Storm Drainage Plan [Drawing C-300];
- Storm Drainage Details Plan [Drawing C-301];

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- Storm Drainage Plan [Drawing C-302];
- Storm Drainage Details Plan [Drawing C-303];
- Storm Drainage Details Plan [Drawing C-304];
- Utility Plan [Drawing C-400];
- Sanitary Sewer Details Plan [Drawing C-401];
- Sanitary Sewer Details Plan [Drawing C-402];
- Sanitary Sewer General Notes Plan [Drawing C-403];
- Sanitary Sewer Testing Notes Plan [Drawing C-404];
- Water Details Plan [Drawing C-405];
- Water Details & Notes Plan [Drawing C-407];
- Insulated Enclosure Detail Plan [Drawing C-408]; and
- Landscape Plan as Prepared by Robert Walter, RLA [Drawing L-100]

For purposes of the review process, the proposed mixed-use project has been defined broadly to include all required discretionary approvals and permits as well as all site improvements including the proposed driveway connections to Dodge Road, access aisles, parking spaces, driveways, wetland impacts, lighting, landscaping, on-site storm water management improvements, sanitary sewer and water lines and connections and all other required utility improvements.[1] The project purpose is to develop Site "A" of overall Muir Woods Project Site as an innovative mixed-use project on property that has been designated for development for several decades. The proposed mixed-use project is a Type I action pursuant to SEQRA. The Town Board issued an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") on October 19, 2020 to allow mixed-use development of the Project Site.[2]

[1] A completed Part 1 of the Full Environmental Assessment Form with attached Page 5[a] and Attachments "A" and "B" is provided at Exhibit "1".

[2] A copy Resolution 2020-791 as adopted by the Town of Amherst Town Board on October 19, 2020 for the purpose of Issuing an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") for allowing mixed-use development on the Project Site is provided at Exhibit "9".

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Additionally, on October 19, 2020, the Town Board also adopted a resolution to amend the Town's Comprehensive to designate the Project Site as appropriate for mixed-use.[3]

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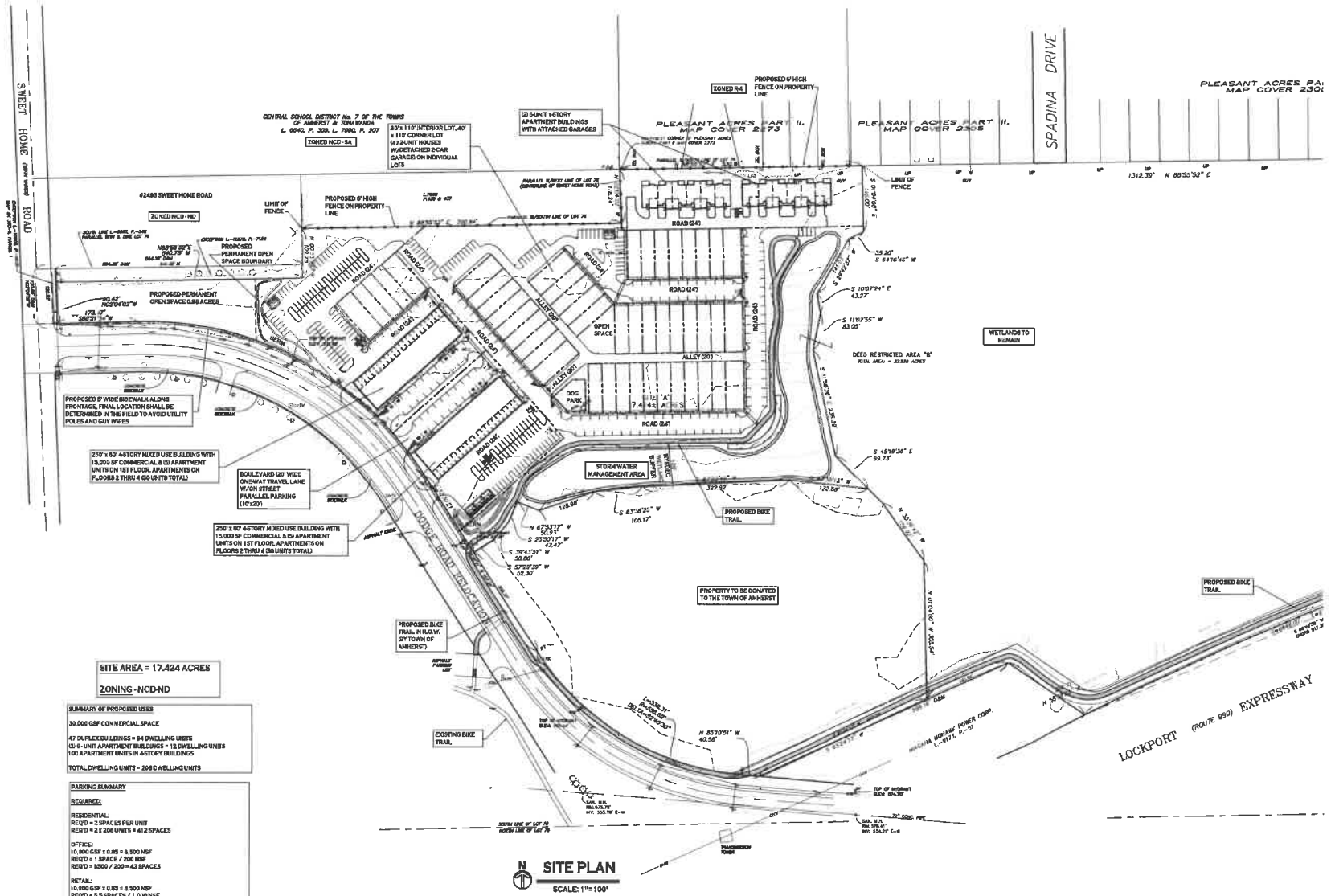
[3] A copy of Resolution 2020-792 as Adopted by the Town of Amherst Town Board on October 19, 2020 for the purpose of approving an Amendment to the Town of Amherst Comprehensive Plan to accommodate mixed-use development on the Project Site is provided at Exhibit "10".

Exhibit 3 – Reduced Size Copy of Overall Site Plan [Drawing C-100] as Prepared by Christopher Wood, P.E., of Carmina Wood Morris DPC

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)



N

SITE PLAN

SCALE: 1"=100'

SITE AREA = 17.424 ACRES

ZONING - NCD/ND

SUMMARY OF PROPOSED USES

30,000 GSF COMMERCIAL SPACE

47 DUPLEX BUILDINGS = 94 DWELLING UNITS
(2) 6-UNIT APARTMENT BUILDINGS = 12 DWELLING UNITS
100 APARTMENT UNITS IN 4-STORY BUILDINGS

TOTAL DWELLING UNITS = 206 DWELLING UNITS

PARKING SUMMARY

REQUIRED:

RESIDENTIAL:
REQ'D = 2 SPACES PER UNIT
REQ'D = 2 x 206 UNITS = 412 SPACES

OFFICE:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 1 SPACE / 200 NSF
REQ'D = 8500 / 200 = 43 SPACES

RETAIL:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 5.5 SPACES / 1,000 NSF
REQ'D = 8500 / 1000 x 5.5 = 47 SPACES

RESTAURANT:
REQ'D = 1 SPACE / 3 SEATS + 1 SPACE / 100 SF TAKE OUT AREA
REQ'D = 100 SEAT / 3 + 500 SF / 100 = 38 SPACES

TOTAL REQ'D = 540 SPACES

PROVIDED:

158 PARALLEL PARKING SPACES
213 9'x18' SPACES *
49 GARAGE SPACES IN 4-STORY BLDGS
94 GARAGE SPACES IN DETACHED GARAGES
TOTAL SPACES

* INCLUDES SPACES IN FRONT OF APARTMENT GARAGES

PERMANENT OPEN SPACE SUMMARY

TOTAL PROPOSED PERMANENT OPEN SPACE = 0.98 ACRES

WETLAND SUMMARY

FEDERAL IMPACTS PROPOSED = 6.089 AC
FEDERAL IMPACTS PREVIOUSLY PROPOSED = 13.01 AC
DECREASE = 6.921 AC (53% DECREASE)

NYSDEC IMPACTS PROPOSED = 1.20 AC
NYSDEC IMPACTS PREVIOUSLY PROPOSED = 9.48 AC
DECREASE = 8.28 AC (87% DECREASE)

NYSDEC BUFFER IMPACT PROPOSED = 3.65 AC
NYSDEC BUFFER IMPACTS PREVIOUSLY PROPOSED = 4.20 AC
DECREASE = 0.55 AC (13% DECREASE)

NOTE: NYSDEC IMPACTS INCLUDES FEDERAL WETLAND IMPACT OVERLAP AREAS

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 0 100 200FT

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Carmina Wood Morris DPC
497 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0283

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Overall Site Plan

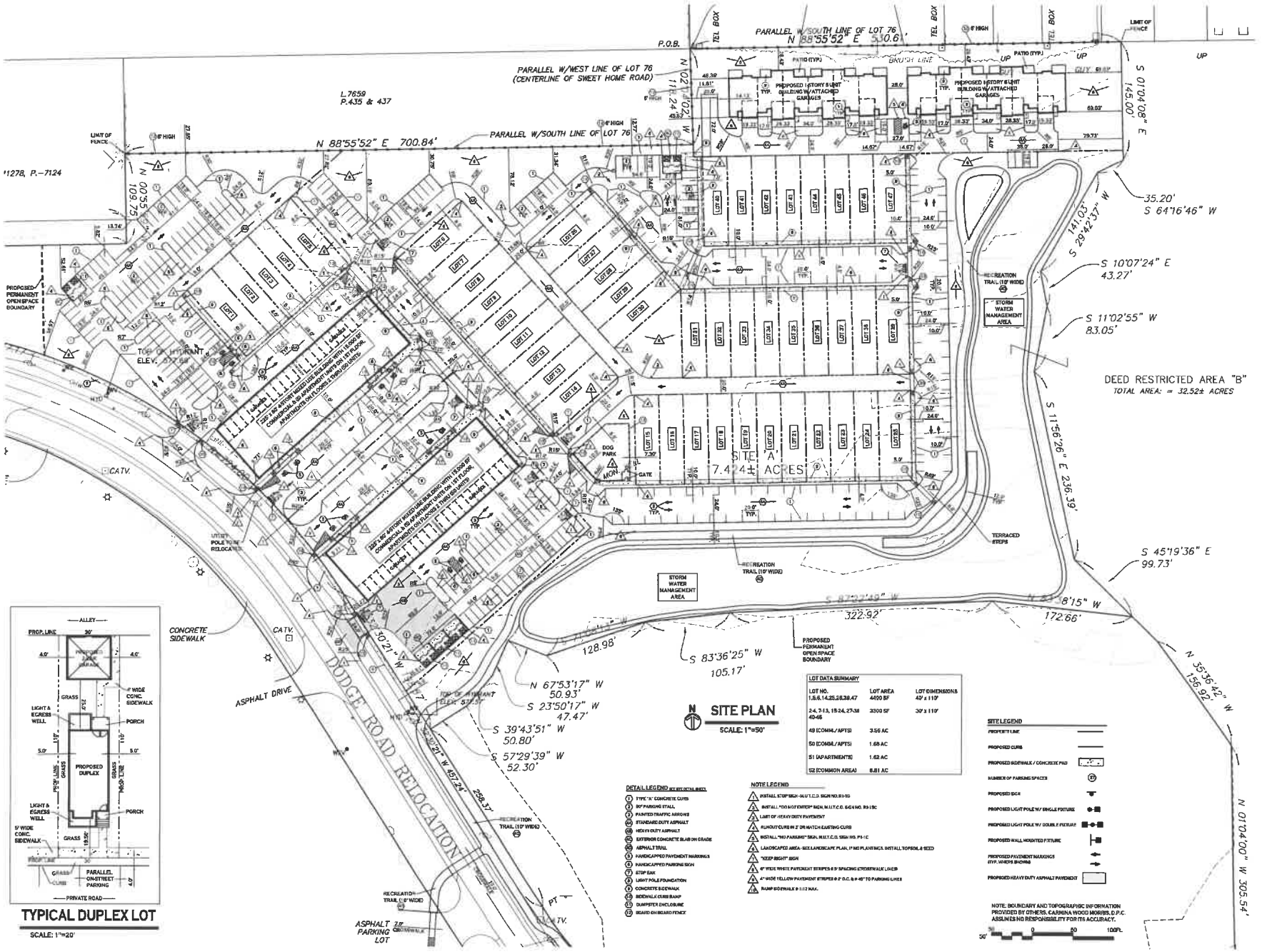
DRAWING NO.
C-100

Project no.: 21.011

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Exhibit 4 – Reduced Size Copy of Site Plan [Drawing C-101] as Prepared by Christopher Wood, P.E., of Carmina Wood Morris DPC

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)



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487 Main Street, Suite 500
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P 716.842.2185
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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Site Plan

DRAWING NO.
C-101
Project no.: 21.011

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Exhibit 5 – Reduced Size Copy of Parcel Map [Drawing C-102] as Prepared by Christopher Wood, P.E., of Carmina Wood Morris DPC

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

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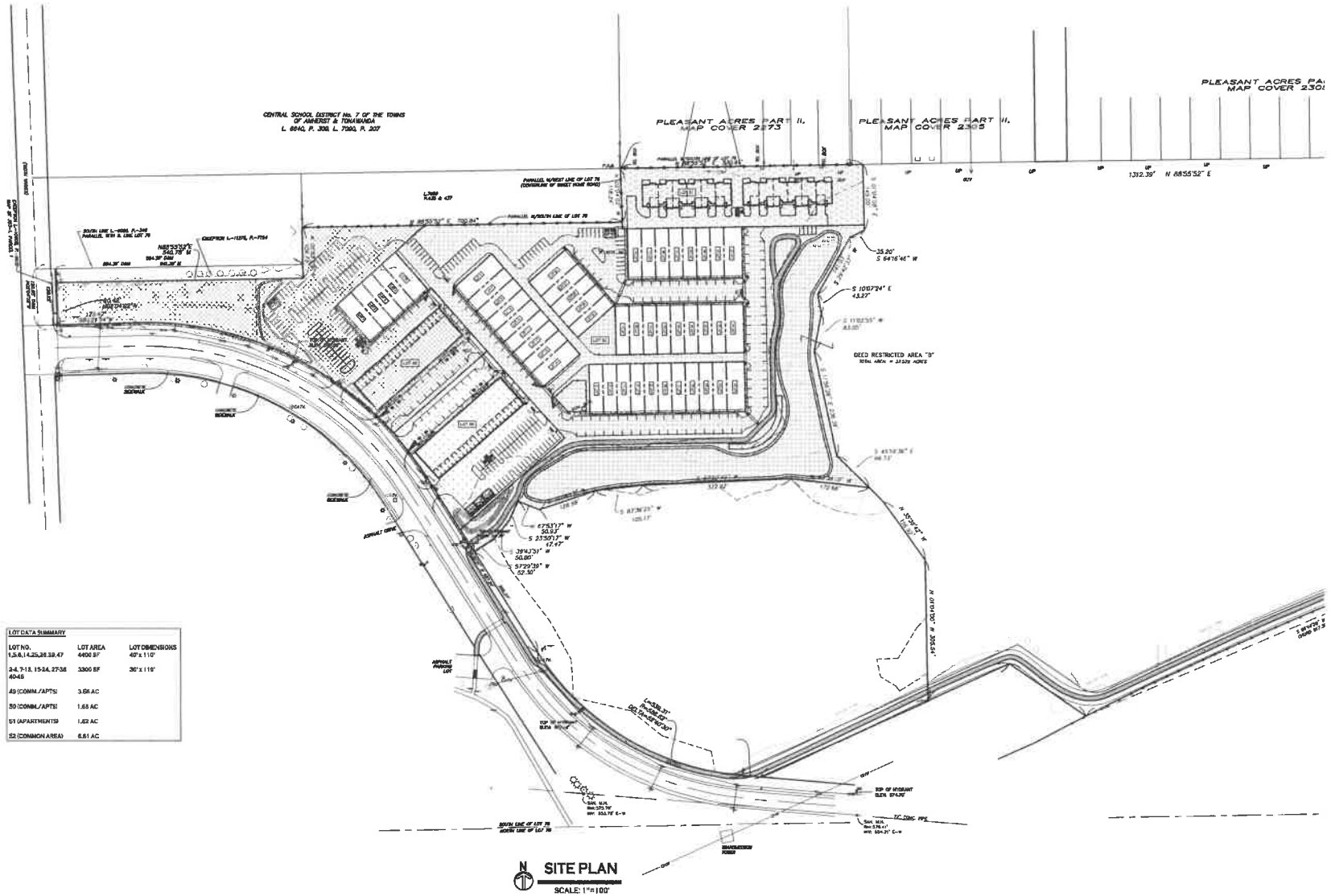

LOT DATA SUMMARY		
LOT NO.	LOT AREA	LOT DIMENSIONS
1,5,6,14,25,26,39,47	4400 SF	40' x 110'
2-4, 7-13, 15-24, 27-38, 40-46	3300 SF	30' x 110'
49 (COMM./APTS)	3.56 AC	
50 (COMM./APTS)	1.65 AC	
51 (APARTMENTS)	1.62 AC	
52 (COMMON AREA)	6.51 AC	

SITE PLAN

SCALE: 1"=100'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200FL

Carmina Wood Morris DPC
437 Main Street Suite 500
Buffalo, New York, 14203
P 716.842.3148
F 716.842.0263

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Parcel Map

DRAWING NO.
C-102

Project no.: 21.011

Exhibit 6 – Reduced Size Copy of Storm Drainage Plan [Drawing C-300] as Prepared by Christopher Wood, P.E., of Carmina Wood Morris DPC

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

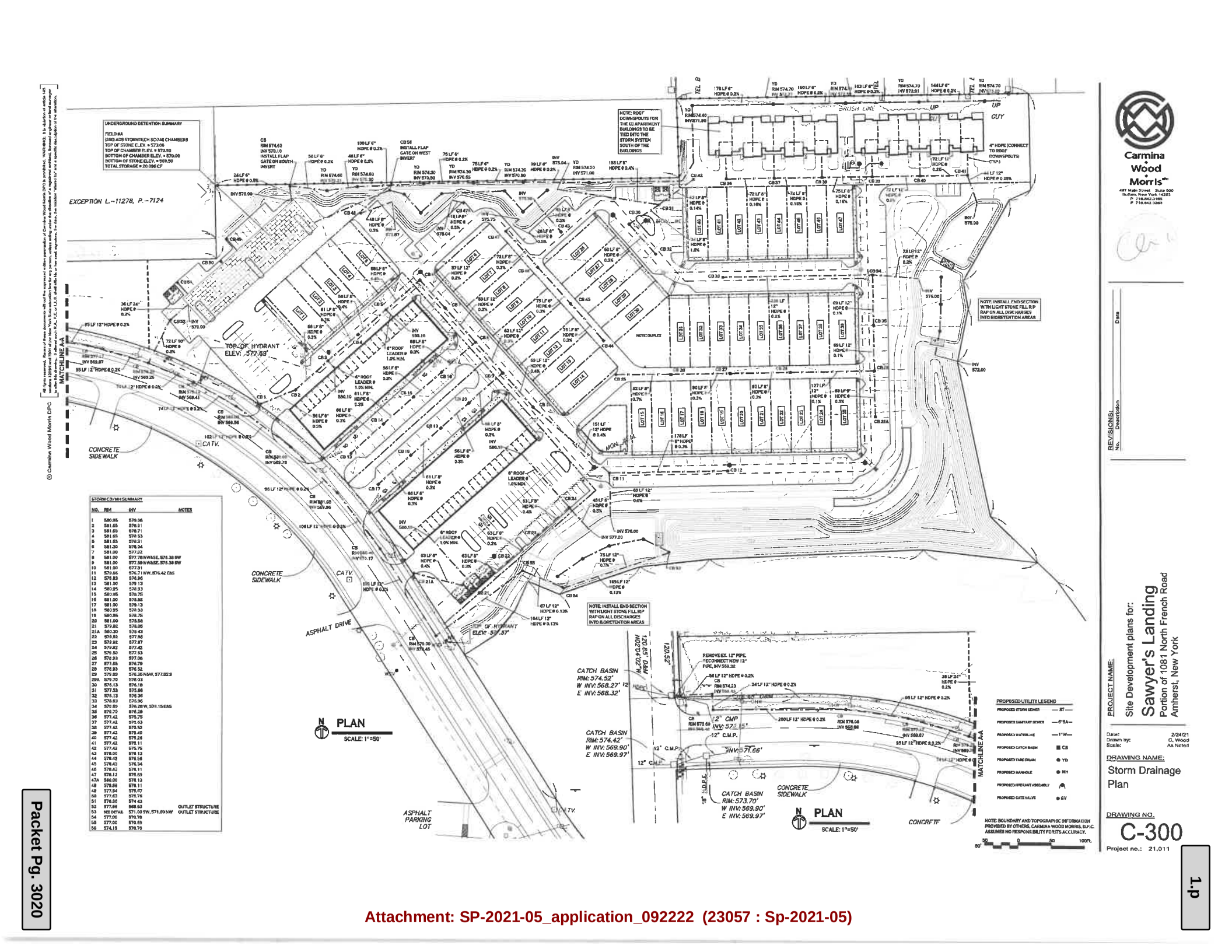

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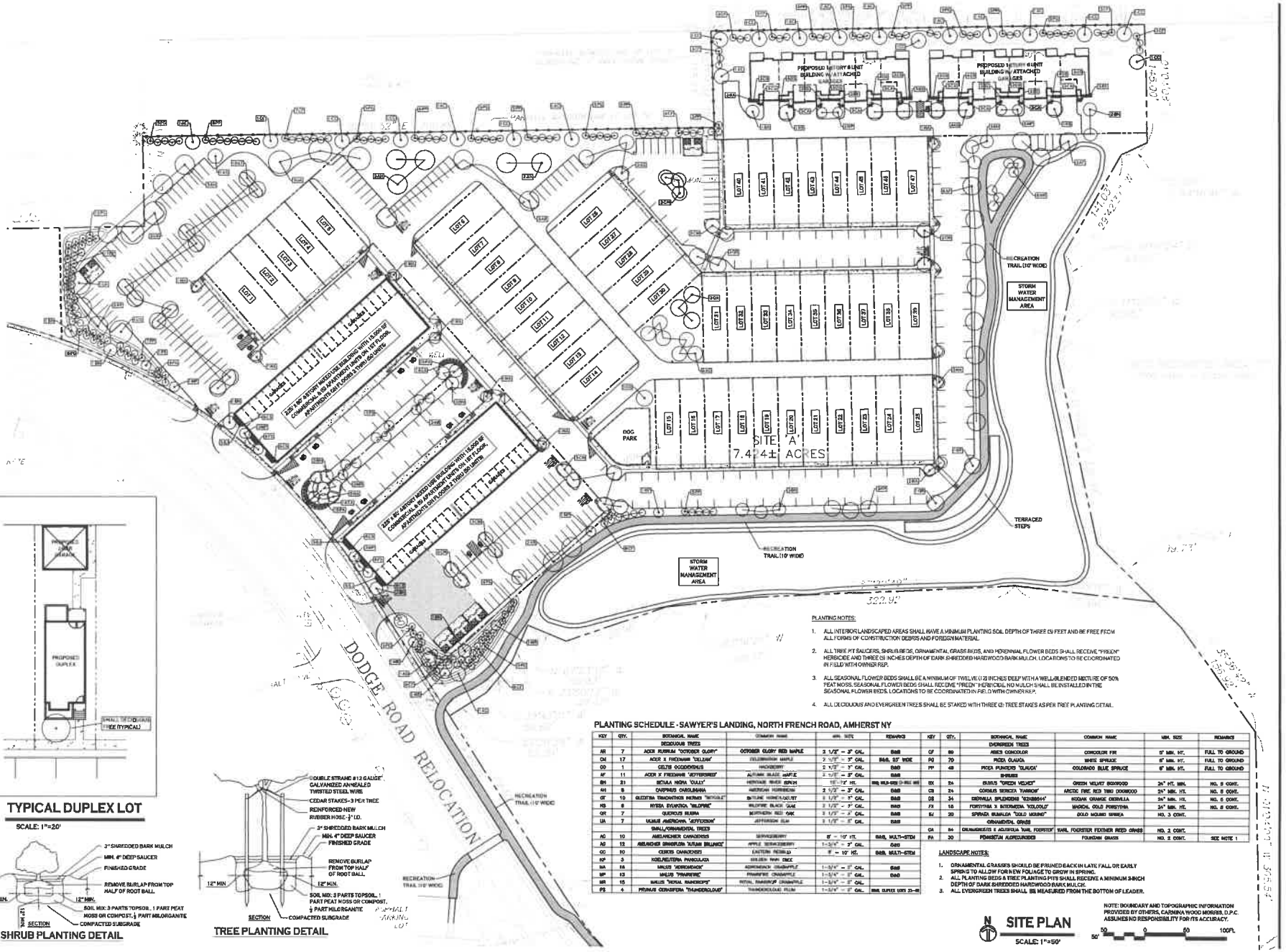
Exhibit 7 – Reduced Size Copy of Landscape Plan [Drawing L-100] as Prepared by Robert Walter, Registered Landscape Architect

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)



PLANTING NOTES:

1. ALL INTERIOR LANDSCAPED AREAS SHALL HAVE A MINIMUM PLANTING SOIL DEPTH OF THREE (3) FEET AND BE FREE FROM ALL FORMS OF CONSTRUCTION DEBRIS AND FOREIGN MATERIAL.
2. ALL TREE PIT SAUCERS, SHRUB BEDS, ORNAMENTAL GRASS BEDS, AND HERENNIAL FLOWER BEDS SHALL RECEIVE "PRIEN" HERBICIDE AND THREE (3) INCHES DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
3. ALL SEASONAL FLOWER BEDS SHALL BE A MINIMUM OF TWELVE (12) INCHES DEEP WITH A WELL-BLENDED MIXTURE OF 50% PEAT MOSS, SEASONAL FLOWER BEDS SHALL RECEIVE "PRIEN" HERBICIDE, NO MULCH SHALL BE INSTALLED IN THE SEASONAL FLOWER BEDS. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
4. ALL DECIDUOUS AND EVERGREEN TREES SHALL BE STAKED WITH THREE (3) TREE STAKES AS PER TREE PLANTING DETAIL.

PLANTING SCHEDULE - SAWYER'S LANDING, NORTH FRENCH ROAD, AMHERST NY

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		DECIDUOUS TREES			
AR	7	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	2 1/2" – 3" CAL.	B&B
CM	17	ACER X FREEMANII 'CELZAM'	CELEBRATION MAPLE	2 1/2" – 3" CAL.	B&B, 12' WIDE
CO	1	CELTIS OCCIDENTALIS	HACKBERRY	2 1/2" – 3" CAL.	B&B
KF	11	ACER X FREEMANII 'KEFREEDOM'	AUTUMN BLAZE MAPLE	2 1/2" – 3" CAL.	B&B
GH	21	GLEDITSIA NICRA 'CULLY'	HONEY LOCUST	10'-12' HT.	B&B, MULTI-STEM
AH	9	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2 1/2" – 3" CAL.	B&B
GT	10	GLEDITSIA TRIACANTHOS INERMIS 'SKYCOLE'	SKYLINE HONEYLOCUST	2 1/2" – 3" CAL.	B&B
NS	8	NYSSA SYLVATICA 'WILDFIRE'	WILDFIRE BLACK GUM	2 1/2" – 3" CAL.	B&B
QR	7	QUERCUS RUBRA	NORTHERN RED OAK	2 1/2" – 3" CAL.	B&B
UA	7	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2 1/2" – 3" CAL.	B&B
		SMALL ORNAMENTAL TREES			
AC	10	AMELANCHIER CANADENSIS	SERVICEBERRY	8' – 10' HT.	B&B, MULTI-STEM
AG	12	AMELANCHIER GRANDIFLORA 'AUTUMN BRILLIANCE'	APPLE SERVICEBERRY	1-3/4" – 2" CAL.	B&B
CC	10	CERCIS CANADENSIS	EASTERN REDBUD	8' – 10' HT.	B&B, MULTI-STEM
KP	3	KOELREUTERIA PANICULATA	GOLDEN RAIN TREE		
MA	16	MALUS 'ADIRONDACK'	ADIRONDACK CRABAPPLE	1-3/4" – 2" CAL.	B&B
MP	12	MALUS 'PRAIRIFIRE'	PRAIRIFIRE CRABAPPLE	1-3/4" – 2" CAL.	B&B
MR	15	MALUS 'ROYAL RAINDROPS'	ROYAL RAINDROPS CRABAPPLE	1-3/4" – 2" CAL.	
PS	4	PRUNUS SERRASFERA 'THUNDERCLOUD'	THUNDERCLOUD PLUM	1-3/4" – 2" CAL.	B&B, SUPER VAR'S 25-45
		EVERGREEN TREES			
PG	60	PICEA GLAUCA	WHITE SPRUCE	5' MIN. HT.	FULL TO GROUND
PP	48	PICEA PUNGENS 'GLAUCA'	COLORADO BLUE SPRUCE	5' MIN. HT.	FULL TO GROUND
		SHRUBS			
SX	24	CORNUS 'GREEN VELVET'	GREEN VELVET DOGWOOD	24" MIN. HT.	NO. 5 CONT.
CS	24	CORNUS SERICEA 'FARROW'	ARCTIC FIRE RED TWIG DOGWOOD	24" MIN. HT.	NO. 5 CONT.
DS	34	DEUTZIA SPLENDENS 'KLMDS844'	KOSMIK ORANGE DEUTZIA	24" MIN. HT.	NO. 5 CONT.
FX	18	FORSYTHIA X INTERMEDIA 'KOLGOLD'	MAGICAL GOLD FORSYTHIA	24" MIN. HT.	NO. 5 CONT.
SJ	20	SPIRAEA JAPONICA 'GOLD MOUND'	GOLD MOUND SPIREA	NO. 3 CONT.	
		ORNAMENTAL GRASS			
CA	84	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	NO. 2 CONT.	
PA	30	PENNISETUM ALOPECUROIDES	FOUNTAIN GRASS	NO. 2 CONT.	SEE NOTE 1

LANDSCAPE NOTES:

1. ORNAMENTAL GRASSES SHOULD BE PRUNED BACK IN LATE FALL OR EARLY SPRING TO ALLOW FOR NEW FOLIAGE TO GROW IN SPRING.
2. ALL PLANTING BEDS & TREE PLANTING PITS SHALL RECEIVE A MINIMUM 3-INCH DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH.
3. ALL EVERGREEN TREES SHALL BE MEASURED FROM THE BOTTOM OF LEADER.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

N

SITE PLAN

SCALE: 1"=50'

50' 0 50' 100'FT.

TYPICAL DUPLEX LOT

SCALE: 1"=20'

SHRUB PLANTING DETAIL

TREE PLANTING DETAIL

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Carmina Wood Morris DPC
497 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0251

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/9/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Landscape Plan

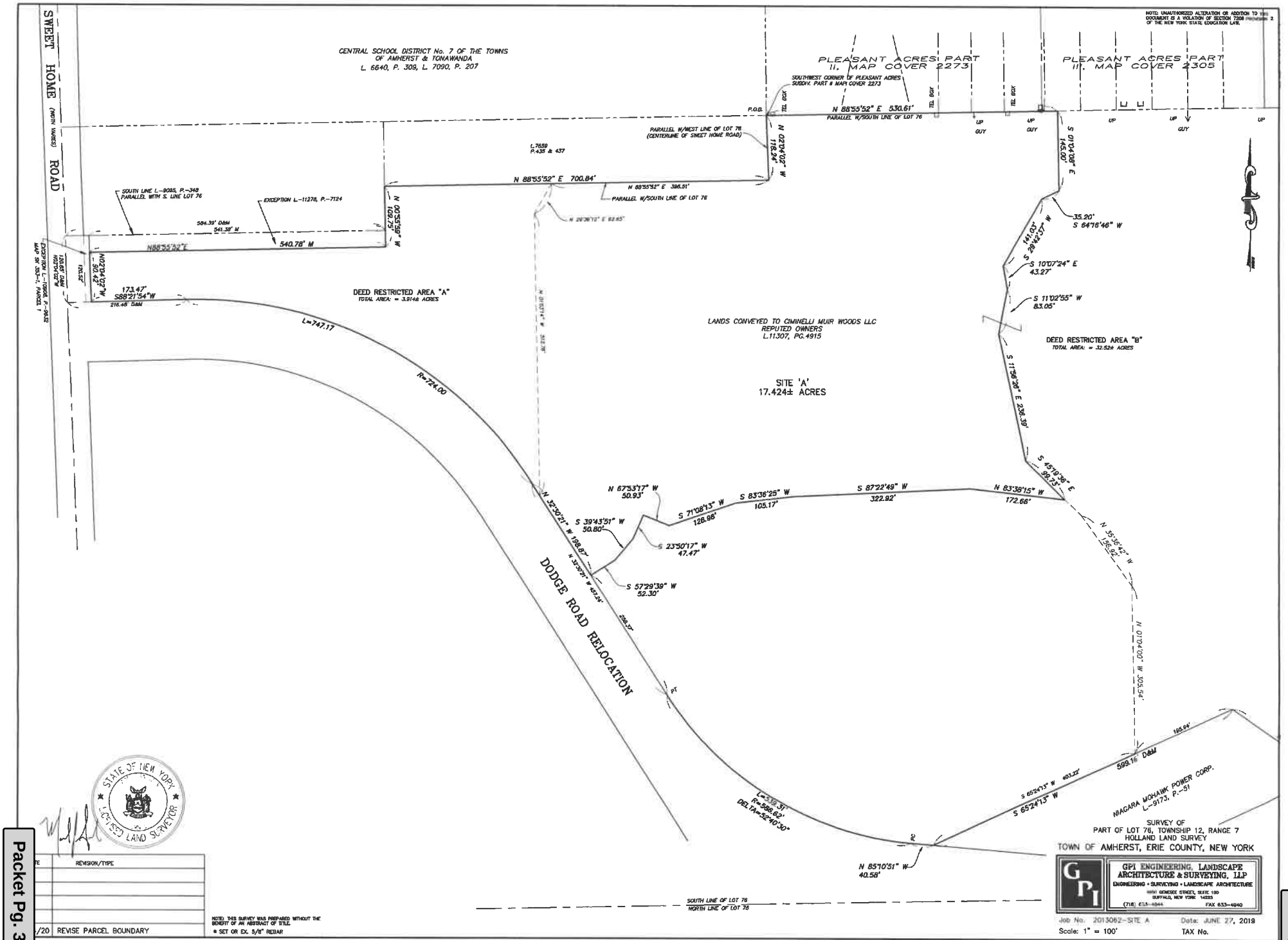
DRAWING NO.
L-100

Project no.: 21.011

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Exhibit 6 – Reduced Size Copy of Storm Drainage Plan [Drawing C-300] as Prepared by Christopher Wood, P.E., of Carmina Wood Morris DPC

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)


SWEET HOME (MAIN YARDS) ROAD
CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA
L 6640, P. 309, L 7090, P. 207
PLEASANT ACRES PART II, MAP COVER 2273
PLEASANT ACRES PART III, MAP COVER 2305
SOUTHWEST CORNER OF PLEASANT ACRES SUBDIV. PART II MAP COVER 2273
P.O.B.
N 88°55'52" E 530.61'
PARALLEL W/SOUTH LINE OF LOT 76
PARALLEL W/WEST LINE OF LOT 76 (CENTERLINE OF SWEET HOME ROAD)
N 03°04'02" W 118.24'
L.7659 P.435 & 437
N 88°55'52" E 700.84'
N 88°55'52" E 396.51'
PARALLEL W/SOUTH LINE OF LOT 76
S 01°04'08" E 145.00'
35.20'
S 64°18'46" W
141.03'
S 29°42'57" W
S 10°07'24" E 43.27'
S 11°02'55" W 83.05'
SOUTH LINE L.-9085, P.-348 PARALLEL WITH S. LINE LOT 76
EXCEPTION L.-11278, P.-7124
584.39' D&M 541.38' M
540.78' M
N88°55'52"E
N 00°55'59" W 109.75'
EXCEPTION L.-11860, P.-9832 MAP SH 353-1, PARCEL 1
180.65' D&M N03°04'02"W
120.35'
N03°04'02"W 120.42'
173.47'
S88°21'54"W
216.48' D&M
DEED RESTRICTED AREA "A"
TOTAL AREA: = 3.914± ACRES
LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC
REPUTED OWNERS
L.11307, PG.4915
SITE 'A'
17.424± ACRES
DEED RESTRICTED AREA "B"
TOTAL AREA: = 32.52± ACRES
S 11°36'26" E 238.39'
S 45°19'36" E 99.73'
L=747.17
R=724.00
N 67°53'17" W 50.93'
S 71°08'13" W 128.86'
S 83°36'25" W 105.17'
S 87°22'49" W 322.92'
N 83°38'15" W 172.66'
N 32°30'21" W 198.87'
S 39°43'51" W 50.80'
S 23°50'17" W 47.47'
S 57°29'39" W 52.30'
N 32°30'21" W 452.24'
DODGE ROAD RELOCATION
250.37'
PT
PC
L=318.31'
R=388.62'
DELTA=52°40'30"
N 85°10'51" W 40.58'
N 35°15'42" W 126.92'
N 01°04'00" W 325.54'
185.84'
599.16' D&M
S 65°24'13" W 403.22'
S 65°24'13" W
NIAGARA MOHAWK POWER CORP. L.-9173, P.-51
SOUTH LINE OF LOT 76
NORTH LINE OF LOT 76
NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW.
STATE OF NEW YORK LICENSED LAND SURVEYOR
REVISION/TYPE
/20 REVISE PARCEL BOUNDARY
NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE.
⊕ SET OR EX. 5/8" REBAR
SURVEY OF
PART OF LOT 76, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK
GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE
(716) 634-4044 FAX 633-4040
Job No. 2013062-SITE A
Date: JUNE 27, 2019
Scale: 1" = 100'
TAX No.

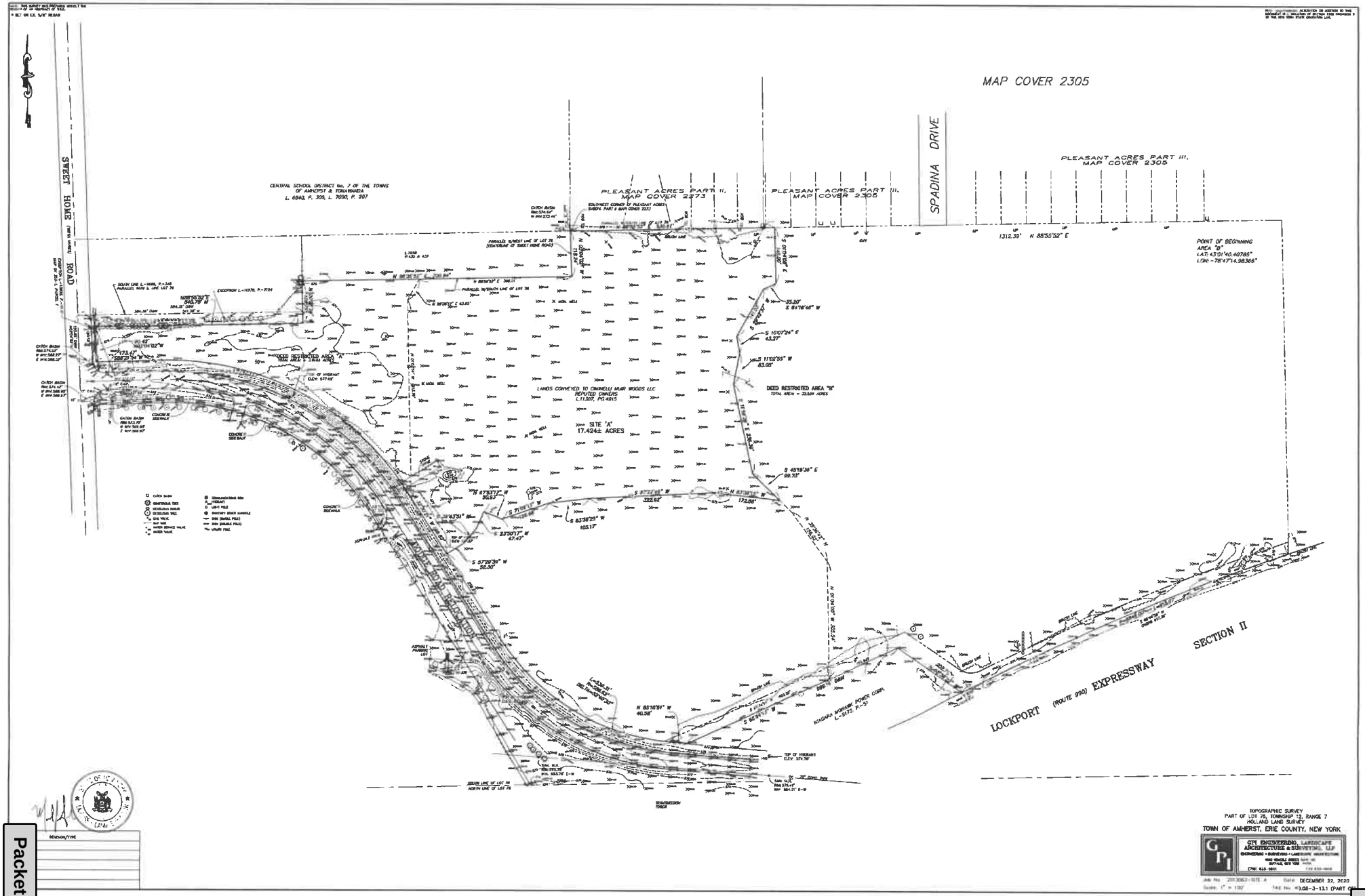
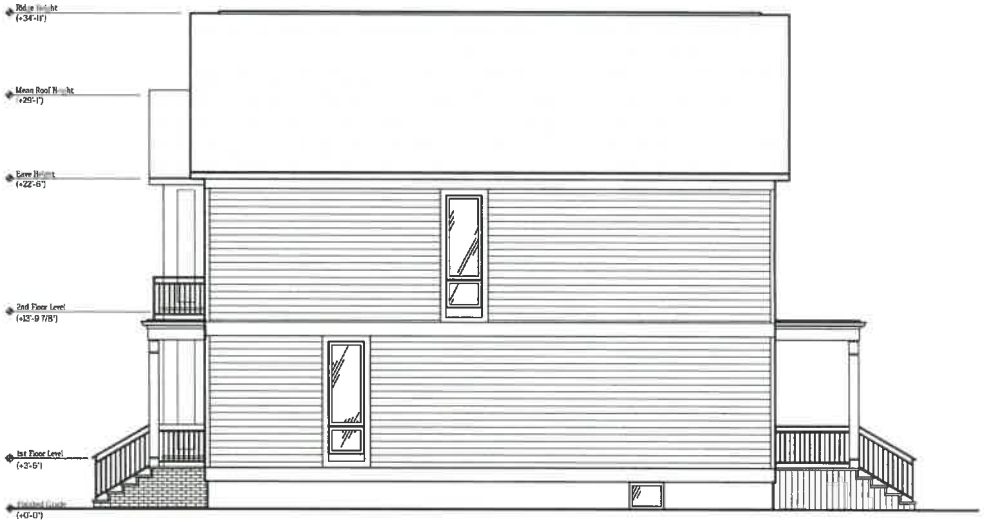

MAP COVER 2305
SPADINA DRIVE
PLEASANT ACRES PART II.
MAP COVER 2373
PLEASANT ACRES PART III.
MAP COVER 2305
PLEASANT ACRES PART III.
MAP COVER 2305
CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA
L. 6840, P. 309, L. 7090, P. 207
SWEET HOME ROAD
POINT OF BEGINNING
AREA 79±
LAT: 43°01'40.40785"
LON: -78°47'14.98386"
SITE 'A'
17.424± ACRES
LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC
REPUTED OWNERS
L.11307, P.4915
DEED RESTRICTED AREA "B"
TOTAL AREA = 32.529 ACRES
DEED RESTRICTED AREA "A"
TOTAL AREA = 7.886 ACRES
LOCKPORT (ROUTE 990) EXPRESSWAY
SECTION II
TOPOGRAPHIC SURVEY
PART OF LOT 78, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK
GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
DECEMBER 22, 2020

Exhibit 8 – 11” x 17” Size Copies of Elevation Plans for Two-Family Townhomes on Individual Lots, Six-Unit Single-Story Buildings and Four-Story Mixed Use Buildings as Prepared by Sutton Architecture PLLC

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)



Front Elevation



Right Elevation



Rear Elevation

1/4" = 1'-0"



Left Elevation

1/4" = 1'-0"

SEVERYN DEVELOPMENT
BETTER BUILT HOMES
Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing
Two Family

Portion Of 1081 North French Road Amherst, NY
2/23/21

SUTTON architecture
"Design 2 Build"
5409 Main Street
716-932-7156

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)



South Elevation

1/8" = 1'-0"



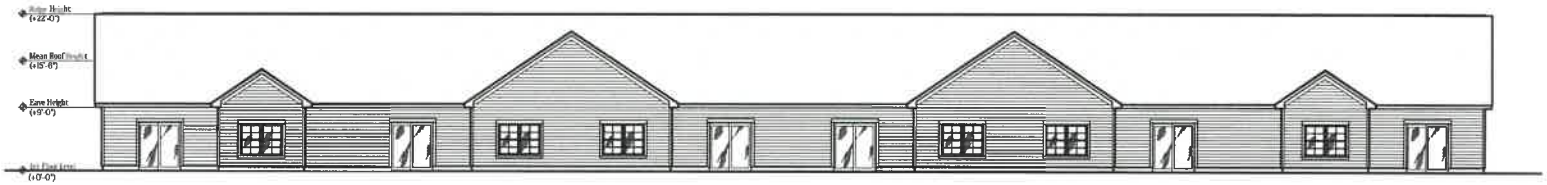
East Elevation

1/8" = 1'-0"



West Elevation

1/8" = 1'-0"



North Elevation

1/8" = 1'-0"

SEVERYN DEVELOPMENT
BETTER BUILT HOMES

Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing
6 Unit Multifamily

Portion Of 1081 North French Road Amherst, NY
2/23/21

SUTTON architecture
"Design 2 Build"
5409 Main Street
716-992-7156

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)



North Elevation

1/8" = 1'-0"



South Elevation

1/8" = 1'-0"

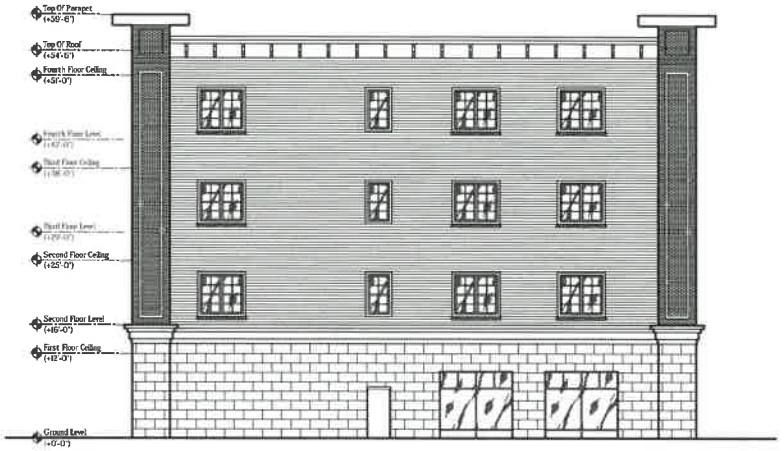
SD SEVERYN DEVELOPMENT
BETTER BUILT HOMES
Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing
4 Story Mixed Use

Portion Of 1081 North French Road Amherst, NY
2/23/21

SUTTON architecture
"Design 2 Build"
5409 Main Street
716-832-7158

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)



East Elevation

1/8" = 1'-0"



West Elevation

1/8" = 1'-0"

SD SEVERYN DEVELOPMENT
BETTER BUILT HOMES
Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyer's Landing

4 Story Mixed Use

Portion Of 1081 North French Road Amherst, NY

2/23/21

SUTTON architecture
"Design 2 Build"
5409 Main Street
716-932-7156

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Exhibit 9 – Resolution 2020-791 as Adopted by the Town of Amherst Town Board on October 19, 2020 for the Purpose of Issuing an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") for Mixed-Use Development on 1081 North French Road [Site "A" of Muir Woods Property]

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Amherst Town Board
5583 Main Street
Williamsville, NY 14221
www.amherst.ny.us

Francina J. Spoth
Town Clerk

Meeting: 10/19/20 07:00 PM
Department: Town Clerk
Initiated by: **Kathleen Cooper**
Co-Sponsored by:

DOC ID: 22383 **RESOLUTION 2020-791** **ROLL CALL VOTE (ADOPTED)**

Amendment to the SEQR Findings Statement for "Muir Woods - Site A" (1081 N. French Road)

Amendment to the SEQR Findings Statement for
"Muir Woods - Site A"
[1081 North French Road (NCD); Z-2002-09C]

RESOLVED, that pursuant to 6NYCRR Part 617 (SEQR) and Town Code Section 104, as amended, that the requirements of SEQR have been completed, and be it further

RESOLVED, that pursuant to NYS Town Law Section 272-a, the Town Board concurs with the findings of the Planning Board as stated in their resolution of August 20, 2020 to amend the "Development Program" within the SEQR Findings Statement approved by the Town Board on August 5, 2020 to permit "Site A" located at the western end of the overall Muir Woods site located at 1081 North French Road (NCD) to be developed as a mixed-use residential/commercial project instead of flex office/R&D buildings.

RESOLVED, that Ciminelli Muir Woods, LLC has offered to donate to the Town approximately 43 acres of Permanent Open Space located between Site "A" and Site "B" of the Overall Muir Wood Property as depicted on a plan prepared by Greenman-Pedersen Consulting Engineers Inc. dated October 13, 2020;

RESOLVED, the approximately 43 acres of Permanent Open Space includes a portion of the Muir Woods Project with frontage on Dodge Road and is also contiguous to the southern boundary of a portion of the Bucyrus Heights Subdivision and the approximately 43 acres of Permanent Open Space includes extensive existing vegetation and also includes wetlands subject to the jurisdiction of the United States Army Corps of Engineers ("USACE") and wetlands and regulated 100 ft. adjacent areas subject to the jurisdiction of the New York State Department of Environmental Conservation ("NYSDEC"); and

RESOLVED, the Town Board hereby finds as follows: i.) Acquisition of the approximately 43 acres of Permanent Open Space on the Muir Woods Project Site is consistent with the Conceptual Land Use Plan for the Town contained at Figure 6 of the adopted Bicentennial Comprehensive Plan that designates this acreage as "Recreation, Open Space & Gateways"; and, ii.) Acquisition of the approximately 43 acres of Permanent Open Space on the Muir Woods Project Site as described herein will result in benefits to the Town and its residents including homeowners in the Bucyrus Heights Subdivision.

RESOLVED, the Town Board has evaluated the potential adverse environmental impacts associated with the acquisition of the 43 acres of Permanent Open Space and determined that such acquisition will not result in any potentially significant adverse environmental impacts.

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

RESOLVED, that the Town Board hereby authorizes the acquisition of the approximately 43 acres of Permanent Open Space on the Muir Woods Project Site as described herein via a donation from Ciminelli Muir Woods, LLC subject to the following terms and conditions:

1. The adoption of this resolution by the Town Board for the purpose of acquiring the Permanent Open Space described herein does not include the Town Board designating the Permanent Open Space as "parkland". The Town Board shall adopt a separate resolution in the future if it determines designating the Permanent Open Space as "parkland" is appropriate.

2. Ciminelli Muir Woods, LLC, its successors and assigns, shall retain an easement with respect to the approximately 43 acres of Permanent Open Space for the purpose of completing required wetland mitigation and wetland mitigation monitoring in accordance with the terms and conditions contained in wetland permits issued by the USACE and the NYSDEC. Upon the USACE and the NYSDEC determining that the required wetland mitigation has been completed to their satisfaction and the expiration of the monitoring period, the easement shall terminate.

3. Prior to the recording of a deed from Ciminelli Muir Woods, LLC to the Town of Amherst for the purpose of conveying ownership of the Permanent Open Space as described herein, a Declaration of Restrictive Covenants shall be recorded at the Erie County Clerk's Office for the restricting the use of the approximately 43 acres of Permanent Open Space in accordance with the terms and conditions of wetland permits issued by the USACE and the NYSDEC and also for the purpose of prohibiting future development of the approximately 43 acres of Permanent Open Space.

4. Ciminelli Muir Woods, LLC shall be responsible for the expenses associated with the preparation of a survey and an Abstract of Title for the Permanent Open Space as described herein and the recording fees for the deed to be recorded at the Erie County Clerk's Office.

5. The documentation required to effectuate the transfer of the Permanent Open Space as described herein and to comply with the above conditions shall be subject to review and approval by the Town Attorney's Office.

6. The Supervisor is authorized to execute any documentation required to effectuate the acquisition of the 43 acres of Permanent Open Space in accordance with the terms and conditions contained in this resolution.

10/06/2020

A motion to open the public hearing was made by Supervisor Kulpa, seconded by Councilmember Lavin and unanimously approved 4-0. The public hearing was opened at 7:51 PM.

Sean W. Hopkins, Esq., presented for both resolution #791 and #792 and answered questions from the Board.

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

There were no speakers from the public, therefore Supervisor Kulpa moved to adjourn the public hearing and set a Decision Date for October 19th. The motion was seconded by Councilmember Lavin and unanimously approved 4-0. The public hearing was adjourned at 8:13 PM.

10/19/2020
A motion to open the public hearing was made by Supervisor Kulpa, seconded by Councilmember Lavin and unanimously approved 5-0. The public hearing was opened at 7:18 PM.

Sean W. Hopkins, Esq., presented under Res #792.

There were no speakers from the public, therefore Supervisor Kulpa moved to close the public hearing, seconded by Councilmember Lavin and unanimously approved 5-0. The public hearing was closed at 7:20 PM.

A motion to adopt the amended SEQR Findings Statement was made by Supervisor Kulpa, seconded by Deputy Supervisor Berger and approved via Roll Call vote 4-1 (nay, Bucki).

RESULT:	**ROLL CALL VOTE (ADOPTED) [4 TO 1]**
MOVER:	Brian J. Kulpa, Supervisor
SECONDER:	Jacqualine Berger, Deputy Supervisor
AYES:	Kulpa, Berger, Lavin, Szukala
NAYS:	Bucki

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Exhibit 10 – Resolution 2020-792 as Adopted by the Town of Amherst Town Board on October 19, 2020 for the Purpose of Approving an Amendment to the Town of Amherst Comprehensive Plan

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Amherst Town Board
5583 Main Street
Williamsville, NY 14221
www.amherst.ny.us

Francina J. Spoth
Town Clerk

Meeting: 10/19/20 07:00 PM
Department: Town Clerk
Initiated by: **Kathleen Cooper**
Co-Sponsored by:

DOC ID: 22366 **RESOLUTION 2020-792** **ROLL CALL VOTE (ADOPTED)**

Amendment to the Comprehensive Plan for "Muir Woods - Site A" (1081 N. French Road)

Amendment to the Comprehensive Plan for
"Muir Woods - Site A"
[1081 North French Road (NCD); BCPA-2020-02]

RESOLVED, that pursuant to 6NYCRR Part 617 (SEQR) and Town Code Section 104, as amended, that the requirements of SEQR have been completed, and be it further

RESOLVED, that pursuant to NYS Town Law Section 272-a and Section 11.6 of the Town Comprehensive Plan, the Town Board concurs with the findings of the Planning Board as stated in their resolution of August 20, 2020 to amend the Conceptual Land Use Plan (Figure 6) and the University Focal Planning Area (Figure 21) of the Comprehensive Plan for "Muir Woods - Site A" located at 1081 North French Road (NCD) to permit mixed-use residential/commercial use on Site A.

For additional information (copy & paste link):
https://share.amherst.ny.us:443/docman/doc_files_list.php?hash=uaaidrb0hpn0mkelzsugvr62

10/06/2020
A motion to open the public hearing was made by Supervisor Kulpa, seconded by Councilmember Lavin and unanimously approved 4-0. The public hearing was opened at 7:51 PM.

Sean W. Hopkins, Esq., presented for both resolution #791 and #792 and answered questions from the Board.

There were no speakers from the public, therefore Supervisor Kulpa moved to adjourn the public hearing and set a Decision Date for October 19th. The motion was seconded by Councilmember Lavin and unanimously approved 4-0. The public hearing was adjourned at 8:13 PM.

10/19/2020
A motion to open the public hearing was made by Supervisor Kulpa, seconded by Deputy Supervisor Berger and unanimously approved 5-0. The public hearing was opened at 7:07 PM.

Sean W. Hopkins, Esq., presented.

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

There were no speakers from the public, therefore Supervisor Kulpa moved to close the public hearing, seconded by Deputy Supervisor Berger and unanimously approved 5-0. The public hearing was closed at 7:18 PM.

A motion to approve the Negative Declaration was made by Supervisor Kulpa, seconded by Deputy Supervisor Berger and approved 4-1 (nay, Bucki). A motion to adopt the resolution was made by Supervisor Kulpa, seconded by Deputy Supervisor Berger and approved via Roll Call vote 4-1 (nay, Bucki).

RESULT:	**ROLL CALL VOTE (ADOPTED) [4 TO 1]**
MOVER:	Brian J. Kulpa, Supervisor
SECONDER:	Jacqualine Berger, Deputy Supervisor
AYES:	Kulpa, Berger, Lavin, Szukala
NAYS:	Bucki

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

HSM

December 26, 2020

Ellen Kost, AICP, Assistant Planning Director
Town of Amherst Planning Department
5583 Main Street
Williamsville, NY 14221

Re: Proposed Mixed Use Project - Site A of Muir Woods [Z-2002-09C & BCPA-2020-02]
Portion of 1081 North French Road
Applicant/Project Sponsor: Ciminelli Real Estate Corporation
File No. 10024.12

Dear Ellen:

Attached as Exhibit "1" is a copy of the Amended Wetland Permit [Permit No. 9-1422-00398/0001] issued by the New York State Department of Environmental Conservation ("NYSDEC") on December 24, 2020 authorizing the impacts to NYSDEC Freshwater Wetlands and the associated regulated 100 ft. Adjacent Area in order to accommodate the mixed-use development of Site "A" of the Muir Woods Property in accordance with the project layout depicted on the Concept Site Plan prepared by Christopher Wood, P.E. of Carmina Wood Morris DPC.

Attached as Exhibit "2" is a copy of the Public Notice of the United States Army Corps of Engineers ("USACE") dated December 21, 2020. The comment period on the pending requested Amended Wetland Permit being sought from the USACE expires on January 11, 2021. The Project Sponsor anticipates receiving an Amended Wetland Permit from the USACE by the end of January.

Please feel free to call me at 510-4338 or via e-mail if you have any questions regarding this letter or the Amended Wetland Permit issued by the NYSDEC on December 24, 2020 or the status of the mixed-use project.

Thank you for your continued cooperation.

Sincerely,

HOPKINS SORGI & MCCARTHY PLLC

Sean W. Hopkins, Esq.

cc: Adam Faeth, Esq., Ciminelli Real Estate Corporation [Via e-mail and mail]
William Severyn, Severyn Development Inc. [Via e-mail and mail]
Christopher Wood, P.E., Carmina Wood Morris DPC [Via e-mail]

HOPKINS SORGI & MCCARTHY PLLC
Attorneys at Law
5500 Main Street, Suite 343 • Williamsville, New York 14221
Direct: 716-510-4338 • E-mail: shopkins@hsr-legal.com • www.hsr-legal.com

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Scott J. Livingstone, Earth Dimensions, Inc. [Via e-mail]
Jody Celeste, Earth Dimensions, Inc. [Via e-mail]

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Exhibit 1 – Amended Wetland Permit Issued by the NYS Department of Environmental Conservation dated December 24, 2020

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 9
270 Michigan Avenue, Buffalo, NY 14203-2915
P: (716) 851-7165 I F: (716) 851-7168
www.dec.ny.gov

December 24, 2020

Mr. Adam Faeth
Ciminelli Real Estate Corporation
50 Fountain Plaza, Suite 500
Buffalo, New York 14202

Muir Woods Development – "Site A"
Permit Transmittal Letter
Permit No. 9-1422-00398/00001

Dear Mr. Faeth:

Enclosed is your permit which was issued in accordance with applicable provisions of the Environmental Conservation Law. The permit is valid for only that project, activity or operation expressly authorized. If modifications are desired after permit issuance, you must submit the proposed revisions and receive written approval from the Permit Administrator prior to initiating any change. If the Department determines that the modification represents a material change in the scope of the authorized project, activity, operation or permit conditions, you will be required to submit a new application for permit.

Please review all permit conditions carefully. In particular, identify your initial responsibilities under this permit in order to assure timely action if required. Since failure to comply precisely with permit conditions may be treated as a violation of the environmental conservation law, you are requested to provide a copy of the permit to the project contractor, facility operator, and other persons directly responsible for permit implementation (if any).

If you have any questions, please contact this office at the above address.

Respectfully,
David S. Denk
Regional Permit Administrator

Enclosure
ecc: NYSDEC Law Enforcement
Maureen Brady, NYSDEC Office of General Counsel
Mr. Chuck Rosenburg, NYSDEC Division of Fish and Wildlife
Mr. Martin Crossen, USACOE
Sean Hopkins, Esq., Hopkins Sorgi & McCarthy PLLC

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

PERMIT

Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
Ciminelli Muir Woods LLC
50 Fountain Plaza, Suite 500
Buffalo, NY 14202
(716) 631-8000

Facility:
MUIR WOODS DEVELOPMENT
1121 N French Rd
Amherst, NY 14228

Facility Location: in AMHERST in ERIE COUNTY
Facility Principal Reference Point: NYTM-E: 191.586 NYTM-N: 4770.823
Latitude: 43°01'38.9" Longitude: 78°47'07.2"

Authorized Activity: Construction of a mixed-use project named "Muir Woods" consisting of approximately two 4-story mixed-use buildings consisting of commercial space and residential units, 90 two-family townhouses and 2 six-unit apartment buildings, approximately 133 detached single-family residential units and 515 cottage-style and apartment-style housing units with various amenities; and gas, electric, sanitary, potable water and storm water (the necessary infrastructure), while maintaining open space on approximately 224 acres in the Audubon New Community District. The Muir Woods project property is a 326 acre site bounded by the Lockport Expressway (Interstate Route 990) and Dodge Road on the south, Sweet Home Road on the west, North French Road on the north and Campbell Boulevard on the east. The project will result in permanent impacts to approximately 2.39 acres of State regulated wetlands (TE-22, TE-23 and TE-34), and 11.38 acres of State regulated 100 foot wide wetland adjacent area. As mitigation for those impacts the project includes creation of 19.58 acres of in-kind and out-of-kind wetlands on-site, in six areas, to replace the functions and benefits of the impacted wetlands. There will be 4.3 acres of stream channel enhancement on-site as mitigation for State wetland regulated adjacent area impacts. The project also includes construction at 520 Campbell Road property as detailed on plan sheets referenced in Natural Resource Condition No. 4.

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Permit Authorizations

Freshwater Wetlands - Under Article 24
Permit ID 9-1422-00398/00001

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

Water Quality Certification - Under Section 401 - Clean Water Act
Permit ID 9-1422-00398/00002

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: DAVID S DENK, Regional Permit Administrator
Address: NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY 14203 -2915

Authorized Signature: David S. Denk Digitally signed by David S. Denk DN: cn=David S. Denk, o=NYS DEC, ou=Div. of Env. Permits, email=david.denk@dec.ny.gov, c=US Date: 2020.12.24 10:29:47 -05'00' Date ___/___/___

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: FRESHWATER WETLANDS; WATER QUALITY CERTIFICATION

1. **No Work Prior to Approval of Legal Instrument for Preservation of Undeveloped Areas of Site** No work authorized by this permit may begin until the Department approves a legal instrument, such as a deed restriction and/or conservation easement, that will preserve in perpetuity the natural resource values of the undeveloped areas of the site. This condition does not apply to the 520 Campbell Boulevard property.

2. **Declaration of Restrictions 520 Campbell Boulevard Property** A Declaration of Restrictions permanently prohibiting any future development of the 6.88 acres of jurisdictional federal wetlands and portion of the upland area on 520 Campbell Boulevard as depicted on the Wetland Restriction Exhibit Map must be incorporated into the deeds for lots 1 – 12 and 21. By 60 days after Water Quality Certification issuance, the permittee shall file with the real property records of the Erie County Clerk`s Office, the deed for each applicable lot containing this notice. The permittee shall within two weeks following the filing of the deed(s) submit proof of filing from the County Clerk's Office

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showing the Liber and page number at which the deed notice was filed and the date of filing for one of the affected lots to: Regional Permit Administrator, NYSDEC Region 9 Headquarters, 270 Michigan Ave, Buffalo, NY 14203-2915.

3. **Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by Ciminelli Development Company, Inc. and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009.

4. **Conformance with Plans Site B** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include the "Concept Plan - Muir Woods" dated 08 November 2019 amended to show Conifer Planting Area (attached).

5. **Conformance with Plans - 520 Campbell Boulevard** All activities authorized by this permit for the 520 Campbell Boulevard property must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans include those sheets entitled: The Preserve at Muir Woods (DEC Planting Exhibit, DEC Earthwork Exhibit and the Wetland Restriction Exhibit) by Greenman-Pedersen, Inc. dated May 2018.

6. **Conformance with Plans Site A** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include Drawing C-100 dated July 20, 2020 and received by this Department on August 10, 2020.

7. **Future Phases** Prior to development of Muir Woods Sites A and B, the permittee must obtain specific approval of engineered plans for Sites A and B to ensure compliance with the terms and condition of this permit, the approved wetland mitigation plans and the most current Findings Statement for the overall Muir Woods Project issued pursuant to the State Environmental Quality Review Act. The permittee shall submit the engineered plans for the development of Sites A and B for review by the Department simultaneous with submission of such engineered plans to the Town of Amherst. If required by the Department, the permittee shall make any necessary modifications to the engineered plans to ensure compliance with the terms and conditions of this permit, the approved wetland mitigation plans and the most current Findings Statement.

8. **Permit Conditions Prevail over Plans** If any condition of this permit conflicts with the approved plans noted in Condition Number 1, the permit conditions shall prevail over the plans unless specific written approval for such a change is obtained from this Department prior to implementation.

9. **Pre-construction Meeting to Review Permit** Prior to commencing work at the project site, the permittee shall schedule a pre-construction meeting with Department staff (Contact: Mr. David Denk, Regional Permit Administrator, NYSDEC, Division of Environmental Permits, Telephone : 716/851- 7165 and/or Mr. Charles P. Rosenburg, NYSDEC, Division of Fish and Wildlife, Telephone: 716/851-7010) and selected contractors to review the conditions contained in this permit.

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10. Mark Areas of No Disturbance on the Muir Woods Site Grade stakes and/or other appropriate measures (substantial contractor fencing, perhaps in combination with necessary silt fencing) shall be used to ensure that no equipment enters identified areas of no disturbance within the immediate area under construction (i.e.- Site A, Site B, Site C or Site D) on the Muir Woods project site. Boundaries of the on-site mitigation areas shall likewise be marked to define the limits of that work.

11. Install Controls Along Limits of Disturbance Before any soil is disturbed within a specific Site Development Area, as detailed in Condition #6 above, the permittee shall install securely anchored silt fencing and/or continuous staked hay bales along the limits-of-disturbance as shown on the plans or drawings referenced in this permit. Such erosion and sedimentation controls shall be maintained until unpaved portions of the subject site are stabilized by a self-sustaining cover of vegetation that is adequate to prevent erosion and sedimentation on and off the site. Sediment which has accumulated at the controls shall be removed periodically as necessary during the construction period. Before the controls are removed, the permittee shall remove all sediment that has accumulated at the controls.

12. Work Within Ares Depicted on Plans All construction activity, including operation of machinery, excavation, filling, grading, clearing of vegetation, disposal of waste, street paving and stockpiling of material must take place within the Site Development Areas or mitigation areas as depicted on the project plans referenced by this permit. Construction activity is prohibited within areas to be left in a natural condition or locations on the property not within the Site Development Areas or mitigation areas designated by this permit. Disturbance to the wetlands and their regulated 100 foot wide adjacent areas shall be strictly limited to the work areas identified in the plans, and specifically the MAP SHOWING WETLAND IMPACT AREAS - NEW YORK STATE WETLANDS, and APPENDIX M - PROPOSED ON-SITE MITIGATION PLAN.

13. Invasive Species (Non-Native Vegetation) To prevent the unintentional introduction or spread of invasive species, the permittee must ensure that all construction equipment is cleaned of mud, seeds, vegetation and other debris before entering any approved Site Development Areas within State regulated wetlands or their 100 foot wide adjacent areas, as well as all on-site wetland mitigation areas.

14. Prevention of Invasive Species The permittee shall prevent the establishment of invasive species (purple loosestrife, Phragmites, reed canary-grass, Japanese knotweed, glossy buckthorn and common buckthorn) across all disturbed areas within the wetland mitigation area for five growing seasons. If any of these invasive species become established, monitoring and treatment may be extended for an additional 5 years at the Department's discretion.

15. Wetland Mitigation is Mandatory Completion of all freshwater wetland mitigation is mandatory regardless of whether or not construction proceeds to completion. The required mitigation must be completed by the expiration date of this permit. Mitigation will be subject to remediation, if necessary, pursuant to Condition #16 below. All mitigation areas shall be monitored for a period of ten (10) years or until the mitigation is deemed successful by this Department. Monitoring reports shall be prepared for the first four (4) years after construction of the mitigation areas and every other year (years 6, 8 and 10) thereafter. This Department may, at its discretion, modify the 10-year monitoring period and/or monitoring report requirement at any time. Monitoring reports shall be submitted to Mr. Charles P. Rosenburg, Habitat Manager, NYSDEC, Bureau of Ecosystem Health, 270 Michigan Avenue, Buffalo, NY 14203-2915 Telephone: 716/851-7024.

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

16. **On-Site Mitigation to be in Accordance with Mitigation Plan** The on-site mitigation shall be in accordance with Appendix M - Proposed On-Site Wetland Mitigation for Muir Woods prepared by Earth Dimensions, Inc. revised May 25, 2009 and with the modifications shown in Exhibit 22 of the July 20, 2020 application binder.

17. **Planting Row of Native Conifers** The permittee shall plant a row of native conifer trees in the location shown on the attached plan. The tree plantings must be a minimum of 6 feet tall, spaced 15 feet apart, and must be planted no later than October 15th following the completion of construction of the adjacent apartment units.

18. **Survival Rate for Mitigation Plantings** The permittee shall prepare a care, maintenance, inspection, and replacement schedule for the tree and shrub plantings described in the mitigation plan to ensure an 85% survival rate for five growing seasons. This condition includes all on-site landscape "buffer" plantings.

19. **Herbicides, Pesticides in Wetland or Adjacent Area** The use of herbicides and other pesticides in State regulated wetlands or their 100 foot wide adjacent areas is a regulated activity and may only be conducted pursuant to a valid Article 33 Pesticides Permit.

20. **Requirement for SPDES General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities** Since development of the Muir Woods site in the Town of Amherst will involve land disturbance of one (1) or more acres, the permittee is required to obtain coverage under State Pollutant Discharge Elimination System (SPDES) General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities. A Notice of Intent (NOI) is required to be sent to NYSDEC, Division of Water, 625 Broadway, 4th Floor, Albany, New York 12233-3505, Telephone: 518/402-8111 and approved before construction commences. Alternatively, an eNOI may be filed electronically as described on the Department's website. The General Permit GP-0-15-002 and NOI form are available on the Department's website at www.dec.state.ny.us.

21. **Visibly Turbid Discharges Prohibited** Visibly turbid discharges from project dewatering operations, excavation and grading activities are strictly prohibited to any "water body" (pond, wetland, stream or water course). Any such discharges shall be (1) retained in an appropriately maintained upland settling basin, filtered through crushed stone, sand, filter fabric fences, hay bales etc., or (2) directed to a grassy area sufficiently distant from any water body to preclude such entry.

22. **Stockpiling of Soil** Stockpiling of excavated soil is prohibited at locations within any portion of the TE-22, TE-23 and TE-34 Wetlands or their regulated 100 foot wide adjacent areas, or within any mapped 100-year floodplain beyond the Site Development Areas or mitigation areas identified in the plans.

23. **Stabilize Disturbed Areas** All areas of soil disturbance resulting from this project shall be seeded with an appropriate perennial grass seed and mulched with straw, or hydro-seeded. Mulch shall be maintained until suitable vegetative cover is established.

24. **Temporary Mulch, Final Seeding** If seeding is impracticable due to the time of year, a temporary mulch shall be applied and final seeding shall be performed at the earliest opportunity when weather conditions favor germination and growth.

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25. **Disposal of Material** Any non-merchantable tree and brush debris, demolition debris, excess construction materials, and/or excess excavated materials shall be immediately and completely disposed of on an approved upland site more than 100 feet from any regulated freshwater wetland. These materials shall be suitably stabilized so as not to re-enter any water body, wetland, or wetland adjacent area; and must be disposed of in accordance with all local, state, and federal statutes, regulations, or ordinances.

26. **Placement of Interpretive Signs Required** Permanent interpretive signs shall be placed at various wetland boundary locations throughout the Muir Woods project site . The permittee shall submit a proposal for the signs to the Department for approval. The interpretive signs shall be a minimum of 12 inches by 12 inches and shall be placed on permanent posts.

27. **Annual Project Inspection / Meeting** The permittee shall schedule an annual inspection/meeting to update Department staff on project progress and compliance with conditions of this permit for the on-site wetland mitigation area.

28. **Wetland Monuments** Monuments shall be placed every 200 feet along the outer edge of the wetland preservation areas. The monuments shall be 30" long, 5/8" rebar and cap embedded flush and in the center of the top exposed surface of concrete in a minimum 4 inch diameter, 4.5 foot long section of PVC Schedule 40 drain pipe filled with concrete, extending vertically1.5 to 2 feet above existing grade at each location. The caps shall say "Conservation Area Marker, Do Not Disturb". These monuments are to be permanently maintained.

29. **Wetland Boundaries** The boundaries of the TE-22, TE-23 and TE-34 Wetlands shall be fixed for the period of this permit (expires November 30, 2024). At that time, new boundary delineations for those wetlands will be required by this Department (to be performed or confirmed by a Department Biologist). Since project activities will be subject to the updated wetland boundary delineations and pertinent regulations at that time, any future permit modification (if necessary) would be reviewed based on the updated delineations and pertinent regulations. As such, modifications to the current project plan may be necessary depending upon the updated wetland delineations and permit regulations in effect at that time.

30. **State Not Liable for Damage** The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

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31. **State May Order Removal or Alteration of Work** If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

32. **State May Require Site Restoration** If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may lawfully require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.

33. **Precautions Against Contamination of Waters** All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. **Water Quality Certification** The authorized project, as conditioned pursuant to the Certificate, complies with Section 301, 302, 303, 306, and 307 of the Federal Water Pollution Control Act, as amended and as implemented by the limitations, standards, and criteria of state statutory and regulatory requirements set forth in 6 NYCRR Section 608.9(a). The authorized project, as conditioned, will also comply with applicable New York State water quality standards, including but not limited to effluent limitations, best usages and thermal discharge criteria, as applicable, as set forth in 6 NYCRR Parts 701, 702, 703, and 704.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. **Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

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The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. **Relationship of this Permit to Other Department Orders and Determinations** Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. **Applications For Permit Renewals, Modifications or Transfers** The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY14203 -2915

4. **Submission of Renewal Application** The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Freshwater Wetlands, Water Quality Certification.

5. **Permit Modifications, Suspensions and Revocations by the Department** The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

a. materially false or inaccurate statements in the permit application or supporting papers;

b. failure by the permittee to comply with any terms or conditions of the permit;

c. exceeding the scope of the project as described in the permit application;

d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;

e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. **Permit Transfer** Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

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NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification
The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit
The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits
The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights
This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

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Exhibit 2 – Public Notice as Published by the United States Army Corps of Engineers dated December 21, 2020

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Public Notice

U.S. Army Corps
of Engineers
Buffalo District
CELRB-TDR

Applicant: Ciminelli Real Estate Corporation

Published: December 21, 2020
Expires: January 11, 2021

Application No: 2001-00067 (2020 Site A Modification)
Section: New York

All written comments should reference the above Application No. and be addressed to:
Attn: Martin Crosson
U.S. Army Corps of Engineers, Buffalo District
1776 Niagara Street
Buffalo, NY 14207

THE PURPOSE OF THIS PUBLIC NOTICE IS TO SOLICIT COMMENTS FROM THE PUBLIC REGARDING THE WORK DESCRIBED BELOW. NO DECISION HAS BEEN MADE AS TO WHETHER OR NOT A PERMIT WILL BE ISSUED AT THIS TIME.

Application for Permit Modification under Authority of Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act (33 U.S.C. 1344).

APPLICANT: Ciminelli Real Estate Corporation/Ciminelli Muir Woods, LLC ("Ciminelli"). Ciminelli has requested a modification to an existing permit described below.

WATERWAY & LOCATION: approximately 98 acres of Federal wetlands, a 32 acre lake and approximately 4.4 acres of tributaries have been previously identified as jurisdictional on the 326 acre parcel permitted for development known as "Muir Woods". The permitted project is located in the Town of Amherst, County of Erie and State of New York.

LATITUDE & LONGITUDE: Latitude North: 43°01'46"
Longitude West: -78°46'33"

EXISTING CONDITIONS: On May 14, 2012 a permit was issued to Ciminelli for placement of fill into 17.83 acres of Federal wetland and 1.29 acres of federally regulated tributaries for the multi-use development known as "Muir Woods". The current jurisdictional determination remains valid until the existing permit expiration date of November 30, 2024.

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PROPOSED MODIFICATION: Ciminelli proposes to modify the existing permit to change the proposed use of the area identified as Site A of the "Muir Woods" site. Under the existing permit, Site A was to consist of research and development and flex office space. The applicant is currently proposing to change the previously proposed use of Site A to a mixed-use commercial and residential development. The concept plan for the proposed project includes two 4-story mixed-use buildings, in addition to two-family townhouses and 6-unit apartment buildings. Also in association with the proposed changes, a new recreational bike/walking trail that will enter Site A from the southeast connection with Site B ultimately connecting to the rest of the on-site trail system and the Town's recreational trail that connects to the North Campus of the University of Buffalo and the Ellicott Creek Trailway system. The applicant has indicated these modifications are necessary due to changes in economic conditions in the real estate market, and also due to their consideration of input from the Town of Amherst municipal boards and the local public.

PROJECT PURPOSE
Basic: Construction of a multi-use development.
Overall: Modification of an existing permitted Ciminelli construction project by changing the proposed use of Site A of the Muir Woods site to the planned development from Research and Development and flex office space to mixed-use commercial and residential development with associated amenities on Site A due to market changes and consideration of the Town of Amherst municipal boards and local public input.

Water Dependency Determination: As with the existing permit, this newly proposed modification resulting in changes in project purpose and use within Site A, impacts to waters of the US have been determined to not be water dependent. Therefore, alternatives that do not require impacts to US waters are presumed to exist. The applicant adequately demonstrated that US waters have been avoided and minimized to the greatest extent practicable. As a result, wetland impacts have been reduced from the currently permitted 13.010 acres to 6.089 in Site A.

Mitigation: The currently permitted wetland impact in Site A is 13.010 acres. The new proposed impact to Site A wetlands are 6.089 acres resulting in a reduction in wetland impacts by 6.921 acres. As a result of the decrease in wetland impacts in Site A, the previously approved off-site mitigation consisting of creation of 27.37 acres of wetland habitat in the Town of Newstead has been proposed to be removed as a permit requirement. The previously approved and currently permitted on-site mitigation for Site A consisting of creation of approximately 10.47 acres of wetland remains unchanged. In addition, the increase in avoided wetland area and the reduction in developed area proposed in Site A results in an increase to the amount of wetland area to be preserved on-site as permanent open space from 3.91 acres to 11.83 acres.

Location and details of the above described work are shown on the attached maps and drawings.

Comments or questions pertaining to the work described in this notice should reference the Application Number and be directed to the attention of Martin Crosson, who can be contacted at the above address, by calling (716) 879-4346, or by e-mail at: martin.h.crosson@usace.army.mil. A lack of response will be interpreted as meaning that there is no objection to the work as proposed.

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Comments submitted in response to this notice will be fully considered during the public interest review for this permit application. All written comments will be made a part of the administrative record which is available to the public under the Freedom of Information Act. The Administrative Record, or portions thereof, may also be posted on a Corps of Engineers internet web site. Due to resource limitations, this office will normally not acknowledge the receipt of comments or respond to individual letters of comment.

Any individual may request a public hearing by submitting their written request, stating the specific reasons for holding a hearing, in the same manner and time period as other comments.

Pursuant to Section 106 of the National Historic Preservation Act, this proposed modification to Site A does not constitute an action that requires additional consultation with the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP). In a letter dated September 10, 2009 NYSOPRHP indicated the proposed project will have No Effect upon cultural resources in or eligible for inclusion in the National Registers of Historic Places. The proposed modification does not change the previously considered permit area or determination.

Pursuant to Section 7 of the Endangered Species Act (16 U.S.C. 1531), the Corps of Engineers has concluded consultation with the USFWS to evaluate potential impacts to the northern long-eared bat (NLEB). The Corps has previously determined that the project may affect the NLEB, but that the scope of the work falls within the parameters of the 4(d) Rule. Therefore, consultation has concluded. The existing permit for the project included the entire Site A area. This proposed modification does not constitute an action that requires further coordination or consideration under the Endangered Species Act (16 U.S.C. 1531).

Pursuant to Section 401(d) of the Clean Water Act, A Water Quality Certification will be issued or waived for this proposed project modification by the State of New.

Public hearings for the purposes of the Corps permit program will be held when the District Commander determines he can obtain additional information, not available in written comments, that will aid him in the decision-making process for this application. A Corps hearing is not a source of information for the general public, nor a forum for the resolution of issues or conflicting points of view (witnesses are not sworn, and cross examination is prohibited). Hearings will not be held to obtain information on issues unrelated to the work requiring a permit, such as property ownership, neighbor disputes, or the behavior or actions of the public or applicant on upland property not regulated by the Department of the Army. Information obtained from a public hearing is given no greater weight than that obtained from written comments. Therefore, you should not fail to make timely written comments because a hearing might be held.

The decision to approve or deny this permit modification request will be based on an evaluation of the probable impact, including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may

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be relevant to the proposal will be considered including the cumulative effects thereof; among these are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, flood plain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and in general, the needs and welfare of the people.

The Corps of Engineers is soliciting comments from the public; Federal, state and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

SIGNED

Diane C. Kozlowski
Chief, Regulatory Branch

NOTICE TO POSTMASTER: It is requested that this notice be posted continuously and conspicuously for 20 days from the date of issuance.

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HSM

February 26, 2021

Ellen Kost, AICP, Assistant Planning Director
Town of Amherst Planning Department
5583 Main Street
Williamsville, NY 14221

Re: Proposed Mixed Use Project - Site A of Muir Woods [SP-2021-05]
Portion of 1081 North French Road – Town of Amherst
File No. 10024.12

Dear Ellen:

Attached as Exhibit "1" is a copy of the Amended Wetland Permit [LRB-2001-00067] issued by the United States Army Corps of Engineers ("USACE") on February 25, 2021 authorizing impacts to 6.089 acres of federal wetlands [reduction of 6.921 acres of previously authorized impacts to federal wetlands] in order to accommodate the mixed-use development of Site "A" of the Muir Woods Property in accordance with the project layout depicted on the Concept Site Plan prepared by Christopher Wood, P.E. of Carmina Wood Morris DPC attached as Sheet 1 of 3.

Please feel free to call me at 510-4338 or via e-mail if you have any questions regarding this letter or the Amended Wetland Permit issued by the USACE on February 25, 2021 or the status of the pending request for Major Site Plan Approval for the proposed mixed-use project.

Thank you for your continued cooperation.

Sincerely,

HOPKINS SORGI & MCCARTHY PLLC

Sean W. Hopkins, Esq.

cc: Adam Faeth, Esq., Ciminelli Real Estate Corporation [Via e-mail and mail]
William Severyn, Severyn Development Inc. [Via e-mail and mail]
Christopher Wood, P.E., Carmina Wood Morris DPC [Via e-mail]
Scott J. Livingstone, Earth Dimensions, Inc. [Via e-mail]
Jody Celeste, Earth Dimensions, Inc. [Via e-mail]

HOPKINS SORGI & MCCARTHY PLLC
Attorneys at Law
5500 Main Street, Suite 343 • Williamsville, New York 14221
Direct: 716-510-4338 • E-mail: shopkins@hsr-legal.com • www.hsr-legal.com

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Exhibit 1 – Amended Wetland Permit Issued by the United States Army Corps of Engineers dated February 25, 2021

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

DEPARTMENT OF THE ARMY
BUFFALO DISTRICT, CORPS OF ENGINEERS
1776 NIAGARA STREET
BUFFALO, NEW YORK 14207-3199

February 25, 2021

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

Mr. Adam Faeth
Development Manager
Ciminelli Muir Woods LLC
350 Essjay Road Suite 101
Williamsville, NY 14221

Dear Mr. Faeth:

This is in reply to your submittal dated July 20, 2020 in which you requested a modification of Department of the Army Permit No. LRB-2001-00067. The project is located on a 326-acre parcel in the Town of Amherst, Erie County, New York. Specifically, you seek authorization to change the proposed use of an area identified as Site A from research and development and flex office space to a mixed-use commercial and residential development. This includes two 4-story mixed-use buildings, two-family townhouses, 6-unit apartment buildings, and a recreational trail to connect Site A with Site B. Wetland impacts have been reduced from 13.01 acres to 6.089 acres in Site A. A reduction of 6.921 acres. In addition, because of the reconfigured project including the significant reduction of wetland impacts, you have requested that the requirement of off-site compensatory mitigation be removed. Lastly, you have requested that 134 acres of the overall Muir Woods site located northeast of Site B, is donated to the Town of Amherst. This area will remain as open space in perpetuity. Permit compliance with mitigation requirements will remain as it currently is on the 134-acre site as a responsibility of Ciminelli Muir Woods LLC.

A Public Notice was published and coordinated with agencies and adjacent property owners using standard procedures. No comments were received as a result of the Public Notice. Based upon our evaluation, I concluded your request will not result in any unacceptable environmental or navigational impacts. Therefore, I am modifying Department of the Army permit No. LRB-2001-00067 to reflect the changes outlined in your request and identified on the attached drawings. All other terms and conditions of Permit No. LRB-2001-00067 remain in full force and effect.

Sheets 1, 2, and 3 of 3 are hereby made part of Permit No. LRB-2001-00067. Sheet 1 of 3 of this modification is an update to Sheets 2, 3, and 5 of 6 of the original permit. Sheet 2 and 3 of 3 of this modification are updates to Sheet 5 of 6 of the original permit. In addition, the following Special Conditions No. 6 and 8 of Permit No. LRB-2001-00067 are modified so that they no

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Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

longer include the requirement of off-site compensatory mitigation, as indicated below with the original and the following modified condition:

1. Special Condition Number 6: As mitigation to compensate for unavoidable and permanent impacts to 17.83 acres of Federal wetlands and 1.29 acres of Federal tributaries (approximately 5227 linear feet), the permittee shall create, at a minimum; 26.91 acres of wetland on-site, and 27.37 acres of wetland off-site. In addition, the permittee shall enhance 4.3 acres of tributary (approximately 2630 linear feet) on-site, all in accordance with the approved on-site and off-site mitigation plan that is made part of this permit. The mitigation area must be constructed in accordance with the approved plan as well as all permit conditions.

   Modified Special Condition Number 6: As mitigation to compensate for unavoidable and permanent impacts to 10.91 acres of Federal wetlands and 1.29 acres of Federal tributaries (approximately 5227 linear feet), the permittee shall create, at a minimum; 26.91 acres of wetland on-site. In addition, the permittee shall enhance 4.3 acres of tributary (approximately 2630 linear feet) on-site, all in accordance with the approved on-site mitigation plan that is made part of this permit. The mitigation area must be constructed in accordance with the approved plan as well as all permit conditions.

2. Special Condition Number 8: The approved compensatory mitigation must be in strict conformance with the plans approved by the Corps of Engineers. Such approved plans were prepared by Ciminelli Development Company, Incorporated and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009, including the Proposed On-Site Wetland Mitigation Plan, and the Proposed Off-Site Wetland Mitigation Plan dated November 16, 2009. The stated mitigation plans are hereby incorporated into and made part of the permit as Attachments 1 and 2. The permittee shall implement the mitigation in accordance with the plans and all permit conditions. Where permit conditions differ from the mitigation plan, the permit conditions shall be the ruling condition.

   Modified Special Condition Number 8: The approved compensatory mitigation must be in strict conformance with the plans approved by the Corps of Engineers. Such approved plans were prepared by Ciminelli Development Company, Incorporated and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009, including the Proposed On-Site Wetland Mitigation Plan dated November 16, 2009. The stated on-site mitigation plan is hereby incorporated into and made part of the permit as Attachments 1. The permittee shall implement the mitigation in accordance with the plans and all permit conditions. Where permit conditions differ from the mitigation plan, the permit conditions shall be the ruling condition.

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

Questions pertaining to this matter should be directed to Martin Crosson at 716-879-4346, by writing to the following address: U.S. Army Corps of Engineers, 1776 Niagara Street, Buffalo, New York 14207 or by E-mail at: martin.h.crosson@usace.army.mil

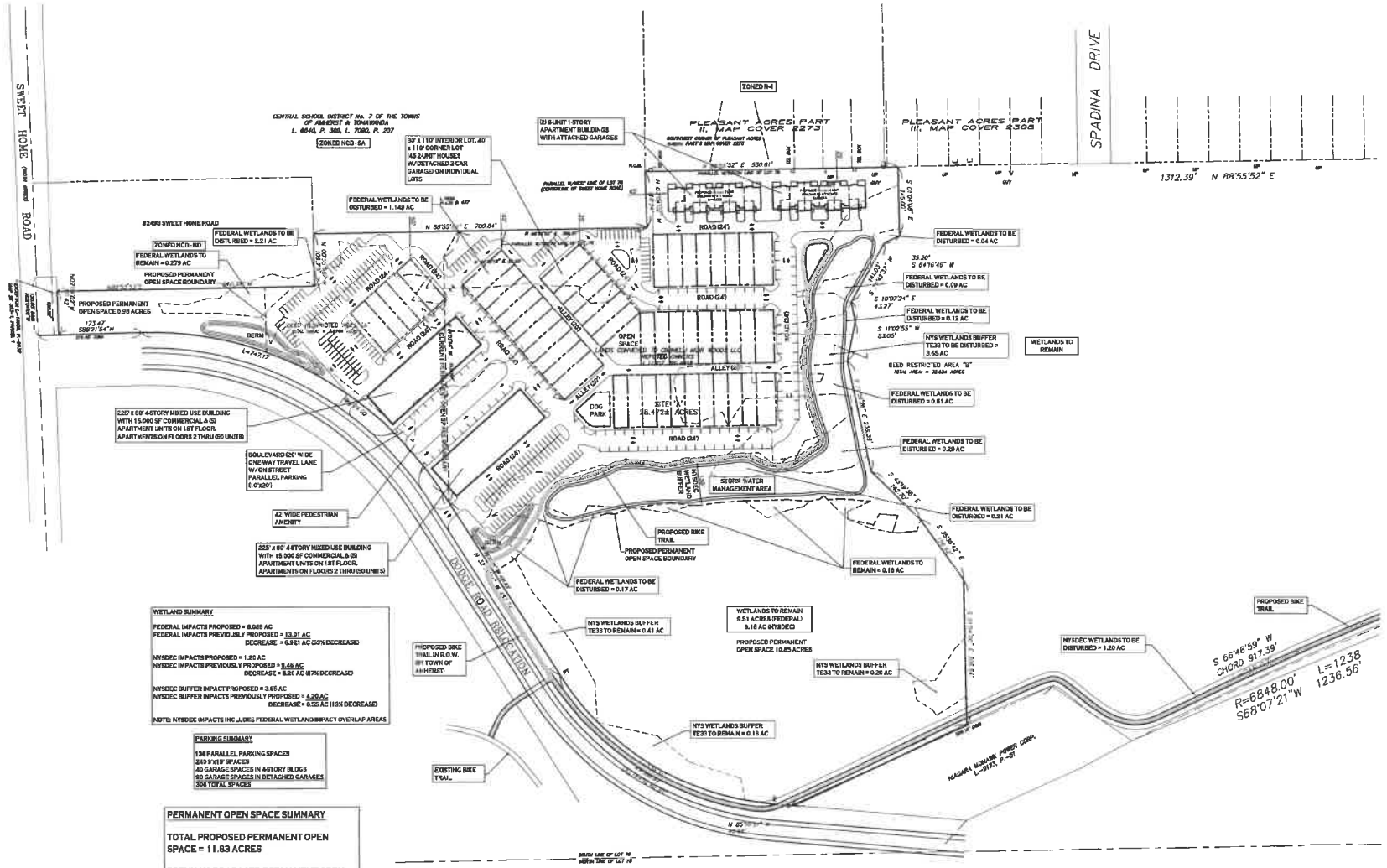
BY AUTHORITY OF THE SECRETARY OF THE ARMY

Steven V. Metivier

For: Mark Scalabrino
Acting Chief, Regulatory Branch

Enclosures

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)



N SITE PLAN
SCALE: 1"=100'

Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 1 of 3

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS. CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

© Carmina Wood Morris DPC
All rights reserved. Reuse of these documents without the expressed written permission of Carmina Wood Morris DPC is prohibited. WARNING: It is a violation of article 145 sections 7209A and 7301 of the New York State education law for any person, unless acting under the direction of a registered architect, licensed engineer or land surveyor to alter this drawing. If altered such R.A., P.E. or L.S. shall affix his or her seal, signature, the letter, the notation "altered by" and a specific description of the alteration.

Carmina Wood Morris
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0061

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Muir Woods Site "A"
Sweet Home & Dodge Road
Amherst, New York

Date: 7/1/20
Drawn by: C. Wood
Scale: As Noted

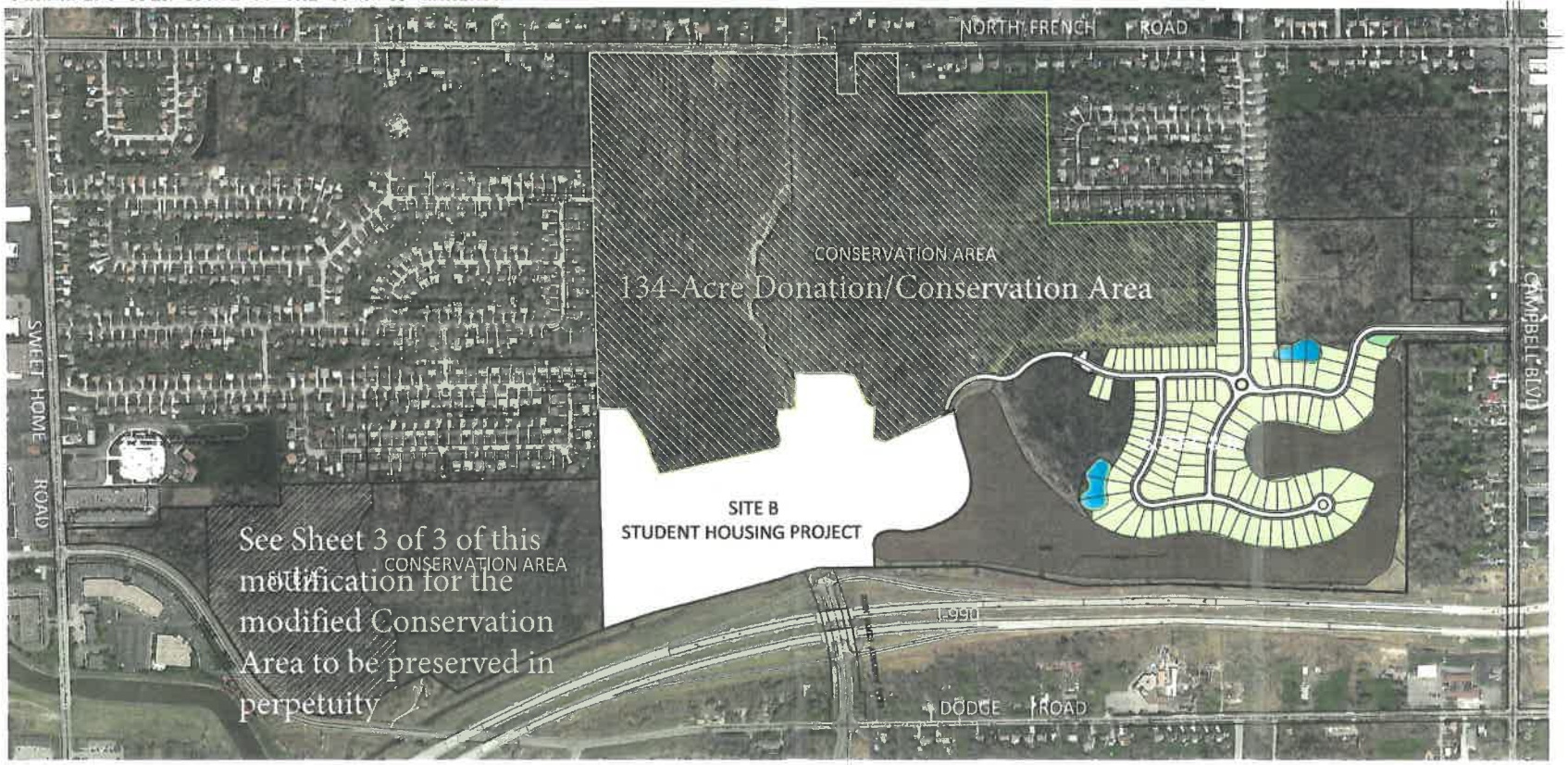
DRAWING NAME:
Concept Site Plan

DRAWING NO.
C-100
Project no.: 19.192

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

MUIR WOODS OVERALL PROJECT AREA

PROPOSED DONATION OF APPROXIMATELY 134 ACRES OF
PERMANENT OPEN SPACE TO THE TOWN OF AMHERST

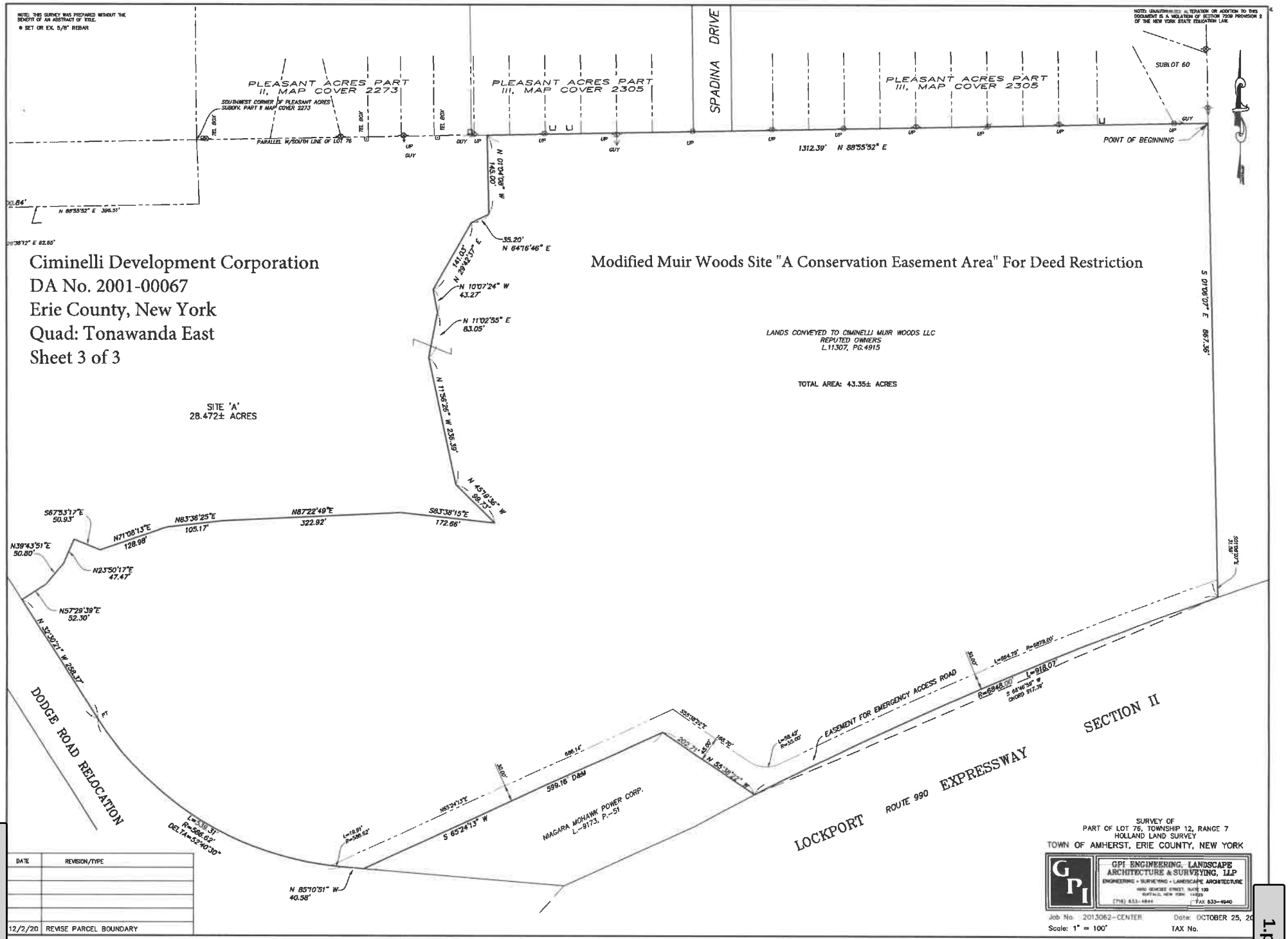


CONSERVATION AREA TO BE DONATED

Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 2 of 3

GPI GREENMAN-PEDERSEN, INC. CONSULTING ENGINEERS ENGINEERING • SURVEYING • PLANNING

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Traffic Impact Study

for the proposed

Muir Woods - Site A
Proposed Mixed-Use Project
1081 North French Road

Town of Amherst
Erie County, New York
August 3, 2020

Project No. 40027

Prepared For:

Ciminelli Real Estate Corporation
350 Essjay Road
Williamsville, New York 14221

Prepared By:

SRF Associates
www.srfa.net
Transportation Planning / Engineering / Design

3495 Winton Place
Building E, Suite 110
Rochester, New York 14623

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

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LIST OF REFERENCES

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4. Traffic Impact Study for Submittal to Town of Amherst The Hub Amherst. Kimley-Horn of New York, P.C. 2017.
5. Traffic Impact Study for Access Modification Report For Break in Access Application For Northerly Extension of John James Audubon Parkway As A Town of Amherst Roadway. GPI Engineering. 2020.

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

EXECUTIVE SUMMARY

OVERVIEW

The purpose of this report is to identify and evaluate the potential traffic impacts associated with the proposed development of Site "A" of the overall Muir Woods Property as a mixed-use project. Site "A" of the Muir Woods Property consists of approximately 28.47 acres located 1081 North French Road in the Town of Amherst, Erie County, New York ("Project Site"). The Applicant is seeking to amend the Amended Findings Statement issued by the Town of Amherst Town Board ("Town Board") pursuant to the State Environmental Quality Review Act ("SEQRA") on August 5, 2019 to accommodate a change of the previously proposed use of the Project Site as 237,000 sq. ft. of flex office and R&D space to a mixed-use project as described in this report and depicted on the Concept Site Plan prepared by Carmina Wood Morris DPC.

The operating characteristics of the proposed access points and impacts to the adjacent roadway network are identified and mitigating measures, if any, are provided to minimize capacity or safety concerns.

In an effort to define traffic impact, this analysis establishes existing base traffic conditions, projects background traffic flow including area growth and/or additional traffic resulting from new development in the area, and determines the traffic operations that would result the full development of the proposed mixed-use project.

The Project Site consists of vacant land and is located along the north side of Dodge Road, west of Interstate 990, in the Town of Amherst, Erie County, New York. Surrounding the proposed development is residential development and Heritage Heights Elementary School to the north, vacant land to the east, offices to the south, and a medical plaza to the west. Land uses in the vicinity of the Project Site include residential, office, medical, and educational uses. The study area consists of the following intersections:

- Dodge Road/Sweet Home Road
- Dodge Road/ North Forest Road

Access to the Project Site will be provided via three proposed driveways connecting to Dodge Road as follows: one full access driveway located at the southerly/easterly end of the Project Site, one full access driveway located at the northerly/westerly end of the Project Site, and a driveway separated by a 42 ft. wide median which has been designed to be a pedestrian amenity area (i.e. one driveway is enter-only and the other is exit only).

Construction of the proposed mixed-use project is anticipated to be completed within two years. Town of Amherst officials were contacted to discuss projects within the study area that are under construction and/or approved. Three projects were identified that are either under construction, approved for construction, or completed after data was collected in 2017: The Hub Amherst at 2949 North Forest Road, a student housing community on Site "B" of the overall Muir Woods Property, and a mixed-use building at 315 Campbell Boulevard.

Traffic related to full build out of The Hub Development was used to develop the 2020 base traffic volumes. Additional traffic related to the proposed student housing community on Site "B" of the Muir Woods Property has been added to the base traffic volumes at the study area intersections. To account for normal increases in background traffic growth including the mixed-use building 315 Campbell @ Dodge, as well as any other unforeseen developments in the project study area, a growth rate of 1% per year has been applied to the base traffic volumes. This growth rate is

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based upon historical traffic growth derived from NYSDOT traffic volume data for the area as well as consideration of the approved projects previously mentioned.

CONCLUSIONS & RECOMMENDATIONS

This study evaluates the potential traffic impacts resulting from the Muir Woods Site A Development. This study also provides the Town of Amherst and other governmental agencies with detailed information providing a hard look at potential traffic impacts for the purpose of the environmental review of the proposed mixed-use project pursuant to the State Environmental Quality Review Act ("SEQRA").

Based upon the analyses, the results indicate that the proposed mixed-use project will not have significant adverse traffic impacts on the existing roadway network. The following sets forth conclusions based upon the results of the analyses:

1. The proposed mixed-use project is expected to generate approximately 47 entering/85 exiting vehicle trips during the AM peak hour and 106 entering/82 exiting vehicle trips during the PM peak hour.

2. The proposed mixed-use project will not result in any potentially significant adverse traffic impacts to the study area intersections. No mitigation is warranted at the study area intersections as a result of the proposed mixed-use project.

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I. INTRODUCTION

The purpose of this report is to identify the potential traffic impacts associated with the proposed Muir Woods Site A Development in the Town of Amherst, Erie County, New York. The operating characteristics of the proposed access points and impacts to the adjacent roadway network are identified and mitigating measures, if any, are provided to minimize capacity or safety concerns.

In an effort to define traffic impact, this analysis establishes 2020 existing base traffic conditions, projects background traffic flow including area growth and/or additional traffic resulting from new development in the area, and determines the traffic operations that would result from full development of the proposed project.

II. LOCATION

The proposed mixed-use project is located along the north side of Dodge Road, west of Interstate 990, in the Town of Amherst, Erie County, New York. The site is currently vacant. Surrounding the proposed development is residential development and Heritage Heights Elementary School to the north, vacant land to the east, offices to the south, and a medical plaza to the west. Land uses in the vicinity of the project site include residential, office, medical, and educational uses. The study area consists of the following existing intersections:

- Dodge Road/Sweet Home Road
- Dodge Road/ North Forest Road

The site location and study area are shown in **Figure 1** (all figures are included at the end of the report).

III. EXISTING HIGHWAY SYSTEM

The following information outlined in **Table I** provides a description of the existing roadway network within the project study area.

TABLE I: EXISTING HIGHWAY SYSTEM

ROADWAY	ROUTE[1]	FUNC. CLASS[2]	JURIS.[3]	SPEED LIMIT[4]	# OF TRAVEL LANES[5]	TRAVEL PATTERN/ DIRECTION	EST. AADT[6]	AADT SOURCE[7]
Dodge Road (from Sweet Home Road to Campbell Road)	CR 45	Minor Arterial	ECDPW	40	2	Two-way/ East-West	7,058	NYSDOT (2016)
Sweet Home Road (from N Ellicott Road to Commerce Drive)	CR 301	Minor Arterial	ECDPW	45	4	Two-way/ North-South	22,713	NYSDOT (2016)
Sweet Home Road (from Commerce Drive to N French Road)	CR 301	Minor Arterial	ECDPW	45	4	Two-way/ North-South	16,008	NYSDOT (2016)

Notes:

1. "CR" = County Route.

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2. State Functional Classification of Roadway: Urban.
3. Jurisdiction: "ECDPW" = Erie County Department of Public Works.
4. Posted or Statewide Limit in Miles per Hour (MPH).
5. Excludes turning/auxiliary lanes developed at intersections.
6. Estimated Annual Average Daily Traffic (AADT) in Vehicles per Day (vpd).
7. "NYSDOT" = New York Department of Transportation. Source (Year). Obtained volumes represent the most recent available data.

Figure 2 illustrates the lane geometry at each of the study intersections and the AADT/ADT volumes on the study roadways.

IV. EXISTING TRAFFIC CONDITIONS

A. Peak Intervals for Analysis

Given the functional characteristics of the land uses proposed for the Project Site (residential, office and retail), the peak hours selected for analysis are the weekday commuter AM and PM peaks. The combination of site traffic and adjacent through traffic produces the greatest demand during these time periods.

B. Existing Traffic Volume Data

Historical weekday commuter AM (7:00-9:00 AM) and PM (4:00-6:00 PM) peak hour volumes were obtained from the Greater Buffalo Niagara Regional Transportation Council (GRBNRTC) and the Traffic Impact Statement for The Hub Amherst at the study area intersections, as noted in *Section II*, on Tuesday February 28, 2017 and Monday, July 17, 2017. The peak hour traffic periods generally occurred between 7:30-8:30 AM and 4:45-5:45 PM at the study intersections. Given the current traffic situation due to business restrictions resulting from COVID-19, it is not possible to collect more current traffic data.

All turning movement count data was collected on a typical weekday. The traffic volumes were reviewed to confirm the accuracy and relative balance of the collective traffic counts. Traffic volumes were adjusted to reflect 2020 traffic conditions by adding traffic associated with any developments (e.g. The Hub residential development) that have been constructed or are currently under construction since the data collection in 2017. The 2020 weekday AM and PM peak hour base volumes used for analysis purposes in this study are reflected in **Figure 3**.

C. Field Observations

Signal timing information was obtained by the Town of Amherst at the signalized intersection within the study area to determine peak hour phasing plans and phase durations during each interval.

D. Existing Crash History Analysis

Crash data has been requested from local agencies and an analysis will be provided once all data is received.

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V. FUTURE AREA DEVELOPMENT AND LOCAL GROWTH

Construction of the proposed mixed-use project is anticipated to be completed within two years. Town of Amherst officials were contacted to discuss projects within the study area that are under construction and/or approved. Three projects were identified that are either under construction, approved for construction, or completed after data was collected in 2017: The Hub Amherst at 2949 North Forest Road, a student housing project on Site "B" of the Muir Woods Property , and a mixed-use building at 315 Campbell Boulevard.

Traffic related to full build out of The Hub Development was used to develop the 2020 base traffic volumes. Additional traffic related to the proposed student housing project on Site "B" of the Muir Woods Property has been added to the base traffic volumes at the study area intersections. To account for normal increases in background traffic growth including the mixed-use building 315 Campbell Boulevard, as well as any other unforeseen developments in the project study area, a growth rate of one percent (1%) per year has been applied to the base traffic volumes. This growth rate is based upon historical traffic growth derived from NYSDOT traffic volume data for the area as well as consideration of the approved projects previously mentioned. The 2022 background traffic volumes are depicted in **Figure 4** for the build out time period.

VI. PROPOSED DEVELOPMENT

A. Description

The proposed mixed-use project will construct:

- (45) 2-unit attached townhomes
- (2) 6-unit 1-story apartment buildings
- (2) 4-story mixed-use buildings with (12) commercial units and (5) apartment units on the 1st floor; apartments on floors 2-4 (50 units total)

An estimated 1,875 square feet (SF) per commercial tenant for the 12 commercial units. Of the 12 units, it is estimated that 8 units will consist of retail use and 4 units will consist of general office space. Access to the Project Site will be provided via three proposed driveways connecting to Dodge Road as follows: one full access driveway located at the southerly/easterly end of the site, one full access driveway located at the northerly/westerly end of the site, and a one-way couple separated by a 42 ft wide pedestrian amenity area (i.e. one driveway is enter-only and the other is exit only).

B. Site Traffic Generation

The volume of traffic generated by a site is dependent on the intended land use and size of the development. Trip generation is an estimate of the number of trips generated by a specific building or land use. These trips represent the volume of traffic entering and exiting the development. Trip Generation, 10th Edition is used as a reference for this information. Data published by the ITE is the nationally accepted standard for generating trips for new uses. The trip rate for the peak hour of the generator may or may not coincide in time or volume with the trip rate for the peak hour of adjacent street traffic. Volumes generated during the peak hour of adjacent street traffic, in this case, the weekday AM and PM peaks, represent a more critical volume when analyzing the capacity of the system; those intervals will provide the basis of this analysis. All trip generation information has been included in the appendix.

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Table II summarizes the volume of projected site trips during the weekday AM and PM peak hours.

TABLE II
SITE GENERATED TRIPS

DESCRIPTION	ITE LUC	SIZE/ UNITS	AM PEAK HOUR		PM PEAK HOUR	
			ENTER	EXIT	ENTER	EXIT
Houses w/ 2- Car Detached Garage	210	90 units	17	50	56	33
1-Story Apartments	220	12 units	1	5	6	3
4-Story Apartment Units	221	100 units	9	25	27	17
General Office Building	710	15,000 SF	14	2	2	14
Variety/Retail Store	814	15,000 SF	6	3	15	15
		Total Site Trips	***47***	***85***	***106***	***82***

Notes:
1. "ITE LUC" = ITE Land Use Code.

The proposed mixed-use project is expected to generate approximately 47 entering/85 exiting vehicle trips during the AM weekday peak hour and 106 entering/82 exiting vehicle trips during the PM weekday peak hour.

C. Site Traffic Distribution

The cumulative effect of site traffic on the transportation network is dependent on the origins and destinations of that traffic and the location of the access drive serving the Project Site.

The proposed arrival/departure distribution of traffic to be generated at this site is considered a function of several parameters, including the following:

- Employment centers in the local area and region;
- Population centers in the local area and region;
- Proximity and access to Interstate 990;
- Proximity to the North Campus of the University at Buffalo;
- Site access drive locations and internal roadway circulation;
- Existing highway network;
- Existing traffic patterns; and
- Existing traffic conditions and controls

Based on these parameters, **Figure 6** shows the anticipated trip distribution patterns for the proposed development. **Figure 7** illustrates the peak hour of site-generated traffic based on those percentages for the proposed development.

VII. FULL DEVELOPMENT VOLUMES

The projected design hour traffic volumes were developed for the weekday AM and PM peak hours by combining the future background traffic conditions (Figure 4), and projected site generated for the proposed development (Figure 7) to yield the total traffic conditions expected under full development conditions. **Figure 8** illustrate the total weekday AM and PM peak hour

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volumes anticipated for the proposed mixed-use project under full development conditions respectively.

VIII. CAPACITY ANALYSIS

Capacity analysis is a technique used for determining a measure of effectiveness for a section of roadway and/or intersection based on the number of vehicles during a specific time period. The measure of effectiveness used for the capacity analysis is referred to as a Level of Service (LOS). Levels of Service are calculated to provide an indication of the amount of delay that a motorist experiences while traveling along a roadway or through an intersection. Since the most amount of delay to motorists usually occurs at intersections, capacity analysis typically focuses on intersections, as opposed to highway segments.

Six Levels of Service are defined for analysis purposes. They are assigned letter designations, from "A" to "F", with LOS "A" representing the best conditions and LOS "F" the worst. Suggested ranges of service capacity and an explanation of Levels of Service are included in the Appendix.

The standard procedure for capacity analysis of signalized and un-signalized intersections is outlined in the Highway Capacity Manual (HCM 2016) published by the Transportation Research Board. Traffic analysis software, Synchro 10, which is based on procedures and methodologies contained in the HCM, was used to analyze operating conditions at study area intersections. The procedure yields a Level of Service (LOS) based on the HCM as an indicator of how well intersections operate.

Existing base and background operating conditions during the peak study periods are evaluated to determine a basis for comparison with the projected future conditions. The future traffic conditions generated by the proposed development under Phase I and full build out were analyzed to assess the operations of the intersections in the study area. Capacity results for existing, background, and full development conditions are listed in **Table III**. The discussion following the table summarizes capacity conditions. All capacity analysis calculations are included in the Appendices.

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TABLE III: CAPACITY ANALYSIS RESULTS

INTERSECTION	2020 BASE CONDITIONS				2022 BACKGROUND CONDITIONS				FULL BUILD CONDITIONS			
	AM		PM		AM		PM		AM		PM	
Sweet Home Road / Commerce Drive/Dodge Road (S)												
EB left - Commerce Road	D	40.5	C	30.3	D	41.1	C	30.9	D	41.1	C	32.1
EB thru/right - Commerce Drive	B	14.2	E	77.7	B	14.3	F	88.5	B	15.0	F	100.2
WB left- Dodge Road	C	27.7	F	191.3	C	28.0	F	*	C	29.3	F	*
WB thru/right - Dodge Road	E	76.4	B	19.3	F	86.8	B	19.9	F	106.8	C	22.9
NB left - Sweet Home Road	C	31.5	C	32.4	C	33.3	C	34.3	C	33.3	C	34.8
NB thru/right - Sweet Home Road	C	20.9	B	18.8	C	21.0	B	19.2	C	21.2	C	20.5
SB left - Sweet Home Road	B	17.6	B	10.1	B	19.0	B	10.3	C	21.2	B	11.9
SB thru/right - Sweet Home Road	C	30.0	C	32.2	C	30.8	C	33.8	C	30.7	C	33.7
Overall LOS	***C***	***34.0***	***D***	***37.6***	***D***	***36.3***	***D***	***40.3***	***D***	***40.4***	***D***	***47.7***
Dodge Road / Proposed North Driveway (U)												
SEB thru/left - Dodge Road	N/A				N/A				A	8.3	A	8.5
SWB - Proposed North Driveway									B	14.9	B	14.9
Dodge Road / Proposed Middle Exit Only Driveway (U)												
SWB - Proposed Middle Exit Only Driveway	N/A				N/A				B	13.3	B	13.4
Dodge Road / Proposed South Driveway (U)												
SEB thru/left - Dodge Road	N/A				N/A				A	8.2	A	8.5
SWB - Proposed South Driveway									C	16.2	C	16.1
Dodge Road / North ForestRoad (U)												
WB thru/left - Dodge Road	A	9.2	A	8.3	A	9.3	A	8.4	A	9.5	A	8.6
NB - North Forest Road	D	27.5	D	28.6	D	31.1	E	35.9	E	39.6	F	59.6

NOTES:

1. A(2.8) = Level of Service (Delay in seconds per vehicle)
2. (U) = Unsignalized
3. N/A = Approach does not exist and/or was not analyzed during this condition
4. F(*) = Delay greater than 200 seconds per vehicle

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Sweet Home Rd/Commerce Drive-Dodge Road
All approaches operate at LOS "D" or better during the AM and PM peak hours under all conditions with the exception of the westbound through/right turn movement which operates at LOS "F" under background and future conditions during the AM peak hour; in addition the westbound left turn and the eastbound through/right turn movements also operate at LOS "F" under background conditions during the PM peak hour. The southbound left turn movement is projected to change from LOS "B" to "C" between background and full development conditions during the AM peak hour. No other changes in LOS are projected as a result of the development. The existing traffic signal is fully actuated and will automatically adjust, within the set parameters, to accommodate the additional traffic. No mitigation is warranted or recommended at this intersection as a result of the proposed development.

Dodge Road/Proposed Driveways
All of the proposed driveways are projected to operate at LOS "C" or better during both peak hours under full development conditions.

Dodge Road/North Forest Road
All approaches operate at LOS "D" or better during the AM peak hour under the existing base and background conditions. During the PM peak hour, the northbound approach operates at LOS "E" under background conditions. Under full development conditions, the northbound approach is projected to operate at LOS "E" during the AM peak hour and LOS "F" with delays on the order of 59.6 seconds per vehicle during the PM peak hour. The development will add 7(16) northbound left turns during the AM(PM) peak hours. The traffic volumes that are exiting northbound North Forest Road are relatively small and a traffic signal is not warranted at this location. No mitigation is warranted or recommended at this intersection as a result of the proposed development.

IX. CONCLUSIONS

This study evaluates the potential traffic impacts resulting from the Muir Woods Site A Development. This study also provides the Town of Amherst and other governmental agencies with detailed information providing a hard look at potential traffic impacts for the purpose of the environmental review of the proposed mixed-use project pursuant to the State Environmental Quality Review Act ("SEQRA").

Based upon the analyses, the results indicate that the proposed mixed-use project will not have significant adverse traffic impacts on the existing roadway network. The following sets forth conclusions based upon the results of the analyses:

1. The proposed mixed-use project is expected to generate approximately 47 entering/85 exiting vehicle trips during the AM peak hour and 106 entering/82 exiting vehicle trips during the PM peak hour.

2. The proposed mixed-use project will not result in any potentially significant adverse traffic impacts to the study area intersections. No mitigation is warranted at the study area intersections as a result of the proposed mixed-use project.

X. FIGURES

Figures 1 through 8 are included on the following pages.

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FIGURE 1 - SITE LOCATION AND STUDY AREA



Legend

- Study Intersection
- Proposed Driveway
- Site Location
- Study Area

PROPOSED MUIR WOODS SITE A DEVELOPMENT

TOWN OF AMHERST, NY

0 250 500 1000

Feet

N

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Transportation

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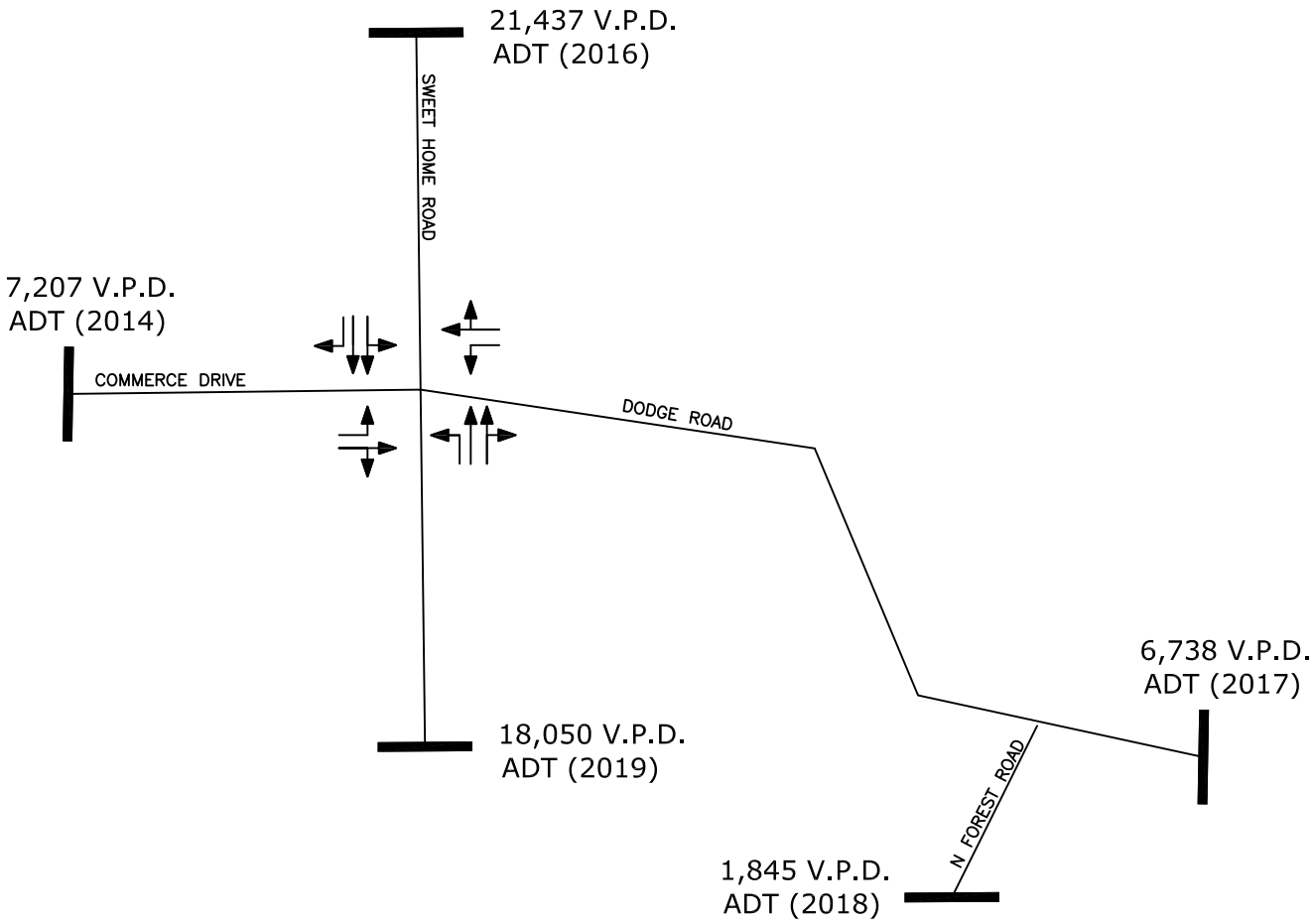

NOTES:
1. All counts by NYSDOT
2. V.P.D. = Vehicles per Day

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FIGURE 2

LANE GEOMETRY &
AVERAGE DAILY TRAFFIC

PROPOSED MUIR WOODS SITE A,
TOWN OF AMHERST, NY

KEY

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

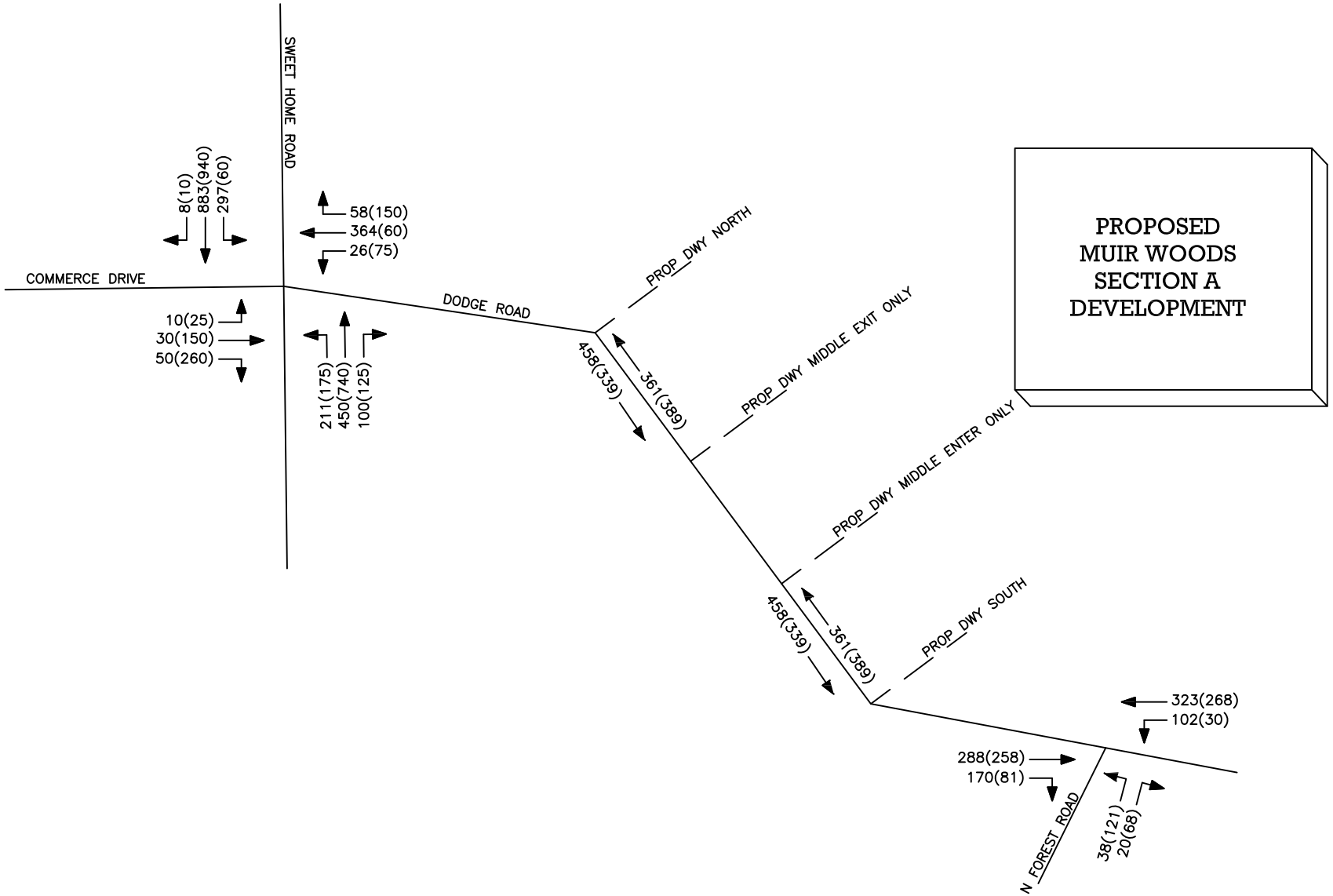

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FIGURE 3

PEAK HOUR VOLUMES
2020 BASE CONDITIONS

PROPOSED MUIR WOODS SITE A,
TOWN OF AMHERST, NY

KEY

00(00) = AM(PM)

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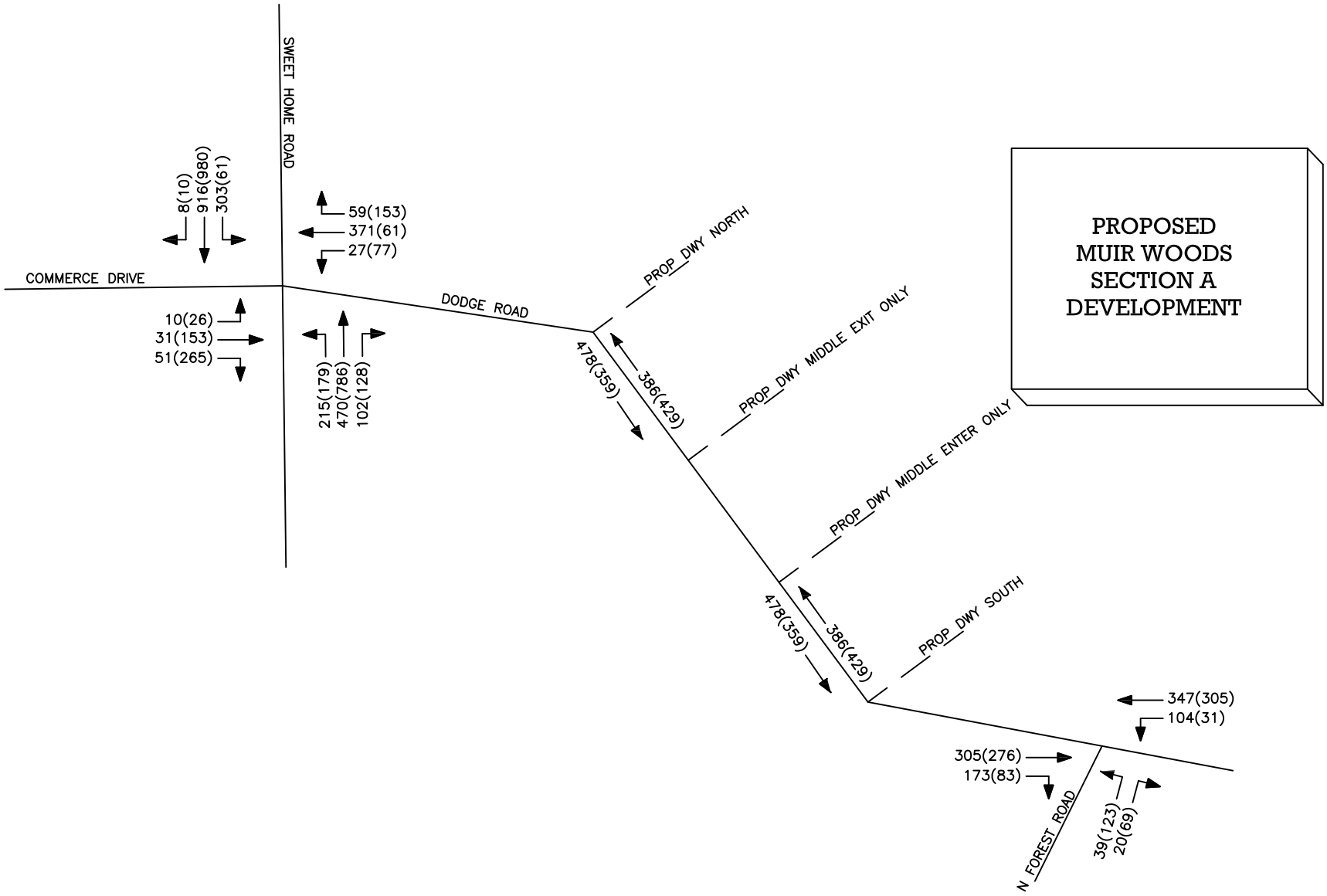

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FIGURE 4

PEAK HOUR VOLUMES
2022 BACKGROUND CONDITIONS

PROPOSED MUIR WOODS SITE A,

KEY

00(00) = AM(PM)

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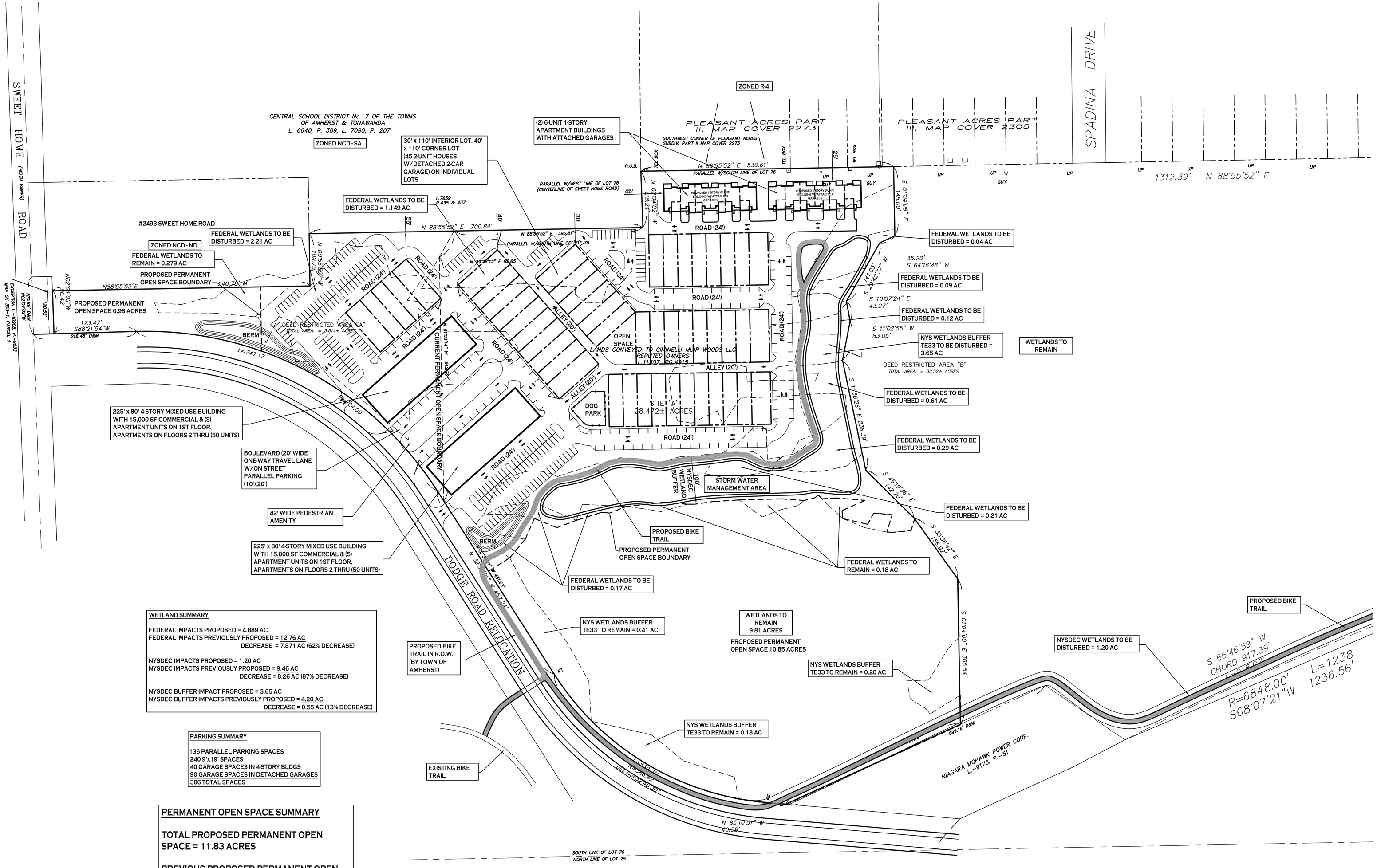

SITE PLAN

SCALE: 1"=100'

WETLAND SUMMARY

FEDERAL IMPACTS PROPOSED = 4.889 AC
FEDERAL IMPACTS PREVIOUSLY PROPOSED = 12.76 AC
DECREASE = 7.871 AC (62% DECREASE)

NYSDEC IMPACTS PROPOSED = 1.20 AC
NYSDEC IMPACTS PREVIOUSLY PROPOSED = 9.46 AC
DECREASE = 8.26 AC (87% DECREASE)

NYSDEC BUFFER IMPACT PROPOSED = 3.65 AC
NYSDEC BUFFER IMPACTS PREVIOUSLY PROPOSED = 4.20 AC
DECREASE = 0.55 AC (13% DECREASE)

PARKING SUMMARY

136 PARALLEL PARKING SPACES
240 9'x19' SPACES
40 GARAGE SPACES IN 4-STORY BLDGS
90 GARAGE SPACES IN DETACHED GARAGES
306 TOTAL SPACES

PERMANENT OPEN SPACE SUMMARY

TOTAL PROPOSED PERMANENT OPEN SPACE = 11.83 ACRES

PREVIOUS PROPOSED PERMANENT OPEN SPACE = 3.91 ACRES

NET INCREASE = 7.92 ACRES

SITE DATA

28.47 ACRES TOTAL
ZONED: NCD - ND

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Muir Woods Site "A"

Sweet Home & Dodge Road
Amherst, New York

Date: 7/1/20
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Concept Site Plan

DRAWING NO.

C-100

Project no.: 19.192

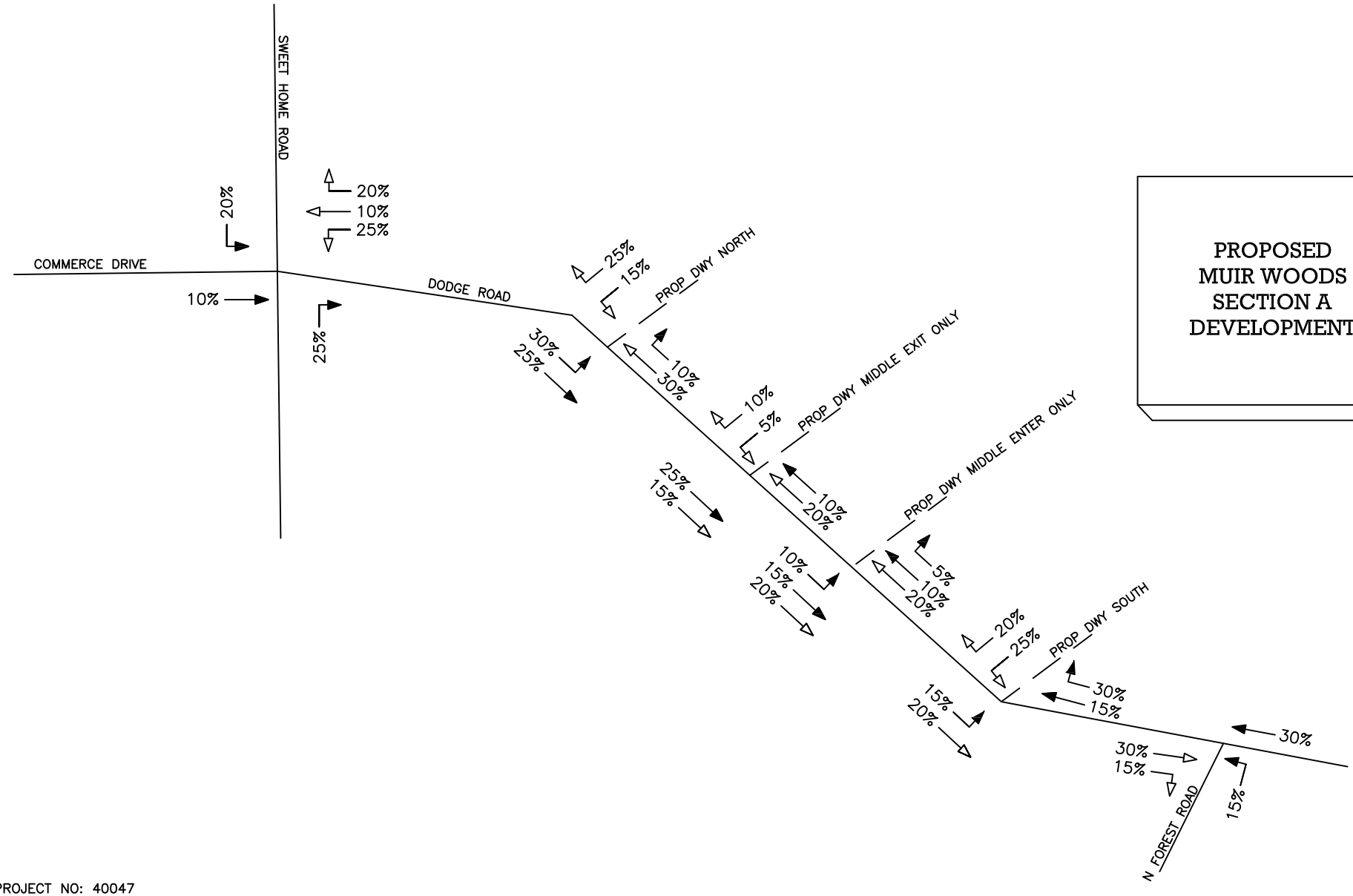

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FIGURE 6

TRIP DISTRIBUTION

PROPOSED MUIR WOODS SITE A,
TOWN OF AMHERST, NY

KEY

00(00) = AM(PM)
ENTERING TRIPS →
EXITING TRIPS →

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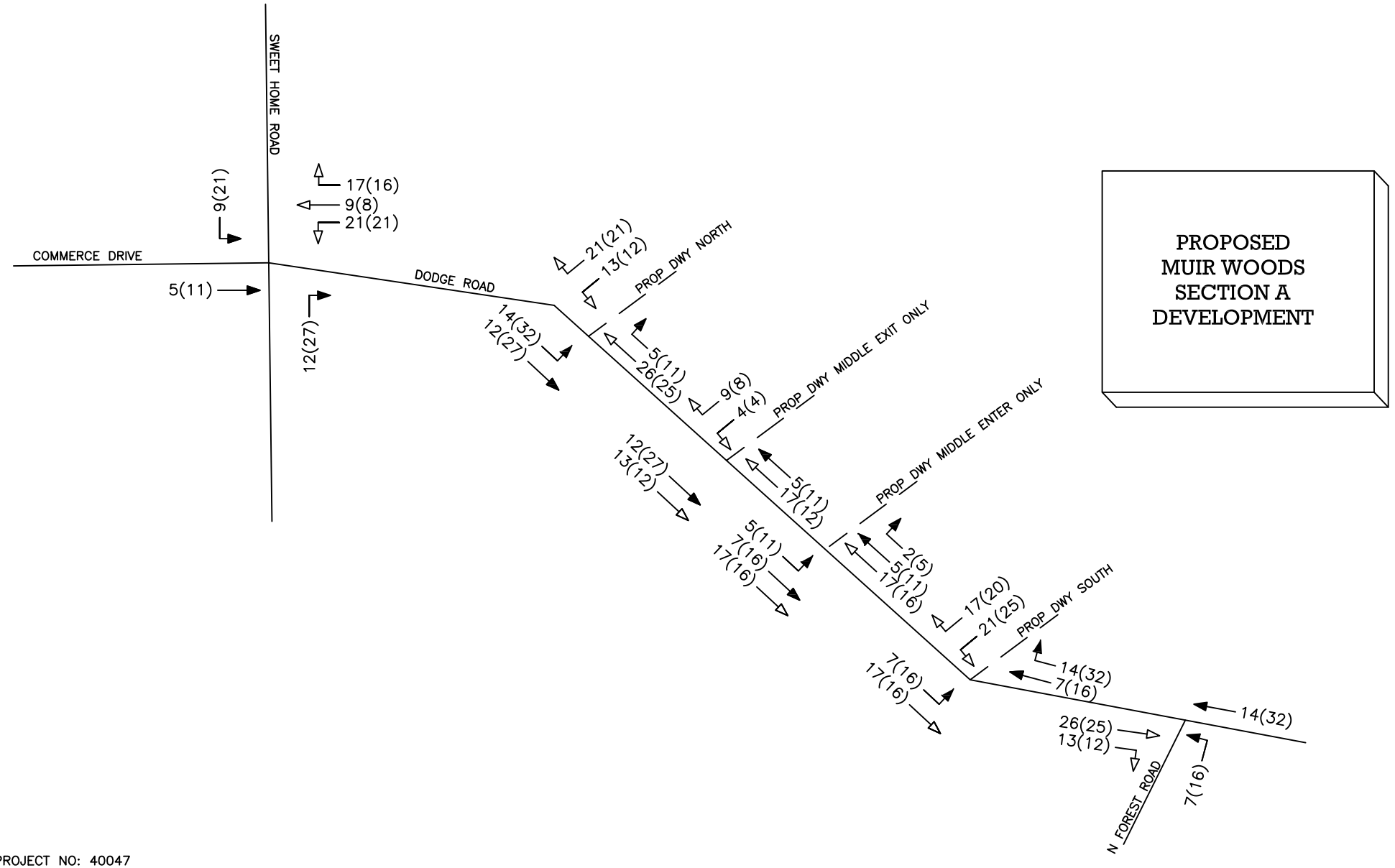

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FIGURE 7

SITE GENERATED TRIPS

PROPOSED MUIR WOODS SITE A,
TOWN OF AMHERST, NY

KEY

00(00) = AM(PM)
ENTERING TRIPS →
EXITING TRIPS →

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

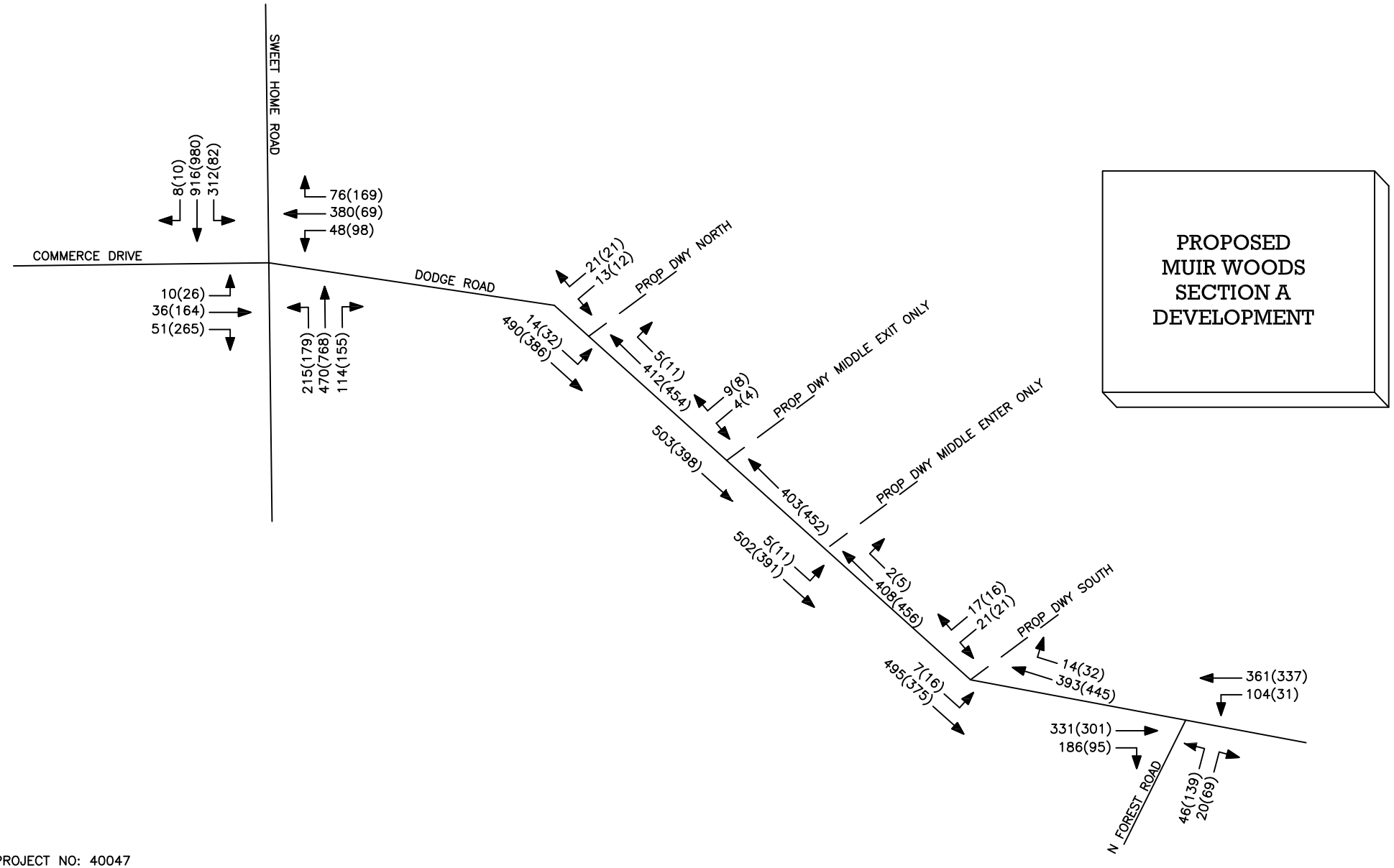

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FIGURE 8

PEAK HOUR VOLUMES
FULL DEVELOPMENT CONDITIONS

PROPOSED MUIR WOODS SITE A,
TOWN OF AMHERST, NY

KEY

00(00) = AM(PM)

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APPENDICES

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A1

Collected Traffic Volume Data

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TRI-STATE TRAFFIC DATA

www.TSTData.com
184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Amherst, NY
N Forest Rd/Dodge Rd
Tuesday, February 28, 2017
Location: 43.023716, -78.788008

Count Name: N Forest Rd/Dodge Rd
Site Code:
Start Date: 02/28/2017
Page No: 1

Turning Movement Data

Start Time	Dodge Rd Westbound					North Forest Rd Northbound					Dodge Rd Eastbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
7:00 AM	32	3	0	0	35	2	12	0	0	14	21	30	0	0	51	100
7:15 AM	51	5	0	0	56	1	8	0	0	9	23	37	0	0	60	125
7:30 AM	77	15	0	0	92	4	10	0	0	14	54	55	0	0	109	215
7:45 AM	101	41	0	0	142	5	5	0	0	10	53	85	0	0	138	290
Hourly Total	261	64	0	0	325	12	35	0	0	47	151	207	0	0	358	730
8:00 AM	83	19	0	0	102	2	5	0	0	7	37	53	0	0	90	199
8:15 AM	59	25	0	0	84	6	14	0	0	20	24	59	0	0	83	187
8:30 AM	37	10	0	0	47	3	12	0	0	15	32	45	0	0	77	139
8:45 AM	44	14	0	0	58	4	14	0	1	18	26	50	0	0	76	152
Hourly Total	223	68	0	0	291	15	45	0	1	60	119	207	0	0	326	677
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	56	8	0	0	64	35	35	0	0	70	20	37	0	0	57	191
4:15 PM	51	2	0	0	53	13	30	0	0	43	16	44	0	0	60	156
4:30 PM	58	5	0	0	63	16	34	0	0	50	19	51	0	0	70	183
4:45 PM	45	5	0	0	50	7	25	0	0	32	18	61	0	0	79	161
Hourly Total	210	20	0	0	230	71	124	0	0	195	73	193	0	0	266	691
5:00 PM	84	6	0	0	90	32	38	0	0	70	22	86	0	0	108	268
5:15 PM	78	11	0	0	89	10	22	0	0	32	19	55	0	0	74	195
5:30 PM	39	3	0	0	42	4	23	0	0	27	11	67	0	0	78	147
5:45 PM	53	3	0	0	56	3	17	0	0	20	15	37	0	0	52	128
Hourly Total	254	23	0	0	277	49	100	0	0	149	67	245	0	0	312	738
6:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Grand Total	949	175	0	0	1124	147	304	0	1	451	410	852	0	0	1262	2837
Approach %	84.4	15.6	0.0	-	-	32.6	67.4	0.0	-	-	32.5	67.5	0.0	-	-	-
Total %	33.5	6.2	0.0	-	39.6	5.2	10.7	0.0	-	15.9	14.5	30.0	0.0	-	44.5	-
Lights	936	175	0	-	1111	144	303	0	-	447	408	841	0	-	1249	2807
% Lights	98.6	100.0	-	-	98.8	98.0	99.7	-	-	99.1	99.5	98.7	-	-	99.0	98.9
Buses	8	0	0	-	8	3	1	0	-	4	2	8	0	-	10	22
% Buses	0.8	0.0	-	-	0.7	2.0	0.3	-	-	0.9	0.5	0.9	-	-	0.8	0.8
Trucks	5	0	0	-	5	0	0	0	-	0	0	3	0	-	3	8
% Trucks	0.5	0.0	-	-	0.4	0.0	0.0	-	-	0.0	0.0	0.4	-	-	0.2	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

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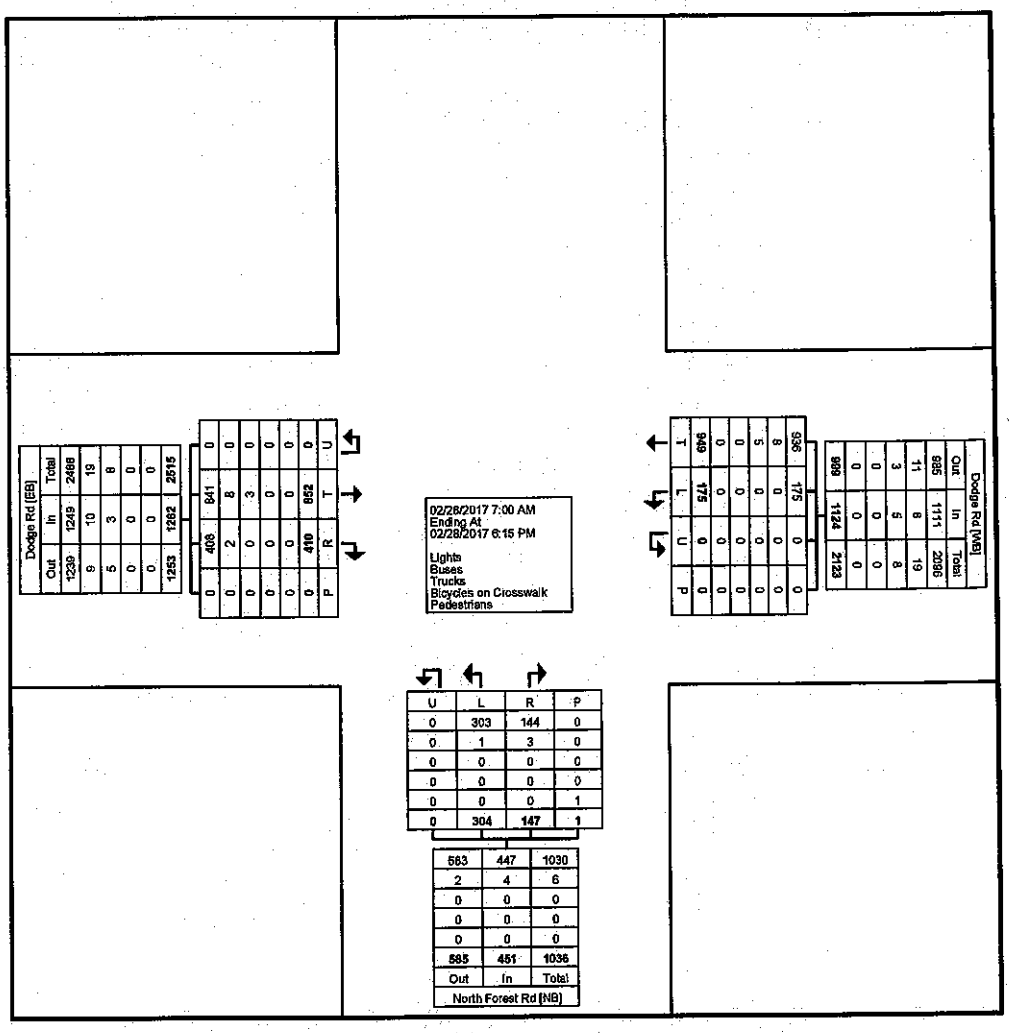

Turning Movement Data Plot

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Count Name: N Forest Rd/Dodge Rd
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Turning Movement Peak Hour Data (7:30 AM)

Start Time	Dodge Rd Westbound					North Forest Rd Northbound					Dodge Rd Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	
7:30 AM	77	15	0	0	92	4	10	0	0	14	54	55	0	0	109	215
7:45 AM	101	41	0	0	142	5	5	0	0	10	53	85	0	0	138	290
8:00 AM	83	19	0	0	102	2	5	0	0	7	37	53	0	0	90	199
8:15 AM	59	25	0	0	84	6	14	0	0	20	24	59	0	0	83	187
Total	320	100	0	0	420	17	34	0	0	51	168	252	0	0	420	891
Approach %	76.2	23.8	0.0	-	-	33.3	66.7	0.0	-	-	40.0	60.0	0.0	-	-	-
Total %	35.9	11.2	0.0	-	47.1	1.9	3.8	0.0	-	5.7	18.9	28.3	0.0	-	47.1	-
PHF	0.792	0.610	0.000	-	0.739	0.708	0.607	0.000	-	0.638	0.778	0.741	0.000	-	0.761	0.768
Lights	318	100	0	-	418	15	33	0	-	48	168	248	0	-	416	882
% Lights	99.4	100.0	-	-	99.5	88.2	97.1	-	-	94.1	100.0	98.4	-	-	99.0	99.0
Buses	1	0	0	-	1	2	1	0	-	3	0	2	0	-	2	6
% Buses	0.3	0.0	-	-	0.2	11.8	2.9	-	-	5.9	0.0	0.8	-	-	0.5	0.7
Trucks	1	0	0	-	1	0	0	0	-	0	0	2	0	-	2	3
% Trucks	0.3	0.0	-	-	0.2	0.0	0.0	-	-	0.0	0.0	0.8	-	-	0.5	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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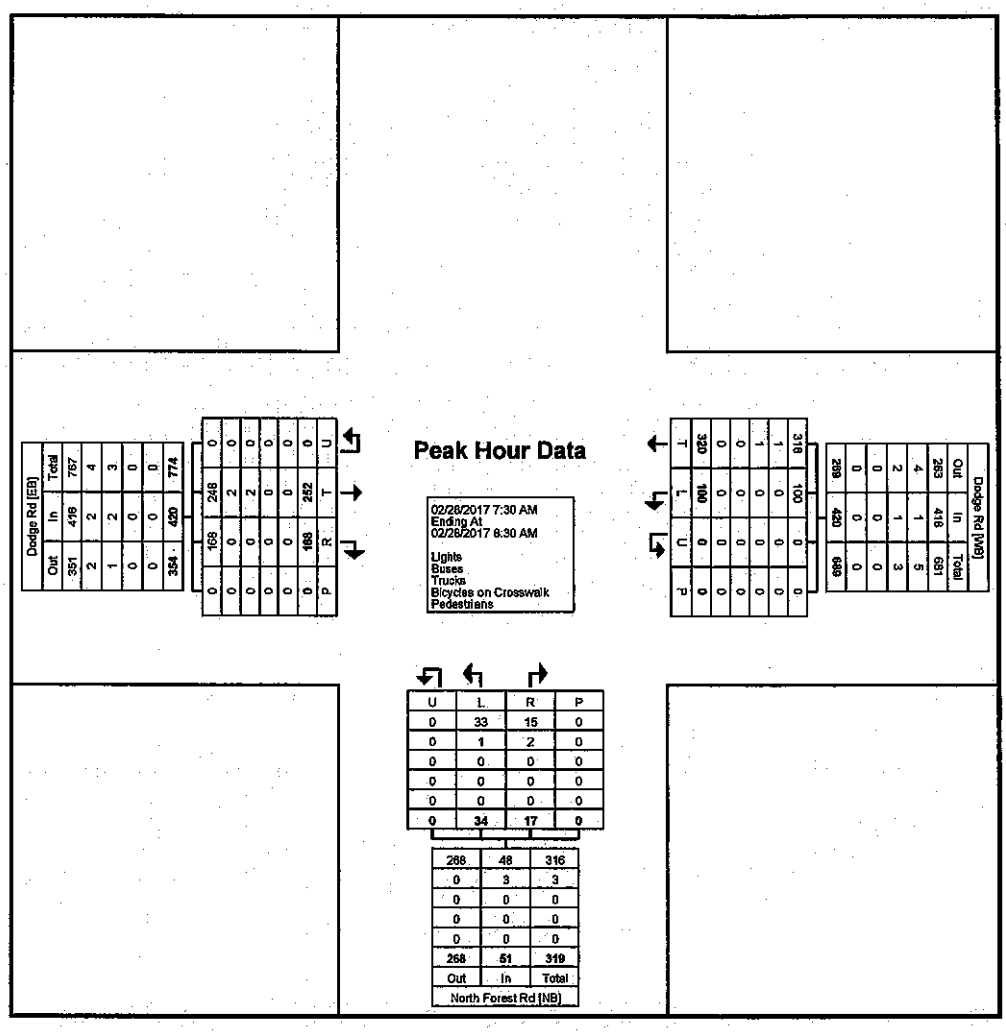

Turning Movement Peak Hour Data Plot (7:30 AM)

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Start Date: 02/28/2017

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Dodge Rd Westbound					North Forest Rd Northbound					Dodge Rd Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	
4:30 PM	58	5	0	0	63	16	34	0	0	50	19	51	0	0	70	183
4:45 PM	45	5	0	0	50	7	25	0	0	32	18	61	0	0	79	161
5:00 PM	84	6	0	0	90	32	38	0	0	70	22	86	0	0	108	268
5:15 PM	78	11	0	0	89	10	22	0	0	32	19	55	0	0	74	195
Total	265	27	0	0	292	65	119	0	0	184	78	253	0	0	331	807
Approach %	90.8	9.2	0.0	-	-	35.3	64.7	0.0	-	-	23.6	76.4	0.0	-	-	-
Total %	32.8	3.3	0.0	-	36.2	8.1	14.7	0.0	-	22.8	9.7	31.4	0.0	-	41.0	-
PHF	0.789	0.614	0.000	-	0.811	0.508	0.783	0.000	-	0.657	0.886	0.735	0.000	-	0.766	0.753
Lights	265	27	0	-	292	65	119	0	-	184	78	253	0	-	331	807
% Lights	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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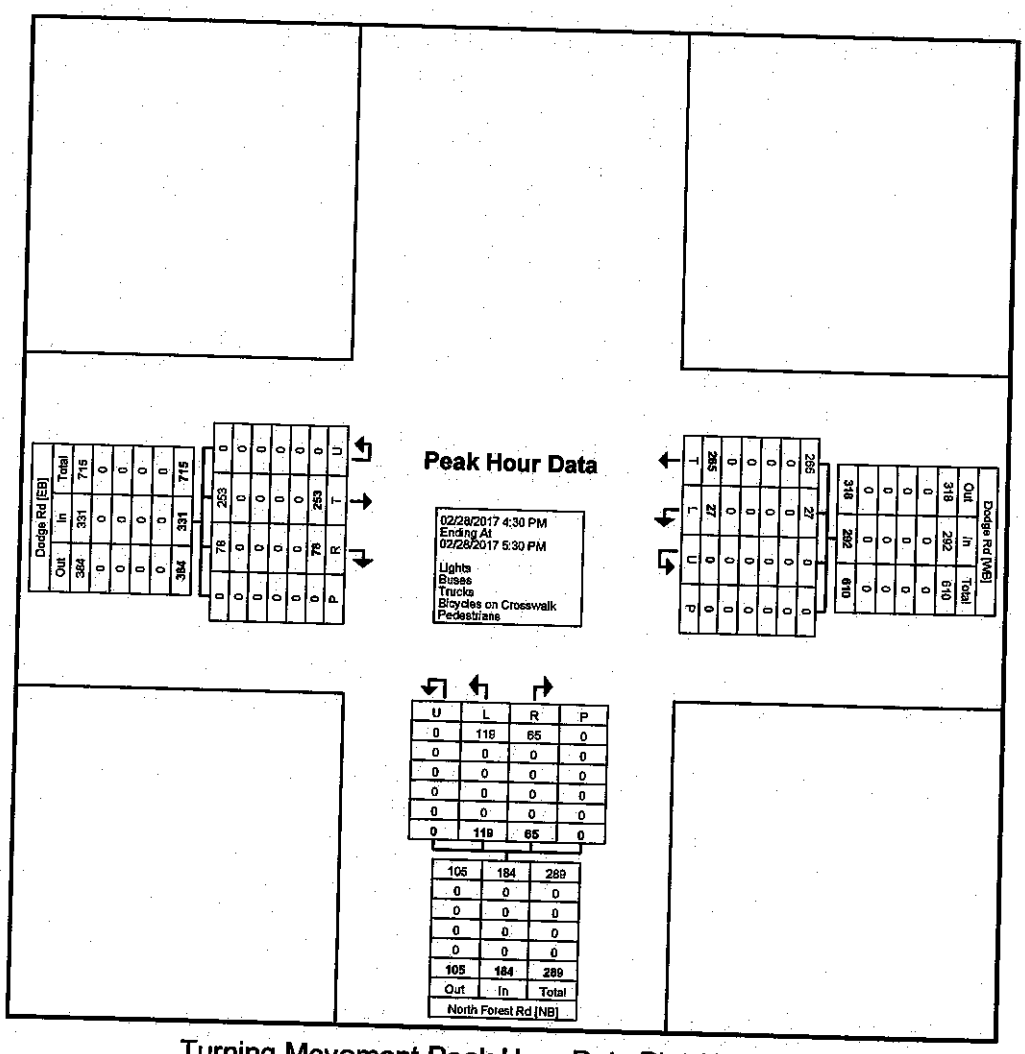


Turning Movement Peak Hour Data Plot (4:30 PM)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

TTS - THE HUB - 2949 N. FOREST
KIMLEY-HORN, 3/2017

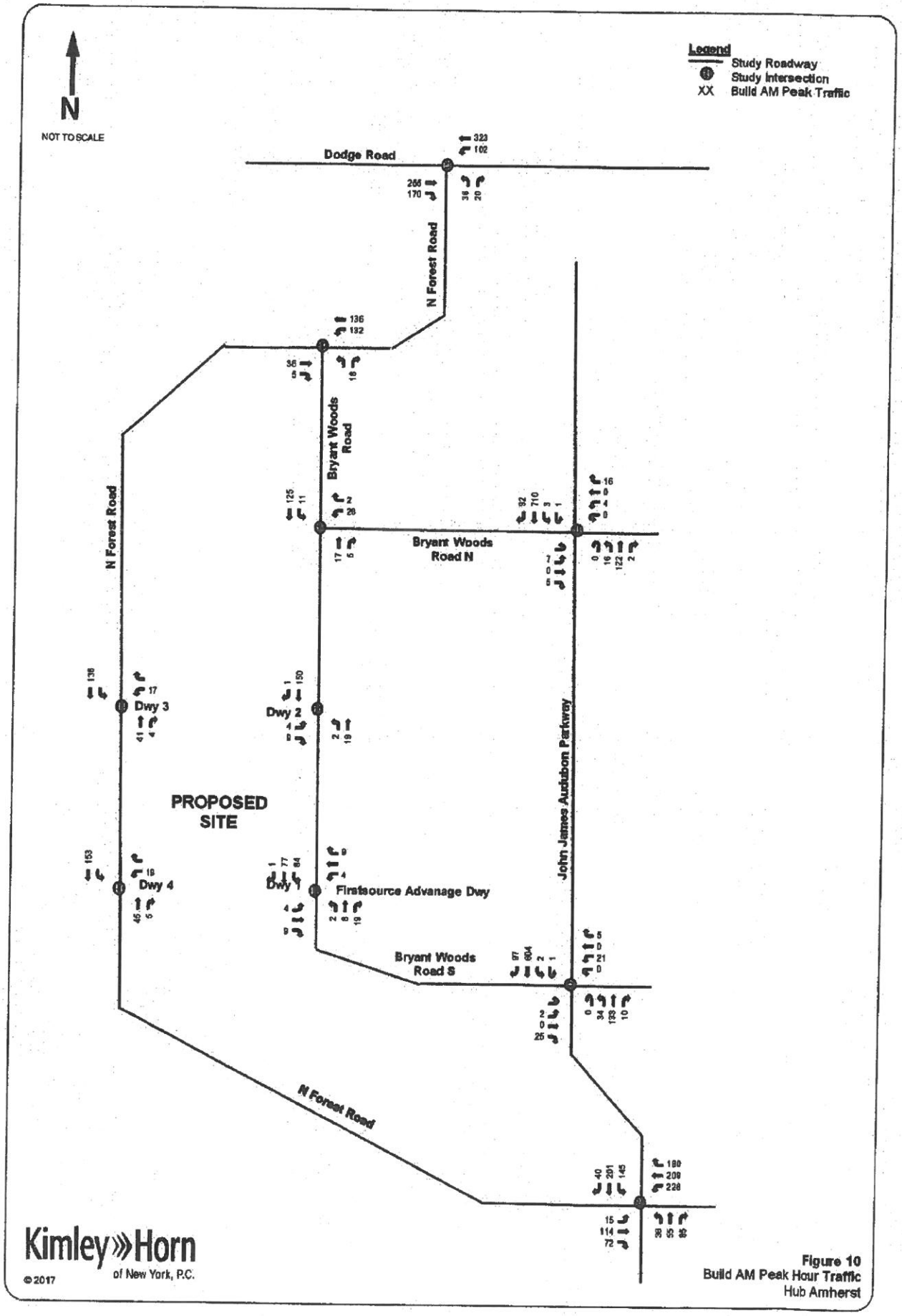


Figure 10
Build AM Peak Hour Traffic
Hub Amherst

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

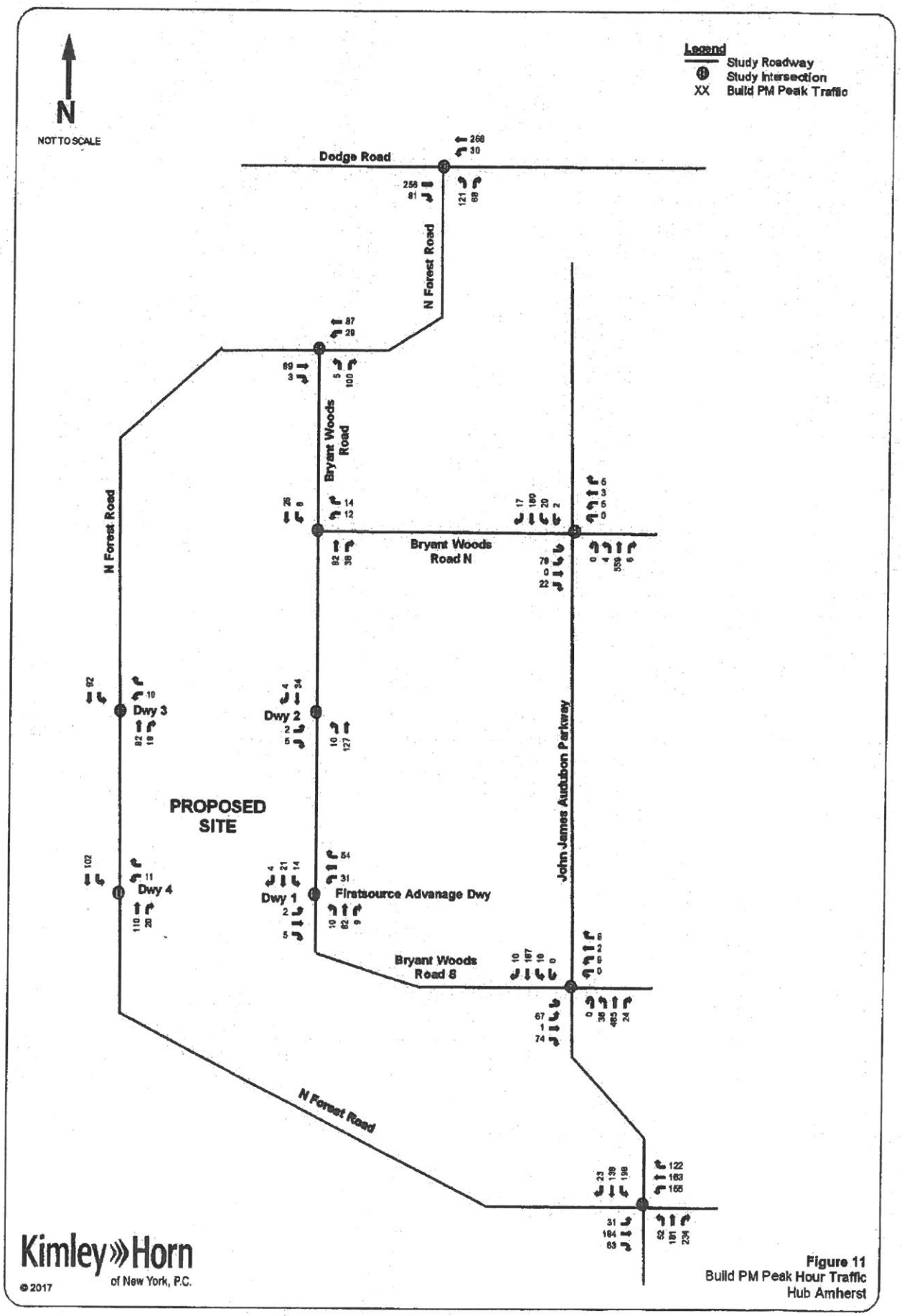


Figure 11
Build PM Peak Hour Traffic
Hub Amherst

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Peak Hour Data for Intersection

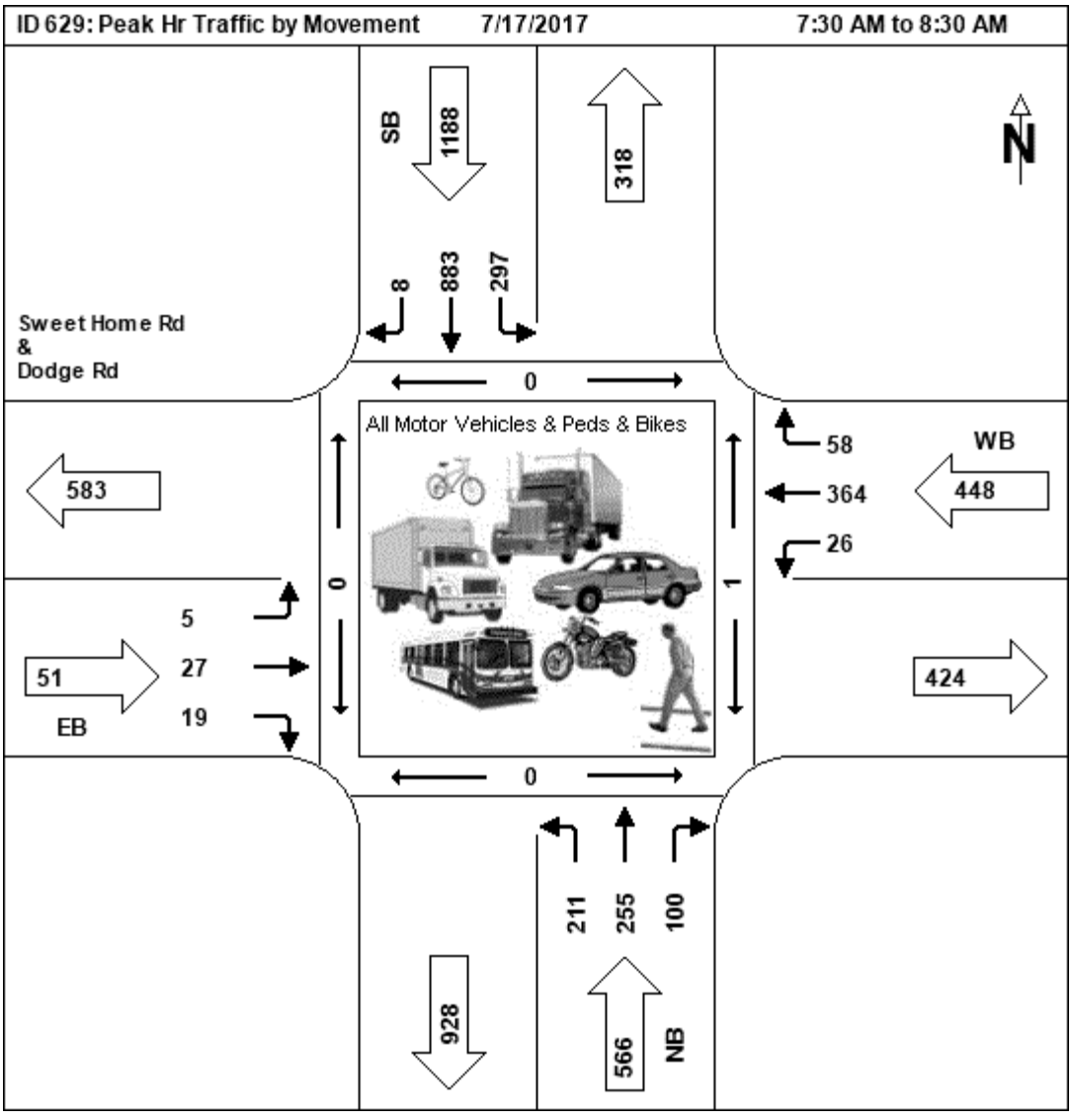
Int ID:	629		
Community:	Amherst	**Corridor:**	NA
Road 1:	Sweet Home Rd	**Road 3:**	Commerce Dr
Road 2:	Dodge Rd	**Road 4:**	

|<< < > >>| 1-2 of 2

AM Peak Hour
07/17/2017

Start Time	NB Left	NB Thru	NB Right	NB Ped	NB App Total	EB Left	EB Thru	EB Right	EB Ped	EB App Total	SB Left	SB Thru	SB Right	SB Ped	SB App Total	WB Left	WB Thru	WB Right	WB Ped	WB App Total	Int Total
7:30 AM	65	54	17	1	136	3	14	4	0	21	60	290	2	0	352	3	97	11	0	111	620
7:45 AM	50	69	31	0	150	0	3	0	0	3	75	196	0	0	271	6	120	8	0	134	558
8:00 AM	49	66	25	0	140	1	5	4	0	10	66	175	2	0	243	10	72	22	0	104	497
8:15 AM	47	66	27	0	140	1	5	11	0	17	96	222	4	0	322	7	75	17	0	99	578
Total	211	255	100	1	566	5	27	19	0	51	297	883	8	0	1188	26	364	58	0	448	2253
PHF	0.81	0.92	0.81		0.94	0.42	0.48	0.43		0.61	0.77	0.76	0.50		0.84	0.65	0.76	0.66		0.84	
HV %	6	4	6			60	0	32			1	3	0			12	1	2			

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes



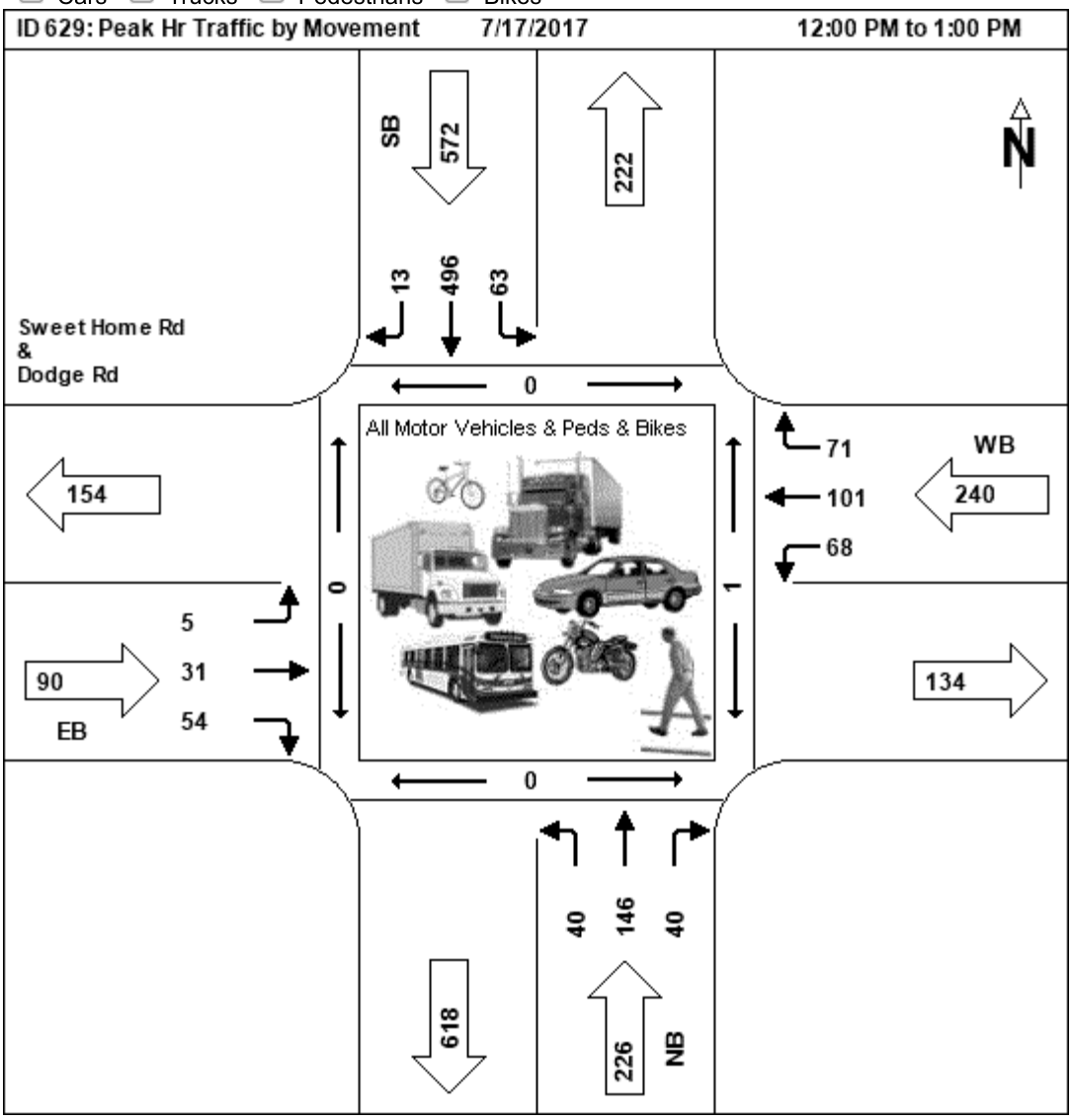
Midday Peak Hour
07/17/2017

Start Time	NB Left	NB Thru	NB Right	NB Ped	NB App Total	EB Left	EB Thru	EB Right	EB Ped	EB App Total	SB Left	SB Thru	SB Right	SB Ped	SB App Total	WB Left	WB Thru	WB Right	WB Ped	WB App Total	Int Total

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

12:00 PM	6	34	11	1	51	0	6	12	0	18	20	127	4	0	151	26	19	26	0	71	291
12:15 PM	10	15	4	0	29	5	16	13	0	34	17	110	2	0	129	12	23	26	0	61	253
12:30 PM	3	34	10	0	47	0	5	14	0	19	19	120	3	0	142	11	24	11	0	46	254
12:45 PM	21	63	15	0	99	0	4	15	0	19	7	139	4	0	150	19	35	8	0	62	330
Total	40	146	40	1	226	5	31	54	0	90	63	496	13	0	572	68	101	71	0	240	1128
PHF	0.48	0.58	0.67		0.57	0.25	0.48	0.90		0.66	0.79	0.89	0.81		0.95	0.65	0.72	0.68		0.85	
HV %	13	8	5			20	3	4			2	2	0			1	0	1			

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes



PM Peak Hour
07/17/2017

	NB					EB					SB					WB						
Start Time	Left	Thru	Right	Ped	App Total	Left	Thru	Right	Ped	App Total	Left	Thru	Right	Ped	App Total	Left	Thru	Right	Ped	App Total	Int Total
4:45 PM	8	132	12	0	152	2	28	51	0	81	24	190	0	0	214	30	22	21	0	73	520
5:00 PM	5	119	6	0	130	4	51	116	0	171	10	258	0	0	268	20	22	50	0	92	661
5:15 PM	7	149	10	0	166	4	27	34	0	65	14	266	0	0	280	18	10	21	0	49	560
5:30 PM	6	119	12	0	137	1	27	44	0	72	5	226	0	0	231	7	6	28	0	41	481
Total	26	519	40	0	585	11	133	245	0	389	53	940	0	0	993	75	60	120	0	255	2222
PHF	0.81	0.87	0.83		0.88	0.69	0.65	0.53		0.57	0.55	0.88			0.89	0.63	0.68	0.60		0.69	
HV %	12	1	5			18	2	1			0	1				0	2	1			

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes

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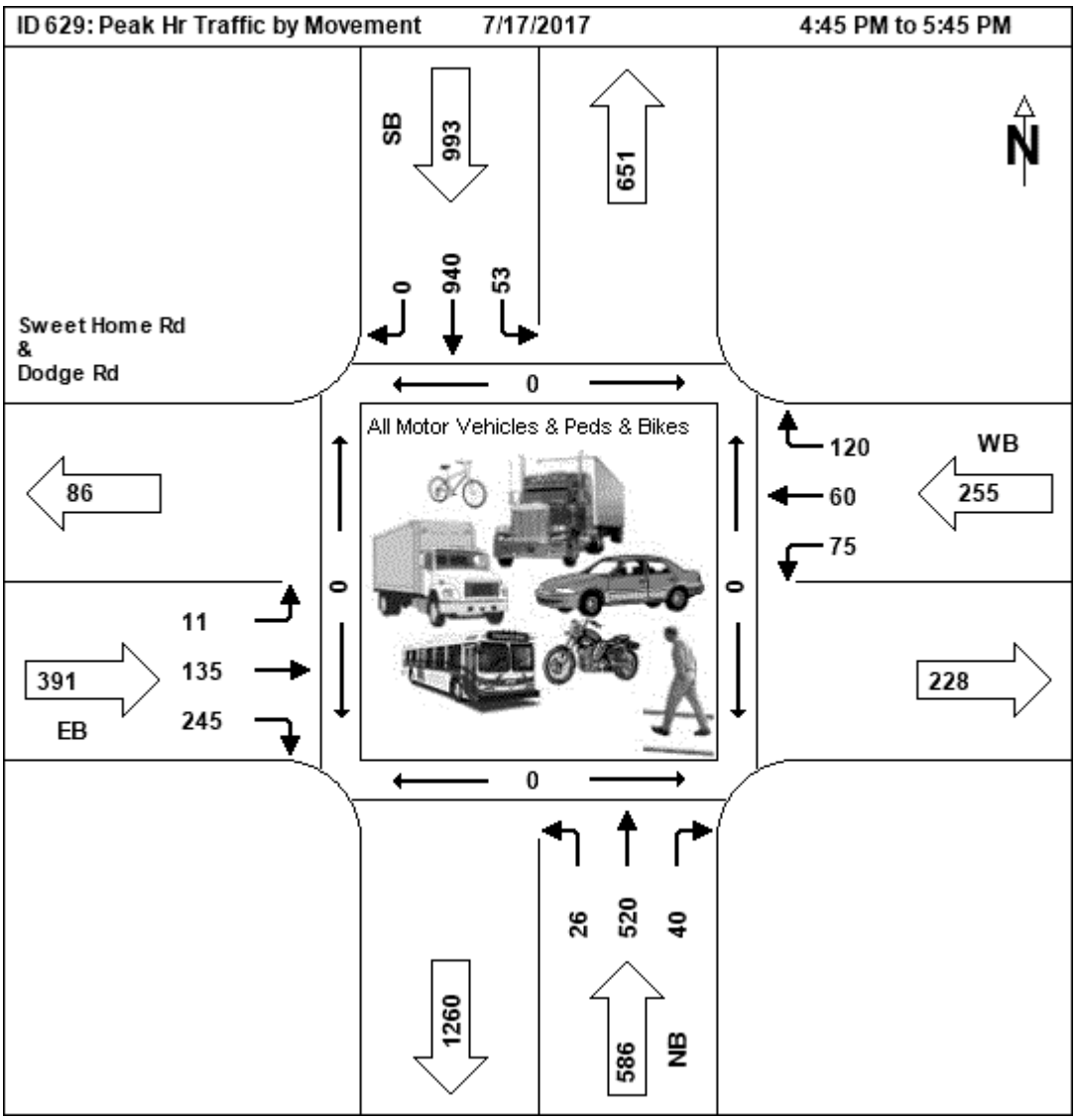

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

A2

Miscellaneous Traffic Data and Calculations

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

STATION: **531020**

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR294** ROAD NAME: **NORTH FOREST RD** FROM: **1.0 N OF NY263** TO: **DODGE RD** COUNTY: **Erie**
DIRECTION: Northbound FACTOR GROUP: 30 REC. SERIAL #: W699 FUNC. CLASS: 16 TOWN: **AMHERST**
STATE DIR CODE: 6 WK OF YR: 16 PLACEMENT: .57m S of Bryant Woods S NHS: no LION#:
DATE OF COUNT: 04/19/2015 @ REF MARKER: JURIS: Village BIN:
NOTES LANE 1: North ADDL DATA: Class Speed CC Stn: RR CROSSING:
COUNT TYPE: VEHICLES BATCH ID: DOT-SJWR5Cww17a CLASS HPMS SAMPLE: 3010446
COUNT TAKEN BY: ORG CODE: TTG INITIALS: DKS PROCESSED BY: ORG CODE: DOT INITIALS: SJW

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M																											
7	T																											
8	W																											
9	T																											
10	F																											
11	S																											
12	S																											
13	M																											
14	T																											
15	W																											
16	T																											
17	F																											
18	S																											
19	S																											
20	M	**2**	**0**	**0**	**0**	**1**	**4**	**12**	**48**	**64**	**42**	**59**	**47**	**74**	**74**	**68**	**100**	**94**	**82**	**63**	**32**	**41**	**20**	**17**	**11**	955	100	15
21	T	**3**	**0**	**1**	**0**	**0**	**1**	**11**	**48**	**43**	**39**	**47**	**66**	**77**	**69**	**81**	**114**	**96**	**98**	**72**	**37**	**40**	**22**	**13**	**8**	986	114	15
22	W	**5**	**1**	**1**	**2**	**2**	**1**	**12**	**48**	**55**	**42**	**46**	**58**	**81**	**59**	**79**	**97**	**98**	**82**	**56**	**47**	**35**	**27**	**23**				
23	T																											
24	F																											
25	S																											
26	S																											
27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

ADT

4	**0**	**1**	**1**	**1**	**1**	**12**	**48**	**54**	**41**	**51**	**57**	**77**	**67**	**76**	**104**	**96**	**87**	**64**	**39**	**39**	**23**	**18**	**10**	**971**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	**ESTIMATED**
3	71	2	65	104	11%	1.000	1.047	**AADT 927**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

STATION: **531020**

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR294** ROAD NAME: **NORTH FOREST RD** FROM: **1.0 N OF NY263** TO: **DODGE RD** COUNTY: **Erie**
DIRECTION: Southbound FACTOR GROUP: 30 REC. SERIAL #: W805 FUNC. CLASS: 16 TOWN: **AMHERST**
STATE DIR CODE: 7 WK OF YR: 16 PLACEMENT: .57m S of Bryant Woods S NHS: no LION#:
DATE OF COUNT: 04/19/2015 @ REF MARKER: JURIS: Village BIN:
NOTES LANE 1: South ADDL DATA: Class Speed CC Stn: RR CROSSING:
COUNT TYPE: VEHICLES BATCH ID: DOT-SJWR5Cww17a CARS HPMS SAMPLE: 3010446
COUNT TAKEN BY: ORG CODE: TTG INITIALS: dks PROCESSED BY: ORG CODE: DOT INITIALS: SJW

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M																											
7	T																											
8	W																											
9	T																											
10	F																											
11	S																											
12	S																											
13	M																											
14	T																											
15	W																											
16	T																											
17	F																											
18	S																											
19	S																											
20	M	**1**	**1**	**1**	**1**	**1**	**11**	**42**	**77**	**104**	**51**	**48**	**44**	**53**	**52**	**71**	**69**	**104**	**79**	**50**	**23**	**18**	**13**	**12**	**3**	929	104	8
21	T	**1**	**1**	**2**	**0**	**0**	**12**	**42**	**84**	**91**	**53**	**56**	**55**	**67**	**63**	**60**	**56**	**85**	**97**	**44**	**28**	**15**	**10**	**7**	**9**	938	97	17
22	W	**1**	**1**	**1**	**2**	**1**	**13**	**41**	**72**	**87**	**57**	**51**	**55**	**63**	**51**	**54**	**66**	**79**	**96**	**56**	**31**	**16**	**15**	**12**				
23	T																											
24	F																											
25	S																											
26	S																											
27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
1	**1**	**2**	**1**	**0**	**12**	**42**	**78**	**94**	**54**	**52**	**51**	**61**	**55**	**62**	**64**	**89**	**91**	**50**	**27**	**16**	**13**	**10**	**6**	**932**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
3	71	2	65	94	10%	1.000	1.047	**AADT 890**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR45** ROAD NAME: **DODGE RD**
DIRECTION: Eastbound FACTOR GROUP: 30
STATE DIR CODE: 6 WK OF YR: 32
DATE OF COUNT: 08/07/2017
NOTES LANE 1: EB 1 Lane - 40 mph

COUNT TAKEN BY: ORG CODE: MBN INITIALS: APV

FROM: **SWEET HOME RD** TO: **NY 270 CAMPBELL BLVD**
REC. SERIAL #: Y110 FUNC. CLASS: 16
PLACEMENT: 450 FEET EAST OF AUDUBON PK NHS: no
@ REF MARKER: JURIS: Village
ADDL DATA: Class Speed CC Stn:
COUNT TYPE: AXLE PAIRS BATCH ID: DOT-R05c32aMBN0000-2017

PROCESSED BY: ORG CODE: DOT INITIALS: CW

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	T																											
2	W																											
3	T																											
4	F																											
5	S																											
6	S																											
7	M																		472	223	157	142	81	43	41			
8	T	**23**	**10**	**6**	**6**	**4**	**17**	**55**	**207**	**272**	**174**	**158**	**216**	**271**	**230**	**243**	**301**	**447**	**457**	**249**	**168**	**165**	**116**	**61**	**41**	3897	457	17
9	W	**27**	**14**	**6**	**7**	**3**	**13**	**69**	**195**	**244**	**172**	**177**	**212**	**283**	**268**	**250**	**319**	**412**	**437**	**234**	**185**	**162**	**133**	**51**	**37**	3910	437	17
10	T	**18**	**10**	**7**	**5**	**6**	**8**	**60**	**158**	**204**	**154**	**182**	**202**	**301**	**264**	**267**	**326**	**438**	**436**	**228**	**158**	**152**	**114**	**66**	**46**	3810	438	16
11	F	**27**	**8**	**13**	**8**	**6**	**16**	**64**	**172**																			
12	S																											
13	S																											
14	M																											
15	T																											
16	W																											
17	T																											
18	F																											
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24	T																											
25	F																											
26	S																											
27	S																											
28	M																											
29	T																											
30	W																											
31	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																									ADT
24	**10**	**8**	**6**	**5**	**14**	**62**	**183**	**240**	**167**	**172**	**210**	**285**	**254**	**253**	**315**	**432**	**450**	**234**	**167**	**155**	**111**	**55**	**41**	**3853**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
4	87	4	87	450	12%	1.000	1.100	**AADT 3503**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR45** ROAD NAME: **DODGE RD**
DIRECTION: Westbound FACTOR GROUP: 30
STATE DIR CODE: 7 WK OF YR: 32
DATE OF COUNT: 08/07/2017
NOTES LANE 1: WB 1 Lane - 40 mph

COUNT TAKEN BY: ORG CODE: MBN INITIALS: APV

FROM: **SWEET HOME RD** TO: **NY 270 CAMPBELL BLVD**
REC. SERIAL #: Y110 FUNC. CLASS: 16
PLACEMENT: 450 FEET EAST OF AUDUBON PK NHS: no
@ REF MARKER: JURIS: Village
ADDL DATA: Class Speed BIN:
CC Stn: RR CROSSING:
COUNT TYPE: AXLE PAIRS BATCH ID: DOT-R05c32aMBN0000-2017 SAMPLE:
PROCESSED BY: ORG CODE: DOT INITIALS: CW

COUNTY: **Erie**
TOWN:
LION#:

DATE	DAY	AM 12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	PM 12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	T																											
2	W																											
3	T																											
4	F																											
5	S																											
6	S																											
7	M																		250	150	104	92	61	38	18			
8	T	17	5	2	7	8	27	124	380	419	243	185	169	293	250	231	233	211	287	189	121	109	66	54	17	3647	419	8
9	W	9	5	6	6	13	22	125	348	424	225	194	200	202	243	280	212	234	268	206	133	102	68	59	15	3599	424	8
10	T	16	3	1	7	9	31	120	335	390	219	208	208	208	243	285	225	252	261	187	127	106	68	50	26	3585	390	8
11	F	11	5	5	3	11	27	111	302																			
12	S																											
13	S																											
14	M																											
15	T																											
16	W																											
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18	F																											
19	S																											
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22	T																											
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24	T																											
25	F																											
26	S																											
27	S																											
28	M																											
29	T																											
30	W																											
31	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																									ADT
13	**4**	**4**	**6**	**10**	**27**	**120**	**341**	**411**	**229**	**196**	**192**	**234**	**245**	**265**	**223**	**232**	**266**	**183**	**121**	**102**	**66**	**50**	**19**	**3559**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
5	87	5	87	411	12%	1.000	1.100

ESTIMATED

AADT
3235

ROAD #: **CR45** ROAD NAME: **DODGE RD**
STATION: **534232** STATE DIR CODE: **7**

FROM: **SWEET HOME RD** TO: **NY 270 CAMPBELL BLVD**
PLACEMENT: **450 FEET EAST OF AUDUBON PK**

COUNTY: **Erie**
DATE OF COUNT: 08/07/2017

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

1.p

STATION: **534822**

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Northbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 23
DATE OF COUNT: 06/03/2019
NOTES LANE 0: North

COUNT TAKEN BY: ORG CODE: TTG INITIALS: DKS

FROM: **COMMERCE DRIVE**
REC. SERIAL #: W807
PLACEMENT: 151' N of Sunshine Dr
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS

PROCESSED BY: ORG CODE: DOT INITIALS: JH

TO: **N FRENCH RD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05V23aTTG5196

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	S																											
2	S																											
3	M																**774**	**1037**	**1082**	**627**	**443**	**469**	**345**	**209**	**140**			
4	T	**69**	**39**	**23**	**11**	**18**	**46**	**199**	**447**	**506**	**431**	**399**	**484**	**556**	**524**	**607**	**754**	**1009**	**977**	**661**	**468**	**428**	**347**	**201**	**141**	9345	1009	16
5	W	**83**	**50**	**29**	**19**	**27**	**43**	**207**	**467**	**509**	**430**	**409**	**541**	**597**	**521**	**671**	**841**	**1058**	**958**	**630**	**444**	**451**	**358**	**195**	**135**	9673	1058	16
6	T	**89**	**37**	**19**	**18**	**19**	**69**	**186**	**466**	**515**	**474**	**403**	**509**	**563**	**563**	**658**	**825**	**1015**	**1079**	**699**	**549**	**498**	**378**	**235**				
7	F																											
8	S																											
9	S																											
10	M																											
11	T																											
12	W																											
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28	F																											
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30	S																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
79	**41**	**24**	**16**	**21**	**52**	**194**	**454**	**503**	**439**	**399**	**504**	**565**	**529**	**637**	**788**	**1017**	**1011**	**645**	**470**	**456**	**352**	**207**	**137**	**9540**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	80	4	80	1017	11%	0.987	1.113

ESTIMATED (one way)

AADT
8571

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Southbound FACTOR GROUP: 30
STATE DIR CODE: 2 WK OF YR: 23
DATE OF COUNT: 06/03/2019
NOTES LANE 0: South

FROM: **COMMERCE DRIVE**
REC. SERIAL #: R314
PLACEMENT: 151' N of Sunshine Dr
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS

TO: **N FRENCH RD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05V23aTTG5196

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

COUNT TAKEN BY: ORG CODE: TTG INITIALS: DKS
PROCESSED BY: ORG CODE: DOT INITIALS: JH

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	S																											
2	S																											
3	M																**699**	**811**	**832**	**567**	**382**	**321**	**258**	**169**	**84**			
4	T	**43**	**33**	**20**	**20**	**51**	**171**	**524**	**1071**	**994**	**566**	**536**	**553**	**542**	**550**	**618**	**636**	**794**	**850**	**622**	**297**	**303**	**219**	**180**	**95**	10288	1071	7
5	W	**55**	**29**	**17**	**25**	**42**	**175**	**509**	**1093**	**1076**	**641**	**534**	**616**	**658**	**581**	**586**	**741**	**804**	**788**	**592**	**379**	**319**	**248**	**132**	**88**	10728	1093	7
6	T	**51**	**28**	**12**	**19**	**45**	**168**	**510**	**1095**	**978**	**632**	**570**	**657**	**697**	**639**	**635**	**714**	**823**	**897**	**616**	**377**	**315**	**308**	**189**				
7	F																											
8	S																											
9	S																											
10	M																											
11	T																											
12	W																											
13	T																											
14	F																											
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28	F																											
29	S																											
30	S																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																									ADT
49	**30**	**16**	**21**	**45**	**169**	**507**	**1072**	**1003**	**605**	**540**	**601**	**624**	**582**	**605**	**689**	**797**	**831**	**591**	**354**	**310**	**255**	**166**	**88**	**10550**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	80	4	80	1072	10%	0.987	1.113

ESTIMATED (one way)

AADT
9479

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD** FROM: **N ELLICOTT RD** TO: **COMMERCE DRIVE** COUNTY: **Erie**
DIRECTION: Northbound FACTOR GROUP: 30 REC. SERIAL #: W796 FUNC. CLASS: 16 TOWN:
STATE DIR CODE: 1 WK OF YR: 15 PLACEMENT: 605ft N of N Ellicott Creek NHS: no LION#:
DATE OF COUNT: 04/06/2020 @ REF MARKER: JURIS: Village BIN: 3367090
NOTES LANE 1: North ADDL DATA: Class Speed CC Stn: RR CROSSING:
NOTES LANE 2: North COUNT TYPE: VEHICLES BATCH ID: DOT-R05C15cTTG5196 HPMS SAMPLE:
COUNT TAKEN BY: ORG CODE: TTG INITIALS: JB PROCESSED BY: ORG CODE: DOT INITIALS: CPA

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M															**393**	**465**	**479**	**413**	**323**	**216**	**173**	**102**	**83**	**53**			
7	T	**35**	**23**	**26**	**24**	**22**	**64**	**243**	**301**	**262**	**259**	**316**	**328**	**380**	**389**	**430**	**478**	**462**	**403**	**294**	**237**	**166**	**120**	**81**	**65**	5408	478	15
8	W	**30**	**26**	**25**	**16**	**18**	**87**	**235**	**303**	**264**	**225**	**242**	**286**	**320**	**329**	**353**	**467**	**400**	**397**	**318**	**242**	**183**	**135**	**90**	**75**	5066	467	15
9	T	**40**	**22**	**24**	**22**	**23**	**78**	**231**	**270**	**258**	**239**	**266**	**294**	**346**	**309**	**418**	**419**	**477**	**421**	**284**	**231**	**146**	**114**	**96**	**72**	5100	477	16
10	F	**44**	**29**	**25**	**26**	**19**	**53**	**164**	**213**	**248**	**199**																	
11	S																											
12	S																											
13	M																											
14	T																											
15	W																											
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28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																								ADT
37	**25**	**25**	**22**	**20**	**70**	**218**	**272**	**258**	**230**	**275**	**303**	**349**	**342**	**398**	**457**	**454**	**408**	**305**	**232**	**167**	**118**	**88**	**66**	**5139**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
5	92	5	92	457	9%	1.000	1.054	**AADT 4876**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD** FROM: **N ELLICOTT RD** TO: **COMMERCE DRIVE** COUNTY: **Erie**

DIRECTION: Southbound FACTOR GROUP: 30 REC. SERIAL #: JH88 FUNC. CLASS: 16 TOWN:

STATE DIR CODE: 2 WK OF YR: 15 PLACEMENT: 605ft N of N Ellicott Creek NHS: no LION#:

DATE OF COUNT: 04/06/2020 @ REF MARKER: JURIS: Village BIN: 3367090

NOTES LANE 1: South ADDL DATA: Class Speed CC Stn: RR CROSSING:

NOTES LANE 2: South COUNT TYPE: VEHICLES BATCH ID: DOT-R05C15cTTG5196 HPMS SAMPLE:

COUNT TAKEN BY: ORG CODE: TTG INITIALS: JB PROCESSED BY: ORG CODE: DOT INITIALS: CPA

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M															**404**	**497**	**481**	**434**	**284**	**212**	**129**	**97**	**72**	**69**			
7	T	**31**	**29**	**9**	**16**	**27**	**86**	**208**	**320**	**270**	**294**	**276**	**331**	**371**	**388**	**428**	**472**	**470**	**384**	**262**	**229**	**133**	**86**	**70**	**82**	5272	472	15
8	W	**35**	**21**	**15**	**15**	**28**	**88**	**220**	**300**	**264**	**272**	**320**	**266**	**314**	**227**	**248**	**298**	**282**	**248**	**187**	**129**	**97**	**70**	**44**	**58**	4046	320	10
9	T	**25**	**17**	**11**	**12**	**17**	**52**	**122**	**173**	**154**	**137**	**186**	**198**	**222**	**212**	**224**	**308**	**256**	**281**	**165**	**153**	**91**	**74**	**41**	**48**	3179	308	15
10	F	**25**	**9**	**13**	**13**	**20**	**38**	**116**	**194**	**135**	**149**																	
11	S																											
12	S																											
13	M																											
14	T																											
15	W																											
16	T																											
17	F																											
18	S																											
19	S																											
20	M																											
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23	T																											
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25	S																											
26	S																											
27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																									ADT
29	**19**	**12**	**14**	**23**	**66**	**166**	**247**	**206**	**213**	**261**	**265**	**302**	**276**	**326**	**394**	**372**	**337**	**224**	**181**	**112**	**82**	**57**	**64**	**4248**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
5	92	5	92	394	9%	1.000	1.054	**AADT 4030**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Northbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 28
DATE OF COUNT: 07/05/2016
NOTES LANE 0: NB 2 lane - 45 mph

COUNT TAKEN BY: ORG CODE: CSE INITIALS: CDM

FROM: **COMMERCE DRIVE**
REC. SERIAL #: 1867
PLACEMENT: 525 ft N of Bucyrus Dr
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS

PROCESSED BY: ORG CODE: MBN INITIALS: AHL

TO: **N FRENCH RD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05MBN-28-5-July-6-2016

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	F																											
2	S																											
3	S																											
4	M																											
5	T											**397**	**468**	**580**	**510**	**566**	**692**	**905**	**889**	**578**	**443**	**430**	**359**	**229**	**159**			
6	W	**73**	**44**	**20**	**17**	**22**	**45**	**168**	**374**	**471**	**384**	**409**	**448**	**529**	**483**	**557**	**696**	**887**	**1021**	**711**	**498**	**442**	**371**	**225**	**192**	9087	1021	17
7	T	**96**	**51**	**22**	**20**	**21**	**60**	**154**	**375**	**494**	**367**	**368**	**439**	**526**	**522**	**602**	**639**	**856**	**931**	**582**	**459**	**434**	**361**	**270**	**167**	8816	931	17
8	F	**105**	**57**	**27**	**25**	**36**	**53**	**138**	**358**	**407**																		
9	S																											
10	S																											
11	M																											
12	T																											
13	W																											
14	T																											
15	F																											
16	S																											
17	S																											
18	M																											
19	T																											
20	W																											
21	T																											
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24	S																											
25	M																											
26	T																											
27	W																											
28	T																											
29	F																											
30	S																											
31	S																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
91	**51**	**23**	**21**	**26**	**53**	**153**	**369**	**457**	**376**	**391**	**452**	**545**	**505**	**575**	**676**	**883**	**947**	**624**	**467**	**435**	**364**	**241**	**173**	**8898**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	71	4	71	947	11%	1.000	1.093

ESTIMATED (one way)

AADT
8141

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Southbound FACTOR GROUP: 30
STATE DIR CODE: 2 WK OF YR: 28
DATE OF COUNT: 07/05/2016
NOTES LANE 0: SB 2 lane - 45 mph

COUNT TAKEN BY: ORG CODE: CSE INITIALS: CDM

FROM: **COMMERCE DRIVE**
REC. SERIAL #: 1867
PLACEMENT: 525 ft N of Bucyrus Dr
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS

PROCESSED BY: ORG CODE: MBN INITIALS: AHL

TO: **N FRENCH RD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05MBN-28-5-July-6-2016

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	F																											
2	S																											
3	S																											
4	M																											
5	T											470	454	539	500	503	502	618	686	463	376	257	240	176	126			
6	W	**56**	**33**	**9**	**16**	**32**	**135**	**372**	**705**	**742**	**499**	**460**	**444**	**525**	**530**	**497**	**544**	**627**	**705**	**507**	**365**	**306**	**289**	**206**	**108**	8712	742	8
7	T	**60**	**32**	**19**	**17**	**33**	**124**	**387**	**685**	**746**	**501**	**501**	**484**	**551**	**523**	**521**	**558**	**629**	**700**	**497**	**385**	**286**	**255**	**203**	**103**	8800	746	8
8	F	**65**	**31**	**30**	**28**	**35**	**111**	**354**	**655**	**571**																		
9	S																											
10	S																											
11	M																											
12	T																											
13	W																											
14	T																											
15	F																											
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27	W																											
28	T																											
29	F																											
30	S																											
31	S																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
60	**32**	**19**	**20**	**33**	**123**	**371**	**682**	**686**	**500**	**477**	**461**	**538**	**518**	**507**	**535**	**625**	**697**	**489**	**375**	**283**	**261**	**195**	**112**	**8599**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	71	4	71	697	8%	1.000	1.093

ESTIMATED (one way)

AADT
7867

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR45** ROAD NAME: **DODGE RD**
DIRECTION: Eastbound FACTOR GROUP: 30
STATE DIR CODE: 6 WK OF YR: 46
DATE OF COUNT: 11/07/2016
NOTES LANE 1: One Lane EB - 35 MPH

COUNT TAKEN BY: ORG CODE: TTG INITIALS: DKS

FROM: **SWEET HOME RD**
REC. SERIAL #: EZ53
PLACEMENT: 850' E of Audubon Pkwy
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS
PROCESSED BY: ORG CODE: R05 INITIALS: RPJ

TO: **NY 270 CAMPBELL BLVD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05V46aTTG5196

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	T																											
2	W																											
3	T																											
4	F																											
5	S																											
6	S																											
7	M															**269**	**339**	**457**		**259**	**156**		**60**	**53**	**27**			
8	T	**37**	**11**	**6**	**3**	**4**	**20**												**482**	**264**	**153**	**114**	**75**	**55**	**30**			
9	W	**16**	**11**	**5**	**6**	**6**	**19**	**47**	**184**	**175**	**128**	**138**	**211**	**256**	**193**	**233**	**330**	**484**	**513**	**212**	**143**	**134**	**76**	**61**	**45**	3626	513	17
10	T	**16**	**7**	**2**	**6**	**5**	**17**	**53**	**204**	**170**	**144**	**152**	**213**	**250**	**220**	**268**	**365**	**466**	**447**	**226**	**159**	**141**	**94**	**62**	**43**	3730	466	16
11	F	**30**																										
12	S																											
13	S																											
14	M																											
15	T																											
16	W																											
17	T																											
18	F																											
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28	M																											
29	T																											
30	W																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
25	**10**	**4**	**5**	**5**	**19**	**49**	**191**	**170**	**134**	**143**	**209**	**250**	**203**	**254**	**341**	**463**	**475**	**237**	**151**	**128**	**75**	**57**	**36**	**3634**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
5	70	5	70	475	13%	0.987	1.017

ESTIMATED

AADT
3573

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR45** ROAD NAME: **DODGE RD**
DIRECTION: Westbound FACTOR GROUP: 30
STATE DIR CODE: 7 WK OF YR: 46
DATE OF COUNT: 11/07/2016
NOTES LANE 1: One Lane WB - 35 MPH

COUNT TAKEN BY: ORG CODE: TTG INITIALS: DKS

FROM: **SWEET HOME RD**
REC. SERIAL #: EZ96
PLACEMENT: 850' E of Audubon Pkwy
@ REF MARKER:
ADDL DATA:
COUNT TYPE: AXLE PAIRS
PROCESSED BY: ORG CODE: R05 INITIALS: RPJ

TO: **NY 270 CAMPBELL BLVD**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05V46aTTG5196

COUNTY: **Erie**
TOWN:
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	T																											
2	W																											
3	T																											
4	F																											
5	S																											
6	S																											
7	M															233	227	267		162	127		54	33	19			
8	T	**9**	**6**	**2**	**10**	**9**	**34**												**329**	**165**	**105**	**91**	**48**	**40**	**21**			
9	W	**7**	**7**	**2**	**14**	**7**	**38**	**138**	**416**	**453**	**239**	**188**	**168**	**207**	**226**	**250**	**227**	**241**	**275**	**178**	**103**	**81**	**63**	**43**	**14**	3585	453	8
10	T	**10**	**5**	**1**	**9**	**14**	**37**	**144**	**421**	**469**	**222**	**187**	**175**	**209**	**212**	**227**	**213**	**250**	**254**	**178**	**120**	**70**	**64**	**38**	**16**	3545	469	8
11	F	**9**																										
12	S																											
13	S																											
14	M																											
15	T																											
16	W																											
17	T																											
18	F																											
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24	T																											
25	F																											
26	S																											
27	S																											
28	M																											
29	T																											
30	W																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
9	**6**	**2**	**11**	**10**	**36**	**139**	**413**	**455**	**227**	**186**	**170**	**205**	**216**	**234**	**219**	**250**	**282**	**169**	**113**	**80**	**56**	**38**	**18**	**3544**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
5	70	5	70	455	13%	0.987	1.017	**AADT 3485**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

STATION: 535024

New York State Department of Transportation
Roadway Traffic Count Hourly Report

ROUTE/ROAD:	COMMERCE DR	FROM:	WOODRIDGE DR	TO:	SWEET HOME RD	REGION-COUNTY:	5-ERIE
FED DIR CODE:	3, 7	REF. MARKER:		FUNC. CLASS:	19 - U Local System	MUNI:	Amherst-Town-0019
ST DIR CODE:	7	END MILEPOST:	.82	FACTOR GROUP:	30	BIN:	
DOT ID:	157446	LANES BY DIR:	1 East 1 West	CC STN:		RR CROSSING:	
BEGIN DATE:	9/21/2014	WEEK OF YEAR:	38	ADDL DATA:		HPMS SAMPLE:	
NOTES 1:	West	PLACEMENT:	.2m E of John Glenn DR	JURISDICTION:	03-Town	1 WAY CODE:	
NOTES 2:						COUNT TYPE:	Vehicle
TAKEN BY:	TTG-DKS	PROCESSED BY:	DOT-VJR	BATCH ID:	DOT-R5 WW39A	SPEED LIMIT:	

DATE	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	DAILY TOTAL	HIGH COUNT	HIGH HOUR
9/21, Sun																	**82**	**77**	**96**	**81**	**42**	**34**	**28**	**12**	452		
9/22, Mon	**13**	**7**	**4**	**3**	**28**	**66**	**336**	**761**	**730**	**393**	**330**	**457**	**486**	**431**	**429**	**673**	**855**	**684**	**321**	**185**	**154**	**82**	**34**	**35**	7497	855	16-17
9/23, Tue	**28**	**5**	**45**	**6**	**36**	**69**	**347**	**783**	**739**	**414**	**319**	**330**	**491**	**397**	**374**	**650**	**842**	**707**	**351**	**226**	**137**	**72**	**35**	**28**	7431	842	16-17
9/24, Wed	**24**	**14**	**42**	**6**	**31**	**61**	**351**	**761**	**721**	**414**	**288**	**355**	**467**	**408**	**447**	**646**	**785**	**759**	**322**	**215**	**127**	**88**	**39**	**36**	7407	785	16-17
9/25, Thu	**22**	**11**	**37**	**8**	**27**	**77**	**336**																		518		
AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6 AM to Fri Noon)																									**AWDT**		
	25	**10**	**41**	**7**	**31**	**69**	**343**	**768**	**730**	**407**	**312**	**381**	**481**	**412**	**417**	**656**	**827**	**717**	**331**	**209**	**139**	**81**	**36**	**33**	7463		

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY Roadway High Hour	Roadway % of day	East High Hour	East % of day	West High Hour	West % of day
4	87	3	73	827	11.1	578	14.2	431	12.7

ESTIMATED AADT		
Roadway	East	West
7027	3821	3206

FACTOR

Month	Seasonal	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Axl
9	1.06	1.00	1.00	1.00	1.00	1.00			1.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

STATION: 535024

New York State Department of Transportation
EB Traffic Count Hourly Report

ROUTE/ROAD:	COMMERCE DR	FROM:	WOODRIDGE DR	TO:	SWEET HOME RD	REGION-COUNTY:	5-ERIE
FED DIR CODE:	3	REF. MARKER:		FUNC. CLASS:	19 - U Local System	MUNI:	Amherst-Town-0019
ST DIR CODE:	7	END MILEPOST:	.82	FACTOR GROUP:	30	BIN:	
DOT ID:	157446	LANES BY DIR:	1 East	CC STN:		RR CROSSING:	
BEGIN DATE:	9/21/2014	WEEK OF YEAR:	38	ADDL DATA:		HPMS SAMPLE:	
NOTES 1:	West	PLACEMENT:	.2m E of John Glenn DR	JURISDICTION:	03-Town	1 WAY CODE:	
NOTES 2:						COUNT TYPE:	Vehicle
TAKEN BY:	TTG-DKS	PROCESSED BY:	DOT-VJR	BATCH ID:	DOT-R5 WW39A	SPEED LIMIT:	

DATE	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	DAILY TOTAL	HIGH COUNT	HIGH HOUR
9/21, Sun																	**39**	**33**	**38**	**49**	**21**	**12**	**10**	**5**	207		
9/22, Mon	**5**	**1**	**2**	**1**	**9**	**26**	**65**	**334**	**289**	**185**	**176**	**304**	**261**	**213**	**214**	**406**	**583**	**509**	**192**	**123**	**78**	**31**	**13**	**21**	4041	583	16-17
9/23, Tue	**22**	**4**	**41**	**1**	**14**	**25**	**74**	**351**	**315**	**193**	**149**	**186**	**266**	**208**	**179**	**402**	**602**	**534**	**213**	**132**	**68**	**31**	**11**	**16**	4037	602	16-17
9/24, Wed	**20**	**12**	**39**	**1**	**13**	**20**	**80**	**354**	**292**	**192**	**147**	**199**	**258**	**203**	**224**	**402**	**550**	**577**	**179**	**132**	**67**	**40**	**18**	**20**	4039	577	17-18
9/25, Thu	**17**	**7**	**34**	**2**	**10**	**32**	**72**																		174		
AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6 AM to Fri Noon)																									**AWDT**		
	20	**8**	**38**	**1**	**12**	**26**	**73**	**346**	**299**	**190**	**157**	**230**	**262**	**208**	**206**	**403**	**578**	**540**	**195**	**129**	**71**	**34**	**14**	**19**	4058		

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY Roadway High Hour	Roadway % of day	East High Hour	East % of day	West High Hour	West % of day
4	87	3	73	827	11.1	578	14.2	431	12.7

ESTIMATED AADT Roadway	East	West
7027	3821	3206

FACTOR

Month	Seasonal	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Axl
9	1.06	1.00	1.00	1.00	1.00	1.00			1.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

New York State Department of Transportation

WB Traffic Count Hourly Report

STATION: 535024

ROUTE/ROAD:	COMMERCE DR	FROM:	WOODRIDGE DR	TO:	SWEET HOME RD	REGION-COUNTY:	5-ERIE
FED DIR CODE:	7	REF. MARKER:		FUNC. CLASS:	19 - U Local System	MUNI:	Amherst-Town-0019
ST DIR CODE:	7	END MILEPOST:	.82	FACTOR GROUP:	30	BIN:	
DOT ID:	157446	LANES BY DIR:	1 West	CC STN:		RR CROSSING:	
BEGIN DATE:	9/21/2014	WEEK OF YEAR:	38	ADDL DATA:		HPMS SAMPLE:	
NOTES 1:	West	PLACEMENT:	.2m E of John Glenn DR	JURISDICTION:	03-Town	1 WAY CODE:	
NOTES 2:						COUNT TYPE:	Vehicle
TAKEN BY:	TTG-DKS	PROCESSED BY:	DOT-VJR	BATCH ID:	DOT-R5 WW39A	SPEED LIMIT:	

DATE	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	DAILY TOTAL	HIGH COUNT	HIGH HOUR
9/21, Sun																	**43**	**44**	**58**	**32**	**21**	**22**	**18**	**7**	245		
9/22, Mon	**8**	**6**	**2**	**2**	**19**	**40**	**271**	**427**	**441**	**208**	**154**	**153**	**225**	**218**	**215**	**267**	**272**	**175**	**129**	**62**	**76**	**51**	**21**	**14**	3456	441	08-09
9/23, Tue	**6**	**1**	**4**	**5**	**22**	**44**	**273**	**432**	**424**	**221**	**170**	**144**	**225**	**189**	**195**	**248**	**240**	**173**	**138**	**94**	**69**	**41**	**24**	**12**	3394	432	07-08
9/24, Wed	**4**	**2**	**3**	**5**	**18**	**41**	**271**	**407**	**429**	**222**	**141**	**156**	**209**	**205**	**223**	**244**	**235**	**182**	**143**	**83**	**60**	**48**	**21**	**16**	3368	429	08-09
9/25, Thu	**5**	**4**	**3**	**6**	**17**	**45**	**264**																		344		
AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6 AM to Fri Noon)																									**AWDT**		
	5	**2**	**3**	**5**	**19**	**43**	**270**	**422**	**431**	**217**	**155**	**151**	**220**	**204**	**211**	**253**	**249**	**177**	**137**	**80**	**68**	**47**	**22**	**14**	3405		

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY Roadway High Hour	Roadway % of day	East High Hour	East % of day	West High Hour	West % of day	ESTIMATED AADT Roadway	East	West
4	87	3	73	827	11.1	578	14.2	431	12.7	7027	3821	3206

FACTOR

Month	Seasonal	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Axl
9	1.06	1.00	1.00	1.00	1.00	1.00			1.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Northbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 44
DATE OF COUNT: 10/24/2016
NOTES LANE 1: North
NOTES LANE 2: North
COUNT TAKEN BY: ORG CODE: TTG INITIALS: JM

FROM: **N ELLICOTT RD**
REC. SERIAL #: GC47
PLACEMENT: 654ft N of N Ellicott Creek
@ REF MARKER:
ADDL DATA: Class Speed
COUNT TYPE: VEHICLES
PROCESSED BY: ORG CODE: DOT INITIALS: SJW

TO: **COMMERCE DRIVE**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05C44aTTG5196

COUNTY: **Erie**
TOWN:
LION#:
BIN: 3367090
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	S																											
2	S																											
3	M																											
4	T																											
5	W																											
6	T																											
7	F																											
8	S																											
9	S																											
10	M																											
11	T																											
12	W																											
13	T																											
14	F																											
15	S																											
16	S																											
17	M																											
18	T																											
19	W																											
20	T																											
21	F																											
22	S																											
23	S																											
24	M																				**551**	**457**	**315**	**218**	**155**			
25	T	**95**	**35**	**29**	**38**	**46**	**131**	**528**	**977**	**1072**	**621**	**470**	**562**	**659**	**616**	**761**	**837**	**1028**	**1036**	**714**	**520**	**461**	**360**	**232**	**156**	11984	1072	8
26	W	**87**	**42**	**14**	**36**	**41**	**120**	**507**	**931**	**1085**	**628**	**527**	**554**	**618**	**722**	**758**	**852**	**1058**	**1061**	**744**	**555**	**425**	**426**	**251**	**161**	12203	1085	8
27	T	**93**	**37**	**25**	**42**	**40**	**142**	**488**	**951**	**1036**	**600**	**492**	**506**	**588**	**599**	**693**	**862**	**982**	**1040**	**630**	**540**	**454**	**365**	**282**	**188**	11675	1040	17
28	F	**98**	**56**	**37**	**43**	**40**	**111**	**446**	**959**	**988**	**626**																	
29	S																											
30	S																											
31	M																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
93	**42**	**26**	**40**	**42**	**126**	**492**	**954**	**1045**	**619**	**496**	**541**	**622**	**646**	**737**	**850**	**1023**	**1046**	**696**	**542**	**449**	**366**	**246**	**165**	**11904**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	87	4	87	1046	9%	1.000	1.074

ESTIMATED

AADT
11084

ROAD #: **CR301** ROAD NAME: **SWEET HOME RD** FROM: **N ELLICOTT RD** TO: **COMMERCE DRIVE** COUNTY: **Erie**
STATION: **536335** STATE DIR CODE: **1** PLACEMENT: **654ft N of N Ellicott Creek** **DATE OF COUNT: 10/24/2016**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR CR301** ROAD NAME: **SWEET HOME RD**
DIRECTION: Southbound FACTOR GROUP: 30
STATE DIR CODE: 2 WK OF YR: 44
DATE OF COUNT: 10/24/2016
NOTES LANE 1: South
NOTES LANE 2: South
COUNT TAKEN BY: ORG CODE: TTG INITIALS: MJ

FROM: **N ELLICOTT RD**
REC. SERIAL #: L442
PLACEMENT: 654ft N of N Ellicott Creek
@ REF MARKER:
ADDL DATA: Class Speed
COUNT TYPE: VEHICLES
PROCESSED BY: ORG CODE: DOT INITIALS: SJW

TO: **COMMERCE DRIVE**
FUNC. CLASS: 16
NHS: no
JURIS: Village
CC Stn:
BATCH ID: DOT-R05C44aTTG5196

COUNTY: **Erie**
TOWN:
LION#:
BIN: 3367090
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	AM 12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	PM 12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	S																											
2	S																											
3	M																											
4	T																											
5	W																											
6	T																											
7	F																											
8	S																											
9	S																											
10	M																											
11	T																											
12	W																											
13	T																											
14	F																											
15	S																											
16	S																											
17	M																											
18	T																											
19	W																											
20	T																											
21	F																											
22	S																											
23	S																											
24	M																				**399**	**311**	**182**	**134**	**102**			
25	T	**69**	**25**	**16**	**24**	**51**	**179**	**474**	**943**	**769**	**596**	**571**	**643**	**718**	**609**	**625**	**1000**	**1321**	**1416**	**779**	**448**	**300**	**211**	**146**	**121**	12054	1416	17
26	W	**57**	**23**	**24**	**40**	**51**	**179**	**485**	**1005**	**901**	**661**	**630**	**647**	**771**	**713**	**752**	**1206**	**1380**	**1346**	**870**	**459**	**302**	**274**	**166**	**118**	13060	1380	16
27	T	**83**	**42**	**20**	**29**	**70**	**156**	**527**	**1040**	**912**	**650**	**572**	**592**	**808**	**663**	**688**	**983**	**1331**	**1307**	**742**	**489**	**337**	**227**	**167**	**125**	12560	1331	16
28	F	**58**	**43**	**18**	**35**	**45**	**162**	**447**	**952**	**841**	**664**																	
29	S																											
30	S																											
31	M																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																									ADT
67	**33**	**20**	**32**	**54**	**169**	**483**	**985**	**856**	**643**	**591**	**627**	**766**	**662**	**688**	**1063**	**1344**	**1356**	**797**	**449**	**312**	**224**	**153**	**116**	**12490**

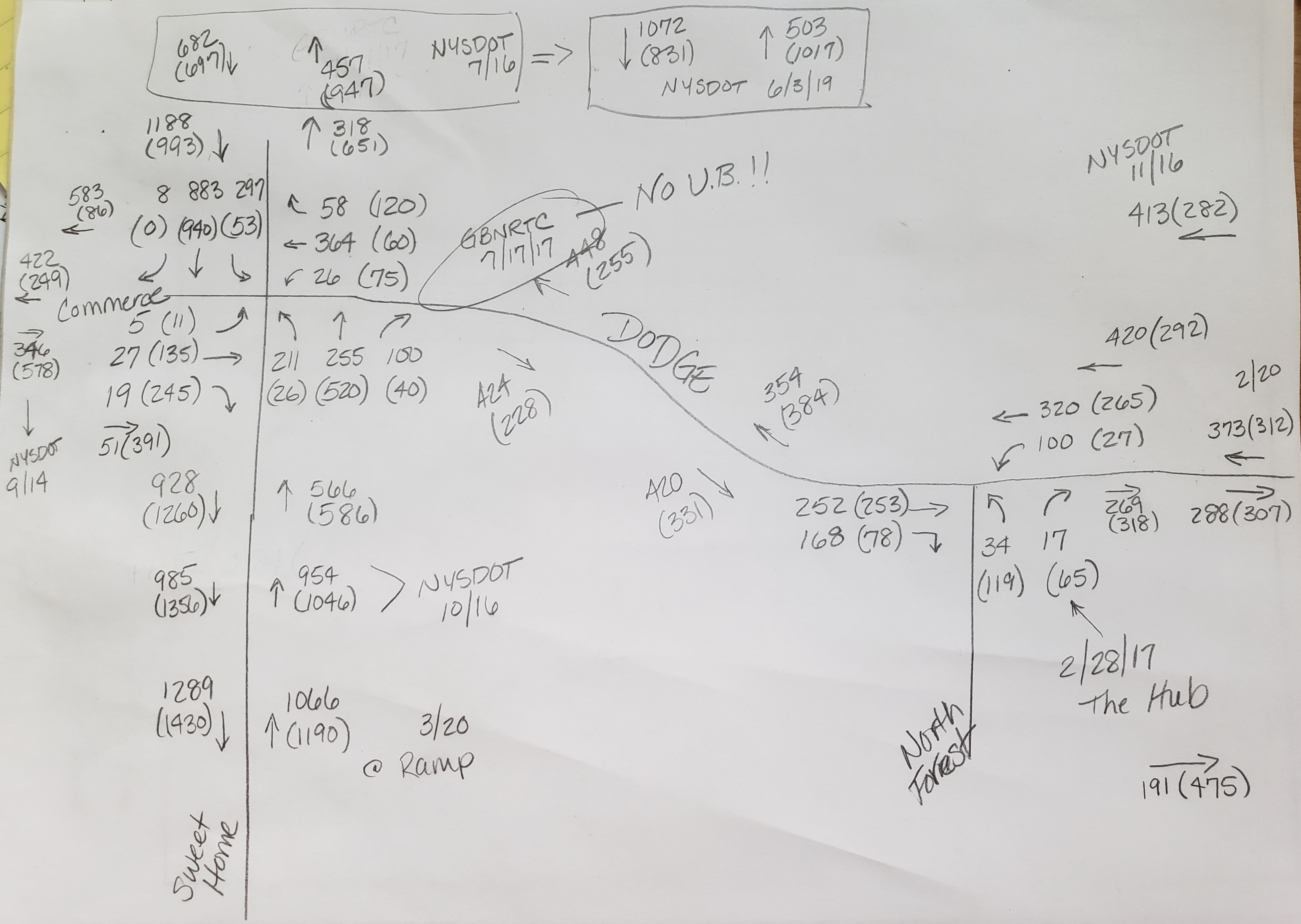
DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	87	4	87	1356	11%	1.000	1.074

ESTIMATED

AADT
11629

ROAD #: **CR301** ROAD NAME: **SWEET HOME RD** FROM: **N ELLICOTT RD** TO: **COMMERCE DRIVE** COUNTY: **Erie**
STATION: **536335** STATE DIR CODE: **2** PLACEMENT: **654ft N of N Ellicott Creek** **DATE OF COUNT: 10/24/2016**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)



682 (697)
457 (947)
NYSDOT 7/16
1072 (831)
503 (1017)
NYSDOT 6/3/19
1188 (993)
318 (651)
583 (86)
8 883 297
(0) (940) (53)
58 (120)
364 (60)
26 (75)
GBNRTC 7/17/17
NO U.B.!!
448 (255)
NYSDOT 11/16
413 (282)
422 (249)
Commerce
5 (11)
27 (135)
19 (245)
346 (578)
211 255 100
(26) (520) (40)
DODGE
424 (228)
354 (384)
420 (292)
2/20
320 (265)
100 (27)
373 (312)
51 (391)
NYSDOT 9/14
928 (1260)
566 (586)
420 (331)
252 (253)
168 (78)
34 (119)
17 (65)
269 (318)
288 (307)
985 (1356)
954 (1046)
NYSDOT 10/16
2/28/17
The Hub
1289 (1430)
1066 (1190)
3/20
@ Ramp
North Forest
191 (475)
Sweet Home

SRF ASSOCIATES
www.srfa.net
Transportation Planning / Engineering / Design

Muir Woods Site A, Town of Amherst, NY

Documentation of Ambient Traffic Volume Growth

Roadway	Segment starts at	Segment end at	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Annual Growth
North Forest Road	1.0 N of NY263/Turtle Creek Apt DWY	Dodge Road								2,189			1,809		1,825	1,845		-2.81%
Dodge Road	Sweet Home Road	NY270 Campbell Road					6,363			5,440				7,058	6,738			0.72%
Sweet Home Road	Commerce Drive	North French Road			16,280				16,606		15,052			16,008			18,050	0.86%
Sweet Home Road	N Ellicott Road	Commerce Drive	23,552		21,115			21,021						21,437				-0.78%
Commerce Drive	Woodbridge Road	Sweet Home Road										7,027						

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

PROJECT DETAILS

Project Name:	Muir Woods	Type of Project:	
Project No:		City:	
Country:		Built-up Area(Sq.ft):	
Analyst Name:	Amy Dake	Clients Name:	
Date:	6/22/2020	ZIP/Postal Code:	
State/Province:		No. of Scenarios:	2
Analysis Region:			

SCENARIO SUMMARY

Scenarios	Name	No. of Land Uses	Phases of Development	No. of Years to Project Traffic	User Group	Estimated New Vehicle Trips		
						Entry	Exit	Total
Scenario - 1	AM Peak Hour	5	1	0		47	85	132
Scenario - 2	PM Peak Hour	5	1	0		106	82	181

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Scenario - 1

Scenario Name: AM Peak Hour
User Group:
Dev. phase: 1
No. of Years to Project Traffic : 0
Analyst Note:
Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method Rate/Equation	Entry Split%	Exit Split%	Total
210 - Single-Family Detached Housing	General Urban/Suburban	Dwelling Units	90	Weekday, Peak Hour of Adjacent Street Traffic,	Average	17	50	67
Data Source: Trip Gen Manual, 10th Ed +					0.74	25%	75%	
220 - Multifamily Housing (Low-Rise)	General Urban/Suburban	Dwelling Units	12	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LOG)	1	5	6
Data Source: Trip Gen Manual, 10th Ed +					Ln(T) =0.95Ln(X) - 0.51	23%	77%	
221 - Multifamily Housing (Mid-Rise) [Private]	General Urban/Suburban	Dwelling Units	100	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LOG)	9	25	34
Data Source: Trip Gen Manual, 10th Ed +					Ln(T) =0.98Ln(X) - 0.98	26%	74%	
710 - General Office Building	General Urban/Suburban	1000 Sq. Ft. GFA	15	Weekday, Peak Hour of Adjacent Street Traffic,	Average	14	2	17
Data Source: Trip Gen Manual, 10th Ed +					1.16	86%	14%	
875 - Department Store	General Urban/Suburban	1000 Sq. Ft. GFA	15	Weekday, Peak Hour of Adjacent Street	Average	6	3	9
Data Source: Trip Gen Manual, 10th Ed +					0.58	64%	36%	

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
210 - Single-Family Detached Housing	100	100	1	1	25	75
220 - Multifamily Housing (Low-Rise)	100	100	1	1	23	77
221 - Multifamily Housing (Mid-Rise) [Private]	100	100	1	1	26	74
710 - General Office Building	100	100	1	1	86	14
875 - Department Store	100	100	1	1	64	36

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
210 - Single-Family Detached Housing	17	50	0	0	17	50
	67		0		67	
220 - Multifamily Housing (Low-Rise)	1	5	0	0	1	5
	6		0		6	
221 - Multifamily Housing (Mid-Rise) [Private]	9	25	0	0	9	25
	34		0		34	
710 - General Office Building	15	2	0	0	14	2
	17		0		17	
875 - Department Store	6	3	0	0	6	3
	9		0		9	

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
210 - Single-Family Detached Housing	17	50	67
220 - Multifamily Housing (Low-Rise)	1	5	6

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

221 - Multifamily Housing (Mid-Rise) [Private]	9	25	34
710 - General Office Building	14	2	17
875 - Department Store	6	3	9

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	47	85	132
External Vehicle Trips	47	85	132
New Vehicle Trips	47	85	132

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Scenario - 2

Scenario Name: PM Peak Hour
User Group:
Dev. phase: 1
No. of Years to Project Traffic : 0
Analyst Note:
Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method / Rate/Equation	Entry / Split%	Exit / Split%	Total
210 - Single-Family Detached Housing	General Urban/Suburban	Dwelling Units	90	Weekday, Peak Hour of Adjacent Street Traffic,	Average	56	33	89
Data Source: Trip Gen Manual, 10th Ed +					0.99	63%	37%	
220 - Multifamily Housing (Low-Rise)	General Urban/Suburban	Dwelling Units	12	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LOG)	6	3	9
Data Source: Trip Gen Manual, 10th Ed +					Ln(T) =0.89Ln(X) - 0.02	63%	37%	
221 - Multifamily Housing (Mid-Rise)	General Urban/Suburban	Dwelling Units	100	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LOG)	27	17	44
Data Source: Trip Gen Manual, 10th Ed +					Ln(T) =0.96Ln(X) - 0.63	61%	39%	
710 - General Office Building	General Urban/Suburban	1000 Sq. Ft. GFA	15	Weekday, Peak Hour of Adjacent Street Traffic,	Average	2	14	17
Data Source: Trip Gen Manual, 10th Ed +					1.15	16%	84%	
875 - Department Store [Private]	General Urban/Suburban	1000 Sq. Ft. GFA	15	Weekday, Peak Hour of Adjacent Street	Average	15	15	30
Data Source: Trip Gen Manual, 10th Ed +					1.95	50%	50%	

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
210 - Single-Family Detached Housing	100	100	1	1	63	37
220 - Multifamily Housing (Low-Rise)	100	100	1	1	63	37
221 - Multifamily Housing (Mid-Rise)	100	100	1	1	61	39
710 - General Office Building	100	100	1	1	16	84
875 - Department Store [Private]	100	100	1	1	50	50

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
210 - Single-Family Detached Housing	56	33	0	0	56	33
	89		0		89	
220 - Multifamily Housing (Low-Rise)	6	3	0	0	6	3
	9		0		9	
221 - Multifamily Housing (Mid-Rise)	27	17	0	0	27	17
	44		0		44	
710 - General Office Building	3	14	0	0	2	14
	17		0		17	
875 - Department Store [Private]	15	15	0	0	15	15
	30		0		30	

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
210 - Single-Family Detached Housing	56	33	89
220 - Multifamily Housing (Low-Rise)	6	3	9

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221 - Multifamily Housing (Mid-Rise)	27	17	44
710 - General Office Building	2	14	17
875 - Department Store [Private]	15	15	30

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	106	82	188
External Vehicle Trips	106	82	188
New Vehicle Trips	106	82	188

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PROPOSED MUIR WOODS SECTION A
TOWN OF AMHERST, NY
AM PEAK

Fig 3 Fig 4 Fig 6 Fig 7 Fig 8

Num of yrs: 2

LOCATION NUMBER	INTERSECTION DESCRIPTION	2020 Existing Volume	2022 Bkgd Vol 1.00%	Muir Woods Site B	2022 Bkgrd Volume	Proposed Muir Woods Section A Enter Dist. %	Exit Dist. %	Trips IN 47	Trips OUT 85	Total Site Trips	FULL Build Volumes
1	Sweet Home Road Dodge Road/Commerce Drive										
	SR	8	8		8						8
	ST	883	901	15	916						916
	SL	297	303		303	20%		9		9	312
	WR	58	59		59		20%		17	17	76
	WT	364	371		371		10%		9	9	380
	WL	26	27		27		25%		21	21	48
	NR	100	102		102	25%		12		12	114
	NT	450	459	11	470						470
	NL	211	215		215						215
	ER	50	51		51						51
	ET	30	31		31	10%		5		5	36
	EL	10	10		10						10
2	Dodge Road Proposed North Driveway										
	SR						25%		21	21	21
	ST										
	SL						15%		13	13	13
	WR					10%		5		5	5
	WT	361	368	18	386		30%		26	26	412
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	458	467	11	478	25%		12		12	490
	EL					30%		14		14	14
3	Dodge Road Proposed Middle Out Driveway										
	SR						10%		9	9	9
	ST										
	SL						5%		4	4	4
	WR										
	WT	361	368	18	386	10%	15%	5	13	17	403
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	458	467	11	478	25%	15%	12	13	25	503
	EL										
4	Dodge Road Proposed Middle In Driveway										
	SR										
	ST										
	SL										
	WR					5%		2		2	2
	WT	361	368	18	386	10%	20%	5	17	22	408
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	458	467	11	478	15%	20%	7	17	24	502
	EL					10%		5		5	5
5	Dodge Road Proposed South Driveway										
	SR						20%		17	17	17
	ST										
	SL						25%		21	21	21
	WR					30%		14		14	14
	WT	361	368	18	386	15%		7		7	393
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	458	467	11	478		20%		17	17	495
	EL					15%		7		7	7
6	Dodge Road North Forest Road										
	SR										
	ST										
	SL										
	WR										
	WT	323	329	18	347	30%		14		14	361
	WL	102	104		104						104
	NR	20	20		20						20
	NT										
	NL	38	39		39	15%		7		7	46
	ER	170	173		173		15%		13	13	186
	ET	288	294	11	305		30%		26	26	331
	EL										

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PROPOSED MUIR WOODS SECTION A
TOWN OF AMHERST, NY
PM PEAK

Fig 3 Fig 4 Fig 6 Fig 7 Fig 8

Num of yrs: 2

LOCATION NUMBER	INTERSECTION DESCRIPTION	2020 Existing Volume	2022 Bkgd Vol 1.00%	Muir Woods Site B	2022 Bkgrd Volume	Proposed Muir Woods Section A Enter Dist. %	Exit Dist. %	Trips IN 106	Trips OUT 82	Total Site Trips	FULL Build Volumes
1	Sweet Home Road Dodge Road/Commerce Drive										
	SR	10	10		10						10
	ST	940	959	21	980						980
	SL	60	61		61	20%		21		21	82
	WR	150	153		153		20%		16	16	169
	WT	60	61		61		10%		8	8	69
	WL	75	77		77		25%		21	21	98
	NR	125	128		128	25%		27		27	155
	NT	740	755	13	768						768
	NL	175	179		179						179
	ER	260	265		265						265
	ET	150	153		153	10%		11		11	164
	EL	25	26		26						26
2	Dodge Road Proposed North Driveway										
	SR						25%		21	21	21
	ST										
	SL						15%		12	12	12
	WR					10%		11		11	11
	WT	389	397	32	429		30%		25	25	454
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	339	346	13	359	25%		27		27	386
	EL					30%		32		32	32
3	Dodge Road Proposed Middle Out Driveway										
	SR						10%		8	8	8
	ST										
	SL						5%		4	4	4
	WR										
	WT	389	397	32	429	10%	15%	11	12	23	452
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	339	346	13	359	25%	15%	27	12	39	398
	EL										
4	Dodge Road Proposed Middle In Driveway										
	SR										
	ST										
	SL										
	WR					5%		5		5	5
	WT	389	397	32	429	10%	20%	11	16	27	456
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	339	346	13	359	15%	20%	16	16	32	391
	EL					10%		11		11	11
5	Dodge Road Proposed South Driveway										
	SR						20%		16	16	16
	ST										
	SL						25%		21	21	21
	WR					30%		32		32	32
	WT	389	397	32	429	15%		16		16	445
	WL										
	NR										
	NT										
	NL										
	ER										
	ET	339	346	13	359		20%		16	16	375
	EL					15%		16		16	16
6	Dodge Road North Forest Road										
	SR										
	ST										
	SL										
	WR										
	WT	268	273	32	305	30%		32		32	337
	WL	30	31		31						31
	NR	68	69		69						69
	NT										
	NL	121	123		123	15%		16		16	139
	ER	81	83		83		15%		12	12	95
	ET	258	263	13	276		30%		25	25	301
	EL										

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SWEET HOME/DODGE/COMMERCE

1.p

Phase Times (next/2/2/2, next/2/2/7/6) E/W

	1	2	3	4	5	6 SB	7	8	
Movement	SBL	NB			NBL	[redacted]		[redacted]	
Minimum Green	10	40	0	0	10	40	0	15	0 - 255 sec.
Passage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 sec.
Yellow	3.2	4.3	0.0	0.0	3.2	4.3	0.0	3.9	0.0 - 25.5 sec.
Red Clearance	1.1	1.4	0.0	0.0	1.1	1.4	0.0	1.8	0.0 - 25.5 sec. or 0 - 255 sec.
Max 1	20	45	0	0	20	45	0	30	0 - 255 sec
Max 2	0	0	0	0	0	0	0	0	0 - 255 sec
Walk	0	7	0	0	0	7	0	7	0 - 255 sec
Ped Clear	0	15	0	0	0	15	0	15	0 - 255 sec
Seconds Per Actuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 sec.
Time Before Reduction	0	0	0	0	0	0	0	0	0 - 255 sec
Time to Reduce	0	0	0	0	0	0	0	0	0 - 255 sec
Minimum Gap	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0 - 25.5 sec.
Max Variable Initial	0	0	0	0	0	0	0	0	0 - 255 sec
Max Extend	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 sec.
Auto Max	0	0	0	0	0	0	0	0	0 - 255 sec
Inhibit Min Yellow									X = On
Red Decimal Off									X = On

Other Controller Functions (next/2/2/9)

Phase -->	1	2	3	4	5	6	7	8	
Inhibit Simultaneous Gap Out									X = On
Last Car Passage	2	0 = recall phase, 1 = last car passage, 2 = NOT recall - Not last car passage							
Red Revert (+2seconds)	0.0	0 - 25.5 sec.							
Auto Ped Clear		X = On							
Flashing Don't Walk Thru Yellow		X = On							
Soft Recall / Red Rest Delay	0.0	0 - 25.5 sec.							
Change Sequence	X	X = On (After a download with a power on - off cycle)							

Phase -->	1	2	3	4	5	6	7	8	
Red Clear Extension Detector	0	0	0	0	0	0	0	0	0 = none 1 - 32 = detector 1 - 32
Red Clear Extension Red Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0 - 25.5 sec.

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A3

Level of Service: Criteria and Definitions

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Level of Service Criteria

Highway Capacity Manual 2016

SIGNALIZED INTERSECTIONS

Level of Service is a qualitative measure describing operational conditions within a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. Level of Service for signalized intersections is defined in terms of delay specifically, average total delay per vehicle for a 15 minute analysis period. The ranges are as follows:

Level of Service	Control Delay per vehicle (seconds)
A	< 10
B	10 – 20
C	20 – 35
D	35 – 55
E	55 – 80
F	>80

UNSIGNALIZED INTERSECTIONS

Level of Service for unsignalized intersections is also defined in terms of delay. However, the delay criteria are different from a signalized intersection. The primary reason for this is driver expectation that a signalized intersection is designed to carry higher volumes than an unsignalized intersection. The total delay threshold for any given Level of Service is less for an unsignalized intersection than for a signalized intersection. The ranges are as follows:

Level of Service	Control Delay per vehicle (seconds)
A	< 10
B	10 – 15
C	15 – 25
D	25 – 35
E	35 - 50
F	>50

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A4

Level of Service Calculations: Existing Conditions

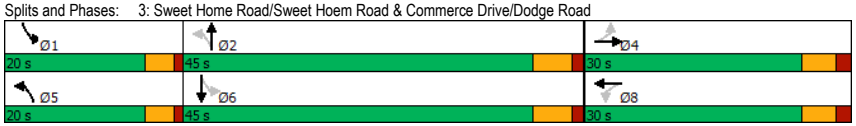
Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	30	50	26	364	58	211	450	100	297	883	8
Future Volume (vph)	10	30	50	26	364	58	211	450	100	297	883	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.906			0.979			0.973			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1128	1434	0	1612	1839	0	1703	3366	0	1787	3502	0
Flt Permitted	0.163			0.693			0.117			0.308		
Satd. Flow (perm)	194	1434	0	1176	1839	0	210	3366	0	579	3502	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		62			8			34			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	60%	0%	32%	12%	1%	2%	6%	4%	6%	1%	3%	0%
Adj. Flow (vph)	12	37	62	32	449	72	260	556	123	367	1090	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	99	0	32	521	0	260	679	0	367	1100	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.5	24.5		24.5	24.5		49.5	34.2		49.0	34.0	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.56	0.39		0.56	0.39	
v/c Ratio	0.23	0.22		0.10	1.01		0.74	0.51		0.72	0.82	
Control Delay	40.5	14.2		27.7	76.4		31.5	20.9		17.6	30.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	40.5	14.2		27.7	76.4		31.5	20.9		17.6	30.0	
LOS	D	B		C	E		C	C		B	C	
Approach Delay		17.0			73.5			23.8			26.9	
Approach LOS		B			E			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 88.2			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 34.0		Intersection LOS: C	
Intersection Capacity Utilization 72.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	288	170	102	323	38	20
Future Volume (vph)	288	170	102	323	38	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.950				0.953	
Flt Protected				0.988	0.968	
Satd. Flow (prot)	1783	0	0	1863	1753	0
Flt Permitted				0.988	0.968	
Satd. Flow (perm)	1783	0	0	1863	1753	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Adj. Flow (vph)	374	221	132	419	49	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	595	0	0	551	75	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.5%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	288	170	102	323	38	20
Future Vol, veh/h	288	170	102	323	38	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	374	221	132	419	49	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	595	0	1168	485
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	683	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	991	-	216	586
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	505	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	991	-	178	586
Mov Cap-2 Maneuver	-	-	-	-	178	-
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	417	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	27.5
HCM LOS			D

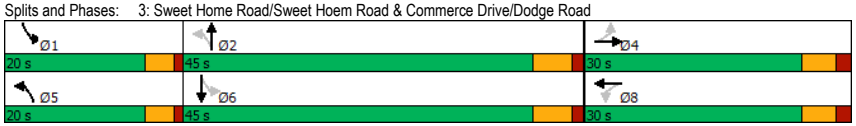
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	234	-	-	991	-
HCM Lane V/C Ratio	0.322	-	-	0.134	-
HCM Control Delay (s)	27.5	-	-	9.2	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.3	-	-	0.5	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	150	260	75	60	150	175	740	125	60	940	10
Future Volume (vph)	25	150	260	75	60	150	175	740	125	60	940	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.905			0.893			0.978			0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1530	1696	0	1805	1675	0	1612	3476	0	1805	3567	0
Flt Permitted	0.435			0.164			0.095			0.188		
Satd. Flow (perm)	700	1696	0	312	1675	0	161	3476	0	357	3567	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		88			127			24			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	18%	2%	1%	0%	2%	1%	12%	1%	5%	0%	1%	0%
Adj. Flow (vph)	33	197	342	99	79	197	230	974	164	79	1237	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	539	0	99	276	0	230	1138	0	79	1250	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.4	24.4		24.4	24.4		55.8	45.4		45.0	36.6	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.62	0.50		0.50	0.41	
v/c Ratio	0.17	1.03		1.18	0.51		0.73	0.65		0.27	0.86	
Control Delay	30.3	77.7		191.3	19.3		32.4	18.8		10.1	32.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	30.3	77.7		191.3	19.3		32.4	18.8		10.1	32.2	
LOS	C	E		F	B		C	B		B	C	
Approach Delay		75.0			64.7			21.1			30.9	
Approach LOS		E			E			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 90.3			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 37.6		Intersection LOS: D	
Intersection Capacity Utilization 81.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	258	81	30	268	121	68
Future Volume (vph)	258	81	30	268	121	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.968				0.951	
Flt Protected				0.995	0.969	
Satd. Flow (prot)	1839	0	0	1890	1751	0
Flt Permitted				0.995	0.969	
Satd. Flow (perm)	1839	0	0	1890	1751	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	344	108	40	357	161	91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	452	0	0	397	252	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.1%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	6.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	258	81	30	268	121	68
Future Vol, veh/h	258	81	30	268	121	68
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	344	108	40	357	161	91

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	452	0	835	398
Stage 1	-	-	-	-	398	-
Stage 2	-	-	-	-	437	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1119	-	340	656
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	655	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1119	-	325	656
Mov Cap-2 Maneuver	-	-	-	-	325	-
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	626	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	28.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	397	-	-	1119	-
HCM Lane V/C Ratio	0.635	-	-	0.036	-
HCM Control Delay (s)	28.6	-	-	8.3	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	4.2	-	-	0.1	-

A5

Level of Service Calculations: Background Conditions

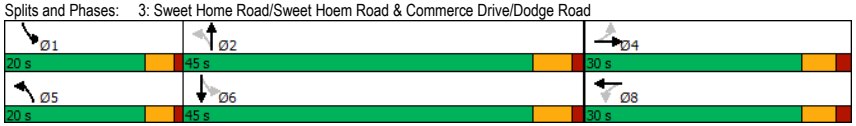
Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	31	51	27	371	59	215	470	102	303	916	8
Future Volume (vph)	10	31	51	27	371	59	215	470	102	303	916	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.906			0.979			0.973			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1128	1435	0	1612	1839	0	1703	3366	0	1787	3502	0
Flt Permitted	0.163			0.692			0.112			0.298		
Satd. Flow (perm)	194	1435	0	1174	1839	0	201	3366	0	561	3502	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		63			8			33			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	60%	0%	32%	12%	1%	2%	6%	4%	6%	1%	3%	0%
Adj. Flow (vph)	12	38	63	33	458	73	265	580	126	374	1131	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	101	0	33	531	0	265	706	0	374	1141	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.5	24.5		24.5	24.5		51.2	35.6		50.2	35.1	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.57	0.40		0.56	0.39	
v/c Ratio	0.23	0.23		0.10	1.05		0.75	0.52		0.75	0.83	
Control Delay	41.1	14.3		28.0	86.8		33.3	21.0		19.0	30.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	41.1	14.3		28.0	86.8		33.3	21.0		19.0	30.8	
LOS	D	B		C	F		C	C		B	C	
Approach Delay		17.1			83.4			24.3			27.9	
Approach LOS		B			F			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 89.6			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.05			
Intersection Signal Delay: 36.3		Intersection LOS: D	
Intersection Capacity Utilization 73.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	305	173	104	347	39	20
Future Volume (vph)	305	173	104	347	39	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.951				0.954	
Flt Protected				0.989	0.968	
Satd. Flow (prot)	1784	0	0	1865	1755	0
Flt Permitted				0.989	0.968	
Satd. Flow (perm)	1784	0	0	1865	1755	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Adj. Flow (vph)	396	225	135	451	51	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	621	0	0	586	77	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.0%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	305	173	104	347	39	20
Future Vol, veh/h	305	173	104	347	39	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	396	225	135	451	51	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	621	0	1230	509
Stage 1	-	-	-	-	509	-
Stage 2	-	-	-	-	721	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	969	-	198	568
Stage 1	-	-	-	-	608	-
Stage 2	-	-	-	-	485	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	969	-	161	568
Mov Cap-2 Maneuver	-	-	-	-	161	-
Stage 1	-	-	-	-	608	-
Stage 2	-	-	-	-	395	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	31.1
HCM LOS			D

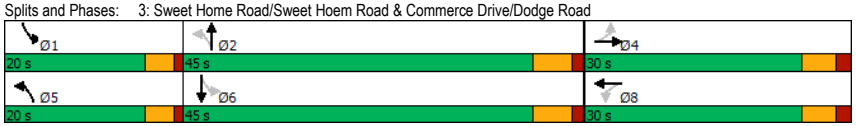
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	213	-	-	969	-
HCM Lane V/C Ratio	0.36	-	-	0.139	-
HCM Control Delay (s)	31.1	-	-	9.3	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.5	-	-	0.5	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	153	265	77	61	153	179	768	128	61	980	10
Future Volume (vph)	26	153	265	77	61	153	179	768	128	61	980	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.905			0.893			0.979			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1530	1696	0	1805	1675	0	1612	3480	0	1805	3571	0
Flt Permitted	0.421			0.164			0.093			0.174		
Satd. Flow (perm)	678	1696	0	312	1675	0	158	3480	0	331	3571	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		88			128			24			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	18%	2%	1%	0%	2%	1%	12%	1%	5%	0%	1%	0%
Adj. Flow (vph)	34	201	349	101	80	201	236	1011	168	80	1289	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	550	0	101	281	0	236	1179	0	80	1302	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.4	24.4		24.4	24.4		57.2	46.6		46.2	37.7	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.62	0.51		0.50	0.41	
v/c Ratio	0.19	1.07		1.23	0.52		0.75	0.66		0.29	0.89	
Control Delay	30.9	88.5		206.8	19.9		34.3	19.2		10.3	33.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	30.9	88.5		206.8	19.9		34.3	19.2		10.3	33.8	
LOS	C	F		F	B		C	B		B	C	
Approach Delay		85.1			69.3			21.7			32.5	
Approach LOS		F			E			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 91.6			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.23			
Intersection Signal Delay: 40.3		Intersection LOS: D	
Intersection Capacity Utilization 83.7%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	276	83	31	305	123	69
Future Volume (vph)	276	83	31	305	123	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.969				0.951	
Flt Protected				0.995	0.969	
Satd. Flow (prot)	1841	0	0	1890	1751	0
Flt Permitted				0.995	0.969	
Satd. Flow (perm)	1841	0	0	1890	1751	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	368	111	41	407	164	92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	479	0	0	448	256	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.4%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	8.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	276	83	31	305	123	69
Future Vol, veh/h	276	83	31	305	123	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	368	111	41	407	164	92

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	479	0	913	424
Stage 1	-	-	-	-	424	-
Stage 2	-	-	-	-	489	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1094	-	306	634
Stage 1	-	-	-	-	664	-
Stage 2	-	-	-	-	621	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1094	-	291	634
Mov Cap-2 Maneuver	-	-	-	-	291	-
Stage 1	-	-	-	-	664	-
Stage 2	-	-	-	-	591	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	35.9
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	361	-	-	1094	-
HCM Lane V/C Ratio	0.709	-	-	0.038	-
HCM Control Delay (s)	35.9	-	-	8.4	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	5.2	-	-	0.1	-

A6

Level of Service Calculations: Full Build Conditions

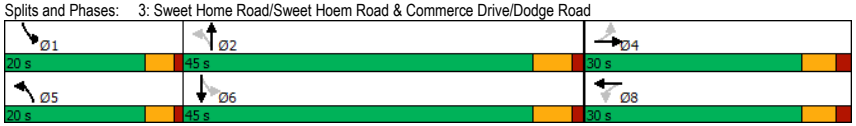
Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	36	51	48	380	76	215	470	114	312	916	8
Future Volume (vph)	10	36	51	48	380	76	215	470	114	312	916	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		150	0		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.912			0.975			0.971			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1128	1458	0	1612	1831	0	1703	3358	0	1787	3502	0
Flt Permitted	0.163			0.688			0.113			0.285		
Satd. Flow (perm)	194	1458	0	1167	1831	0	203	3358	0	536	3502	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		63			10			38			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	60%	0%	32%	12%	1%	2%	6%	4%	6%	1%	3%	0%
Adj. Flow (vph)	12	44	63	59	469	94	265	580	141	385	1131	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	107	0	59	563	0	265	721	0	385	1141	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.5	24.5		24.5	24.5		50.8	35.3		50.5	35.1	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.57	0.39		0.56	0.39	
v/c Ratio	0.23	0.24		0.18	1.11		0.75	0.54		0.77	0.83	
Control Delay	41.1	15.0		29.3	106.8		33.3	21.2		21.2	30.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	41.1	15.0		29.3	106.8		33.3	21.2		21.2	30.7	
LOS	D	B		C	F		C	C		C	C	
Approach Delay		17.7			99.5			24.5			28.3	
Approach LOS		B			F			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 89.6			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 40.4		Intersection LOS: D	
Intersection Capacity Utilization 75.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	331	186	104	361	46	20
Future Volume (vph)	331	186	104	361	46	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.951				0.959	
Flt Protected				0.989	0.966	
Satd. Flow (prot)	1784	0	0	1865	1760	0
Flt Permitted				0.989	0.966	
Satd. Flow (perm)	1784	0	0	1865	1760	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Adj. Flow (vph)	430	242	135	469	60	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	672	0	0	604	86	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.3%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	331	186	104	361	46	20
Future Vol, veh/h	331	186	104	361	46	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	430	242	135	469	60	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	672	0	1290	551
Stage 1	-	-	-	-	551	-
Stage 2	-	-	-	-	739	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	928	-	182	538
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	476	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	928	-	146	538
Mov Cap-2 Maneuver	-	-	-	-	146	-
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	382	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	39.6
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	187	-	-	928	-
HCM Lane V/C Ratio	0.458	-	-	0.146	-
HCM Control Delay (s)	39.6	-	-	9.5	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	2.2	-	-	0.5	-

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	14	490	412	5	13	21
Future Volume (vph)	14	490	412	5	13	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999		0.916	
Flt Protected		0.999			0.981	
Satd. Flow (prot)	0	1861	1861	0	1674	0
Flt Permitted		0.999			0.981	
Satd. Flow (perm)	0	1861	1861	0	1674	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		240	235		405	
Travel Time (s)		5.5	5.3		9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	533	448	5	14	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	548	453	0	37	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.6

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	14	490	412	5	13	21
Future Vol, veh/h	14	490	412	5	13	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	533	448	5	14	23

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	453	0	-	0	1014	451
Stage 1	-	-	-	-	451	-
Stage 2	-	-	-	-	563	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1108	-	-	-	264	608
Stage 1	-	-	-	-	642	-
Stage 2	-	-	-	-	570	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1108	-	-	-	259	608
Mov Cap-2 Maneuver	-	-	-	-	259	-
Stage 1	-	-	-	-	630	-
Stage 2	-	-	-	-	570	-

Approach	SE	NW	SW
HCM Control Delay, s	0.2	0	14.9
HCM LOS			B

Minor Lane/Major Mvmt	NWT	NWR	SEL	SETSWLn1	
Capacity (veh/h)	-	-	1108	-	401
HCM Lane V/C Ratio	-	-	0.014	-	0.092
HCM Control Delay (s)	-	-	8.3	0	14.9
HCM Lane LOS	-	-	A	A	B
HCM 95th %tile Q(veh)	-	-	0	-	0.3

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	0	503	403	0	4	9
Future Volume (vph)	0	503	403	0	4	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.904	
Flt Protected					0.986	
Satd. Flow (prot)	0	1863	1863	0	1660	0
Flt Permitted					0.986	
Satd. Flow (perm)	0	1863	1863	0	1660	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		235	240		378	
Travel Time (s)		5.3	5.5		8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	547	438	0	4	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	547	438	0	14	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.2

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	0	503	403	0	4	9
Future Vol, veh/h	0	503	403	0	4	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	547	438	0	4	10

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	985	438
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	547	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	275	619
Stage 1	0	-	-	0	651	-
Stage 2	0	-	-	0	580	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	275	619
Mov Cap-2 Maneuver	-	-	-	-	275	-
Stage 1	-	-	-	-	651	-
Stage 2	-	-	-	-	580	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	NWT	SETSWLn1
Capacity (veh/h)	-	- 447
HCM Lane V/C Ratio	-	- 0.032
HCM Control Delay (s)	-	- 13.3
HCM Lane LOS	-	- B
HCM 95th %tile Q(veh)	-	- 0.1

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	5	502	408	2	0	0
Future Volume (vph)	5	502	408	2	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999			
Flt Protected						
Satd. Flow (prot)	0	1863	1861	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	1861	0	0	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		240	291		382	
Travel Time (s)		5.5	6.6		8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	546	443	2	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	551	445	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.7%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	7	495	393	14	21	17
Future Volume (vph)	7	495	393	14	21	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.995		0.941	
Flt Protected		0.999			0.973	
Satd. Flow (prot)	0	1861	1853	0	1706	0
Flt Permitted		0.999			0.973	
Satd. Flow (perm)	0	1861	1853	0	1706	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		291	117		311	
Travel Time (s)		6.6	2.7		7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	538	427	15	23	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	546	442	0	41	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 41.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.7

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	7	495	393	14	21	17
Future Vol, veh/h	7	495	393	14	21	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	538	427	15	23	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	442	0	-	0	989	435
Stage 1	-	-	-	-	435	-
Stage 2	-	-	-	-	554	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1118	-	-	-	274	621
Stage 1	-	-	-	-	653	-
Stage 2	-	-	-	-	575	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1118	-	-	-	271	621
Mov Cap-2 Maneuver	-	-	-	-	271	-
Stage 1	-	-	-	-	646	-
Stage 2	-	-	-	-	575	-

Approach	SE	NW	SW
HCM Control Delay, s	0.1	0	16.2
HCM LOS			C

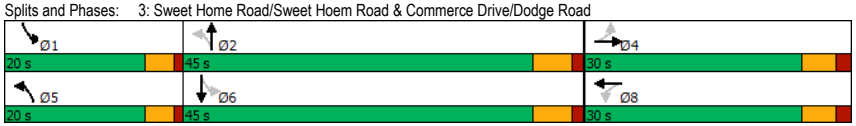
Minor Lane/Major Mvmt	NWT	NWR	SEL	SETSWLn1	
Capacity (veh/h)	-	-	1118	-	362
HCM Lane V/C Ratio	-	-	0.007	-	0.114
HCM Control Delay (s)	-	-	8.2	0	16.2
HCM Lane LOS	-	-	A	A	C
HCM 95th %tile Q(veh)	-	-	0	-	0.4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	164	265	98	69	169	179	768	155	82	980	10
Future Volume (vph)	26	164	265	98	69	169	179	768	155	82	980	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		150	0		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.907			0.894			0.975			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1530	1700	0	1805	1677	0	1612	3462	0	1805	3571	0
Flt Permitted	0.369			0.164			0.093			0.153		
Satd. Flow (perm)	594	1700	0	312	1677	0	158	3462	0	291	3571	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		82			124			30			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			420			308			340	
Travel Time (s)		6.5			9.5			7.0			7.7	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	18%	2%	1%	0%	2%	1%	12%	1%	5%	0%	1%	0%
Adj. Flow (vph)	34	216	349	129	91	222	236	1011	204	108	1289	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	565	0	129	313	0	236	1215	0	108	1302	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.7	27.7		27.7	27.7		10.3	27.7		9.5	27.7	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		20.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		21.1%	47.4%	
Maximum Green (s)	24.3	24.3		24.3	24.3		15.7	39.3		15.7	39.3	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	4.3		3.2	4.3	
All-Red Time (s)	1.8	1.8		1.8	1.8		1.1	1.4		1.1	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.7	5.7		5.7	5.7		4.3	5.7		4.3	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			15.0			15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	24.4	24.4		24.4	24.4		57.1	45.8		47.0	37.7	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.62	0.50		0.51	0.41	
v/c Ratio	0.22	1.10		1.57	0.58		0.75	0.70		0.39	0.88	
Control Delay	32.1	100.2		333.9	22.9		34.8	20.5		11.9	33.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	32.1	100.2		333.9	22.9		34.8	20.5		11.9	33.7	
LOS	C	F		F	C		C	C		B	C	
Approach Delay		96.4			113.7			22.8			32.0	
Approach LOS		F			F			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 91.5			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.57			
Intersection Signal Delay: 47.7		Intersection LOS: D	
Intersection Capacity Utilization 85.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Sweet Home Road/Sweet Hoem Road & Commerce Drive/Dodge Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	301	95	31	337	139	69
Future Volume (vph)	301	95	31	337	139	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.968				0.955	
Flt Protected				0.996	0.968	
Satd. Flow (prot)	1839	0	0	1892	1756	0
Flt Permitted				0.996	0.968	
Satd. Flow (perm)	1839	0	0	1892	1756	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	401	127	41	449	185	92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	528	0	0	490	277	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 62.0%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	13

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	301	95	31	337	139	69
Future Vol, veh/h	301	95	31	337	139	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	401	127	41	449	185	92

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	528	0	996	465
Stage 1	-	-	-	-	465	-
Stage 2	-	-	-	-	531	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1049	-	273	602
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	594	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1049	-	259	602
Mov Cap-2 Maneuver	-	-	-	-	259	-
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	563	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	59.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	319	-	-	1049	-
HCM Lane V/C Ratio	0.869	-	-	0.039	-
HCM Control Delay (s)	59.6	-	-	8.6	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	7.9	-	-	0.1	-

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	32	386	454	11	12	21
Future Volume (vph)	32	386	454	11	12	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.997		0.914	
Flt Protected		0.996			0.982	
Satd. Flow (prot)	0	1855	1857	0	1672	0
Flt Permitted		0.996			0.982	
Satd. Flow (perm)	0	1855	1857	0	1672	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		240	235		405	
Travel Time (s)		5.5	5.3		9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	420	493	12	13	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	455	505	0	36	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 56.8%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.9

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	32	386	454	11	12	21
Future Vol, veh/h	32	386	454	11	12	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	420	493	12	13	23

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	505	0	-	0	989	499
Stage 1	-	-	-	-	499	-
Stage 2	-	-	-	-	490	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1060	-	-	-	274	572
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	616	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1060	-	-	-	262	572
Mov Cap-2 Maneuver	-	-	-	-	262	-
Stage 1	-	-	-	-	584	-
Stage 2	-	-	-	-	616	-

Approach	SE	NW	SW
HCM Control Delay, s	0.7	0	14.9
HCM LOS			B

Minor Lane/Major Mvmt	NWT	NWR	SEL	SETSWLn1	
Capacity (veh/h)	-	-	1060	-	400
HCM Lane V/C Ratio	-	-	0.033	-	0.09
HCM Control Delay (s)	-	-	8.5	0	14.9
HCM Lane LOS	-	-	A	A	B
HCM 95th %tile Q(veh)	-	-	0.1	-	0.3

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑		Y	
Traffic Volume (vph)	0	398	452	0	4	8
Future Volume (vph)	0	398	452	0	4	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.907	
Flt Protected					0.985	
Satd. Flow (prot)	0	1863	1863	0	1664	0
Flt Permitted					0.985	
Satd. Flow (perm)	0	1863	1863	0	1664	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		235	240		378	
Travel Time (s)		5.3	5.5		8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	433	491	0	4	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	433	491	0	13	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.2

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑		Y	
Traffic Vol, veh/h	0	398	452	0	4	8
Future Vol, veh/h	0	398	452	0	4	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	433	491	0	4	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	924	491
Stage 1	-	-	-	-	491	-
Stage 2	-	-	-	-	433	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	299	578
Stage 1	0	-	-	0	615	-
Stage 2	0	-	-	0	654	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	299	578
Mov Cap-2 Maneuver	-	-	-	-	299	-
Stage 1	-	-	-	-	615	-
Stage 2	-	-	-	-	654	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	13.4
HCM LOS			B

Minor Lane/Major Mvmt	NWT	SETSWLn1
Capacity (veh/h)	-	- 441
HCM Lane V/C Ratio	-	- 0.03
HCM Control Delay (s)	-	- 13.4
HCM Lane LOS	-	- B
HCM 95th %tile Q(veh)	-	- 0.1

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	11	391	456	5	0	0
Future Volume (vph)	11	391	456	5	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999			
Flt Protected		0.999				
Satd. Flow (prot)	0	1861	1861	0	0	0
Flt Permitted		0.999				
Satd. Flow (perm)	0	1861	1861	0	0	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		240	291		382	
Travel Time (s)		5.5	6.6		8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	425	496	5	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	437	501	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.8%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	16	375	445	32	21	16
Future Volume (vph)	16	375	445	32	21	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.991		0.943	
Flt Protected		0.998			0.972	
Satd. Flow (prot)	0	1859	1846	0	1707	0
Flt Permitted		0.998			0.972	
Satd. Flow (perm)	0	1859	1846	0	1707	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		291	117		311	
Travel Time (s)		6.6	2.7		7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	408	484	35	23	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	425	519	0	40	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 42.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.8

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	16	375	445	32	21	16
Future Vol, veh/h	16	375	445	32	21	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	408	484	35	23	17

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	519	0	-	0	944	502
Stage 1	-	-	-	-	502	-
Stage 2	-	-	-	-	442	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1047	-	-	-	291	569
Stage 1	-	-	-	-	608	-
Stage 2	-	-	-	-	648	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1047	-	-	-	285	569
Mov Cap-2 Maneuver	-	-	-	-	285	-
Stage 1	-	-	-	-	595	-
Stage 2	-	-	-	-	648	-

Approach	SE	NW	SW
HCM Control Delay, s	0.3	0	16.1
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	1047	-	363
HCM Lane V/C Ratio	-	-	0.017	-	0.111
HCM Control Delay (s)	-	-	8.5	0	16.1
HCM Lane LOS	-	-	A	A	C
HCM 95th %tile Q(veh)	-	-	0.1	-	0.4

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STORMWATER POLLUTION PREVENTION PLAN for CONSTRUCTION ACTIVITIES

Sawyer's Landing

Dodge & Sweet Home Road
Town of Amherst, Erie County, New York

Prepared for

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c/o Severyn Development
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February 2021



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101 SCOPE

A. **PURPOSE:** Sawyer's Landing LLC (SL) has placed an emphasis on following the New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit for Stormwater Discharges from Construction Activity governing storm water discharges during construction, and in accordance with erosion control practices. The Contractor's participation in this program is mandatory and its non-compliance is subject to various remedies, including without limitation, monetary set-offs, withholding payments; reimbursement for costs, expenses (including reasonable attorney's fees), fines and civil penalties incurred by SL; and/or liquidated damages. This section provides a descriptive explanation of SL's Storm Water Pollution Prevention Program and required Contractor participation.

The Engineer of record for this project certifies that this SWPPP meets the requirements and is in compliance with the New York State Stormwater Management Design Manual and latest NYSDEC Phase II stormwater regulation requirements.

B. **SPDES General Permit for Stormwater Discharges from Construction Activity:** Regulations promulgated by the NYSDEC to regulate the discharge of storm water from construction activities on sites where more than one (1) acre of soil is disturbed. One of the ways to comply with these regulations for affected sites is to request coverage under the General Permit for Construction Activities for New York State. In order to use the General Permit, a Notice of Intent (NOI) form must be completed and electronically submitted to the NYSDEC at least 5 business days prior to any earth-disturbing activities (this time frame may increase to 60 business days if a full review of the SWPPP is determined necessary by the NYSDEC) and a Storm Water Pollution Prevention Plan (SWPPP) for the site must be prepared and followed during the construction activities. Once a copy of the SPDES permit is received from NYSDEC after filing, it will be included in Appendix L of this report.

Approval from a regulated, traditional land use control MS4:

1. An **owner or operator** of a construction activity that is <u>not</u> subject to the requirements of a regulated, traditional land use control MS4 must first develop a SWPPP in accordance with all applicable requirements of this permit and then submit a completed NOI form to the NYSDEC.

2. An **owner or operator** of a construction activity that is subject to the requirements of a regulated, traditional land use control MS4 must first

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develop a SWPPP in accordance with all applicable requirements of this permit and then have its SWPPP reviewed and accepted by the MS4 prior to submitting the NOI to the NYSDEC. The **owner or operator** shall have the "MS4 SWPPP Acceptance" form signed by the principal executive officer or ranking elected official from the regulated, traditional land use control MS4, or by a duly authorized representative of that person, and then submit that form along with the NOI to the address referenced under "Notice of Intent (NOI) Submittal".

C. **RESPONSIBILITIES OF THE CONTRACTOR:** The Contractor shall manage the discharge of storm water from the site in accordance with the NYSDEC General Permit for Construction Activities conditions and the following provisions of this section. The Operator shall be responsible for conducting the storm water management practices in accordance with the permit. The Contractor shall be responsible for providing **qualified inspector**s to conduct the inspections required by the SWPPP. The Contractor shall be responsible for any enforcement action taken or imposed by federal, state, or local agencies, including the cost of fines, construction delays, and remedial actions resulting from the Contractor's failure to comply with the permit provisions. It shall be the responsibility of the Contractor to make any changes to the SWPPP necessary when the Contractor or any of his subcontractors elects to use borrow or fill or material storage sites, either contiguous to or remote from the construction site, when such sites are used solely for this construction site. Such sites are considered to be part of the construction site covered by the permit and this SWPPP. Off-site borrow, fill, or material storage sites which are used for multiple construction projects are not subject to this requirement, unless specifically required by state or local jurisdictional entity regulations. The Contractor should consider this requirement in negotiating with earthwork subcontractors, since the choice of an off-site borrow, fill, or material storage site may impact their duty to implement, make changes to, and perform inspections required by the SWPPP for the site.

D. **NOTICE OF INTENT:** The Operator has petitioned the NYSDEC for coverage under the storm water discharges during construction at this site to be covered by the SPDES General Permit for Construction Activity for the State of New York. A Notice of Intent (NOI) for coverage under this permit has been filed by the Operator. The SWPPP must be prepared prior to submittal of the NOI form. The Operator will require the Contractor to be a co-permittee with the Operator. The Contractor will be required to post the NOI at the construction site along with any building permits.

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E. **CONTRACTOR CERTIFICATION & TRAINING:** Proof of Training/Certification of the Contractor's Designated individual shall be kept on site at all times.

F. **REQUIREMENTS FOR THE GENERAL CONTRACTOR AND SUBCONTRACTOR(S):** The General Contractor and Subcontractor(s) shall sign the "Contractor's Certification Statement" (located in the Appendix of this report) verifying they have been instructed on how to comply with and fully understand the requirements of the SPDES General Permit for Construction Activity for the State of New York and the SWPPP. These certifications must be signed, by a responsible corporate officer or other party meeting the "Signatory Requirements" of the SPDES General Permit, on behalf of each entity, prior to the beginning of any construction activities.

G. **STORM WATER POLLUTION PREVENTION PROGRAM LOCATION REQUIREMENTS:** The SWPPP is meant to be a working document that shall be maintained at the site of the Construction Activities at all times throughout the project, shall be readily available upon request by the Operator's personnel or NYSDEC or any other agency with regulatory authority over storm water issues, and shall be kept on-site until the site complies with the Final Stabilization section of this document. A sign or other notice must be posted near the main entrance of the construction site which contains a completed NOI, the location of the SWPPP and the name and phone number of a contact person responsible for scheduling SWPPP viewing times, and any other state specific requirements.

H. **INSPECTIONS AND RECORD-KEEPING:**

A. **General Construction Site Inspection and Maintenance Requirements**

1. The **owner or operator** must ensure that all erosion and sediment control practices and all post-construction stormwater management practices identified in the SWPPP are maintained in effective operating condition at all times.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York, or protect the public health and safety and/or the environment.

B. **Owner or operator Maintenance Inspection Requirements**

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1. The **owner or operator** shall inspect, in accordance with the requirements in the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, the erosion and sediment controls identified in the SWPPP to ensure that they are being maintained in effective operating condition at all times.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the **owner or operator** can stop conducting the maintenance inspections. The **owner or operator** shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of the General Permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the **owner or operator** can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved final stabilization and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. **Qualified inspector Inspection Requirements**

The **owner or operator** shall have a **qualified inspector** conduct site inspections in conformance with the following requirements:

Note: The **trained contractor** identified in Part III.A.6 of the General Permit **cannot** conduct the **qualified inspector** site inspections unless they meet the **qualified inspector** qualifications included in Appendix A of the General Permit. In order to perform these inspections, the trained contractor would have to be a:

- Licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- Registered Landscape Architect, or
- Someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape

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Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity.

1. A **qualified inspector** shall conduct site inspections for all construction activities identified in Tables 1 and 2 of Appendix B of the General Permit, with the exception of:

   a. The construction of a single family residential subdivision with 25% or less impervious cover at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C of the General Permit and not directly discharging to one of the 303(d) segments listed in Appendix E of the General Permit;

   b. The construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E of the General Permit;

   c. Construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

   d. Construction activities located in the watersheds identified in Appendix D of the General Permit that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the **qualified inspector** shall conduct site inspections in accordance with the following timetable:

   a. For construction sites where soil disturbance activities are on-going, the **qualified inspector** shall conduct a site inspection at least once every seven (7) calendar days.

   b. For construction sites where soil disturbance activities are on-going and the **owner or operator** has received authorization in accordance with Part II.C.3 of the General Permit to **disturb greater than five (5) acres** of soil at any one time, the **qualified inspector**

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shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

c. For construction sites where soil disturbance activities have been **temporarily suspended (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas**, the **qualified inspector** shall conduct a site inspection at least once every thirty (30) calendar days. The **owner or operator** shall notify the Regional Office stormwater contact person (see contact information in Appendix F of the General Permit) or, in areas under the jurisdiction of a regulated, traditional land use control MS4, the MS4 (provided the MS4 is not the **owner or operator** of the construction activity) in writing prior to reducing the frequency of inspections.

d. For construction sites where **soil disturbance activities have been shut down with partial project completion**, the **qualified inspector** can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved final stabilization and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The **owner or operator** shall notify the Regional Office stormwater contact person or, in areas under the jurisdiction of a regulated, traditional land use control MS4, the MS4 (provided the MS4 is not the **owner or operator** of the construction activity). in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the **owner or operator** shall have the **qualified inspector** perform a final inspection and certify that all disturbed areas have achieved final stabilization, and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "Final Stabilization" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The **owner or operator** shall then submit the completed NOT form to the address in Part II.A.1 of the General Permit.

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3. At a minimum, the **qualified inspector** shall inspect all erosion and sediment control practices to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved final stabilization, all points of discharge to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the construction site, and all points of discharge from the construction site.

4. The **qualified inspector** shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

   a. Date and time of inspection;

   b. Name and title of person(s) performing inspection;

   c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

   d. A description of the condition of the runoff at all points of discharge from the construction site. This shall include identification of any discharges of sediment from the construction site. Include discharges from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

   e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the construction site which receive runoff from disturbed areas. This shall include identification of any discharges of sediment to the surface waterbody;

   f. Identification of all erosion and sediment control practices that need repair or maintenance;

   g. Identification of all erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

   h. Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection;

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i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s); and

k. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The **qualified inspector** shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The **qualified inspector** shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The **qualified inspector** shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the **qualified inspector** shall notify the **owner or operator** and appropriate contractor or subcontractor identified in Part III.A.6. of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the **qualified inspector**. Pursuant to Part II.C.2 of the General Permit, the inspection reports shall be maintained on site with the SWPPP.

Record Retention - The **owner or operator** shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the site achieves final stabilization. This period may be extended by the Department, in its sole discretion, at any time upon written notification.

l. **SWPPP MODIFICATIONS:** The inspection report should also identify if any revisions to the SWPPP are warranted due to unexpected conditions. The SWPPP is meant

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to be a dynamic working guide that is to be kept current and amended whenever there is a change in design, construction, operation, or maintenance at the construction site that has or could have a significant effect on the discharge of pollutants or when the plan proves to be ineffective in eliminating or significantly minimizing pollutant discharges. The Contractor's failure to modify or report deficiencies to the Operator will result in the Contractor being liable for fines and construction delays resulting from any federal, state, or local agency enforcement action.

J. **FINAL STABILIZATION AND TERMINATION OF PERMIT COVERAGE:** A site can be considered finally stabilized when all soil disturbing activities have been completed and a uniform perennial vegetative cover with a density of **85%** for the unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures have been established and the facility no longer discharges storm water associated with construction activities and a Notice of Termination (NOT) form filed by the Operator(s) with the NYSDEC. The Operator's Project Manager must complete the NOT. The NOT must be signed by the signatory (or equivalent position) on the NOI and subsequently submitted to the appropriate agency. The Operator's Project Manager must provide a completed copy of the NOT to the Contractor for inclusion in the SWPPP, which will then be optically scanned into the final SWPPP document as required. This filing terminates coverage under the General Permit and terminates the Contractor's responsibility to implement the SWPPP, but the requirements of the SWPPP, including periodic inspections, must be continued until the NOT is filed. The **owner or operator** shall also have the **qualified inspector** perform a final site inspection prior to signing and submitting the NOT to the Department. The local MS4/Stormwater Management Officer must also sign the NOT and may require a final site inspection to be completed prior to. Final payment and/or the release of retainage will be withheld until all provisions of the SWPPP have been submitted, completed and accepted by the Operator.

102 PROJECT NAME AND LOCATION

Sawyer's Landing

Dodge Road

Town of Amherst, County of Erie, New York

Easting: 190681.1

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Northing: 4770798.8

Estimated Area of Site ≈ 17.4 acres

Estimated Area to be disturbed by Construction Activities ≈ 16.4 acres

A general location map is included as Appendix A.

103 OPERATOR'S NAME AND ADDRESS

Sawyer's Landing LLC

c/o Severyn Development

43 Central Avenue

Lancaster, NY 14086

Contact Person: William Severyn

Telephone: 716–818-0207

104 PROJECT DESCRIPTION

This project is a development of a 17.4 acre site located on the north side of Dodge Road, west of Sweet Home Road in the Town of Amherst. Both Dodge Road and Sweet Home Road are Erie County roads. Proposed is the construction of a mixed use development to include (2) 4-story buildings with a total of 30,000 sf of commercial and 100 apartments, (47) duplex lots and (2) 1-story apartment buildings with a total of 12 units. A bike trail will be constructed on site, this trail will connect to the existing Town of Amherst bike trail on the south side of Dodge Road. The approximately 1 acre westerly portion will remain undisturbed and be deed restricted as permanent open space. The site is currently undeveloped consisting of woods and overgrown brush/grass. NYSDEC and Federal wetlands were delineated on site by Earth Dimensions, Inc. Approximately 6.1 acres of Federal and 1.2 acres of NYSDEC wetlands have been permitted to be impacted. The proposed site development area to be disturbed for this project is approximately 16.4 acres.

Soil disturbing activities will include:

A. Construction of temporary construction exit points

B. Clearing & grubbing of the site within disturbance limits

C. Installation of detention basins, bioretention areas including topsoil & seed

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D. Installation of storm sewer pipes and inlets

E. Construction of utilities

F. Construction of curb and parking lot

G. Final grading & landscaping

H. Construction of building

This project is owned by Sawyer's Landing LLC and will be developed by the same. The work area consists of approximately 16.4 acres for which erosion and sediment controls have been developed and fully addressed in this written plan and the Erosion and Sediment Control Plans. See the construction documents for additional details.

105 RUNOFF COEFFICIENT, SOILS, AND RAINFALL INFORMATION

The initial runoff curve number for the pre-construction site is "CN" = 78. The post-construction runoff curve number for the site will be "CN" = 91. The site is 17.4 acres of which approximately 16.4 acres will be disturbed by construction activities.

See soils information located in Appendix H.

The site is in Erie County, which receives an average of approximately 45 inches rainfall annually with the highest amounts of rainfall received in the months of May thru September. Annual snow for this area is approximately 120 inches.

106 WATERS

The runoff generated from this site will discharge to the storm system on Dodge Road which is tributary to Ellicott Creek.

107 INDIAN COUNTRY LANDS

This project is not located on Indian Lands.

108 ENDANGERED AND THREATENED SPECIES

No endangered or threatened species have been determined to be on the site.

109 CRITICAL HABITAT

See section 108 above.

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110 HISTORIC PLACES

The assessed property is shown on the NYSHPO map as an archeologically sensitive area. A NYSHPO "no effect" letter is included in Appendix I.

111 WETLANDS AND/OR OTHER SURFACE WATERS

Federal and NYSDEC wetlands were delineated on site by Earth Dimensions, Inc. Approximately 6.1 acres of Federal and 1.2 acres of NYSDEC wetlands have been permitted to be impacted. The USACOE and NYSDEC wetland permits are included in Appendix K of this report.

112 EROSION AND SEDIMENT CONTROLS

112.1 STABILIZATION PRACTICES

Stabilization practices for this site include:

A. Land clearing activities shall be done only in areas where earthwork will be performed and shall progress as earthwork is needed.

B. Use of stabilization method for all slopes with a slope greater than 1V:3H.

C. Permanent seeding and planting of all unpaved areas using the hydromulching grass seeding technique.

D. Mulching exposed areas.

E. Vegetation preservation in undisturbed areas.

F. Frequent watering to minimize wind erosion during construction.

a. **For sites where 5 acres or more are disturbed at any one time**: In areas where soil disturbance activity has been temporarily or permanently ceased, temporary and/or permanent soil stabilization measures shall be installed and/or implemented within seven (7) days from the date the soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the most current version of the New York Standards and Specifications for Erosion and Sediment Control.

b. The **owner or operator** shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

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c. The **owner or operator** shall install any additional measures needed to protect water quality.

112.2 STRUCTURAL PRACTICES

Structural practices for this site include:

A. Inlet protection using a method detailed in the Construction Documents.

B. Perimeter protection using temporary silt fence/silt sock or silt sock.

C. Outlet protection using rip-rap stone and end sections.

D. Stabilized Construction Entrance.

E. Temporary stone wash off areas.

F. Storm sewer, curb/gutter.

G. Sediment traps and basins.

112.3 SEQUENCE OF MAJOR ACTIVITIES

The Contractor will be responsible for implementing the following erosion control and storm water management control measures. The Contractor may designate these tasks to certain subcontractors as he sees fit, but the ultimate responsibility for implementing these controls and ensuring their proper functioning remains with the Contractor. The order of activities will be as follows:

A. Construct temporary construction exits at locations shown on the Demolition & Erosion Control Plan Sheet.

B. Install perimeter silt fence/silt socks/silt sock in the locations shown on the Demolition & Erosion Control Plan Sheet.

C. Clear & Grub site.

D. Installation of detention basin to act as sediment basin.

E. Commence site grading.

F. If less than 5 acres of the site have been disturbed and construction activity has ceased for more than 14 days, temporarily seed and water to stabilize this area. If more than 5 acres of the site have been disturbed and construction activity has ceased for more than 7 days, temporarily seed and water to stabilize this area.

G. Installation of proposed utilities.

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H. Install base material as required for pavement/buildings.

I. Finalize pavement subgrade preparation.

J. Construction of buildings.

K. Construct all curb, drainage inlets, storm sewer pipes and storm sewer manholes, as shown on the plans. Install temporary inlet protection at the locations of all inlets.

L. Dust control.

L. Remove inlet protection around inlets and manholes no more than 48 hours prior to placing stabilized base course.

N. Carry out final grading and seeding and planting.

O. Install bioretention areas (do not install bioretention soil or underdrains until surrounding area is stabilized).

P. Clean storm system following construction, clean detention basin of any silt and return to design grades.

Q. Remove silt fencing/silt sock only after all paving is complete and exposed surfaces are stabilized.

R. Remove temporary construction exits only prior to pavement construction in these areas.

Note: Sediment control storage during construction (traps & basins) during construction shall be 134 cy per acre of disturbance per NYSDEC requirements.

112.4 STORM WATER MANAGEMENT

The existing site is generally flat and slopes west with portions sloping east. The portion that slopes west settles in a low area and once the capacity of that area is exceeded, sheet flow continues towards Sweet Home Road and is collected by an existing 12" pipe on the north side of Dodge Road. This pipe flows to the Erie County system on Sweet Home Road. The portion that flows east flows to the offsite wetlands.

Currently Dodge Road does not have a drainage system. A series of catch basins and pipes will be installed in the green area on the north side of Dodge Road to collect the road drainage. The west portion of this system will connect to the existing closed drainage system on Sweet Home Road. The east portion will discharge to the Ellicott Creek diversion channel using and existing discharge point. This new system will also convey the proposed discharge from the site as described below.

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The proposed onsite storm sewer system consists of smooth interior and perforated HDPE pipes connected by a series of catch basins, manholes and yard drains. The site is split into a storm water management area on the east and west sides.

West Side

The west side of the site has (2) bioretention areas which portions of the westerly area will discharge to. These bioretention areas along with the remainder of the west portion of the site will discharge to the underground detention area. Note that the yard drains installed along the north property line discharge to the underground detention area. An outlet structure in the SW portion of this area will control runoff to at or below existing runoff flow rates. The discharge from the outlet control structure will discharge to the new system on Dodge Road which flows to the Sweet Home Road system.

Underground Detention Summary

(286) ADS Stormtech SC-740 chambers
Top of stone elev. = 573.00
Top of chamber elev. = 572.50
Bottom of chamber elev. = 570.00
Bottom of stone elev. = 569.50
Total storage = 18,574 CF

Event	Ex. Discharge	Pro. Discharge	Elev.
1 yr	0.87 cfs	0.33 cfs	570.29
2 yr	1.34 cfs	0.68 cfs	570.46
5 yr	2.14 cfs	1.05 cfs	570.79
10 yr	2.94 cfs	1.28 cfs	571.13
25 yr	4.34 cfs	1.61 cfs	571.73
50 yr	5.69 cfs	3.61 cfs	572.23
100 yr	7.33 cfs	4.83 cfs	572.92

East Side

The east side of the site has a bioretention area and wet detention pond which this portion of the site discharges to. The NE portion of the site discharges to a forebay which spills into the main micropool portion of the wet detention basin. The SE portion of the site discharges to the bioretention area which also spills into the main micropool portion of the site. An outlet control structure is located in

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the SE portion of the micropool and controls the discharge from this storm water management area. Spillways are also located on the east portion of the micropool which will discharge to the existing wetlands to the east in order to not cut off all flow from this site into this area. The discharge from the outlet control structure will discharge to the new system on Dodge Road which flows to the Ellicott Creek diversion channel.

The bioretention areas and wet detention pond for the project area are sized to provide 100% of the required Runoff Reduction Volume (RRv) and Water Quality Volume (WQv) treatment for the overall site in accordance with Chapter 4 of the NYSDEC Stormwater design manual. The soils in the vicinity of the bioretention areas are mainly USDA hydrologic group 'D' and therefore the system will be installed with underdrains per NYSDEC requirements. The bioretention areas will consist of 6" and 8" perforated HDPE underdrains in 12" of drainage gravel, followed by filter fabric and 18" minimum of planting soil. Overflow yard drains will be installed to allow 6" maximum temporary ponding for RRv treatment. The east bioretention area (area #3) spills into the wet detention pond and the underdrain pipe ties together with the pond discharge and flows to Dodge Road. The east bioretention areas (areas #1 & #2) have a catch basin to act as the spillway and this catch basin and the underdrain pipes discharge to the underground detention area.

Storm Water Management Area Summary

Forebay
Top of basin elev. = 576.80
Permanent water elev. = 575.00
Aquatic bench elev. = 574.50
Bottom of basin elev. = 569.00

Micropool
Top of basin elev. = 576.80
Permanent water elev. = 575.00
Aquatic bench elev. = 574.50
Bottom of basin elev. = 563.00

Overall Storm Water Summary

WQv Provided = 152,678 cf (pond)
WQv Provided = 6,948 cf (bioretention)
WQv Provided = 159,626 cf (total)

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Bioretention Area Summary:

Area	Rim Elev.	Bottom Elev.	Area
1	574.50	574.00	2,300 sf
2	574.50	574.00	2,600 sf
3	575.50	575.00	11,000 sf
		Total Provided =	15,900 sf

Water Quality Summary:
WQv req'd = 28,804 cf (0.661 ac-ft)
RRv min. req'd = 5,518 cf (0.127 ac-ft)
RRv provided = 8,662 cf (0.199 ac-ft)
WQv provided = 159,626 cf (3.665 ac-ft)
Total RRv + WQv provided = 8,662 cf + 159,626 cf = 168,287 cf (3.868 ac-ft)

Detention: Comparison of the existing 1-year vs. the proposed 1-year runoff
Comparison of the existing 10-year vs. the proposed 10-year runoff
Comparison of the existing 100-year vs. the proposed 100-year runoff

Storm pipes: 10-year storm

Refer to the engineer's report in Appendix N for additional details.

113 OTHER CONTROLS

113.1 OFF-SITE VEHICLE TRACKING

A stabilized construction exit will be provided to help reduce vehicle tracking of sediments. Existing paved areas will remain as long as possible and will be used for vehicle wash areas and to further aid in the reduction of vehicle tracking of sediments. The paved streets adjacent to the site entrance shall be inspected daily and swept as necessary to remove any excess mud, dirt, or rock tracked from the site. Dump trucks hauling material to/from the construction site will be covered with a tarpaulin. The job site superintendent will be responsible for seeing that these procedures are followed.

113.2 EXCAVATION SPOIL MATERIALS

Excavation spoil materials are generated during the excavation of the development's building and utilities installation. These materials must be properly managed to prevent them from contributing to storm water discharges. The materials generated from the development of this project will be hauled off-site or stockpiled for re-use in designated areas which will have temporary erosion &

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sediment control measures installed. Any removal from site will be done under the necessary permits required by the local governing agencies.

113.3 DUST CONTROL

Minimizing wind erosion and controlling dust will be accomplished by one or more of the following methods:

A. Frequent watering of excavation and fill areas.

B. Providing gravel or paving at entrance/exit drives, parking areas and transit paths.

113.4 WASTE DISPOSAL

If needed, all waste materials will be collected and stored in securely lidded metal dumpsters rented from an approved waste management company. The dumpster will comply with all local and state solid waste management regulations.

All trash and construction debris from the site will be deposited in the dumpsters. The dumpsters will be emptied when full and then hauled to a NYSDEC approved landfill for proper disposal. No construction waste will be buried on-site. All personnel will be instructed regarding the correct procedures for waste disposal.

113.5 SANITARY WASTE

If needed, portable toilet units or field offices with toilet facilities connected to the municipal sanitary sewer will be used for sanitary purposes. All portable toilet units will be emptied a minimum of once per week by a licensed portable facility provided in compliance with local and state regulations.

113.6 CONCRETE WASTE FROM CONCRETE TRUCKS

A. Emptying of excess unhardened concrete and/or washout from concrete delivery trucks will be allowed on the job site, but in either (1) specifically designated diked areas which have been prepared to prevent contact between concrete and/or washout and storm water which will be discharged from the site or (2) in locations where waste concrete will be poured into forms to make rip-rap or other useful concrete products.

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B. Hardened waste concrete from the designated diked areas described above will be disposed of in accordance with applicable local and state regulations with regards to disposal of construction debris.

113.7 HAZARDOUS SUBSTANCES & HAZARDOUS WASTE

A. All hazardous waste materials will be disposed of by the Contractor in the manner specified by local, state, and/or federal regulations and by the manufacturer of such products. Site personnel will be instructed in these practices by the job superintendent, who will also be responsible for seeing these practices are followed. Material Safety Data Sheets (MSDS's) for each substance with hazardous properties that is used on the job site will be obtained and used for the proper management of potential wastes that may result from these products. An MSDS will be posted in the immediate area where such products are stored and/or used and another copy of each MSDS will be maintained in the SWPPP file at the job site construction office. Each employee who must handle a substance with hazardous properties will be instructed on the use of MSDS sheets and the specific information in the applicable MSDS for the product he/she is using, particularly regarding spill control techniques.

B. The contractor will implement the Spill Prevention Control and Countermeasures (SPCC) Plan found within this SWPPP and will train all personnel in the proper cleanup and handling of spilled materials. No spilled hazardous materials of hazardous wastes will be allowed to come in contact with storm water discharges. If such contact occurs, the storm water discharge shall be contained on site until appropriate measures in compliance with state and federal regulations are taken to dispose of such contaminated storm water. It shall be the responsibility of the job superintendent to properly train all personnel in the use of the SPCC plan.

C. Any spills of hazardous materials which are in excess of the Reportable Quantities as defined by the EPA regulations shall be immediately reported to the EPA National Response Center at 1-100-424-1102. From SWPPP-9 "Reportable Quantity Release Form" must be filled out.

D. In order to minimize the potential for a spill of hazardous materials to come in contact with storm water, the following steps will be implemented:

1. All materials with hazardous properties (such as pesticides, petroleum products, fertilizers, detergents, construction chemicals,

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acids, paints, paint solvents, cleaning solvents, additives for soil stabilization, concrete curing compounds and additives, etc.) will be stored in a secure location, under cover, when not in use.

2. The minimum practical quantity of all such materials will be kept on the job site.

3. A spill control and containment kit (containing for example, absorbent such as kitty litter or sawdust, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided at the storage site.

4. All of the product in a container will be used before the container is disposed of. All such containers will be triple rinsed with water prior to disposal. The rinse water used in these containers will be disposed of in a manner in compliance with state and federal regulations and will not be allowed to mix with storm water discharges.

5. All products will be stored in and used from the original container with the original product label.

6. All products will be used in strict compliance with instructions on the product label.

7. The disposal of excess or used products will be in strict compliance with instructions on the product label.

113.8 CONTAMINATED SOILS

A. Any contaminated soils (resulting from spills of materials with hazardous properties) which may result from construction activities will be contained and cleaned up immediately in accordance with the procedures given in the Spill Prevention Control and Countermeasures (SPCC) Plan and in accordance with applicable state and federal regulations.

B. The job site superintendent will be responsible for seeing that these procedures are followed.

114 COMPLIANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS

The Contractor will obtain copies of any and all local and state regulations which are applicable to storm water management, erosion control, and

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pollution minimization at this job site and will comply fully with such regulations. The Contractor will submit written evidence of such compliance if requested by the Operator or any agent of a regulatory body. The Contractor will comply with all conditions of the SPDES General Permit for Construction Activity for the State of New York, including the conditions related to maintaining the SWPPP and evidence of compliance with the SWPPP at the job site and allowing regulatory personnel access to the job site and to records in order to determine compliance.

The SWPPP for this site development project requires regulated MS4 approval from the Town of Amherst. All changes to the SWPPP must be approved by the Town of Amherst prior to applying changes to the SWPPP in the field.

115 INSPECTION AND MAINTENANCE PROCEDURES

The following inspection and maintenance practices will be used to maintain erosion and sediment controls and stabilization measures.

1. All control measures will be inspected by the owner/operator at least weekly and shall continue until the site complies with the Final Stabilization section of this document (See Section 116).

2. All control measures will be inspected by a Qualified Professional at least weekly and shall continue until the site complies with the Final Stabilization section of this document (See Section 116).

3. All measures will be maintained in good working order; if repairs or other measures are found to be necessary, they will be initiated within 24 hours of report.

4. Built up sediment will be removed from silt fence/silt sock when it has reached one-third the height of the fence.

5. Silt fence/silt socks will be inspected for depth of sediment, tears, etc., to see if the fabric is securely attached to the fence posts, and to see that the fence posts are securely in the ground.

6. Temporary and permanent seeding and all other stabilization measures will be inspected for bare spots, washouts, and healthy growth.

7. A maintenance inspection report will be made after each inspection. Copies of the report forms to be completed by the inspector are included in this SWPPP.

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8. The job site superintendent will be responsible for selecting and training the individuals who will be responsible for these inspections, maintenance and repair activities, and filling out inspection and maintenance reports.

9. Personnel selected for the inspection and maintenance responsibilities will receive training from the job site superintendent. They will be trained in all the inspection and maintenance practices necessary for keeping the erosion and sediment controls that are used onsite in good working order. They will also be trained in the completion of, initiation of actions required by, and the filing of the inspection forms. Documentation of this personnel training will be kept on site with the SWPPP.

10. Disturbed areas and materials storage areas will be inspected for evidence of or potential for pollutants entering stormwater systems.

11. Report to the NYSDEC within 24 hours any noncompliance with the SWPPP that will endanger public health or the environment. Follow up with a written report within 5 days of the noncompliance event. The following events require 24 hour reporting: a) any unanticipated bypass which exceeds any effluent limitation in the permit, b) any upset which exceeds any effluent limitation in the permit, and c) a violation of a maximum daily discharge limitation for any of the pollutants listed by the NYSDEC in the permit to be reported within 24 hours. The written submission must contain a description of the non-compliance and its cause; the period of non-compliance, including exact dates and times, and if the non-compliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the non-compliance.

12. Releases of hazardous substances or oil in excess of reportable quantities (as established under 40 CFR 110, 40 CFR 117 or 40 CFR 302) must be reported.

Upon completion of construction, the property owner is responsible for ensuring that the stormwater facilities are regularly inspected and maintained. Maintenance and inspection procedures are as follows.

1. On a quarterly basis and following significant rainfall events or snow-melts, perform the following:

    - Inspect catch basins, storm manholes, yard drains, storm piping and stormwater pond for debris and accumulation of sediment.

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- Remove and properly dispose of any collected debris and sediment in accordance with applicable state, federal and local regulations.
- Flush piping with water if necessary to remove accumulated sediment.
- Bioretention areas shall be maintained per the NYSDEC Maintenance and Management Checklist included in this SWPPP.
- Check all stone outfall structures for erosion and re-stone if necessary to prevent further erosion.
- Inspect grassed/landscaped areas for un-vegetated areas or areas with less than 85% healthy stand of grass and reseed and mulch as necessary. Water daily if reseeded in July and August.
- A record of all inspections should be kept.

2. Maintain all lawn areas by regular mowing, including the grassed slopes of the stormwater pond and any grass swales. Any eroded areas shall be regarded, seeded and mulched immediately.

116 INSPECTION AND MAINTENANCE REPORT FORMS

Once installation of any required or optional erosion control device or measure has been implemented, inspections shall be performed by a Qualified Professional at least once every seven (7) calendar days. For construction sites where soil disturbance activities are on-going and the **owner or operator** has received authorization in accordance with Part II.C.3 of the General Permit to disturb greater than five (5) acres of soil at any one time, the **qualified inspector** shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days. The owner and contractor shall obtain from the MS4 an approval for disturbing more than five-acres at any given time. For construction sites where active construction has been suspended, inspection frequency under the general permit can be reduced to once every 30 days, provided temporary stabilization measures have been applied to all disturbed areas. The forms found in this SWPPP shall be used by the inspectors to inventory and report the condition of each measure to assist in maintaining the erosion and sediment control measures in good working order.

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These report forms shall become an integral part of the SWPPP and shall be made readily accessible to governmental inspection officials, the Operator's Engineer, and the Operator for review upon request during visits to the project site. In addition, copies of the reports shall be provided to any of these persons, upon request, via mail or facsimile transmission. Inspection and maintenance report forms are to be maintained by the permittee for five years following the final stabilization of the site.

117 OTHER RECORD-KEEPING REQUIREMENTS

The Contractor shall keep the following records related to construction activities at the site:

- Dates when major grading activities occur and the areas which were graded
- Dates and details concerning the installation of structural controls
- Dates when construction activities cease in an area
- Dates when an areas is stabilized, either temporarily or permanently
- Dates of rainfall and the amount of rainfall
- Dates and descriptions of the character and amount of any spills of hazardous materials
- Records of reports filed with regulatory agencies if reportable quantities of hazardous materials spilled

118 SPILL PREVENTION CONTROL AND COUNTERMEASURES (SPCC) PLAN

118.1 MATERIALS COVERED

The following materials or substances are expected to be present onsite during construction:

- Concrete/Additives/Wastes
- Cleaning solvents
- Sanitary wastes
- Detergents
- Petroleum based products
- Paints/Solvents
- Pesticides
- Solid and construction wastes
- Acids

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- Fertilizers
- Soil stabilization additives

118.2 MATERIAL MANAGEMENT PRACTICES

The following are the material management practices that will be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff. The job site superintendent will be responsible for ensuring that these procedures are followed.

A. Good Housekeeping

The following good housekeeping practices will be followed onsite during the construction project.

1. An effort will be made to store only enough products required to do the job.

2. All materials stored onsite will be stored in a neat, orderly manner and, if possible, under a roof or in a containment area. At a minimum, all containers will be stored with their lids on when not in use. Drip pans shall be provided under all dispensers.

3. Products will be kept in their original containers with the original manufacturer's label in legible condition.

4. Substances will not be mixed with one another unless recommended by the manufacturer.

5. Whenever possible, all of a product will be used up before disposing of the container.

6. Manufacturer's recommendations for proper use and disposal will be followed.

7. The job site superintendent will be responsible for daily inspections to ensure proper use and disposal of materials.

B. Hazardous Products

These practices will be used to reduce the risks associated with hazardous materials. Material Safety Data Sheets (MSDS's) for each substance with hazardous properties that is used on the job site will be obtained and used for the proper management of potential wastes that may result from

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these products. An MSDS will be posted in the immediate area where such product is stored and/or used and another copy of each MSDS will be maintained in the SWPPP file at the job site construction trailer office. Each employee who must handle a substance with hazardous properties will be instructed on the use of MSDS sheets and the specific information in the applicable MSDS for the product he/she is using, particularly regarding spill control techniques.

1. Products will be kept in original containers with the original labels in legible condition.

2. Original labels and material safety data sheets (MSDS's) will be procured and used for each material.

3. If surplus product must be disposed of, manufacturer's or local/state/federal recommended methods for proper disposal will be followed.

4. A spill control and containment kit (containing for example, absorbent such as kitty litter or sawdust, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided at the storage site.

5. All of the product in a container will be used before the container is disposed of. All such containers will be triple rinsed with water prior to disposal. The rinse water used in these containers will be disposed of in a manner in compliance with state and federal regulations and will not be allowed to mix with storm water discharges.

C. Hazardous Waste

All hazardous waste materials will be disposed of by the Contractor in the manner specified by local, state, and/or federal regulations and by the manufacturer of such products. Site personnel will be instructed in these practices by the job site superintendent, who will also be responsible for seeing that these practices are followed.

D. Product Specific Practices

The following product specific practices will be followed on the job site.

1. Petroleum Products

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All onsite vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers which are clearly labeled. Any petroleum storage tanks stored onsite will be located within a containment area that is designed with an impervious surface between the tank and the ground. The secondary containment must be designed to provide a containment volume that is equal to 110% of the volume of the largest tank. Drip pans shall be provided for all dispensers. Any asphalt substances used onsite will be applied according to the manufacturer's recommendations. The location of any fuel tanks and/or equipment storage areas must be identified on a plan by the contractor once the locations have been determined.

2. Fertilizers

Fertilizers will be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer will be worked in the soil to limit exposure to stormwater. Storage will be in a covered shed. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.

3. Paints, Paint Solvents, and Cleaning Solvents

All containers will be tightly sealed and stored when not in use. Excess paint and solvents will not be discharged to the storm sewer system but will be properly disposed of according to manufacturer's instructions or state and federal regulations.

4. Concrete Wastes

Concrete trucks will be allowed to wash out or discharge surplus concrete or drum wash water on the site, but only in either (1) specifically designated diked areas which have been prepared to prevent contact between the concrete and/or wash out and storm water which will be discharged from the site or (2) in locations where waste concrete can be poured into forms to make riprap or other useful concrete products.

The hardened residue from the concrete wash out diked areas will be disposed of in the same manner as other non-hazardous construction waste materials or may be broken up and used on site

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as deemed appropriate by the Contractor. The job site superintendent will be responsible for seeing that these procedures are followed.

All concrete wash out areas will be located in an area where the likelihood of the area contributing to storm water discharges is negligible. If required, additional BMPs must be implemented to prevent concrete wastes from contributing to storm water discharges. The location of concrete wash out area(s) must be identified on a plan by the contractor once the locations have been determined. In addition, a standard detail on the construction of the concrete wash out shall be included on this plan.

E. Solid and Construction Wastes

All waste materials will be collected and stored in an appropriately covered container and/or securely lidded metal dumpster rented from a local waste management company which must be a solid waste management company licensed to do business in New York and the Town of Amherst. The dumpster will comply with all local and state solid waste management regulations.

All trash and construction debris from the site will be deposited in the dumpster. The dumpster will be emptied a minimum of twice per week or more often if necessary, and the trash will be hauled to a landfill approved by the NYSDEC. No construction waste materials will be buried on site. All personnel will be instructed regarding the correct procedures for waste disposal.

All waste dumpsters and roll-off containers will be located in an area where the likelihood of the containers contributing to storm water discharges is negligible. If required, additional BMPs must be implemented, such as sandbags around the base, to prevent wastes from contributing to storm water discharges. The location of waste dumpsters and roll-off containers must be identified on a plan by the contractor once the locations have been determined.

F. Sanitary Wastes

Portable toilet units or field offices with toilet facilities connected to the municipal sanitary sewer will be used for sanitary purposes. All portable

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toilet units will be emptied a minimum of once per week by a licensed portable facility provided in compliance with local and state regulations.

All sanitary waste units will be located in an area where the likelihood of the unit contributing to storm water discharges is negligible. If required, additional BMPs must be implemented, such as sandbags around the base, to prevent wastes from contributing to storm water discharges. The location of sanitary waste units must be identified on a plan by the contractor once the locations have been determined.

G. Contaminated Soils

Any contaminated soils (resulting from spills of materials with hazardous properties) which may result from construction activities will be contained and cleaned up immediately in accordance with the procedures given in the Materials Management Plan and in accordance with applicable state and federal regulations.

118.3 SPILL PREVENTION AND RESPONSE PROCEDURES

The Contractor will train all personnel in the proper handling and cleanup of spilled materials. No spilled hazardous materials or hazardous wastes will be allowed to come in contact with storm water discharges. If such contact occurs, the storm water discharge will be contained on site until appropriate measures in compliance with state and federal regulations are taken to dispose of such contaminated storm water. It shall be the responsibility of the job site superintendent to properly train all personnel in spill prevention and clean up procedures.

A. In order to minimize the potential for a spill of hazardous materials to come into contact with storm water, the following steps will be implemented:

1. All materials with hazardous properties (such as pesticides, petroleum products, fertilizers, detergents, construction chemicals, acids, paints, paint solvents, cleaning solvents, additives for soil stabilization, concrete curing compounds and additives, etc.) will be stored in a secure location, with their lids on, preferably under cover, when not in use.

2. The minimum practical quantity of all such materials will be kept on the job site.

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3. A spill control and containment kit (containing, for example, absorbent materials, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided at the storage site.

4. Manufacturer's recommended methods for spill cleanup will be clearly posted and site personnel will be trained regarding these procedures and the location of the information and cleanup supplies.

B. In the event of a spill, the following procedures should be followed

1. All spills will be cleaned up immediately after discovery.

2. The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with the hazardous substances.

3. The project manager and the Engineer of Record will be notified immediately.

   Spills of toxic or hazardous materials will be reported to the appropriate federal, state, and/or local government agency, regardless of the size of the spill. Spills of amounts that exceed Reportable Quantities of certain substances specifically mentioned in federal regulations (40 CFR 110, 40 CFR 117, and 40 CFR 302) must be immediately reported to the EPA National Response Center, telephone 1-100-424-1102. From SWPPP-9 "Reportable Quantity Release Form" must be filled out.

4. If the spill exceeds a Reportable Quantity, the SWPPP must be modified within seven (7) calendar days of knowledge of the discharge to provide a description of the release, the circumstances leading to the release, and the date of the release. The plans must identify measures to prevent the recurrence of such releases and to respond to such releases.

C. The job site superintendent will be the spill prevention and response coordinator. He will designate the individuals who will receive spill prevention and response training. These individuals will each become responsible for a particular phase of prevention and response. The names

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of these personnel will be posted in the material storage area and in the office trailer onsite.

119 CONTROL OF NON-STORM WATER DISCHARGES

Certain types of discharges are allowable under the NYSDEC SPDES General Permit for Construction Activity for the State of New York, and it is the intent of this SWPPP to allow such discharges. These types of discharges will be allowed under the conditions that no pollutants will be allowed to come in contact with the water prior to or after its discharge. The control measures which have been outlined previously in this SWPPP will be strictly followed to ensure that no contamination of these non-storm water discharges takes place. The following allowable non-storm water discharges which may occur at the job site include:

A. Discharges from firefighting activities.

B. Fire hydrant flushings (see note below)

C. Waters used to wash vehicles or control dust in order to minimize offsite sediment tracking.

D. Routine external building washdown which does not use detergents.

E. Pavement wash waters where spills or leaks of hazardous materials have not occurred or detergents have not been used.

F. Air conditioning condensate.

G. Springs or other uncontaminated groundwater, including dewatering ground water infiltration.

H. Foundation or footing drains where no contamination with process materials such as solvents is present.

Note: The Contractor shall discharge any super-chlorinated water from water distribution pipe disinfection activities into sanitary sewer system.

120 STORM WATER CONTROL FACILITY MAINTENANCE

Upon completion of construction, SL shall be responsible for maintenance of the storm sewer system and all ponds, bioretention areas, etc. per a Stormwater Maintenance Agreement to the Town of Amherst that shall be filed with the County of Erie.

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The frequency of inspections for the bioretention areas shall match the frequencies listed on the "Bioretention Operation, Maintenance and Management Inspection Checklist" in Appendix O of the SWPPP.

The proposed catch basins, as per section 115, shall be inspected 4 times per year for removal of floatable debris. Any silt buildup over 6" in depth shall be removed and disposed of properly off-site.

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Appendix A

Site Location Map

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Stormwater Interactive Map



The coordinates of the point you clicked on are:

UTM 18	**Easting:**	190681.063	**Northing:**	4770798.806
Longitude/Latitude	**Longitude:**	-78.796	**Latitude:**	43.027

The approximate address of the point you clicked on is:
26-42 Dodge Rd, Getzville, New York, 14068

County: Erie
Town: Amherst
USGS Quad: TONAWANDA EAST

DEC Administrative Boundaries

Region 9:
(Western New York) Allegany, Chautauqua, Cattaraugus, Erie, Niagara and Wyoming counties. For more information visit http://www.dec.ny.gov/about/617.html.

Regulated MS4s

UA 2000: 11350
Standard: Buffalo
Municipality: AMHERST
SWIS: 142200
Regulated: Automatic

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Appendix B

NYSDEC Notice of Intent (NOI)

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NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR _____ (for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-20-001

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-

RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)
Sawyer's Landing LLC

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
Severyn

Owner/Operator Contact Person First Name
Will

Owner/Operator Mailing Address
43 Central Ave

City
Lancaster

State
NY

Zip
14086 -

Phone (Owner/Operator)
716 - 912 - 0969

Fax (Owner/Operator)
___ - ___ - ____

Email (Owner/Operator)
william.severyn.ny@gmail.com

FED TAX ID
__ - _____ (not required for individuals)

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Project Site Information

Project/Site Name
Sawyer's Landing

Street Address (NOT P.O. BOX)
Dodge Road

Side of Street
● North ○ South ○ East ○ West

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Amherst

State NY | Zip 14228 - | County Erie | DEC Region 9

Name of Nearest Cross Street
Sweet Home Road

Distance to Nearest Cross Street (Feet)
0

Project In Relation to Cross Street
○ North ○ South ● East ○ West

Tax Map Numbers
Section-Block-Parcel
40.08-3-13.1

Tax Map Numbers

1. Provide the Geographic Coordinates for the project site. To do this, go to the NYSDEC Stormwater Interactive Map on the DEC website at:

https://gisservices.dec.ny.gov/gis/stormwater/

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located the centroid of your project site, go to the bottom right hand corner of the map for the X, Y coordinates. Enter the coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)
-7 8796
Ex. -73.749

Y Coordinates (Northing)
43027
Ex. 42.652

2. What is the nature of this construction project?

● **New Construction**

○ **Redevelopment with increase in impervious area**

○ **Redevelopment with no increase in impervious area**

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3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use

- (●) FOREST
- ( ) PASTURE/OPEN LAND
- ( ) CULTIVATED LAND
- ( ) SINGLE FAMILY HOME
- ( ) SINGLE FAMILY SUBDIVISION
- ( ) TOWN HOME RESIDENTIAL
- ( ) MULTIFAMILY RESIDENTIAL
- ( ) INSTITUTIONAL/SCHOOL
- ( ) INDUSTRIAL
- ( ) COMMERCIAL
- ( ) ROAD/HIGHWAY
- ( ) RECREATIONAL/SPORTS FIELD
- ( ) BIKE PATH/TRAIL
- ( ) LINEAR UTILITY
- ( ) PARKING LOT
- ( ) OTHER

Post-Development Future Land Use

- ( ) SINGLE FAMILY HOME — Number of Lots
- ( ) SINGLE FAMILY SUBDIVISION
- ( ) TOWN HOME RESIDENTIAL
- ( ) MULTIFAMILY RESIDENTIAL
- ( ) INSTITUTIONAL/SCHOOL
- ( ) INDUSTRIAL
- ( ) COMMERCIAL
- ( ) MUNICIPAL
- ( ) ROAD/HIGHWAY
- ( ) RECREATIONAL/SPORTS FIELD
- ( ) BIKE PATH/TRAIL
- ( ) LINEAR UTILITY (water, sewer, gas, etc.)
- ( ) PARKING LOT
- ( ) CLEARING/GRADING ONLY
- ( ) DEMOLITION, NO REDEVELOPMENT
- ( ) WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
- (●) OTHER: Mixed use

***Note:** for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

Total Site Area	Total Area To Be Disturbed	Existing Impervious Area To Be Disturbed	Future Impervious Area Within Disturbed Area
17.4	16.4	0.0	8.0

5. Do you plan to disturb more than 5 acres of soil at any one time? (●) **Yes** ( ) **No**

6. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	B	C	D
%	%	%	100 %

7. Is this a phased project? ( ) **Yes** (●) **No**

8. Enter the planned start and end dates of the disturbance activities.

Start Date 7/1/2021 – **End Date** 7/1/2022

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9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.

Name

Ellicott Creek

9a. Type of waterbody identified in Question 9?

- ○ Wetland / State Jurisdiction On Site (Answer 9b)
- ○ Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 9b)
- ○ Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ● Stream / Creek Off Site
- ○ River On Site
- ○ River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ○ Other Type Off Site

9b. How was the wetland identified?

- ○ Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ○ Other (identify)

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001? ○ Yes ● No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001? ○ Yes ● No

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? ○ Yes ● No
If no, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ○ Yes ● No
If Yes, what is the acreage to be disturbed?

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ○ Yes ● No

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15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ● Yes ○ No ○ Unknown

16. What is the name of the municipality/entity that owns the separate storm sewer system?

Erie County

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ Yes ● No ○ Unknown

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law? ○ Yes ● No

19. Is this property owned by a state authority, state agency, federal government or local government? ○ Yes ● No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) ○ Yes ● No

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? ● Yes ○ No

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)? ● Yes ○ No
If No, skip questions 23 and 27-39.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? ● Yes ○ No

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24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ● **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer
Carmina Wood Morris DPC

Contact Name (Last, Space, First)
Wood Christopher

Mailing Address
487 Main St

City
Buffalo

State Zip
NY 14127-

Phone
716-842-3165

Fax
716-842-0263

Email
cwood@cwm-ae.com

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name
Christopher

MI

Last Name
Wood

Signature

Date
03/03/2021

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25. Has a construction sequence schedule for the planned management practices been prepared? ● Yes ○ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ● Check Dams
- ○ Construction Road Stabilization
- ● Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ○ Sediment Basin
- ○ Sediment Traps
- ● Silt Fence
- ● Stabilized Construction Entrance
- ● Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ○ Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ● Mulching
- ● Protecting Vegetation
- ○ Recreation Area Improvement
- ● Seeding
- ○ Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ○ Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ○ Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ○ Retaining Wall
- ○ Riprap Slope Protection
- ○ Rock Outlet Protection
- ○ Streambank Protection

Other

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Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

- ● **Preservation of Undisturbed Areas**
- ● **Preservation of Buffers**
- ○ **Reduction of Clearing and Grading**
- ○ **Locating Development in Less Sensitive Areas**
- ○ **Roadway Reduction**
- ○ **Sidewalk Reduction**
- ○ **Driveway Reduction**
- ○ **Cul-de-sac Reduction**
- ○ **Building Footprint Reduction**
- ○ **Parking Reduction**

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

- ● All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).
- ○ Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

		0	.	6	6	1

acre-feet

29. Identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required(#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

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Table 1 - Runoff Reduction (RR) Techniques and Standard Stormwater Management Practices (SMPs)

	Total Contributing Area (acres)		Total Contributing Impervious Area (acres)
RR Techniques (Area Reduction)			
● Conservation of Natural Areas (RR-1)	1.0	and/or	0.0
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)		and/or	
○ Tree Planting/Tree Pit (RR-3)		and/or	
○ Disconnection of Rooftop Runoff (RR-4)		and/or	
RR Techniques (Volume Reduction)			
○ Vegetated Swale (RR-5)			
○ Rain Garden (RR-6)			
○ Stormwater Planter (RR-7)			
○ Rain Barrel/Cistern (RR-8)			
○ Porous Pavement (RR-9)			
○ Green Roof (RR-10)			
Standard SMPs with RRv Capacity			
○ Infiltration Trench (I-1)			
○ Infiltration Basin (I-2)			
○ Dry Well (I-3)			
○ Underground Infiltration System (I-4)			
● Bioretention (F-5)	4.3		
○ Dry Swale (O-1)			
Standard SMPs			
○ Micropool Extended Detention (P-1)			
○ Wet Pond (P-2)			
○ Wet Extended Detention (P-3)			
○ Multiple Pond System (P-4)			
● Pocket Pond (P-5)	3.4		
○ Surface Sand Filter (F-1)			
○ Underground Sand Filter (F-2)			
○ Perimeter Sand Filter (F-3)			
○ Organic Filter (F-4)			
○ Shallow Wetland (W-1)			
○ Extended Detention Wetland (W-2)			
○ Pond/Wetland System (W-3)			
○ Pocket Wetland (W-4)			
○ Wet Swale (O-2)			

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Table 2 - Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Alternative SMP	Total Contributing Impervious Area (acres)
○ Hydrodynamic	
○ Wet Vault	
○ Media Filter	
○ Other [ ]	

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Name

Manufacturer

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

Total RRv provided

0.199 **acre-feet**

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28).

○ **Yes** ● **No**

If Yes, go to question 36.
If No, go to question 32.

32. Provide the Minimum RRv required based on HSG.
[Minimum RRv Required = (P)(0.95)(Ai)/12, Ai=(S)(Aic)]

Minimum RRv Required

0.127 **acre-feet**

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

● **Yes** ○ **No**

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

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33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRv Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question 29.

WQv Provided

3.664 **acre-feet**

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRv provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a). 3.863

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? ● **Yes** ○ **No**

If Yes, go to question 36.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.

CPv Required

0.42 **acre-feet**

CPv Provided

0.42 **acre-feet**

36a. The need to provide channel protection has been waived because:

○ Site discharges directly to tidal waters or a fifth order or larger stream.

○ Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (37a), if applicable.

Total Overbank Flood Control Criteria (Qp)

Pre-Development

4.34 **CFS**

Post-development

3.63 **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development

7.33 **CFS**

Post-development

4.38 **CFS**

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37a. The need to meet the Qp and Qf criteria has been waived because:

- ○ Site discharges directly to tidal waters or a fifth order or larger stream.
- ○ Downstream analysis reveals that the Qp and Qf controls are not required

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? ● Yes ○ No

If Yes, Identify the entity responsible for the long term Operation and Maintenance

Sawyer's Landing LLC

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required(#28). (See question 32a) This space can also be used for other pertinent project information.

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40. Identify other DEC permits, existing and new, that are required for this project/facility.

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Solid Waste
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ● Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers
- ○ Stream Bed or Bank Protection / Article 15
- ○ Endangered or Threatened Species(Incidental Take Permit)
- ○ Individual SPDES
- ○ SPDES Multi-Sector GP NYR
- ○ Other
- ● None

41. Does this project require a US Army Corps of Engineers Wetland Permit? ● Yes ○ No
If Yes, Indicate Size of Impact. .

42. Is this project subject to the requirements of a regulated, traditional land use control MS4? ● Yes ○ No
(If No, skip question 43)

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ● Yes ○ No

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. NYR

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Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name: Will

MI:

Print Last Name: Severyn

Owner/Operator Signature: William T Severyn

Date: 03/03/2021

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Appendix C

MS4 SWPPP Acceptance Form

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NYS Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit

*(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information	
1. Owner/Operator Name:	Sawyer's Landing LLC
2. Contact Person:	Will Severyn
3. Street Address:	43 Central Ave
4. City/State/Zip:	Lancaster, NY 14086
II. Project Site Information	
5. Project/Site Name:	Sawyer's Landing
6. Street Address:	Dodge Road
7. City/State/Zip:	Amherst, NY 14228
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information	
8. SWPPP Reviewed by:	
9. Title/Position:	
10. Date Final SWPPP Reviewed and Accepted:	
IV. Regulated MS4 Information	
11. Name of MS4:	
12. MS4 SPDES Permit Identification Number: NYR20A	
13. Contact Person:	
14. Street Address:	
15. City/State/Zip:	
16. Telephone Number:	

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MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

Date:

VI. Additional Information

(NYS DEC - MS4 SWPPP Acceptance Form - January 2015)

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Appendix D

NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity Permit No. GP-0-20-001

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70

of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

1-23-20

Authorized Signature

Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

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Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;

2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State.*

3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

*Discharge*s authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the *Stormwater Pollution Prevention Plan* ("SWPPP") the reason(s) for the

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deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:

   (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharge*s;

   (ii) Control stormwater *discharge*s, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;

   (iii) *Minimize* the amount of soil exposed during *construction activity*;

   (iv) *Minimize* the disturbance of *steep slopes*;

   (v) *Minimize* sediment *discharge*s from the site;

   (vi) Provide and maintain *natural buffer*s around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharge*s, unless *infeasible*;

   (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;

   (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and

   (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.

b. **Soil Stabilization**. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments

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listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

c. **Dewatering**. *Discharges* from *dewatering* activities, including *discharges* from *dewatering* of trenches and excavations, must be managed by appropriate control measures.

d. **Pollution Prevention Measures**. Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards.* At a minimum, such measures must be designed, installed, implemented and maintained to:

(i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;

(ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and

(iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

e. **Prohibited *Discharges*.** The following *discharges* are prohibited:

(i) Wastewater from washout of concrete;

(ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

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(iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;

(iv) Soaps or solvents used in vehicle and equipment washing; and

(v) Toxic or hazardous substances from a spill or other release.

f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices ("SMPs") are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

(i) Runoff Reduction Volume ("RRv"): Reduce the total Water Quality Volume ("WQv") by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

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For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site discharges directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria ("Qp"): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria ("Qf"): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

b. *Sizing Criteria* for *New Development* in Enhanced Phosphorus Removal Watershed

(i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be

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calculated in accordance with the criteria in Section 10.3 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible*.

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site *discharge*s directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

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c. Sizing Criteria for Redevelopment Activity

(i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.

(1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or

(2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or

(3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or

(4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

(ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iii) *Overbank* Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

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d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharges* necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;

2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharges* authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharges* authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharges* will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

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E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharges*; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.

3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: "Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned"; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharges* from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.

4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **not** authorized by this permit:

1. *Discharges* after *construction activities* have been completed and the site has undergone *final stabilization*;

2. *Discharges* that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;

3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;

4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

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operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;

6. *Construction activities* for residential, commercial and institutional projects:

   a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

7. *Construction activities* for linear transportation projects and linear utility projects:

   a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

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8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:

   a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.

      - 1-5 acres of disturbance - 20 feet
      - 5-20 acres of disturbance - 50 feet
      - 20+ acres of disturbance - 100 feet, or

   b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
      (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
      (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
      (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
      (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or

   c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

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(i) No Affect
(ii) No Adverse Affect
(iii) Executed Memorandum of Agreement, or

d. Documentation that:

(i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharges* from *construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the "MS4 SWPPP Acceptance" form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.

3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of *Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4* . This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

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B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (http://www.dec.ny.gov/). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

   NOTICE OF INTENT
   NYS DEC, Bureau of Water Permits
   625 Broadway, 4th Floor
   Albany, New York 12233-3505

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.

3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.

4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.

2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:

   a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (http://www.dec.ny.gov/) for more information,

   b. where required, all necessary Department permits subject to the *Uniform Procedures Act ("UPA")* (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators* of *construction activities* that are required to obtain *UPA* permits

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must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

c. the final SWPPP has been prepared, and

d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.

3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

   a. For *construction activities* that are not subject to the requirements of a *regulated, traditional land use control MS4*:

      (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or

      (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has not been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;

      (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

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b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:

(i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed "*MS4* SWPPP Acceptance" form, or

(ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed "MS4 SWPPP Acceptance" form.

4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination ("NOT") has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor's or subcontractor's certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land*

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use control MS4, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

a. The *owner or operator* shall have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.

c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

d. The *owner or operator* shall install any additional site-specific practices needed to protect water quality.

e. The *owner or operator* shall include the requirements above in their SWPPP.

4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..

5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.

6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

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regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of *a construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

   An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4,* the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.

2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

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operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.

2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.

3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.

4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:

    a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

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b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*;

c. to address issues or deficiencies identified during an inspection by the *qualified inspector,* the Department or other regulatory authority; and

d. to document the final construction conditions.

5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.

6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor.* The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

   The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

   "I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with

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the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharges* from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:

   a. Background information about the scope of the project, including the location, type and size of project

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b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge*(s);

c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);

d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;

e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;

f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;

g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;

h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;

i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection

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schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;

k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and

l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

   Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

   The post-construction stormwater management practice component of the SWPPP shall include the following:

   a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

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b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;

c. A Stormwater Modeling and Analysis Report that includes:
   (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;

   (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;

   (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;

   (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;

   (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and

   (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;

d. Soil testing results and locations (test pits, borings);

e. Infiltration test results, when required; and

f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

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3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria,* Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators* of *construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators* of the *construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

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begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- New York State Erosion and Sediment Control Certificate Program holder
- Registered Landscape Architect, or
- someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:

   a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located

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in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:

a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.

b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

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d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization,* and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.B.1 of this permit.

e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization,* all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site*, and all points of *discharge* from the *construction site*.

4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

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(Part IV.C.4.a)

a. Date and time of inspection;

b. Name and title of person(s) performing inspection;

c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

d. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This shall include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;

f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;

g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;

i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);

k. Identification and status of all corrective actions that were required by previous inspection; and

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l. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the *qualified inspector.* Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.

2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:

   a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

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b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;

c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.

d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.

3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.

4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the "MS4 Acceptance" statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector*'s final site inspection certification(s) required in Part V.A.3. of this permit.

5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:

a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

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b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),

c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,

d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

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Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator,* its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to $37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

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E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit , or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:

    a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

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(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(i) the chief executive officer of the agency, or

(ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

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superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.

3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.

4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4,* or by a duly authorized representative of that person.

   It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

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include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge*(s), the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner's or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

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3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.

4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.

2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

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(Part VII.R)

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

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APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

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Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property –means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both "sewage" and "stormwater".

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for "*Construction Activity(ies)*" also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for "*Commence (Commencement of) Construction Activities*" and "*Larger Common Plan of Development or Sale*" *also.*

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system

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and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

Embankment –means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department's rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

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Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term "plan" in "larger common plan of development or sale" is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same "common plan" is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State;
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a *combined sewer*; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer –means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

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New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

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Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

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SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

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Steep Slope – means land area designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint sources*. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint sources*, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

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training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

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APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single family home not located in one of the watersheds listed in Appendix C or not *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E
- Construction of a barn or other *agricultural building*, silo, stock yard or pen.

The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects
- Pond construction
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover
- Cross-country ski trails and walking/hiking trails
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

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Table 1 (Continued) Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

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Table 2

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

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Table 2 (Continued)

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover,* and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

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APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River - Figure 1
- Onondaga Lake Watershed - Figure 2
- Greenwood Lake Watershed -Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

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Appendix C

Figure 1 - New York City Watershed East of the Hudson

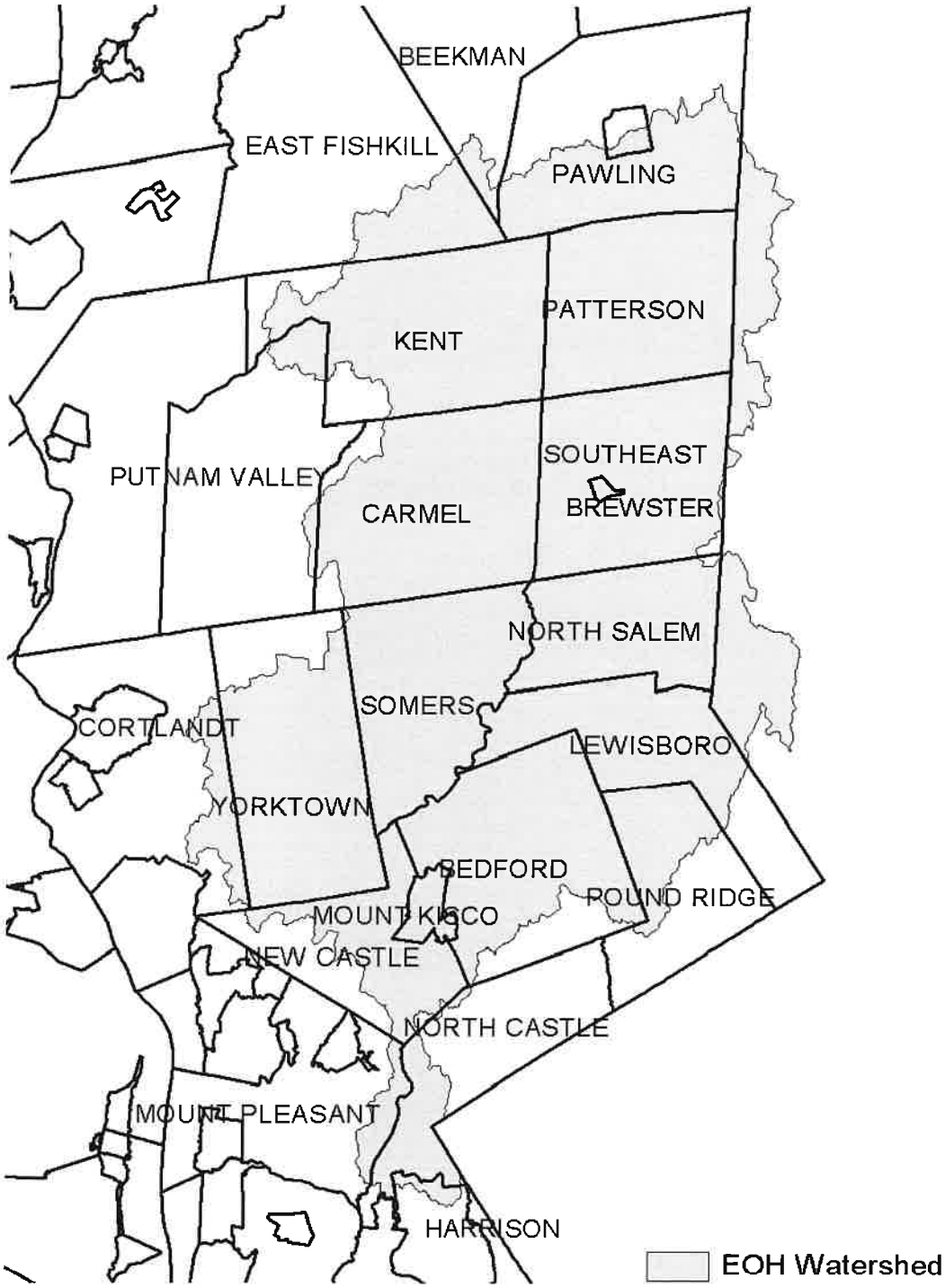

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Figure 2 - Onondaga Lake Watershed



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Figure 3 - Greenwood Lake Watershed



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Figure 4 - Oscawana Lake Watershed

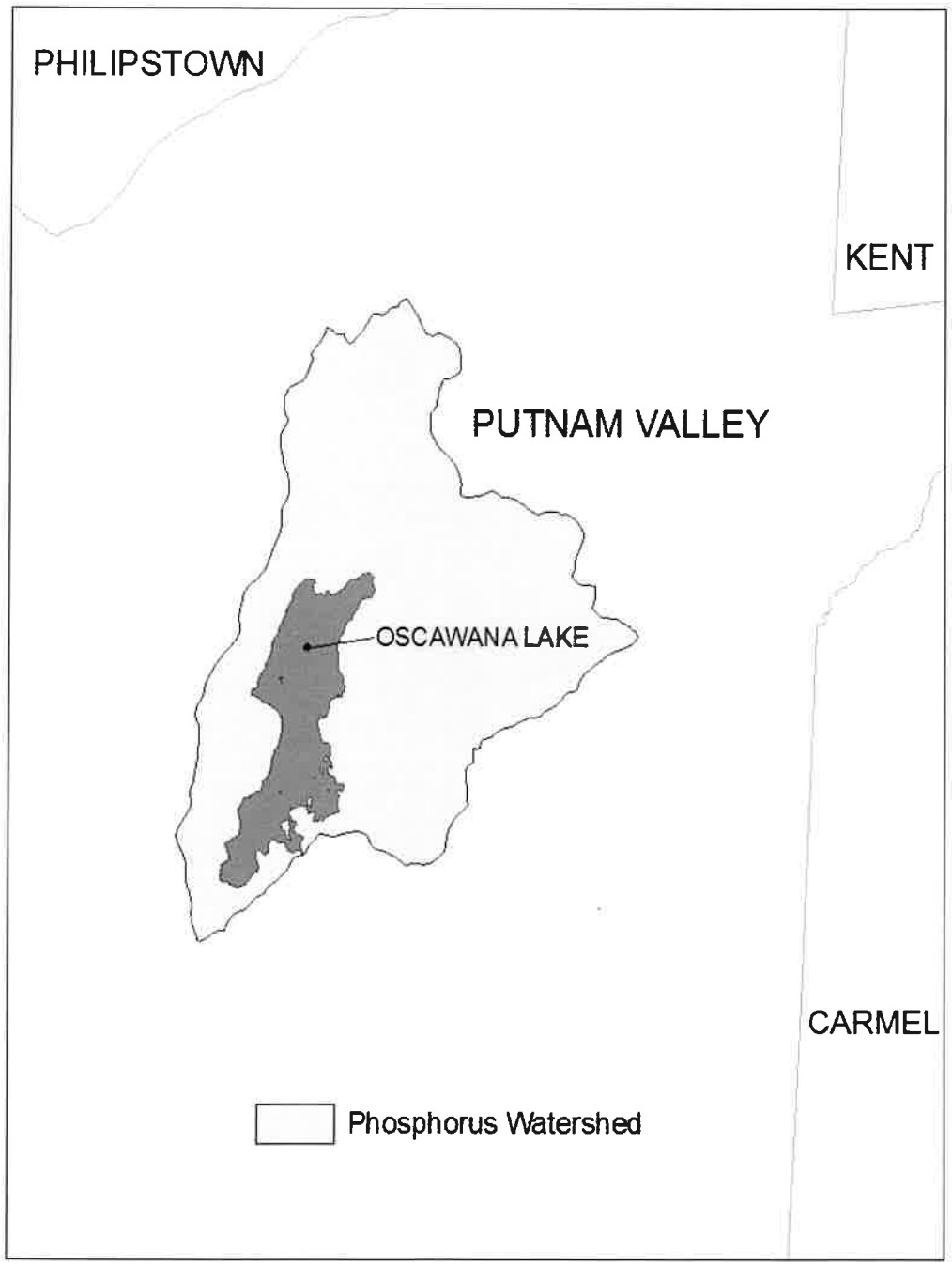

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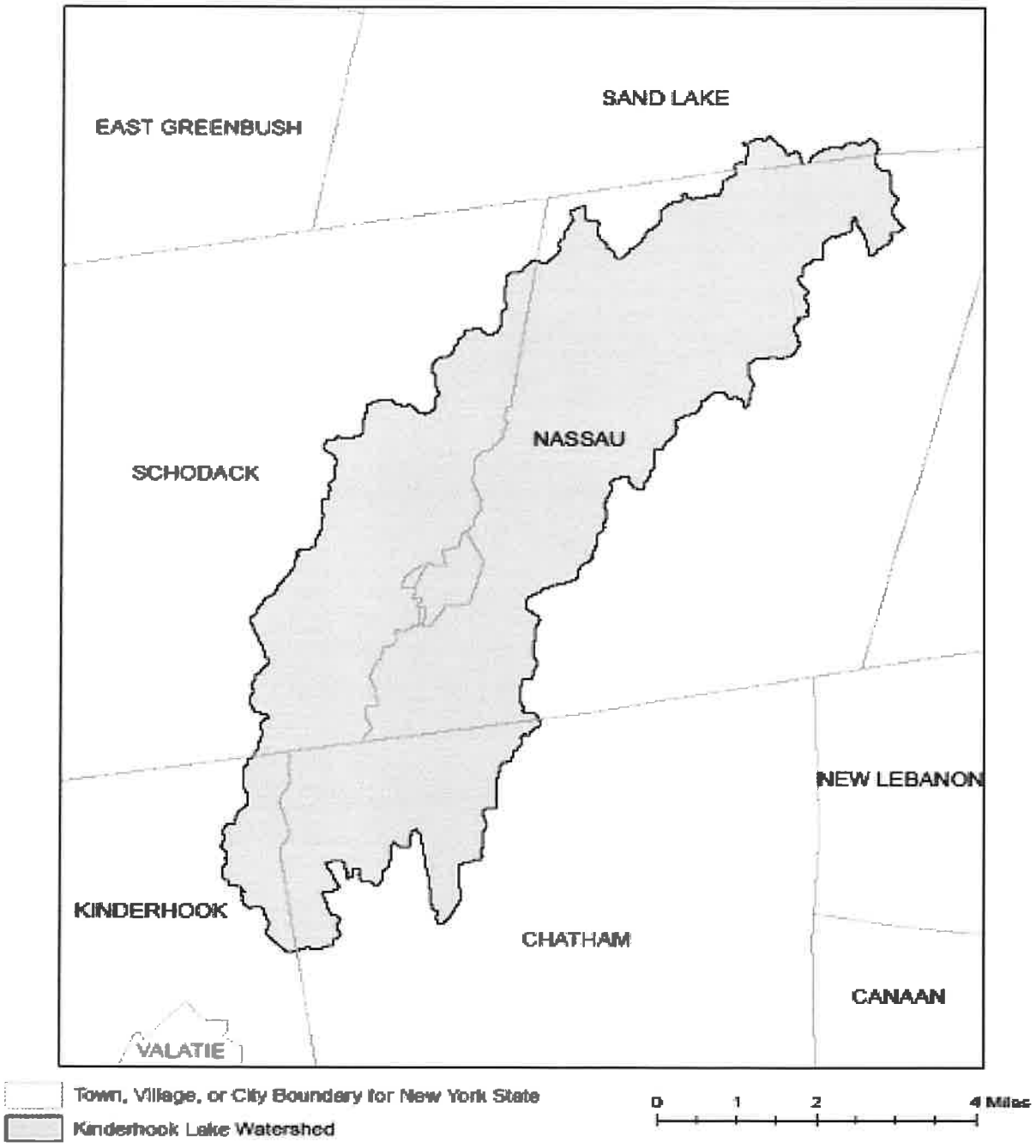
Figure 5 - Kinderhook Lake Watershed



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APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River - See Figure 1 in Appendix C

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APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

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303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

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APPENDIX F – List of NYS DEC Regional Offices

Region	Covering the following counties:	Division of Environmental Permits (DEP) Permit Administrators	Division of Water (DOW) Water (SPDES) Program
1	Nassau and Suffolk	50 Circle Road Stony Brook, NY 11790 Tel. (631) 444-0365	50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0405
2	Bronx, Kings, New York, Queens and Richmond	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4997	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4933
3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester	21 South Putt Corners Road New Paltz, NY 12561-1696 Tel. (845) 256-3059	100 Hillside Avenue, Suite 1w White Plains, NY 10603 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1150 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2069	1130 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	1115 State Route 86, Po Box 296 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, NY 12885-1172 Tel. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Appendix E

Forms

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

STORM WATER POLLUTION PREVENTION PLAN
CONTRACTOR'S CERTIFICATION STATEMENT

Sawyer's Landing

CONTRACTOR'S CERTIFICATION:

"I certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP for the construction site identified in such SWPPP as a condition of authorization to discharge storm water. I also understand that the operator must comply with the terms and conditions of the New York State Pollutant Discharge Elimination System (SPDES) general permit for storm water discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards."

Note: The contractor shall have at least one NYSDEC trained individual onsite at all times when earthwork and other SWPPP associated work is being performed from each contractor(s) and subcontractor(s). Each contractor(s) and subcontractor(s) shall provide copies of these individuals' certifications to the Town of Amherst.

Name: _____
(Print)

Signature: _____

Title: _____

Company Name: _____

Address: _____

Telephone Number: _____

Date: _____

Scope of Services: _____

Trained Individual(s) Responsible for Implementation: _____

This form must be signed by a responsible corporate officer or other party meeting the "Signatory Requirements" of the NYSDEC SPDES General Permit

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

SWPPP Preparer Certification Form

SPDES General Permit for Stormwater Discharges From Construction Activity (GP-0-20-001)

Project Site Information

Project/Site Name

Sawyer's Landing

Owner/Operator Information

Owner/Operator (Company Name/Private Owner/Municipality Name)

Sawyer's Landing LLC

Certification Statement – SWPPP Preparer

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Christopher		Wood
First name	MI	Last Name

Signature

3/3/21
Date

Revised: January 2020

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Owner/Operator Certification Form

SPDES General Permit For Stormwater Discharges From Construction Activity (GP-0-20-001)

Project/Site Name: Sawyer's Landing

eNOI Submission Number: _____

eNOI Submitted by: ☐ Owner/Operator ☑ SWPPP Preparer ☐ Other

Certification Statement - Owner/Operator

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Owner/Operator First Name M.I. Last Name

William T Severyn

Signature

3/3/21

Date

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Appendix F

NYSDEC Notice of Termination (NOT)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505
(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ___ ___ ___ ___ ___ ___

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person: | 4a.Telephone:

4b. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. □ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP. ***Date final stabilization completed** (month/year): _____

9b. □ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ___ ___ ___ ___ ___ ___
(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. □ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? □ yes □ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? □ yes □ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

_____

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? □ yes □ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

□ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.

□ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).

□ For post-construction stormwater management practices that are privately owned, a mechanism is in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the owner or operator's deed of record.

□ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university or hospital), government agency or authority, or public utility; policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____ (acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? □ yes □ no

(If Yes, complete section VI - "MS4 Acceptance" statement

V. Additional Information/Explanation:

(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:

Title/Position:

Signature:	Date:

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued	
VII. Qualified Inspector Certification - Final Stabilization:	
I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:
VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):	
I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:
IX. Owner or Operator Certification	
I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2015)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Appendix G

Construction Documents

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York
SITE DEVELOPMENT DRAWINGS

AGENCIES

ENGINEERING DEPARTMENT
NAME/TITLE: JEFFERY BURROUGHS, P.E. – TOWN ENGINEER
COMPANY/DEPT: TOWN OF AMHERST ENGINEERING DEPARTMENT
ADDRESS: 1100 NORTH FOREST ROAD
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716-631-7154

PLANNING & ZONING DEPARTMENT
NAME/TITLE: DANIEL HOWARD – PLANNING DIRECTOR
COMPANY/DEPT: TOWN OF AMHERST PLANNING DEPARTMENT
ADDRESS: 5583 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716-631-7051

LAND SURVEYOR
NAME/TITLE:
COMPANY/DEPT: GPI ENGINEERING, LANDSCAPE ARCHITECTURE SURVEYING, LLP
ADDRESS: 4950 GENESEE STREET, SUITE 100
BUFFALO, NEW YORK 14225
TELEPHONE 716-633-4844

UTILITIES

NATURAL GAS
COMPANY/DEPT.: NATIONAL FUEL GAS CORP.
ADDRESS: 6363 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716-857-7000

TELEPHONE COMPANY
COMPANY/DEPT: VERIZON
ADDRESS: 65 FRANKLIN STREET
BUFFALO, NEW YORK 14203
TELEPHONE 716-840-8748

CABLE COMPANY
COMPANY/DEPT: TIME WARNER
ADDRESS: 789 CHURCH ROAD
WEST SENECA, NEW YORK
TELEPHONE 716-558-8615

ELECTRIC COMPANY
COMPANY/DEPT: NATIONAL GRID
ADDRESS: 144 KENSINGTON AVENUE
BUFFALO, NEW YORK 14214
TELEPHONE 716-236-2738

WATER
COMPANY/DEPT.: ERIE COUNTY WATER AUTHORITY
ADDRESS: 3030 UNION ROAD
CHEEKTOWAGA, NEW YORK 14227
TELEPHONE 716-684-1510

DIG SAFELY NEW YORK
TELEPHONE 1-800-962-7962

OWNER/DEVELOPER

NAME: Sawyer's Landing LLC
ADDRESS 43 Central Ave Suite #300
Lancaster, NY 14086

TELEPHONE 716 818-0207

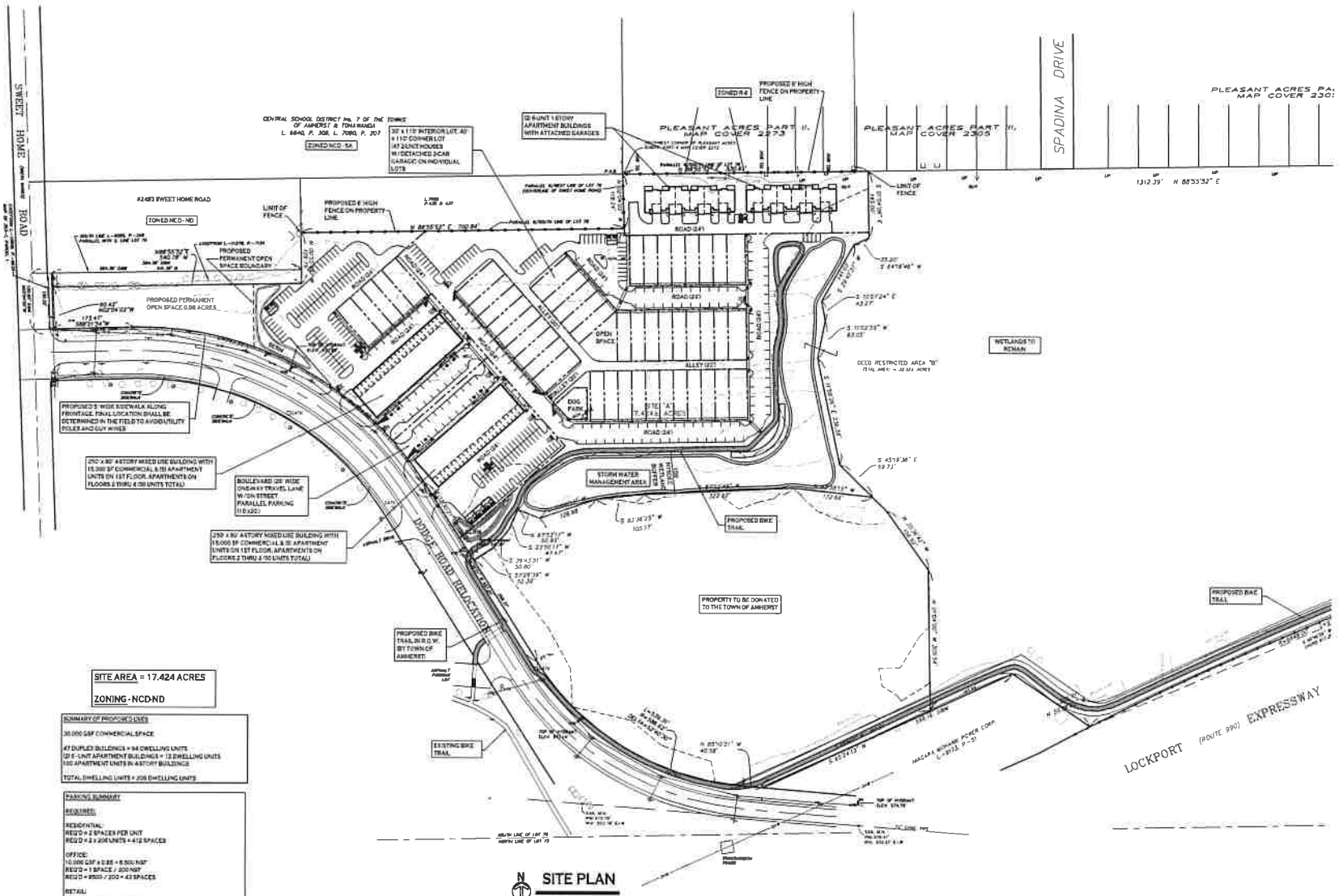
ENGINEER

Carmina • Wood • Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

FEBRUARY 2021

DWG NO.	DRAWING TITLE
–	COVER SHEET
–	TOPOGRAPHIC MAP
–	BOUNDARY SURVEY
C-001	DEMOLITION & EROSION CONTROL PLAN
C-002	DEMOLITION & EROSION CONTROL DETAILS
C-100	OVERALL SITE PLAN
C-101	SITE PLAN
C-102	PARCEL MAP
C-103	SITE DETAILS
C-104	SITE DETAILS
C-200	GRADING PLAN
C-300	STORM DRAINAGE PLAN
C-301	STORM DRAINAGE DETAILS
C-302	STORM DRAINAGE DETAILS
C-303	STORM DRAINAGE DETAILS
C-400	UTILITY PLAN
C-401	SANITARY SEWER DETAILS
C-402	SANITARY SEWER DETAILS
C-403	SANITARY SEWER GENERAL NOTES
C-404	SANITARY SEWER TESTING NOTES
C-405	WATER DETAILS
C-406	WATER DETAILS
C-407	WATER DETAILS & NOTES
C-408	INSULATED ENCLOSURE DETAIL
L-100	LANDSCAPE PLAN

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)



SITE PLAN
SCALE: 1"=100'

© Carmina Wood Morris DPC

Carmina Wood Morris
487 Main Street Suite 300
Buffalo, New York 14203
P 716.842.2185
F 716.842.0761

REVISIONS:
No. Description Date
Nil.

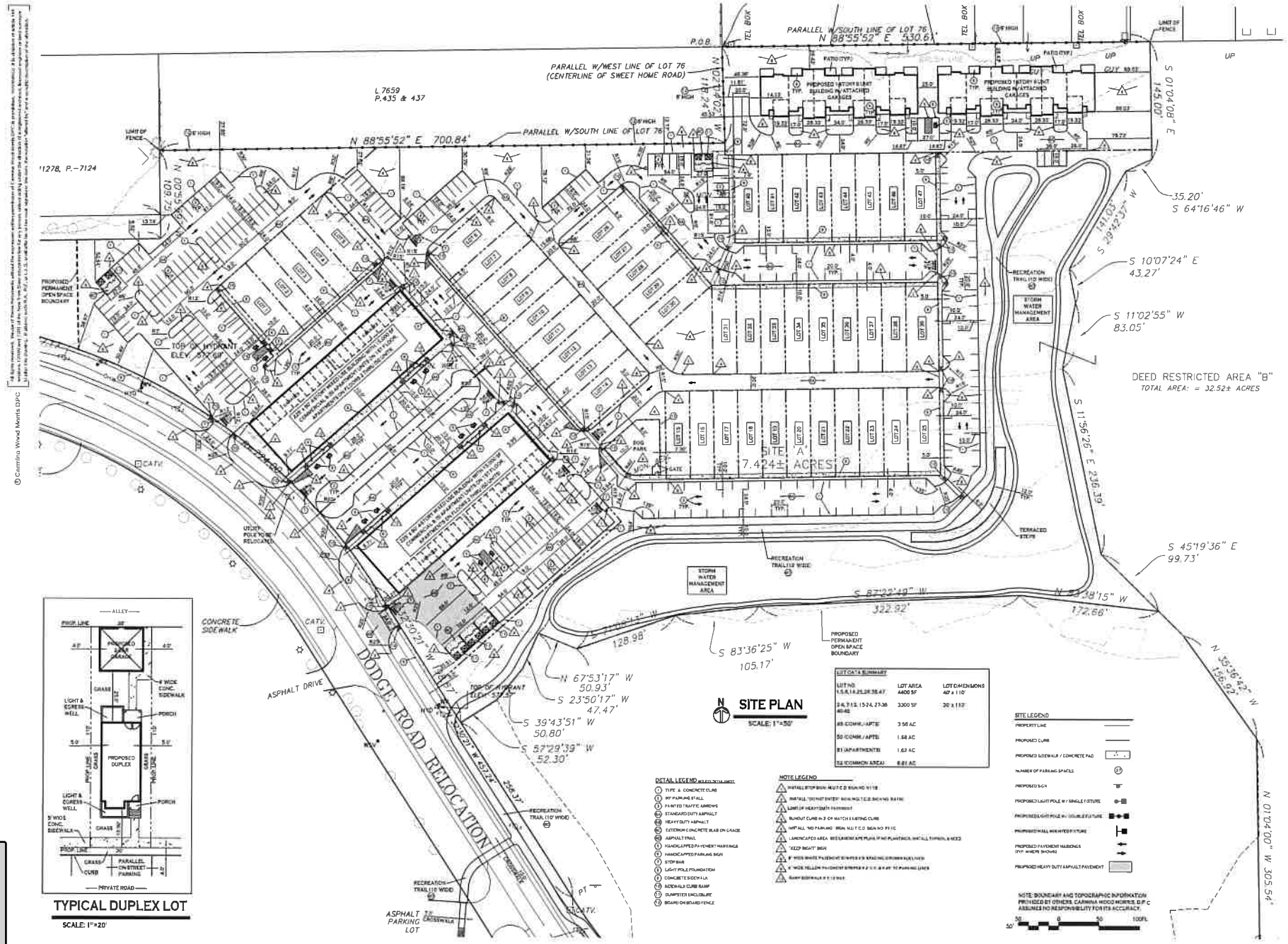
PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Overall Site Plan

DRAWING NO.
C-100
Project no.: 21.011

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)



Carmina Wood Morris

467 Main Street Suite 500
Buffalo, New York 14203
P 716.842.2185
F 716.842.0263

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Site Plan

DRAWING NO.
C-101

Project no.: 21.01

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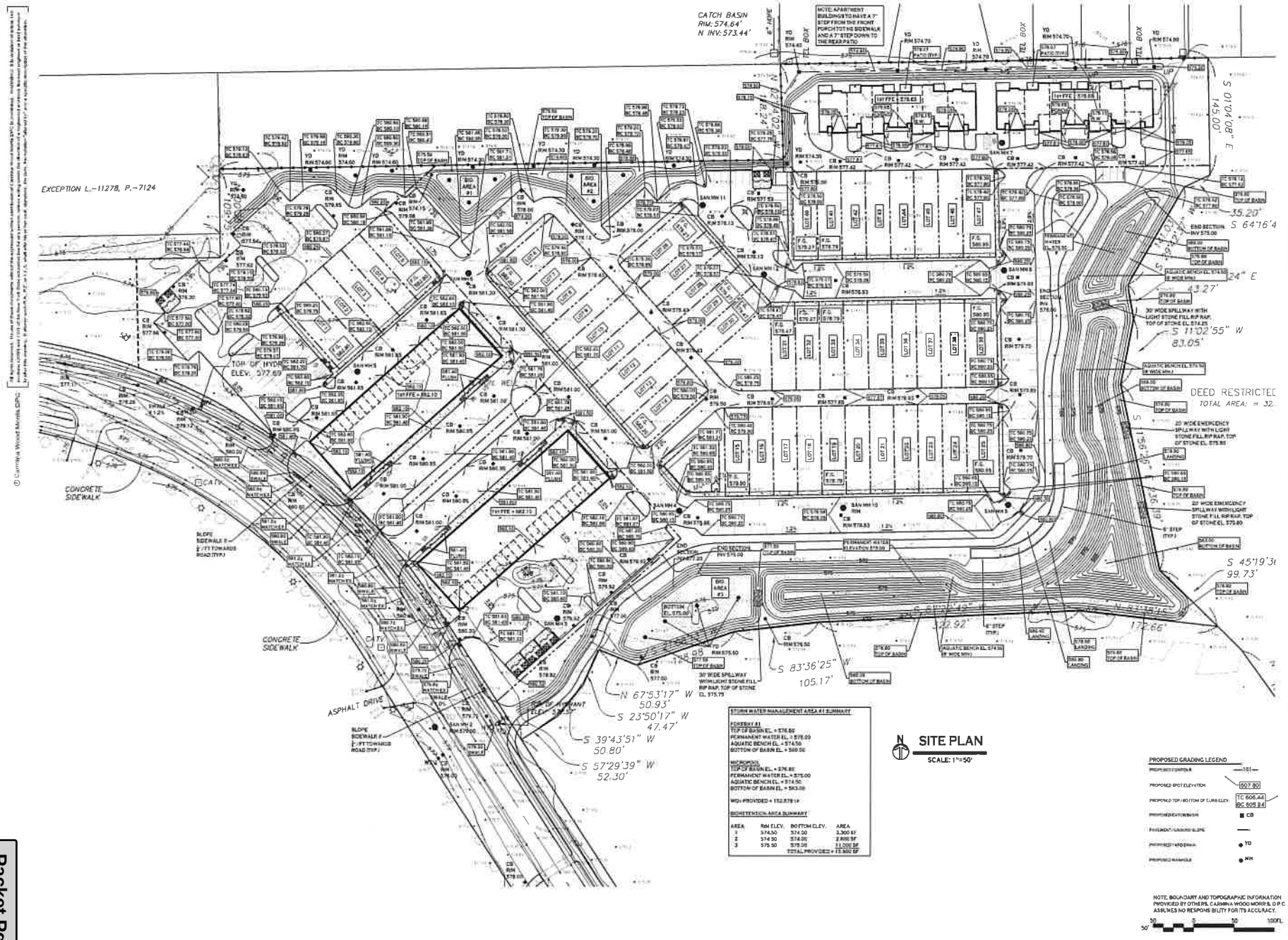
Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)



N SITE PLAN
SCALE: 1"=50'

Carmina Wood Morris
487 Main Street - Suite 500
Buffalo, New York 14203
P 716.842.3185
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REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 3/2/21
Drawn by: C. Wood
Scale: As noted

DRAWING NAME:
Grading Plan

DRAWING NO.
C-200
Project no.: 21.011

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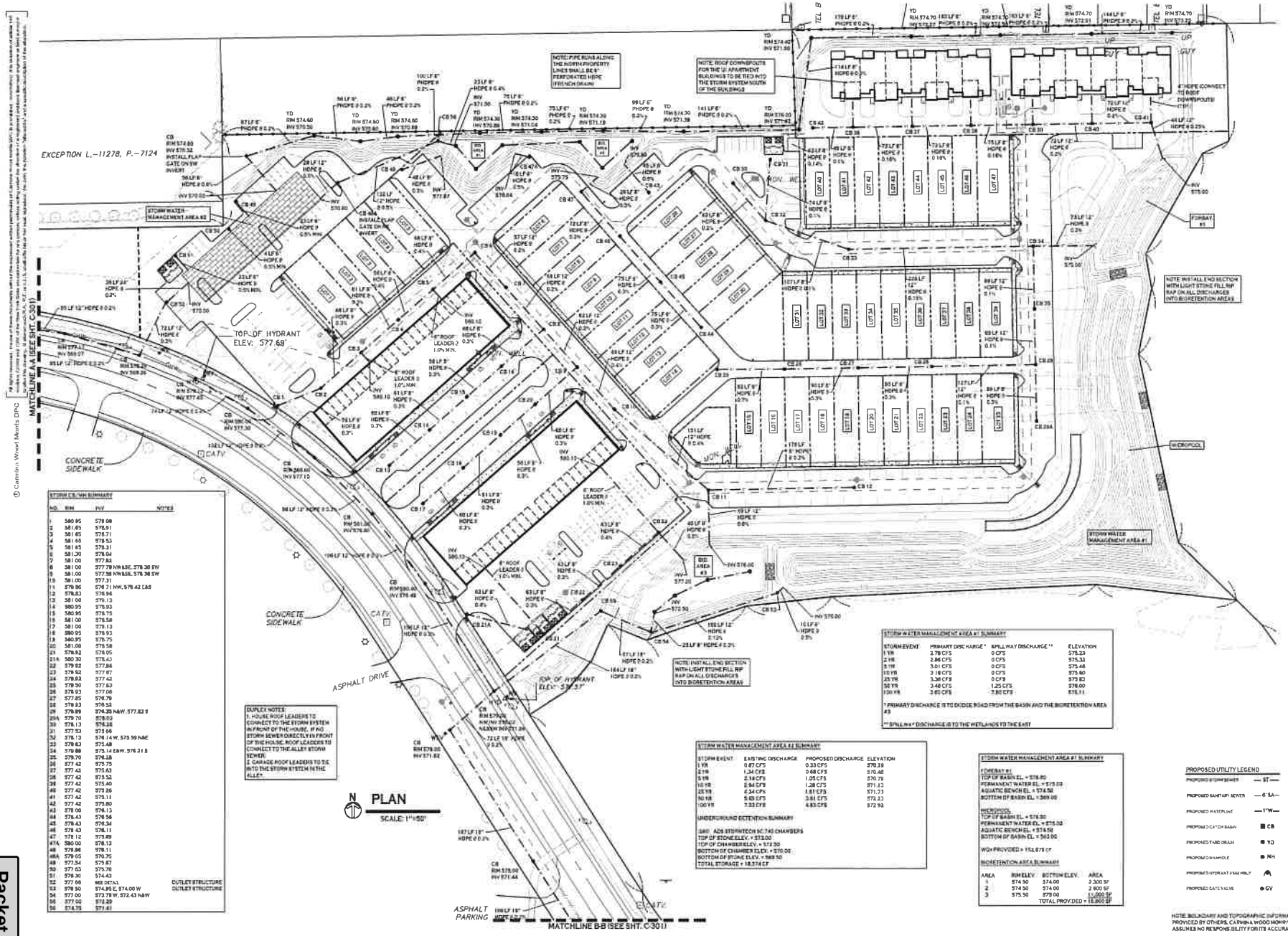

STORM CB / MH SUMMARY

NO.	RIM	INV	NOTES
1	580.95	579.08	
2	581.65	578.91	
3	581.65	578.71	
4	581.65	578.53	
5	581.65	578.31	
6	581.30	578.04	
7	581.00	577.82	
8	581.00	577.78 NW&SE, 578.38 SW	
9	581.00	577.58 NW&SE, 578.38 SW	
10	581.00	577.31	
11	579.86	578.71 NW, 576.42 CB5	
12	578.83	576.96	
13	581.00	579.13	
14	580.95	578.83	
15	580.95	578.75	
16	581.00	578.58	
17	581.00	578.13	
18	580.95	578.93	
19	580.95	578.75	
20	581.00	578.58	
21	578.92	578.05	
21A	580.30	578.43	
22	579.92	577.86	
23	579.92	577.97	
24	578.83	577.42	
25	579.50	577.63	
26	578.93	577.06	
27	577.85	576.79	
28	578.83	576.53	
29	578.99	574.35 NW, 577.83 S	
29A	579.70	578.03	
30	578.13	576.38	
31	577.53	575.66	
32	578.13	576.14 W, 575.59 NAE	
33	578.63	575.48	
34	579.08	575.14 E&W, 576.21 S	
35	579.70	576.58	
36	577.42	575.75	
37	577.42	575.63	
38	577.42	575.52	
39	577.42	575.40	
40	577.42	575.26	
41	577.42	575.11	
42	577.42	575.00	
43	578.00	576.13	
44	578.43	576.56	
45	578.43	576.34	
46	578.43	576.11	
47	578.12	575.89	
47A	580.00	578.13	
48	579.98	578.11	
48A	579.65	576.75	
49	577.54	575.67	
50	577.63	575.78	
51	576.30	574.43	
52	577.66	WIE DETAIL	OUTLET STRUCTURE
53	578.50	574.95 E, 574.00 W	OUTLET STRUCTURE
54	577.00	573.79 W, 572.43 N&W	
55	577.00	572.29	
56	574.75	571.41	

DUPLEX NOTES:
1. HOUSE ROOF LEADERS TO CONNECT TO THE STORM SYSTEM IN FRONT OF THE HOUSE. IF NO STORM SEWER DIRECTLY IN FRONT OF THE HOUSE, ROOF LEADERS TO CONNECT TO THE ALLEY STORM SEWER.
2. GARAGE ROOF LEADERS TO TIE INTO THE STORM SYSTEM IN THE ALLEY.

STORM WATER MANAGEMENT AREA #1 SUMMARY

STORM EVENT	PRIMARY DISCHARGE *	SPILLWAY DISCHARGE **	ELEVATION
1 YR	2.78 CFS	0 CFS	575.23
2 YR	2.84 CFS	0 CFS	575.33
5 YR	3.01 CFS	0 CFS	575.48
10 YR	3.16 CFS	0 CFS	575.60
25 YR	3.36 CFS	0 CFS	575.83
50 YR	3.48 CFS	1.25 CFS	576.00
100 YR	3.60 CFS	7.80 CFS	576.11

* PRIMARY DISCHARGE IS TO DIODE ROAD FROM THE BASIN AND THE BIORETENTION AREA #3
** SPILLWAY DISCHARGE IS TO THE WETLANDS TO THE EAST

STORM WATER MANAGEMENT AREA #2 SUMMARY

STORM EVENT	EXISTING DISCHARGE	PROPOSED DISCHARGE	ELEVATION
1 YR	0.47 CFS	0.33 CFS	570.28
2 YR	1.34 CFS	0.68 CFS	570.48
5 YR	2.16 CFS	1.05 CFS	570.79
10 YR	2.94 CFS	1.28 CFS	571.13
25 YR	4.34 CFS	1.61 CFS	571.73
50 YR	5.60 CFS	3.61 CFS	572.23
100 YR	7.33 CFS	6.83 CFS	572.93

UNDERGROUND RETENTION SUMMARY

(385) ADS STORMTECH SC-740 CHAMBERS
TOP OF STONE ELEV. = 573.00
TOP OF CHAMBER ELEV. = 572.50
BOTTOM OF CHAMBER ELEV. = 570.00
BOTTOM OF STONE ELEV. = 569.50
TOTAL STORAGE = 18,374 CF

STORM WATER MANAGEMENT AREA #1 SUMMARY

FOREBAY #1
TOP OF BASIN EL. = 576.80
PERMANENT WATER EL. = 575.00
AQUATIC BENCH EL. = 574.50
BOTTOM OF BASIN EL. = 569.00

MICROPOOL
TOP OF BASIN EL. = 576.80
PERMANENT WATER EL. = 575.00
AQUATIC BENCH EL. = 574.50
BOTTOM OF BASIN EL. = 569.00

WQv PROVIDED = 152,678 CF

BIORETENTION AREA SUMMARY

AREA	RIM ELEV.	BOTTOM ELEV.	AREA
1	574.50	574.00	2,300 SF
2	574.50	574.00	2,800 SF
3	575.50	573.00	11,000 SF
		TOTAL PROVIDED =	16,900 SF

PROPOSED UTILITY LEGEND

- PROPOSED STORM SEWER — ST —
- PROPOSED SANITARY SEWER — 6" SA —
- PROPOSED WATERLINE — 1"W —
- PROPOSED CATCH BASIN ■ CB
- PROPOSED YARD DRAIN ● YD
- PROPOSED MANHOLE ● MH
- PROPOSED HYDRANT ASSEMBLY
- PROPOSED GATE VALVE ● GV

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS. CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 0 50 100FT

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REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

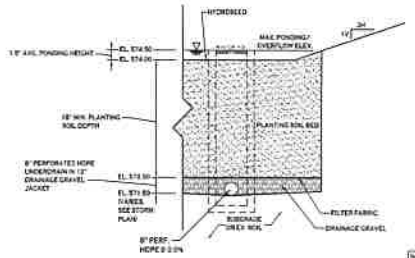
Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Storm Drainage Plan

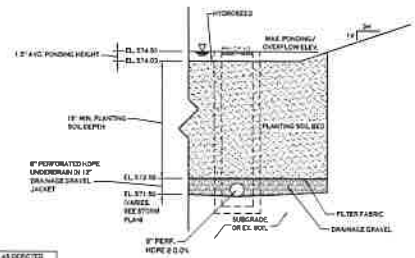
DRAWING NO.
C-300

Project no.: 21.011

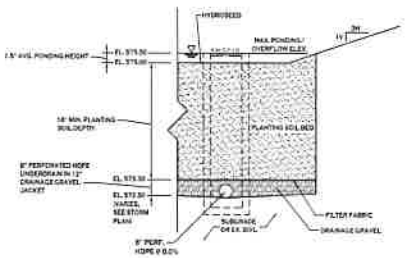
Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)



BIORETENTION AREA #1



BIORETENTION AREA #2



BIORETENTION AREA #3

NOTE: AS DEPICTED TYPICALLY IN BIORETENTION AREAS

BIORETENTION AREA - TYPICAL SECTIONS

NOT TO SCALE

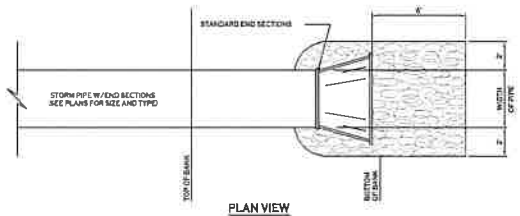
NOTES:
1. FILTER FABRIC TO BE NON-WOVEN CLASS 'C', MIRAFI 140 N OR APPROVED EQUIVALENT.
2. MULCH TO BE SHREDDED HARDWOOD, AGED 12 MONTHS MIN.
3. DRAINAGE GRAVEL TO MEET AASHTO M-43, NO.57, SIZE 0.25" TO 0.75"
4. CONTRACTOR TO PROVIDE PLANTING SOIL SUBMITTAL SPECIFICATION FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION

NOTE: PLANTING SOIL SHALL BE LOAM/SAND MIX CONTAINING A MINIMUM OF 35 TO 99% SAND BY VOLUME AND LESS THAN 25% CLAY. SOIL SHOULD FALL WITHIN USCS TYPES SM OR SL WITH PERMEABILITY OF AT LEAST 0.5 FEET PER DAY. SOIL SHOULD BE FREE FROM STONES, STUMPS, ROOTS OR OTHER WOODY MATERIAL OVER 1" IN DIAMETER. PLACEMENT OF THE PLANTING SOIL SHOULD BE IN LIFTS OF 12" TO 18", LOOSELY COMPACTED.

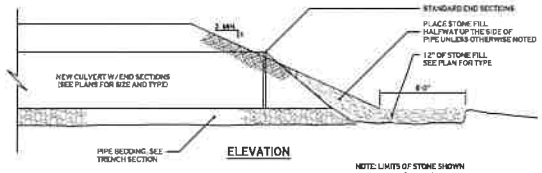
CHARACTERISTICS SHALL BE:
PH RANGE: 5.2 - 7.00
ORGANIC MATTER: 1.5 - 4.0%
MAGNESIUM: 35 LBS PER ACRE MIN.
PHOSPHERUS: 75 LBS PER ACRE MIN
POTASSIUM: 85LBS PER ACRE MIN.
SOLUBLE SALTS: 500 PPM
CLAY: 10 TO 25%
SILT: 30 TO 55%
SAND: 35 TO 60%

BIO-RETENTION AREA SEEDING SPEC (NORTHEAST WETLAND GRASS SEED MIX):

SEED MIXTURE	VARIETY	PERCENT BY NO. OF SEEDS
CALOPHIS SERTOSA	ASCROTIS STOLONIFERA	83.0
TOUCH-ME-NOT	POA TRIVIALIS	17.0
MEADOW FOXTAIL	ALOPECURUS PRATENSIS	11.0
SWAMP TIMOTHY	LOLIUM MULTIFLORUM	4.5
DEERTONGUE	PANICUM CLANDESTINUM	4.5



PLAN VIEW

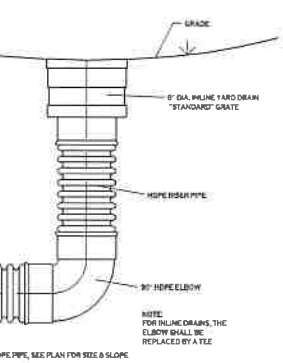


ELEVATION

NOTE: LIMITS OF STONE SHOWN ARE MINIMUMS. PLAN MAY INDICATE GREATER LIMITS

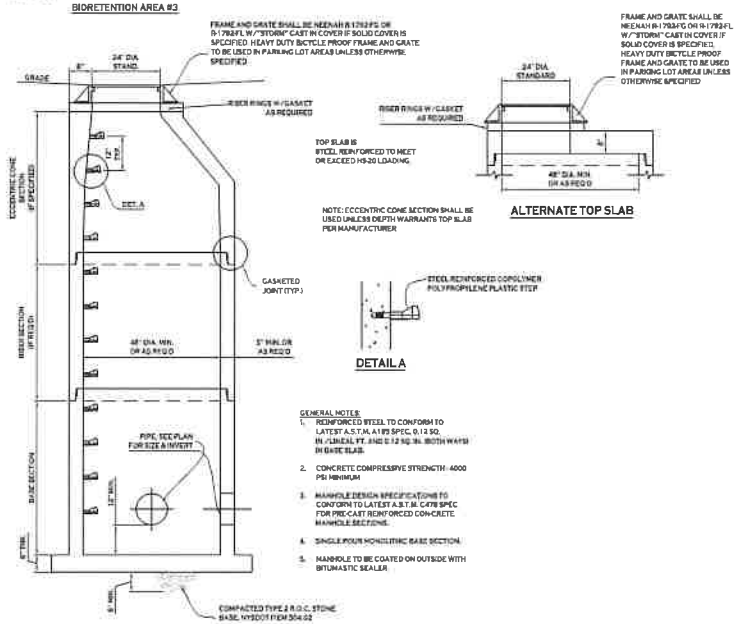
TYPICAL PIPE OUTLET W/ END SECTION & RIP RAP

NOT TO SCALE



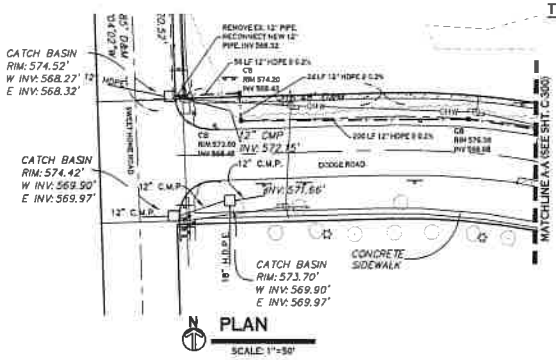
NOTE: SEE TYPICAL TRENCH SECTION FOR BEDDING REQUIREMENTS

TYPICAL YARD DRAIN DETAIL



TYPICAL STORM MANHOLE DETAIL

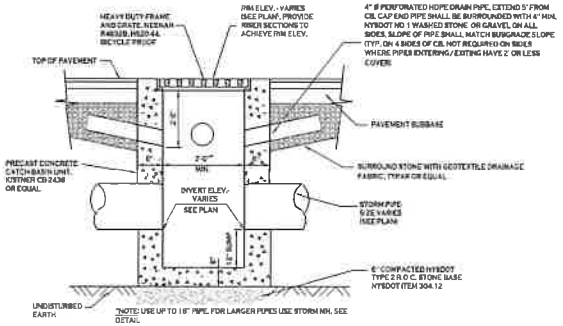
NOT TO SCALE



N PLAN

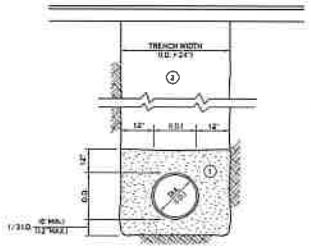
SCALE: 1"=50'





TYPICAL PRECAST CATCH BASIN

NOT TO SCALE



NOTES:

A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.

C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT 1995 EDITION)

① NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703.02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

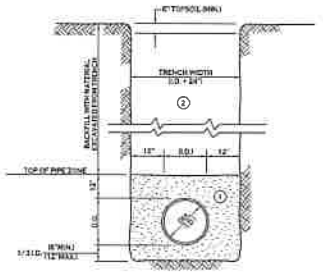
NO SLAG SHALL BE ALLOWED FOR MATERIAL ①

② TYPE 2 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYDOT SECTION 304.2.02 TYPE 2. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN TWO INCHES AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL ②

STORM SEWER TRENCH SECTION IN PAVED AREAS

NOT TO SCALE



NOTES:

A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.

C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT 1995 EDITION)

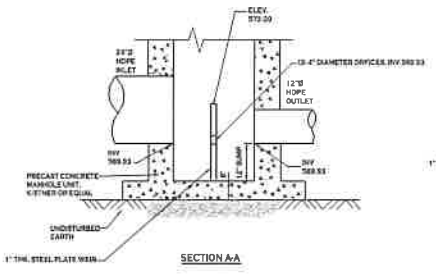
① NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703.02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL ①

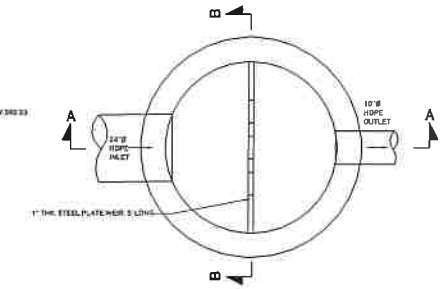
② BACKFILL MATERIAL SHALL BE NATIVE SOIL CONTAINING NO UNSUITABLE MATERIAL COMPACTED IN 6" LIFTS.

STORM SEWER TRENCH SECTION IN UNPAVED AREAS

NOT TO SCALE

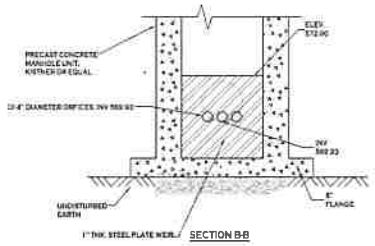


SECTION A-A



PLAN

*NOTE: USE 5'-0" I.D. MANHOLE



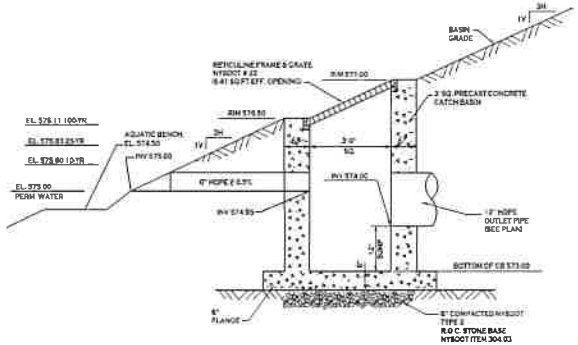
SECTION B-B

NOTES:

1. FASTEN STEEL PLATE TO CB WALL WITH ANGLE CLIPS AND BOLTS
2. STEEL PLATE, ANGLE CLIPS, AND BOLTS TO BE HOT DIPPED GALVANIZED

OUTLET CONTROL STRUCTURE - CB 52

NOT TO SCALE



DETENTION BASIN OUTLET STRUCTURE - CB 53

N.T.S.

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road

Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

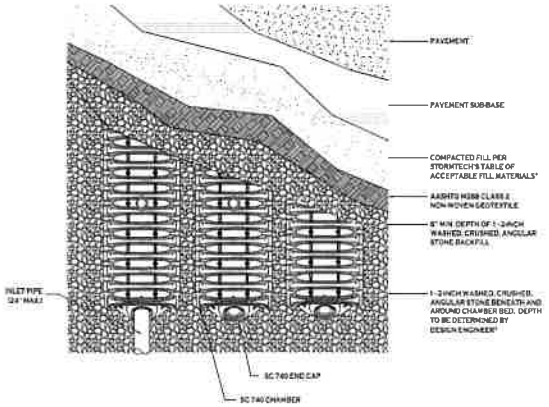
DRAWING NAME:

Storm Drainage Details

DRAWING NO.

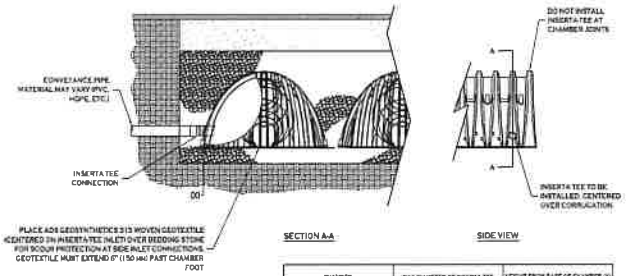
C-302

Project no.: 21,011



STORMTECH SC-740 CHAMBER SYSTEM PLAN VIEW DETAIL

NOT TO SCALE



CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
MC-3500	12" (300 mm)	8" (150 mm)
MC-4500	12" (300 mm)	8" (200 mm)
INSERTA TEE FITTINGS AVAILABLE FOR SOR-26, SDR-35, SCH-40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON		

NOTE:
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

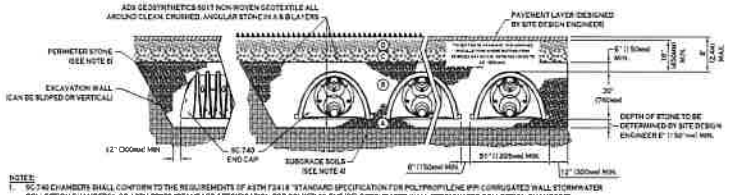
INSERTA TEE DETAIL

NOT TO SCALE

ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION/DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[3,4]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43 STONE)".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) MAX LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS



NOTES:
1. SC-740 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
6. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION

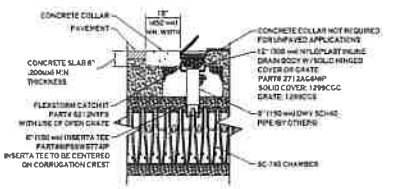
INSPECTION AND MAINTENANCE
STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
A. INSPECTION PORTS (IF PRESENT)
A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
B. ALL ISOLATOR ROWS
B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
○ MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
○ FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 x Ø) OR MORE IS PREFERRED
B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES:
1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



SC-740 6" INSPECTION PORT DETAIL

NOT TO SCALE

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Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P: 716.842.0180
F: 716.842.0293

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

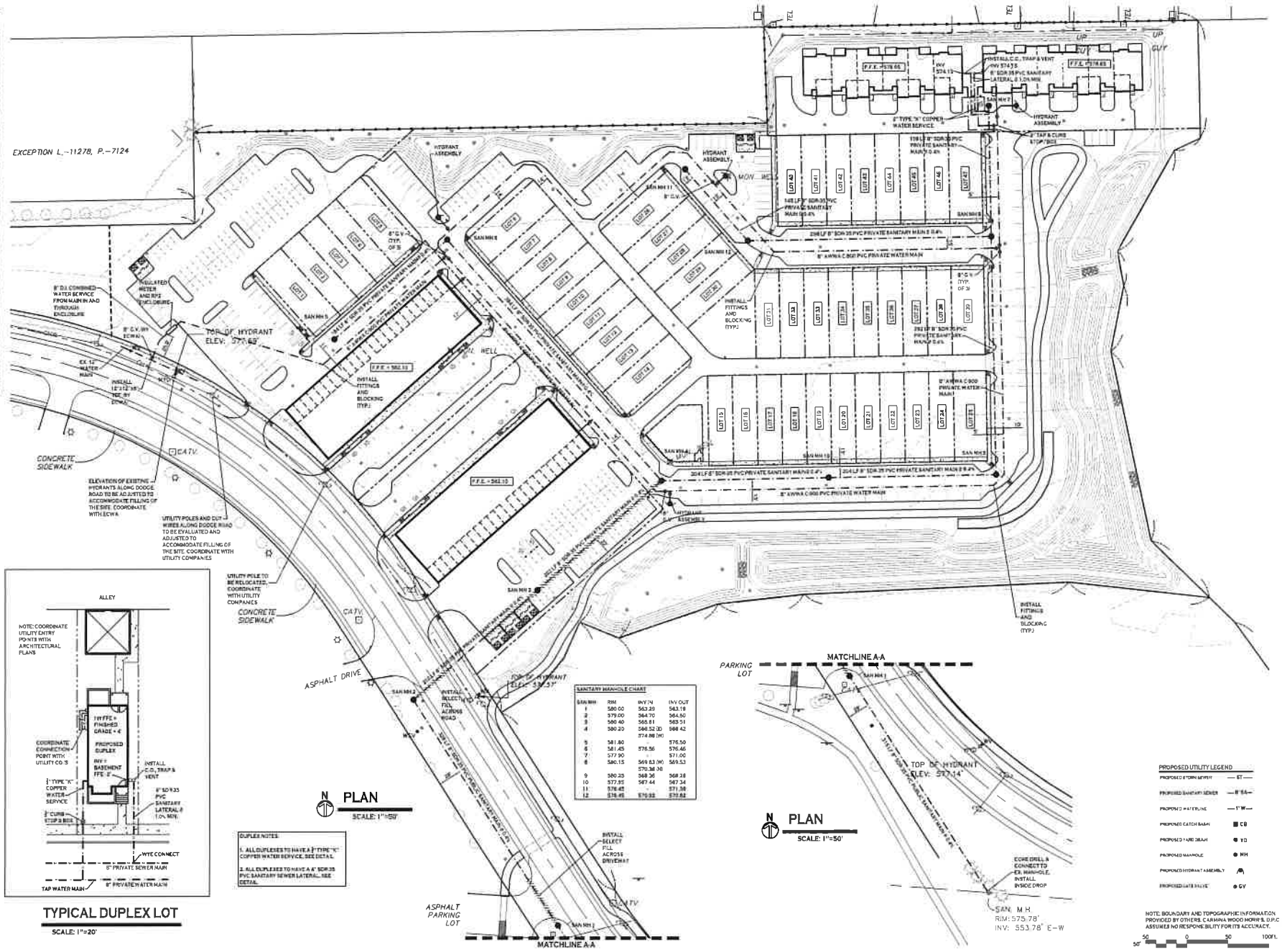
Date: 2/15/21
Drawn by: 2/24/21
Scale: As Noted

DRAWING NAME:
Storm Drainage Details

DRAWING NO.
C-303

Project no: 21.011

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)



SANITARY MANHOLE CHART

SAN MH	RIM	INV IN	INV OUT
1	580.00	563.29	563.18
2	579.00	564.70	564.60
3	580.40	565.81	565.51
4	580.20	568.52 (D) 574.88 (W)	568.42
5	581.80		576.50
6	581.45	576.56	576.46
7	577.90		571.00
8	580.15	569.83 (W) 570.38 (D)	569.53
9	580.25	568.36	568.28
10	577.95	567.44	567.34
11	576.45		571.38
12	576.45	570.92	570.82

DUPLEX NOTES:

1. ALL DUPLEXES TO HAVE A ¾" TYPE "K" COPPER WATER SERVICE. SEE DETAIL.
2. ALL DUPLEXES TO HAVE A 4" SDR-35 PVC SANITARY SEWER LATERAL. SEE DETAIL.

Carmina Wood Morris DPC

REVISIONS: No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 3/3/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Utility Plan

DRAWING NO.
C-400

Project no.: 21,011

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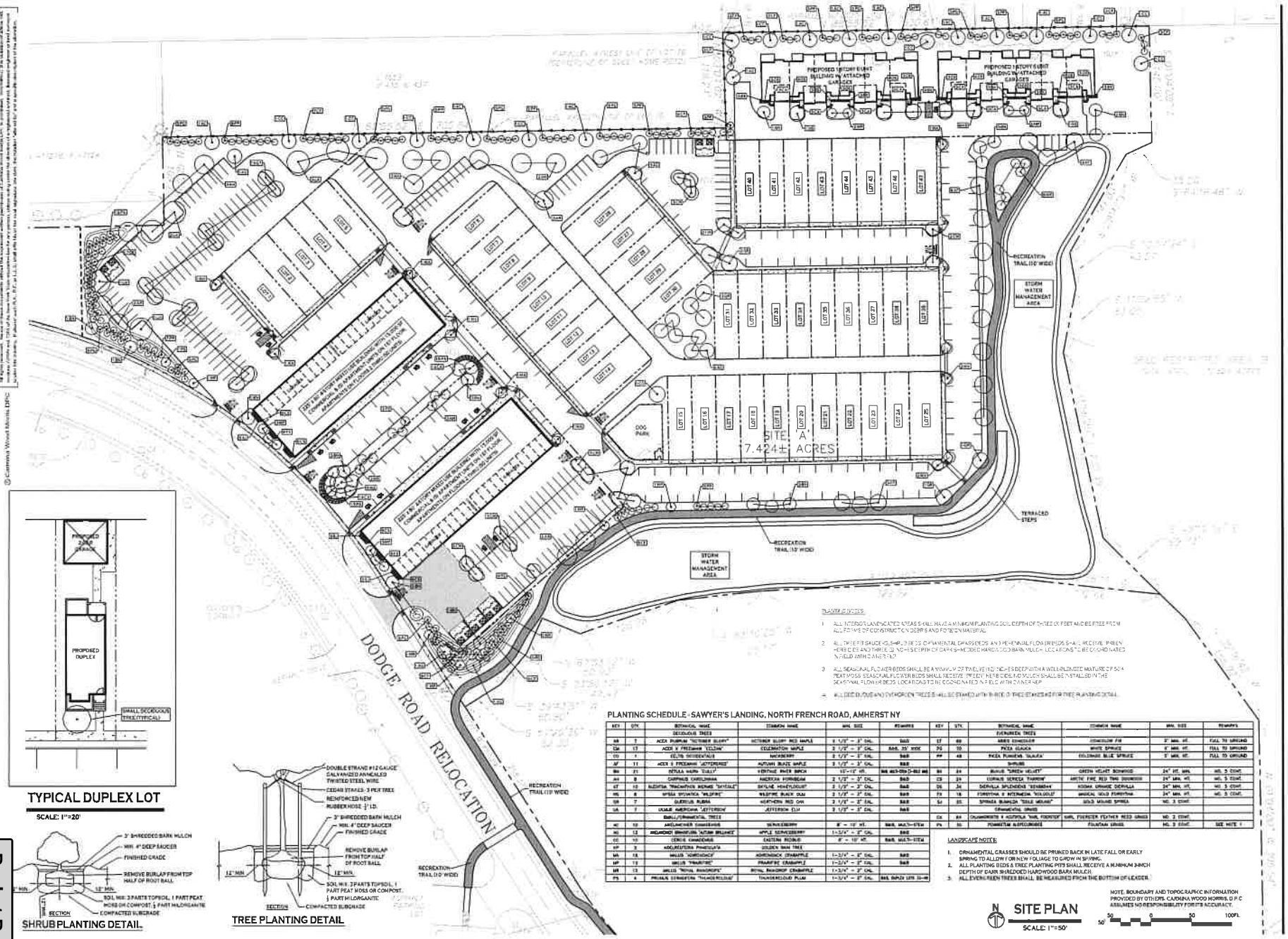
Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)



TYPICAL DUPLEX LOT

SCALE: 1"=20'

SHRUB PLANTING DETAIL

TREE PLANTING DETAIL

PLANTING NOTES:

1. ALL INTERIOR LANDSCAPED AREAS SHALL HAVE A MINIMUM PLANTING SOIL DEPTH OF THREE (3) FEET AND BE FREE FROM ALL FORMS OF CONSTRUCTION DEBRIS AND FOREIGN MATERIAL.
2. ALL TREE PITS AND SHRUB BEDS, ORNAMENTAL GRASS BEDS AND PERENNIAL FLOWER BEDS SHALL RECEIVE THREE (3) INCHES DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER.
3. ALL SEASONAL FLOWER BEDS SHALL BE A MINIMUM OF TWELVE (12) INCHES DEEP WITH A WELL-BLENDED MIXTURE OF 50% PEAT MOSS. SEASONAL FLOWER BEDS SHALL RECEIVE TWENTY HERBICIDES. NO MULCH SHALL BE INSTALLED IN THE SEASONAL FLOWER BEDS. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER.
4. ALL DECIDUOUS AND EVERGREEN TREES SHALL BE STAKED WITH THREE (3) TREE STAKES AND TREE PLANTING DETAIL.

PLANTING SCHEDULE - SAWYER'S LANDING, NORTH FRENCH ROAD, AMHERST NY

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		DECIDUOUS TREES			
AR	7	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	2 1/2" – 3" CAL.	B&B
CM	17	ACER X FREEMANII 'CELZAM'	CELEBRATION MAPLE	2 1/2" – 3" CAL.	B&B, 25' WIDE
CO	1	CELTIS OCCIDENTALIS	HACKBERRY	2 1/2" – 3" CAL.	B&B
AF	11	ACER X FREEMANII 'AUTUMN BLAZE'	AUTUMN BLAZE MAPLE	2 1/2" – 3" CAL.	B&B
BN	21	BETULA NIGRA 'DURA-1'	HERITAGE RIVER BIRCH	10'-12' HT.	B&B, MULTI-STEM
AA	8	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2 1/2" – 3" CAL.	B&B
GT	10	GLEDITSIA TRIACANTHOS INERMIS 'SKYCOLE'	SKYLINE HONEYLOCUST	2 1/2" – 3" CAL.	B&B
WS	8	NYSSA SYLVATICA 'WILDFIRE'	WILDFIRE BLACK GUM	2 1/2" – 3" CAL.	B&B
QR	7	QUERCUS RUBRA	NORTHERN RED OAK	2 1/2" – 3" CAL.	B&B
UA	7	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2 1/2" – 3" CAL.	B&B
		SMALL/ORNAMENTAL TREES			
AC	12	AMELANCHIER CANADENSIS	SERVICEBERRY	8' – 10' HT.	B&B, MULTI-STEM
MJ	13	MALUS/MICRO SELECTION 'AUTUMN BRILLIANCE'	APPLE SERVICEBERRY	1-3/4" – 2" CAL.	B&B
CC	10	CERCIS CANADENSIS	EASTERN REDBUD	8' – 10' HT.	B&B, MULTI-STEM
RP	3	KOELREUTERIA PANICULATA	GOLDEN RAIN TREE		
MA	18	MALUS 'ADIRONDACK'	ADIRONDACK CRABAPPLE	1-3/4" – 2" CAL.	B&B
MP	13	MALUS 'PRAIRIFIRE'	PRAIRIFIRE CRABAPPLE	1-3/4" – 2" CAL.	B&B
MR	13	MALUS 'ROYAL RAINDROPS'	ROYAL RAINDROP CRABAPPLE	1-3/4" – 2" CAL.	
PS	4	PRUNUS SERRULATA 'THUNDERCLOUD'	THUNDERCLOUD PLUM	1-3/4" – 2" CAL.	B&B, SIMILAR LOTS 33-46

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		EVERGREEN TREES			
AB	69	ABIES CONCOLOR	CONCOLOR FIR	5' MIN. HT.	FULL TO GROUND
PG	10	PICEA GLAUCA	WHITE SPRUCE	6' MIN. HT.	FULL TO GROUND
PP	48	PICEA PUNGENS 'GLAUCA'	COLORADO BLUE SPRUCE	5' MIN. HT.	FULL TO GROUND
		SHRUBS			
BH	24	BUXUS 'GREEN VELVET'	GREEN VELVET BOXWOOD	24" HT., MIN.	MO. 3 CONT.
CS	24	CORNUS SERICEA 'FARROW'	ARCTIC FIRE RED TWIG DOGWOOD	24" MIN. HT.	MO. 3 CONT.
DS	24	DIERVILLA SPLENDENS 'SEIBERT4'	KODIAK ORANGE DIERVILLA	24" MIN. HT.	MO. 3 CONT.
FX	18	FORSYTHIA X INTERMEDIA 'BOUCLE'	MAGICAL GOLD FORSYTHIA	24" MIN. HT.	MO. 3 CONT.
SJ	35	SPIRAEA JAPONICA 'DOUG MEDAN'	DOUG MEDAN SPIREA	MO. 3 CONT.	
		ORNAMENTAL GRASS			
CK	84	CALAMAGROSTIS X ACUTIFLA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	MO. 2 CONT.	
PA	30	PENNISETUM ALOPECUROIDES	FOUNTAIN GRASS	MO. 3 CONT.	SEE NOTE 1

LANDSCAPE NOTES:

1. ORNAMENTAL GRASSES SHOULD BE PRUNED BACK IN LATE FALL OR EARLY SPRING TO ALLOW FOR NEW FOLIAGE TO GROW IN SPRING.
2. ALL PLANTING BEDS & TREE PLANTING PITS SHALL RECEIVE A MINIMUM 3-INCH DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH.
3. ALL EVERGREEN TREES SHALL BE MEASURED FROM THE BOTTOM OF LEADER.

N SITE PLAN

SCALE: 1"=50'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS. CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR IT'S ACCURACY.

50 0 50 100FT.

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REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/9/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Landscape Plan

DRAWING NO.

L-100

Project no.: 21.011

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Appendix H

Soils Information

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Soil Map—Erie County, New York



Map Scale: 1:3,590 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Erie County, New York
Survey Area Data: Version 20, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 26, 2019—Oct 10, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ge	Getzville silt loam	27.2	87.5%
Ld	Lamson mucky very fine sandy loam	1.8	5.7%
Sw	Swormville clay loam	2.1	6.8%
Totals for Area of Interest		**31.1**	**100.0%**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Appendix I

SHPO Information

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189
518-237-8643

Bernadette Castro
Commissioner

October 10, 2001

Carolyn A. Pierce
CCRG
105 Robie Avenue
Buffalo, New York 14214

Dear Ms. Pierce:

Re: SEQRA
Muir Woods Mixed-Use Development
Amherst/Erie County
01PR0345

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Parks, Recreation and Historic Preservation Law, Section 14.09.

Based upon this review, it is the OPRHP's opinion that your project will have No Impact upon cultural resources in or eligible for inclusion in the State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Director

RLP:cmp

RECEIVED
OCT 16 2001
CIMINELLI DEVELOPMENT COMPANY, INC.

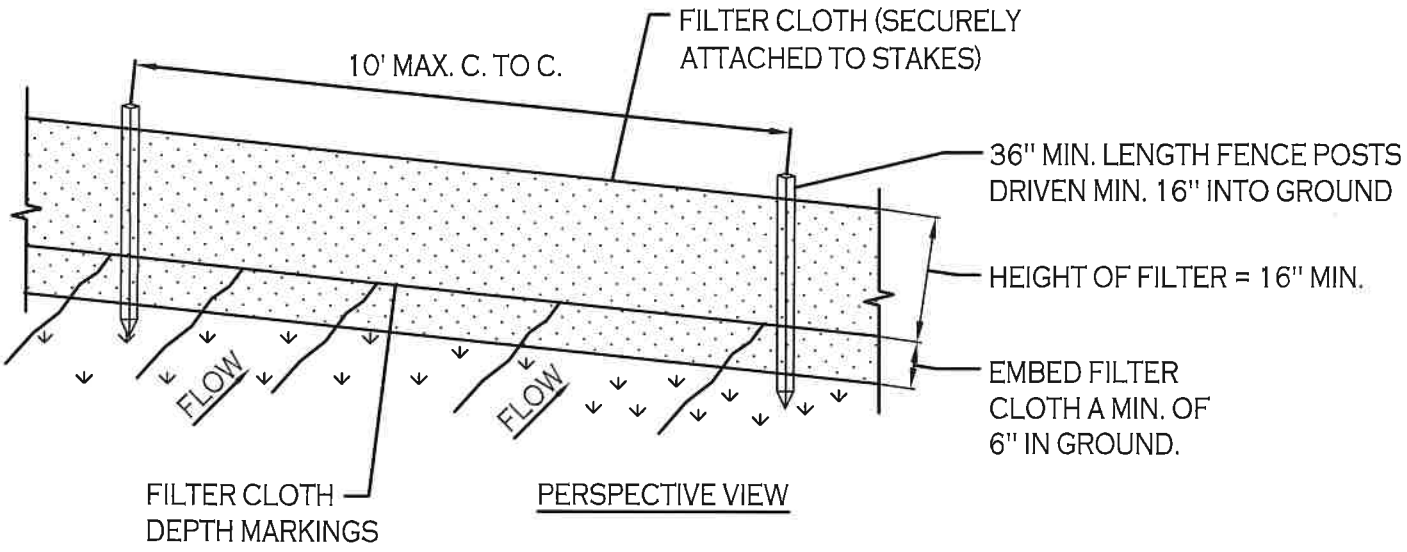
An Equal Opportunity/Affirmative Action Agency
printed on recycled paper

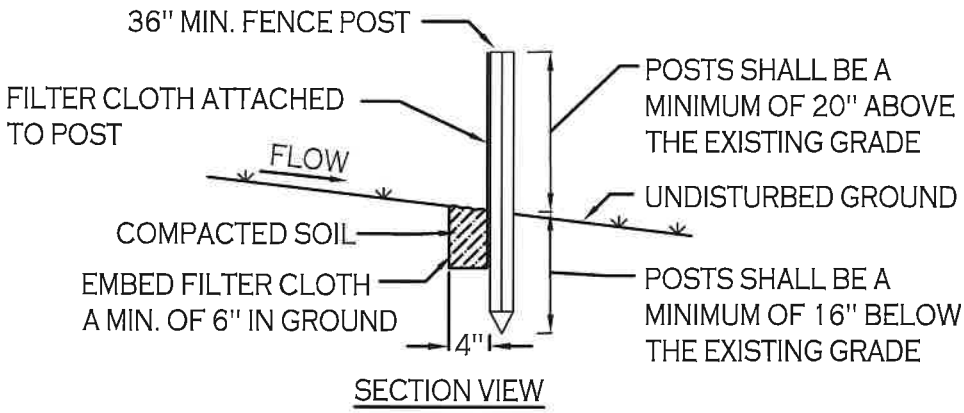
Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Appendix J

Standard Erosion Control Details

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)





CONSTRUCTION SPECIFICATIONS

1. WOVEN FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.

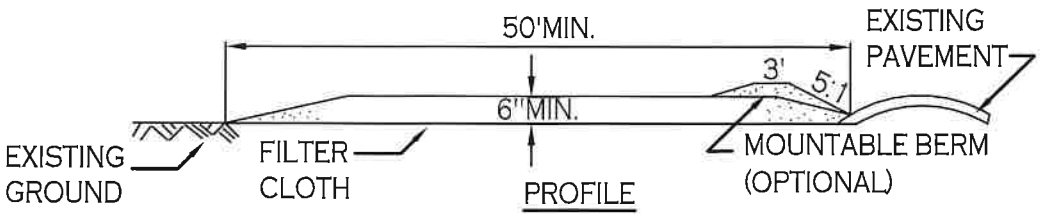
2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.

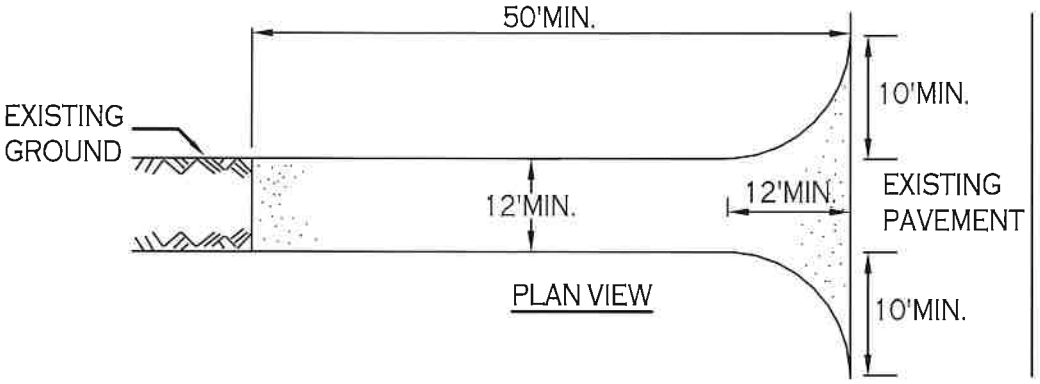
3. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

SILT FENCE DETAIL

NOT TO SCALE

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)





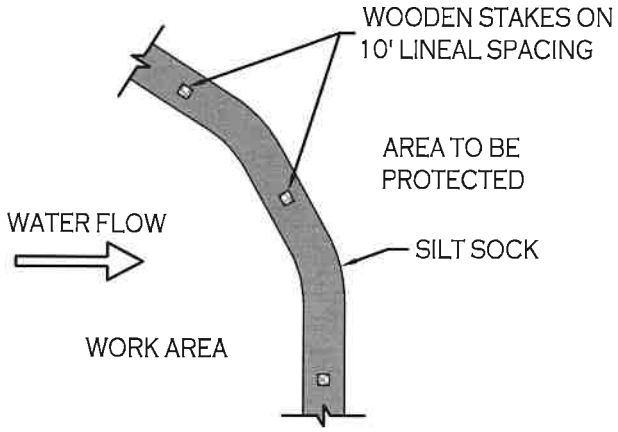
CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

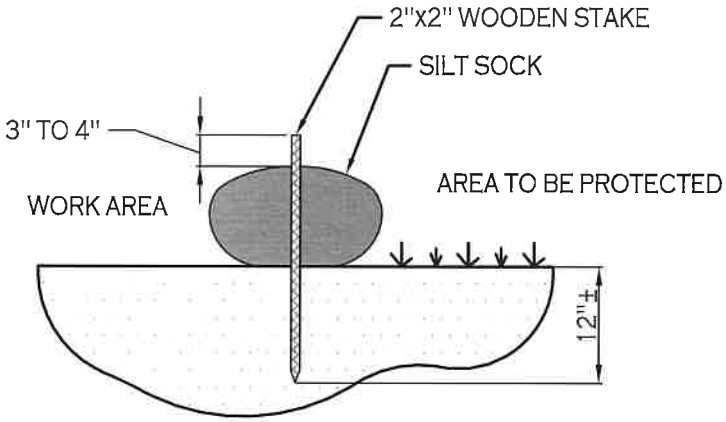
STABILIZED CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)



PLAN VIEW



SECTION VIEW

NOTES:

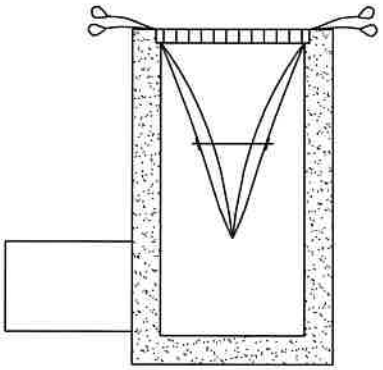
CONTRACTOR SHALL INSPECT AND MAINTAIN SILT SOCK AS NEEDED DURING THE DURATION OF CONSTRUCTION PROJECT.

CONTRACTOR SHALL REMOVE SEDIMENT COLLECTED AT THE BASE OF THE SILT SOCK WHEN IT HAS REACHED $\frac{1}{2}$ OF THE EXPOSED HEIGHT OF THE SILT SOCK. ALTERNATIVELY, RATHER THAN CREATE A SOIL DISTURBING ACTIVITY, THE ENGINEER MAY CALL FOR ADDITIONAL SILT SOCK TO BE ADDED AT AREAS OF HIGH SEDIMENTATION, PLACED IMMEDIATELY ON TOP OF THE EXISTING SEDIMENT LADEN SILT SOCK.

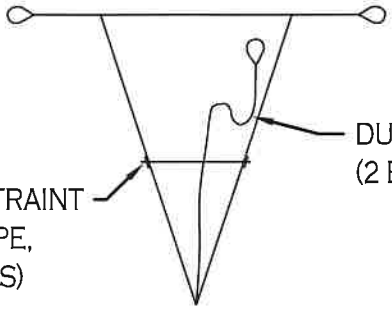
SILT SOCK DETAIL

NOT TO SCALE

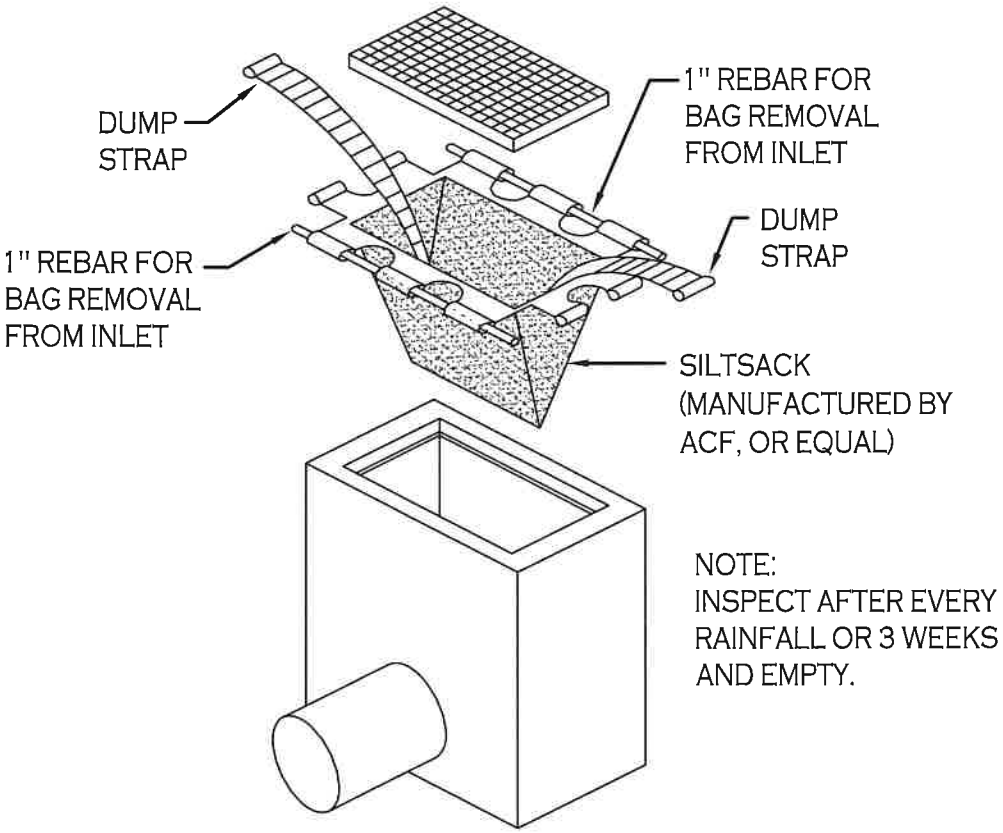
Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)



INSTALLATION DETAIL



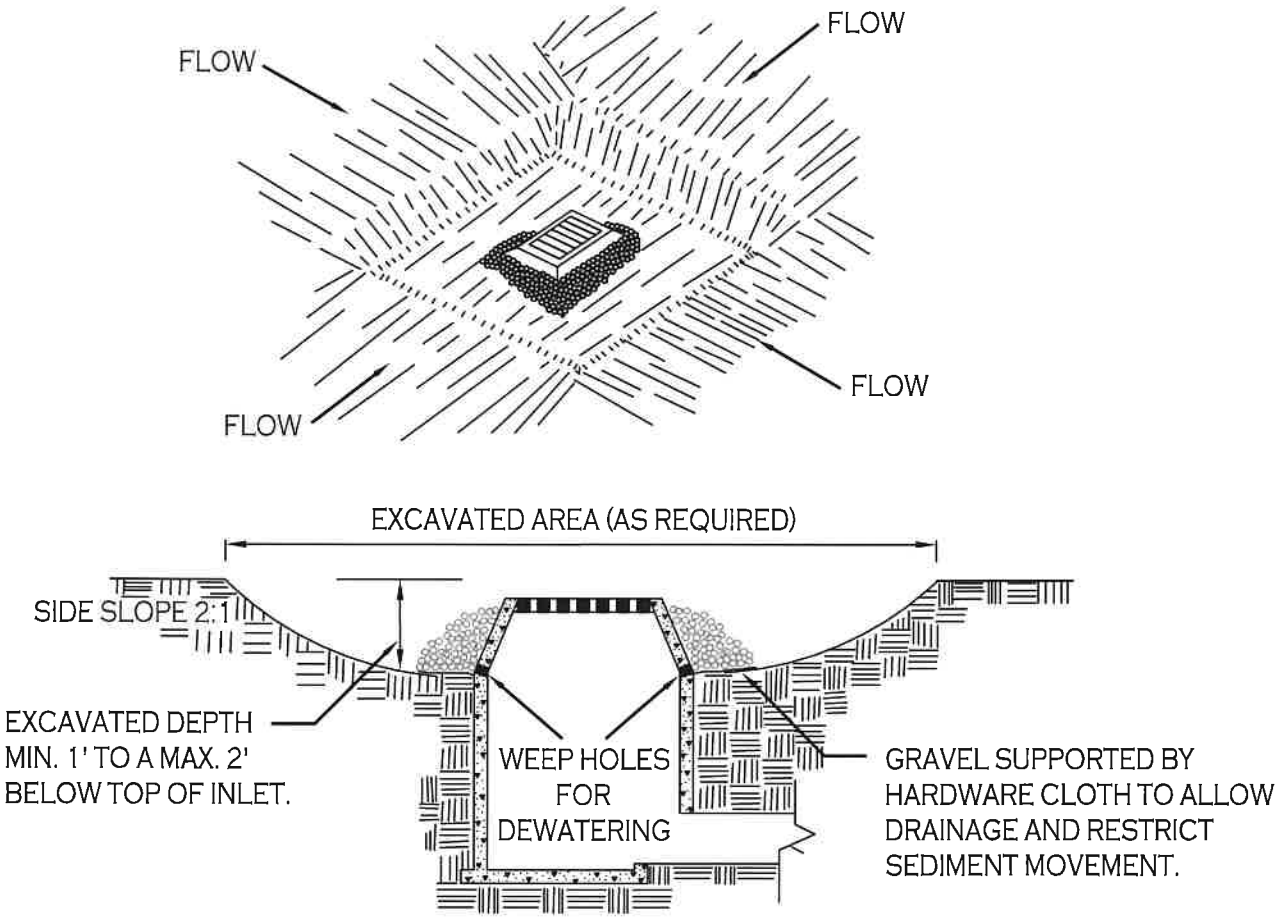
BAG DETAIL



SILT SACK DETAIL

NOT TO SCALE

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)



CONSTRUCTION SPECIFICATIONS

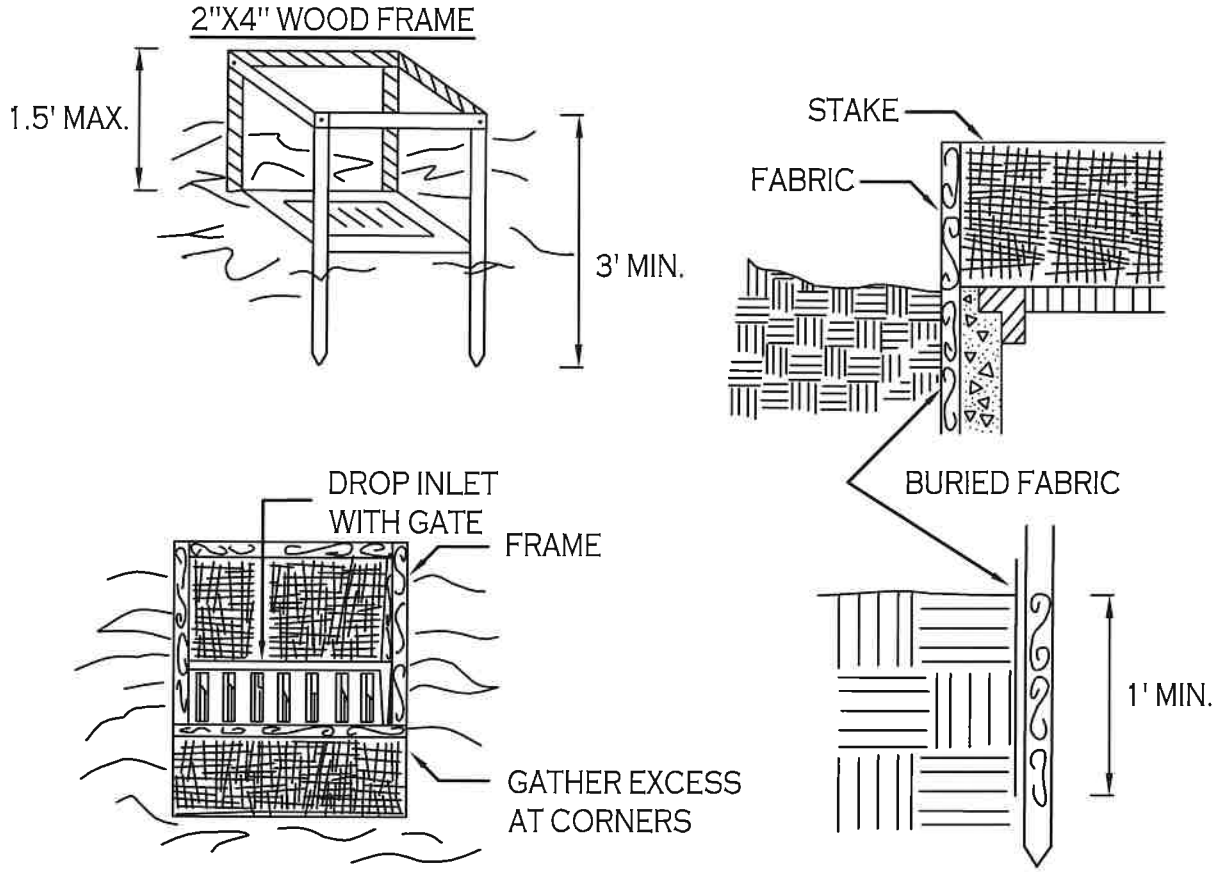
1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER EXCAVATION.
2. GRADE APPROACH TO THE INLET UNIFORMLY AROUND THE BASIN.
3. WEEP HOLES SHALL BE PROTECTED BY GRAVEL.
4. UPON STABILIZATION OF CONTRIBUTING DRAINAGE AREA, SEAL WEEP HOLES, FILL BASIN WITH STABLE SOIL TO FINAL GRADE, COMPACT IT PROPERLY AND STABILIZE WITH PERMANENT SEEDING.

MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 1

NOT TO SCALE

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)



CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.

2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.

3. STAKE MATERIALS WILL BE STANDARD 2" x 4" WOOD OR EQUIVALENT. METAL WITH A MINIMUM LENGTH OF 3 FEET.

4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.

5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.

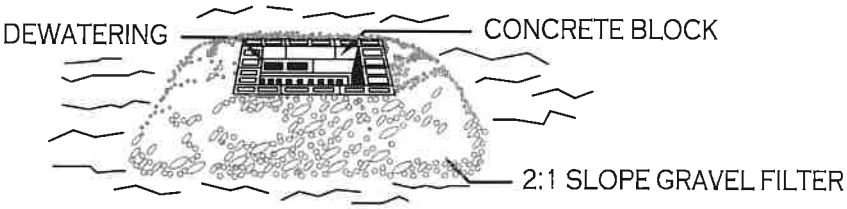
6. A 2" x 4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.

MAXIMUN DRAINAGE AREA 1 ACRE

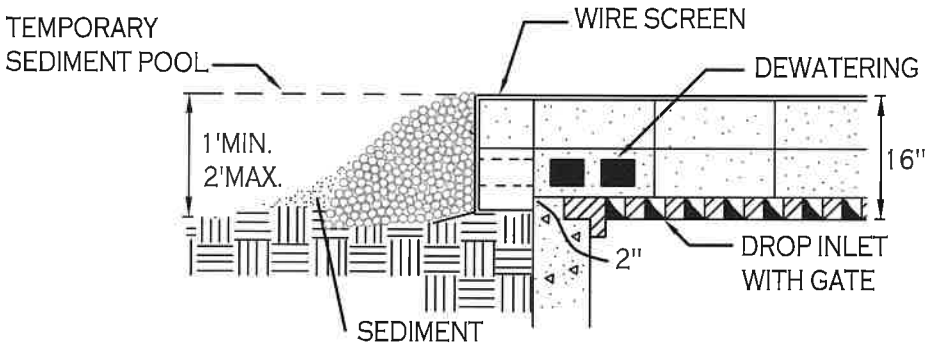
INLET PROTECTION DETAIL 2

NOT TO SCALE

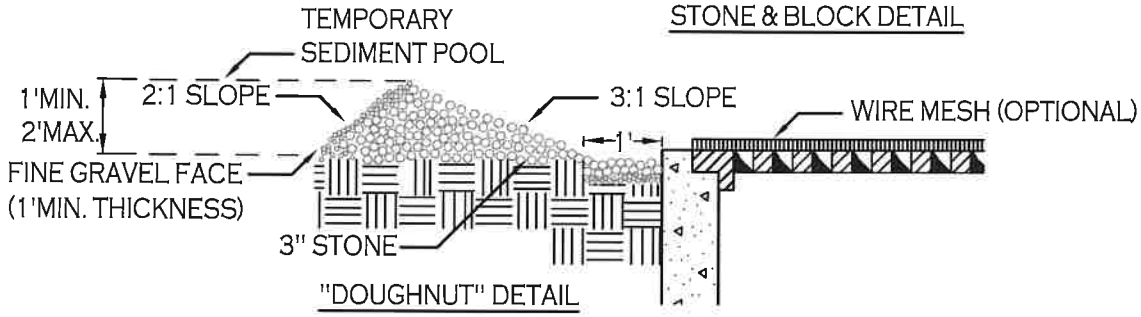
Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)



STONE & BLOCK PLAN VIEW



STONE & BLOCK DETAIL



"DOUGHNUT" DETAIL

CONSTRUCTION SPECIFICATIONS

1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE FOR DEWATERING. FOUNDATION SHALL BE 2 INCHES MINIMUM BELOW REST OF INLET AND BLOCKS SHALL BE PLACED AGAINST INLET FOR SUPPORT.

2. HARDWARE CLOTH OR 1/2" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.

3. USE CLEAN STONE OR GRAVEL 1/2-3/4 INCH IN DIAMETER PLACED 2 INCHES BELOW TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER.

4. FOR STONE STRUCTURES ONLY, A 1 FOOT THICK LAYER OF THE FILTER STONE WILL BE PLACED AGAINST THE 3 INCH STONE AS SHOWN ON THE DRAWINGS.

MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 3

NOT TO SCALE

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Appendix K

Wetland Permits

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 9
270 Michigan Avenue, Buffalo, NY 14203-2915
P: (716) 851-7165 I F: (716) 851-7168
www.dec.ny.gov

December 24, 2020

Mr. Adam Faeth
Ciminelli Real Estate Corporation
50 Fountain Plaza, Suite 500
Buffalo, New York 14202

Muir Woods Development – "Site A"
Permit Transmittal Letter
Permit No. 9-1422-00398/00001

Dear Mr. Faeth:

Enclosed is your permit which was issued in accordance with applicable provisions of the Environmental Conservation Law. The permit is valid for only that project, activity or operation expressly authorized. If modifications are desired after permit issuance, you must submit the proposed revisions and receive written approval from the Permit Administrator prior to initiating any change. If the Department determines that the modification represents a material change in the scope of the authorized project, activity, operation or permit conditions, you will be required to submit a new application for permit.

Please review all permit conditions carefully. In particular, identify your initial responsibilities under this permit in order to assure timely action if required. Since failure to comply precisely with permit conditions may be treated as a violation of the environmental conservation law, you are requested to provide a copy of the permit to the project contractor, facility operator, and other persons directly responsible for permit implementation (if any).

If you have any questions, please contact this office at the above address.

Respectfully,
David S. Denk
Regional Permit Administrator

Enclosure
ecc: NYSDEC Law Enforcement
Maureen Brady, NYSDEC Office of General Counsel
Mr. Chuck Rosenburg, NYSDEC Division of Fish and Wildlife
Mr. Martin Crossen, USACOE
Sean Hopkins, Esq., Hopkins Sorgi & McCarthy PLLC

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

PERMIT
Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
Ciminelli Muir Woods LLC
50 Fountain Plaza, Suite 500
Buffalo, NY 14202
(716) 631-8000

Facility:
MUIR WOODS DEVELOPMENT
1121 N French Rd
Amherst, NY 14228

Facility Location: in AMHERST in ERIE COUNTY
Facility Principal Reference Point: NYTM-E: 191.586 NYTM-N: 4770.823
Latitude: 43°01'38.9" Longitude: 78°47'07.2"

Authorized Activity: Construction of a mixed-use project named "Muir Woods" consisting of approximately two 4-story mixed-use buildings consisting of commercial space and residential units, 90 two-family townhouses and 2 six-unit apartment buildings, approximately 133 detached single-family residential units and 515 cottage-style and apartment-style housing units with various amenities; and gas, electric, sanitary, potable water and storm water (the necessary infrastructure), while maintaining open space on approximately 224 acres in the Audubon New Community District. The Muir Woods project property is a 326 acre site bounded by the Lockport Expressway (Interstate Route 990) and Dodge Road on the south, Sweet Home Road on the west, North French Road on the north and Campbell Boulevard on the east. The project will result in permanent impacts to approximately 2.39 acres of State regulated wetlands (TE-22, TE-23 and TE-34), and 11.38 acres of State regulated 100 foot wide wetland adjacent area. As mitigation for those impacts the project includes creation of 19.58 acres of in-kind and out-of-kind wetlands on-site, in six areas, to replace the functions and benefits of the impacted wetlands. There will be 4.3 acres of stream channel enhancement on-site as mitigation for State wetland regulated adjacent area impacts. The project also includes construction at 520 Campbell Road property as detailed on plan sheets referenced in Natural Resource Condition No. 4.

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Permit Authorizations

Freshwater Wetlands - Under Article 24
Permit ID 9-1422-00398/00001

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

Water Quality Certification - Under Section 401 - Clean Water Act
Permit ID 9-1422-00398/00002

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: DAVID S DENK, Regional Permit Administrator
Address: NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY 14203 -2915

Authorized Signature: David S. Denk Digitally signed by David S. Denk DN: cn=David S. Denk, o=NYS DEC, ou=Div. of Env. Permits, email=david.denk@dec.ny.gov, c=US Date: 2020.12.24 10:29:47 -05'00' Date ___/___/___

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: FRESHWATER WETLANDS; WATER QUALITY CERTIFICATION

1. **No Work Prior to Approval of Legal Instrument for Preservation of Undeveloped Areas of Site** No work authorized by this permit may begin until the Department approves a legal instrument, such as a deed restriction and/or conservation easement, that will preserve in perpetuity the natural resource values of the undeveloped areas of the site. This condition does not apply to the 520 Campbell Boulevard property.

2. **Declaration of Restrictions 520 Campbell Boulevard Property** A Declaration of Restrictions permanently prohibiting any future development of the 6.88 acres of jurisdictional federal wetlands and portion of the upland area on 520 Campbell Boulevard as depicted on the Wetland Restriction Exhibit Map must be incorporated into the deeds for lots 1 – 12 and 21. By 60 days after Water Quality Certification issuance, the permittee shall file with the real property records of the Erie County Clerk`s Office, the deed for each applicable lot containing this notice. The permittee shall within two weeks following the filing of the deed(s) submit proof of filing from the County Clerk's Office

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

showing the Liber and page number at which the deed notice was filed and the date of filing for one of the affected lots to: Regional Permit Administrator, NYSDEC Region 9 Headquarters, 270 Michigan Ave, Buffalo, NY 14203-2915.

3. **Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by Ciminelli Development Company, Inc. and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009.

4. **Conformance with Plans Site B** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include the "Concept Plan - Muir Woods" dated 08 November 2019 amended to show Conifer Planting Area (attached).

5. **Conformance with Plans - 520 Campbell Boulevard** All activities authorized by this permit for the 520 Campbell Boulevard property must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans include those sheets entitled: The Preserve at Muir Woods (DEC Planting Exhibit, DEC Earthwork Exhibit and the Wetland Restriction Exhibit) by Greenman-Pedersen, Inc. dated May 2018.

6. **Conformance with Plans Site A** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include Drawing C-100 dated July 20, 2020 and received by this Department on August 10, 2020.

7. **Future Phases** Prior to development of Muir Woods Sites A and B, the permittee must obtain specific approval of engineered plans for Sites A and B to ensure compliance with the terms and condition of this permit, the approved wetland mitigation plans and the most current Findings Statement for the overall Muir Woods Project issued pursuant to the State Environmental Quality Review Act. The permittee shall submit the engineered plans for the development of Sites A and B for review by the Department simultaneous with submission of such engineered plans to the Town of Amherst. If required by the Department, the permittee shall make any necessary modifications to the engineered plans to ensure compliance with the terms and conditions of this permit, the approved wetland mitigation plans and the most current Findings Statement.

8. **Permit Conditions Prevail over Plans** If any condition of this permit conflicts with the approved plans noted in Condition Number 1, the permit conditions shall prevail over the plans unless specific written approval for such a change is obtained from this Department prior to implementation.

9. **Pre-construction Meeting to Review Permit** Prior to commencing work at the project site, the permittee shall schedule a pre-construction meeting with Department staff (Contact: Mr. David Denk, Regional Permit Administrator, NYSDEC, Division of Environmental Permits, Telephone : 716/851- 7165 and/or Mr. Charles P. Rosenburg, NYSDEC, Division of Fish and Wildlife, Telephone: 716/851-7010) and selected contractors to review the conditions contained in this permit.

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10. Mark Areas of No Disturbance on the Muir Woods Site Grade stakes and/or other appropriate measures (substantial contractor fencing, perhaps in combination with necessary silt fencing) shall be used to ensure that no equipment enters identified areas of no disturbance within the immediate area under construction (i.e.- Site A, Site B, Site C or Site D) on the Muir Woods project site. Boundaries of the on-site mitigation areas shall likewise be marked to define the limits of that work.

11. Install Controls Along Limits of Disturbance Before any soil is disturbed within a specific Site Development Area, as detailed in Condition #6 above, the permittee shall install securely anchored silt fencing and/or continuous staked hay bales along the limits-of-disturbance as shown on the plans or drawings referenced in this permit. Such erosion and sedimentation controls shall be maintained until unpaved portions of the subject site are stabilized by a self-sustaining cover of vegetation that is adequate to prevent erosion and sedimentation on and off the site. Sediment which has accumulated at the controls shall be removed periodically as necessary during the construction period. Before the controls are removed, the permittee shall remove all sediment that has accumulated at the controls.

12. Work Within Ares Depicted on Plans All construction activity, including operation of machinery, excavation, filling, grading, clearing of vegetation, disposal of waste, street paving and stockpiling of material must take place within the Site Development Areas or mitigation areas as depicted on the project plans referenced by this permit. Construction activity is prohibited within areas to be left in a natural condition or locations on the property not within the Site Development Areas or mitigation areas designated by this permit. Disturbance to the wetlands and their regulated 100 foot wide adjacent areas shall be strictly limited to the work areas identified in the plans, and specifically the MAP SHOWING WETLAND IMPACT AREAS - NEW YORK STATE WETLANDS, and APPENDIX M - PROPOSED ON-SITE MITIGATION PLAN.

13. Invasive Species (Non-Native Vegetation) To prevent the unintentional introduction or spread of invasive species, the permittee must ensure that all construction equipment is cleaned of mud, seeds, vegetation and other debris before entering any approved Site Development Areas within State regulated wetlands or their 100 foot wide adjacent areas, as well as all on-site wetland mitigation areas.

14. Prevention of Invasive Species The permittee shall prevent the establishment of invasive species (purple loosestrife, Phragmites, reed canary-grass, Japanese knotweed, glossy buckthorn and common buckthorn) across all disturbed areas within the wetland mitigation area for five growing seasons. If any of these invasive species become established, monitoring and treatment may be extended for an additional 5 years at the Department's discretion.

15. Wetland Mitigation is Mandatory Completion of all freshwater wetland mitigation is mandatory regardless of whether or not construction proceeds to completion. The required mitigation must be completed by the expiration date of this permit. Mitigation will be subject to remediation, if necessary, pursuant to Condition #16 below. All mitigation areas shall be monitored for a period of ten (10) years or until the mitigation is deemed successful by this Department. Monitoring reports shall be prepared for the first four (4) years after construction of the mitigation areas and every other year (years 6, 8 and 10) thereafter. This Department may, at its discretion, modify the 10-year monitoring period and/or monitoring report requirement at any time. Monitoring reports shall be submitted to Mr. Charles P. Rosenburg, Habitat Manager, NYSDEC, Bureau of Ecosystem Health, 270 Michigan Avenue, Buffalo, NY 14203-2915 Telephone: 716/851-7024.

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16. **On-Site Mitigation to be in Accordance with Mitigation Plan** The on-site mitigation shall be in accordance with Appendix M - Proposed On-Site Wetland Mitigation for Muir Woods prepared by Earth Dimensions, Inc. revised May 25, 2009 and with the modifications shown in Exhibit 22 of the July 20, 2020 application binder.

17. **Planting Row of Native Conifers** The permittee shall plant a row of native conifer trees in the location shown on the attached plan. The tree plantings must be a minimum of 6 feet tall, spaced 15 feet apart, and must be planted no later than October 15th following the completion of construction of the adjacent apartment units.

18. **Survival Rate for Mitigation Plantings** The permittee shall prepare a care, maintenance, inspection, and replacement schedule for the tree and shrub plantings described in the mitigation plan to ensure an 85% survival rate for five growing seasons. This condition includes all on-site landscape "buffer" plantings.

19. **Herbicides, Pesticides in Wetland or Adjacent Area** The use of herbicides and other pesticides in State regulated wetlands or their 100 foot wide adjacent areas is a regulated activity and may only be conducted pursuant to a valid Article 33 Pesticides Permit.

20. **Requirement for SPDES General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities** Since development of the Muir Woods site in the Town of Amherst will involve land disturbance of one (1) or more acres, the permittee is required to obtain coverage under State Pollutant Discharge Elimination System (SPDES) General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities. A Notice of Intent (NOI) is required to be sent to NYSDEC, Division of Water, 625 Broadway, 4th Floor, Albany, New York 12233-3505, Telephone: 518/402-8111 and approved before construction commences. Alternatively, an eNOI may be filed electronically as described on the Department's website. The General Permit GP-0-15-002 and NOI form are available on the Department's website at www.dec.state.ny.us.

21. **Visibly Turbid Discharges Prohibited** Visibly turbid discharges from project dewatering operations, excavation and grading activities are strictly prohibited to any "water body" (pond, wetland, stream or water course). Any such discharges shall be (1) retained in an appropriately maintained upland settling basin, filtered through crushed stone, sand, filter fabric fences, hay bales etc., or (2) directed to a grassy area sufficiently distant from any water body to preclude such entry.

22. **Stockpiling of Soil** Stockpiling of excavated soil is prohibited at locations within any portion of the TE-22, TE-23 and TE-34 Wetlands or their regulated 100 foot wide adjacent areas, or within any mapped 100-year floodplain beyond the Site Development Areas or mitigation areas identified in the plans.

23. **Stabilize Disturbed Areas** All areas of soil disturbance resulting from this project shall be seeded with an appropriate perennial grass seed and mulched with straw, or hydro-seeded. Mulch shall be maintained until suitable vegetative cover is established.

24. **Temporary Mulch, Final Seeding** If seeding is impracticable due to the time of year, a temporary mulch shall be applied and final seeding shall be performed at the earliest opportunity when weather conditions favor germination and growth.

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25. **Disposal of Material** Any non-merchantable tree and brush debris, demolition debris, excess construction materials, and/or excess excavated materials shall be immediately and completely disposed of on an approved upland site more than 100 feet from any regulated freshwater wetland. These materials shall be suitably stabilized so as not to re-enter any water body, wetland, or wetland adjacent area; and must be disposed of in accordance with all local, state, and federal statutes, regulations, or ordinances.

26. **Placement of Interpretive Signs Required** Permanent interpretive signs shall be placed at various wetland boundary locations throughout the Muir Woods project site . The permittee shall submit a proposal for the signs to the Department for approval. The interpretive signs shall be a minimum of 12 inches by 12 inches and shall be placed on permanent posts.

27. **Annual Project Inspection / Meeting** The permittee shall schedule an annual inspection/meeting to update Department staff on project progress and compliance with conditions of this permit for the on-site wetland mitigation area.

28. **Wetland Monuments** Monuments shall be placed every 200 feet along the outer edge of the wetland preservation areas. The monuments shall be 30" long, 5/8" rebar and cap embedded flush and in the center of the top exposed surface of concrete in a minimum 4 inch diameter, 4.5 foot long section of PVC Schedule 40 drain pipe filled with concrete, extending vertically1.5 to 2 feet above existing grade at each location. The caps shall say "Conservation Area Marker, Do Not Disturb". These monuments are to be permanently maintained.

29. **Wetland Boundaries** The boundaries of the TE-22, TE-23 and TE-34 Wetlands shall be fixed for the period of this permit (expires November 30, 2024). At that time, new boundary delineations for those wetlands will be required by this Department (to be performed or confirmed by a Department Biologist). Since project activities will be subject to the updated wetland boundary delineations and pertinent regulations at that time, any future permit modification (if necessary) would be reviewed based on the updated delineations and pertinent regulations. As such, modifications to the current project plan may be necessary depending upon the updated wetland delineations and permit regulations in effect at that time.

30. **State Not Liable for Damage** The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

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31. **State May Order Removal or Alteration of Work** If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

32. **State May Require Site Restoration** If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may lawfully require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.

33. **Precautions Against Contamination of Waters** All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. **Water Quality Certification** The authorized project, as conditioned pursuant to the Certificate, complies with Section 301, 302, 303, 306, and 307 of the Federal Water Pollution Control Act, as amended and as implemented by the limitations, standards, and criteria of state statutory and regulatory requirements set forth in 6 NYCRR Section 608.9(a). The authorized project, as conditioned, will also comply with applicable New York State water quality standards, including but not limited to effluent limitations, best usages and thermal discharge criteria, as applicable, as set forth in 6 NYCRR Parts 701, 702, 703, and 704.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. **Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. **Relationship of this Permit to Other Department Orders and Determinations** Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. **Applications For Permit Renewals, Modifications or Transfers** The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY14203 -2915

4. **Submission of Renewal Application** The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Freshwater Wetlands, Water Quality Certification.

5. **Permit Modifications, Suspensions and Revocations by the Department** The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

a. materially false or inaccurate statements in the permit application or supporting papers;

b. failure by the permittee to comply with any terms or conditions of the permit;

c. exceeding the scope of the project as described in the permit application;

d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;

e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. **Permit Transfer** Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification
The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit
The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits
The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights
This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

DEPARTMENT OF THE ARMY
BUFFALO DISTRICT, CORPS OF ENGINEERS
1776 NIAGARA STREET
BUFFALO, NEW YORK 14207-3199

February 25, 2021

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

Mr. Adam Faeth
Development Manager
Ciminelli Muir Woods LLC
350 Essjay Road Suite 101
Williamsville, NY 14221

Dear Mr. Faeth:

This is in reply to your submittal dated July 20, 2020 in which you requested a modification of Department of the Army Permit No. LRB-2001-00067. The project is located on a 326-acre parcel in the Town of Amherst, Erie County, New York. Specifically, you seek authorization to change the proposed use of an area identified as Site A from research and development and flex office space to a mixed-use commercial and residential development. This includes two 4-story mixed-use buildings, two-family townhouses, 6-unit apartment buildings, and a recreational trail to connect Site A with Site B. Wetland impacts have been reduced from 13.01 acres to 6.089 acres in Site A. A reduction of 6.921 acres. In addition, because of the reconfigured project including the significant reduction of wetland impacts, you have requested that the requirement of off-site compensatory mitigation be removed. Lastly, you have requested that 134 acres of the overall Muir Woods site located northeast of Site B, is donated to the Town of Amherst. This area will remain as open space in perpetuity. Permit compliance with mitigation requirements will remain as it currently is on the 134-acre site as a responsibility of Ciminelli Muir Woods LLC.

A Public Notice was published and coordinated with agencies and adjacent property owners using standard procedures. No comments were received as a result of the Public Notice. Based upon our evaluation, I concluded your request will not result in any unacceptable environmental or navigational impacts. Therefore, I am modifying Department of the Army permit No. LRB-2001-00067 to reflect the changes outlined in your request and identified on the attached drawings. All other terms and conditions of Permit No. LRB-2001-00067 remain in full force and effect.

Sheets 1, 2, and 3 of 3 are hereby made part of Permit No. LRB-2001-00067. Sheet 1 of 3 of this modification is an update to Sheets 2, 3, and 5 of 6 of the original permit. Sheet 2 and 3 of 3 of this modification are updates to Sheet 5 of 6 of the original permit. In addition, the following Special Conditions No. 6 and 8 of Permit No. LRB-2001-00067 are modified so that they no

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

longer include the requirement of off-site compensatory mitigation, as indicated below with the original and the following modified condition:

1. Special Condition Number 6: As mitigation to compensate for unavoidable and permanent impacts to 17.83 acres of Federal wetlands and 1.29 acres of Federal tributaries (approximately 5227 linear feet), the permittee shall create, at a minimum; 26.91 acres of wetland on-site, and 27.37 acres of wetland off-site. In addition, the permittee shall enhance 4.3 acres of tributary (approximately 2630 linear feet) on-site, all in accordance with the approved on-site and off-site mitigation plan that is made part of this permit. The mitigation area must be constructed in accordance with the approved plan as well as all permit conditions.

   Modified Special Condition Number 6: As mitigation to compensate for unavoidable and permanent impacts to 10.91 acres of Federal wetlands and 1.29 acres of Federal tributaries (approximately 5227 linear feet), the permittee shall create, at a minimum; 26.91 acres of wetland on-site. In addition, the permittee shall enhance 4.3 acres of tributary (approximately 2630 linear feet) on-site, all in accordance with the approved on-site mitigation plan that is made part of this permit. The mitigation area must be constructed in accordance with the approved plan as well as all permit conditions.

2. Special Condition Number 8: The approved compensatory mitigation must be in strict conformance with the plans approved by the Corps of Engineers. Such approved plans were prepared by Ciminelli Development Company, Incorporated and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009, including the Proposed On-Site Wetland Mitigation Plan, and the Proposed Off-Site Wetland Mitigation Plan dated November 16, 2009. The stated mitigation plans are hereby incorporated into and made part of the permit as Attachments 1 and 2. The permittee shall implement the mitigation in accordance with the plans and all permit conditions. Where permit conditions differ from the mitigation plan, the permit conditions shall be the ruling condition.

   Modified Special Condition Number 8: The approved compensatory mitigation must be in strict conformance with the plans approved by the Corps of Engineers. Such approved plans were prepared by Ciminelli Development Company, Incorporated and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009, including the Proposed On-Site Wetland Mitigation Plan dated November 16, 2009. The stated on-site mitigation plan is hereby incorporated into and made part of the permit as Attachments 1. The permittee shall implement the mitigation in accordance with the plans and all permit conditions. Where permit conditions differ from the mitigation plan, the permit conditions shall be the ruling condition.

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

Questions pertaining to this matter should be directed to Martin Crosson at 716-879-4346, by writing to the following address: U.S. Army Corps of Engineers, 1776 Niagara Street, Buffalo, New York 14207 or by E-mail at: martin.h.crosson@usace.army.mil

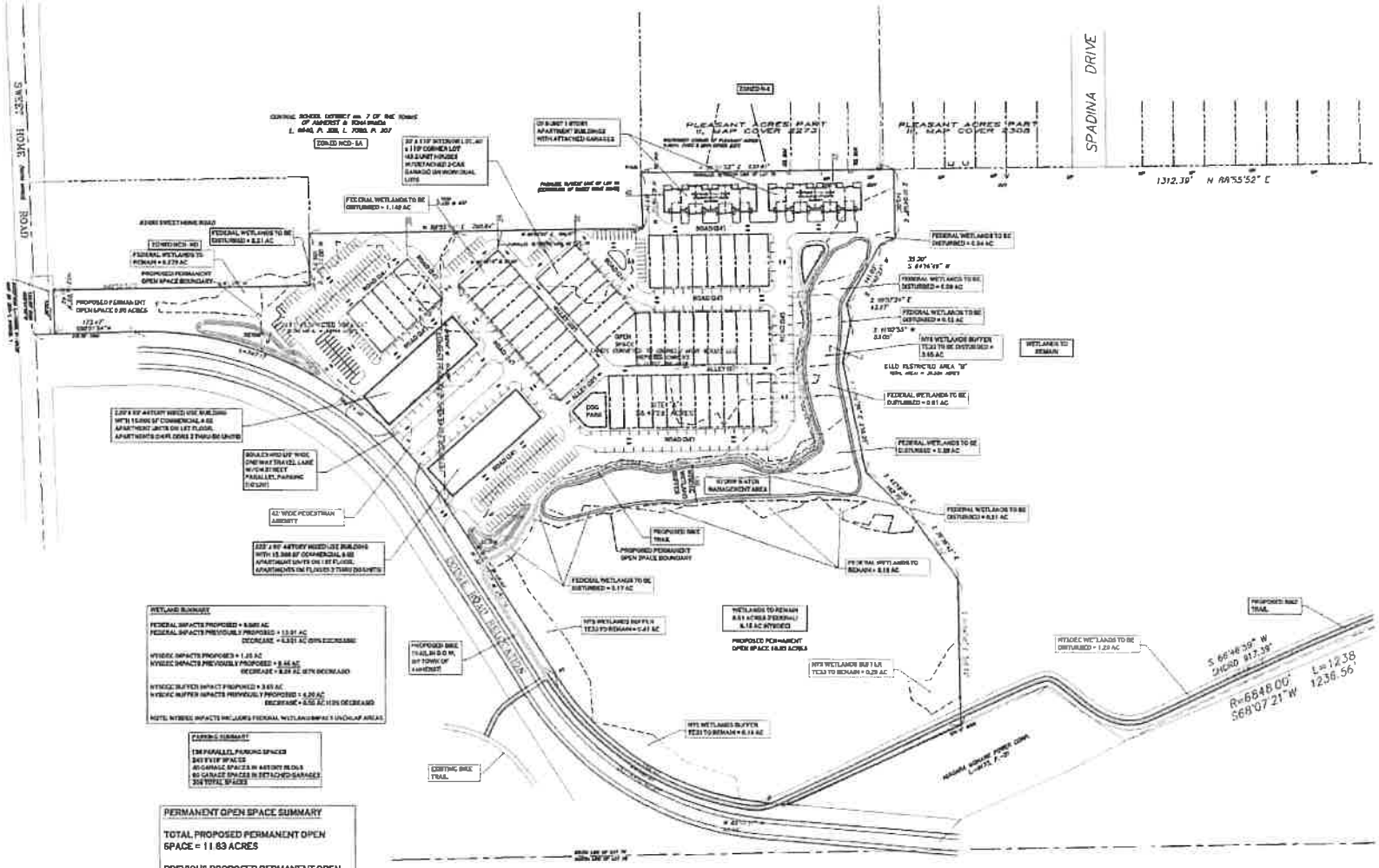
BY AUTHORITY OF THE SECRETARY OF THE ARMY

Steven V. Metivier

For: Mark Scalabrino
Acting Chief, Regulatory Branch

Enclosures

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)



SITE PLAN
SCALE: 1"=100'

Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 1 of 3

Camina Wood Morris

PROJECT NAME:
Site Development plans for:
Muir Woods Site "A"
Sweet Home & Dodge Road
Amherst, New York

Date: 11/20
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Concept Site Plan

DRAWING NO.
C-100

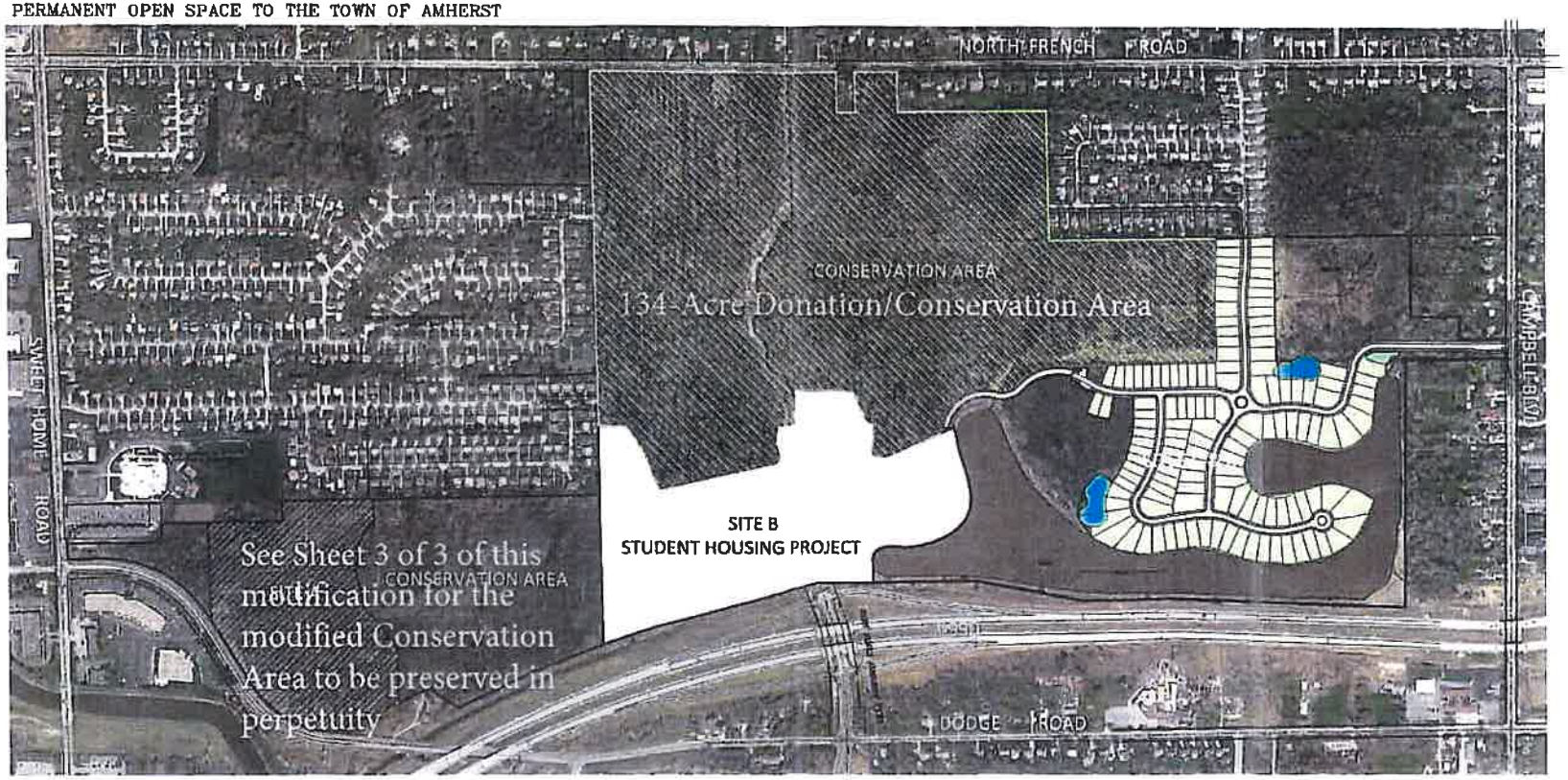
Project no.: 19.192

© Camina Wood Morris D.P.C.

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

MUIR WOODS OVERALL PROJECT AREA

PROPOSED DONATION OF APPROXIMATELY 134 ACRES OF PERMANENT OPEN SPACE TO THE TOWN OF AMHERST

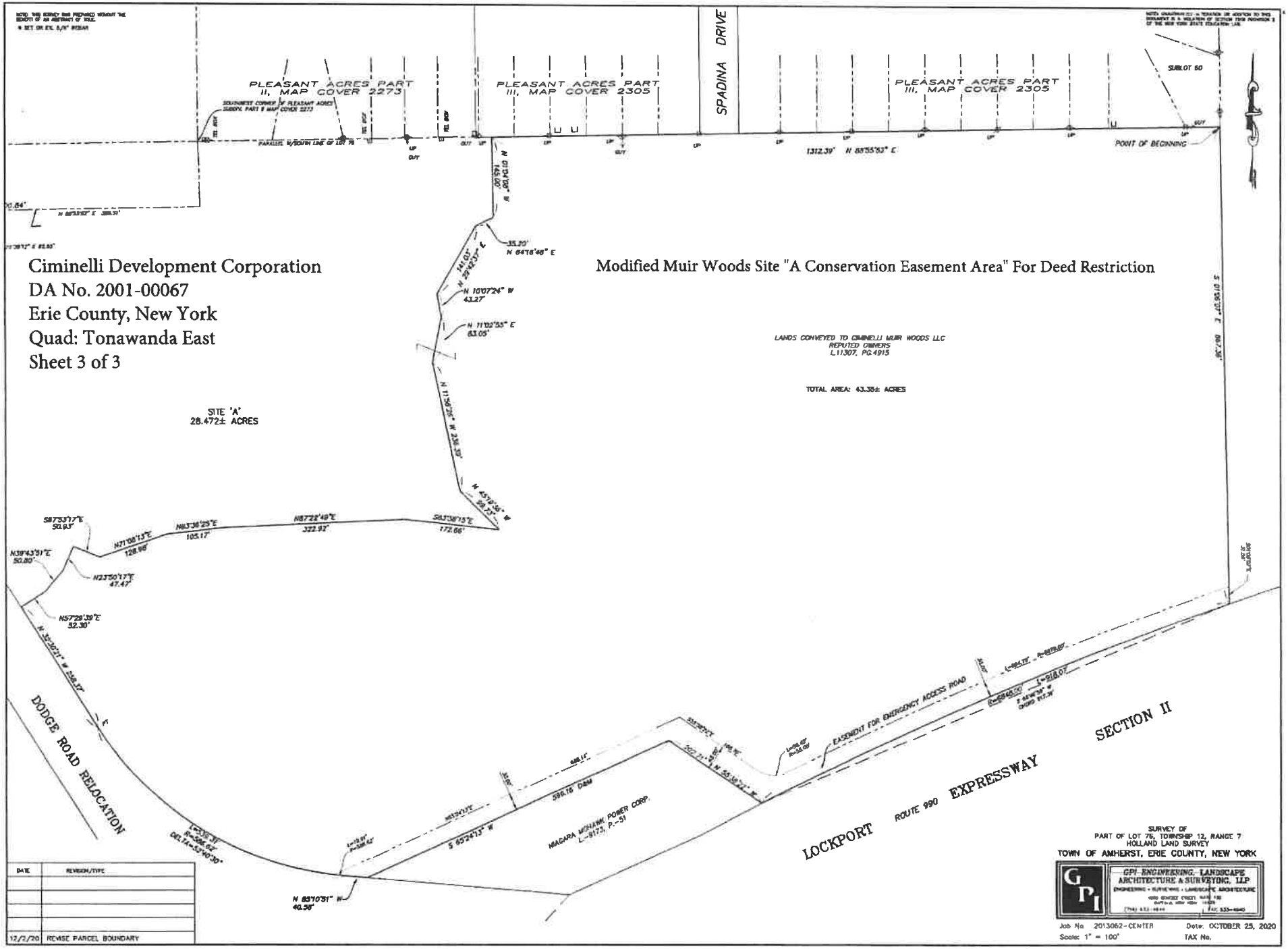


CONSERVATION AREA TO BE DONATED

Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 2 of 3

GPI GREENMAN-PEDERSEN, INC. CONSULTING ENGINEERS

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Appendix L

NYSDEC Letter of Acknowledgement

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Appendix M

5 Acre Disturbance Letter

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Carmina · Wood · Morris DPC

487 Main Street Suite 600 Buffalo, New York 14203 P: 716.842.3165 F: 716.842.0263 W: cwm-ae.com

March 4, 2021

Vaishali Reberholt, PE, CPESC
Town of Amherst Engineering Department
1100 North Forest Road
Amherst, NY 14221

Re: **Sawyer's Landing**
Amherst, NY

Dear Vaishali:

This letter shall serve as our request to have a total of 5 acres disturbed at one time at the above site. Per the NYSDEC General Permit, our site inspections will increase to 2 times per week when 5 acres is reached and will continue until the time the total disturbance is under 5 acres.

If you have any questions regarding the above, please feel free to contact me at 842-3165 [Ext 103] or via e-mail at cwood@cwm-ae.com.

Sincerely,
Carmina Wood Morris, D.P.C.

Christopher Wood, PE

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Appendix N

Engineer's Report

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Carmina · Wood · Morris DPC

487 Main Street Suite 600 Buffalo, New York 14203 P: 716.842.3165 F: 716.842.0263 W: cwm-ae.com

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

ENGINEER'S REPORT

for

Sawyer's Landing

Dodge & Sweet Home Road
Town of Amherst, Erie County, New York

Prepared for

Sawyer's Landing LLC

c/o Severyn Development
43 Central Ave Suite #300
Lancaster, NY 14086

Prepared by

Carmina Wood Morris, D.P.C.

487 Main Street, Suite 500
Buffalo, NY 14203

Telephone: (716) 842-3165
Fax: (716) 842-0263

February 2021



Table of Contents

Written Engineer's Report

Section 1 - Location & Description
Section 2 - Water Service
Section 3 - Sanitary Sewer Service
Section 4 - Storm Sewer Service

Appendices

Appendix A Sanitary Sewer and Water Demand Calculations

Appendix B Storm Sewer System Drainage Calculations

- Existing Runoff
- Proposed Runoff – East
- Proposed Runoff - West
- Green Infrastructure & Water Quality Calculations

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Section 1 - Location & Description

This project is a development of a 17.4 acre site located on the north side of Dodge Road, west of Sweet Home Road in the Town of Amherst. Both Dodge Road and Sweet Home Road are Erie County roads. Proposed is the construction of a mixed use development to include (2) 4-story buildings with a total of 30,000 sf of commercial and 100 apartments, (47) duplex lots and (2) 1-story apartment buildings with a total of 12 units. A bike trail will be constructed on site, this trail will connect to the existing Town of Amherst bike trail on the south side of Dodge Road. The approximately 1 acre westerly portion will remain undisturbed and be deed restricted as permanent open space. The site is currently undeveloped consisting of woods and overgrown brush/grass. NYSDEC and Federal wetlands were delineated on site by Earth Dimensions, Inc. Approximately 6.1 acres of Federal and 1.2 acres of NYSDEC wetlands have been permitted to be impacted. The proposed site development area to be disturbed for this project is approximately 16.4 acres.

Section 2 - Water Service

A new 8" D.I. combined service will be tapped off the existing 24" D.I.P. ECWA water main along the north side of Dodge Road. Following the tap, the 8" D.I. service will continue north into the site where it will enter into a Hot-Box enclosure. Within the Hot-Box enclosure an 8" meter (by ECWA) and an 8" Watts 957 RPZ will be installed. The service will exit the Hot-Box enclosure and then transition into 8" AWWA C-900 PVC. The service will run throughout the site to provide both domestic and fire service to the proposed buildings. Heat & light for testing will be provided in the area of the meter & RPZ to prevent freezing. Drainage due to testing or failure will be to the exterior through a drain, drainage will be away from the enclosure. The owner will be responsible for keeping the drainage ports clear of snow and debris. A total of 4 (four) proposed fire hydrants shall be installed around the site to provide fire protection coverage. There are no existing water services to this site, and therefor none to be killed/abandoned per ECWA requirements.

Domestic Summary:

Peak Operating Demand:	140.6 gpm
Water Main:	24" on Dodge Road
Static Pressure:	105 psi (per ECWA, 98 psi residual)
Friction Loss:	0.0 psi
Loss through meter/RPZ:	13.0 psi
Elevation Loss:	0.0 psi
Pressure after RPZ & Meter:	92 psi
Pressure at 4th floor:	77 psi

Repairs to all devices will be made during off hours, dual backflow preventers are not required. The site is not located in a 100-year flood plain. Disinfection of the

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water service following installation will be continuous feed, according to AWWA C-651, latest revision.

Section 3 - Sanitary Sewer Service

The proposed sanitary sewer service will connect to the existing 60" sanitary sewer (peanut line) located on the south side of Dodge Road. In order to connect to this sewer, a public sewer extension along the south side of Dodge Road will be required. This public extension will consist of a total of 643 LF of 8" SDR-35 PVC at a minimum slope of 0.4%.

The proposed private on site sewer mains will consist of 8" SDR-35 PVC at a minimum slope of 0.4%. Each of the proposed commercial buildings and apartment buildings will have a 6" SDR-35 PVC sanitary sewer lateral at a minimum slope of 1.0% tied into the private main. The duplex units will have a 4" SDR-35 PVC sanitary sewer lateral at a minimum slope of 1.0% tied into the private main. The 8" private main will tie into the proposed public extension on the south side of Dodge Road across from the SE portion of the project site.

A downstream sanitary sewer capacity analysis (DSCA) is required to be prepared for the site given the flows will exceed 2,500 gpd. This report is included in Appendix A.

Design Parameters

Housing: use 110/gpd/bedroom
Q = 412 bedrooms x 110 gpd/bed = 45,320 gpd

Commercial: use 0.1 gpd/sf
Q = 20,000 sf x 0.1 gpd/sf = 2,000 gpd

use 15 gpd/employee
Q = 20 employees x 15 gpd/emp = 300 gpd

Restaurant: use 35 gpd/seat
Q = 100 seats x 35 gpd/seat = 3,500 gpd

Total = 51,120 gpd (average)

using a 3.97 PF (see appendix A for calc)

Total = 51,120 x 3.97 = 202,908 gpd = 140.91 gpm = 0.314 cfs

The hydraulic loading rates per "Design Standard for Wastewater Treatment Works" 2014, NYSDEC. See attached Sanitary Sewer & Water Calculations for additional information.

I/I Mitigation:

Peak Flow = 140.91 gpm

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

4:1 offset = 140.91 x 4 = 563.63 gpm
Mitigation Credit = $250/gpm
I/I Mitigation = 563.63 gpm x $250/gpm = $140,908.66
Refer to Appendix A for additional information.

Section 4 - Storm Sewer Service

The existing site is generally flat and slopes west with portions sloping east. The portion that slopes west settles in a low area and once the capacity of that area is exceeded, sheet flow continues towards Sweet Home Road and is collected by an existing 12" pipe on the north side of Dodge Road. This pipe flows to the Erie County system on Sweet Home Road. The portion that flows east flows to the offsite wetlands.

Currently Dodge Road does not have a drainage system. A series of catch basins and pipes will be installed in the green area on the north side of Dodge Road to collect the road drainage. The west portion of this system will connect to the existing closed drainage system on Sweet Home Road. The east portion will discharge to the Ellicott Creek diversion channel using and existing discharge point. This new system will also convey the proposed discharge from the site as described below.

The proposed onsite storm sewer system consists of smooth interior and perforated HDPE pipes connected by a series of catch basins, manholes and yard drains. The site is split into a storm water management area on the east and west sides.

West Side

The west side of the site has (2) bioretention areas which portions of the westerly area will discharge to. These bioretention areas along with the remainder of the west portion of the site will discharge to the underground detention area. Note that the yard drains installed along the north property line discharge to the underground detention area. An outlet structure in the SW portion of this area will control runoff to at or below existing runoff flow rates. The discharge from the outlet control structure will discharge to the new system on Dodge Road which flows to the Sweet Home Road system.

Underground Detention Summary

(286) ADS Stormtech SC-740 chambers
Top of stone elev. = 573.00
Top of chamber elev. = 572.50
Bottom of chamber elev. = 570.00
Bottom of stone elev. = 569.50
Total storage = 18,574 CF

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Sawyer's Landing
3/4/2021
4 of 5

Event	Ex. Discharge	Pro. Discharge	Elev.
1 yr	0.87 cfs	0.33 cfs	570.29
2 yr	1.34 cfs	0.68 cfs	570.46
5 yr	2.14 cfs	1.05 cfs	570.79
10 yr	2.94 cfs	1.28 cfs	571.13
25 yr	4.34 cfs	1.61 cfs	571.73
50 yr	5.69 cfs	3.61 cfs	572.23
100 yr	7.33 cfs	4.83 cfs	572.92

East Side

The east side of the site has a bioretention area and wet detention pond which this portion of the site discharges to. The NE portion of the site discharges to a forebay which spills into the main micropool portion of the wet detention basin. The SE portion of the site discharges to the bioretention area which also spills into the main micropool portion of the site. An outlet control structure is located in the SE portion of the micropool and controls the discharge from this storm water management area. Spillways are also located on the east portion of the micropool which will discharge to the existing wetlands to the east in order to not cut off all flow from this site into this area. The discharge from the outlet control structure will discharge to the new system on Dodge Road which flows to the Ellicott Creek diversion channel.

The bioretention areas and wet detention pond for the project area are sized to provide 100% of the required Runoff Reduction Volume (RRv) and Water Quality Volume (WQv) treatment for the overall site in accordance with Chapter 4 of the NYSDEC Stormwater design manual. The soils in the vicinity of the bioretention areas are mainly USDA hydrologic group 'D' and therefore the system will be installed with underdrains per NYSDEC requirements. The bioretention areas will consist of 6" and 8" perforated HDPE underdrains in 12" of drainage gravel, followed by filter fabric and 18" minimum of planting soil. Overflow yard drains will be installed to allow 6" maximum temporary ponding for RRv treatment. The east bioretention area (area #3) spills into the wet detention pond and the underdrain pipe ties together with the pond discharge and flows to Dodge Road. The east bioretention areas (areas #1 & #2) have a catch basin to act as the spillway and this catch basin and the underdrain pipes discharge to the underground detention area.

Storm Water Management Area Summary

Forebay
Top of basin elev. = 576.80
Permanent water elev. = 575.00
Aquatic bench elev. = 574.50
Bottom of basin elev. = 569.00

Micropool
Top of basin elev. = 576.80
Permanent water elev. = 575.00
Aquatic bench elev. = 574.50
Bottom of basin elev. = 563.00

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Sawyer's Landing
3/4/2021
5 of 5

Overall Storm Water Summary

WQv Provided = 152,678 cf (pond)
WQv Provided = 6,948 cf (bioretention)
WQv Provided = 159,626 cf (total)

Bioretention Area Summary:

Area	Rim Elev.	Bottom Elev.	Area
1	574.50	574.00	2,300 sf
2	574.50	574.00	2,600 sf
3	575.50	575.00	11,000 sf
		Total Provided =	15,900 sf

Water Quality Summary:
WQv req'd = 28,804 cf (0.661 ac-ft)
RRv min. req'd = 5,518 cf (0.127 ac-ft)
RRv provided = 8,662 cf (0.199 ac-ft)
WQv provided = 159,626 cf (3.665 ac-ft)
Total RRv + WQv provided = 8,662 cf + 159,626 cf = 168,287 cf (3.868 ac-ft)

Detention: Comparison of the existing 1-year vs. the proposed 1-year runoff
Comparison of the existing 10-year vs. the proposed 10-year runoff
Comparison of the existing 100-year vs. the proposed 100-year runoff

Storm pipes: 10-year storm

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Appendix A

Sanitary Sewer and Water Demand Calculations

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

CARMINA WOOD MORRIS, D.P.C.
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 21.011 Date: 2/19/2021
Project Name: Sawyer's Landing
Project Address: Sweet Home Road and Dodge Road - Amherst, NY
Subject: Sanitary Sewer Demand Calcs
Sheet: 1 of 1

Sanitary Sewage Demand Calculations:

West - Mixed Use Buildings						
0.1 gal/d/sf	x	20,000 sf	=	2,000	gpd	*use 0.1 gallons per day per square foot
35.0 gal/d/seat	x	100 seats	=	3,500	gpd	*use 35 gallons per day per seat (fast food)
15 gal/d/employee	x	20 employees	=	300	gpd	*use 15 gallons per day per employee
West - Apartments						
220 gal/d/unit	x	100 units	=	22,000	gpd	*use 220 gallons per day per 2-bedroom unit
North - Apartments and Duplex Buildings						
220 gal/d/unit	x	94 units	=	20,680	gpd	*use 220 gallons per day per 2-bedroom unit
220 gal/d/unit	x	12 units	=	2,640	gpd	*use 220 gallons per day per 2-bedroom unit
Total Site Sanitary Demand:			=	51,120	gpd	
			=	0.051	MGD	
Find Peak Sanitary Demand:			=	0.079	cfs	

Peaking Factor based on Population:
Total demand: 51,120 gpd / 100 gpcd = 511 per capita

Population (P) = 511 people

Peaking Factor : $(18 + \sqrt{P}) / (4 + \sqrt{P})$ where P is in thousands

Peaking Factor = 3.97

Peak Sanitary Demand = 51,120 x 3.97 = 202,908 gpd
= 0.203 MGD
= 0.314 cfs

Required Infiltration and Inflow Mitigation:

Peak Sanitary Flow	=	202,908	gpd	=	140.91	gpm
4:1 offset flow per NYSDEC requirements	=	140.9	x 4	=	563.63	gpm req'd
Mitigation Credit	=	$250	/ gpm			
Mitigation Agreement Amount	=	**$140,908.66**				

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

CARMINA WOOD MORRIS, D.P.C.
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 21.011 Date: 2/19/2021
Project Name: Sawyer's Landing
Project Address: Sweet Home Road and Dodge Road - Amherst, NY
Subject: Sanitary Sewer & Water Demand Calcs
Sheet: 2 of 2

Water Demand Calculations (domestic):

Site

51,120 gpd x 1.1 = 56,232 gpd *use 110% of sewage demand

*use 1.8 peaking factor and assume a 12 hour day

56,232 gpm x 1day/12hr x 1hr/60min = 78.10 gpm

78.10 gpm x 1.8 = 140.58 gpm Q_{peak}

Headlosses:

Q_{peak} = 140.58 gpm
Pipe = 8 inch Ductile Iron C = 140
Length = 20 LF (approx. distance from tap to RPZ)

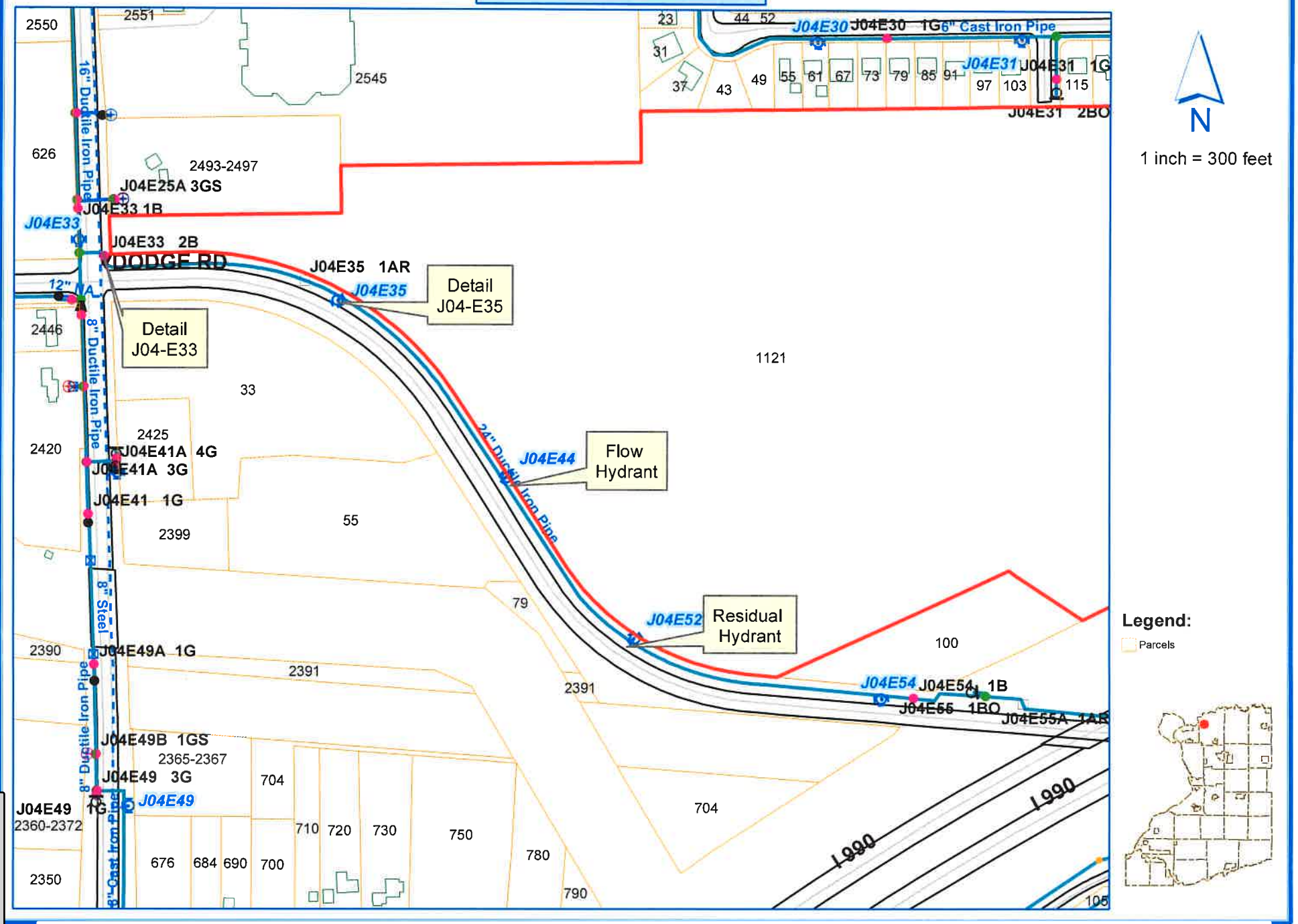
$$H_L = \frac{10.44\, L\, Q^{1.85}}{C^{1.85}\, D^{4.866}} = \frac{10.44(20)(21.51)^{1.85}}{(140)^{1.85}\,(6)^{4.866}} = 0.01 \text{ ft} = 0.00 \text{ psi}$$

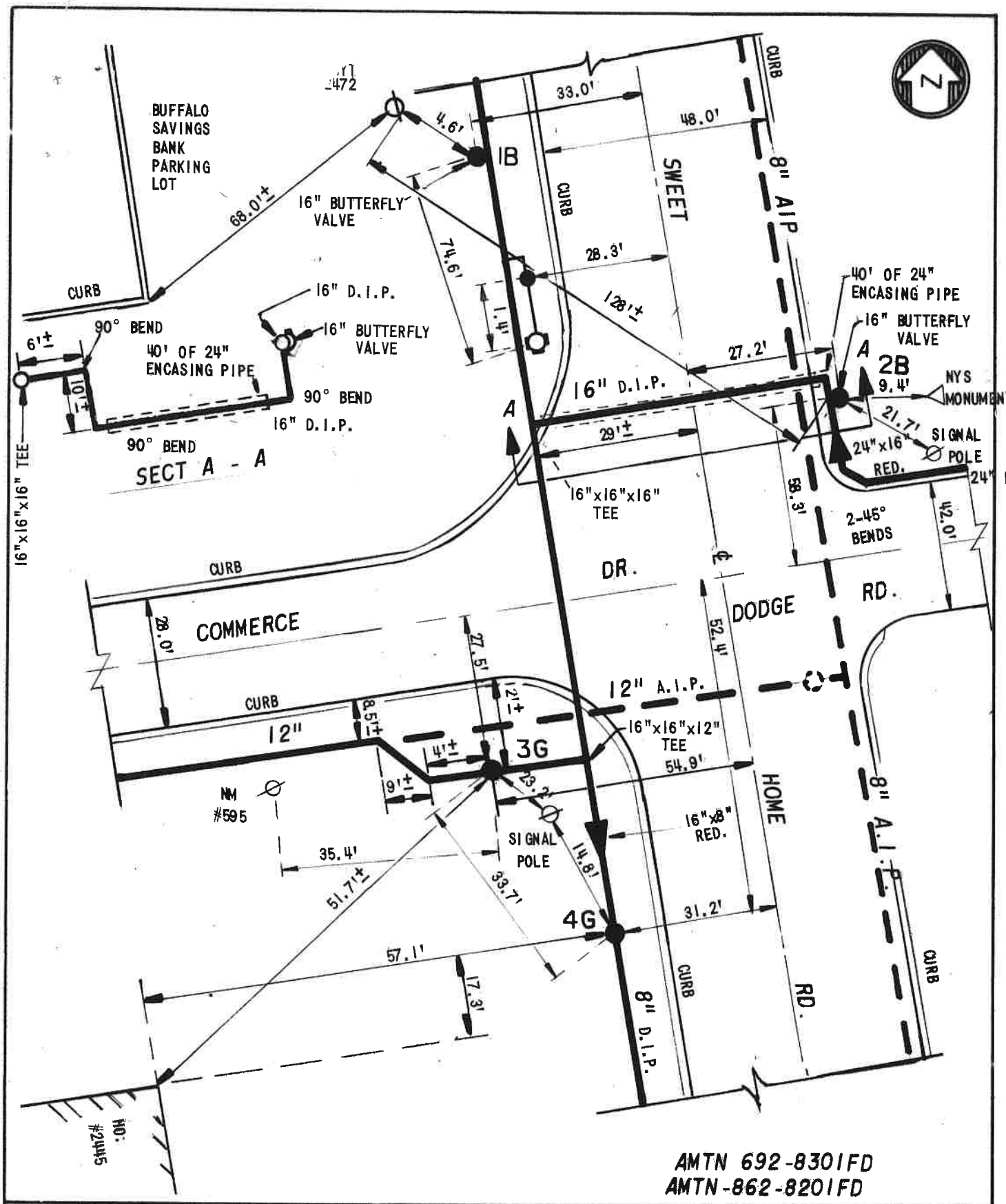
Δ elev = 0 ft = 0.00 psi
Loss through meter = 1 psi
Loss through RPZ = 12 psi
Total Losses = 13.0 psi
Static Pressure = 105 psi (per ECWA - residual pressure 98 psi)
Residual Pressure Following RPZ = 105 - 13.0 = 92.0 psi (available after rpz & meter)

Residual Pressure 30" above 4th Floor
Δ elev = 35 ft = 15.16 psi
Residual Pressure 30" above 4th Floor = 76.8 psi

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

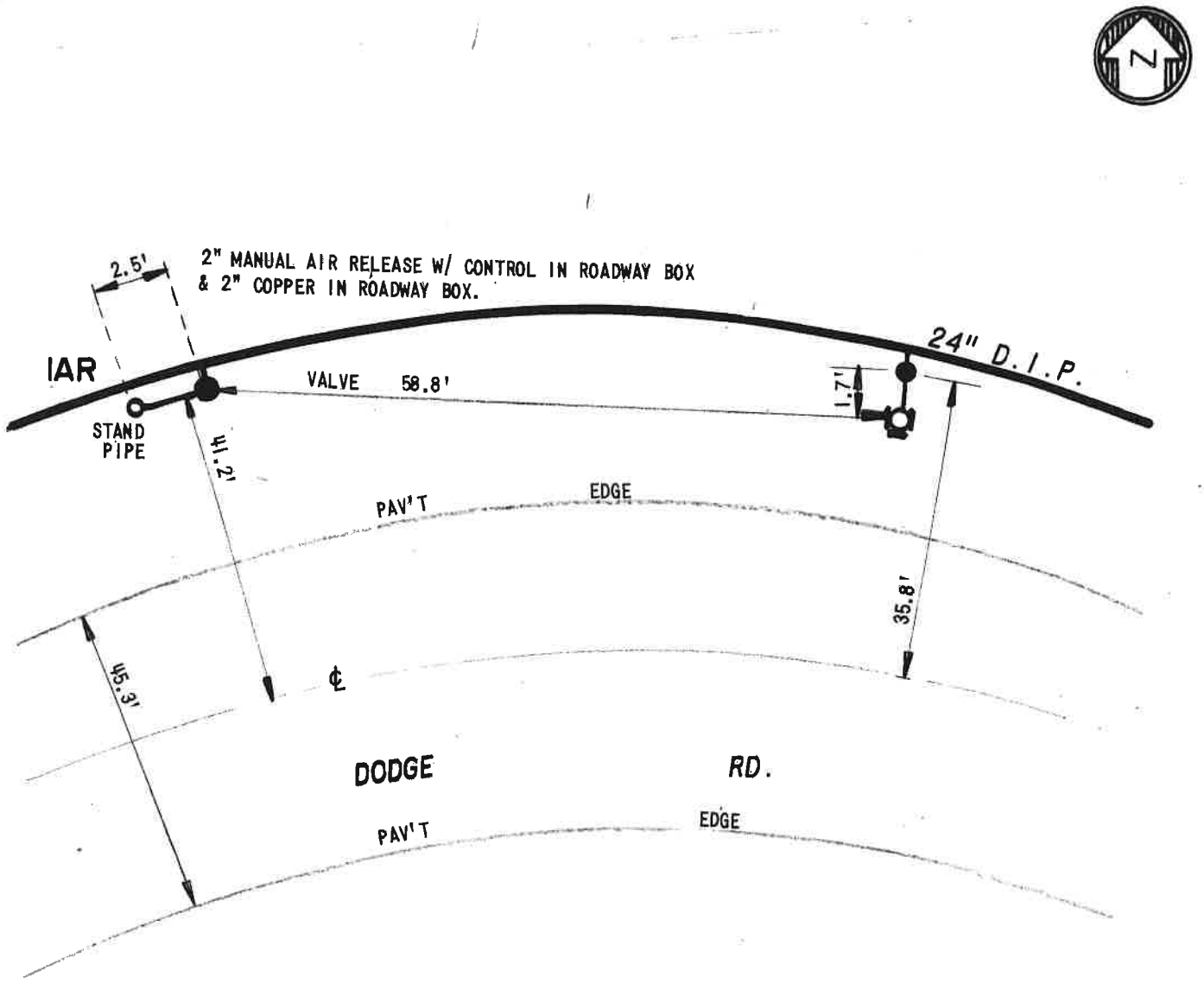
1121 Dodge Rd., AMTN





ERIE COUNTY WATER AUTHORITY, BUFFALO, NEW YORK	REVISED DR. BY: RLS DATE: 6-30-06 NOT TO SCALE	TOWN OF AMHERST W.D 15C	J04-E33 DETAIL SHEET NO.

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)



AMTN-692-8301-FD

SHEET 1

ERIE COUNTY WATER AUTHORITY, BUFFALO, NEW YORK	REVISED DR. BY: RLS DATE: 6-30-06 NOT TO SCALE	TOWN OF AMHERST W.D. 15C	J04-E35 DETAIL SHEET NO.

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

AMHERST
Size of Main/Branch: 24"/6" Fire District: 22028 GETZVILLE FD 11 Water District: 315 AMHERST DISTRICT 15C

Performed By: JRS & DPZ

Comments: HYDRANT FLOW TEST REQUESTED BY BILL GROFF
PRATT & HUTH, PHONE: 633-4844, FAX: 633-4940

Dischrge Coef: .90 Elvtn Usgs(ft): Static(psi): 105 Residual(psi): 98 Required Residual Pressure(psi): 20
Gallons Used..: 7,680 Total Flow(gpm): 2,558 Flow at Reqd Resid Pressure: 9,850

Flow Hydrants:

C	Flow Hyd	Flow Hydrant Address	Main/Brnch	Nzle	Size	Pitot	Flow	Comments
_	J04 E44	DODGE RD 2ND HYD E/O SWEET HOME RD	24"/6"	1:	2.50	58.0	1,279	
				2:	2.50	58.0	1,279	
				3:			Tot Flow: 2,558	

Bottom

I=Flow Hydrant Inquiry
ENTER=Continue F3=Exit F6=Maintain Test F7=Test Hydrant Inquiry F15=Print Test Information

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Downstream Sewer Capacity Analysis

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Muir Woods Site

Sweet Home & Dodge Road, Amherst New York

Downstream Sewer Capacity Analysis Report

Project Description

This new site development project will consist of the construction of apartment buildings, duplexes, office, restaurant, and retail space. Construction will also include on-site utility, landscaping improvements, and associated roads and parking. The overall acreage of the site is 28.47 acres. The site is located at Sweet Home Road and Dodge Road on a western portion of parcel 40.08-3-13.1 in the Town of Amherst.

The proposed sewer for this project will tie into the existing 60" RCP Peanut line along Dodge Road. Sewage will then be conveyed west and then eventually north through the 84" West Side Interceptor to the Town of Amherst Wastewater Treatment Facility #16.

Node 1 – Dodge Road (60"):

Existing Peak Flow measured (wet weather event)	=	40.602 cfs (21.851 mgd)*
Proposed Muir Woods Peak Flow	=	0.337 cfs **
Proposed Peak Flow	=	40.939 cfs

Theoretical capacity of existing 60" RCP pipe @ 0.07% = 81.366 cfs

Conclusion: The proposed peak flow is less than the capacity of the 60" pipe, therefore there is sufficient capacity. At no time during the monitoring did the flow depth exceed the pipe diameter at Node 1 of the downstream monitoring points during the rain events monitored.

Node 2 – North Ellicott Creek Rd (60")

Existing Peak Flow measured (wet weather event)	=	99.524 cfs (53.561 mgd)*
Proposed Muir Woods Peak Flow	=	0.337 cfs **
Proposed Peak Flow	=	99.861 cfs

Theoretical capacity of existing 60" pipe = 82.873 cfs (44.60 mgd)

Conclusion: Current flows the day following the 1.21" rainfall event exceeded the capacity of the existing 60" sewer pipe, but at no time during the monitoring period did the flow at any point slow or stall which would have caused a backup or flooding at the manhole. In addition, Sanitary Sewer Overflow (SSD) did not occur. I/I mitigation shall be required for the contribution proposed for this project.

Notes:

Pipe slopes, sizes and materials provided by Town of Amherst Engineering Department Sewer Maintenance Division

* Converted from measurements in TECSmith report dated 8/12/20

** See Sanitary Sewage Demand Calculations

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Node 3 – Sweet Home (66")

Existing Peak Flow measured (overall)	=	69.058 cfs (39.601 mgd)*
Proposed Muir Woods Peak Flow	=	0.337 cfs **
Proposed Peak Flow	=	69.395 cfs

Capacity of existing 66" pipe = 106.657 cfs (57.40 mgd)

Conclusion: The proposed peak flow is less than the capacity of the 66" pipe, therefore there is sufficient capacity. At no time during the monitoring did the flow depth exceed the pipe diameter at Node 3 of the downstream monitoring points during the rain events monitored.

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Notes:

Pipe slopes, sizes and materials provided by Town of Amherst Engineering Department Sewer Maintenance Division

* Converted from measurements in TECSmith report dated 8/12/20

** See Sanitary Sewage Demand Calculations

Location Map

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Muir Woods Site - Sweet Home and Dodge Rd



8/18/2020, 8:51:26 AM

Parcels

Municipal Boundaries

1:9,028

0 300 600 1,200 ft

0 90 180 360 m

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, :GIS .gov

Sanitary Demand Calculations

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

CARMINA WOOD MORRIS, D.P.C.
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 19.192 Date: 8/24/2020
Project Name: Muir Woods
Project Address: Sweet Home Road and Dodge Road - Amherst, NY
Subject: Sanitary Sewer Demand Calcs
Sheet: 1 of 1

1.p

Sanitary Sewage Demand Calculations:

West - Mixed Use Buildings							
0.1 gal/d/sf	x	15,000	sf	=	1,500	gpd	*use 0.1 gallons per day per square foot
35.0 gal/d/seat	x	200	seats	=	7,000	gpd	*use 35 gallons per day per seat (fast food)
15 gal/d/employee	x	20	employees	=	300	gpd	*use 15 gallons per day per employee
West - Apartments							
220 gal/d/unit	x	110	units	=	24,200	gpd	*use 220 gallons per day per 2-bedroom unit
North - Apartments and Duplex Buildings							
220 gal/d/unit	x	90	units	=	19,800	gpd	*use 220 gallons per day per 2-bedroom unit
220 gal/d/unit	x	12	units	=	2,640	gpd	*use 220 gallons per day per 2-bedroom unit

Total Site Sanitary Demand: = 55,440 gpd
= 0.055 MGD
Find Peak Sanitary Demand: = 0.086 cfs

Peaking Factor based on Population:
Total demand: 55,440 gpd / 100 gpcd = 554 per capita

Population (P) = 554 people

Peaking Factor : $(18 + \sqrt{P}) / (4 + \sqrt{P})$ where P is in thousands

Peaking Factor = 3.95

Peak Sanitary Demand = 55,440 x 3.95 = 219,029 gpd
= 0.219 MGD
= 0.339 cfs

Required Infiltration and Inflow Mitigation:

Peak Sanitary Flow = 219,029 gpd = 152.10 gpm

4:1 offset flow per NYSDEC requirements = 152.1 x 4 = 608.41 gpm req'd

Mitigation Credit = $250 / gpm

Mitigation Agreement Amount = $152,103.30

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

TECSmith Monitoring Report

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Date	Node 1			Node 2			Node 3			Rain:
	Dodge Rd 60" (60")			North Ellicott Creek Rd. (60")			Sweethome 66 (66")			
	FLOW (GAL x 1,000)	PEAK FLOW (MGD)	PEAK LEVEL (IN)	FLOW (GAL x 1,000)	PEAK FLOW (MDG)	PEAK LEVEL (IN)	FLOW (GAL x 1	PEAK FLOW (MDG)	PEAK LEVEL (IN)	(inches)
7/8/2020	4186.283	8.161	14.473	7265.409	8.598	16.319	4800986323.2	8.025	19.770	0
7/9/2020	6195.964	8.253	14.556	7387.504	8.661	16.273	6645115872.8	8.044	19.590	0
7/10/2020	6231.790	8.143	14.521	7625.321	9.362	16.873	6667623530.3	8.079	19.790	0
7/11/2020	10033.769	21.851	39.526	20780.607	53.561	76.701	10540796680.3	28.096	66.000	1.21
7/12/2020	9184.078	14.374	22.474	11292.759	17.205	23.420	9306202243.7	13.750	25.810	0
7/13/2020	7070.585	9.115	15.714	11243.925	29.525	33.420	7609650153.8	9.108	20.730	0.47
7/14/2020	6974.494	9.101	15.869	9685.896	13.288	20.168	7274548275.2	9.280	20.720	0
7/15/2020	6591.385	8.845	15.512	8174.879	9.503	17.013	6975378581.5	8.831	20.460	0
7/16/2020	9916.241	20.532	27.213	18886.012	44.070	43.892	12067803314.2	39.601	32.990	0.86
7/17/2020	10096.644	16.639	23.493	12451.728	18.137	24.043	10307997546.4	14.224	26.250	0.03
7/18/2020	8256.593	10.757	17.307	9766.538	11.556	18.960	8664937727.1	10.772	22.350	0
7/19/2020	7589.558	11.382	18.060	10166.964	17.245	24.128	8331695207.5	24.048	23.030	0.21
7/20/2020	7269.757	9.235	16.144	8853.911	10.160	18.118	7730113857.4	9.669	20.890	0
7/21/2020	6681.658	8.895	15.365	8179.097	9.991	17.880	1603593925.8	9.197	20.330	0
7/22/2020	8633.887	15.390	22.402	15950.443	42.105	43.300	16326027301.0	29.736	27.790	0.42
7/23/2020	7327.211	9.216	16.027	9664.310	11.130	18.508	6916249204.1	19.172	20.800	0
7/24/2020	6764.464	8.779	15.317	8434.117	9.760	17.405	8296938032.2	15.723	20.360	0
7/25/2020	6426.122	8.861	15.407	8159.333	9.969	17.608	6871634377.4	12.359	20.320	0
7/26/2020	6409.255	8.667	15.297	8027.060	9.774	17.372	6816880470.0	9.106	20.360	0
7/27/2020	6487.339	8.269	15.107	7871.954	9.244	16.902	6854655651.9	8.336	20.100	0.03
7/28/2020	6298.427	8.016	14.780	7696.223	9.134	16.757	6692447010.5	8.080	19.740	0.01
7/29/2020	8340.302	16.584	23.592	12134.192	36.728	39.530	9170179156.5	20.222	29.310	0.18
7/30/2020	6969.955	8.785	15.769	8383.294	9.650	17.268	7523641190.2	9.272	20.460	0
7/31/2020	6450.443	8.415	15.050	7762.583	9.287	16.964	7145517425.5	9.079	20.020	0
8/1/2020	6190.340	8.162	14.979	7900.808	9.762	17.305	6954528215.3	13.188	20.010	0
8/2/2020	7093.727	10.270	17.033	9801.968	15.922	22.240	7827565960.7	17.585	22.270	0.29
8/3/2020	6767.967	8.538	15.346	8117.853	9.663	17.172	7374180322.3	9.104	20.460	0
8/4/2020	6796.062	10.365	17.180	8920.731	24.649	28.896	7717920498.0	19.489	24.920	0.9
8/5/2020	4464.403	13.072	20.203	5583.196	26.407	31.097	3896577334.0	14.011	25.600	0
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Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

Date: August 12, 2020

SANITARY SEWER FLOW CAPACITY STUDY – Summary Review

Prepared For: Muir Woods Capacity Analysis

Christopher Wood
487 Main Street, Suite 600
Buffalo, New York 14203
P: (716) 842-3165
F: (716) 842-0263

Project Name: Muir Woods Capacity Analysis

Flow Monitoring Period: July 8, 2020 to August 5, 2020

Rain Events (> 0.5-inches) Monitored: July 11 (1.21"), July 16 (0.86"), and August (0.90")

Number of Monitoring Nodes: Three (3) downstream manholes

Node Locations and Descriptions:

- Node 1 Dodge Rd 60" (60")
- Node 2 North Ellicott Creek Rd. (60")
- Node 3 Sweethome 66 (66")

Summary Conclusion:

Based on the data presented in this report, specifically the flow depth measurements recorded (see graphs below)

- At no time did the flow depth exceed pipe diameter at Node 1 and Node3 of the downstream monitoring points during the rain events monitored.
- One time the flow depth exceed pipe diameter at Node 2 of the downstream monitoring points during the rain events monitored.
- At no time during the monitoring period did the flow at any point slow or stall which would have caused a backup or flooding at the manhole.

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

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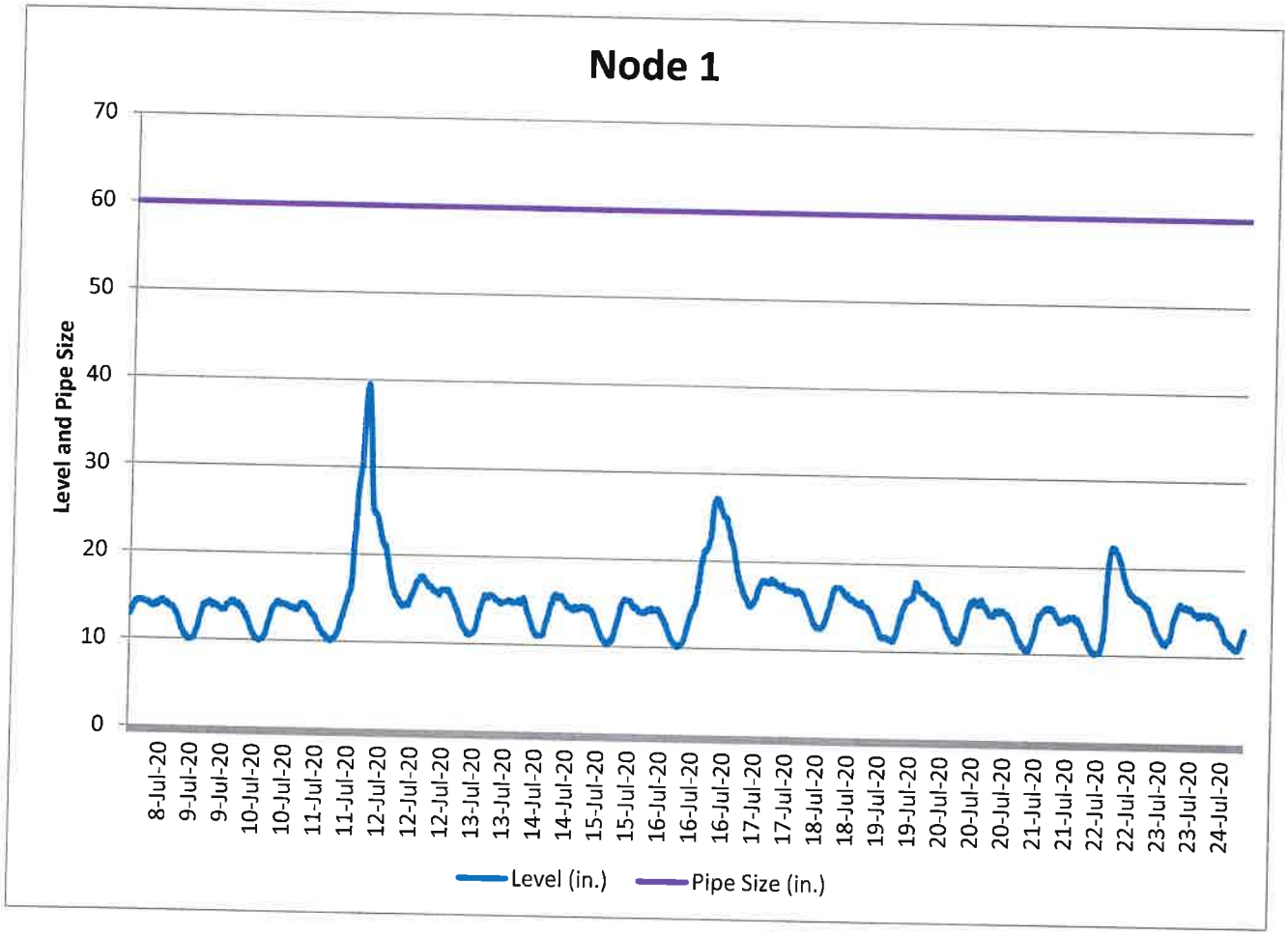
Fax: 716-687-1418

Depth of Flow Capacity Summary:

Depth of flow capacity is based on diameter of pipe. See graphs below.

- At no time during the monitoring period did depth of flow exceed pipe diameter at Node 1.



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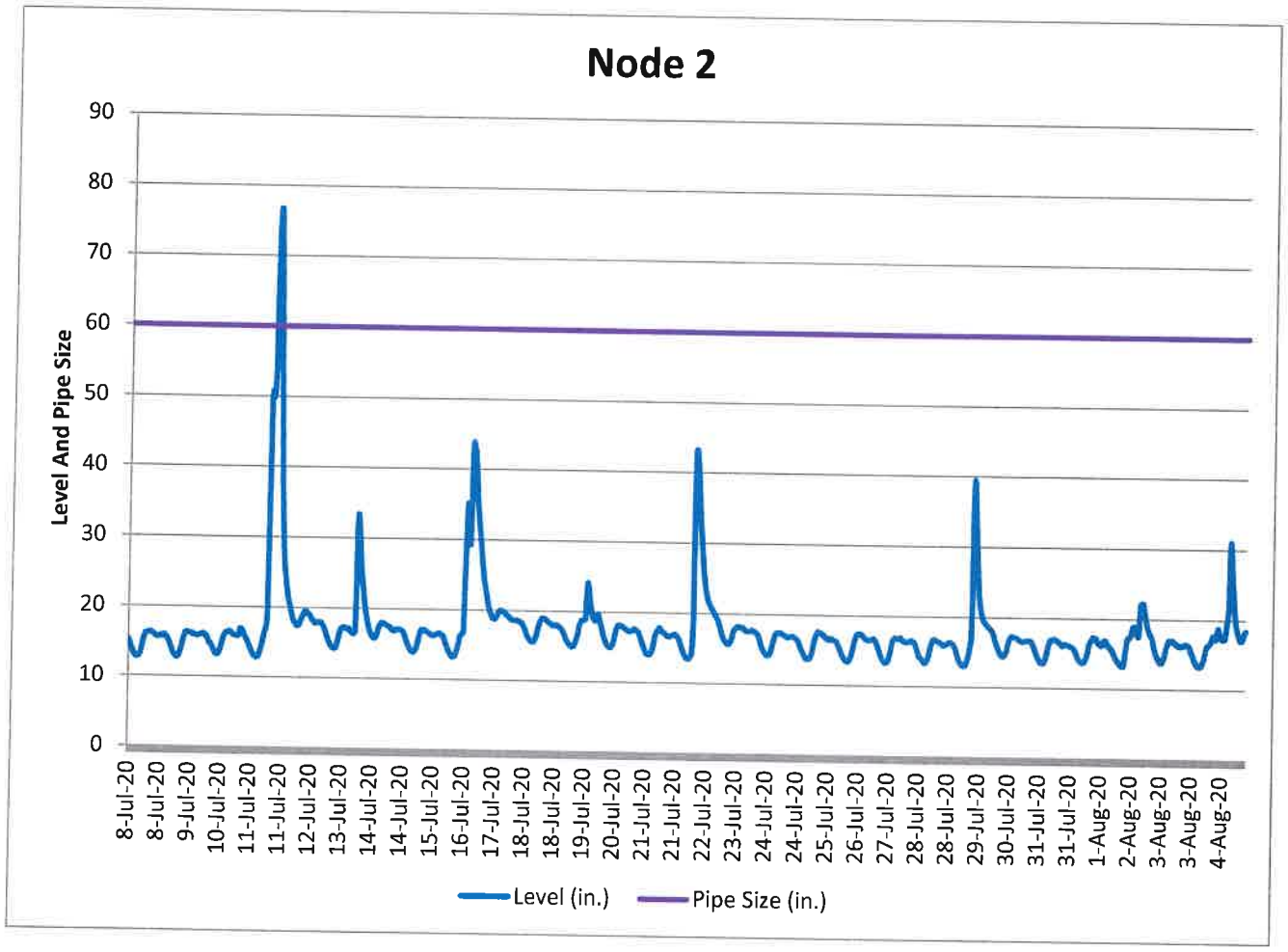
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

- One time during the monitoring period did depth of flow exceed pipe diameter at Node 2.



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TECsmith

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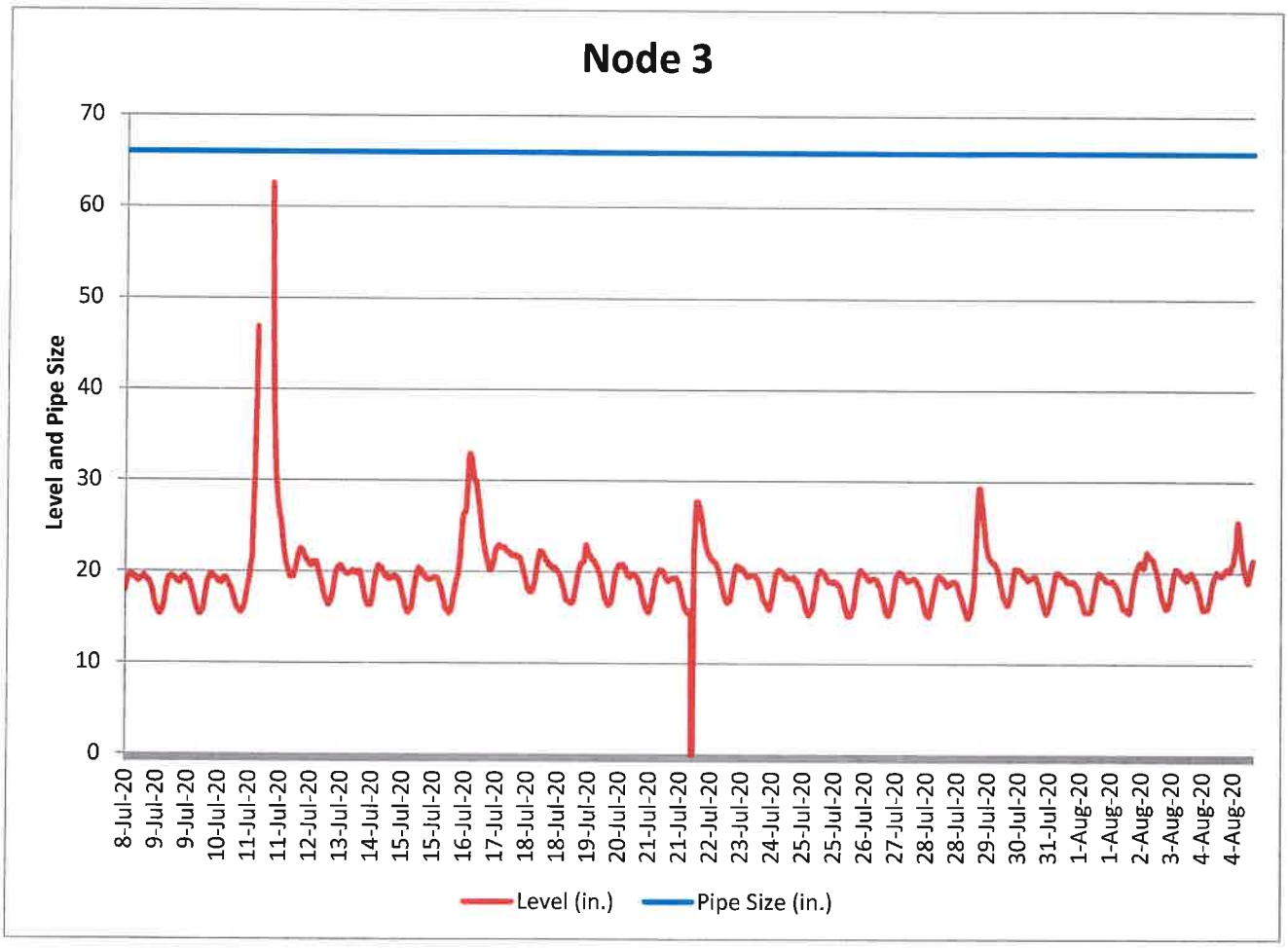
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

- At no time during the monitoring period did depth of flow exceed pipe diameter at Node 3.



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

(T) Amherst Engineering Department Sewer Maintenance Division
Downstream Routing Map

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Town of Amherst Engineering Department
Sewer Maintenance Division

Main Sanitary Sewer Interceptors

DOWNSTREAM SEWER

AMHERST PEANUT LINE & WEST SIDE INTERCEPTOR

460 Dodge Road - Proposed 26 Unit Apartment Building - Amherst Consolidated Sewer District

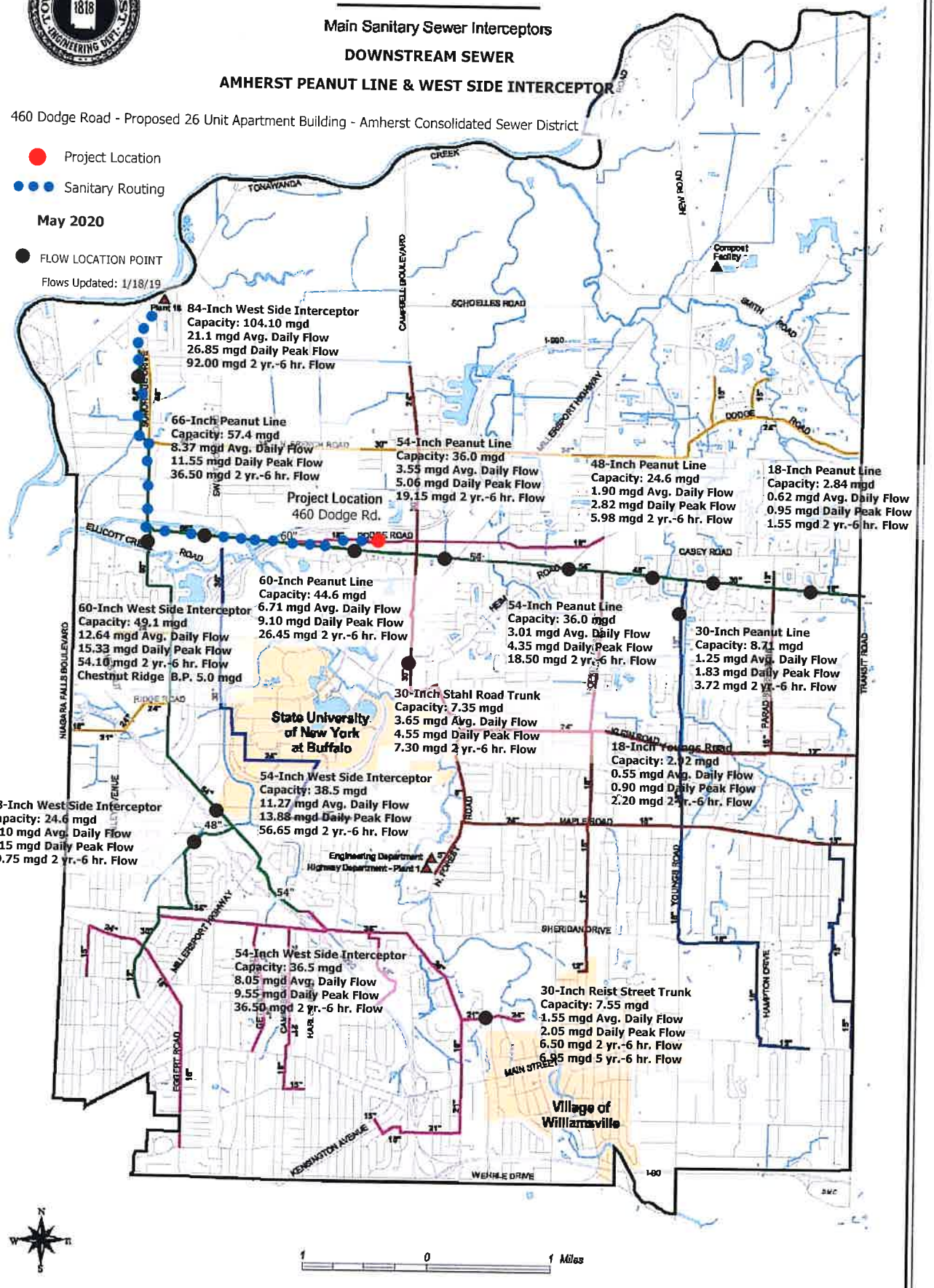
Project Location

Sanitary Routing

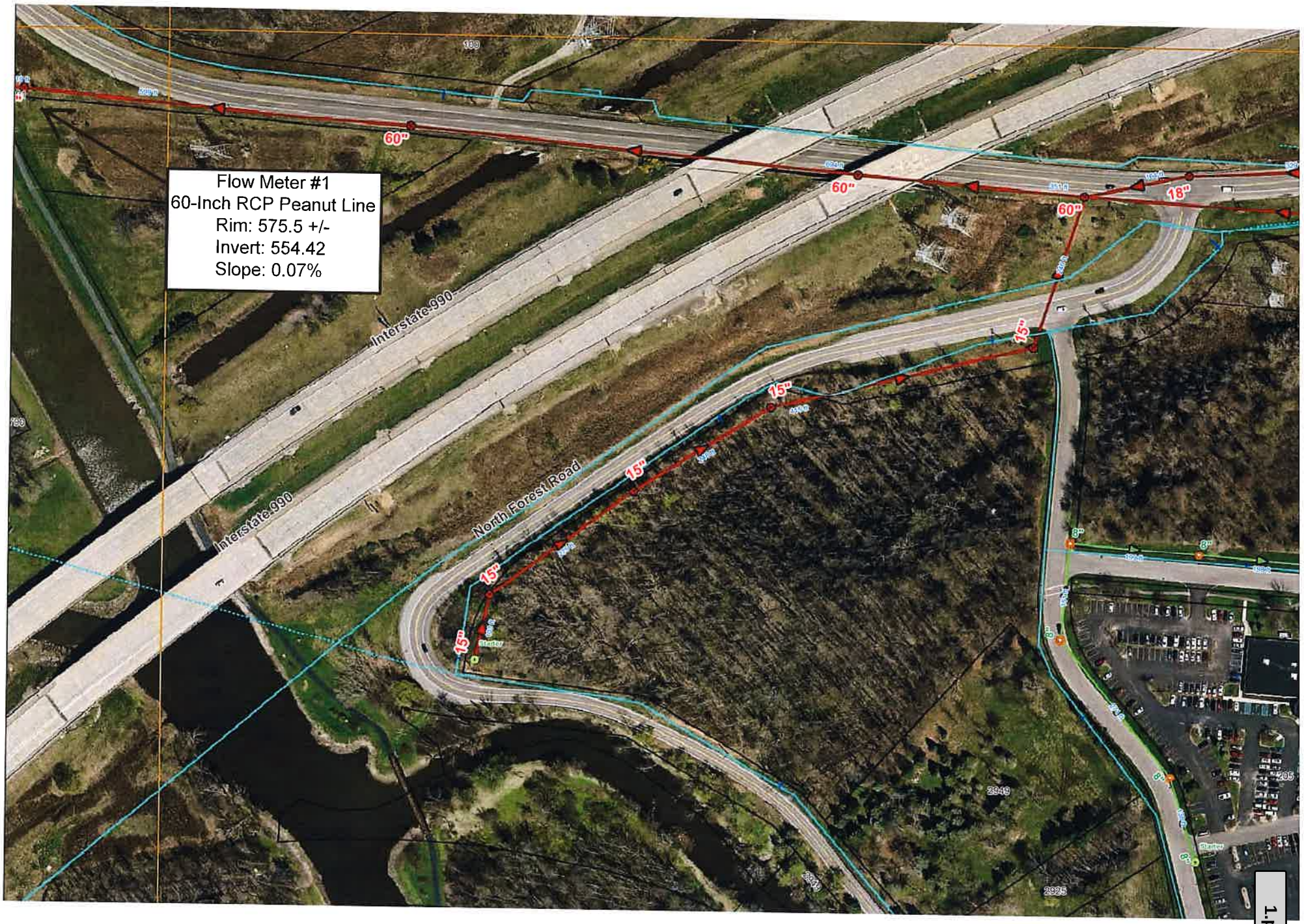
May 2020

FLOW LOCATION POINT

Flows Updated: 1/18/19



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)


Flow Meter #1
60-Inch RCP Peanut Line
Rim: 575.5 +/-
Invert: 554.42
Slope: 0.07%
Interstate 990
Interstate 990
North Forest Road
60"
60"
60"
18"
15"
15"
15"
15"
15"


348 N Ellicott Creek Rd
Buffalo, New York
Google
Street View
Flow Meter #2

Flow Meter #3


Sweet Home Rd
Reznicki & Company, LLP
Timothy M Brown CPA PLLC
Buffalo Vet Center
Dr. Ronald A. Cooke, MD
Ashley's Garden

Appendix B

Storm Sewer System Drainage Calculations

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Existing Runoff

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

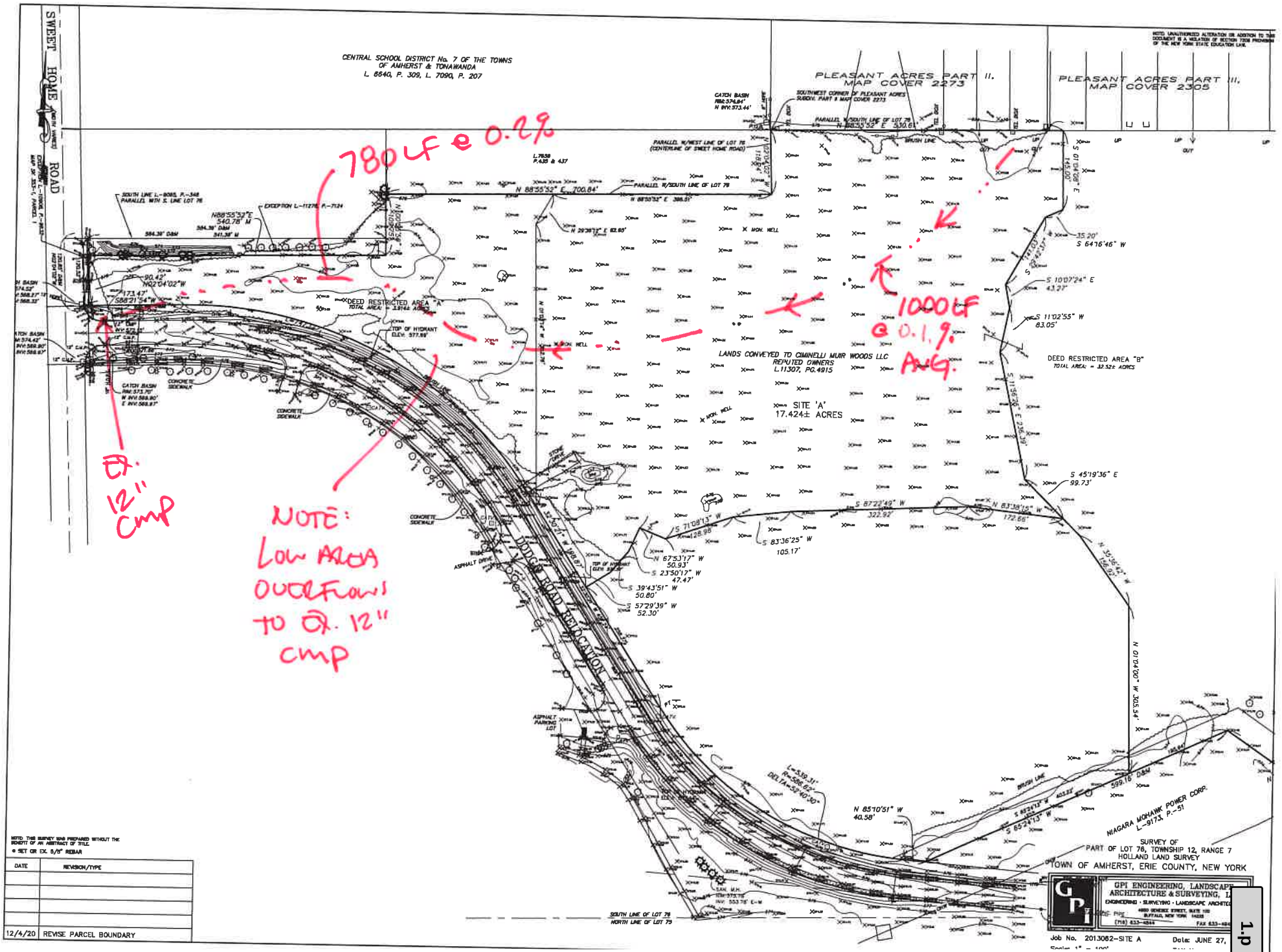


Existing

Subcat Reach Pond Link

Routing Diagram for 21.011 Existing
Prepared by Hewlett-Packard Company, Printed 3/1/2021
HydroCAD® 10.00-18 s/n 05019 © 2016 HydroCAD Software Solutions LLC

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)


780 LF @ 0.2%
1000 LF @ 0.1% AVG.
EX. 12" CMP
NOTE: LOW AREA OVERFLOWS TO EX. 12" CMP
SWEET HOME ROAD
CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA
L. 8640, P. 309, L. 7090, P. 207
PLEASANT ACRES PART II. MAP COVER 2273
PLEASANT ACRES PART III. MAP COVER 2305
LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC REPUTED OWNERS L.11307, PG.4915
SITE 'A' 17.424± ACRES
DEED RESTRICTED AREA "A" TOTAL AREA: = 3.8144 ACRES
DEED RESTRICTED AREA "B" TOTAL AREA: = 32.52± ACRES
DODGE ROAD RELOCATION
NIAGARA MOHAWK POWER CORP. L.-9173, P.-51
SURVEY OF PART OF LOT 78, TOWNSHIP 12, RANGE 7 HOLLAND LAND SURVEY TOWN OF AMHERST, ERIE COUNTY, NEW YORK
GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, L
Job No. 2013082-SITE A
Date: JUNE 27,
DATE | REVISION/TYPE
12/4/20 | REVISE PARCEL BOUNDARY

Events for Subcatchment 1S: Existing

Event	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-Year	0.87	0.578	0.41
2-Year	1.34	0.851	0.60
5-Year	2.14	1.304	0.92
10-Year	2.94	1.752	1.24
25-Year	4.34	2.527	1.78
50-Year	5.69	3.272	2.31
100-Year	**7.33**	**4.181**	**2.95**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.830	77	Brush, Fair, HSG D (1S)
12.170	79	Woods, Fair, HSG D (1S)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
17.000	HSG D	1S
0.000	Other	

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	4.830	0.000	4.830	Brush, Fair	1S
0.000	0.000	0.000	12.170	0.000	12.170	Woods, Fair	1S

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

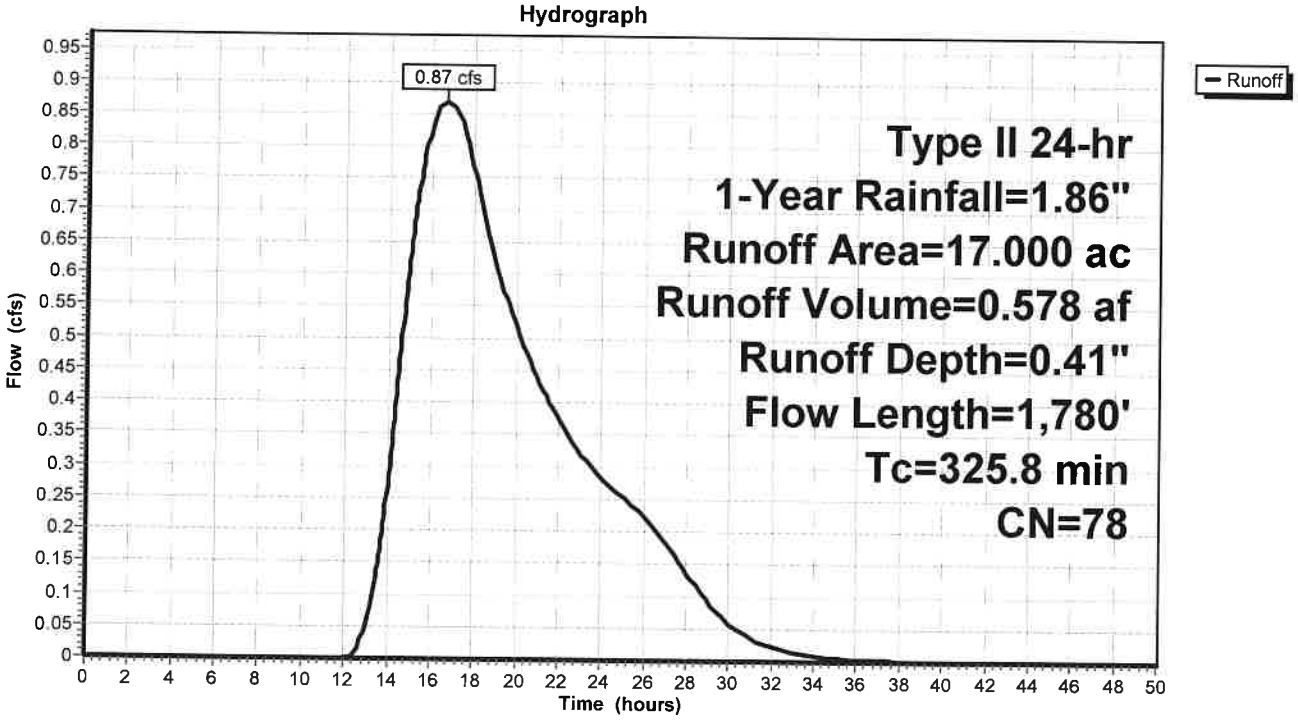
Runoff = 0.87 cfs @ 16.65 hrs, Volume= 0.578 af, Depth= 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

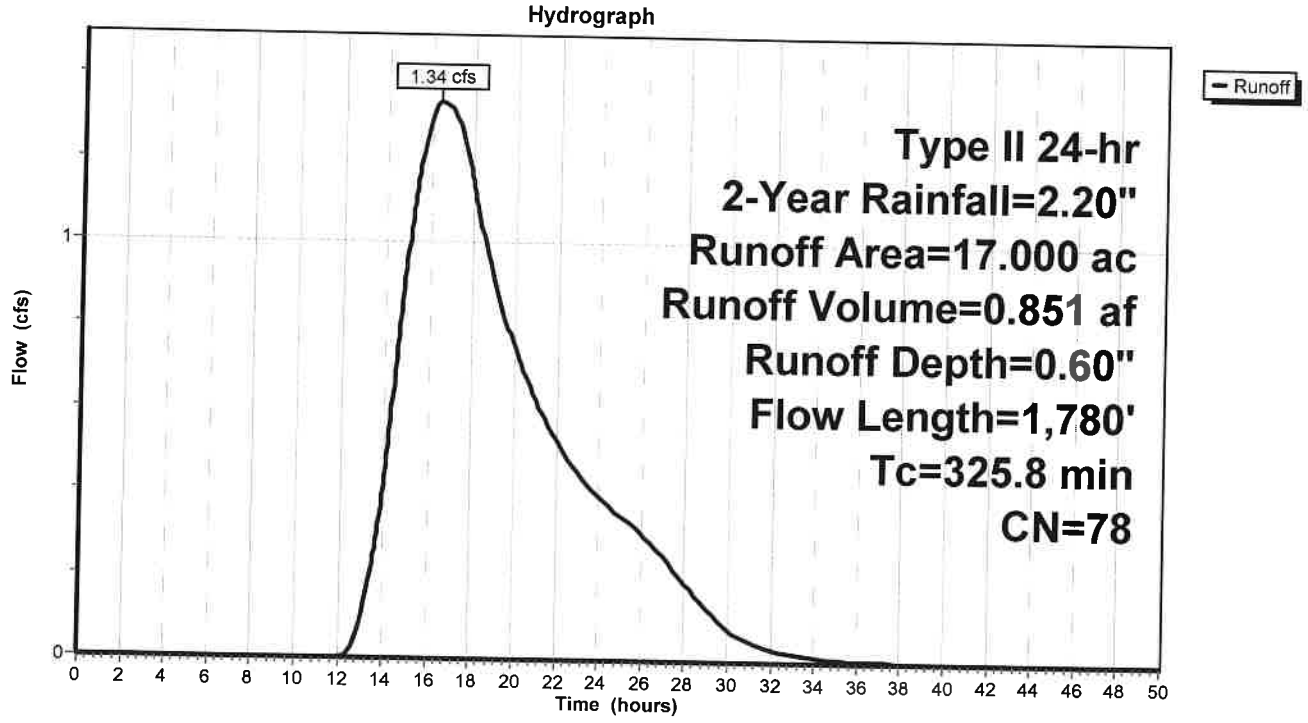
Runoff = 1.34 cfs @ 16.35 hrs, Volume= 0.851 af, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

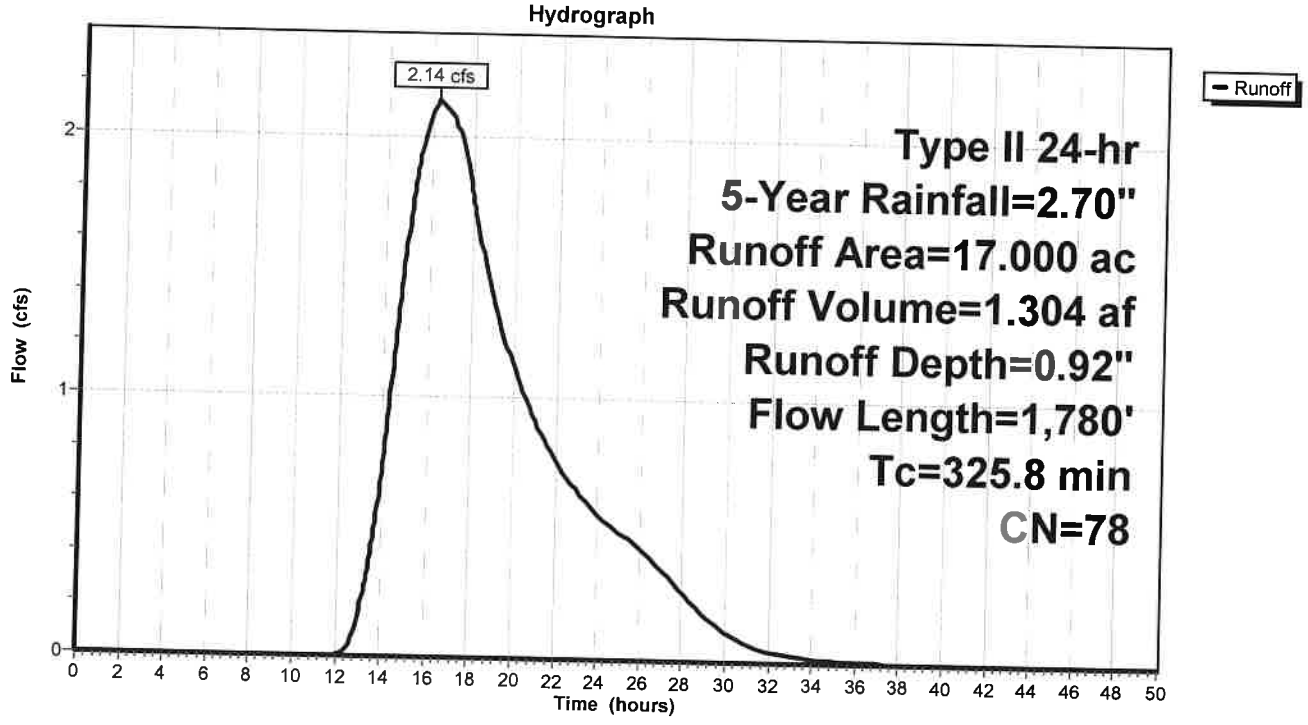
Runoff = 2.14 cfs @ 16.31 hrs, Volume= 1.304 af, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

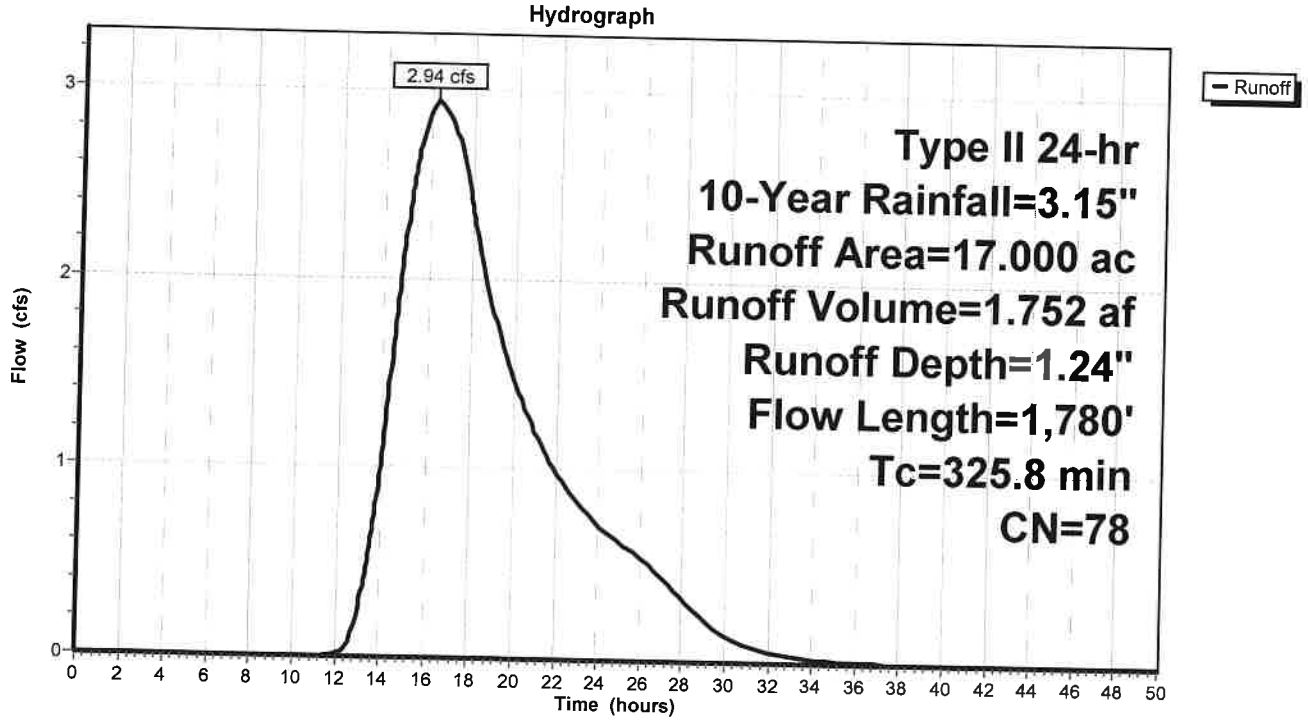
Runoff = 2.94 cfs @ 16.31 hrs, Volume= 1.752 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

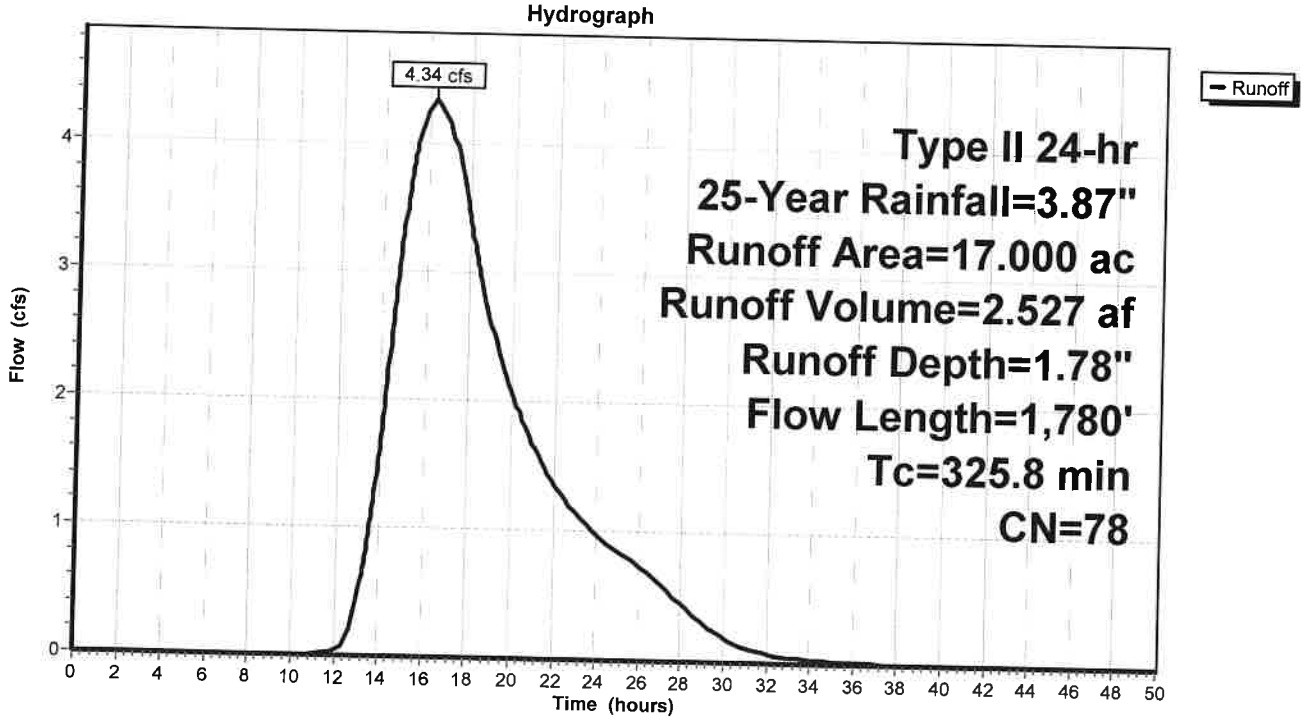
Runoff = 4.34 cfs @ 16.30 hrs, Volume= 2.527 af, Depth= 1.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

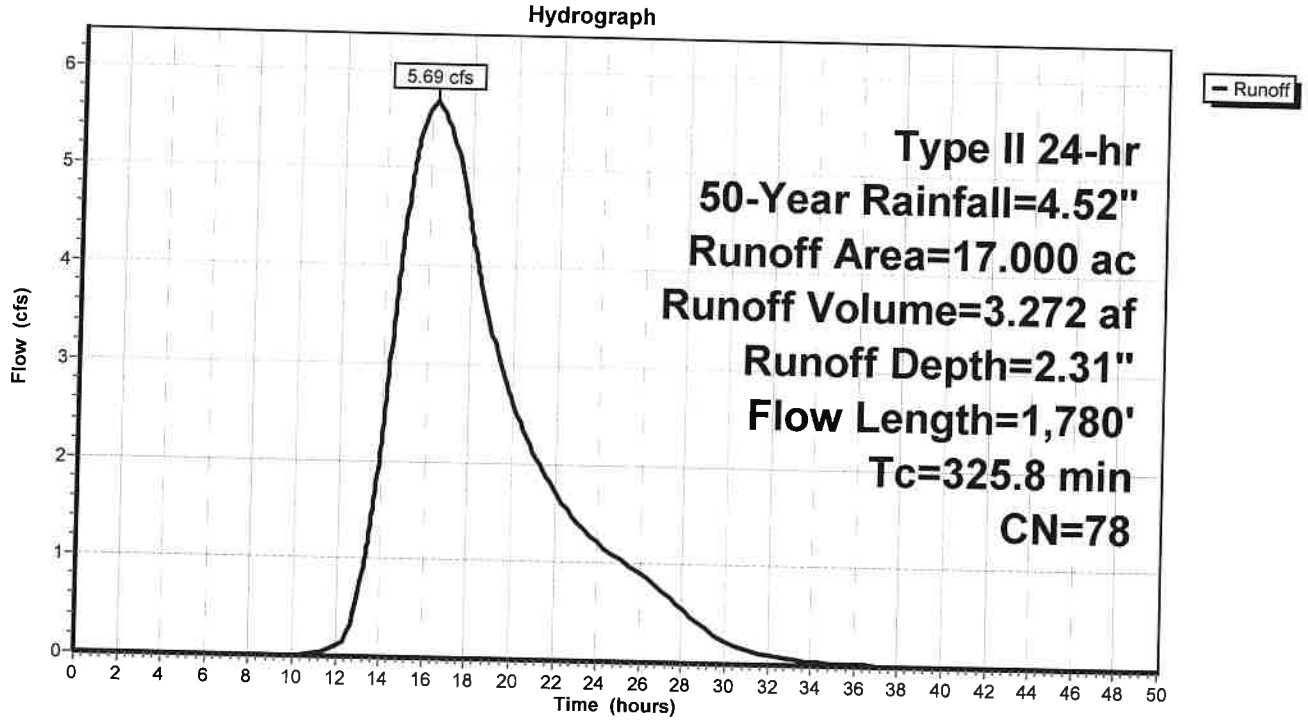
Runoff = 5.69 cfs @ 16.29 hrs, Volume= 3.272 af, Depth= 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Existing

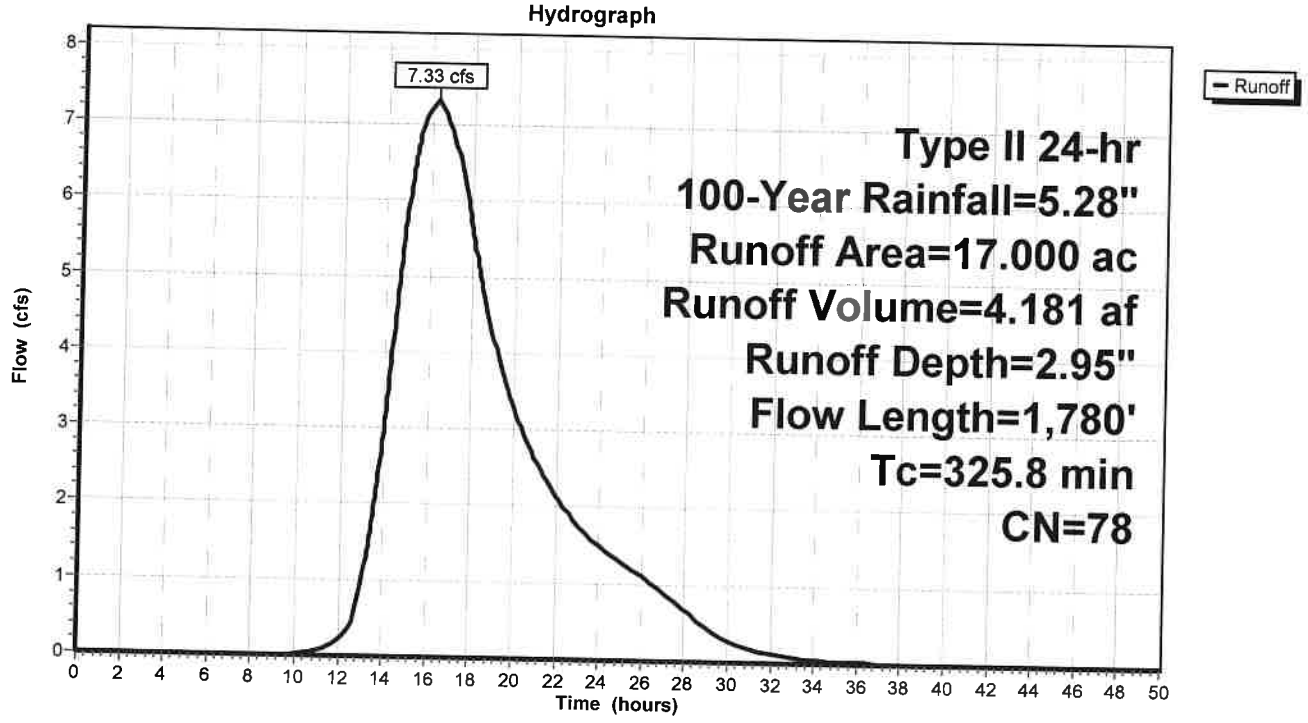
Runoff = 7.33 cfs @ 16.29 hrs, Volume= 4.181 af, Depth= 2.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



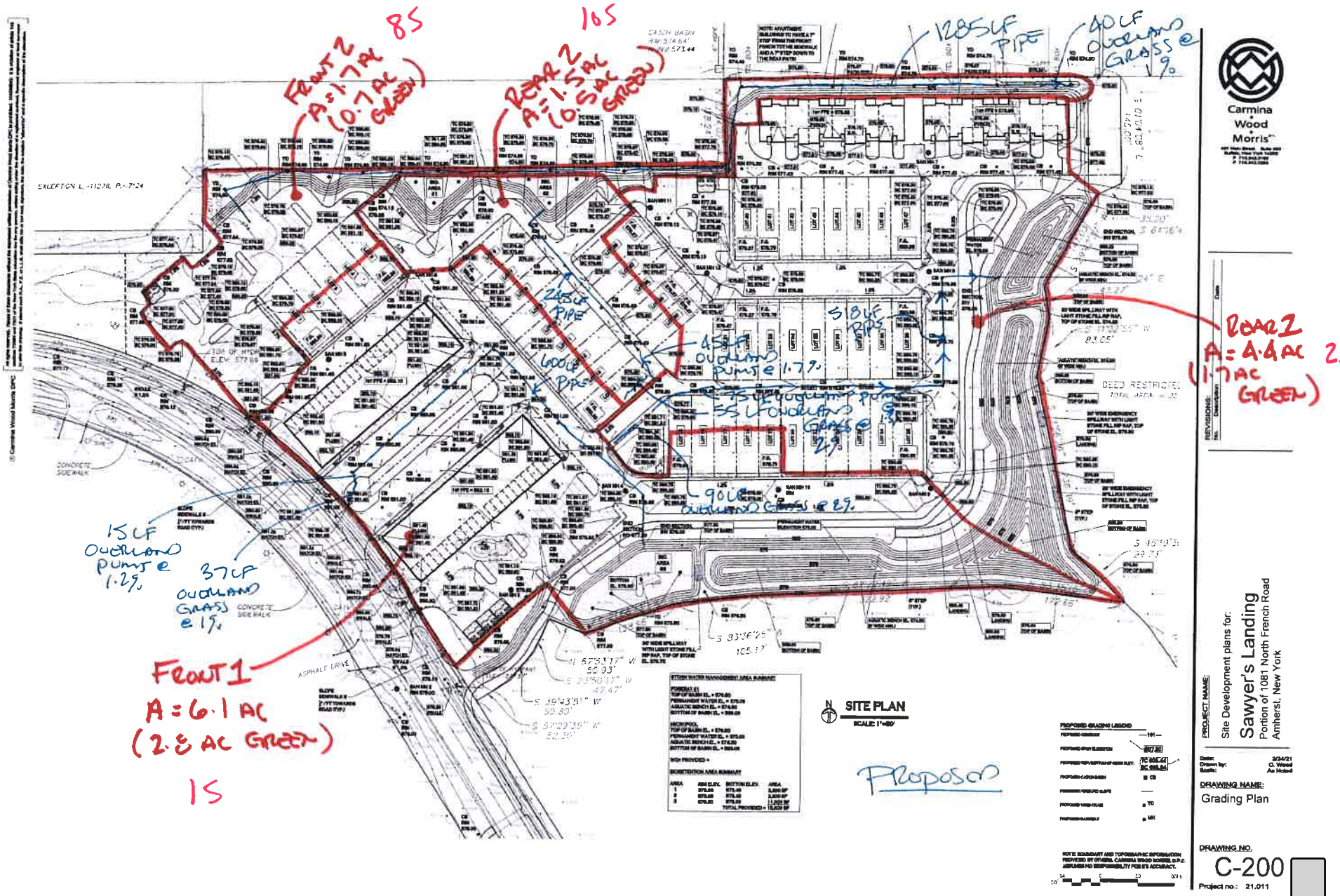
Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

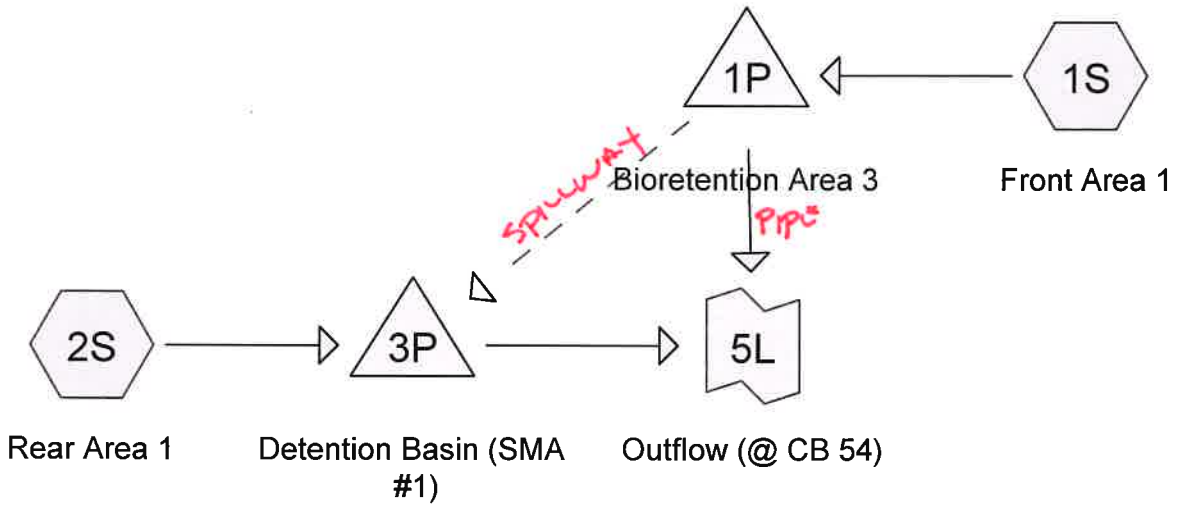
Proposed Runoff

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Proposed Runoff - East

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)


FRONT 2
A = 1.7 AC
(0.7 AC GREEN)
85
REAR 2
A = 1.5 AC
(0.5 AC GREEN)
105
120 LF PIPE
40 LF OVERLAND GRASSED 9%
REAR 2
A = 4.4 AC
(1.7 AC GREEN)
245 LF PIPE
60 LF PIPE
45 LF OVERLAND PUMPED 1.7%
55 LF OVERLAND PUMPED 1.7%
55 LF OVERLAND GRASSED 2%
90 LF OVERLAND GRASSED 2%
15 LF OVERLAND PUMPED 1.2%
37 LF OVERLAND GRASSED 1%
FRONT 1
A = 6.1 AC
(2.5 AC GREEN)
15
DEED RESTRICTED
SITE PLAN
SCALE: 1"=60'
Proposed
Carmina Wood Morris
PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York
DRAWING NAME:
Grading Plan
DRAWING NO.
C-200
Project no.: 21.011



Subcat Reach Pond Link

Routing Diagram for 21.011 Proposed
Prepared by Hewlett-Packard Company, Printed 3/4/2021
HydroCAD® 10.00-18 s/n 05019 © 2016 HydroCAD Software Solutions LLC

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Events for Link 5L: Outflow (@ CB 54)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
1-Year	2.78	2.78	**0.00**
2-Year	2.86	2.86	0.00
5-Year	3.01	3.01	0.00
10-Year	3.16	3.16	0.00
25-Year	3.36	3.36	0.00
50-Year	3.48	3.48	0.00
100-Year	**3.60**	**3.60**	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Events for Pond 3P: Detention Basin (SMA #1)

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	6.05	0.10	0.10	0.00	575.23	13,685
2-Year	12.29	0.18	0.18	0.00	575.32	19,129
5-Year	20.08	0.33	0.33	0.00	575.46	28,218
10-Year	26.01	0.47	0.47	0.00	575.60	37,117
25-Year	34.94	0.64	0.64	0.00	575.83	51,964
50-Year	42.93	1.97	0.72	1.25	576.00	62,935
100-Year	**52.24**	**8.57**	**0.78**	**7.80**	**576.11**	**70,722**

TO DUDLEE RD

TO WETLANDS

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Events for Pond 1P: Bioretention Area 3

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	8.17	4.38	2.74	1.63	575.82	7,520
2-Year	10.57	8.19	2.79	5.41	575.91	8,359
5-Year	14.18	12.91	2.83	10.09	575.99	9,153
10-Year	17.46	16.45	2.85	13.60	576.04	9,672
25-Year	22.74	21.73	2.89	18.84	576.11	10,375
50-Year	27.50	26.43	2.91	23.52	576.17	10,954
100-Year	**33.05**	**31.92**	**2.94**	**28.98**	**576.23**	**11,585**

↑ TO DOUGE RD

↑ TO BASIN

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.500	80	>75% Grass cover, Good, HSG D (1S, 2S)
3.200	98	Paved parking, HSG D (1S, 2S)
2.800	98	Roofs, HSG D (1S, 2S)
10.500	**90**	**TOTAL AREA**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
10.500	HSG D	1S, 2S
0.000	Other	
10.500		**TOTAL AREA**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	4.500	0.000	4.500	>75% Grass cover, Good	1S, 2S
0.000	0.000	0.000	3.200	0.000	3.200	Paved parking	1S, 2S
0.000	0.000	0.000	2.800	0.000	2.800	Roofs	1S, 2S
0.000	**0.000**	**0.000**	**10.500**	**0.000**	**10.500**	**TOTAL AREA**	

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=0.98"
Flow Length=652' Tc=13.3 min CN=90 Runoff=8.17 cfs 0.496 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=1.04"
Flow Length=683' Tc=14.4 min CN=91 Runoff=6.05 cfs 0.382 af

Pond 1P: Bioretention Area 3 Peak Elev=575.82' Storage=7,520 cf Inflow=8.17 cfs 0.496 af
Primary=2.74 cfs 0.475 af Secondary=1.63 cfs 0.021 af Outflow=4.38 cfs 0.496 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.23' Storage=13,685 cf Inflow=6.05 cfs 0.403 af
Primary=0.10 cfs 0.249 af Secondary=0.00 cfs 0.000 af Outflow=0.10 cfs 0.249 af

Link 5L: Outflow (@ CB 54) Inflow=2.78 cfs 0.724 af
Primary=2.78 cfs 0.724 af

Total Runoff Area = 10.500 ac Runoff Volume = 0.878 af Average Runoff Depth = 1.00"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

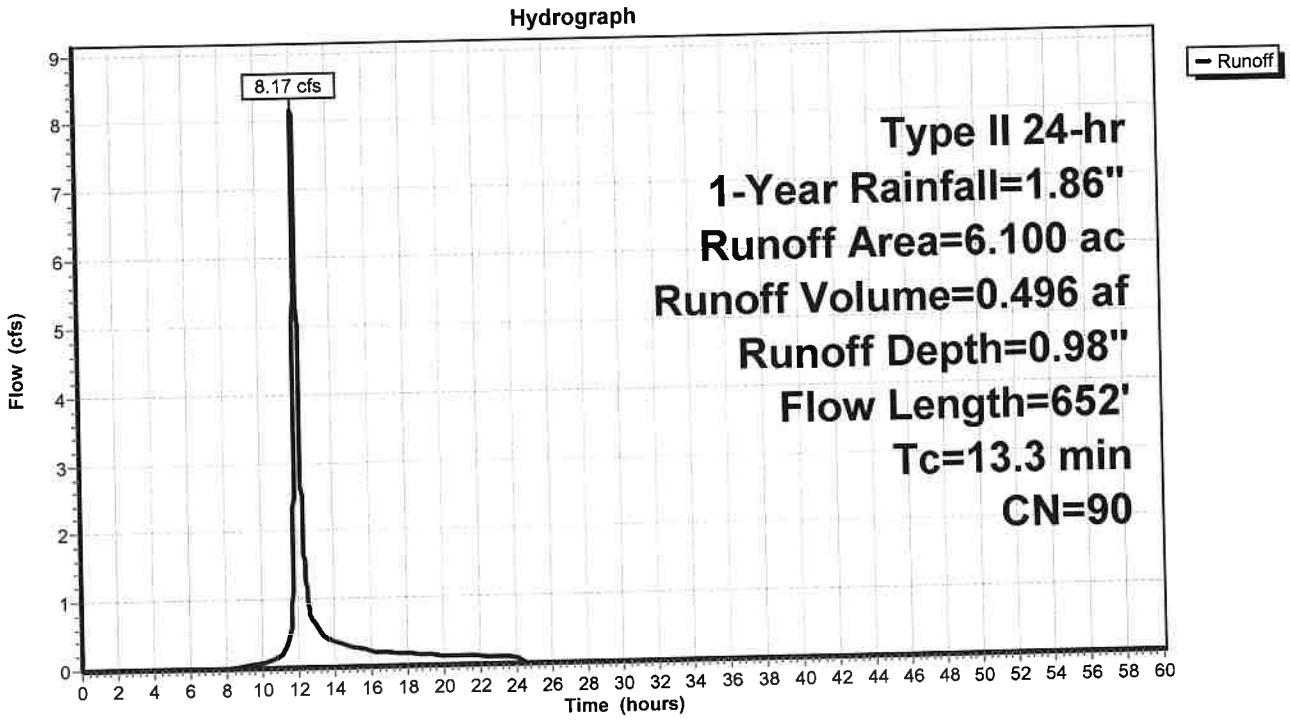
Runoff = 8.17 cfs @ 12.05 hrs, Volume= 0.496 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.00
9.00	0.27	0.00	0.02
10.00	0.34	0.01	0.07
11.00	0.44	0.03	0.20
12.00	1.23	0.48	**7.23**
13.00	1.44	0.63	**0.63**
14.00	1.53	0.70	0.37
15.00	1.59	0.75	0.29
16.00	1.64	0.79	0.23
17.00	1.68	0.83	0.20
18.00	1.71	0.85	0.17
19.00	1.74	0.88	0.15
20.00	1.77	0.90	0.13
21.00	1.79	0.92	0.12
22.00	1.82	0.94	0.12
23.00	1.84	0.96	0.11
24.00	**1.86**	**0.98**	0.11
25.00	1.86	0.98	0.00
26.00	1.86	0.98	0.00
27.00	1.86	0.98	0.00
28.00	1.86	0.98	0.00
29.00	1.86	0.98	0.00
30.00	1.86	0.98	0.00
31.00	1.86	0.98	0.00
32.00	1.86	0.98	0.00
33.00	1.86	0.98	0.00
34.00	1.86	0.98	0.00
35.00	1.86	0.98	0.00
36.00	1.86	0.98	0.00
37.00	1.86	0.98	0.00
38.00	1.86	0.98	0.00
39.00	1.86	0.98	0.00
40.00	1.86	0.98	0.00
41.00	1.86	0.98	0.00
42.00	1.86	0.98	0.00
43.00	1.86	0.98	0.00
44.00	1.86	0.98	0.00
45.00	1.86	0.98	0.00
46.00	1.86	0.98	0.00
47.00	1.86	0.98	0.00
48.00	1.86	0.98	0.00
49.00	1.86	0.98	0.00
50.00	1.86	0.98	0.00
51.00	1.86	0.98	0.00
52.00	1.86	0.98	0.00
53.00	1.86	0.98	0.00
54.00	1.86	0.98	0.00
55.00	1.86	0.98	0.00
56.00	1.86	0.98	0.00
57.00	1.86	0.98	0.00
58.00	1.86	0.98	0.00
59.00	1.86	0.98	0.00
60.00	1.86	0.98	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

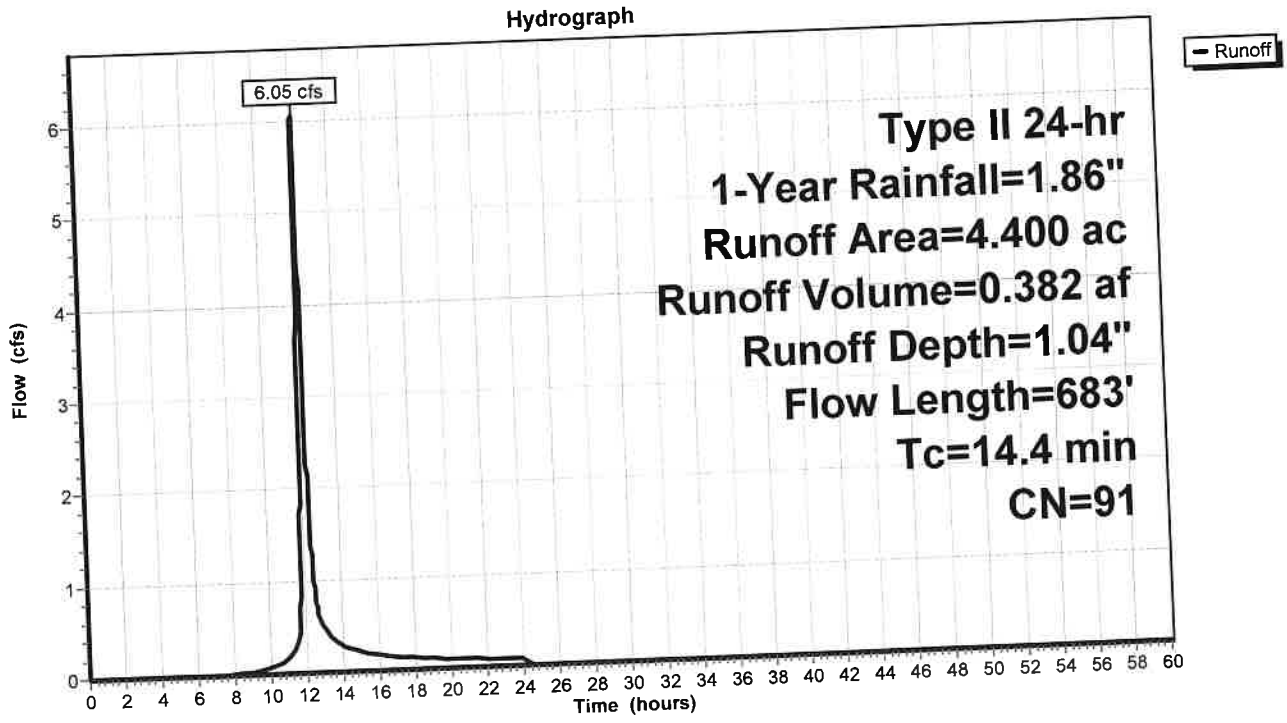
Runoff = 6.05 cfs @ 12.06 hrs, Volume= 0.382 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.01
9.00	0.27	0.01	0.03
10.00	0.34	0.02	0.06
11.00	0.44	0.05	0.17
12.00	1.23	0.53	**5.18**
13.00	1.44	0.69	**0.48**
14.00	1.53	0.76	0.28
15.00	1.59	0.81	0.21
16.00	1.64	0.85	0.17
17.00	1.68	0.89	0.15
18.00	1.71	0.92	0.13
19.00	1.74	0.94	0.11
20.00	1.77	0.97	0.10
21.00	1.79	0.99	0.09
22.00	1.82	1.01	0.09
23.00	1.84	1.02	0.08
24.00	**1.86**	**1.04**	0.08
25.00	1.86	1.04	0.00
26.00	1.86	1.04	0.00
27.00	1.86	1.04	0.00
28.00	1.86	1.04	0.00
29.00	1.86	1.04	0.00
30.00	1.86	1.04	0.00
31.00	1.86	1.04	0.00
32.00	1.86	1.04	0.00
33.00	1.86	1.04	0.00
34.00	1.86	1.04	0.00
35.00	1.86	1.04	0.00
36.00	1.86	1.04	0.00
37.00	1.86	1.04	0.00
38.00	1.86	1.04	0.00
39.00	1.86	1.04	0.00
40.00	1.86	1.04	0.00
41.00	1.86	1.04	0.00
42.00	1.86	1.04	0.00
43.00	1.86	1.04	0.00
44.00	1.86	1.04	0.00
45.00	1.86	1.04	0.00
46.00	1.86	1.04	0.00
47.00	1.86	1.04	0.00
48.00	1.86	1.04	0.00
49.00	1.86	1.04	0.00
50.00	1.86	1.04	0.00
51.00	1.86	1.04	0.00
52.00	1.86	1.04	0.00
53.00	1.86	1.04	0.00
54.00	1.86	1.04	0.00
55.00	1.86	1.04	0.00
56.00	1.86	1.04	0.00
57.00	1.86	1.04	0.00
58.00	1.86	1.04	0.00
59.00	1.86	1.04	0.00
60.00	1.86	1.04	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area =	6.100 ac,	54.10% Impervious,	Inflow Depth =	0.98"	for 1-Year event
Inflow =	8.17 cfs @	12.05 hrs,	Volume=	0.496 af	
Outflow =	4.38 cfs @	12.19 hrs,	Volume=	0.496 af,	Atten= 46%, Lag= 8.2 min
Primary =	2.74 cfs @	12.19 hrs,	Volume=	0.475 af	
Secondary =	1.63 cfs @	12.19 hrs,	Volume=	0.021 af	

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.82' @ 12.19 hrs Surf.Area= 9,695 sf Storage= 7,520 cf

Plug-Flow detention time= 319.4 min calculated for 0.496 af (100% of inflow)
Center-of-Mass det. time= 319.4 min (1,152.7 - 833.3)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

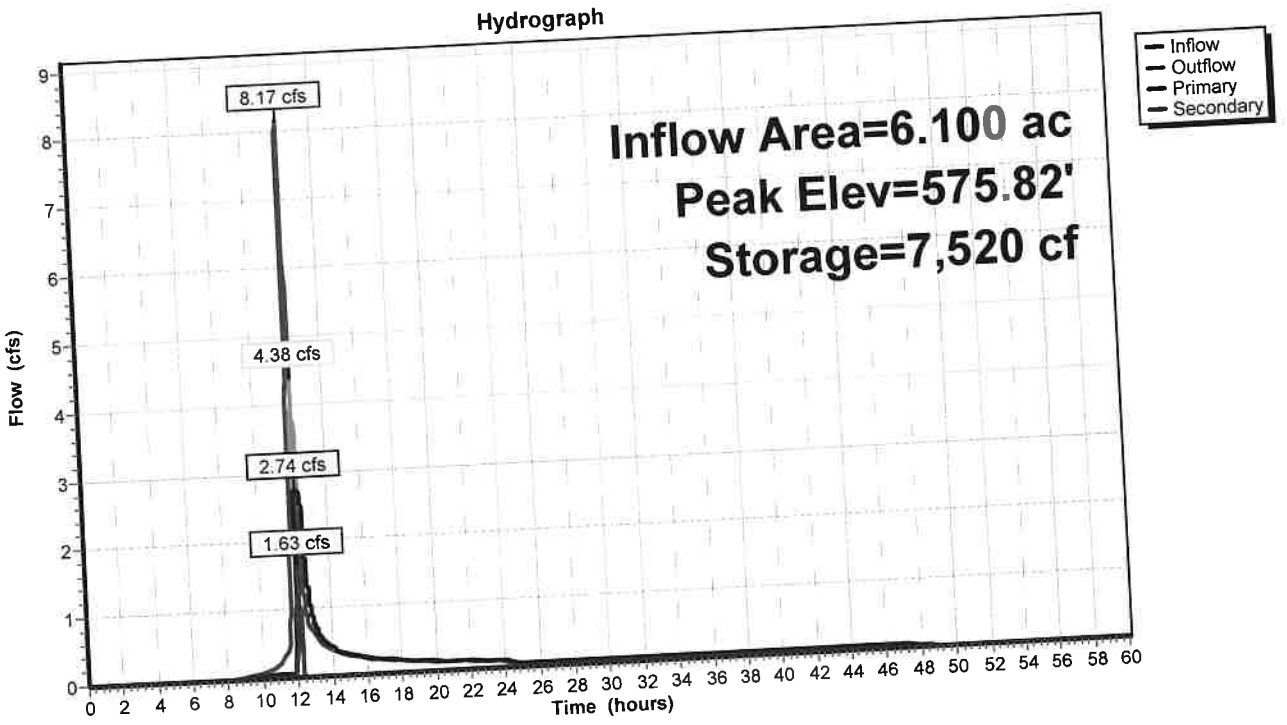
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.74 cfs @ 12.19 hrs HW=575.82' (Free Discharge)
↑—**1=8" pipe** (Barrel Controls 2.74 cfs @ 7.86 fps)
↑—**2=Grate** (Passes < 3.80 cfs potential flow)
└—**3=Exfiltration** (Passes < 0.06 cfs potential flow)

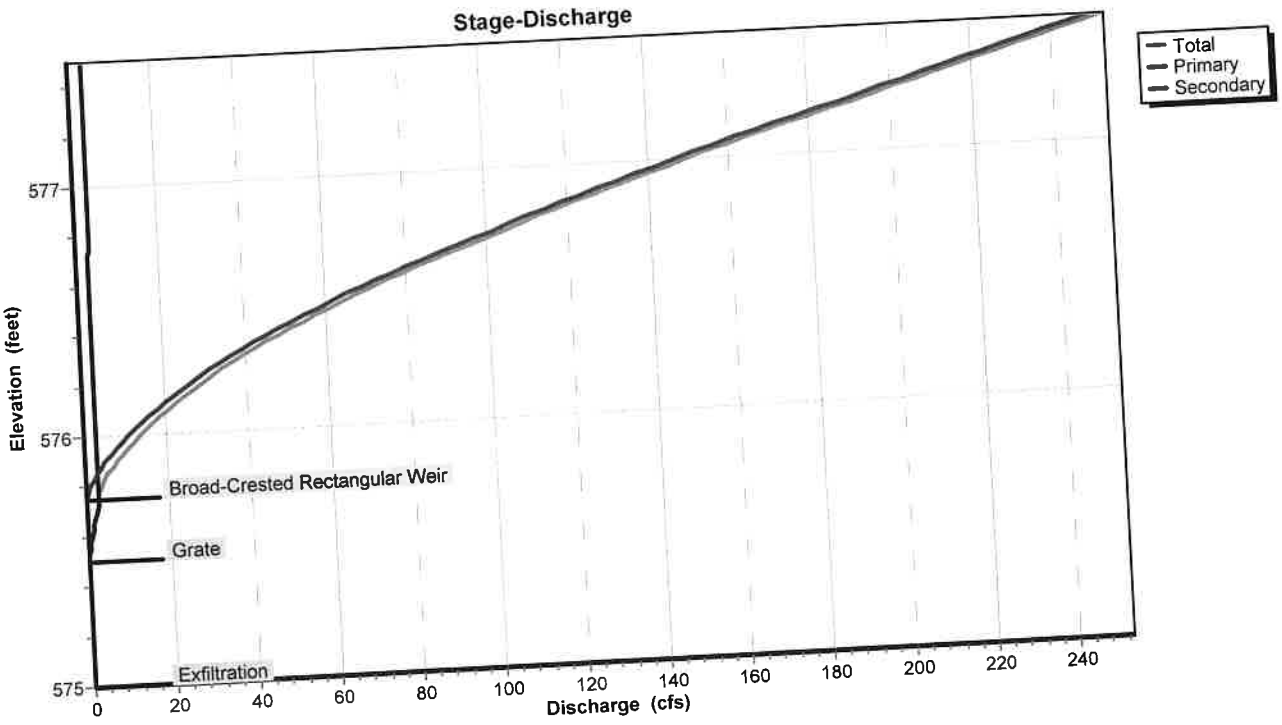
Secondary OutFlow Max=1.62 cfs @ 12.19 hrs HW=575.82' (Free Discharge)
↑—**4=Broad-Crested Rectangular Weir** (Weir Controls 1.62 cfs @ 0.77 fps)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

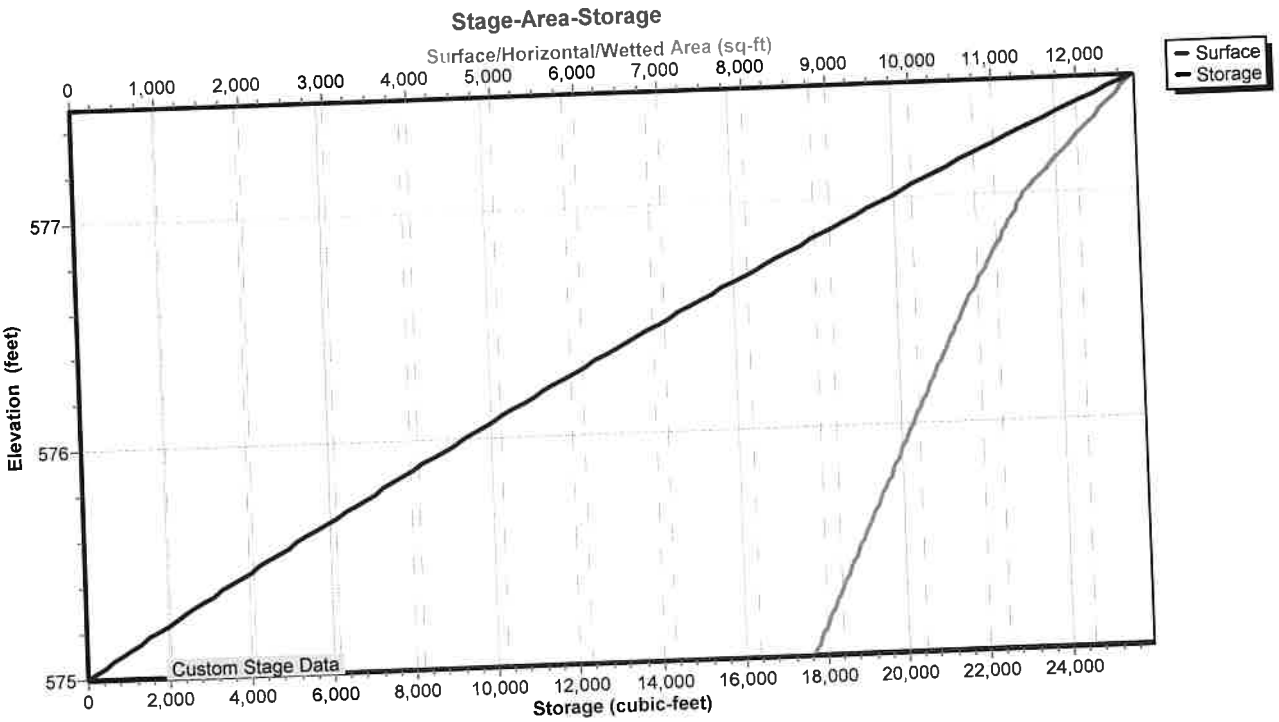


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.00	0	575.00	0.00	0.00	0.00
10.00	0.07	121	575.01	0.03	0.03	0.00
12.00	**7.23**	**4,533**	**575.51**	**0.08**	**0.08**	**0.00**
14.00	**0.37**	**5,004**	**575.56**	**0.42**	**0.42**	**0.00**
16.00	0.23	4,812	575.54	0.25	0.25	0.00
18.00	0.17	4,735	575.53	0.18	0.18	0.00
20.00	0.13	4,666	575.52	0.14	0.14	0.00
22.00	0.12	4,618	575.51	0.12	0.12	0.00
24.00	0.11	4,598	575.51	0.11	0.11	0.00
26.00	0.00	4,207	575.47	0.06	0.06	0.00
28.00	0.00	3,812	575.43	0.05	0.05	0.00
30.00	0.00	3,420	575.38	0.05	0.05	0.00
32.00	0.00	3,031	575.34	0.05	0.05	0.00
34.00	0.00	2,646	575.30	0.05	0.05	0.00
36.00	0.00	2,264	575.26	0.05	0.05	0.00
38.00	0.00	1,885	575.21	0.05	0.05	0.00
40.00	0.00	1,510	575.17	0.05	0.05	0.00
42.00	0.00	1,138	575.13	0.05	0.05	0.00
44.00	0.00	769	575.09	0.05	0.05	0.00
46.00	0.00	404	575.05	0.05	0.05	0.00
48.00	0.00	96	575.01	0.02	0.02	0.00
50.00	0.00	18	575.00	0.00	0.00	0.00
52.00	0.00	3	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 1.10" for 1-Year event
Inflow = 6.05 cfs @ 12.06 hrs, Volume= 0.403 af
Outflow = 0.10 cfs @ 19.66 hrs, Volume= 0.249 af, Atten= 98%, Lag= 455.7 min
Primary = 0.10 cfs @ 19.66 hrs, Volume= 0.249 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.23' @ 19.66 hrs Surf.Area= 60,952 sf Storage= 13,685 cf

Plug-Flow detention time= 1,134.7 min calculated for 0.249 af (62% of inflow)
Center-of-Mass det. time= 1,028.3 min (1,852.6 - 824.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

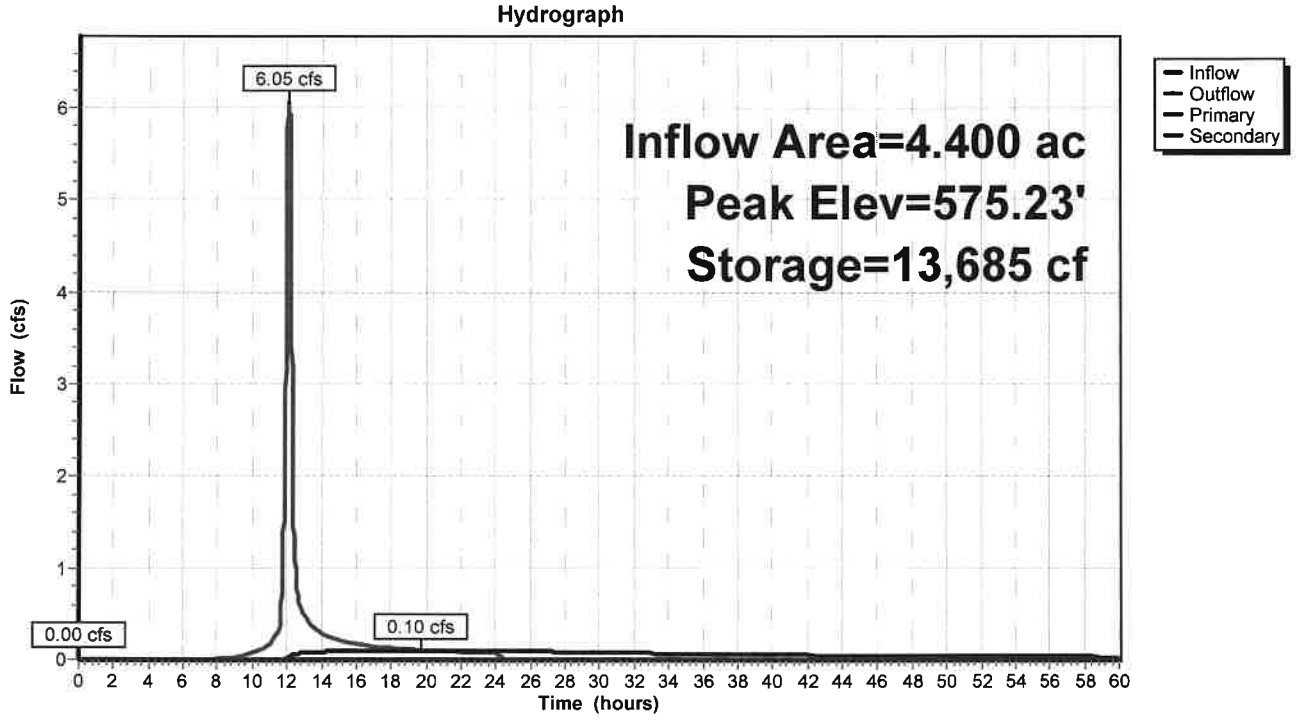
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.10 cfs @ 19.66 hrs HW=575.23' (Free Discharge)
↑**1=12" outlet pipe** (Passes 0.10 cfs of 1.85 cfs potential flow)
↑**2=low flow outlet pipe** (Barrel Controls 0.10 cfs @ 1.70 fps)
3=Grate (Controls 0.00 cfs)

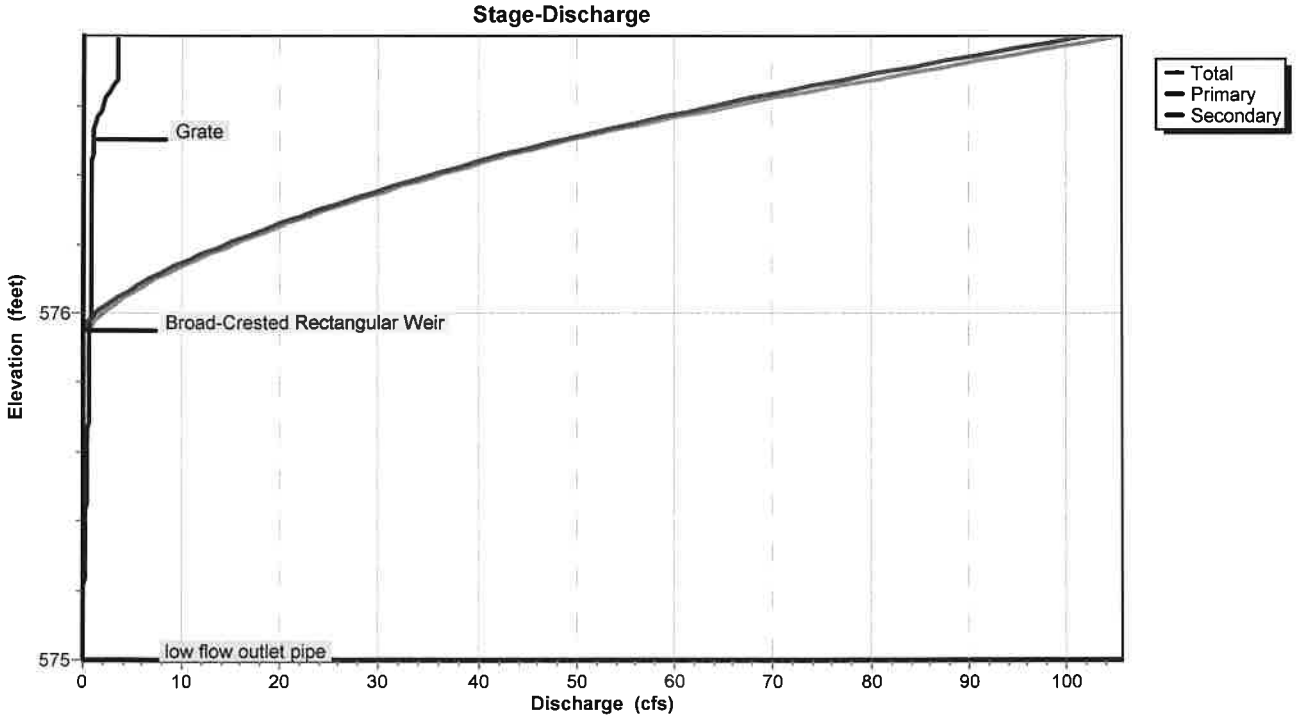
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
↑**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

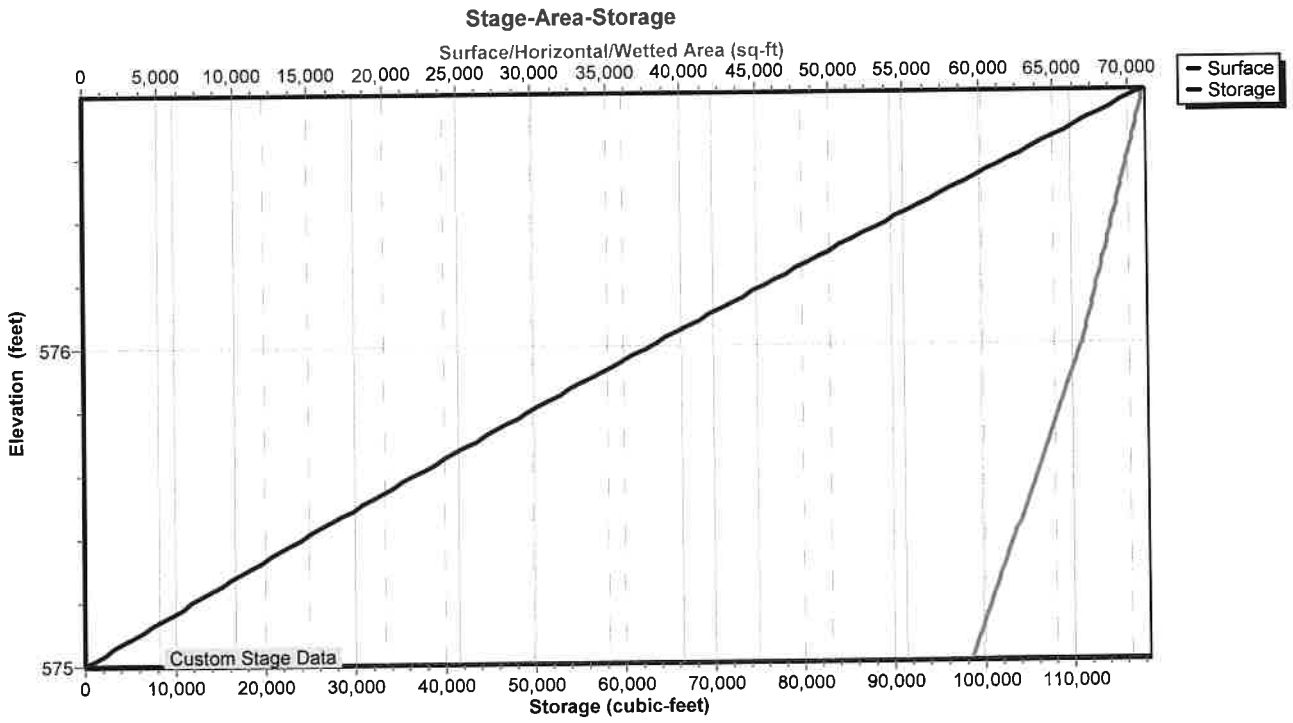


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.01	5	575.00	0.00	0.00	0.00
10.00	0.06	218	575.00	0.00	0.00	0.00
12.00	**5.18**	3,798	575.06	0.01	0.01	0.00
14.00	**0.28**	12,350	575.21	0.08	0.08	0.00
16.00	0.17	13,252	575.22	0.10	0.10	0.00
18.00	0.13	**13,599**	**575.23**	**0.10**	**0.10**	0.00
20.00	0.10	**13,682**	**575.23**	**0.10**	**0.10**	0.00
22.00	0.09	13,599	575.23	0.10	0.10	0.00
24.00	0.08	13,477	575.22	0.10	0.10	0.00
26.00	0.00	12,859	575.21	0.09	0.09	0.00
28.00	0.00	12,236	575.20	0.08	0.08	0.00
30.00	0.00	11,664	575.19	0.08	0.08	0.00
32.00	0.00	11,139	575.19	0.07	0.07	0.00
34.00	0.00	10,655	575.18	0.06	0.06	0.00
36.00	0.00	10,207	575.17	0.06	0.06	0.00
38.00	0.00	9,792	575.16	0.06	0.06	0.00
40.00	0.00	9,408	575.16	0.05	0.05	0.00
42.00	0.00	9,050	575.15	0.05	0.05	0.00
44.00	0.00	8,716	575.15	0.04	0.04	0.00
46.00	0.00	8,404	575.14	0.04	0.04	0.00
48.00	0.00	8,113	575.14	0.04	0.04	0.00
50.00	0.00	7,839	575.13	0.04	0.04	0.00
52.00	0.00	7,582	575.13	0.03	0.03	0.00
54.00	0.00	7,341	575.12	0.03	0.03	0.00
56.00	0.00	7,114	575.12	0.03	0.03	0.00
58.00	0.00	6,899	575.12	0.03	0.03	0.00
60.00	0.00	6,696	575.11	0.03	0.03	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

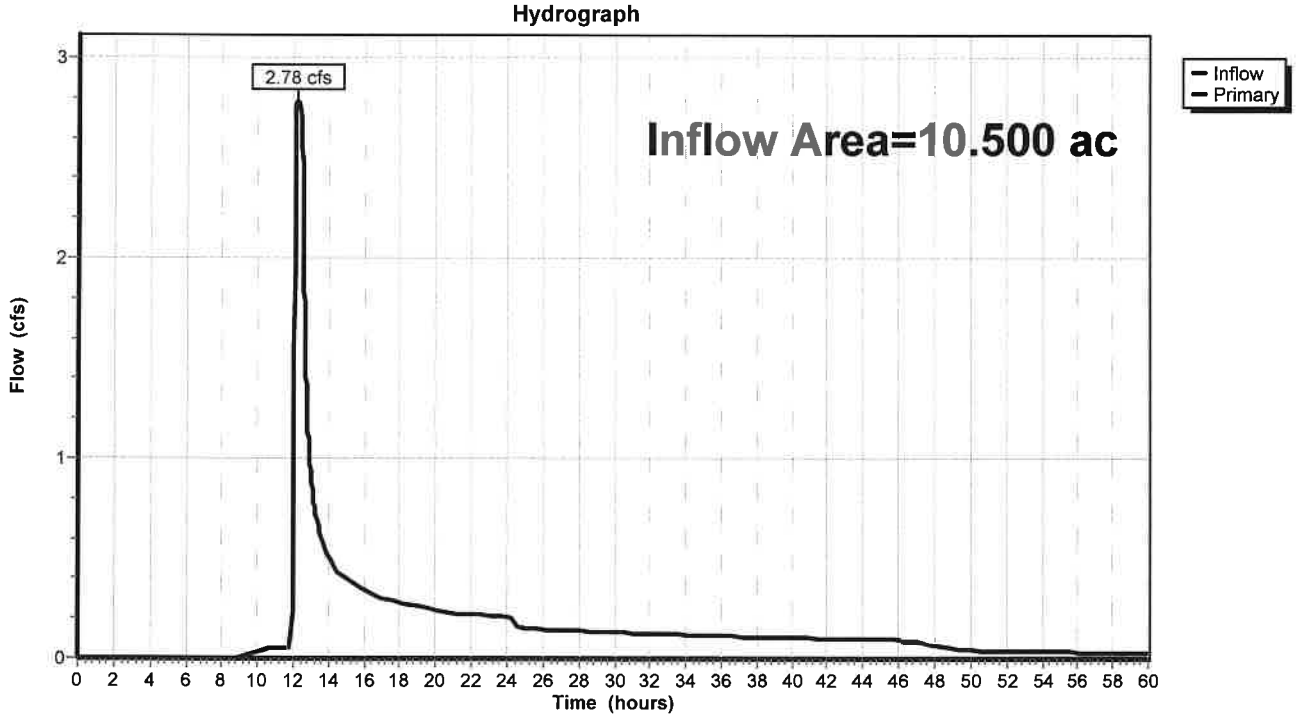
Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 0.83" for 1-Year event
Inflow = 2.78 cfs @ 12.22 hrs, Volume= 0.724 af
Primary = 2.78 cfs @ 12.22 hrs, Volume= 0.724 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.04	0.00	0.04
1.00	0.00	0.00	0.00	53.00	0.03	0.00	0.03
2.00	0.00	0.00	0.00	54.00	0.03	0.00	0.03
3.00	0.00	0.00	0.00	55.00	0.03	0.00	0.03
4.00	0.00	0.00	0.00	56.00	0.03	0.00	0.03
5.00	0.00	0.00	0.00	57.00	0.03	0.00	0.03
6.00	0.00	0.00	0.00	58.00	0.03	0.00	0.03
7.00	0.00	0.00	0.00	59.00	0.03	0.00	0.03
8.00	0.00	0.00	0.00	60.00	0.03	0.00	0.03
9.00	0.01	0.00	0.01				
10.00	0.03	0.00	0.03				
11.00	0.05	0.00	0.05				
12.00	**0.09**	0.00	**0.09**				
13.00	**0.91**	0.00	**0.91**				
14.00	0.51	0.00	0.51				
15.00	0.40	0.00	0.40				
16.00	0.34	0.00	0.34				
17.00	0.30	0.00	0.30				
18.00	0.28	0.00	0.28				
19.00	0.26	0.00	0.26				
20.00	0.24	0.00	0.24				
21.00	0.23	0.00	0.23				
22.00	0.22	0.00	0.22				
23.00	0.21	0.00	0.21				
24.00	0.21	0.00	0.21				
25.00	0.15	0.00	0.15				
26.00	0.15	0.00	0.15				
27.00	0.14	0.00	0.14				
28.00	0.14	0.00	0.14				
29.00	0.13	0.00	0.13				
30.00	0.13	0.00	0.13				
31.00	0.13	0.00	0.13				
32.00	0.12	0.00	0.12				
33.00	0.12	0.00	0.12				
34.00	0.12	0.00	0.12				
35.00	0.12	0.00	0.12				
36.00	0.11	0.00	0.11				
37.00	0.11	0.00	0.11				
38.00	0.11	0.00	0.11				
39.00	0.11	0.00	0.11				
40.00	0.10	0.00	0.10				
41.00	0.10	0.00	0.10				
42.00	0.10	0.00	0.10				
43.00	0.10	0.00	0.10				
44.00	0.10	0.00	0.10				
45.00	0.09	0.00	0.09				
46.00	0.09	0.00	0.09				
47.00	0.09	0.00	0.09				
48.00	0.06	0.00	0.06				
49.00	0.05	0.00	0.05				
50.00	0.04	0.00	0.04				
51.00	0.04	0.00	0.04				

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=1.27"
Flow Length=652' Tc=13.3 min CN=90 Runoff=10.57 cfs 0.644 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=1.34"
Flow Length=683' Tc=14.4 min CN=91 Runoff=7.75 cfs 0.491 af

Pond 1P: Bioretention Area 3 Peak Elev=575.91' Storage=8,359 cf Inflow=10.57 cfs 0.644 af
Primary=2.79 cfs 0.556 af Secondary=5.41 cfs 0.088 af Outflow=8.19 cfs 0.644 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.32' Storage=19,128 cf Inflow=12.29 cfs 0.579 af
Primary=0.18 cfs 0.400 af Secondary=0.00 cfs 0.000 af Outflow=0.18 cfs 0.400 af

Link 5L: Outflow (@ CB 54) Inflow=2.86 cfs 0.956 af
Primary=2.86 cfs 0.956 af

Total Runoff Area = 10.500 ac Runoff Volume = 1.135 af Average Runoff Depth = 1.30"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

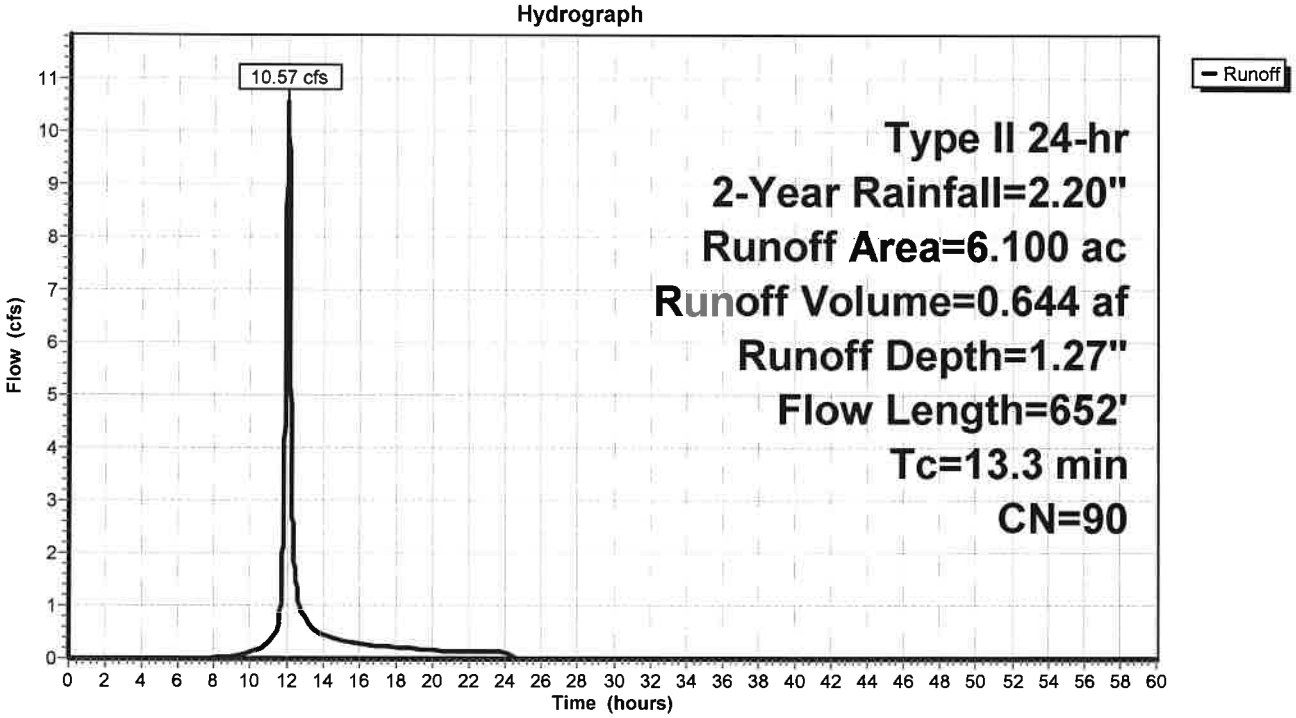
Runoff = 10.57 cfs @ 12.05 hrs, Volume= 0.644 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.05	0.00	0.00
3.00	0.08	0.00	0.00
4.00	0.11	0.00	0.00
5.00	0.14	0.00	0.00
6.00	0.18	0.00	0.00
7.00	0.22	0.00	0.00
8.00	0.26	0.00	0.02
9.00	0.32	0.01	0.06
10.00	0.40	0.02	0.12
11.00	0.52	0.06	0.30
12.00	1.46	0.65	**9.45**
13.00	1.70	0.84	**0.79**
14.00	1.80	0.93	0.46
15.00	1.88	0.99	0.36
16.00	1.94	1.04	0.28
17.00	1.98	1.08	0.24
18.00	2.03	1.12	0.21
19.00	2.06	1.15	0.19
20.00	2.09	1.17	0.16
21.00	2.12	1.20	0.15
22.00	2.15	1.22	0.14
23.00	2.18	1.24	0.14
24.00	**2.20**	**1.27**	0.13
25.00	2.20	1.27	0.00
26.00	2.20	1.27	0.00
27.00	2.20	1.27	0.00
28.00	2.20	1.27	0.00
29.00	2.20	1.27	0.00
30.00	2.20	1.27	0.00
31.00	2.20	1.27	0.00
32.00	2.20	1.27	0.00
33.00	2.20	1.27	0.00
34.00	2.20	1.27	0.00
35.00	2.20	1.27	0.00
36.00	2.20	1.27	0.00
37.00	2.20	1.27	0.00
38.00	2.20	1.27	0.00
39.00	2.20	1.27	0.00
40.00	2.20	1.27	0.00
41.00	2.20	1.27	0.00
42.00	2.20	1.27	0.00
43.00	2.20	1.27	0.00
44.00	2.20	1.27	0.00
45.00	2.20	1.27	0.00
46.00	2.20	1.27	0.00
47.00	2.20	1.27	0.00
48.00	2.20	1.27	0.00
49.00	2.20	1.27	0.00
50.00	2.20	1.27	0.00
51.00	2.20	1.27	0.00
52.00	2.20	1.27	0.00
53.00	2.20	1.27	0.00
54.00	2.20	1.27	0.00
55.00	2.20	1.27	0.00
56.00	2.20	1.27	0.00
57.00	2.20	1.27	0.00
58.00	2.20	1.27	0.00
59.00	2.20	1.27	0.00
60.00	2.20	1.27	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

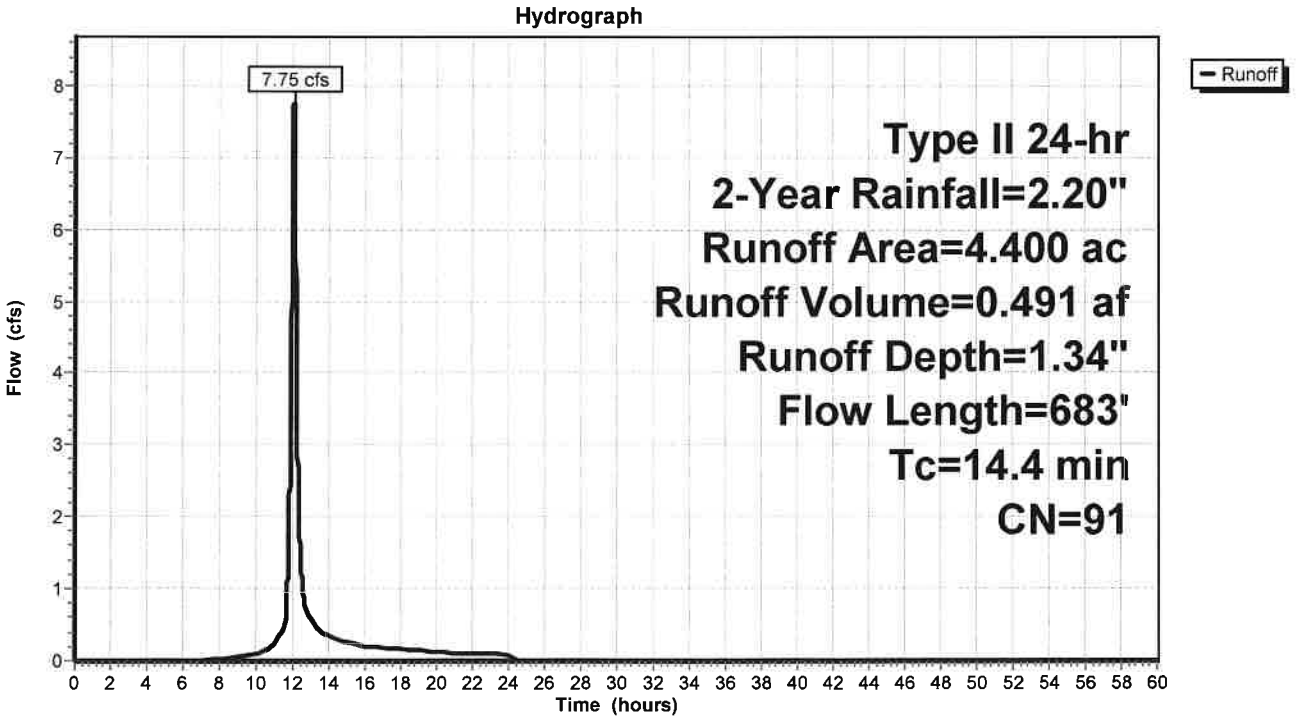
Runoff = 7.75 cfs @ 12.06 hrs, Volume= 0.491 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.05	0.00	0.00
3.00	0.08	0.00	0.00
4.00	0.11	0.00	0.00
5.00	0.14	0.00	0.00
6.00	0.18	0.00	0.00
7.00	0.22	0.00	0.00
8.00	0.26	0.00	0.02
9.00	0.32	0.01	0.06
10.00	0.40	0.03	0.10
11.00	0.52	0.08	0.25
12.00	1.46	0.71	**6.69**
13.00	1.70	0.90	**0.60**
14.00	1.80	0.99	0.35
15.00	1.88	1.06	0.27
16.00	1.94	1.11	0.21
17.00	1.98	1.15	0.18
18.00	2.03	1.19	0.16
19.00	2.06	1.22	0.14
20.00	2.09	1.25	0.12
21.00	2.12	1.27	0.11
22.00	2.15	1.30	0.10
23.00	2.18	1.32	0.10
24.00	**2.20**	**1.34**	0.10
25.00	2.20	1.34	0.00
26.00	2.20	1.34	0.00
27.00	2.20	1.34	0.00
28.00	2.20	1.34	0.00
29.00	2.20	1.34	0.00
30.00	2.20	1.34	0.00
31.00	2.20	1.34	0.00
32.00	2.20	1.34	0.00
33.00	2.20	1.34	0.00
34.00	2.20	1.34	0.00
35.00	2.20	1.34	0.00
36.00	2.20	1.34	0.00
37.00	2.20	1.34	0.00
38.00	2.20	1.34	0.00
39.00	2.20	1.34	0.00
40.00	2.20	1.34	0.00
41.00	2.20	1.34	0.00
42.00	2.20	1.34	0.00
43.00	2.20	1.34	0.00
44.00	2.20	1.34	0.00
45.00	2.20	1.34	0.00
46.00	2.20	1.34	0.00
47.00	2.20	1.34	0.00
48.00	2.20	1.34	0.00
49.00	2.20	1.34	0.00
50.00	2.20	1.34	0.00
51.00	2.20	1.34	0.00
52.00	2.20	1.34	0.00
53.00	2.20	1.34	0.00
54.00	2.20	1.34	0.00
55.00	2.20	1.34	0.00
56.00	2.20	1.34	0.00
57.00	2.20	1.34	0.00
58.00	2.20	1.34	0.00
59.00	2.20	1.34	0.00
60.00	2.20	1.34	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 1.27" for 2-Year event
Inflow = 10.57 cfs @ 12.05 hrs, Volume= 0.644 af
Outflow = 8.19 cfs @ 12.13 hrs, Volume= 0.644 af, Atten= 22%, Lag= 4.9 min
Primary = 2.79 cfs @ 12.13 hrs, Volume= 0.556 af
Secondary = 5.41 cfs @ 12.13 hrs, Volume= 0.088 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.91' @ 12.13 hrs Surf.Area= 9,805 sf Storage= 8,359 cf

Plug-Flow detention time= 252.3 min calculated for 0.644 af (100% of inflow)
Center-of-Mass det. time= 252.2 min (1,078.1 - 825.9)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

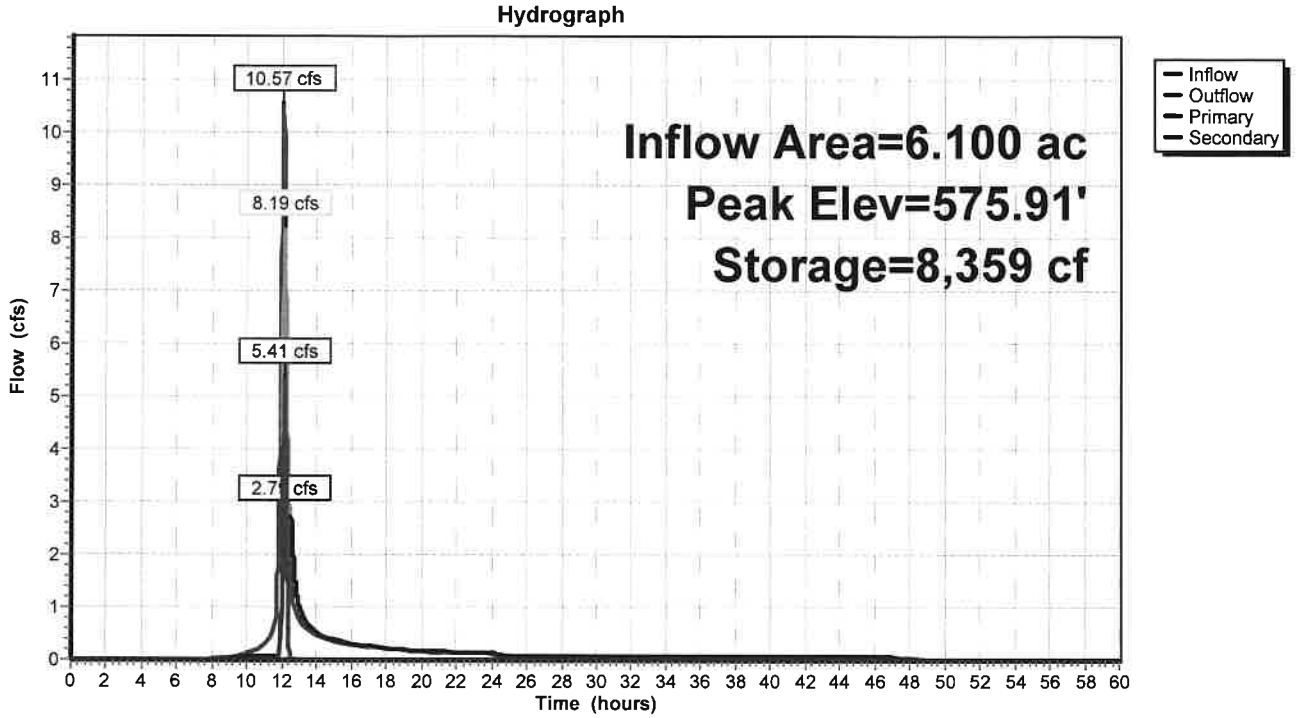
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.79 cfs @ 12.13 hrs HW=575.91' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.79 cfs @ 7.98 fps)
  ├**2=Grate** (Passes < 4.28 cfs potential flow)
  └**3=Exfiltration** (Passes < 0.06 cfs potential flow)

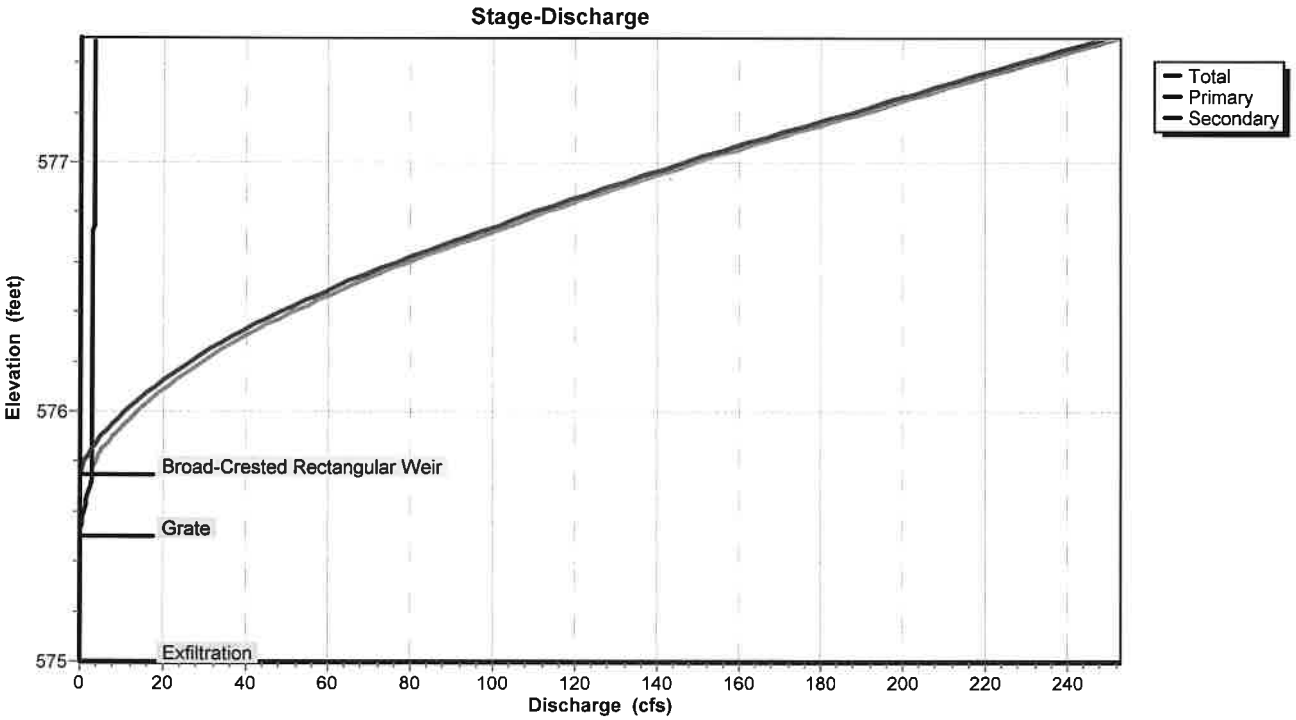
Secondary OutFlow Max=5.39 cfs @ 12.13 hrs HW=575.91' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 5.39 cfs @ 1.15 fps)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

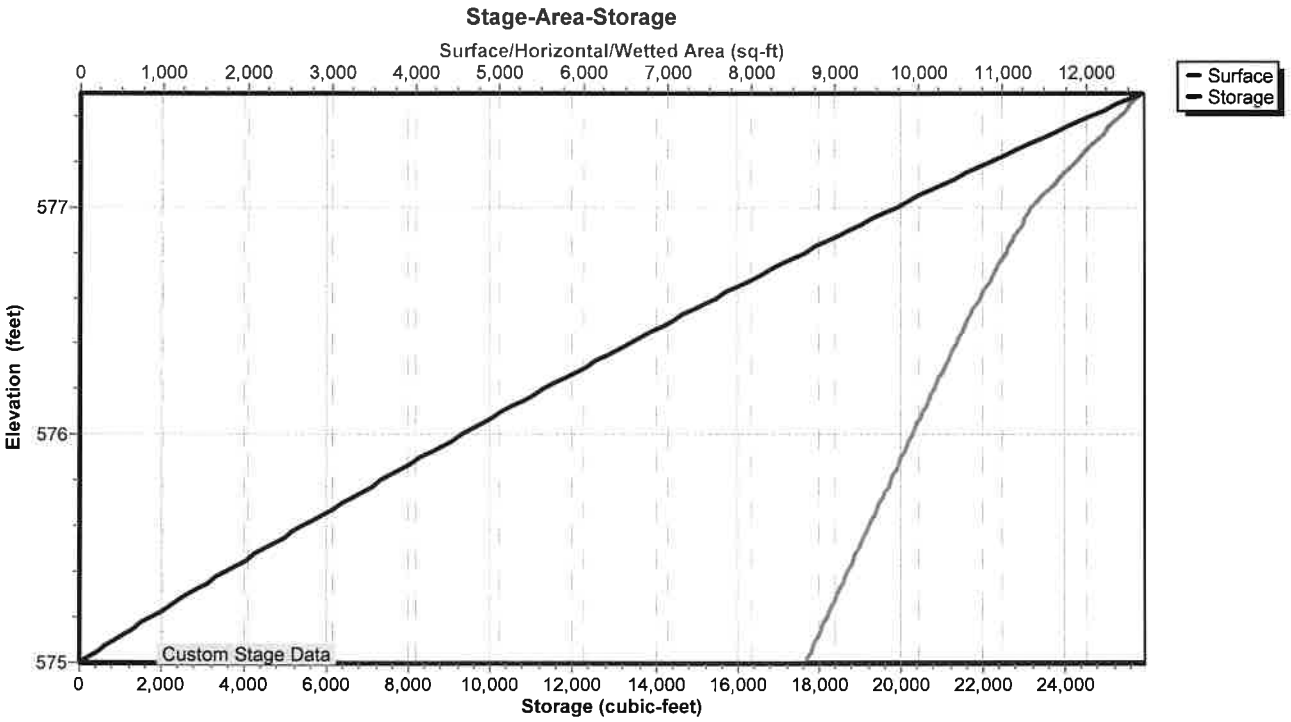


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.02	17	575.00	0.00	0.00	0.00
10.00	0.12	257	575.03	0.05	0.05	0.00
12.00	**9.45**	**6,253**	**575.69**	**2.30**	**2.30**	**0.00**
14.00	**0.46**	**5,096**	**575.57**	**0.52**	**0.52**	**0.00**
16.00	0.28	4,881	575.54	0.30	0.30	0.00
18.00	0.21	4,786	575.53	0.22	0.22	0.00
20.00	0.16	4,719	575.53	0.17	0.17	0.00
22.00	0.14	4,676	575.52	0.15	0.15	0.00
24.00	0.13	4,652	575.52	0.13	0.13	0.00
26.00	0.00	4,232	575.47	0.06	0.06	0.00
28.00	0.00	3,836	575.43	0.05	0.05	0.00
30.00	0.00	3,444	575.39	0.05	0.05	0.00
32.00	0.00	3,055	575.34	0.05	0.05	0.00
34.00	0.00	2,670	575.30	0.05	0.05	0.00
36.00	0.00	2,287	575.26	0.05	0.05	0.00
38.00	0.00	1,909	575.22	0.05	0.05	0.00
40.00	0.00	1,533	575.18	0.05	0.05	0.00
42.00	0.00	1,161	575.13	0.05	0.05	0.00
44.00	0.00	792	575.09	0.05	0.05	0.00
46.00	0.00	426	575.05	0.05	0.05	0.00
48.00	0.00	107	575.01	0.02	0.02	0.00
50.00	0.00	20	575.00	0.00	0.00	0.00
52.00	0.00	4	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 1.58" for 2-Year event
Inflow = 12.29 cfs @ 12.11 hrs, Volume= 0.579 af
Outflow = 0.18 cfs @ 17.01 hrs, Volume= 0.400 af, Atten= 99%, Lag= 293.7 min
Primary = 0.18 cfs @ 17.01 hrs, Volume= 0.400 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.32' @ 17.01 hrs Surf.Area= 61,630 sf Storage= 19,128 cf

Plug-Flow detention time= 1,051.7 min calculated for 0.400 af (69% of inflow)
Center-of-Mass det. time= 962.0 min (1,770.2 - 808.1)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

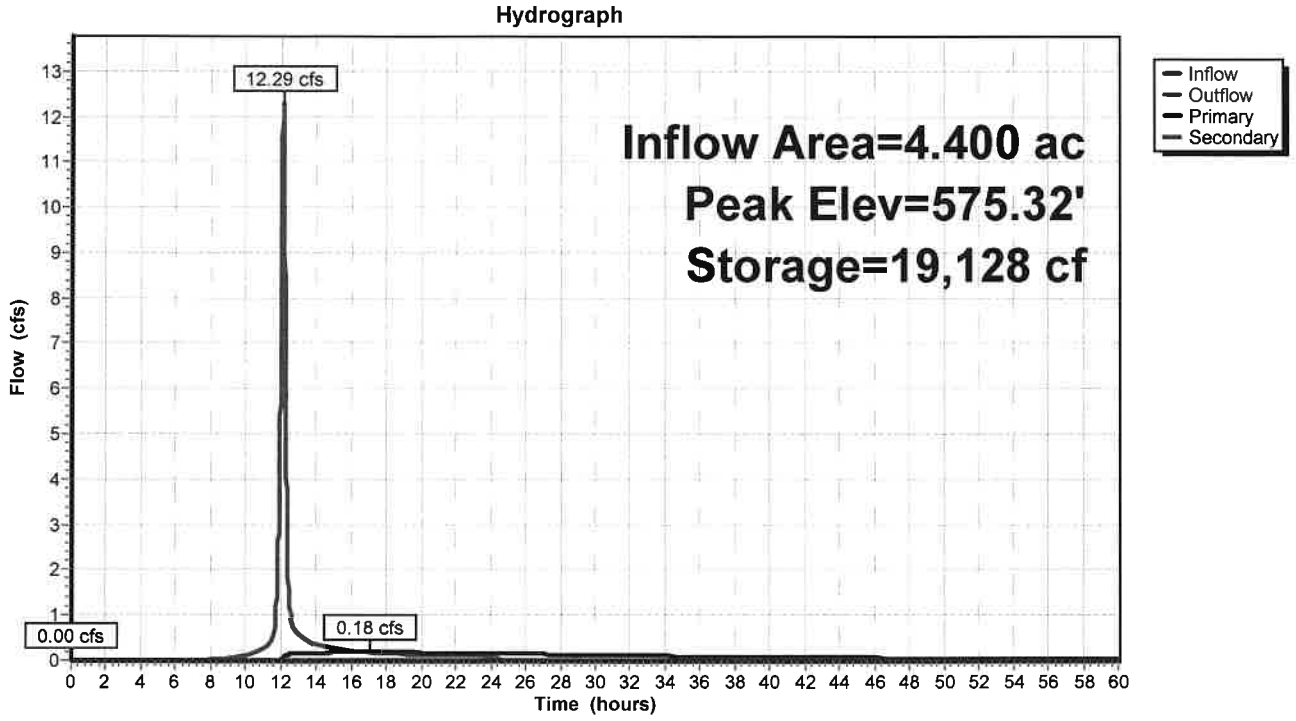
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.18 cfs @ 17.01 hrs HW=575.32' (Free Discharge)
└─**1=12" outlet pipe** (Passes 0.18 cfs of 1.87 cfs potential flow)
  ├─**2=low flow outlet pipe** (Barrel Controls 0.18 cfs @ 1.95 fps)
  └─**3=Grate** (Controls 0.00 cfs)

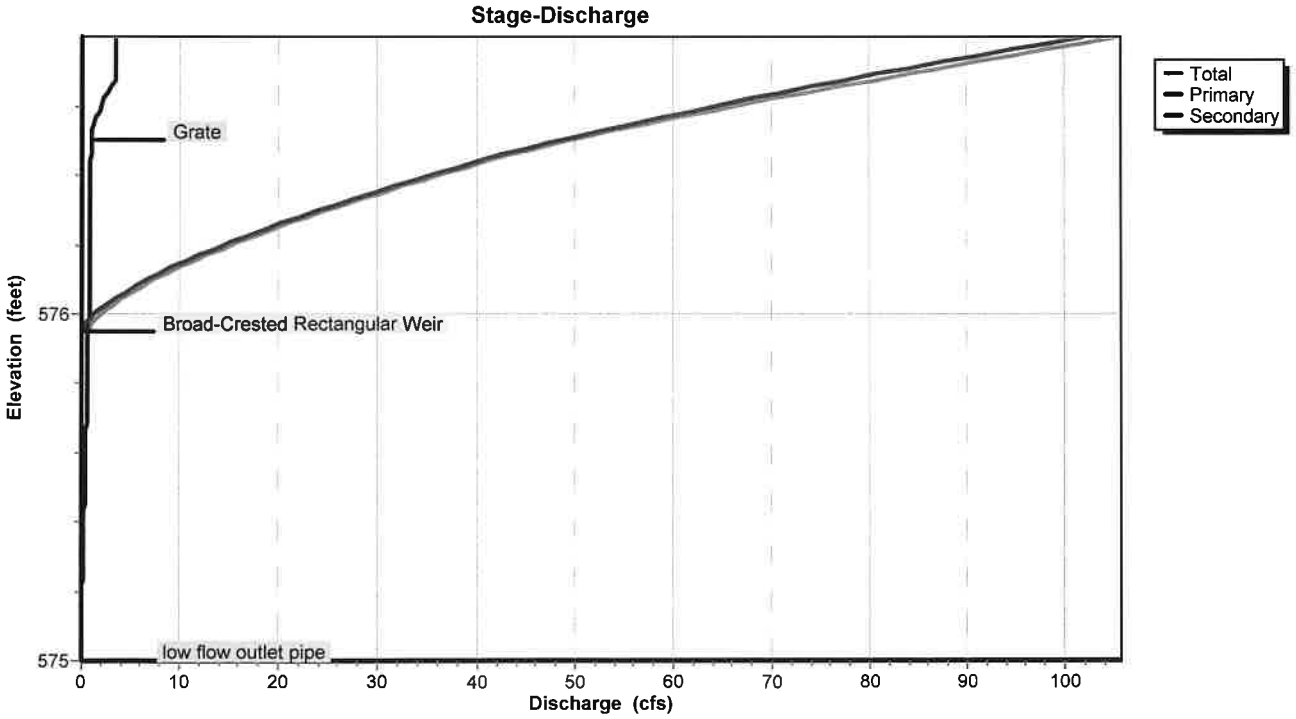
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

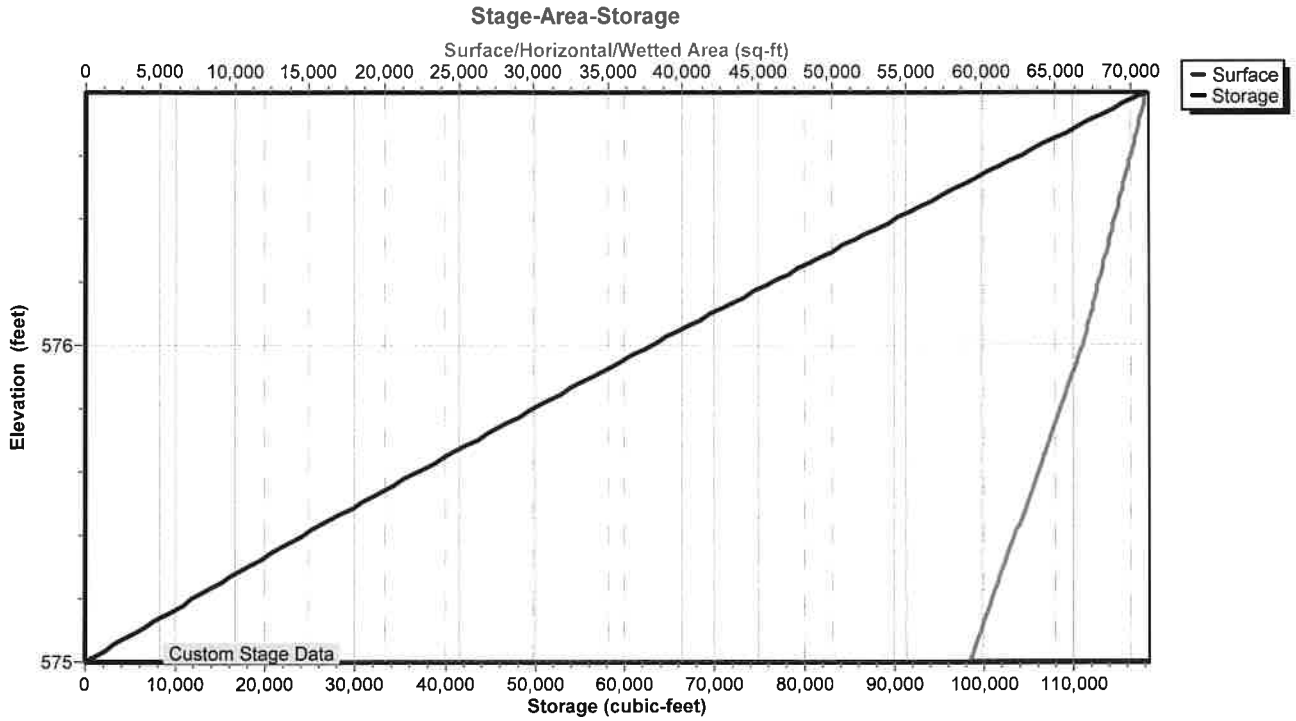


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.02	48	575.00	0.00	0.00	0.00
10.00	0.10	451	575.01	0.00	0.00	0.00
12.00	**6.69**	5,327	575.09	0.02	0.02	0.00
14.00	**0.35**	18,425	575.31	0.17	0.17	0.00
16.00	0.21	**19,087**	**575.32**	**0.18**	**0.18**	0.00
18.00	0.16	**19,093**	**575.32**	**0.18**	**0.18**	0.00
20.00	0.12	18,812	575.31	0.17	0.17	0.00
22.00	0.10	18,367	575.30	0.17	0.17	0.00
24.00	0.10	17,912	575.30	0.16	0.16	0.00
26.00	0.00	16,886	575.28	0.15	0.15	0.00
28.00	0.00	15,893	575.26	0.13	0.13	0.00
30.00	0.00	14,996	575.25	0.12	0.12	0.00
32.00	0.00	14,184	575.24	0.11	0.11	0.00
34.00	0.00	13,445	575.22	0.10	0.10	0.00
36.00	0.00	12,772	575.21	0.09	0.09	0.00
38.00	0.00	12,156	575.20	0.08	0.08	0.00
40.00	0.00	11,591	575.19	0.08	0.08	0.00
42.00	0.00	11,071	575.18	0.07	0.07	0.00
44.00	0.00	10,592	575.18	0.06	0.06	0.00
46.00	0.00	10,149	575.17	0.06	0.06	0.00
48.00	0.00	9,739	575.16	0.05	0.05	0.00
50.00	0.00	9,358	575.16	0.05	0.05	0.00
52.00	0.00	9,003	575.15	0.05	0.05	0.00
54.00	0.00	8,673	575.15	0.04	0.04	0.00
56.00	0.00	8,364	575.14	0.04	0.04	0.00
58.00	0.00	8,075	575.14	0.04	0.04	0.00
60.00	0.00	7,803	575.13	0.04	0.04	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

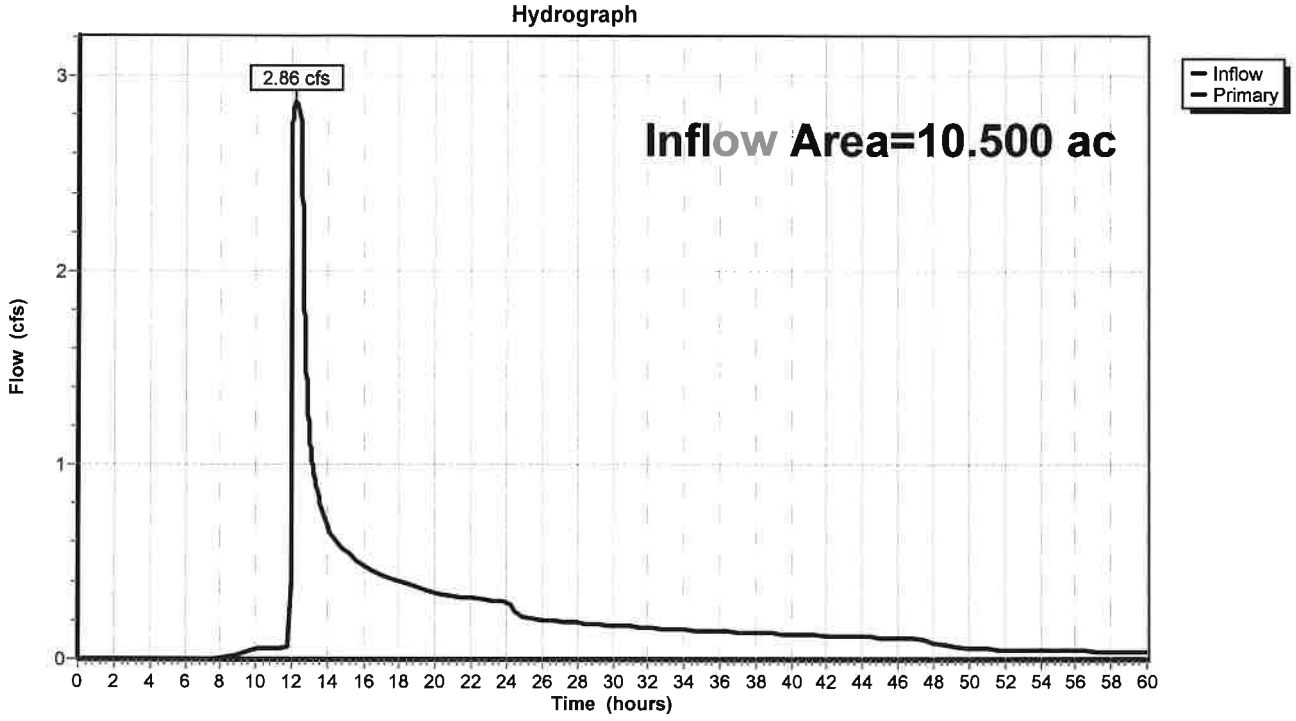
Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 1.09" for 2-Year event
Inflow = 2.86 cfs @ 12.23 hrs, Volume= 0.956 af
Primary = 2.86 cfs @ 12.23 hrs, Volume= 0.956 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00
1.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00
9.00	0.02	0.00	0.02
10.00	0.05	0.00	0.05
11.00	0.05	0.00	0.05
12.00	**2.31**	0.00	**2.31**
13.00	**1.18**	0.00	**1.18**
14.00	0.69	0.00	0.69
15.00	0.55	0.00	0.55
16.00	0.48	0.00	0.48
17.00	0.43	0.00	0.43
18.00	0.40	0.00	0.40
19.00	0.37	0.00	0.37
20.00	0.34	0.00	0.34
21.00	0.32	0.00	0.32
22.00	0.31	0.00	0.31
23.00	0.30	0.00	0.30
24.00	0.29	0.00	0.29
25.00	0.21	0.00	0.21
26.00	0.20	0.00	0.20
27.00	0.19	0.00	0.19
28.00	0.19	0.00	0.19
29.00	0.18	0.00	0.18
30.00	0.17	0.00	0.17
31.00	0.17	0.00	0.17
32.00	0.16	0.00	0.16
33.00	0.16	0.00	0.16
34.00	0.15	0.00	0.15
35.00	0.15	0.00	0.15
36.00	0.14	0.00	0.14
37.00	0.14	0.00	0.14
38.00	0.13	0.00	0.13
39.00	0.13	0.00	0.13
40.00	0.13	0.00	0.13
41.00	0.12	0.00	0.12
42.00	0.12	0.00	0.12
43.00	0.12	0.00	0.12
44.00	0.11	0.00	0.11
45.00	0.11	0.00	0.11
46.00	0.11	0.00	0.11
47.00	0.11	0.00	0.11
48.00	0.08	0.00	0.08
49.00	0.06	0.00	0.06
50.00	0.06	0.00	0.06
51.00	0.05	0.00	0.05
52.00	0.05	0.00	0.05
53.00	0.05	0.00	0.05
54.00	0.04	0.00	0.04
55.00	0.04	0.00	0.04
56.00	0.04	0.00	0.04
57.00	0.04	0.00	0.04
58.00	0.04	0.00	0.04
59.00	0.04	0.00	0.04
60.00	0.04	0.00	0.04

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=1.71"
Flow Length=652' Tc=13.3 min CN=90 Runoff=14.18 cfs 0.870 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=1.79"
Flow Length=683' Tc=14.4 min CN=91 Runoff=10.29 cfs 0.658 af

Pond 1P: Bioretention Area 3 Peak Elev=575.99' Storage=9,153 cf Inflow=14.18 cfs 0.870 af
Primary=2.83 cfs 0.666 af Secondary=10.09 cfs 0.203 af Outflow=12.91 cfs 0.870 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.46' Storage=28,218 cf Inflow=20.08 cfs 0.861 af
Primary=0.33 cfs 0.652 af Secondary=0.00 cfs 0.000 af Outflow=0.33 cfs 0.652 af

Link 5L: Outflow (@ CB 54) Inflow=3.01 cfs 1.318 af
Primary=3.01 cfs 1.318 af

Total Runoff Area = 10.500 ac Runoff Volume = 1.527 af Average Runoff Depth = 1.75"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

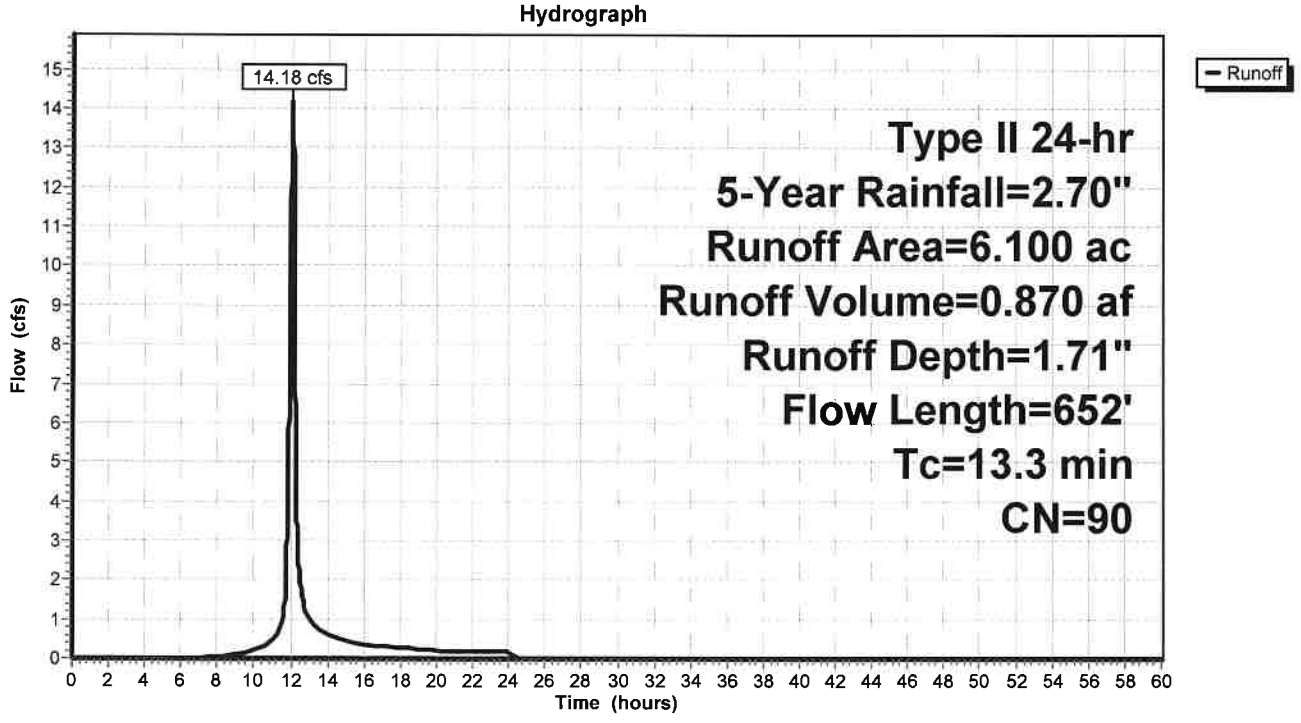
Runoff = 14.18 cfs @ 12.05 hrs, Volume= 0.870 af, Depth= 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.00
7.00	0.27	0.00	0.02
8.00	0.32	0.01	0.05
9.00	0.40	0.02	0.12
10.00	0.49	0.05	0.20
11.00	0.63	0.11	0.47
12.00	1.79	0.92	**12.79**
13.00	2.08	1.17	**1.02**
14.00	2.21	1.28	0.59
15.00	2.30	1.36	0.46
16.00	2.38	1.42	0.36
17.00	2.43	1.47	0.31
18.00	2.49	1.52	0.27
19.00	2.53	1.56	0.24
20.00	2.57	1.59	0.20
21.00	2.60	1.62	0.19
22.00	2.64	1.65	0.18
23.00	2.67	1.68	0.17
24.00	**2.70**	**1.71**	0.17
25.00	2.70	1.71	0.00
26.00	2.70	1.71	0.00
27.00	2.70	1.71	0.00
28.00	2.70	1.71	0.00
29.00	2.70	1.71	0.00
30.00	2.70	1.71	0.00
31.00	2.70	1.71	0.00
32.00	2.70	1.71	0.00
33.00	2.70	1.71	0.00
34.00	2.70	1.71	0.00
35.00	2.70	1.71	0.00
36.00	2.70	1.71	0.00
37.00	2.70	1.71	0.00
38.00	2.70	1.71	0.00
39.00	2.70	1.71	0.00
40.00	2.70	1.71	0.00
41.00	2.70	1.71	0.00
42.00	2.70	1.71	0.00
43.00	2.70	1.71	0.00
44.00	2.70	1.71	0.00
45.00	2.70	1.71	0.00
46.00	2.70	1.71	0.00
47.00	2.70	1.71	0.00
48.00	2.70	1.71	0.00
49.00	2.70	1.71	0.00
50.00	2.70	1.71	0.00
51.00	2.70	1.71	0.00
52.00	2.70	1.71	0.00
53.00	2.70	1.71	0.00
54.00	2.70	1.71	0.00
55.00	2.70	1.71	0.00
56.00	2.70	1.71	0.00
57.00	2.70	1.71	0.00
58.00	2.70	1.71	0.00
59.00	2.70	1.71	0.00
60.00	2.70	1.71	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

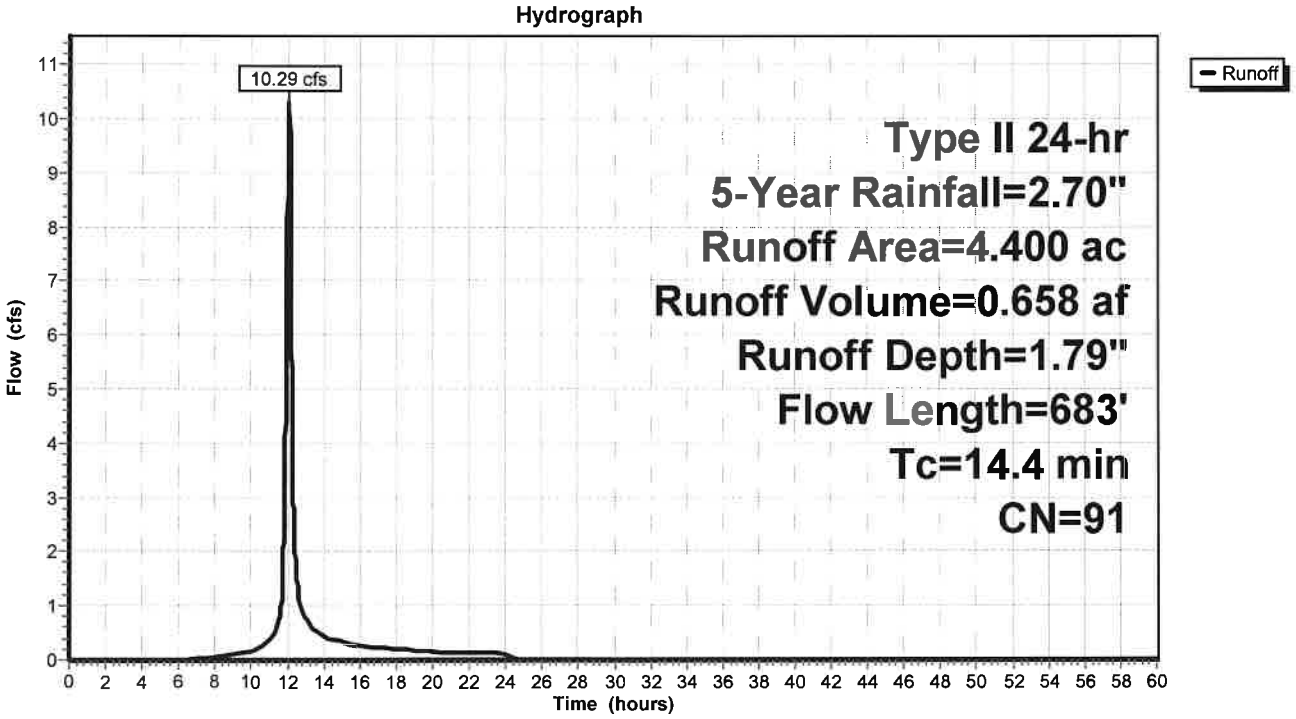
Runoff = 10.29 cfs @ 12.06 hrs, Volume= 0.658 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.00
7.00	0.27	0.00	0.03
8.00	0.32	0.01	0.05
9.00	0.40	0.03	0.10
10.00	0.49	0.07	0.17
11.00	0.63	0.13	0.37
12.00	1.79	0.98	**8.97**
13.00	2.08	1.24	**0.77**
14.00	2.21	1.35	0.44
15.00	2.30	1.43	0.34
16.00	2.38	1.50	0.27
17.00	2.43	1.55	0.23
18.00	2.49	1.60	0.20
19.00	2.53	1.64	0.18
20.00	2.57	1.67	0.15
21.00	2.60	1.71	0.14
22.00	2.64	1.74	0.13
23.00	2.67	1.77	0.13
24.00	**2.70**	**1.79**	0.12
25.00	2.70	1.79	0.00
26.00	2.70	1.79	0.00
27.00	2.70	1.79	0.00
28.00	2.70	1.79	0.00
29.00	2.70	1.79	0.00
30.00	2.70	1.79	0.00
31.00	2.70	1.79	0.00
32.00	2.70	1.79	0.00
33.00	2.70	1.79	0.00
34.00	2.70	1.79	0.00
35.00	2.70	1.79	0.00
36.00	2.70	1.79	0.00
37.00	2.70	1.79	0.00
38.00	2.70	1.79	0.00
39.00	2.70	1.79	0.00
40.00	2.70	1.79	0.00
41.00	2.70	1.79	0.00
42.00	2.70	1.79	0.00
43.00	2.70	1.79	0.00
44.00	2.70	1.79	0.00
45.00	2.70	1.79	0.00
46.00	2.70	1.79	0.00
47.00	2.70	1.79	0.00
48.00	2.70	1.79	0.00
49.00	2.70	1.79	0.00
50.00	2.70	1.79	0.00
51.00	2.70	1.79	0.00
52.00	2.70	1.79	0.00
53.00	2.70	1.79	0.00
54.00	2.70	1.79	0.00
55.00	2.70	1.79	0.00
56.00	2.70	1.79	0.00
57.00	2.70	1.79	0.00
58.00	2.70	1.79	0.00
59.00	2.70	1.79	0.00
60.00	2.70	1.79	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 1.71" for 5-Year event
Inflow = 14.18 cfs @ 12.05 hrs, Volume= 0.870 af
Outflow = 12.91 cfs @ 12.10 hrs, Volume= 0.870 af, Atten= 9%, Lag= 2.9 min
Primary = 2.83 cfs @ 12.10 hrs, Volume= 0.666 af
Secondary = 10.09 cfs @ 12.10 hrs, Volume= 0.203 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.99' @ 12.10 hrs Surf.Area= 9,908 sf Storage= 9,153 cf

Plug-Flow detention time= 193.1 min calculated for 0.869 af (100% of inflow)
Center-of-Mass det. time= 193.4 min (1,010.7 - 817.3)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

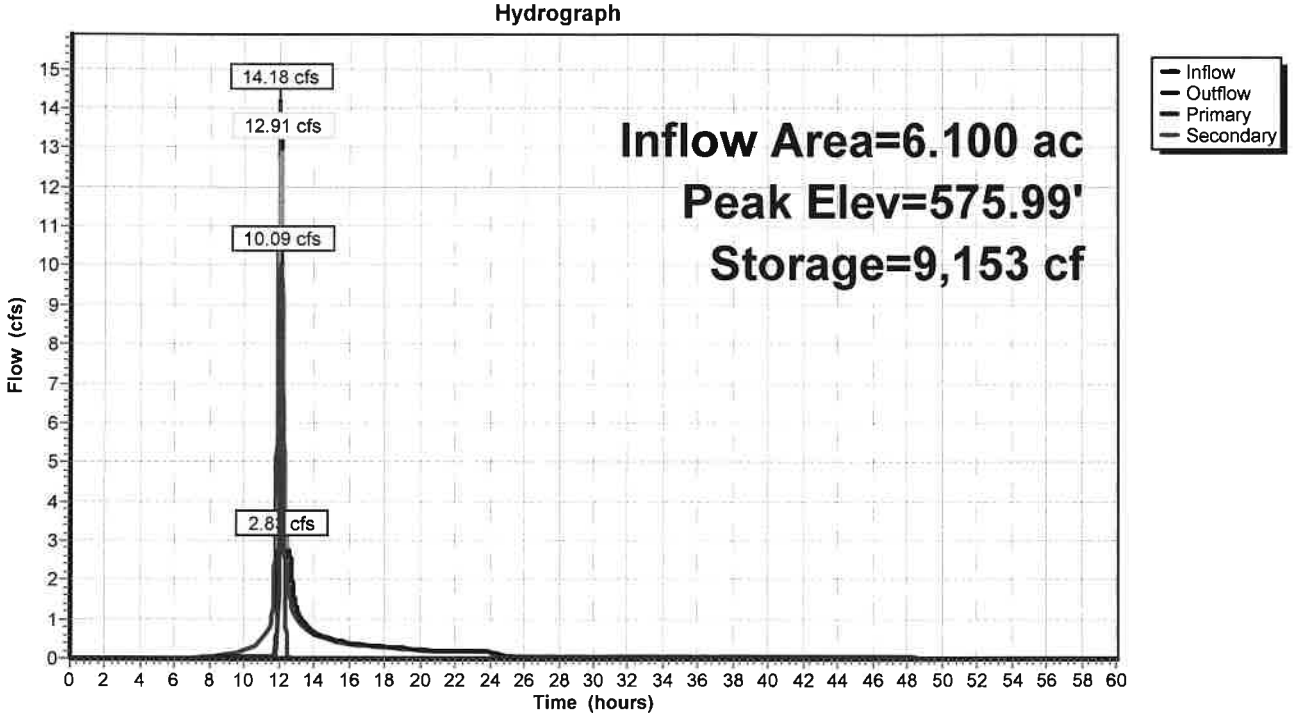
Primary OutFlow Max=2.83 cfs @ 12.10 hrs HW=575.99' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.83 cfs @ 8.10 fps)
  ├**2=Grate** (Passes < 4.69 cfs potential flow)
  └**3=Exfiltration** (Passes < 0.06 cfs potential flow)

Secondary OutFlow Max=10.07 cfs @ 12.10 hrs HW=575.99' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 10.07 cfs @ 1.42 fps)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

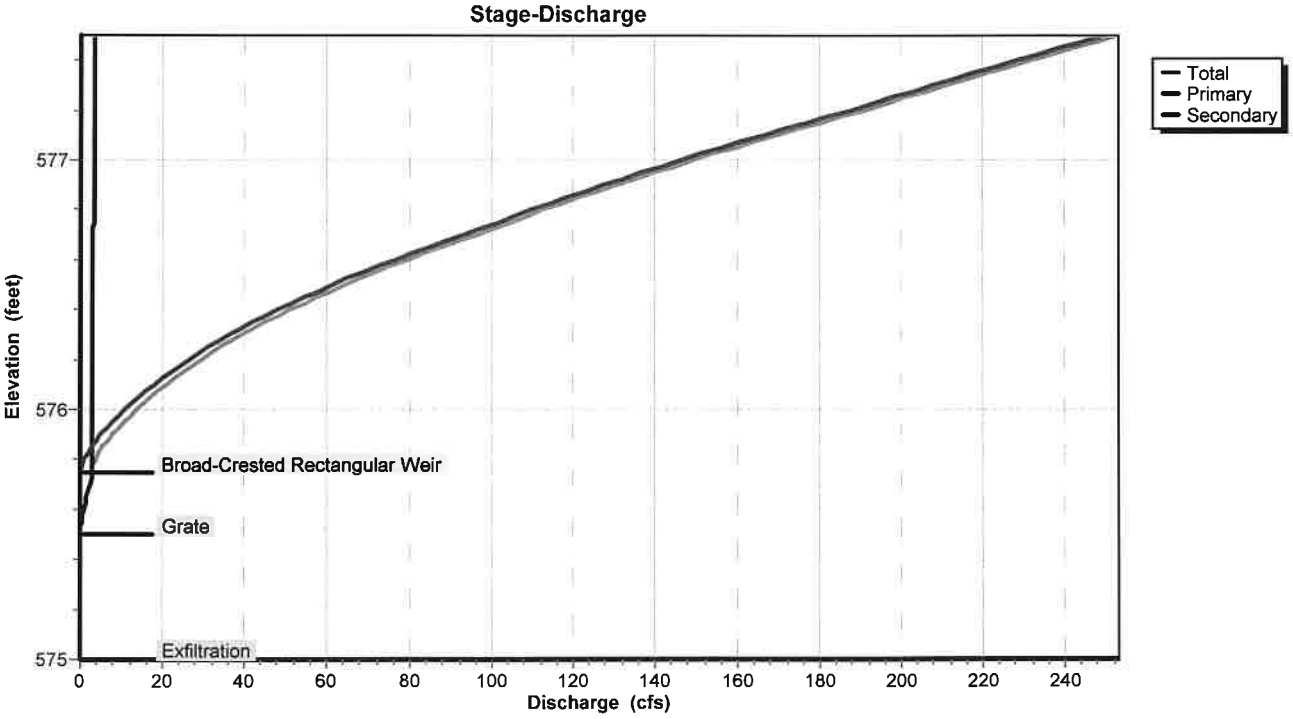
Pond 1P: Bioretention Area 3

Hydrograph



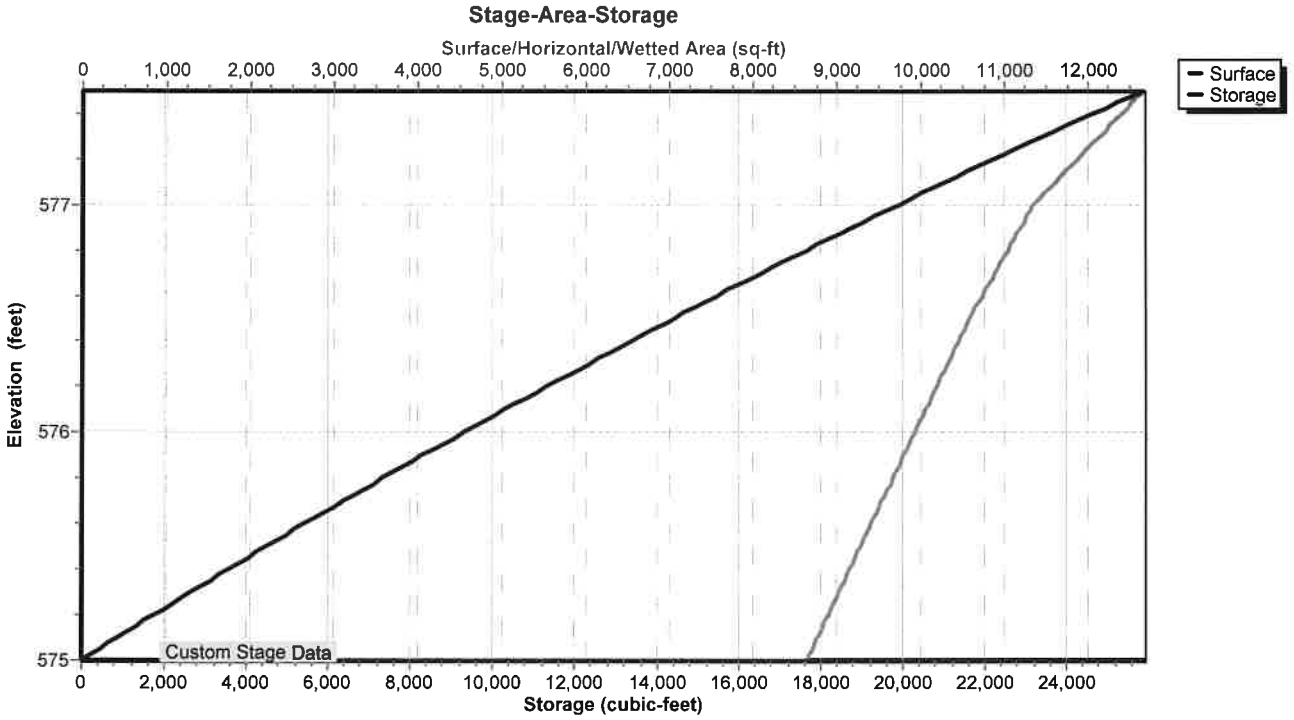
Pond 1P: Bioretention Area 3

Stage-Discharge



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.05	99	575.01	0.02	0.02	0.00
10.00	0.20	617	575.07	0.05	0.05	0.00
12.00	**12.79**	**8,183**	**575.89**	**7.28**	**2.78**	**4.50**
14.00	**0.59**	**5,218**	**575.58**	**0.66**	**0.66**	**0.00**
16.00	0.36	4,969	575.55	0.38	0.38	0.00
18.00	0.27	4,859	575.54	0.29	0.29	0.00
20.00	0.20	4,774	575.53	0.21	0.21	0.00
22.00	0.18	4,739	575.53	0.18	0.18	0.00
24.00	0.17	4,722	575.53	0.17	0.17	0.00
26.00	0.00	4,258	575.48	0.06	0.06	0.00
28.00	0.00	3,862	575.43	0.05	0.05	0.00
30.00	0.00	3,470	575.39	0.05	0.05	0.00
32.00	0.00	3,081	575.35	0.05	0.05	0.00
34.00	0.00	2,695	575.30	0.05	0.05	0.00
36.00	0.00	2,313	575.26	0.05	0.05	0.00
38.00	0.00	1,934	575.22	0.05	0.05	0.00
40.00	0.00	1,558	575.18	0.05	0.05	0.00
42.00	0.00	1,186	575.14	0.05	0.05	0.00
44.00	0.00	816	575.09	0.05	0.05	0.00
46.00	0.00	450	575.05	0.05	0.05	0.00
48.00	0.00	119	575.01	0.03	0.03	0.00
50.00	0.00	22	575.00	0.01	0.01	0.00
52.00	0.00	4	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 2.35" for 5-Year event
Inflow = 20.08 cfs @ 12.08 hrs, Volume= 0.861 af
Outflow = 0.33 cfs @ 15.13 hrs, Volume= 0.652 af, Atten= 98%, Lag= 182.5 min
Primary = 0.33 cfs @ 15.13 hrs, Volume= 0.652 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.46' @ 15.13 hrs Surf.Area= 62,747 sf Storage= 28,218 cf

Plug-Flow detention time= 974.3 min calculated for 0.652 af (76% of inflow)
Center-of-Mass det. time= 898.6 min (1,692.2 - 793.6)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

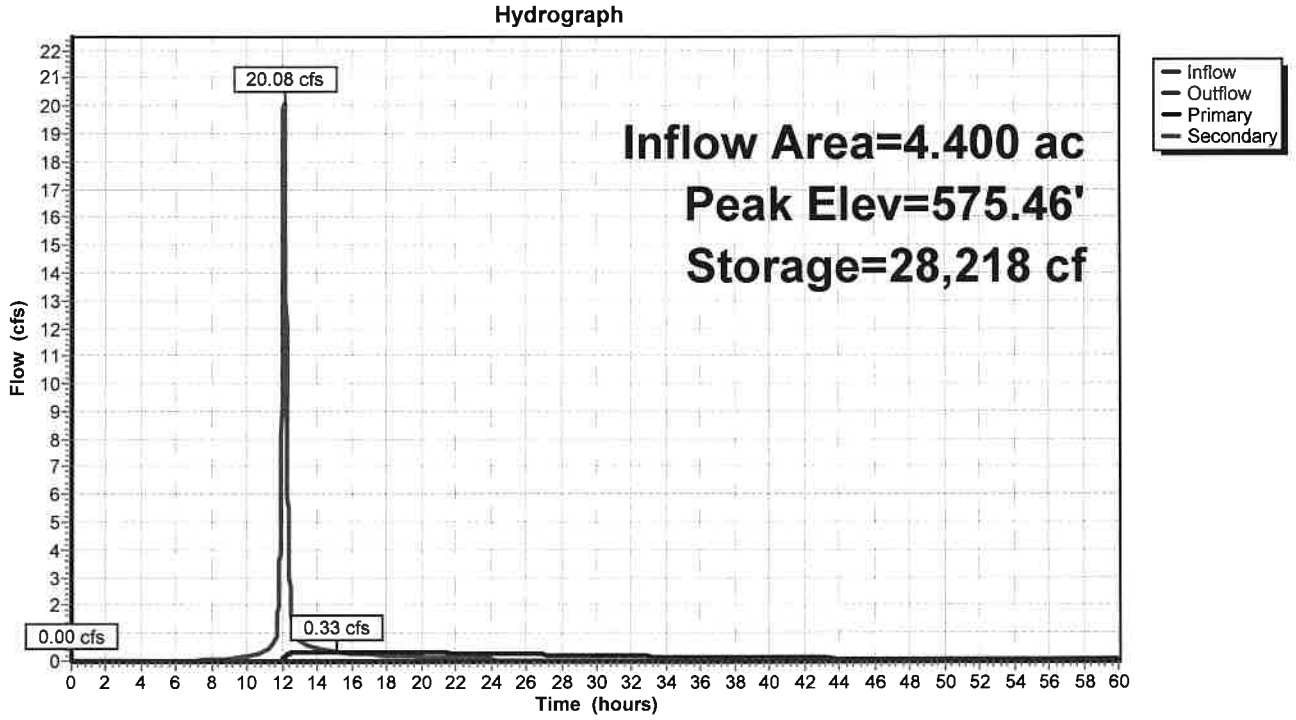
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.33 cfs @ 15.13 hrs HW=575.46' (Free Discharge)
↑**1=12" outlet pipe** (Passes 0.33 cfs of 2.02 cfs potential flow)
↑**2=low flow outlet pipe** (Barrel Controls 0.33 cfs @ 2.27 fps)
↑**3=Grate** (Controls 0.00 cfs)

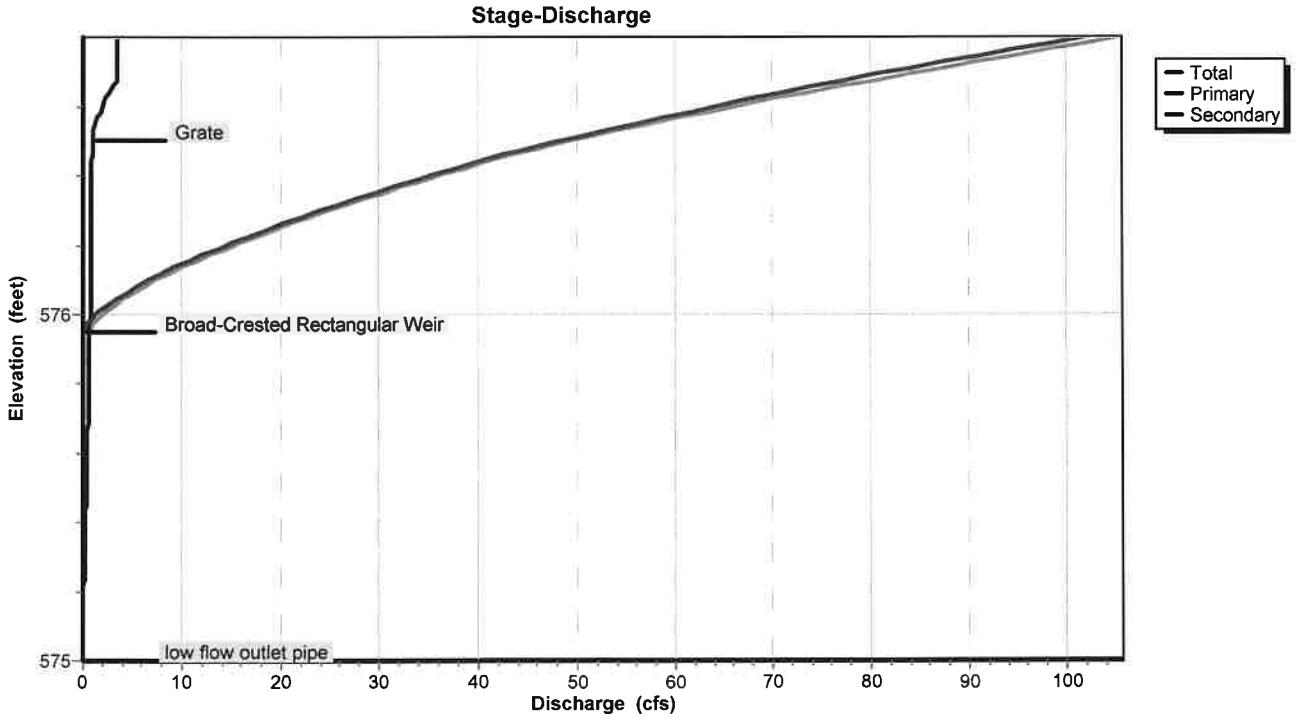
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
↑**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

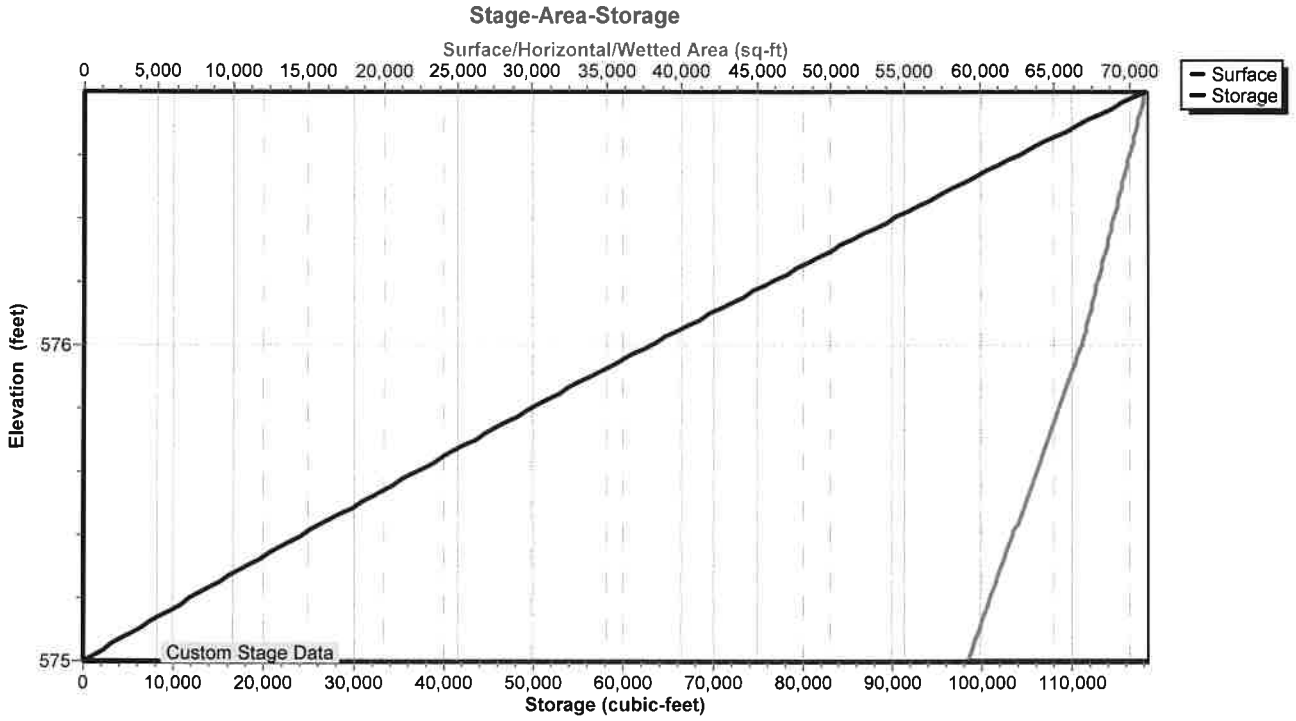


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	1	575.00	0.00	0.00	0.00
8.00	0.05	186	575.00	0.00	0.00	0.00
10.00	0.17	912	575.02	0.00	0.00	0.00
12.00	**13.47**	8,186	575.14	0.04	0.04	0.00
14.00	**0.44**	**28,034**	**575.46**	**0.33**	**0.33**	0.00
16.00	0.27	**28,118**	**575.46**	**0.33**	**0.33**	0.00
18.00	0.20	27,442	575.45	0.32	0.32	0.00
20.00	0.15	26,479	575.43	0.30	0.30	0.00
22.00	0.13	25,382	575.42	0.28	0.28	0.00
24.00	0.12	24,337	575.40	0.26	0.26	0.00
26.00	0.00	22,633	575.37	0.24	0.24	0.00
28.00	0.00	21,033	575.35	0.21	0.21	0.00
30.00	0.00	19,609	575.32	0.19	0.19	0.00
32.00	0.00	18,338	575.30	0.17	0.17	0.00
34.00	0.00	17,199	575.29	0.15	0.15	0.00
36.00	0.00	16,175	575.27	0.13	0.13	0.00
38.00	0.00	15,251	575.25	0.12	0.12	0.00
40.00	0.00	14,415	575.24	0.11	0.11	0.00
42.00	0.00	13,655	575.23	0.10	0.10	0.00
44.00	0.00	12,964	575.22	0.09	0.09	0.00
46.00	0.00	12,331	575.21	0.08	0.08	0.00
48.00	0.00	11,752	575.20	0.08	0.08	0.00
50.00	0.00	11,220	575.19	0.07	0.07	0.00
52.00	0.00	10,729	575.18	0.07	0.07	0.00
54.00	0.00	10,276	575.17	0.06	0.06	0.00
56.00	0.00	9,856	575.16	0.06	0.06	0.00
58.00	0.00	9,467	575.16	0.05	0.05	0.00
60.00	0.00	9,105	575.15	0.05	0.05	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

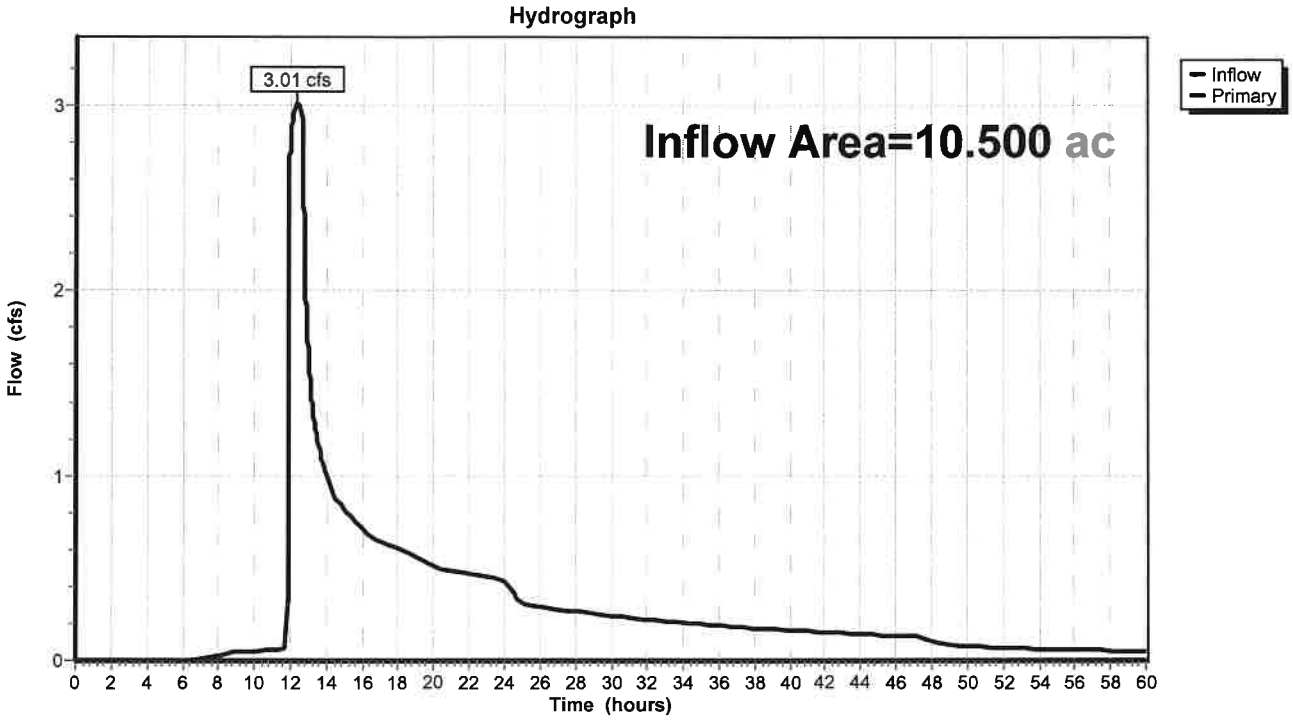
Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 1.51" for 5-Year event
Inflow = 3.01 cfs @ 12.34 hrs, Volume= 1.318 af
Primary = 3.01 cfs @ 12.34 hrs, Volume= 1.318 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.07	0.00	0.07
1.00	0.00	0.00	0.00	53.00	0.06	0.00	0.06
2.00	0.00	0.00	0.00	54.00	0.06	0.00	0.06
3.00	0.00	0.00	0.00	55.00	0.06	0.00	0.06
4.00	0.00	0.00	0.00	56.00	0.06	0.00	0.06
5.00	0.00	0.00	0.00	57.00	0.05	0.00	0.05
6.00	0.00	0.00	0.00	58.00	0.05	0.00	0.05
7.00	0.00	0.00	0.00	59.00	0.05	0.00	0.05
8.00	0.02	0.00	0.02	60.00	0.05	0.00	0.05
9.00	0.05	0.00	0.05				
10.00	0.05	0.00	0.05				
11.00	0.05	0.00	0.05				
12.00	**2.82**	0.00	**2.82**				
13.00	**1.62**	0.00	**1.62**				
14.00	0.99	0.00	0.99				
15.00	0.81	0.00	0.81				
16.00	0.71	0.00	0.71				
17.00	0.65	0.00	0.65				
18.00	0.60	0.00	0.60				
19.00	0.56	0.00	0.56				
20.00	0.51	0.00	0.51				
21.00	0.48	0.00	0.48				
22.00	0.47	0.00	0.47				
23.00	0.45	0.00	0.45				
24.00	0.43	0.00	0.43				
25.00	0.31	0.00	0.31				
26.00	0.29	0.00	0.29				
27.00	0.28	0.00	0.28				
28.00	0.26	0.00	0.26				
29.00	0.25	0.00	0.25				
30.00	0.24	0.00	0.24				
31.00	0.23	0.00	0.23				
32.00	0.22	0.00	0.22				
33.00	0.21	0.00	0.21				
34.00	0.20	0.00	0.20				
35.00	0.20	0.00	0.20				
36.00	0.19	0.00	0.19				
37.00	0.18	0.00	0.18				
38.00	0.17	0.00	0.17				
39.00	0.17	0.00	0.17				
40.00	0.16	0.00	0.16				
41.00	0.16	0.00	0.16				
42.00	0.15	0.00	0.15				
43.00	0.15	0.00	0.15				
44.00	0.14	0.00	0.14				
45.00	0.14	0.00	0.14				
46.00	0.13	0.00	0.13				
47.00	0.13	0.00	0.13				
48.00	0.10	0.00	0.10				
49.00	0.09	0.00	0.09				
50.00	0.08	0.00	0.08				
51.00	0.07	0.00	0.07				

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=2.12"
Flow Length=652' Tc=13.3 min CN=90 Runoff=17.46 cfs 1.079 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=2.21"
Flow Length=683' Tc=14.4 min CN=91 Runoff=12.59 cfs 0.811 af

Pond 1P: Bioretention Area 3 Peak Elev=576.04' Storage=9,672 cf Inflow=17.46 cfs 1.079 af
Primary=2.85 cfs 0.765 af Secondary=13.60 cfs 0.314 af Outflow=16.45 cfs 1.079 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.60' Storage=37,117 cf Inflow=26.01 cfs 1.125 af
Primary=0.47 cfs 0.892 af Secondary=0.00 cfs 0.000 af Outflow=0.47 cfs 0.892 af

Link 5L: Outflow (@ CB 54) Inflow=3.16 cfs 1.657 af
Primary=3.16 cfs 1.657 af

Total Runoff Area = 10.500 ac Runoff Volume = 1.890 af Average Runoff Depth = 2.16"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

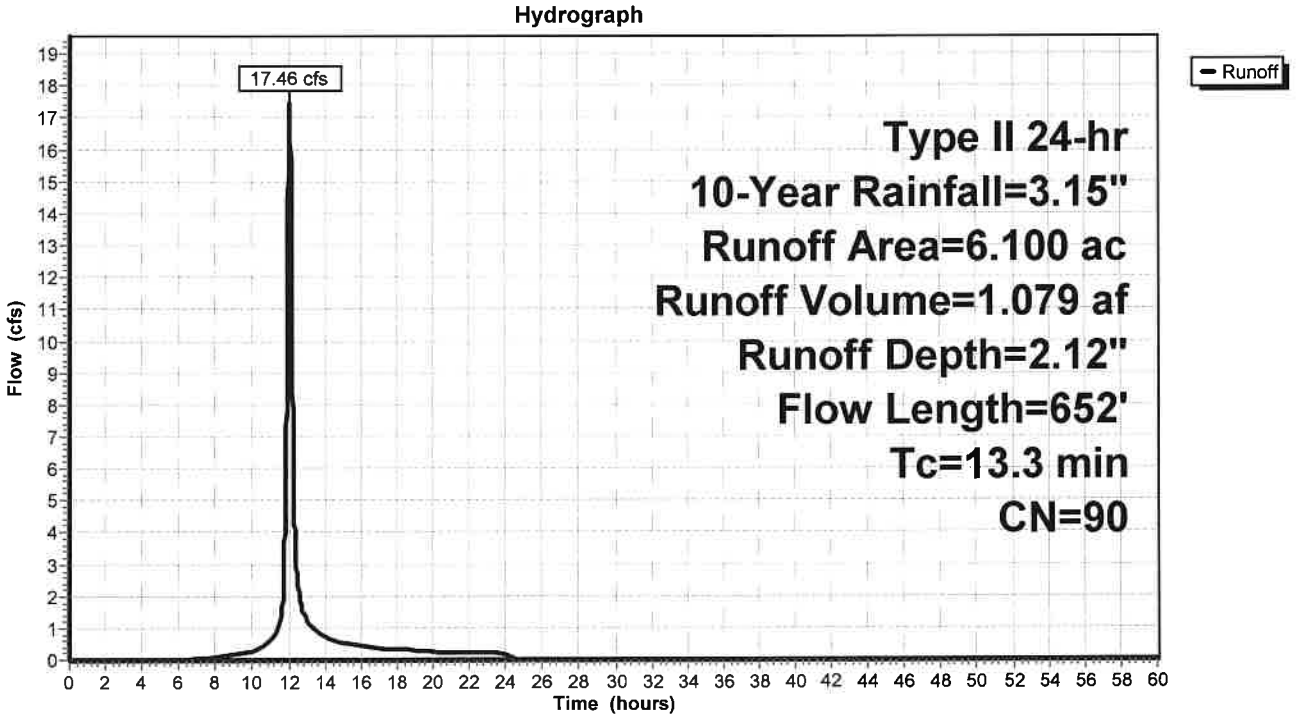
Runoff = 17.46 cfs @ 12.05 hrs, Volume= 1.079 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.07	0.00	0.00
3.00	0.11	0.00	0.00
4.00	0.15	0.00	0.00
5.00	0.20	0.00	0.00
6.00	0.25	0.00	0.01
7.00	0.31	0.01	0.05
8.00	0.38	0.02	0.09
9.00	0.46	0.04	0.18
10.00	0.57	0.08	0.28
11.00	0.74	0.16	0.63
12.00	2.09	1.17	**15.84**
13.00	2.43	1.47	**1.23**
14.00	2.58	1.61	0.71
15.00	2.69	1.70	0.55
16.00	2.77	1.78	0.43
17.00	2.84	1.84	0.37
18.00	2.90	1.89	0.33
19.00	2.95	1.94	0.28
20.00	3.00	1.98	0.24
21.00	3.04	2.02	0.22
22.00	3.08	2.06	0.22
23.00	3.11	2.09	0.21
24.00	**3.15**	**2.12**	0.20
25.00	3.15	2.12	0.00
26.00	3.15	2.12	0.00
27.00	3.15	2.12	0.00
28.00	3.15	2.12	0.00
29.00	3.15	2.12	0.00
30.00	3.15	2.12	0.00
31.00	3.15	2.12	0.00
32.00	3.15	2.12	0.00
33.00	3.15	2.12	0.00
34.00	3.15	2.12	0.00
35.00	3.15	2.12	0.00
36.00	3.15	2.12	0.00
37.00	3.15	2.12	0.00
38.00	3.15	2.12	0.00
39.00	3.15	2.12	0.00
40.00	3.15	2.12	0.00
41.00	3.15	2.12	0.00
42.00	3.15	2.12	0.00
43.00	3.15	2.12	0.00
44.00	3.15	2.12	0.00
45.00	3.15	2.12	0.00
46.00	3.15	2.12	0.00
47.00	3.15	2.12	0.00
48.00	3.15	2.12	0.00
49.00	3.15	2.12	0.00
50.00	3.15	2.12	0.00
51.00	3.15	2.12	0.00
52.00	3.15	2.12	0.00
53.00	3.15	2.12	0.00
54.00	3.15	2.12	0.00
55.00	3.15	2.12	0.00
56.00	3.15	2.12	0.00
57.00	3.15	2.12	0.00
58.00	3.15	2.12	0.00
59.00	3.15	2.12	0.00
60.00	3.15	2.12	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

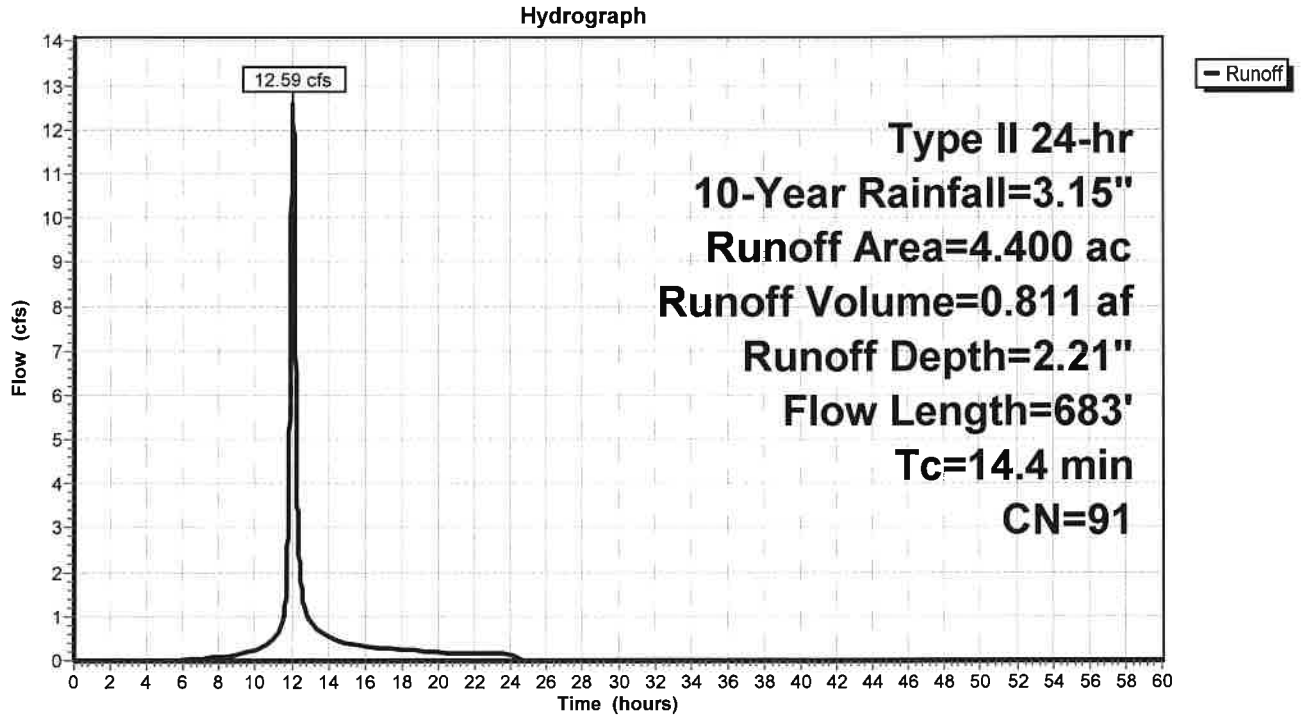
Runoff = 12.59 cfs @ 12.06 hrs, Volume= 0.811 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.07	0.00	0.00
3.00	0.11	0.00	0.00
4.00	0.15	0.00	0.00
5.00	0.20	0.00	0.00
6.00	0.25	0.00	0.02
7.00	0.31	0.01	0.05
8.00	0.38	0.03	0.08
9.00	0.46	0.06	0.15
10.00	0.57	0.10	0.23
11.00	0.74	0.19	0.49
12.00	2.09	1.24	**11.04**
13.00	2.43	1.55	**0.92**
14.00	2.58	1.69	0.53
15.00	2.69	1.78	0.40
16.00	2.77	1.86	0.32
17.00	2.84	1.92	0.27
18.00	2.90	1.98	0.24
19.00	2.95	2.03	0.21
20.00	3.00	2.07	0.18
21.00	3.04	2.11	0.16
22.00	3.08	2.14	0.16
23.00	3.11	2.18	0.15
24.00	**3.15**	**2.21**	0.15
25.00	3.15	2.21	0.00
26.00	3.15	2.21	0.00
27.00	3.15	2.21	0.00
28.00	3.15	2.21	0.00
29.00	3.15	2.21	0.00
30.00	3.15	2.21	0.00
31.00	3.15	2.21	0.00
32.00	3.15	2.21	0.00
33.00	3.15	2.21	0.00
34.00	3.15	2.21	0.00
35.00	3.15	2.21	0.00
36.00	3.15	2.21	0.00
37.00	3.15	2.21	0.00
38.00	3.15	2.21	0.00
39.00	3.15	2.21	0.00
40.00	3.15	2.21	0.00
41.00	3.15	2.21	0.00
42.00	3.15	2.21	0.00
43.00	3.15	2.21	0.00
44.00	3.15	2.21	0.00
45.00	3.15	2.21	0.00
46.00	3.15	2.21	0.00
47.00	3.15	2.21	0.00
48.00	3.15	2.21	0.00
49.00	3.15	2.21	0.00
50.00	3.15	2.21	0.00
51.00	3.15	2.21	0.00
52.00	3.15	2.21	0.00
53.00	3.15	2.21	0.00
54.00	3.15	2.21	0.00
55.00	3.15	2.21	0.00
56.00	3.15	2.21	0.00
57.00	3.15	2.21	0.00
58.00	3.15	2.21	0.00
59.00	3.15	2.21	0.00
60.00	3.15	2.21	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 2.12" for 10-Year event
Inflow = 17.46 cfs @ 12.05 hrs, Volume= 1.079 af
Outflow = 16.45 cfs @ 12.09 hrs, Volume= 1.079 af, Atten= 6%, Lag= 2.3 min
Primary = 2.85 cfs @ 12.09 hrs, Volume= 0.765 af
Secondary = 13.60 cfs @ 12.09 hrs, Volume= 0.314 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.04' @ 12.09 hrs Surf.Area= 9,976 sf Storage= 9,672 cf

Plug-Flow detention time= 160.8 min calculated for 1.079 af (100% of inflow)
Center-of-Mass det. time= 160.7 min (971.9 - 811.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

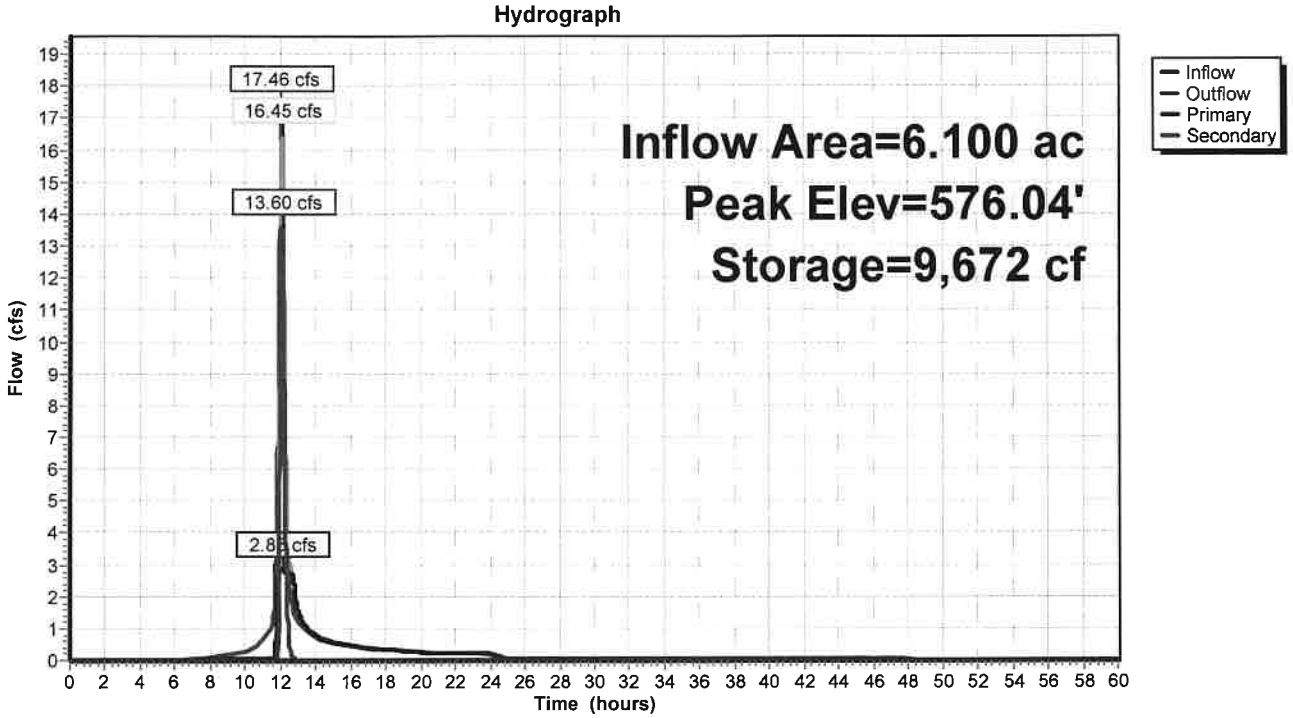
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.85 cfs @ 12.09 hrs HW=576.04' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.85 cfs @ 8.17 fps)
  ├**2=Grate** (Passes < 4.93 cfs potential flow)
  └**3=Exfiltration** (Passes < 0.06 cfs potential flow)

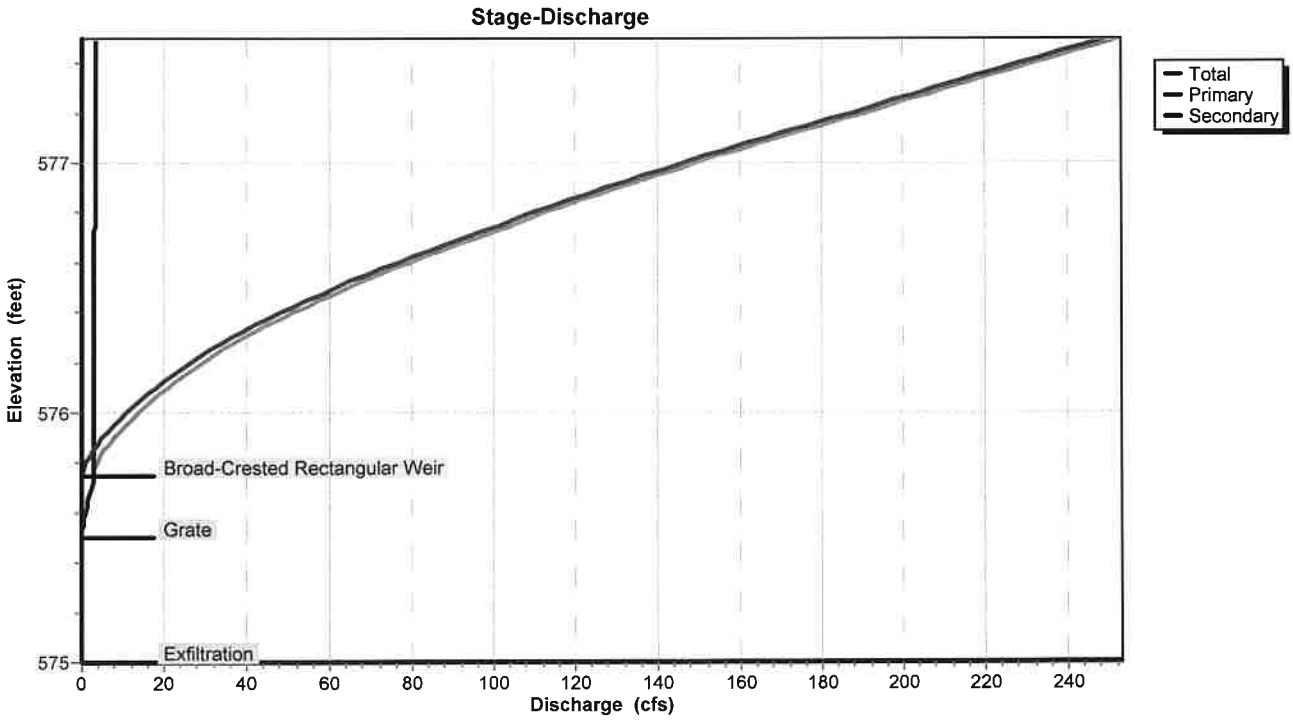
Secondary OutFlow Max=13.58 cfs @ 12.09 hrs HW=576.04' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 13.58 cfs @ 1.57 fps)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

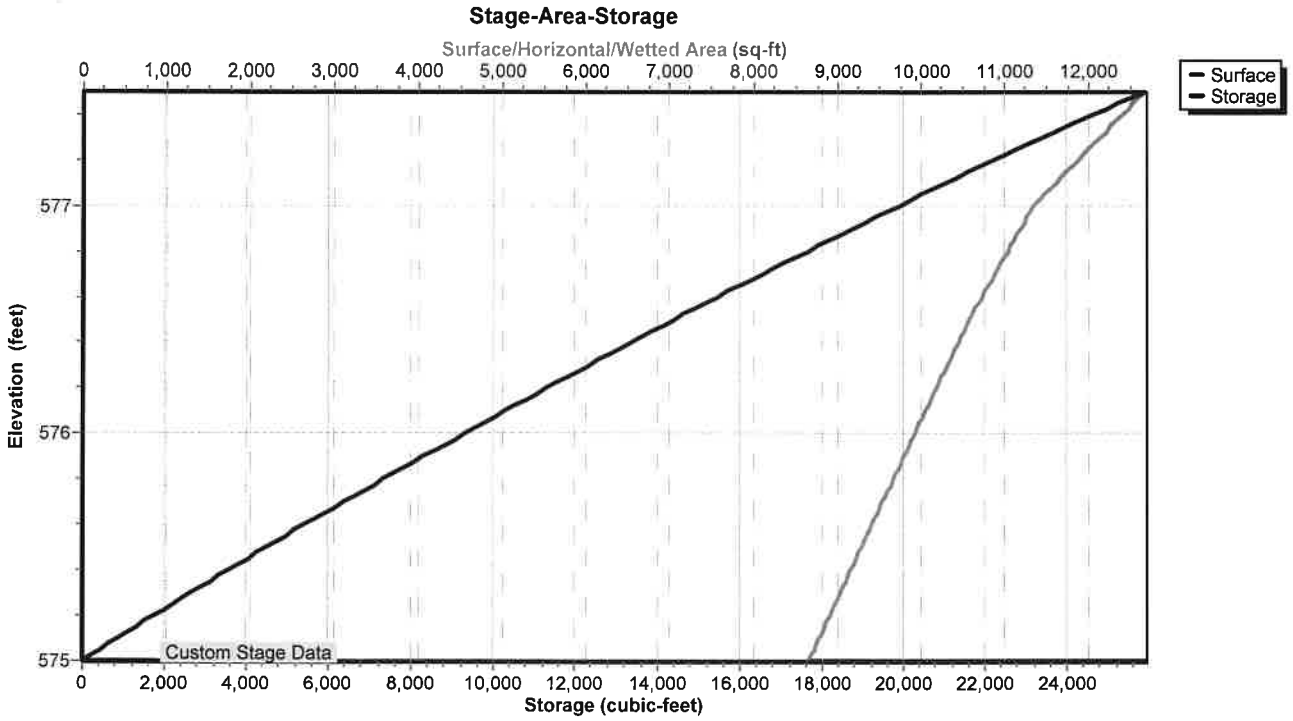


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.01	6	575.00	0.00	0.00	0.00
8.00	0.09	207	575.02	0.05	0.05	0.00
10.00	0.28	1,102	575.13	0.05	0.05	0.00
12.00	**15.84**	**9,006**	**575.97**	**11.97**	**2.82**	**9.15**
14.00	**0.71**	**5,320**	**575.59**	**0.79**	**0.79**	**0.00**
16.00	0.43	5,039	575.56	0.46	0.46	0.00
18.00	0.33	4,925	575.55	0.34	0.34	0.00
20.00	0.24	4,823	575.54	0.25	0.25	0.00
22.00	0.22	4,781	575.53	0.22	0.22	0.00
24.00	0.20	4,760	575.53	0.20	0.20	0.00
26.00	0.00	4,270	575.48	0.06	0.06	0.00
28.00	0.00	3,874	575.43	0.05	0.05	0.00
30.00	0.00	3,482	575.39	0.05	0.05	0.00
32.00	0.00	3,093	575.35	0.05	0.05	0.00
34.00	0.00	2,707	575.31	0.05	0.05	0.00
36.00	0.00	2,324	575.26	0.05	0.05	0.00
38.00	0.00	1,945	575.22	0.05	0.05	0.00
40.00	0.00	1,569	575.18	0.05	0.05	0.00
42.00	0.00	1,197	575.14	0.05	0.05	0.00
44.00	0.00	828	575.10	0.05	0.05	0.00
46.00	0.00	461	575.05	0.05	0.05	0.00
48.00	0.00	126	575.01	0.03	0.03	0.00
50.00	0.00	24	575.00	0.01	0.01	0.00
52.00	0.00	4	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 3.07" for 10-Year event
Inflow = 26.01 cfs @ 12.08 hrs, Volume= 1.125 af
Outflow = 0.47 cfs @ 14.32 hrs, Volume= 0.892 af, Atten= 98%, Lag= 134.6 min
Primary = 0.47 cfs @ 14.32 hrs, Volume= 0.892 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.60' @ 14.32 hrs Surf.Area= 63,820 sf Storage= 37,117 cf

Plug-Flow detention time= 942.6 min calculated for 0.892 af (79% of inflow)
Center-of-Mass det. time= 874.9 min (1,660.4 - 785.4)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

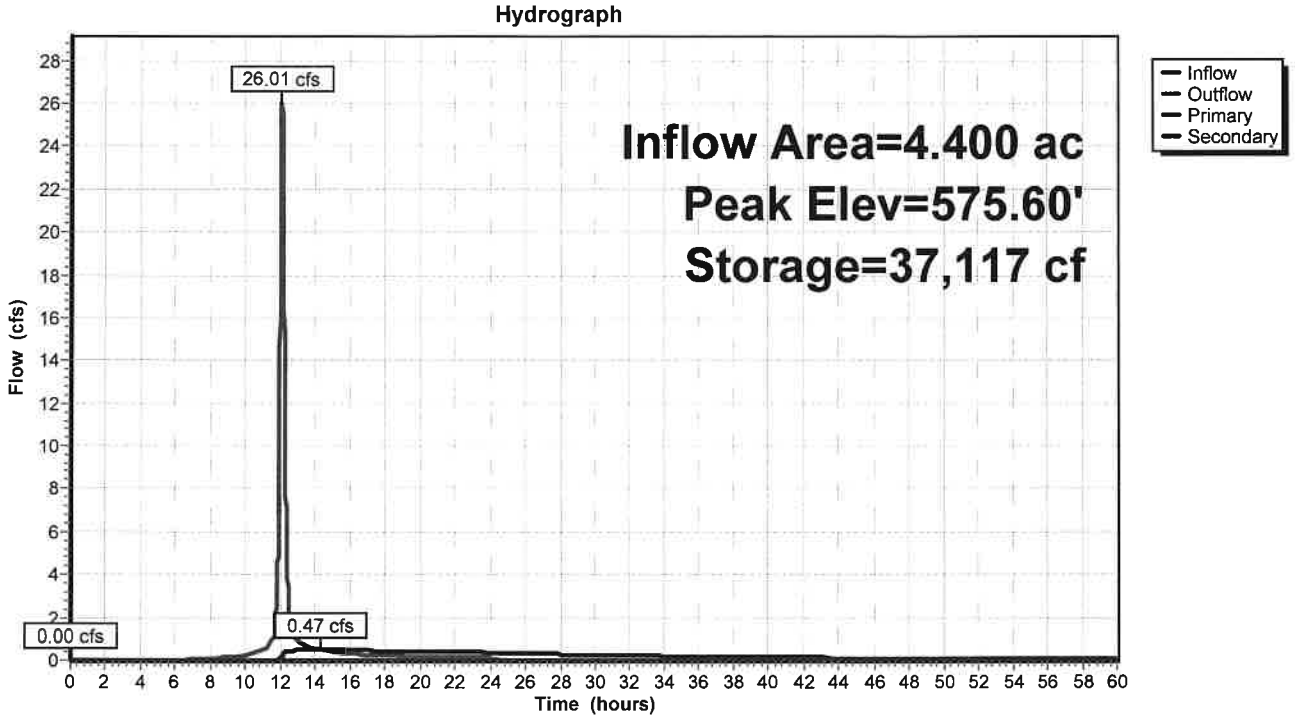
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.47 cfs @ 14.32 hrs HW=575.60' (Free Discharge)
└**1=12" outlet pipe** (Passes 0.47 cfs of 2.23 cfs potential flow)
  ├**2=low flow outlet pipe** (Barrel Controls 0.47 cfs @ 2.50 fps)
  └**3=Grate** (Controls 0.00 cfs)

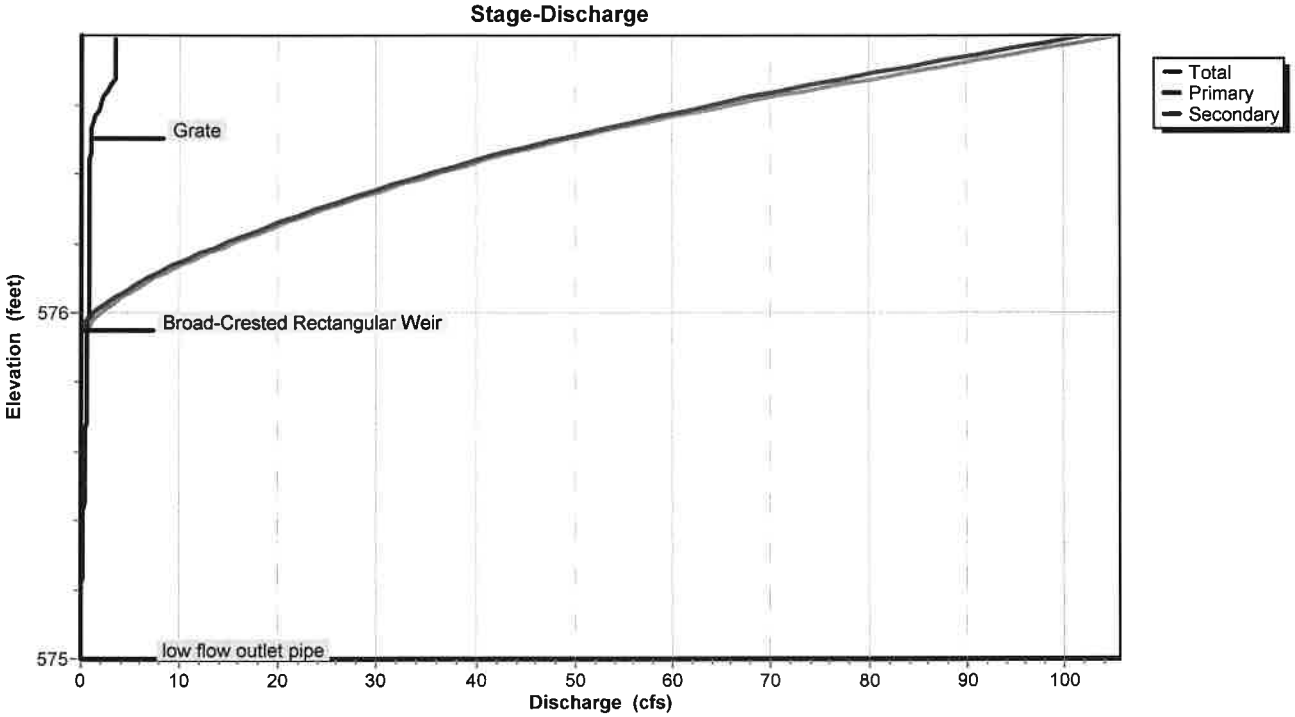
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

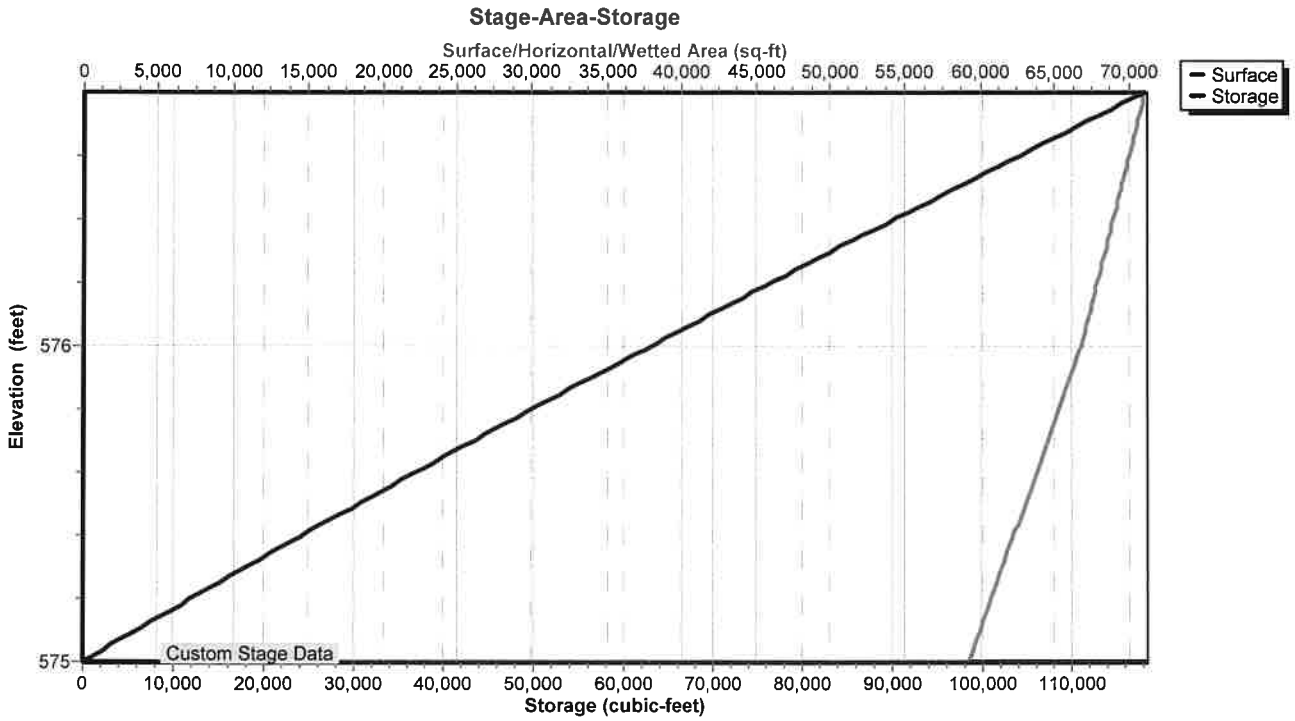


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.02	28	575.00	0.00	0.00	0.00
8.00	0.08	376	575.01	0.00	0.00	0.00
10.00	0.23	1,427	575.02	0.00	0.00	0.00
12.00	**20.19**	11,922	575.20	0.08	0.08	0.00
14.00	**0.53**	**37,087**	**575.60**	**0.47**	**0.47**	0.00
16.00	0.32	**36,669**	**575.60**	**0.46**	**0.46**	0.00
18.00	0.24	35,374	575.58	0.44	0.44	0.00
20.00	0.18	33,764	575.55	0.42	0.42	0.00
22.00	0.16	32,024	575.52	0.39	0.39	0.00
24.00	0.15	30,385	575.50	0.37	0.37	0.00
26.00	0.00	28,005	575.46	0.33	0.33	0.00
28.00	0.00	25,794	575.42	0.29	0.29	0.00
30.00	0.00	23,836	575.39	0.26	0.26	0.00
32.00	0.00	22,102	575.36	0.23	0.23	0.00
34.00	0.00	20,561	575.34	0.20	0.20	0.00
36.00	0.00	19,188	575.32	0.18	0.18	0.00
38.00	0.00	17,961	575.30	0.16	0.16	0.00
40.00	0.00	16,860	575.28	0.14	0.14	0.00
42.00	0.00	15,870	575.26	0.13	0.13	0.00
44.00	0.00	14,975	575.25	0.12	0.12	0.00
46.00	0.00	14,165	575.24	0.11	0.11	0.00
48.00	0.00	13,428	575.22	0.10	0.10	0.00
50.00	0.00	12,756	575.21	0.09	0.09	0.00
52.00	0.00	12,141	575.20	0.08	0.08	0.00
54.00	0.00	11,578	575.19	0.08	0.08	0.00
56.00	0.00	11,059	575.18	0.07	0.07	0.00
58.00	0.00	10,581	575.18	0.06	0.06	0.00
60.00	0.00	10,139	575.17	0.06	0.06	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

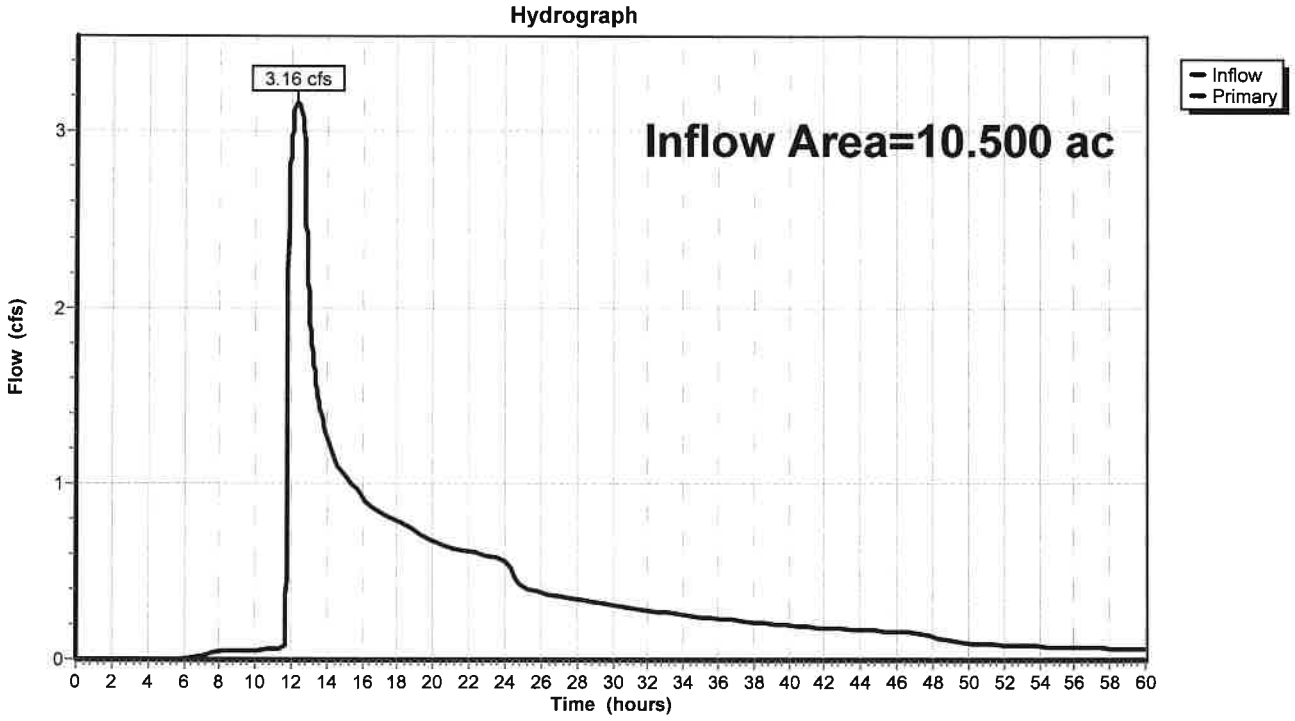
Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 1.89" for 10-Year event
Inflow = 3.16 cfs @ 12.39 hrs, Volume= 1.657 af
Primary = 3.16 cfs @ 12.39 hrs, Volume= 1.657 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.08	0.00	0.08
1.00	0.00	0.00	0.00	53.00	0.08	0.00	0.08
2.00	0.00	0.00	0.00	54.00	0.08	0.00	0.08
3.00	0.00	0.00	0.00	55.00	0.07	0.00	0.07
4.00	0.00	0.00	0.00	56.00	0.07	0.00	0.07
5.00	0.00	0.00	0.00	57.00	0.07	0.00	0.07
6.00	0.00	0.00	0.00	58.00	0.06	0.00	0.06
7.00	0.02	0.00	0.02	59.00	0.06	0.00	0.06
8.00	0.05	0.00	0.05	60.00	0.06	0.00	0.06
9.00	0.05	0.00	0.05				
10.00	0.05	0.00	0.05				
11.00	0.06	0.00	0.06				
12.00	**2.90**	0.00	**2.90**				
13.00	**2.02**	0.00	**2.02**				
14.00	1.26	0.00	1.26				
15.00	1.05	0.00	1.05				
16.00	0.92	0.00	0.92				
17.00	0.84	0.00	0.84				
18.00	0.78	0.00	0.78				
19.00	0.73	0.00	0.73				
20.00	0.67	0.00	0.67				
21.00	0.63	0.00	0.63				
22.00	0.61	0.00	0.61				
23.00	0.59	0.00	0.59				
24.00	0.57	0.00	0.57				
25.00	0.40	0.00	0.40				
26.00	0.38	0.00	0.38				
27.00	0.36	0.00	0.36				
28.00	0.34	0.00	0.34				
29.00	0.33	0.00	0.33				
30.00	0.31	0.00	0.31				
31.00	0.29	0.00	0.29				
32.00	0.28	0.00	0.28				
33.00	0.27	0.00	0.27				
34.00	0.26	0.00	0.26				
35.00	0.24	0.00	0.24				
36.00	0.23	0.00	0.23				
37.00	0.22	0.00	0.22				
38.00	0.21	0.00	0.21				
39.00	0.20	0.00	0.20				
40.00	0.20	0.00	0.20				
41.00	0.19	0.00	0.19				
42.00	0.18	0.00	0.18				
43.00	0.18	0.00	0.18				
44.00	0.17	0.00	0.17				
45.00	0.16	0.00	0.16				
46.00	0.16	0.00	0.16				
47.00	0.15	0.00	0.15				
48.00	0.13	0.00	0.13				
49.00	0.11	0.00	0.11				
50.00	0.09	0.00	0.09				
51.00	0.09	0.00	0.09				

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=2.80"
Flow Length=652' Tc=13.3 min CN=90 Runoff=22.74 cfs 1.421 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=2.89"
Flow Length=683' Tc=14.4 min CN=91 Runoff=16.27 cfs 1.061 af

Pond 1P: Bioretention Area 3 Peak Elev=576.11' Storage=10,375 cf Inflow=22.74 cfs 1.421 af
Primary=2.89 cfs 0.934 af Secondary=18.84 cfs 0.487 af Outflow=21.73 cfs 1.421 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.83' Storage=51,963 cf Inflow=34.94 cfs 1.548 af
Primary=0.64 cfs 1.276 af Secondary=0.00 cfs 0.000 af Outflow=0.64 cfs 1.276 af

Link 5L: Outflow (@ CB 54) Inflow=3.36 cfs 2.210 af
Primary=3.36 cfs 2.210 af

Total Runoff Area = 10.500 ac Runoff Volume = 2.482 af Average Runoff Depth = 2.84"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

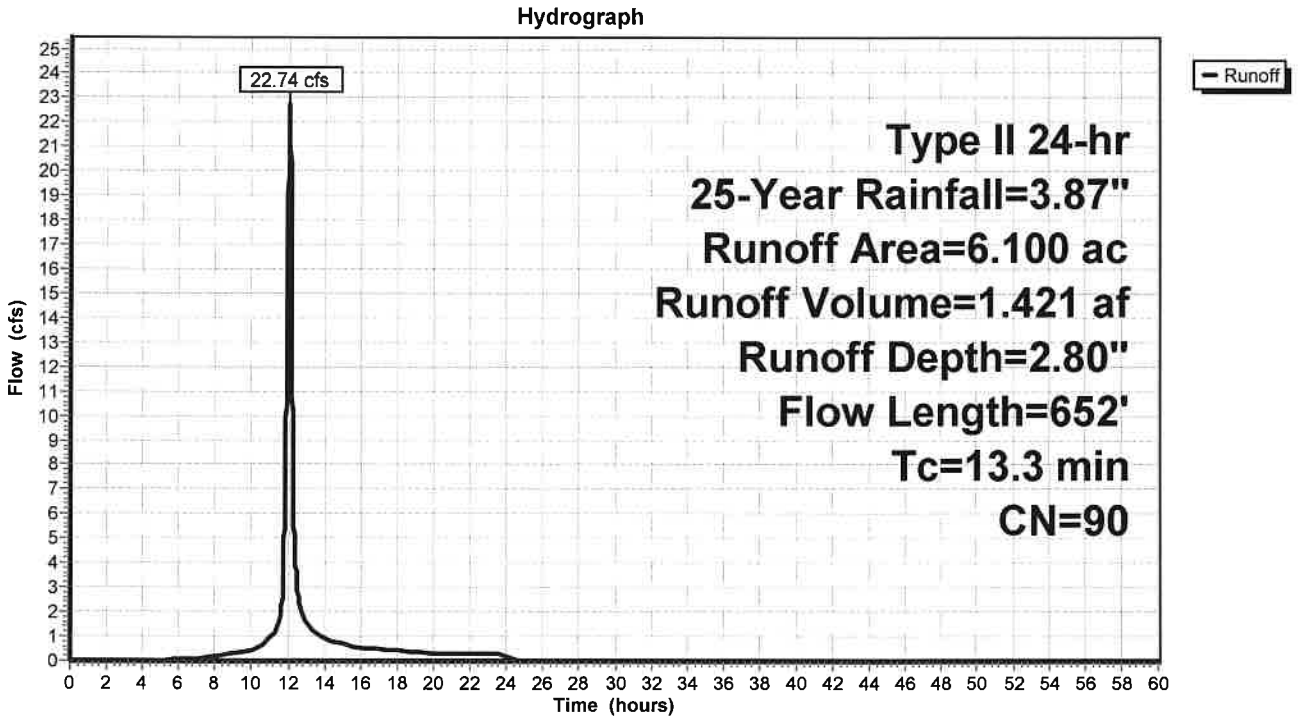
Runoff = 22.74 cfs @ 12.05 hrs, Volume= 1.421 af, Depth= 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.04	0.00	0.00
2.00	0.09	0.00	0.00
3.00	0.13	0.00	0.00
4.00	0.19	0.00	0.00
5.00	0.24	0.00	0.01
6.00	0.31	0.01	0.05
7.00	0.38	0.02	0.10
8.00	0.46	0.04	0.16
9.00	0.57	0.08	0.28
10.00	0.70	0.14	0.43
11.00	0.91	0.26	0.90
12.00	2.57	1.59	**20.75**
13.00	2.99	1.97	**1.57**
14.00	3.17	2.14	0.90
15.00	3.30	2.26	0.70
16.00	3.41	2.36	0.54
17.00	3.49	2.44	0.47
18.00	3.56	2.51	0.41
19.00	3.63	2.57	0.36
20.00	3.68	2.62	0.30
21.00	3.73	2.67	0.28
22.00	3.78	2.71	0.27
23.00	3.83	2.75	0.26
24.00	**3.87**	**2.80**	0.25
25.00	3.87	2.80	0.00
26.00	3.87	2.80	0.00
27.00	3.87	2.80	0.00
28.00	3.87	2.80	0.00
29.00	3.87	2.80	0.00
30.00	3.87	2.80	0.00
31.00	3.87	2.80	0.00
32.00	3.87	2.80	0.00
33.00	3.87	2.80	0.00
34.00	3.87	2.80	0.00
35.00	3.87	2.80	0.00
36.00	3.87	2.80	0.00
37.00	3.87	2.80	0.00
38.00	3.87	2.80	0.00
39.00	3.87	2.80	0.00
40.00	3.87	2.80	0.00
41.00	3.87	2.80	0.00
42.00	3.87	2.80	0.00
43.00	3.87	2.80	0.00
44.00	3.87	2.80	0.00
45.00	3.87	2.80	0.00
46.00	3.87	2.80	0.00
47.00	3.87	2.80	0.00
48.00	3.87	2.80	0.00
49.00	3.87	2.80	0.00
50.00	3.87	2.80	0.00
51.00	3.87	2.80	0.00
52.00	3.87	2.80	0.00
53.00	3.87	2.80	0.00
54.00	3.87	2.80	0.00
55.00	3.87	2.80	0.00
56.00	3.87	2.80	0.00
57.00	3.87	2.80	0.00
58.00	3.87	2.80	0.00
59.00	3.87	2.80	0.00
60.00	3.87	2.80	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

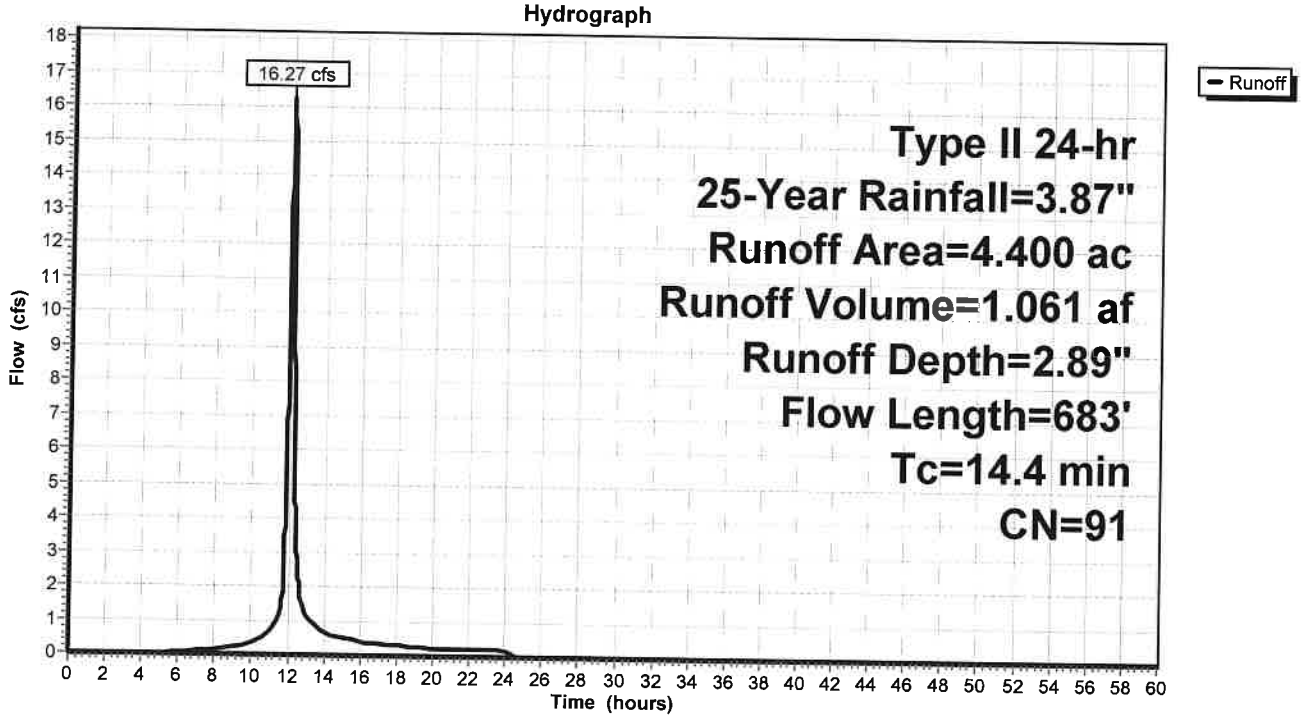
Runoff = 16.27 cfs @ 12.06 hrs, Volume= 1.061 af, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.04	0.00	0.00
2.00	0.09	0.00	0.00
3.00	0.13	0.00	0.00
4.00	0.19	0.00	0.00
5.00	0.24	0.00	0.02
6.00	0.31	0.01	0.05
7.00	0.38	0.03	0.09
8.00	0.46	0.06	0.13
9.00	0.57	0.10	0.23
10.00	0.70	0.17	0.34
11.00	0.91	0.30	0.69
12.00	2.57	1.67	**14.36**
13.00	2.99	2.06	**1.16**
14.00	3.17	2.23	0.67
15.00	3.30	2.36	0.51
16.00	3.41	2.45	0.40
17.00	3.49	2.53	0.34
18.00	3.56	2.60	0.30
19.00	3.63	2.66	0.26
20.00	3.68	2.72	0.22
21.00	3.73	2.76	0.21
22.00	3.78	2.81	0.20
23.00	3.83	2.85	0.19
24.00	**3.87**	**2.89**	0.18
25.00	3.87	2.89	0.00
26.00	3.87	2.89	0.00
27.00	3.87	2.89	0.00
28.00	3.87	2.89	0.00
29.00	3.87	2.89	0.00
30.00	3.87	2.89	0.00
31.00	3.87	2.89	0.00
32.00	3.87	2.89	0.00
33.00	3.87	2.89	0.00
34.00	3.87	2.89	0.00
35.00	3.87	2.89	0.00
36.00	3.87	2.89	0.00
37.00	3.87	2.89	0.00
38.00	3.87	2.89	0.00
39.00	3.87	2.89	0.00
40.00	3.87	2.89	0.00
41.00	3.87	2.89	0.00
42.00	3.87	2.89	0.00
43.00	3.87	2.89	0.00
44.00	3.87	2.89	0.00
45.00	3.87	2.89	0.00
46.00	3.87	2.89	0.00
47.00	3.87	2.89	0.00
48.00	3.87	2.89	0.00
49.00	3.87	2.89	0.00
50.00	3.87	2.89	0.00
51.00	3.87	2.89	0.00
52.00	3.87	2.89	0.00
53.00	3.87	2.89	0.00
54.00	3.87	2.89	0.00
55.00	3.87	2.89	0.00
56.00	3.87	2.89	0.00
57.00	3.87	2.89	0.00
58.00	3.87	2.89	0.00
59.00	3.87	2.89	0.00
60.00	3.87	2.89	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 2.80" for 25-Year event
Inflow = 22.74 cfs @ 12.05 hrs, Volume= 1.421 af
Outflow = 21.73 cfs @ 12.08 hrs, Volume= 1.421 af, Atten= 4%, Lag= 2.0 min
Primary = 2.89 cfs @ 12.08 hrs, Volume= 0.934 af
Secondary = 18.84 cfs @ 12.08 hrs, Volume= 0.487 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.11' @ 12.08 hrs Surf.Area= 10,069 sf Storage= 10,375 cf

Plug-Flow detention time= 127.9 min calculated for 1.421 af (100% of inflow)
Center-of-Mass det. time= 128.1 min (931.5 - 803.4)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

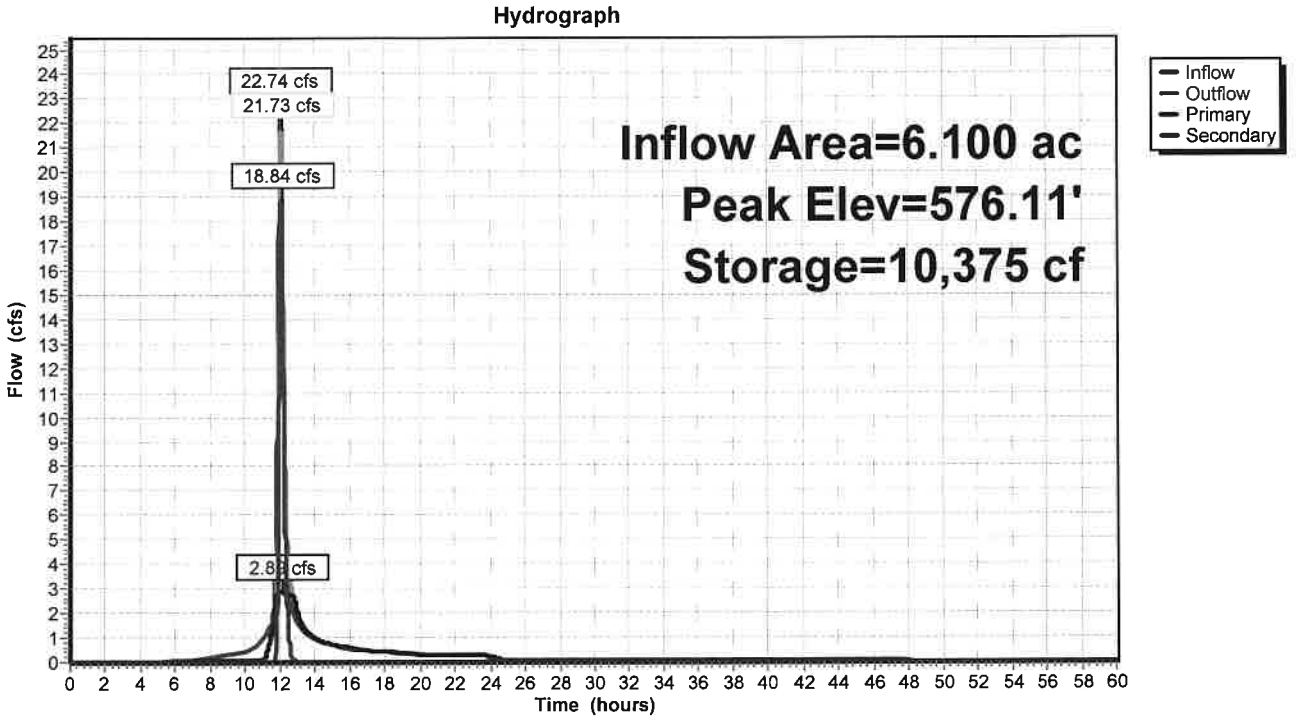
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.89 cfs @ 12.08 hrs HW=576.11' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.89 cfs @ 8.27 fps)
  └**2=Grate** (Passes < 5.25 cfs potential flow)
  └**3=Exfiltration** (Passes < 0.06 cfs potential flow)

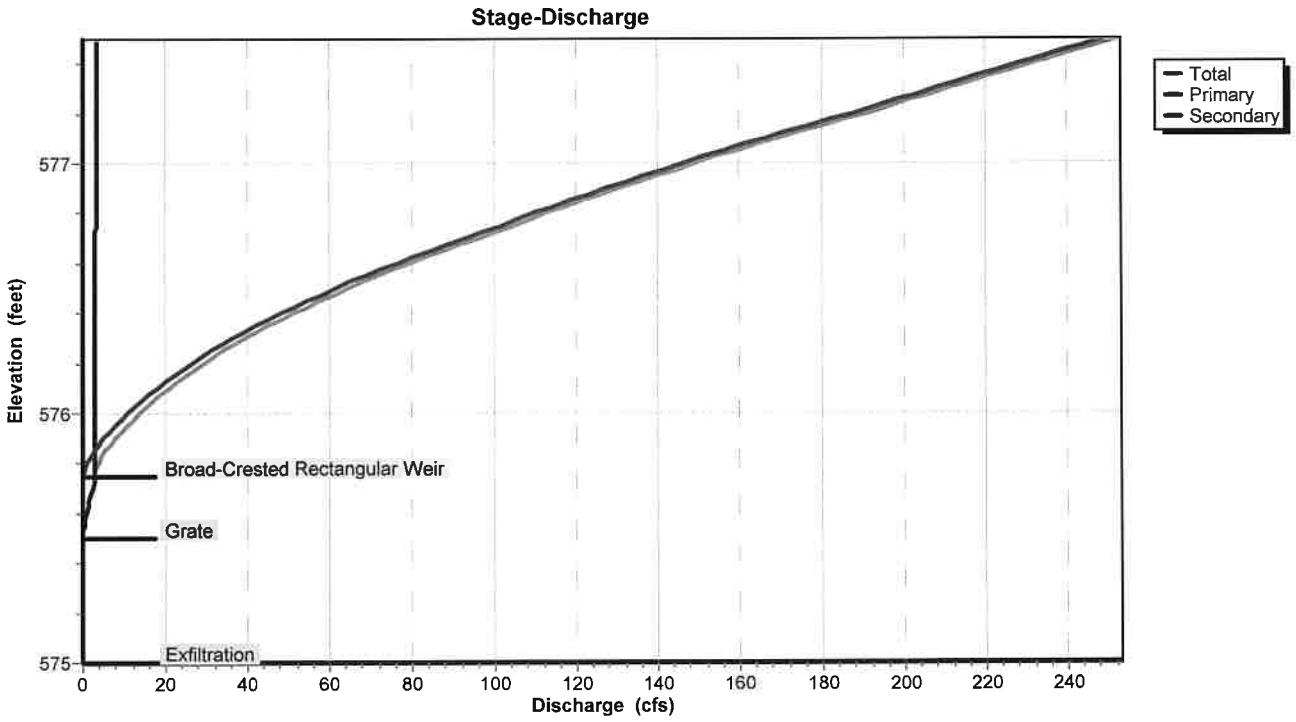
Secondary OutFlow Max=18.83 cfs @ 12.08 hrs HW=576.11' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 18.83 cfs @ 1.75 fps)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

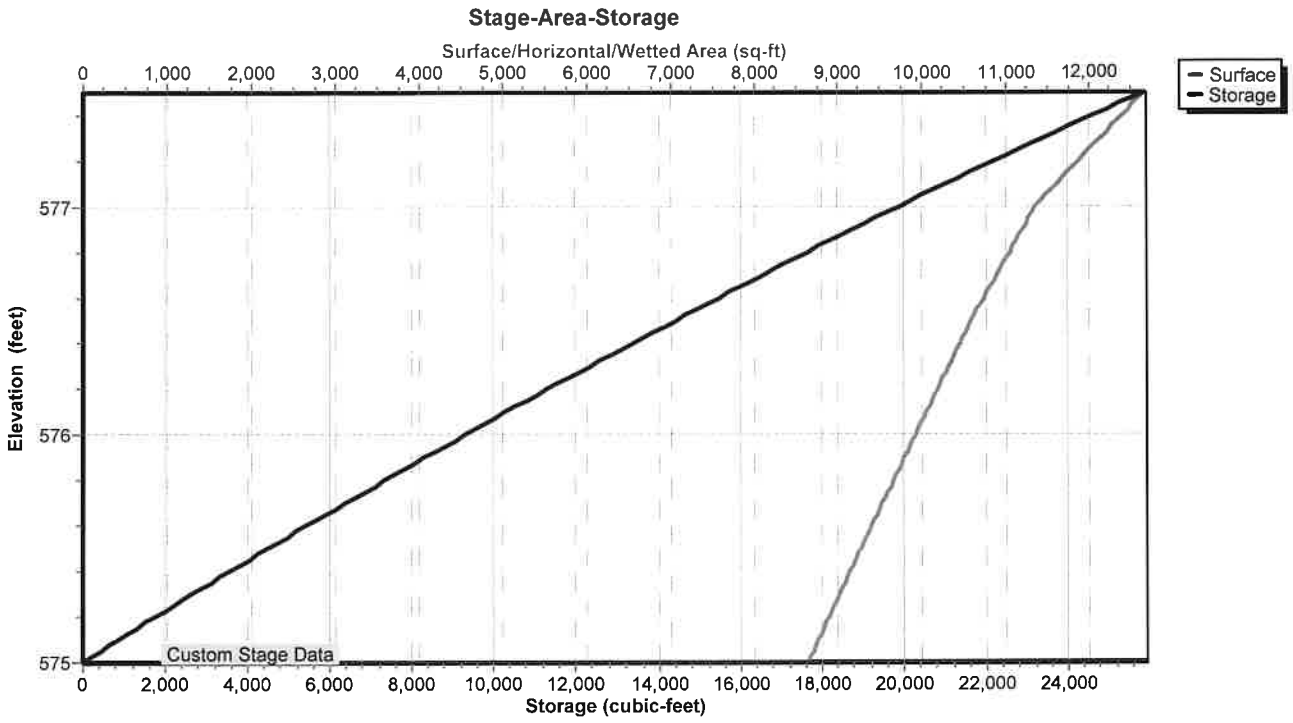


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.05	75	575.01	0.02	0.02	0.00
8.00	0.16	510	575.06	0.05	0.05	0.00
10.00	0.43	2,153	575.24	0.05	0.05	0.00
12.00	**20.75**	**9,748**	**576.05**	**16.99**	**2.86**	**14.14**
14.00	**0.90**	**5,469**	**575.61**	**1.00**	**1.00**	**0.00**
16.00	0.54	5,148	575.57	0.58	0.58	0.00
18.00	0.41	5,009	575.56	0.43	0.43	0.00
20.00	0.30	4,900	575.54	0.32	0.32	0.00
22.00	0.27	4,847	575.54	0.28	0.28	0.00
24.00	0.25	4,821	575.54	0.25	0.25	0.00
26.00	0.00	4,285	575.48	0.06	0.06	0.00
28.00	0.00	3,889	575.44	0.05	0.05	0.00
30.00	0.00	3,497	575.39	0.05	0.05	0.00
32.00	0.00	3,108	575.35	0.05	0.05	0.00
34.00	0.00	2,722	575.31	0.05	0.05	0.00
36.00	0.00	2,339	575.27	0.05	0.05	0.00
38.00	0.00	1,960	575.22	0.05	0.05	0.00
40.00	0.00	1,584	575.18	0.05	0.05	0.00
42.00	0.00	1,211	575.14	0.05	0.05	0.00
44.00	0.00	842	575.10	0.05	0.05	0.00
46.00	0.00	475	575.05	0.05	0.05	0.00
48.00	0.00	134	575.02	0.03	0.03	0.00
50.00	0.00	25	575.00	0.01	0.01	0.00
52.00	0.00	5	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 4.22" for 25-Year event
Inflow = 34.94 cfs @ 12.07 hrs, Volume= 1.548 af
Outflow = 0.64 cfs @ 14.10 hrs, Volume= 1.276 af, Atten= 98%, Lag= 121.4 min
Primary = 0.64 cfs @ 14.10 hrs, Volume= 1.276 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.83' @ 14.10 hrs Surf.Area= 65,573 sf Storage= 51,963 cf

Plug-Flow detention time= 951.6 min calculated for 1.276 af (82% of inflow)
Center-of-Mass det. time= 890.6 min (1,667.8 - 777.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

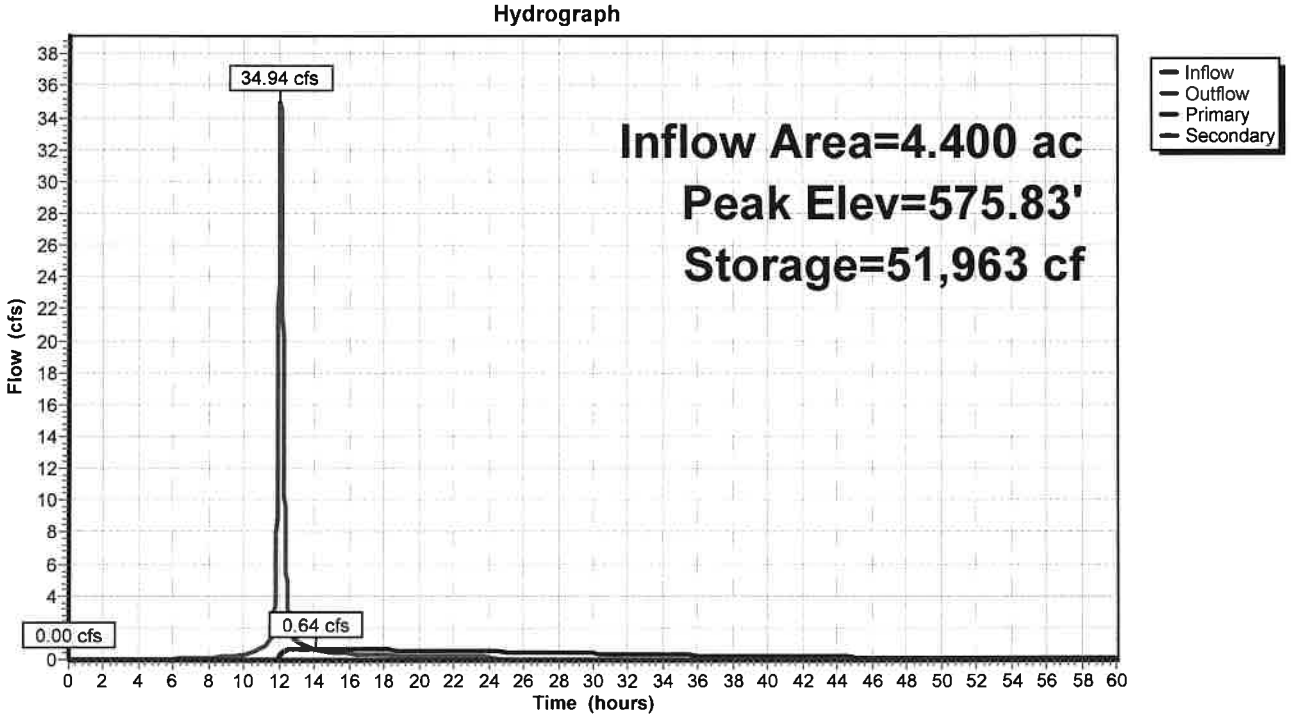
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.64 cfs @ 14.10 hrs HW=575.83' (Free Discharge)
↑—**1=12" outlet pipe** (Passes 0.64 cfs of 2.52 cfs potential flow)
↑—**2=low flow outlet pipe** (Inlet Controls 0.64 cfs @ 3.24 fps)
—**3=Grate** (Controls 0.00 cfs)

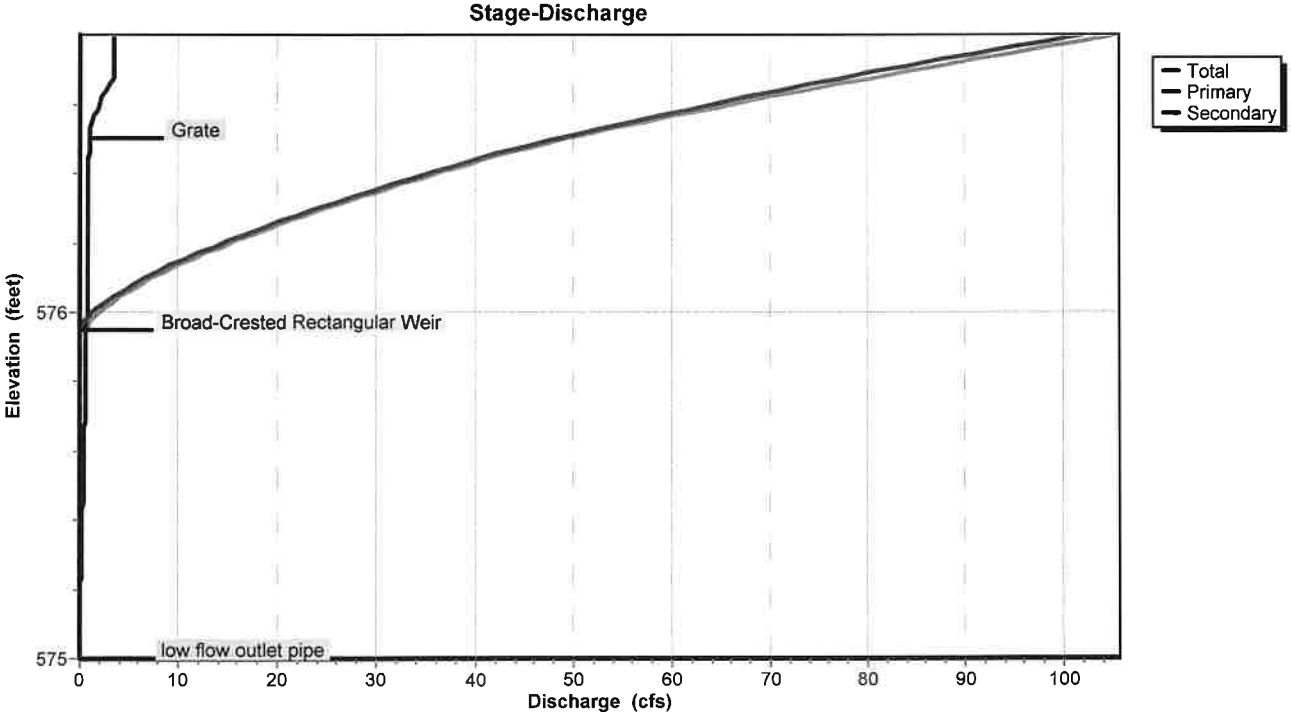
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
↑—**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

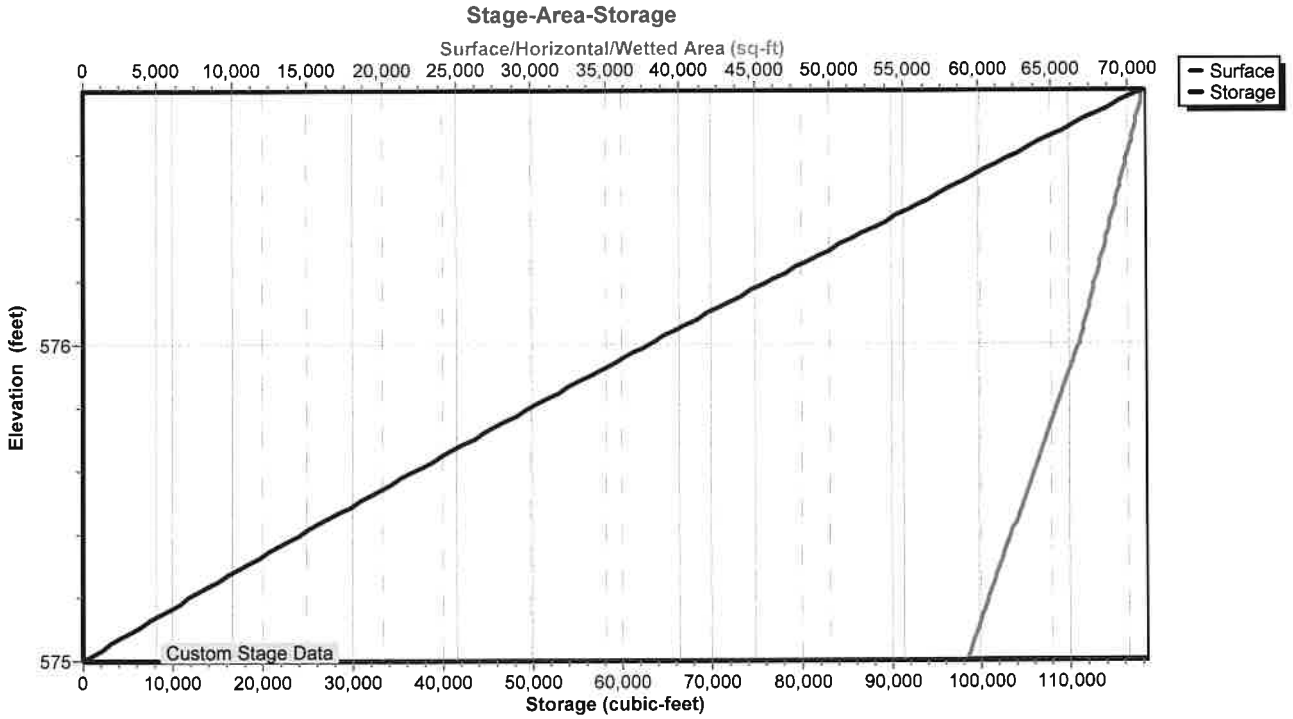


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.05	138	575.00	0.00	0.00	0.00
8.00	0.13	792	575.01	0.00	0.00	0.00
10.00	0.34	2,407	575.04	0.00	0.00	0.00
12.00	**28.50**	18,305	575.30	0.17	0.17	0.00
14.00	**0.67**	**51,959**	**575.83**	**0.64**	**0.64**	0.00
16.00	0.40	**51,083**	**575.82**	**0.63**	**0.63**	0.00
18.00	0.30	49,081	575.79	0.61	0.61	0.00
20.00	0.22	46,637	575.75	0.59	0.59	0.00
22.00	0.20	44,041	575.71	0.55	0.55	0.00
24.00	0.18	41,619	575.67	0.51	0.51	0.00
26.00	0.00	38,209	575.62	0.48	0.48	0.00
28.00	0.00	34,905	575.57	0.44	0.44	0.00
30.00	0.00	31,923	575.52	0.39	0.39	0.00
32.00	0.00	29,266	575.48	0.35	0.35	0.00
34.00	0.00	26,910	575.44	0.31	0.31	0.00
36.00	0.00	24,824	575.41	0.27	0.27	0.00
38.00	0.00	22,978	575.38	0.24	0.24	0.00
40.00	0.00	21,340	575.35	0.21	0.21	0.00
42.00	0.00	19,882	575.33	0.19	0.19	0.00
44.00	0.00	18,582	575.31	0.17	0.17	0.00
46.00	0.00	17,418	575.29	0.15	0.15	0.00
48.00	0.00	16,372	575.27	0.14	0.14	0.00
50.00	0.00	15,429	575.26	0.12	0.12	0.00
52.00	0.00	14,576	575.24	0.11	0.11	0.00
54.00	0.00	13,802	575.23	0.10	0.10	0.00
56.00	0.00	13,098	575.22	0.09	0.09	0.00
58.00	0.00	12,454	575.21	0.09	0.09	0.00
60.00	0.00	11,865	575.20	0.08	0.08	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

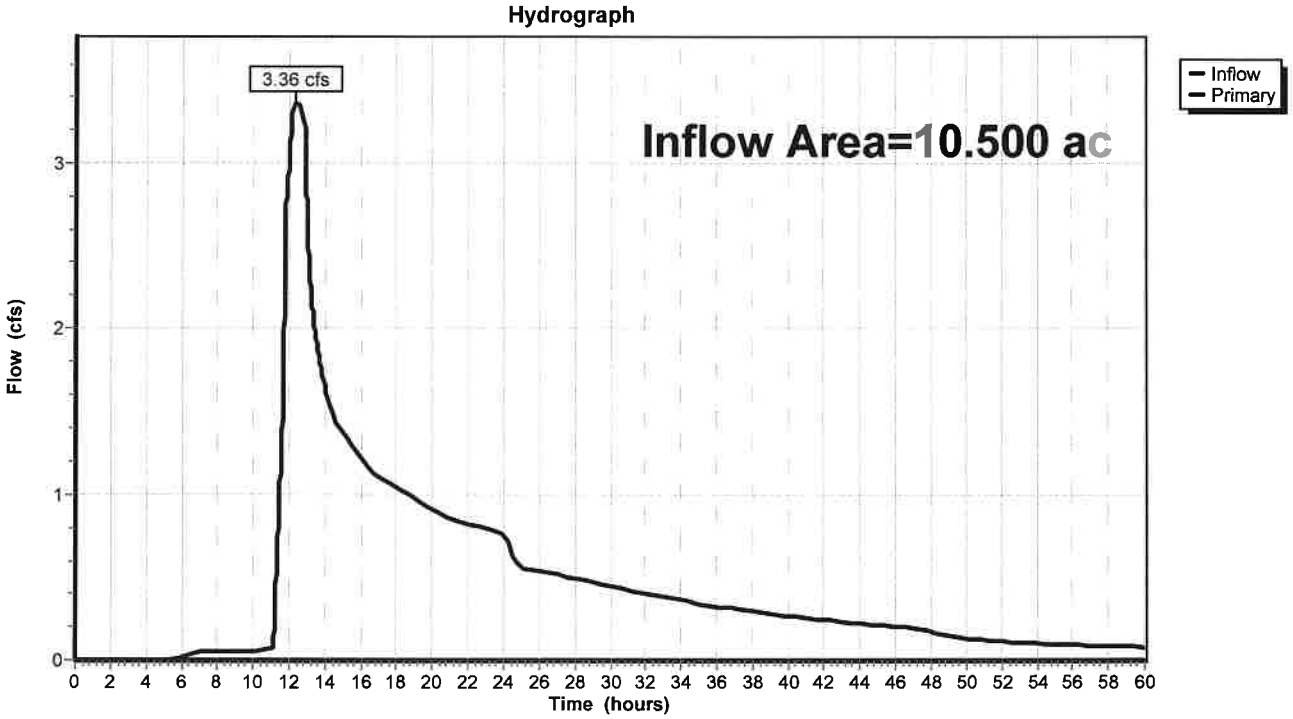
Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 2.53" for 25-Year event
Inflow = 3.36 cfs @ 12.37 hrs, Volume= 2.210 af
Primary = 3.36 cfs @ 12.37 hrs, Volume= 2.210 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.11	0.00	0.11
1.00	0.00	0.00	0.00	53.00	0.11	0.00	0.11
2.00	0.00	0.00	0.00	54.00	0.10	0.00	0.10
3.00	0.00	0.00	0.00	55.00	0.10	0.00	0.10
4.00	0.00	0.00	0.00	56.00	0.09	0.00	0.09
5.00	0.00	0.00	0.00	57.00	0.09	0.00	0.09
6.00	0.02	0.00	0.02	58.00	0.09	0.00	0.09
7.00	0.05	0.00	0.05	59.00	0.08	0.00	0.08
8.00	0.05	0.00	0.05	60.00	0.08	0.00	0.08
9.00	0.05	0.00	0.05				
10.00	0.06	0.00	0.06				
11.00	0.07	0.00	0.07				
12.00	**3.02**	0.00	**3.02**				
13.00	**2.64**	0.00	**2.64**				
14.00	1.63	0.00	1.63				
15.00	1.36	0.00	1.36				
16.00	1.21	0.00	1.21				
17.00	1.10	0.00	1.10				
18.00	1.04	0.00	1.04				
19.00	0.97	0.00	0.97				
20.00	0.91	0.00	0.91				
21.00	0.85	0.00	0.85				
22.00	0.82	0.00	0.82				
23.00	0.79	0.00	0.79				
24.00	0.76	0.00	0.76				
25.00	0.55	0.00	0.55				
26.00	0.53	0.00	0.53				
27.00	0.51	0.00	0.51				
28.00	0.49	0.00	0.49				
29.00	0.47	0.00	0.47				
30.00	0.45	0.00	0.45				
31.00	0.42	0.00	0.42				
32.00	0.40	0.00	0.40				
33.00	0.38	0.00	0.38				
34.00	0.36	0.00	0.36				
35.00	0.34	0.00	0.34				
36.00	0.33	0.00	0.33				
37.00	0.31	0.00	0.31				
38.00	0.29	0.00	0.29				
39.00	0.28	0.00	0.28				
40.00	0.27	0.00	0.27				
41.00	0.25	0.00	0.25				
42.00	0.24	0.00	0.24				
43.00	0.23	0.00	0.23				
44.00	0.22	0.00	0.22				
45.00	0.21	0.00	0.21				
46.00	0.20	0.00	0.20				
47.00	0.20	0.00	0.20				
48.00	0.17	0.00	0.17				
49.00	0.14	0.00	0.14				
50.00	0.13	0.00	0.13				
51.00	0.12	0.00	0.12				

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=3.41"
Flow Length=652' Tc=13.3 min CN=90 Runoff=27.50 cfs 1.736 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=3.52"
Flow Length=683' Tc=14.4 min CN=91 Runoff=19.58 cfs 1.290 af

Pond 1P: Bioretention Area 3 Peak Elev=576.17' Storage=10,953 cf Inflow=27.50 cfs 1.736 af
Primary=2.91 cfs 1.092 af Secondary=23.52 cfs 0.644 af Outflow=26.43 cfs 1.736 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=576.00' Storage=62,935 cf Inflow=42.93 cfs 1.933 af
Primary=0.72 cfs 1.504 af Secondary=1.25 cfs 0.131 af Outflow=1.97 cfs 1.635 af

Link 5L: Outflow (@ CB 54) Inflow=3.48 cfs 2.596 af
Primary=3.48 cfs 2.596 af

Total Runoff Area = 10.500 ac Runoff Volume = 3.026 af Average Runoff Depth = 3.46"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

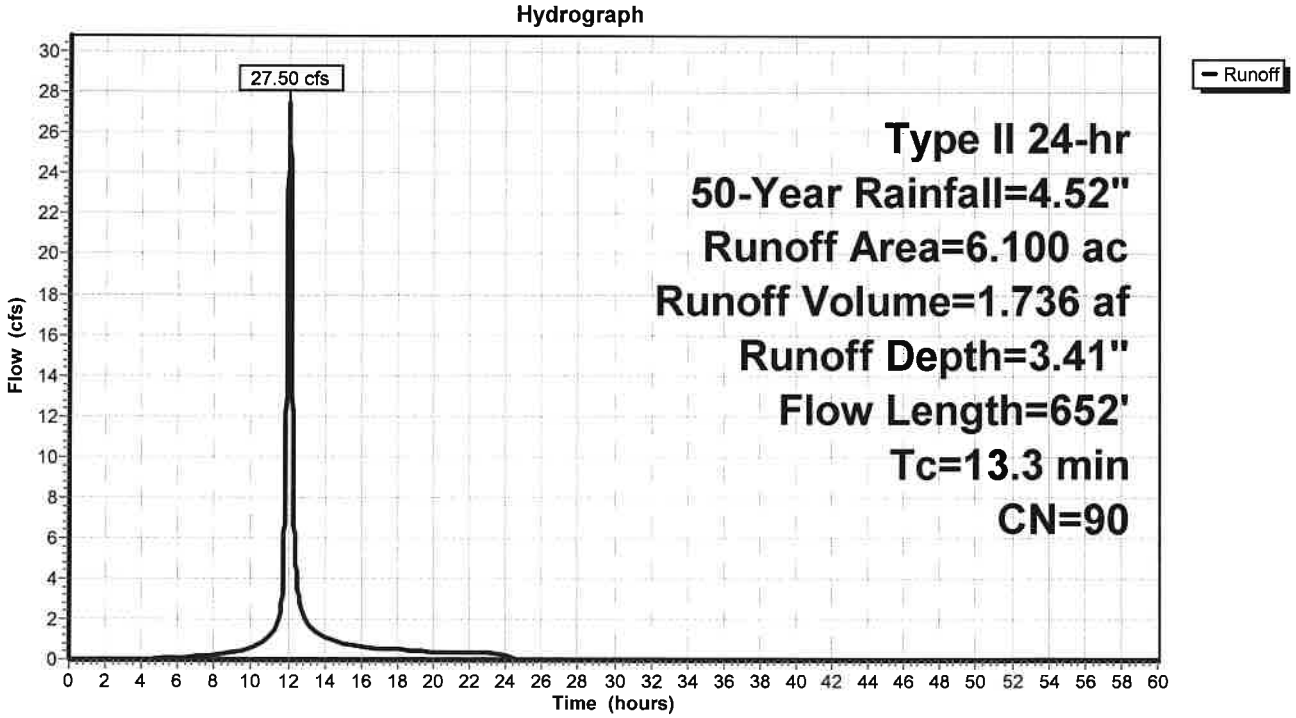
Runoff = 27.50 cfs @ 12.05 hrs, Volume= 1.736 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.10	0.00	0.00
3.00	0.16	0.00	0.00
4.00	0.22	0.00	0.00
5.00	0.28	0.00	0.04
6.00	0.36	0.02	0.09
7.00	0.45	0.04	0.16
8.00	0.54	0.07	0.23
9.00	0.66	0.13	0.39
10.00	0.82	0.21	0.57
11.00	1.06	0.36	1.16
12.00	3.00	1.98	**25.18**
13.00	3.49	2.44	**1.87**
14.00	3.71	2.64	1.08
15.00	3.86	2.78	0.83
16.00	3.98	2.90	0.64
17.00	4.08	2.99	0.55
18.00	4.16	3.07	0.49
19.00	4.24	3.15	0.42
20.00	4.30	3.21	0.36
21.00	4.36	3.26	0.33
22.00	4.42	3.32	0.32
23.00	4.47	3.37	0.31
24.00	**4.52**	**3.41**	0.30
25.00	4.52	3.41	0.00
26.00	4.52	3.41	0.00
27.00	4.52	3.41	0.00
28.00	4.52	3.41	0.00
29.00	4.52	3.41	0.00
30.00	4.52	3.41	0.00
31.00	4.52	3.41	0.00
32.00	4.52	3.41	0.00
33.00	4.52	3.41	0.00
34.00	4.52	3.41	0.00
35.00	4.52	3.41	0.00
36.00	4.52	3.41	0.00
37.00	4.52	3.41	0.00
38.00	4.52	3.41	0.00
39.00	4.52	3.41	0.00
40.00	4.52	3.41	0.00
41.00	4.52	3.41	0.00
42.00	4.52	3.41	0.00
43.00	4.52	3.41	0.00
44.00	4.52	3.41	0.00
45.00	4.52	3.41	0.00
46.00	4.52	3.41	0.00
47.00	4.52	3.41	0.00
48.00	4.52	3.41	0.00
49.00	4.52	3.41	0.00
50.00	4.52	3.41	0.00
51.00	4.52	3.41	0.00
52.00	4.52	3.41	0.00
53.00	4.52	3.41	0.00
54.00	4.52	3.41	0.00
55.00	4.52	3.41	0.00
56.00	4.52	3.41	0.00
57.00	4.52	3.41	0.00
58.00	4.52	3.41	0.00
59.00	4.52	3.41	0.00
60.00	4.52	3.41	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

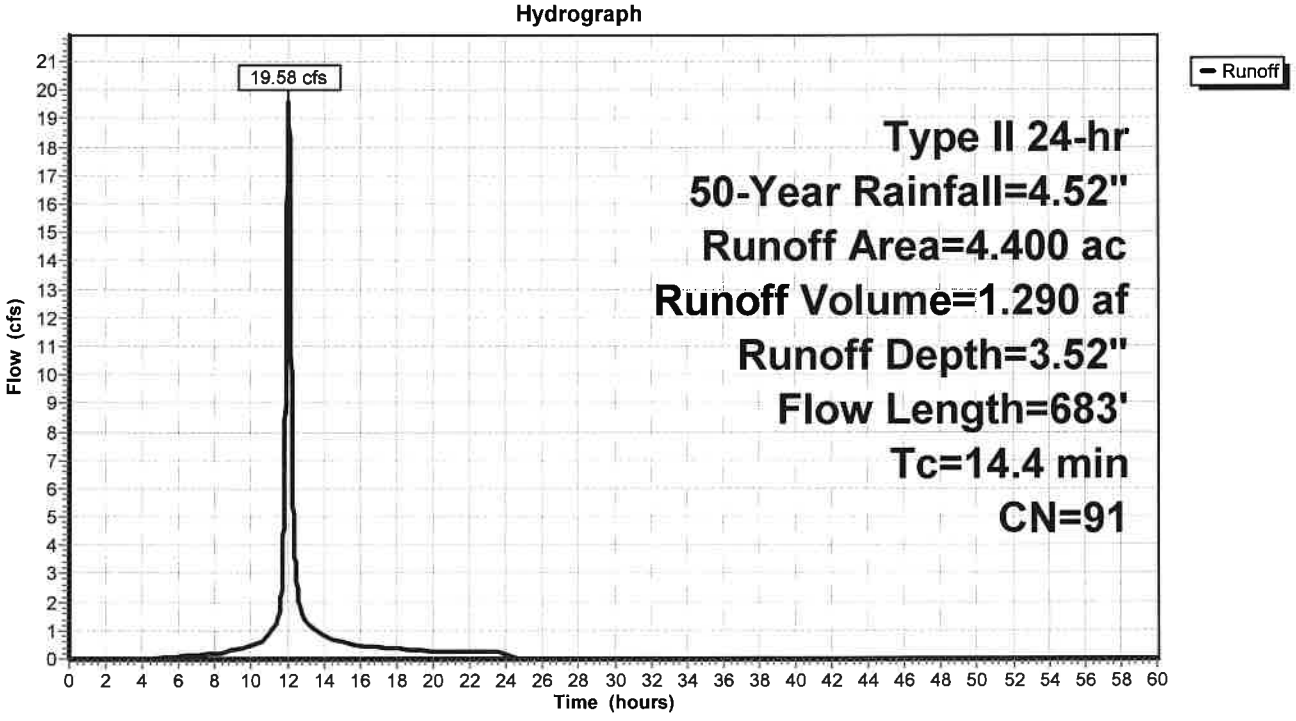
Runoff = 19.58 cfs @ 12.06 hrs, Volume= 1.290 af, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.10	0.00	0.00
3.00	0.16	0.00	0.00
4.00	0.22	0.00	0.00
5.00	0.28	0.01	0.04
6.00	0.36	0.02	0.08
7.00	0.45	0.05	0.13
8.00	0.54	0.09	0.19
9.00	0.66	0.15	0.31
10.00	0.82	0.24	0.44
11.00	1.06	0.40	0.88
12.00	3.00	2.07	**17.36**
13.00	3.49	2.53	**1.38**
14.00	3.71	2.74	0.79
15.00	3.86	2.88	0.60
16.00	3.98	3.00	0.47
17.00	4.08	3.09	0.40
18.00	4.16	3.17	0.36
19.00	4.24	3.25	0.31
20.00	4.30	3.31	0.26
21.00	4.36	3.36	0.24
22.00	4.42	3.42	0.23
23.00	4.47	3.47	0.22
24.00	**4.52**	**3.52**	0.21
25.00	4.52	3.52	0.00
26.00	4.52	3.52	0.00
27.00	4.52	3.52	0.00
28.00	4.52	3.52	0.00
29.00	4.52	3.52	0.00
30.00	4.52	3.52	0.00
31.00	4.52	3.52	0.00
32.00	4.52	3.52	0.00
33.00	4.52	3.52	0.00
34.00	4.52	3.52	0.00
35.00	4.52	3.52	0.00
36.00	4.52	3.52	0.00
37.00	4.52	3.52	0.00
38.00	4.52	3.52	0.00
39.00	4.52	3.52	0.00
40.00	4.52	3.52	0.00
41.00	4.52	3.52	0.00
42.00	4.52	3.52	0.00
43.00	4.52	3.52	0.00
44.00	4.52	3.52	0.00
45.00	4.52	3.52	0.00
46.00	4.52	3.52	0.00
47.00	4.52	3.52	0.00
48.00	4.52	3.52	0.00
49.00	4.52	3.52	0.00
50.00	4.52	3.52	0.00
51.00	4.52	3.52	0.00
52.00	4.52	3.52	0.00
53.00	4.52	3.52	0.00
54.00	4.52	3.52	0.00
55.00	4.52	3.52	0.00
56.00	4.52	3.52	0.00
57.00	4.52	3.52	0.00
58.00	4.52	3.52	0.00
59.00	4.52	3.52	0.00
60.00	4.52	3.52	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 3.41" for 50-Year event
Inflow = 27.50 cfs @ 12.05 hrs, Volume= 1.736 af
Outflow = 26.43 cfs @ 12.08 hrs, Volume= 1.736 af, Atten= 4%, Lag= 1.9 min
Primary = 2.91 cfs @ 12.08 hrs, Volume= 1.092 af
Secondary = 23.52 cfs @ 12.08 hrs, Volume= 0.644 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.17' @ 12.08 hrs Surf.Area= 10,144 sf Storage= 10,953 cf

Plug-Flow detention time= 109.3 min calculated for 1.736 af (100% of inflow)
Center-of-Mass det. time= 109.3 min (907.1 - 797.8)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

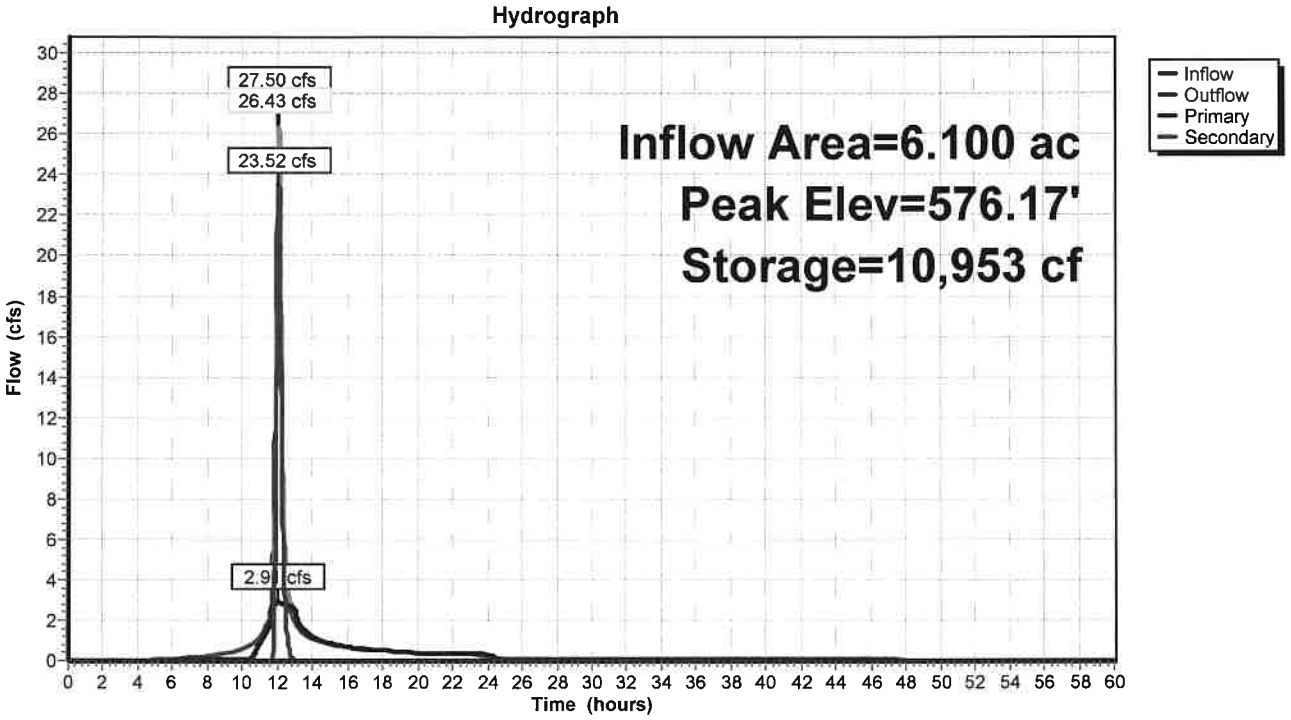
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.91 cfs @ 12.08 hrs HW=576.17' (Free Discharge)
└─**1=8" pipe** (Barrel Controls 2.91 cfs @ 8.34 fps)
  ├─**2=Grate** (Passes < 5.49 cfs potential flow)
  └─**3=Exfiltration** (Passes < 0.06 cfs potential flow)

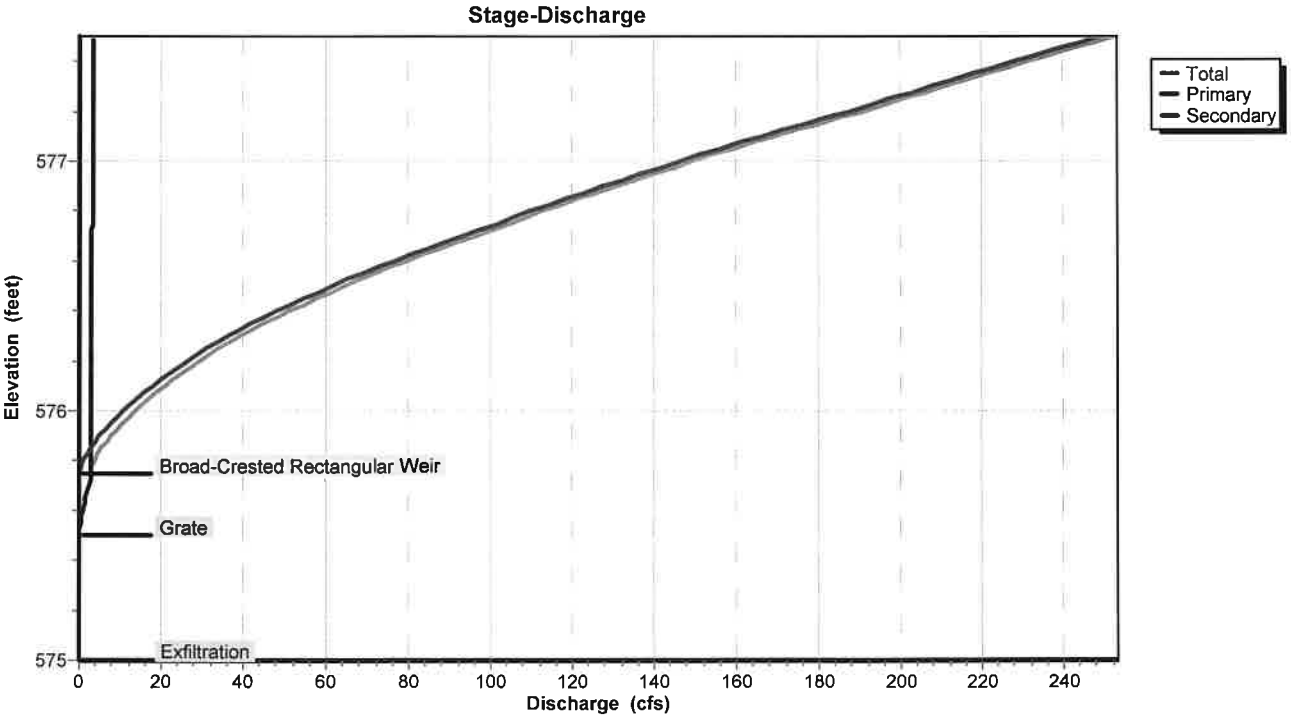
Secondary OutFlow Max=23.50 cfs @ 12.08 hrs HW=576.17' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 23.50 cfs @ 1.88 fps)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

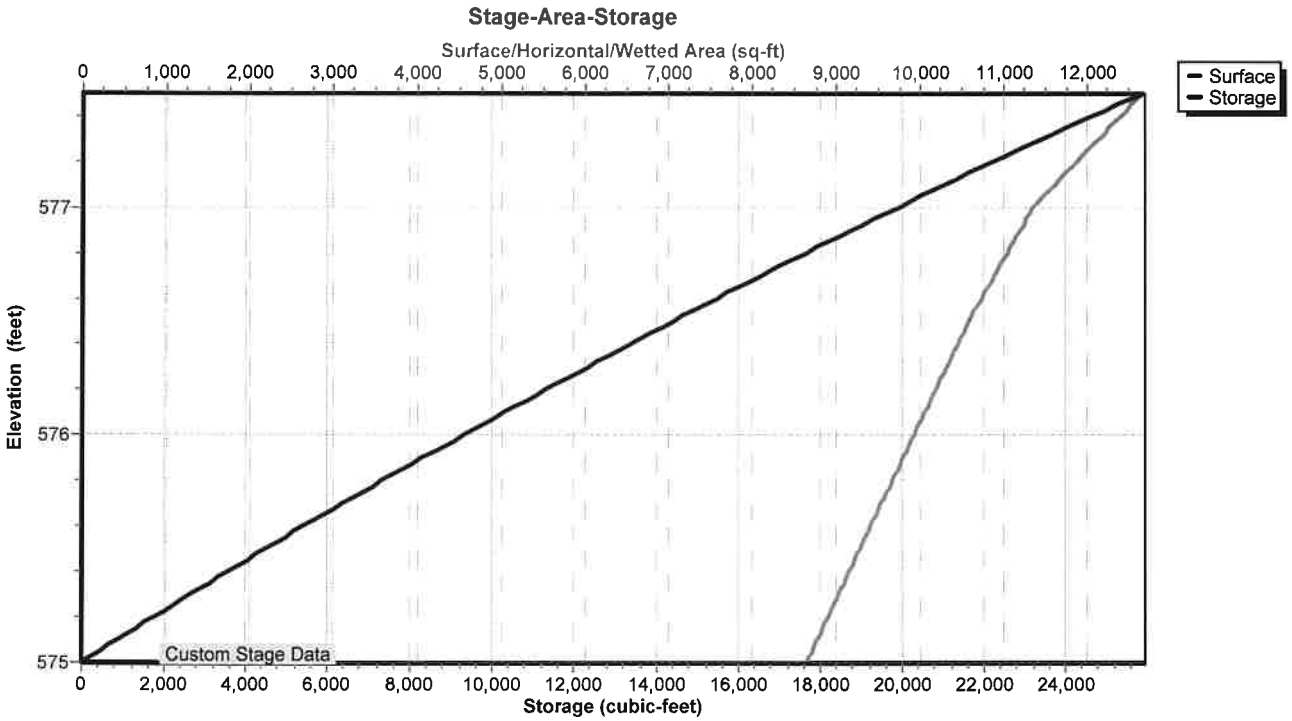


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.09	180	575.02	0.04	0.04	0.00
8.00	0.23	959	575.11	0.05	0.05	0.00
10.00	0.57	3,333	575.38	0.05	0.05	0.00
12.00	**25.18**	**10,302**	**576.10**	**21.15**	**2.88**	**18.27**
14.00	**1.08**	**5,594**	**575.62**	**1.18**	**1.18**	**0.00**
16.00	0.64	5,233	575.58	0.68	0.68	0.00
18.00	0.49	5,081	575.56	0.51	0.51	0.00
20.00	0.36	4,961	575.55	0.38	0.38	0.00
22.00	0.32	4,907	575.55	0.33	0.33	0.00
24.00	0.30	4,876	575.54	0.30	0.30	0.00
26.00	0.00	4,297	575.48	0.06	0.06	0.00
28.00	0.00	3,900	575.44	0.05	0.05	0.00
30.00	0.00	3,508	575.39	0.05	0.05	0.00
32.00	0.00	3,118	575.35	0.05	0.05	0.00
34.00	0.00	2,732	575.31	0.05	0.05	0.00
36.00	0.00	2,350	575.27	0.05	0.05	0.00
38.00	0.00	1,970	575.22	0.05	0.05	0.00
40.00	0.00	1,594	575.18	0.05	0.05	0.00
42.00	0.00	1,221	575.14	0.05	0.05	0.00
44.00	0.00	852	575.10	0.05	0.05	0.00
46.00	0.00	486	575.06	0.05	0.05	0.00
48.00	0.00	140	575.02	0.03	0.03	0.00
50.00	0.00	26	575.00	0.01	0.01	0.00
52.00	0.00	5	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 5.27" for 50-Year event
Inflow = 42.93 cfs @ 12.07 hrs, Volume= 1.933 af
Outflow = 1.97 cfs @ 12.73 hrs, Volume= 1.635 af, Atten= 95%, Lag= 39.8 min
Primary = 0.72 cfs @ 12.73 hrs, Volume= 1.504 af
Secondary = 1.25 cfs @ 12.73 hrs, Volume= 0.131 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.00' @ 12.73 hrs Surf.Area= 66,838 sf Storage= 62,935 cf

Plug-Flow detention time= 900.4 min calculated for 1.635 af (85% of inflow)
Center-of-Mass det. time= 844.0 min (1,616.3 - 772.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

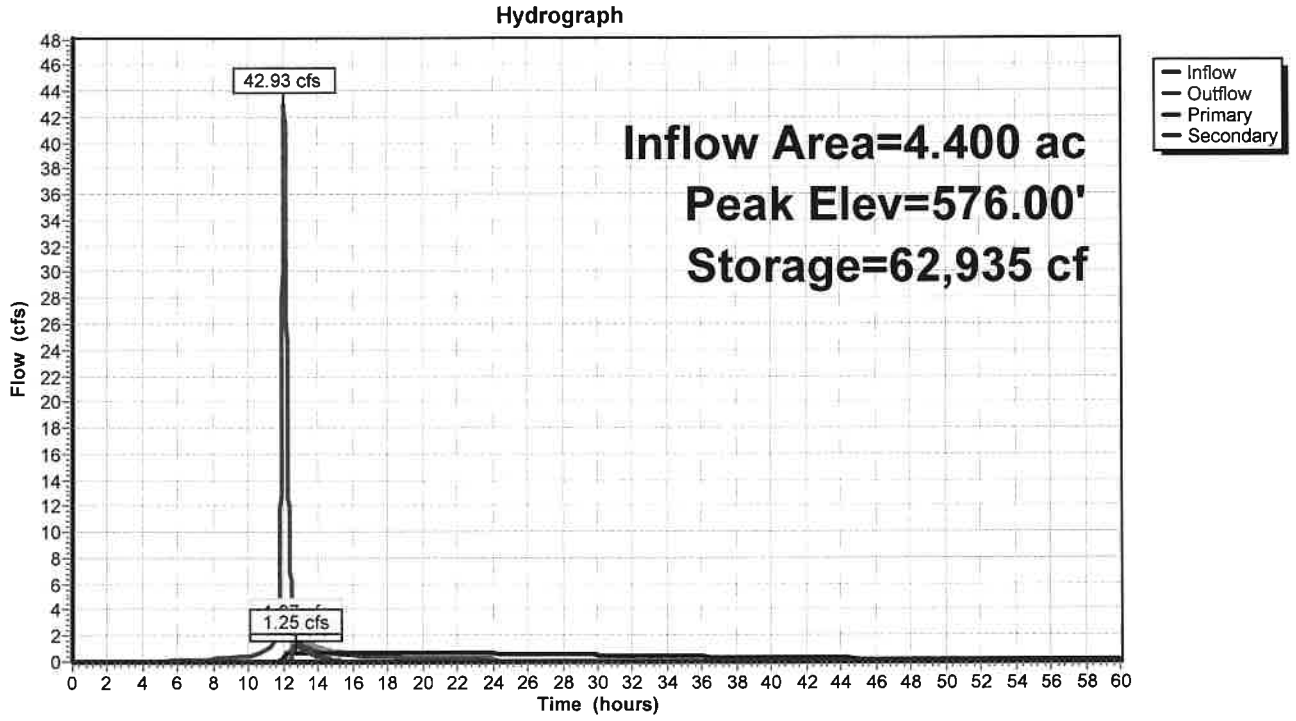
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.72 cfs @ 12.73 hrs HW=576.00' (Free Discharge)
└**1=12" outlet pipe** (Passes 0.72 cfs of 2.71 cfs potential flow)
  ├**2=low flow outlet pipe** (Inlet Controls 0.72 cfs @ 3.68 fps)
  └**3=Grate** (Controls 0.00 cfs)

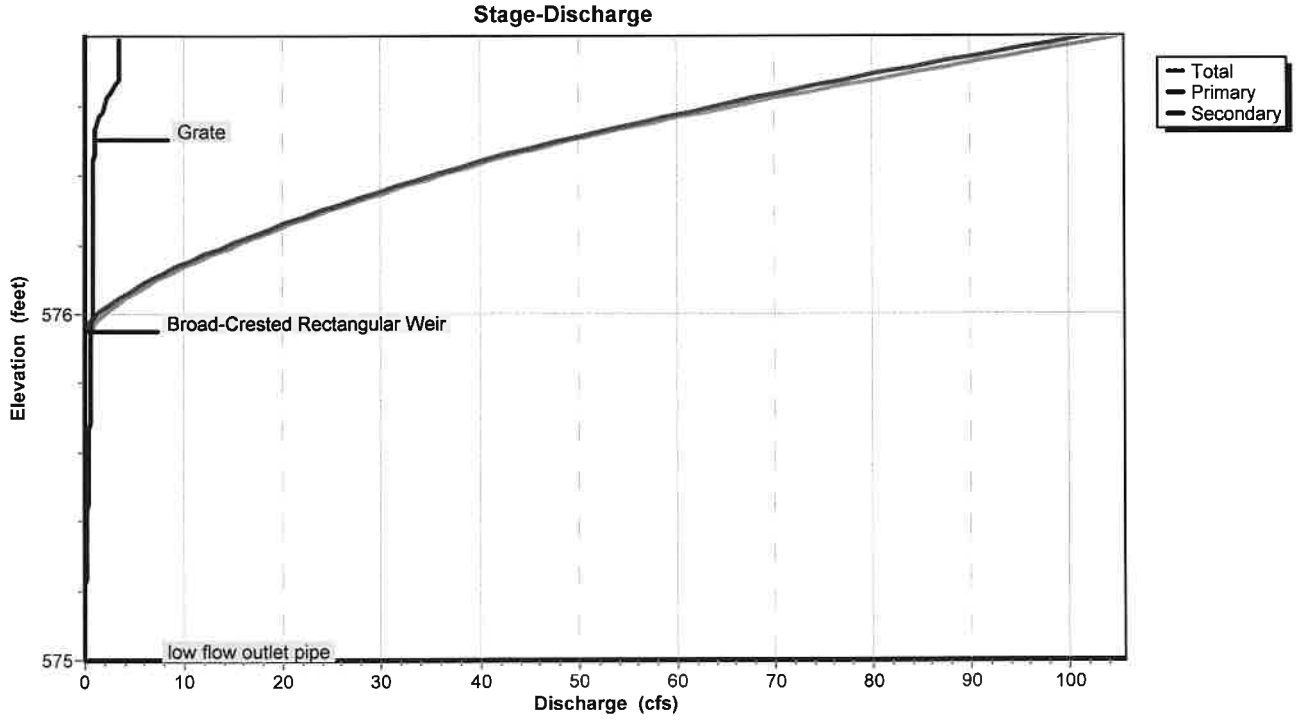
Secondary OutFlow Max=1.25 cfs @ 12.73 hrs HW=576.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 1.25 cfs @ 0.64 fps)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

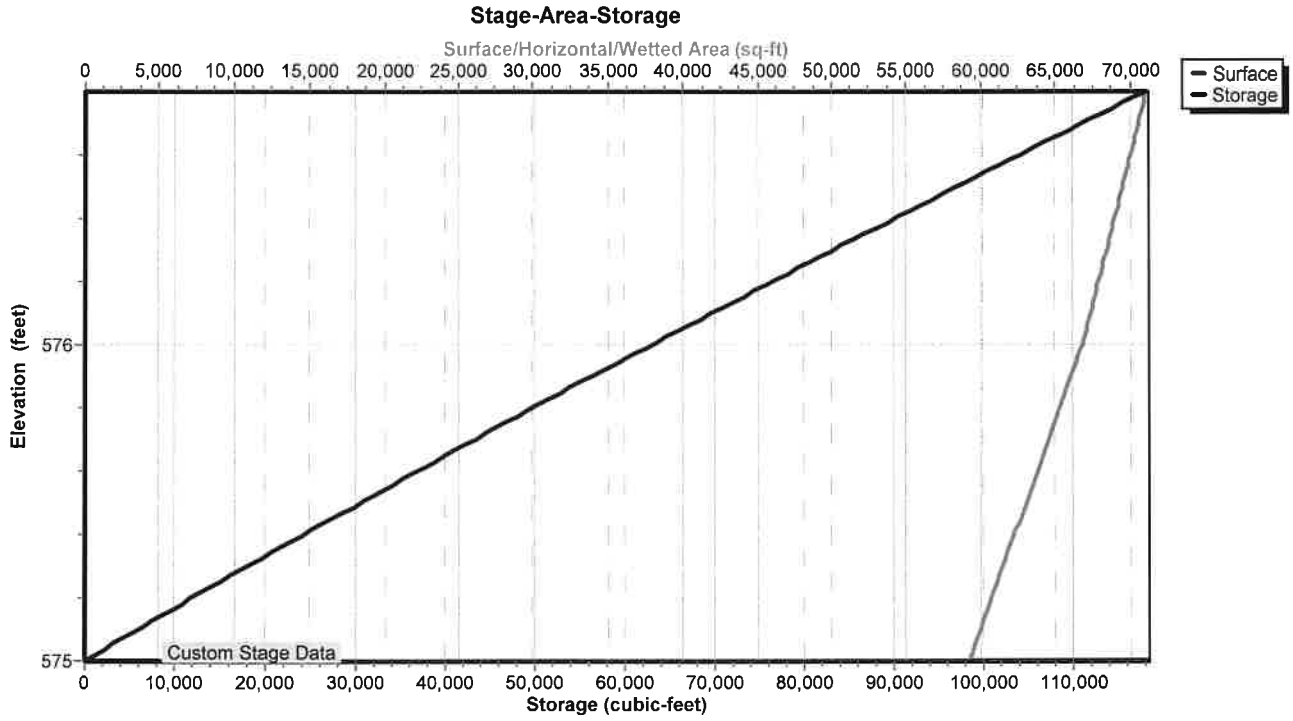


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	1	575.00	0.00	0.00	0.00
6.00	0.08	300	575.01	0.00	0.00	0.00
8.00	0.19	1,265	575.02	0.00	0.00	0.00
10.00	0.44	3,420	575.06	0.01	0.01	0.00
12.00	**35.63**	**24,163**	**575.40**	**0.26**	**0.26**	**0.00**
14.00	**0.79**	**61,204**	**575.97**	**1.11**	**0.71**	**0.40**
16.00	0.47	59,536	575.95	0.70	0.70	0.00
18.00	0.36	57,495	575.92	0.68	0.68	0.00
20.00	0.26	54,889	575.88	0.66	0.66	0.00
22.00	0.23	51,975	575.83	0.64	0.64	0.00
24.00	0.21	49,094	575.79	0.61	0.61	0.00
26.00	0.00	45,010	575.73	0.56	0.56	0.00
28.00	0.00	41,189	575.67	0.50	0.50	0.00
30.00	0.00	37,665	575.61	0.47	0.47	0.00
32.00	0.00	34,410	575.56	0.43	0.43	0.00
34.00	0.00	31,481	575.51	0.38	0.38	0.00
36.00	0.00	28,873	575.47	0.34	0.34	0.00
38.00	0.00	26,562	575.44	0.30	0.30	0.00
40.00	0.00	24,517	575.40	0.27	0.27	0.00
42.00	0.00	22,705	575.37	0.24	0.24	0.00
44.00	0.00	21,097	575.35	0.21	0.21	0.00
46.00	0.00	19,666	575.33	0.19	0.19	0.00
48.00	0.00	18,389	575.30	0.17	0.17	0.00
50.00	0.00	17,245	575.29	0.15	0.15	0.00
52.00	0.00	16,216	575.27	0.14	0.14	0.00
54.00	0.00	15,288	575.25	0.12	0.12	0.00
56.00	0.00	14,449	575.24	0.11	0.11	0.00
58.00	0.00	13,686	575.23	0.10	0.10	0.00
60.00	0.00	12,992	575.22	0.09	0.09	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

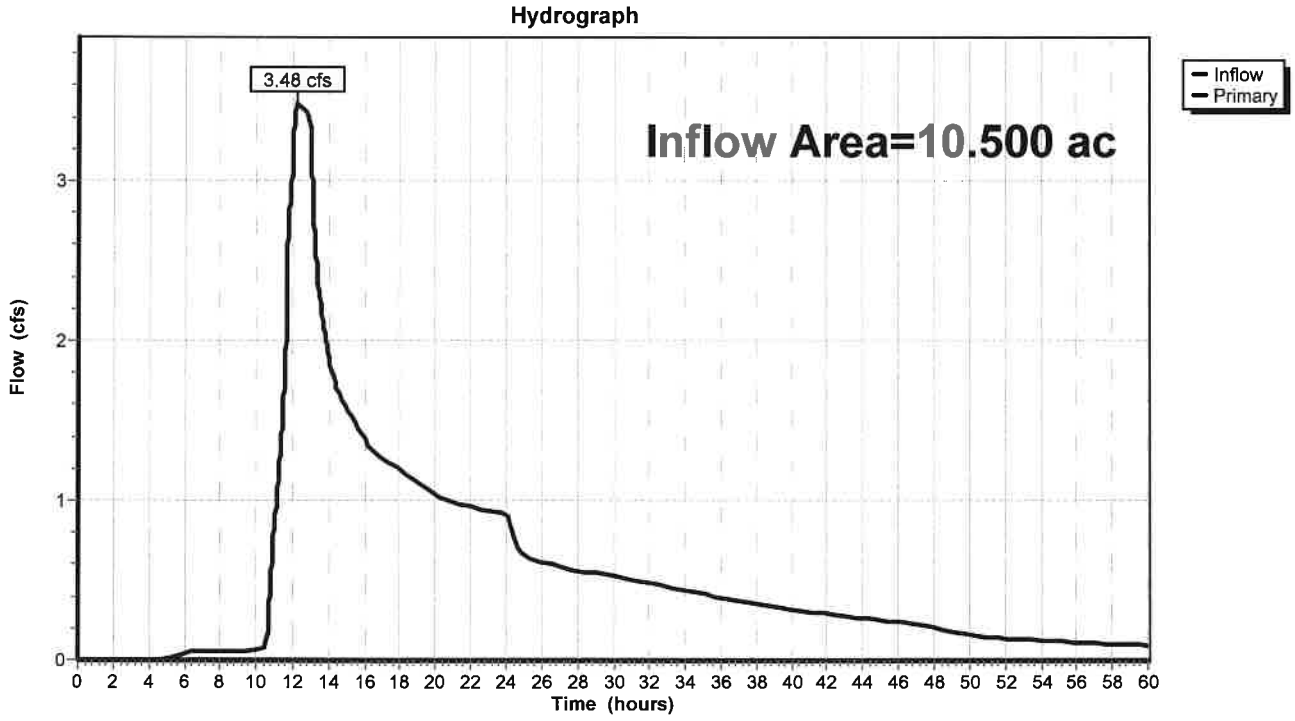
Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 2.97" for 50-Year event
Inflow = 3.48 cfs @ 12.21 hrs, Volume= 2.596 af
Primary = 3.48 cfs @ 12.21 hrs, Volume= 2.596 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.14	0.00	0.14
1.00	0.00	0.00	0.00	53.00	0.13	0.00	0.13
2.00	0.00	0.00	0.00	54.00	0.12	0.00	0.12
3.00	0.00	0.00	0.00	55.00	0.12	0.00	0.12
4.00	0.00	0.00	0.00	56.00	0.11	0.00	0.11
5.00	0.01	0.00	0.01	57.00	0.11	0.00	0.11
6.00	0.04	0.00	0.04	58.00	0.10	0.00	0.10
7.00	0.05	0.00	0.05	59.00	0.10	0.00	0.10
8.00	0.05	0.00	0.05	60.00	0.09	0.00	0.09
9.00	0.06	0.00	0.06				
10.00	0.06	0.00	0.06				
11.00	0.88	0.00	0.88				
12.00	**3.14**	0.00	**3.14**				
13.00	**3.25**	0.00	**3.25**				
14.00	1.89	0.00	1.89				
15.00	1.57	0.00	1.57				
16.00	1.38	0.00	1.38				
17.00	1.26	0.00	1.26				
18.00	1.19	0.00	1.19				
19.00	1.11	0.00	1.11				
20.00	1.04	0.00	1.04				
21.00	0.99	0.00	0.99				
22.00	0.96	0.00	0.96				
23.00	0.94	0.00	0.94				
24.00	0.91	0.00	0.91				
25.00	0.65	0.00	0.65				
26.00	0.62	0.00	0.62				
27.00	0.59	0.00	0.59				
28.00	0.56	0.00	0.56				
29.00	0.55	0.00	0.55				
30.00	0.53	0.00	0.53				
31.00	0.51	0.00	0.51				
32.00	0.48	0.00	0.48				
33.00	0.46	0.00	0.46				
34.00	0.44	0.00	0.44				
35.00	0.42	0.00	0.42				
36.00	0.39	0.00	0.39				
37.00	0.37	0.00	0.37				
38.00	0.35	0.00	0.35				
39.00	0.34	0.00	0.34				
40.00	0.32	0.00	0.32				
41.00	0.30	0.00	0.30				
42.00	0.29	0.00	0.29				
43.00	0.27	0.00	0.27				
44.00	0.26	0.00	0.26				
45.00	0.25	0.00	0.25				
46.00	0.24	0.00	0.24				
47.00	0.23	0.00	0.23				
48.00	0.20	0.00	0.20				
49.00	0.17	0.00	0.17				
50.00	0.16	0.00	0.16				
51.00	0.15	0.00	0.15				

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=4.15"
Flow Length=652' Tc=13.3 min CN=90 Runoff=33.05 cfs 2.108 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=4.25"
Flow Length=683' Tc=14.4 min CN=91 Runoff=23.44 cfs 1.560 af

Pond 1P: Bioretention Area 3 Peak Elev=576.23' Storage=11,585 cf Inflow=33.05 cfs 2.108 af
Primary=2.94 cfs 1.275 af Secondary=28.98 cfs 0.833 af Outflow=31.92 cfs 2.108 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=576.11' Storage=70,722 cf Inflow=52.24 cfs 2.392 af
Primary=0.78 cfs 1.554 af Secondary=7.80 cfs 0.534 af Outflow=8.57 cfs 2.088 af

Link 5L: Outflow (@ CB 54) Inflow=3.60 cfs 2.829 af
Primary=3.60 cfs 2.829 af

Total Runoff Area = 10.500 ac Runoff Volume = 3.668 af Average Runoff Depth = 4.19"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 1S: Front Area 1

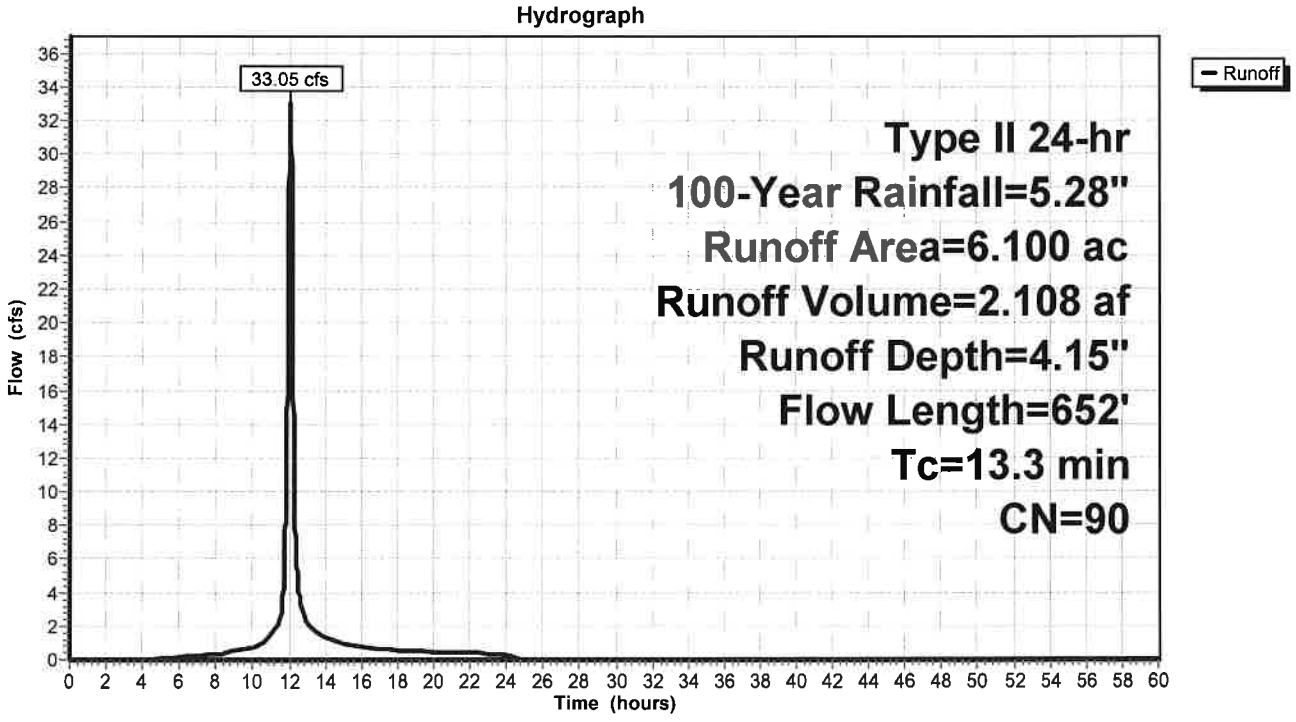
Runoff = 33.05 cfs @ 12.05 hrs, Volume= 2.108 af, Depth= 4.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.28	4.15	0.00
1.00	0.06	0.00	0.00	53.00	5.28	4.15	0.00
2.00	0.12	0.00	0.00	54.00	5.28	4.15	0.00
3.00	0.18	0.00	0.00	55.00	5.28	4.15	0.00
4.00	0.25	0.00	0.01	56.00	5.28	4.15	0.00
5.00	0.33	0.01	0.08	57.00	5.28	4.15	0.00
6.00	0.42	0.03	0.15	58.00	5.28	4.15	0.00
7.00	0.52	0.06	0.23	59.00	5.28	4.15	0.00
8.00	0.63	0.11	0.32	60.00	5.28	4.15	0.00
9.00	0.78	0.18	0.52				
10.00	0.96	0.29	0.74				
11.00	1.24	0.49	1.47				
12.00	3.50	2.45	**30.36**				
13.00	4.08	2.99	**2.21**				
14.00	4.33	3.23	1.27				
15.00	4.51	3.40	0.98				
16.00	4.65	3.54	0.76				
17.00	4.76	3.65	0.66				
18.00	4.86	3.74	0.58				
19.00	4.95	3.83	0.50				
20.00	5.03	3.90	0.42				
21.00	5.09	3.97	0.40				
22.00	5.16	4.03	0.38				
23.00	5.22	4.09	0.36				
24.00	**5.28**	**4.15**	0.35				
25.00	5.28	4.15	0.00				
26.00	5.28	4.15	0.00				
27.00	5.28	4.15	0.00				
28.00	5.28	4.15	0.00				
29.00	5.28	4.15	0.00				
30.00	5.28	4.15	0.00				
31.00	5.28	4.15	0.00				
32.00	5.28	4.15	0.00				
33.00	5.28	4.15	0.00				
34.00	5.28	4.15	0.00				
35.00	5.28	4.15	0.00				
36.00	5.28	4.15	0.00				
37.00	5.28	4.15	0.00				
38.00	5.28	4.15	0.00				
39.00	5.28	4.15	0.00				
40.00	5.28	4.15	0.00				
41.00	5.28	4.15	0.00				
42.00	5.28	4.15	0.00				
43.00	5.28	4.15	0.00				
44.00	5.28	4.15	0.00				
45.00	5.28	4.15	0.00				
46.00	5.28	4.15	0.00				
47.00	5.28	4.15	0.00				
48.00	5.28	4.15	0.00				
49.00	5.28	4.15	0.00				
50.00	5.28	4.15	0.00				
51.00	5.28	4.15	0.00				

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 2S: Rear Area 1

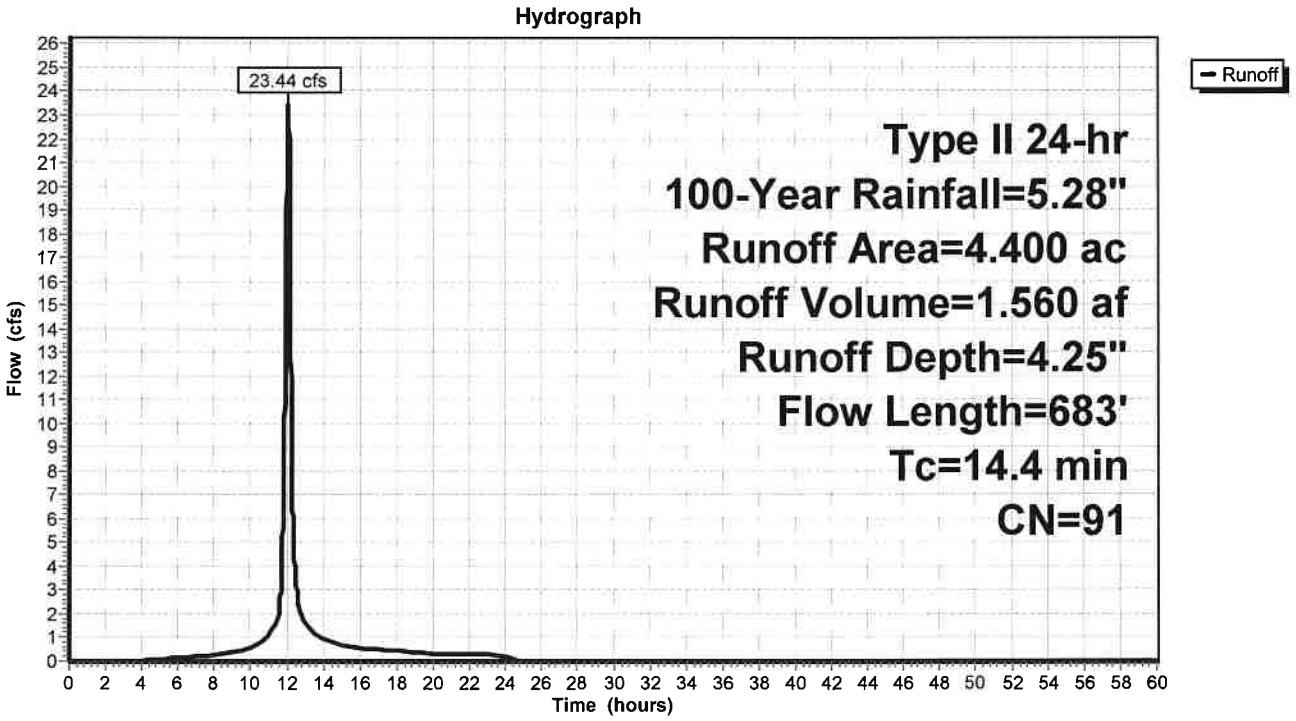
Runoff = 23.44 cfs @ 12.06 hrs, Volume= 1.560 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.18	0.00	0.00
4.00	0.25	0.00	0.02
5.00	0.33	0.02	0.07
6.00	0.42	0.04	0.13
7.00	0.52	0.08	0.19
8.00	0.63	0.13	0.25
9.00	0.78	0.21	0.41
10.00	0.96	0.33	0.57
11.00	1.24	0.54	1.10
12.00	3.50	2.54	**20.85**
13.00	4.08	3.09	**1.64**
14.00	4.33	3.33	0.94
15.00	4.51	3.50	0.71
16.00	4.65	3.64	0.56
17.00	4.76	3.75	0.48
18.00	4.86	3.85	0.42
19.00	4.95	3.93	0.36
20.00	5.03	4.01	0.31
21.00	5.09	4.07	0.29
22.00	5.16	4.14	0.28
23.00	5.22	4.20	0.26
24.00	**5.28**	**4.25**	0.25
25.00	5.28	4.25	0.00
26.00	5.28	4.25	0.00
27.00	5.28	4.25	0.00
28.00	5.28	4.25	0.00
29.00	5.28	4.25	0.00
30.00	5.28	4.25	0.00
31.00	5.28	4.25	0.00
32.00	5.28	4.25	0.00
33.00	5.28	4.25	0.00
34.00	5.28	4.25	0.00
35.00	5.28	4.25	0.00
36.00	5.28	4.25	0.00
37.00	5.28	4.25	0.00
38.00	5.28	4.25	0.00
39.00	5.28	4.25	0.00
40.00	5.28	4.25	0.00
41.00	5.28	4.25	0.00
42.00	5.28	4.25	0.00
43.00	5.28	4.25	0.00
44.00	5.28	4.25	0.00
45.00	5.28	4.25	0.00
46.00	5.28	4.25	0.00
47.00	5.28	4.25	0.00
48.00	5.28	4.25	0.00
49.00	5.28	4.25	0.00
50.00	5.28	4.25	0.00
51.00	5.28	4.25	0.00
52.00	5.28	4.25	0.00
53.00	5.28	4.25	0.00
54.00	5.28	4.25	0.00
55.00	5.28	4.25	0.00
56.00	5.28	4.25	0.00
57.00	5.28	4.25	0.00
58.00	5.28	4.25	0.00
59.00	5.28	4.25	0.00
60.00	5.28	4.25	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 4.15" for 100-Year event
Inflow = 33.05 cfs @ 12.05 hrs, Volume= 2.108 af
Outflow = 31.92 cfs @ 12.08 hrs, Volume= 2.108 af, Atten= 3%, Lag= 1.8 min
Primary = 2.94 cfs @ 12.08 hrs, Volume= 1.275 af
Secondary = 28.98 cfs @ 12.08 hrs, Volume= 0.833 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.23' @ 12.08 hrs Surf.Area= 10,226 sf Storage= 11,585 cf

Plug-Flow detention time= 93.7 min calculated for 2.108 af (100% of inflow)
Center-of-Mass det. time= 93.9 min (886.3 - 792.4)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

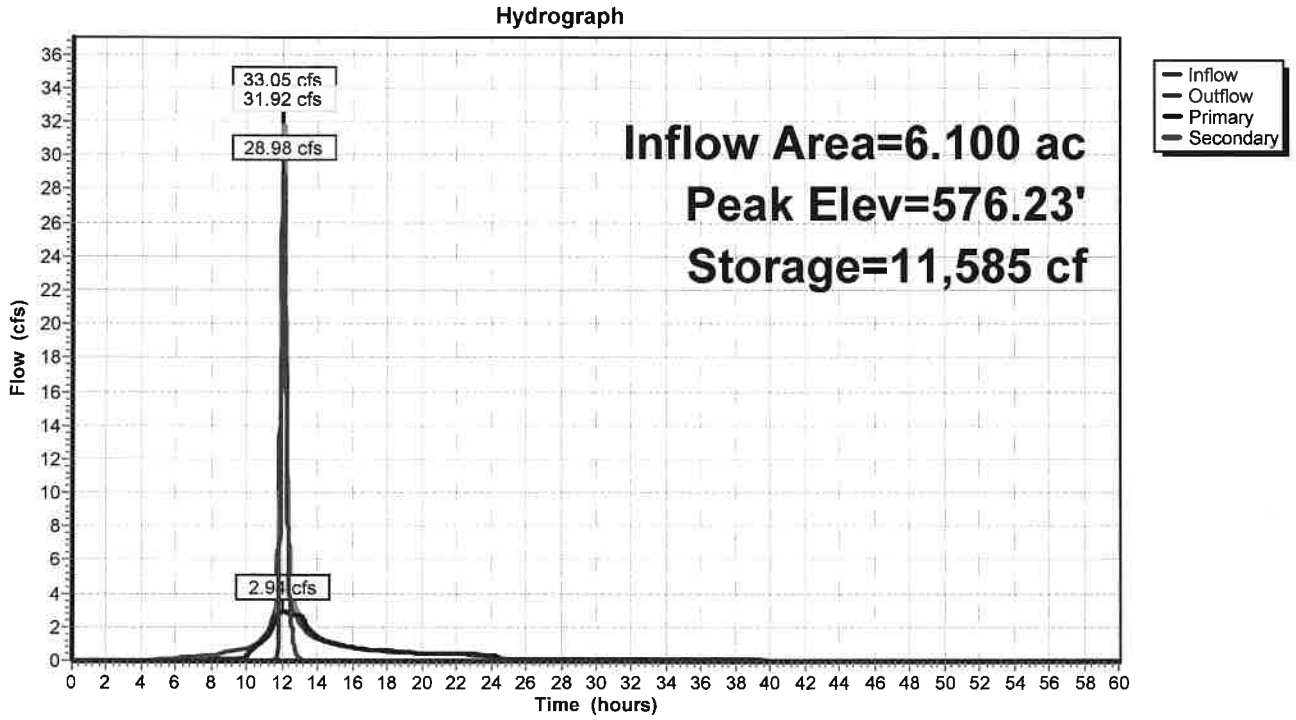
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.94 cfs @ 12.08 hrs HW=576.23' (Free Discharge)
└─**1=8" pipe** (Barrel Controls 2.94 cfs @ 8.43 fps)
  ├─**2=Grate** (Passes < 5.74 cfs potential flow)
  └─**3=Exfiltration** (Passes < 0.06 cfs potential flow)

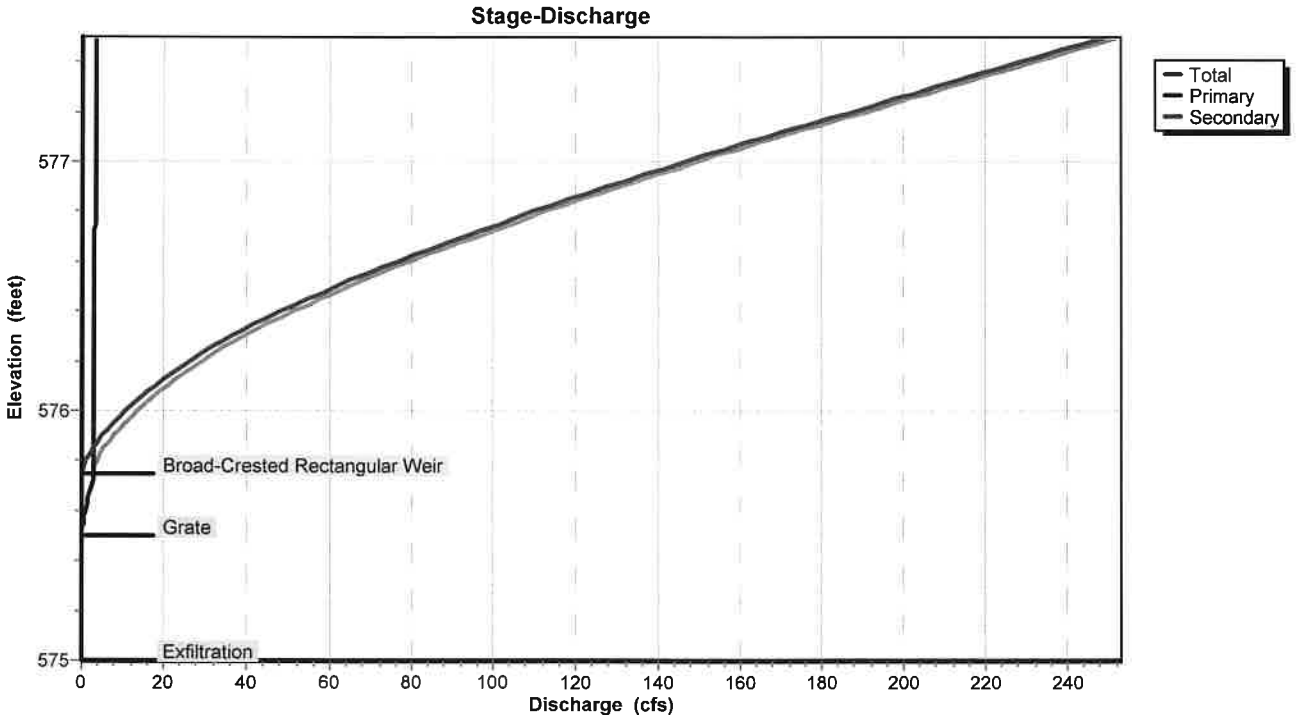
Secondary OutFlow Max=28.93 cfs @ 12.08 hrs HW=576.23' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 28.93 cfs @ 2.02 fps)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3

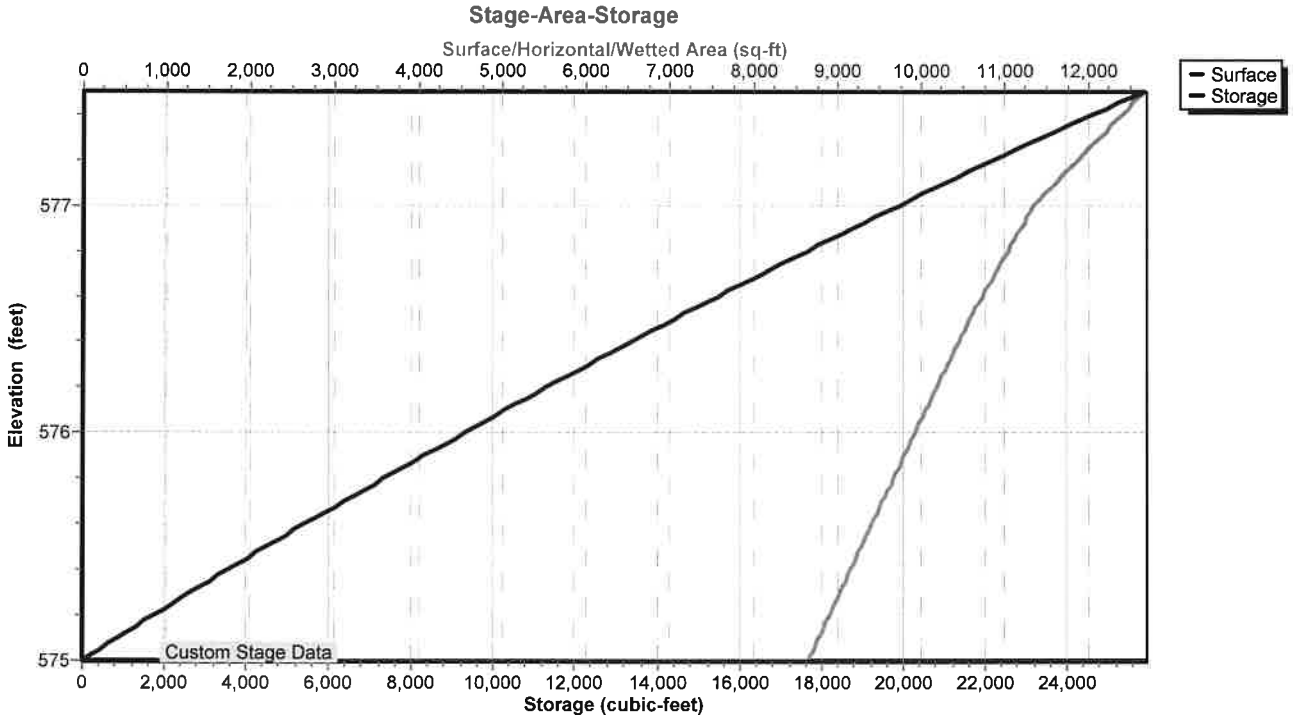


Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 1P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.01	6	575.00	0.00	0.00	0.00
6.00	0.15	359	575.04	0.05	0.05	0.00
8.00	0.32	1,651	575.19	0.05	0.05	0.00
10.00	0.74	4,857	575.54	0.28	0.28	0.00
12.00	**30.36**	**10,896**	**576.16**	**25.95**	**2.91**	**23.04**
14.00	**1.27**	**5,731**	**575.63**	**1.39**	**1.39**	**0.00**
16.00	0.76	5,329	575.59	0.81	0.81	0.00
18.00	0.58	5,164	575.57	0.60	0.60	0.00
20.00	0.42	5,023	575.56	0.44	0.44	0.00
22.00	0.38	4,969	575.55	0.38	0.38	0.00
24.00	0.35	4,939	575.55	0.35	0.35	0.00
26.00	0.00	4,307	575.48	0.06	0.06	0.00
28.00	0.00	3,911	575.44	0.05	0.05	0.00
30.00	0.00	3,518	575.40	0.05	0.05	0.00
32.00	0.00	3,129	575.35	0.05	0.05	0.00
34.00	0.00	2,743	575.31	0.05	0.05	0.00
36.00	0.00	2,360	575.27	0.05	0.05	0.00
38.00	0.00	1,981	575.23	0.05	0.05	0.00
40.00	0.00	1,604	575.18	0.05	0.05	0.00
42.00	0.00	1,232	575.14	0.05	0.05	0.00
44.00	0.00	862	575.10	0.05	0.05	0.00
46.00	0.00	496	575.06	0.05	0.05	0.00
48.00	0.00	147	575.02	0.03	0.03	0.00
50.00	0.00	28	575.00	0.01	0.01	0.00
52.00	0.00	5	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 6.52" for 100-Year event
Inflow = 52.24 cfs @ 12.07 hrs, Volume= 2.392 af
Outflow = 8.57 cfs @ 12.41 hrs, Volume= 2.088 af, Atten= 84%, Lag= 20.7 min
Primary = 0.78 cfs @ 12.41 hrs, Volume= 1.554 af
Secondary = 7.80 cfs @ 12.41 hrs, Volume= 0.534 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.11' @ 12.41 hrs Surf.Area= 67,462 sf Storage= 70,722 cf

Plug-Flow detention time= 739.0 min calculated for 2.088 af (87% of inflow)
Center-of-Mass det. time= 688.7 min (1,456.5 - 767.8)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

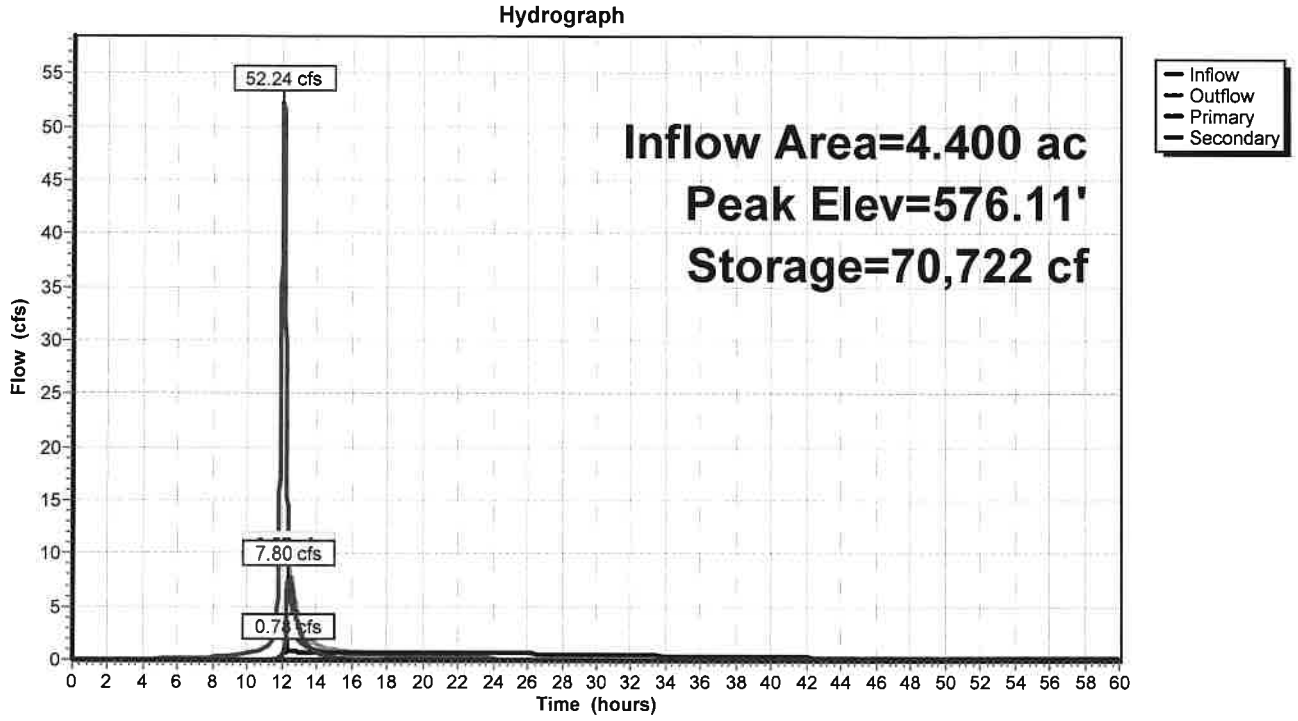
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.78 cfs @ 12.41 hrs HW=576.11' (Free Discharge)
└─**1=12" outlet pipe** (Passes 0.78 cfs of 2.84 cfs potential flow)
  ├─**2=low flow outlet pipe** (Inlet Controls 0.78 cfs @ 3.95 fps)
  └─**3=Grate** (Controls 0.00 cfs)

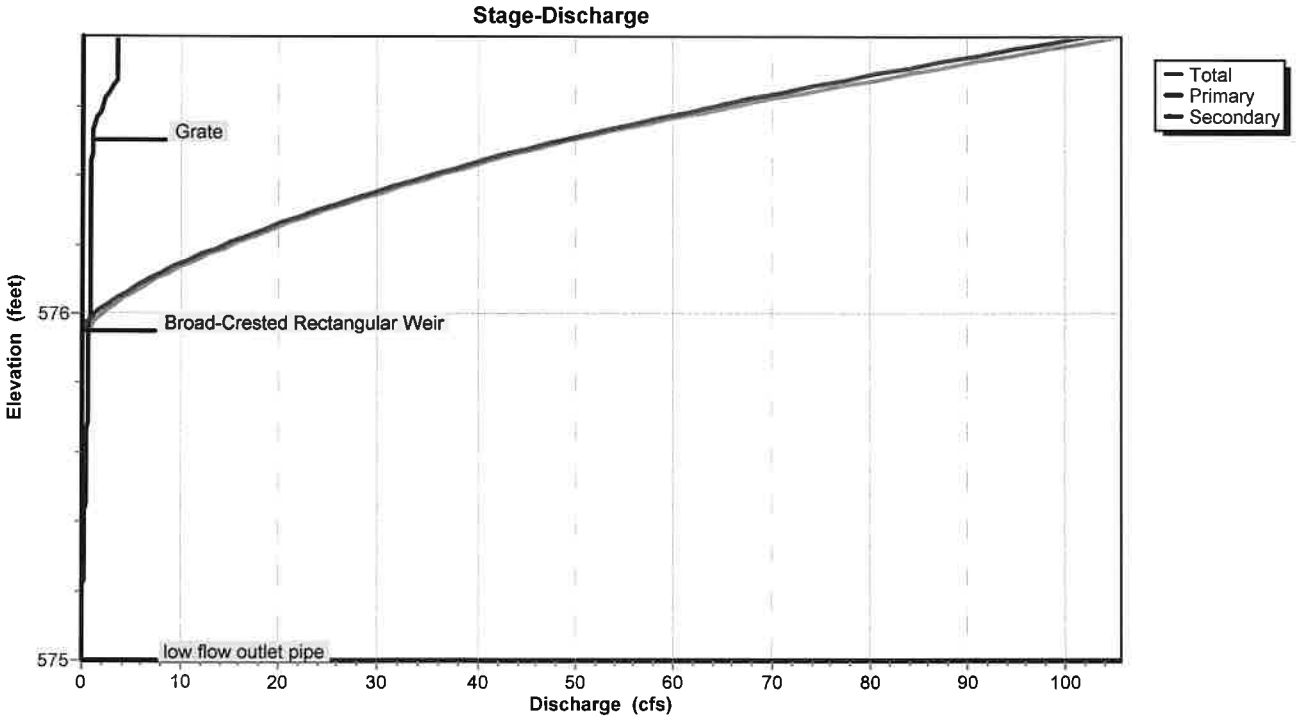
Secondary OutFlow Max=7.79 cfs @ 12.41 hrs HW=576.11' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 7.79 cfs @ 1.18 fps)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)

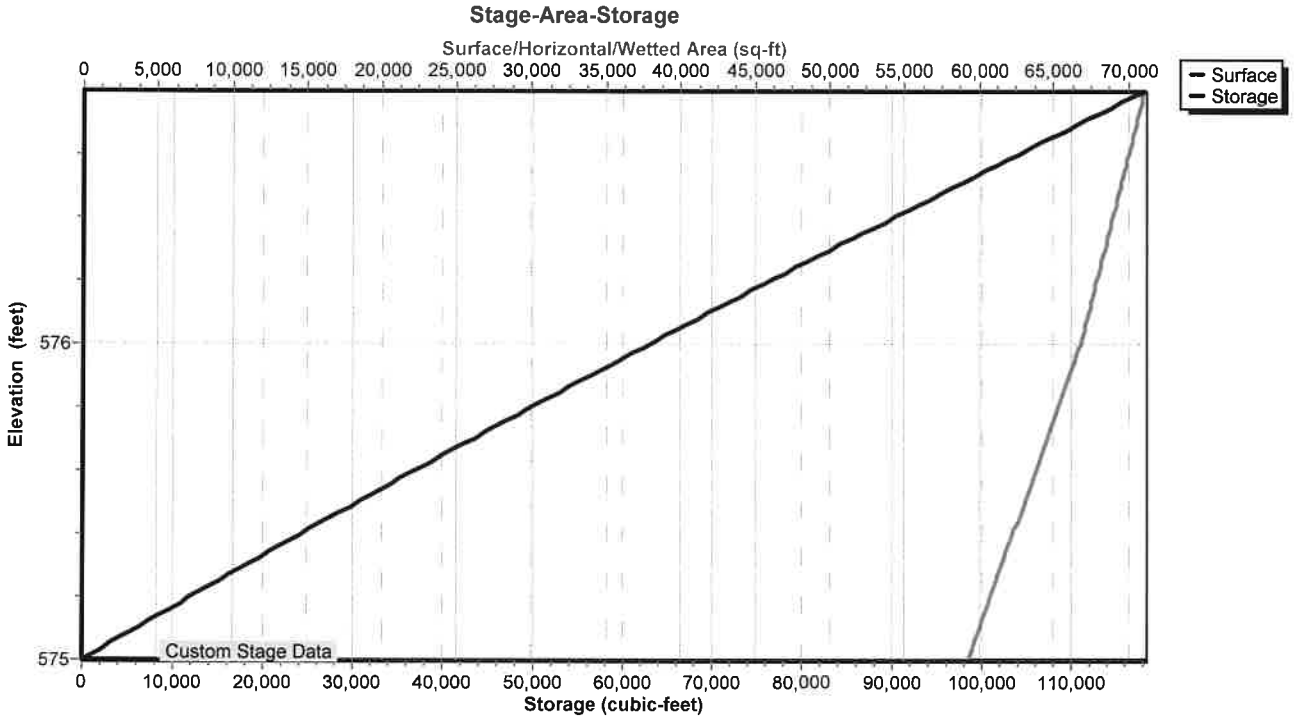


Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 3P: Detention Basin (SMA #1)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.02	25	575.00	0.00	0.00	0.00
6.00	0.13	556	575.01	0.00	0.00	0.00
8.00	0.25	1,914	575.03	0.00	0.00	0.00
10.00	0.57	4,720	575.08	0.01	0.01	0.00
12.00	**43.89**	**31,253**	**575.51**	**0.38**	**0.38**	**0.00**
14.00	**0.94**	**61,894**	**575.98**	**1.43**	**0.71**	**0.72**
16.00	0.56	59,972	575.95	0.73	0.70	0.03
18.00	0.42	58,398	575.93	0.69	0.69	0.00
20.00	0.31	56,130	575.90	0.67	0.67	0.00
22.00	0.28	53,450	575.86	0.65	0.65	0.00
24.00	0.25	50,762	575.81	0.63	0.63	0.00
26.00	0.00	46,581	575.75	0.59	0.59	0.00
28.00	0.00	42,588	575.69	0.52	0.52	0.00
30.00	0.00	38,979	575.63	0.49	0.49	0.00
32.00	0.00	35,609	575.58	0.45	0.45	0.00
34.00	0.00	32,555	575.53	0.40	0.40	0.00
36.00	0.00	29,827	575.49	0.36	0.36	0.00
38.00	0.00	27,407	575.45	0.32	0.32	0.00
40.00	0.00	25,264	575.42	0.28	0.28	0.00
42.00	0.00	23,368	575.39	0.25	0.25	0.00
44.00	0.00	21,686	575.36	0.22	0.22	0.00
46.00	0.00	20,191	575.33	0.20	0.20	0.00
48.00	0.00	18,858	575.31	0.17	0.17	0.00
50.00	0.00	17,665	575.29	0.16	0.16	0.00
52.00	0.00	16,594	575.28	0.14	0.14	0.00
54.00	0.00	15,630	575.26	0.13	0.13	0.00
56.00	0.00	14,758	575.25	0.12	0.12	0.00
58.00	0.00	13,967	575.23	0.10	0.10	0.00
60.00	0.00	13,248	575.22	0.10	0.10	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

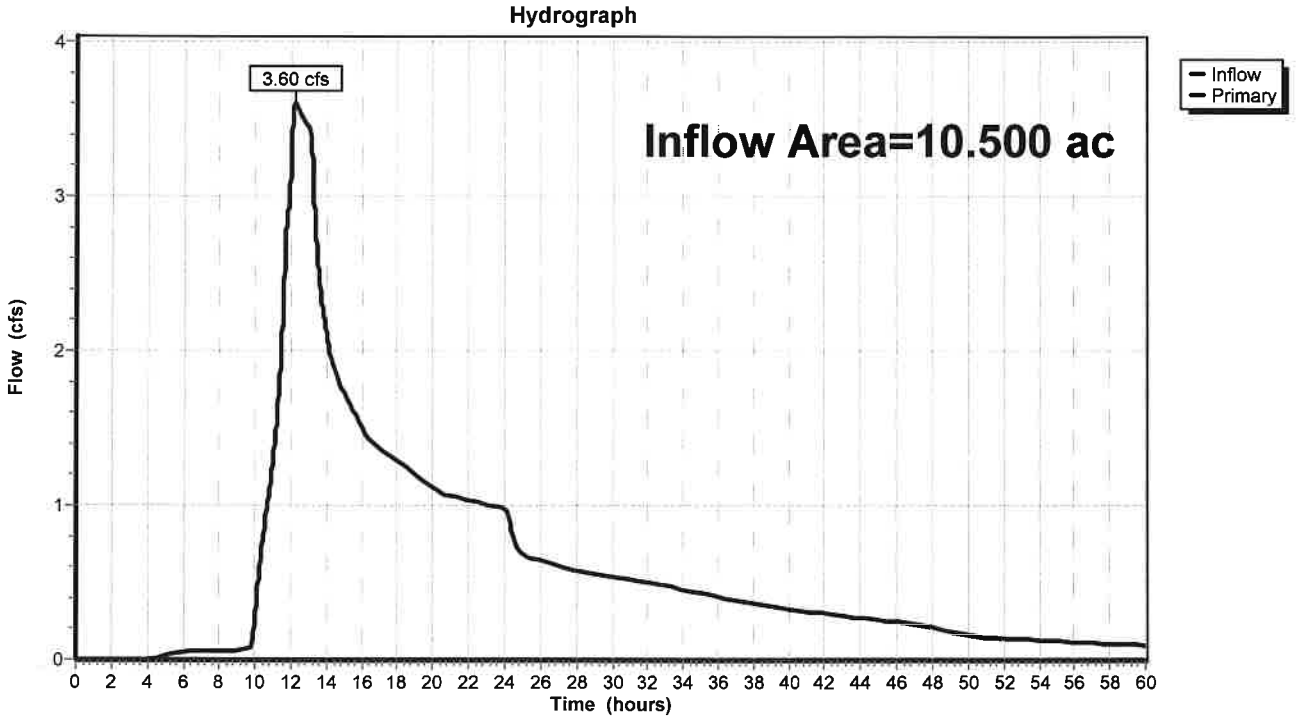
Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 3.23" for 100-Year event
Inflow = 3.60 cfs @ 12.19 hrs, Volume= 2.829 af
Primary = 3.60 cfs @ 12.19 hrs, Volume= 2.829 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

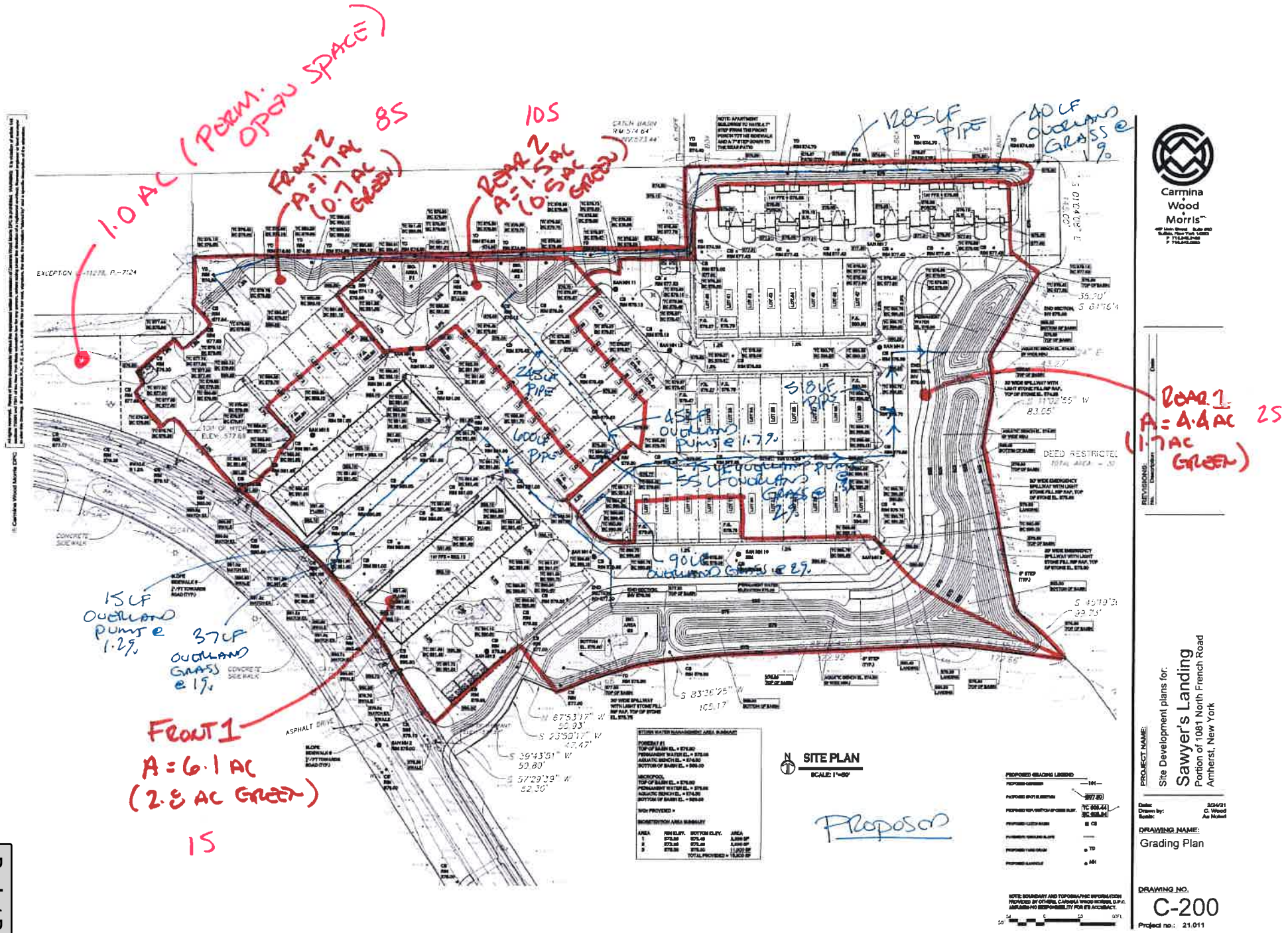
Hydrograph for Link 5L: Outflow (@ CB 54)

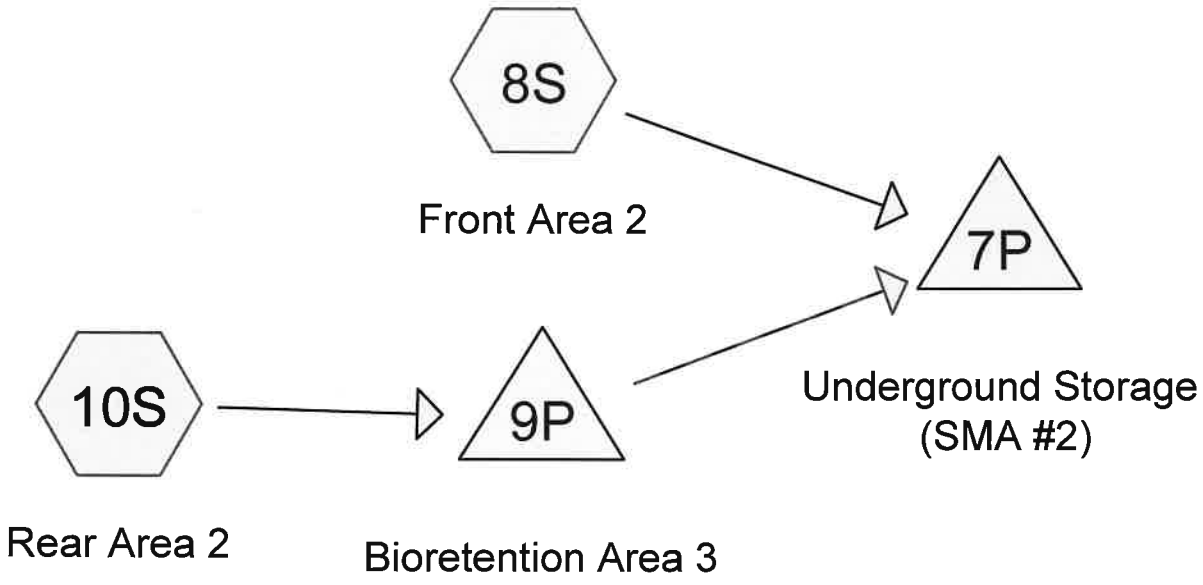
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00
1.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00
5.00	0.03	0.00	0.03
6.00	0.05	0.00	0.05
7.00	0.05	0.00	0.05
8.00	0.05	0.00	0.05
9.00	0.06	0.00	0.06
10.00	0.30	0.00	0.30
11.00	1.31	0.00	1.31
12.00	**3.29**	0.00	**3.29**
13.00	**3.44**	0.00	**3.44**
14.00	2.10	0.00	2.10
15.00	1.72	0.00	1.72
16.00	1.51	0.00	1.51
17.00	1.37	0.00	1.37
18.00	1.29	0.00	1.29
19.00	1.20	0.00	1.20
20.00	1.11	0.00	1.11
21.00	1.06	0.00	1.06
22.00	1.03	0.00	1.03
23.00	1.01	0.00	1.01
24.00	0.98	0.00	0.98
25.00	0.68	0.00	0.68
26.00	0.64	0.00	0.64
27.00	0.61	0.00	0.61
28.00	0.58	0.00	0.58
29.00	0.55	0.00	0.55
30.00	0.54	0.00	0.54
31.00	0.52	0.00	0.52
32.00	0.50	0.00	0.50
33.00	0.48	0.00	0.48
34.00	0.45	0.00	0.45
35.00	0.43	0.00	0.43
36.00	0.41	0.00	0.41
37.00	0.39	0.00	0.39
38.00	0.37	0.00	0.37
39.00	0.35	0.00	0.35
40.00	0.33	0.00	0.33
41.00	0.32	0.00	0.32
42.00	0.30	0.00	0.30
43.00	0.28	0.00	0.28
44.00	0.27	0.00	0.27
45.00	0.26	0.00	0.26
46.00	0.25	0.00	0.25
47.00	0.24	0.00	0.24
48.00	0.21	0.00	0.21
49.00	0.18	0.00	0.18
50.00	0.16	0.00	0.16
51.00	0.15	0.00	0.15
52.00	0.14	0.00	0.14
53.00	0.13	0.00	0.13
54.00	0.13	0.00	0.13
55.00	0.12	0.00	0.12
56.00	0.12	0.00	0.12
57.00	0.11	0.00	0.11
58.00	0.10	0.00	0.10
59.00	0.10	0.00	0.10
60.00	0.10	0.00	0.10

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Proposed Runoff - West

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)


1.0 AC (PERM. OPEN SPACE)
FRONT 2
A = 1.7 AC
(0.7 AC GREEN)
85
REAR 2
A = 1.5 AC
(0.5 AC GREEN)
105
1285 LF PIPE
40 LF OVERLAND GRASS @ 1%
245 LF PIPE
600 LF PIPE
45 LF OVERLAND PUMPED 1.7%
55 LF OVERLAND PUMPED
55 LF OVERLAND GRASS @ 2%
90 LF OVERLAND GRASS @ 2%
REAR 1
A = 4.4 AC
(1.7 AC GREEN)
25
15 LF OVERLAND PUMPED 1.2%
37 LF OVERLAND GRASS @ 1%
FRONT 1
A = 6.1 AC
(2.8 AC GREEN)
15
PROPOSED
SITE PLAN
SCALE: 1"=60'
Carmina Wood Morris
REVISIONS:
No. Description Date
PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York
Date: 3/24/21
Drawn by: C. Wood
Scale: As Noted
DRAWING NAME:
Grading Plan
DRAWING NO.
C-200
Project no.: 21.011



Subcat Reach Pond Link

Routing Diagram for 21.011 Proposed
Prepared by Hewlett-Packard Company, Printed 3/4/2021
HydroCAD® 10.00-18 s/n 05019 © 2016 HydroCAD Software Solutions LLC

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Events for Pond 7P: Underground Storage

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	2.40	0.33	570.29	4,537
2-Year	4.15	0.68	570.46	5,990
5-Year	7.03	1.05	570.79	8,639
10-Year	9.17	1.28	571.13	11,342
25-Year	11.11	1.61	571.73	15,804
50-Year	12.80	3.61	572.23	18,836
100-Year	**14.92**	**4.83**	**572.92**	**21,772**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.200	80	>75% Grass cover, Good, HSG D (8S, 10S)
1.200	98	Paved parking, HSG D (8S, 10S)
0.800	98	Roofs, HSG D (8S, 10S)
3.200	**91**	**TOTAL AREA**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
3.200	HSG D	8S, 10S
0.000	Other	
3.200		**TOTAL AREA**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchmer Numbers
0.000	0.000	0.000	1.200	0.000	1.200	>75% Grass cover, Good	8S, 10S
0.000	0.000	0.000	1.200	0.000	1.200	Paved parking	8S, 10S
0.000	0.000	0.000	0.800	0.000	0.800	Roofs	8S, 10S
0.000	**0.000**	**0.000**	**3.200**	**0.000**	**3.200**	**TOTAL AREA**	

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=1.04"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=2.36 cfs 0.148 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=1.11"
Flow Length=345' Tc=9.1 min CN=92 Runoff=2.63 cfs 0.139 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=570.29' Storage=4,537 cf Inflow=2.40 cfs 0.287 af
Outflow=0.33 cfs 0.243 af

Pond 9P: Bioretention Area 3 Peak Elev=574.54' Storage=2,922 cf Inflow=2.63 cfs 0.139 af
Outflow=0.43 cfs 0.139 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.287 af Average Runoff Depth = 1.08"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

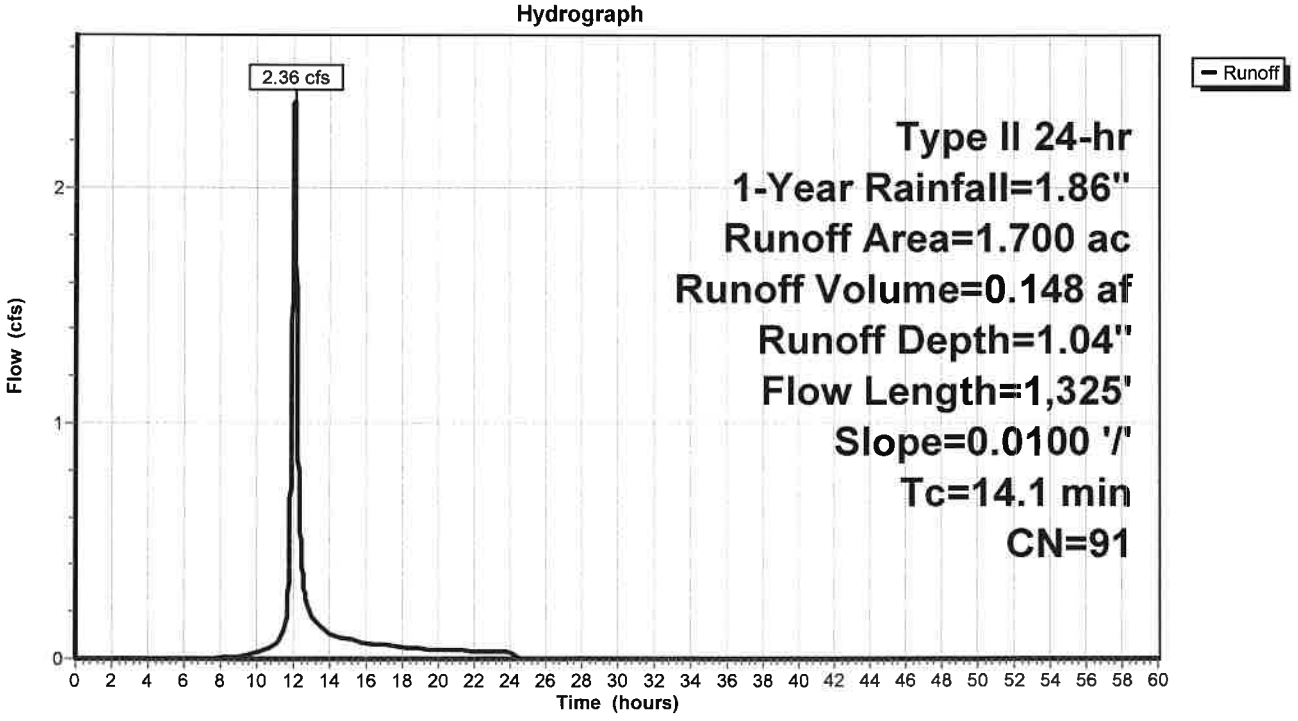
Runoff = 2.36 cfs @ 12.06 hrs, Volume= 0.148 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.00
9.00	0.27	0.01	0.01
10.00	0.34	0.02	0.02
11.00	0.44	0.05	0.07
12.00	1.23	0.53	**2.04**
13.00	1.44	0.69	**0.18**
14.00	1.53	0.76	0.11
15.00	1.59	0.81	0.08
16.00	1.64	0.85	0.07
17.00	1.68	0.89	0.06
18.00	1.71	0.92	0.05
19.00	1.74	0.94	0.04
20.00	1.77	0.97	0.04
21.00	1.79	0.99	0.03
22.00	1.82	1.01	0.03
23.00	1.84	1.02	0.03
24.00	**1.86**	**1.04**	0.03
25.00	1.86	1.04	0.00
26.00	1.86	1.04	0.00
27.00	1.86	1.04	0.00
28.00	1.86	1.04	0.00
29.00	1.86	1.04	0.00
30.00	1.86	1.04	0.00
31.00	1.86	1.04	0.00
32.00	1.86	1.04	0.00
33.00	1.86	1.04	0.00
34.00	1.86	1.04	0.00
35.00	1.86	1.04	0.00
36.00	1.86	1.04	0.00
37.00	1.86	1.04	0.00
38.00	1.86	1.04	0.00
39.00	1.86	1.04	0.00
40.00	1.86	1.04	0.00
41.00	1.86	1.04	0.00
42.00	1.86	1.04	0.00
43.00	1.86	1.04	0.00
44.00	1.86	1.04	0.00
45.00	1.86	1.04	0.00
46.00	1.86	1.04	0.00
47.00	1.86	1.04	0.00
48.00	1.86	1.04	0.00
49.00	1.86	1.04	0.00
50.00	1.86	1.04	0.00
51.00	1.86	1.04	0.00
52.00	1.86	1.04	0.00
53.00	1.86	1.04	0.00
54.00	1.86	1.04	0.00
55.00	1.86	1.04	0.00
56.00	1.86	1.04	0.00
57.00	1.86	1.04	0.00
58.00	1.86	1.04	0.00
59.00	1.86	1.04	0.00
60.00	1.86	1.04	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

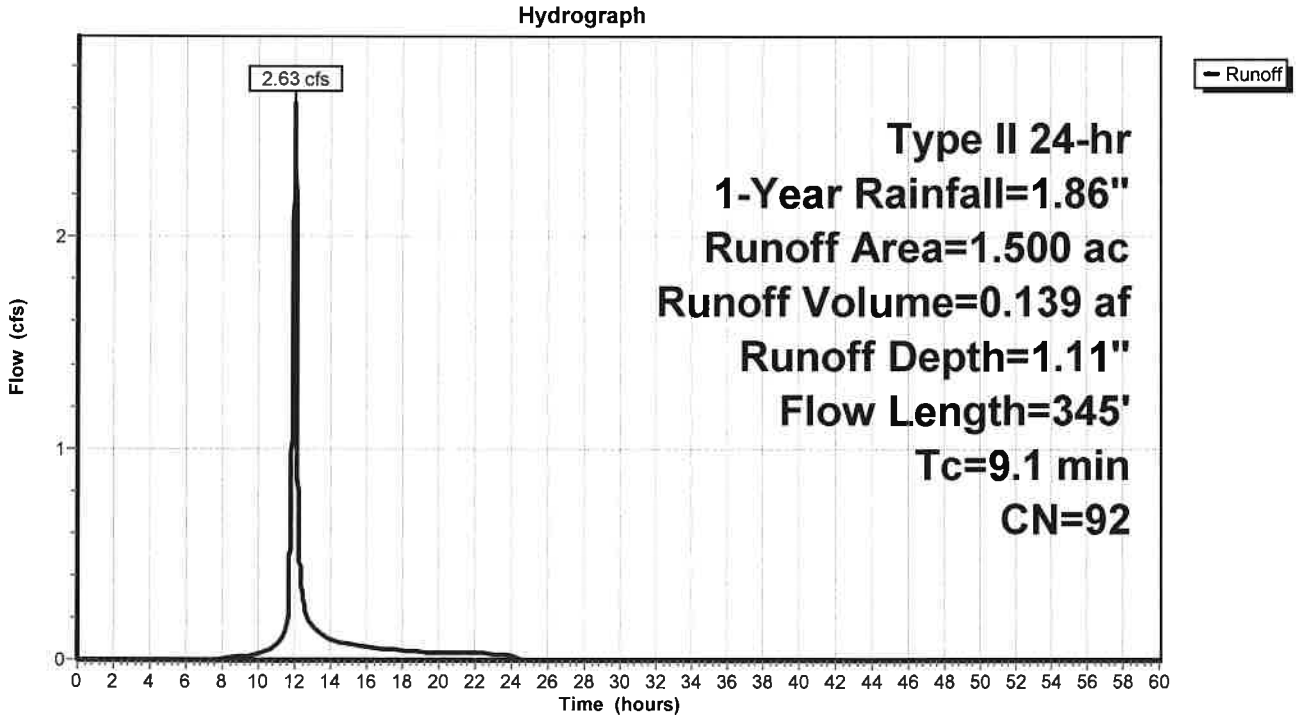
Runoff = 2.63 cfs @ 12.01 hrs, Volume= 0.139 af, Depth= 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.01
9.00	0.27	0.01	0.02
10.00	0.34	0.03	0.03
11.00	0.44	0.06	0.07
12.00	1.23	0.58	**2.63**
13.00	1.44	0.75	**0.16**
14.00	1.53	0.82	0.09
15.00	1.59	0.88	0.07
16.00	1.64	0.92	0.06
17.00	1.68	0.95	0.05
18.00	1.71	0.98	0.04
19.00	1.74	1.01	0.04
20.00	1.77	1.03	0.03
21.00	1.79	1.05	0.03
22.00	1.82	1.07	0.03
23.00	1.84	1.09	0.03
24.00	**1.86**	**1.11**	0.03
25.00	1.86	1.11	0.00
26.00	1.86	1.11	0.00
27.00	1.86	1.11	0.00
28.00	1.86	1.11	0.00
29.00	1.86	1.11	0.00
30.00	1.86	1.11	0.00
31.00	1.86	1.11	0.00
32.00	1.86	1.11	0.00
33.00	1.86	1.11	0.00
34.00	1.86	1.11	0.00
35.00	1.86	1.11	0.00
36.00	1.86	1.11	0.00
37.00	1.86	1.11	0.00
38.00	1.86	1.11	0.00
39.00	1.86	1.11	0.00
40.00	1.86	1.11	0.00
41.00	1.86	1.11	0.00
42.00	1.86	1.11	0.00
43.00	1.86	1.11	0.00
44.00	1.86	1.11	0.00
45.00	1.86	1.11	0.00
46.00	1.86	1.11	0.00
47.00	1.86	1.11	0.00
48.00	1.86	1.11	0.00
49.00	1.86	1.11	0.00
50.00	1.86	1.11	0.00
51.00	1.86	1.11	0.00
52.00	1.86	1.11	0.00
53.00	1.86	1.11	0.00
54.00	1.86	1.11	0.00
55.00	1.86	1.11	0.00
56.00	1.86	1.11	0.00
57.00	1.86	1.11	0.00
58.00	1.86	1.11	0.00
59.00	1.86	1.11	0.00
60.00	1.86	1.11	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 1.08" for 1-Year event
Inflow = 2.40 cfs @ 12.06 hrs, Volume= 0.287 af
Outflow = 0.33 cfs @ 13.18 hrs, Volume= 0.243 af, Atten= 86%, Lag= 67.2 min
Primary = 0.33 cfs @ 13.18 hrs, Volume= 0.243 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 570.29' @ 13.18 hrs Surf.Area= 10,145 sf Storage= 4,537 cf

Plug-Flow detention time= 493.3 min calculated for 0.243 af (85% of inflow)
Center-of-Mass det. time= 283.3 min (1,405.6 - 1,122.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

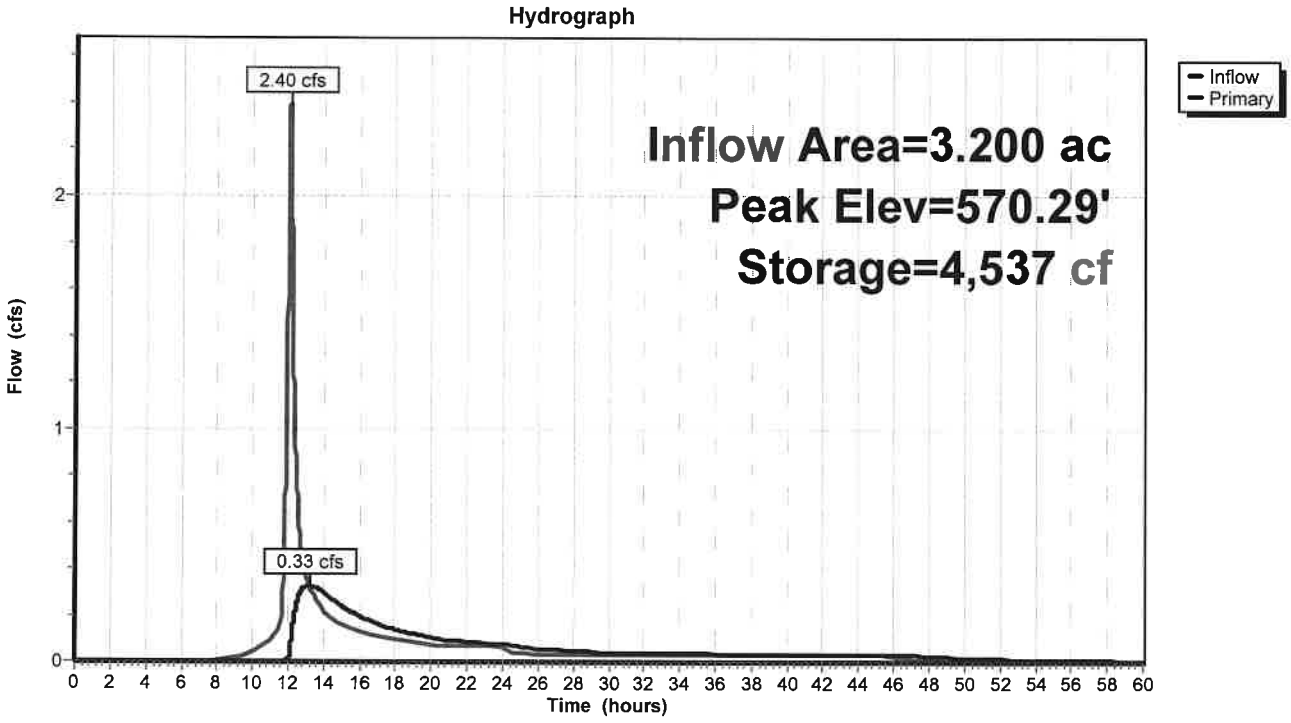
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

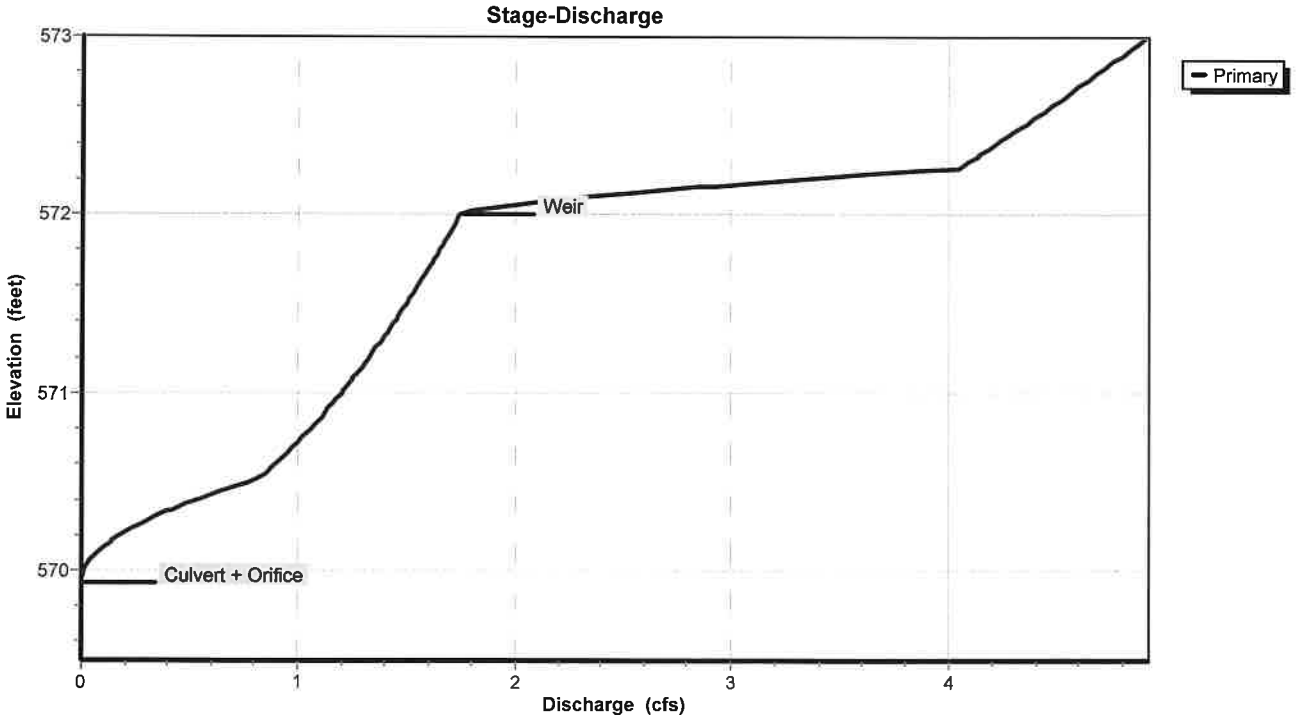
Primary OutFlow Max=0.32 cfs @ 13.18 hrs HW=570.29' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.32 cfs @ 1.88 fps)
  ├**2=Orifice** (Passes 0.32 cfs of 0.56 cfs potential flow)
  └**3=Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

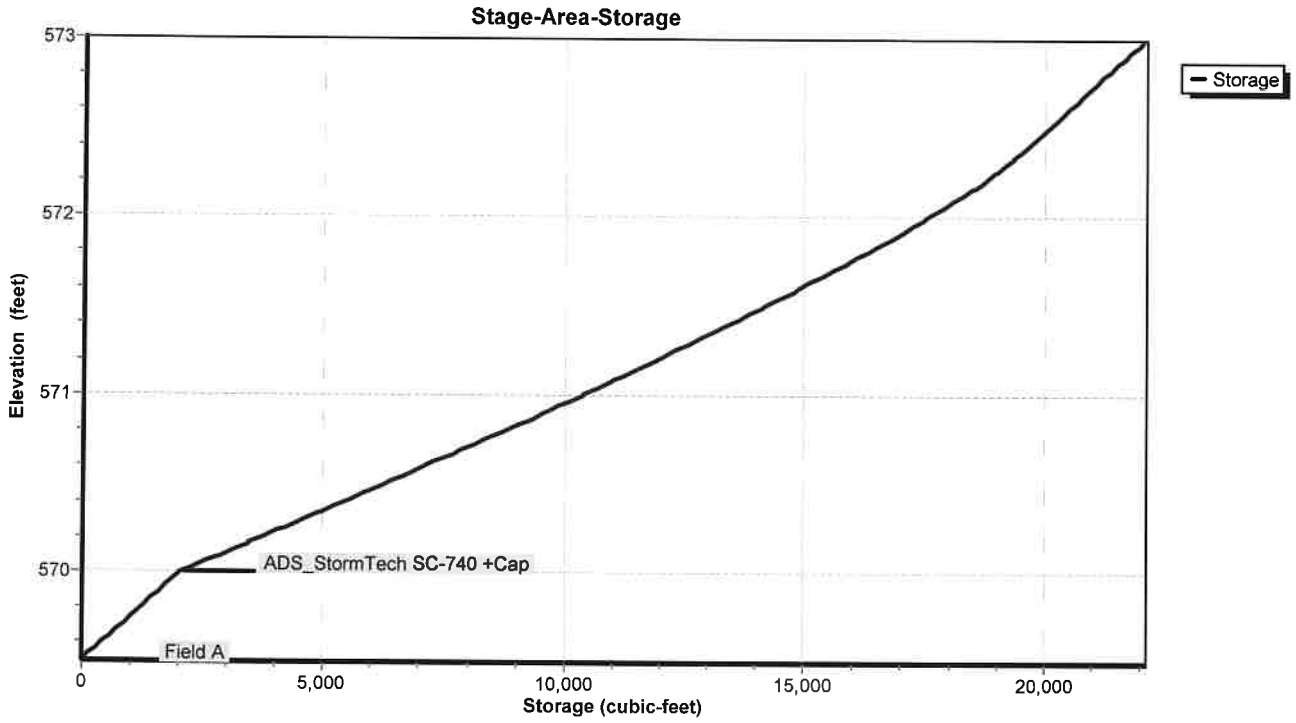


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.00	0	569.50	0.00
8.00	0.00	4	569.50	0.00
10.00	0.04	139	569.53	0.00
12.00	**2.08**	**1,735**	**569.93**	**0.00**
14.00	**0.22**	**4,393**	**570.28**	**0.30**
16.00	0.13	3,835	570.21	0.20
18.00	0.10	3,452	570.17	0.14
20.00	0.07	3,194	570.14	0.10
22.00	0.07	3,023	570.12	0.08
24.00	0.06	2,931	570.10	0.07
26.00	0.03	2,737	570.08	0.06
28.00	0.03	2,618	570.07	0.05
30.00	0.03	2,550	570.06	0.04
32.00	0.03	2,506	570.06	0.04
34.00	0.03	2,476	570.05	0.04
36.00	0.03	2,453	570.05	0.03
38.00	0.03	2,436	570.05	0.03
40.00	0.03	2,422	570.05	0.03
42.00	0.03	2,410	570.04	0.03
44.00	0.03	2,399	570.04	0.03
46.00	0.03	2,388	570.04	0.03
48.00	0.01	2,288	570.03	0.02
50.00	0.00	2,166	570.02	0.02
52.00	0.00	2,066	570.00	0.01
54.00	0.00	1,993	569.99	0.01
56.00	0.00	1,945	569.98	0.01
58.00	0.00	1,910	569.97	0.00
60.00	0.00	1,885	569.96	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)
569.50	0
569.55	203
569.60	406
569.65	609
569.70	812
569.75	1,014
569.80	1,217
569.85	1,420
569.90	1,623
569.95	1,826
570.00	2,029
570.05	2,459
570.10	2,889
570.15	3,318
570.20	3,746
570.25	4,173
570.30	4,598
570.35	5,022
570.40	5,444
570.45	5,865
570.50	6,284
570.55	6,701
570.60	7,116
570.65	7,529
570.70	7,940
570.75	8,349
570.80	8,756
570.85	9,160
570.90	9,562
570.95	9,962
571.00	10,359
571.05	10,754
571.10	11,145
571.15	11,534
571.20	11,919
571.25	12,301
571.30	12,680
571.35	13,056
571.40	13,428
571.45	13,797
571.50	14,161
571.55	14,522
571.60	14,879
571.65	15,230
571.70	15,577
571.75	15,917
571.80	16,252
571.85	16,582
571.90	16,906
571.95	17,224
572.00	17,535
572.05	17,838
572.10	18,133
572.15	18,417
572.20	18,690
572.25	18,946
572.30	19,188
572.35	19,417
572.40	19,637
572.45	19,850
572.50	20,057
572.55	20,260
572.60	20,463
572.65	20,665
572.70	20,868
572.75	21,071
572.80	21,274
572.85	21,477
572.90	21,680
572.95	21,883
573.00	**22,086**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 1.11" for 1-Year event
Inflow = 2.63 cfs @ 12.01 hrs, Volume= 0.139 af
Outflow = 0.43 cfs @ 12.29 hrs, Volume= 0.139 af, Atten= 84%, Lag= 17.0 min
Primary = 0.43 cfs @ 12.29 hrs, Volume= 0.139 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.54' @ 12.29 hrs Surf.Area= 5,881 sf Storage= 2,922 cf

Plug-Flow detention time= 615.0 min calculated for 0.139 af (100% of inflow)
Center-of-Mass det. time= 615.0 min (1,433.7 - 818.7)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

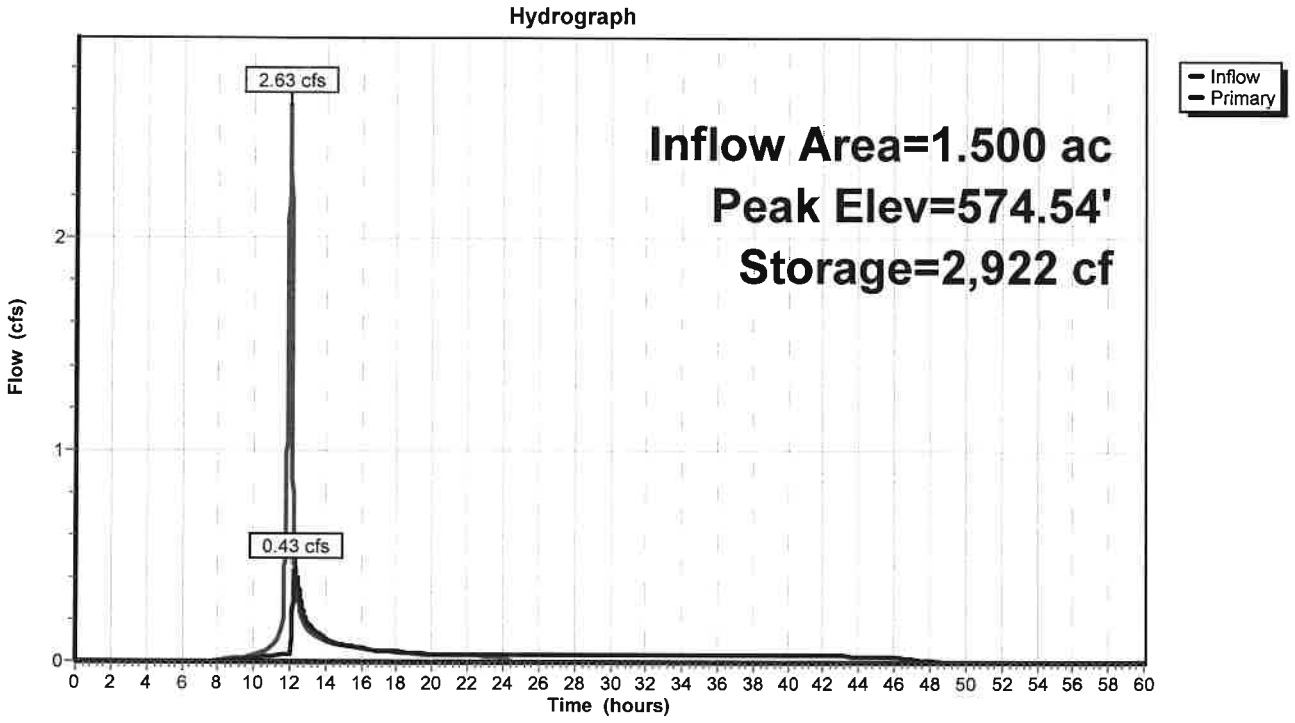
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

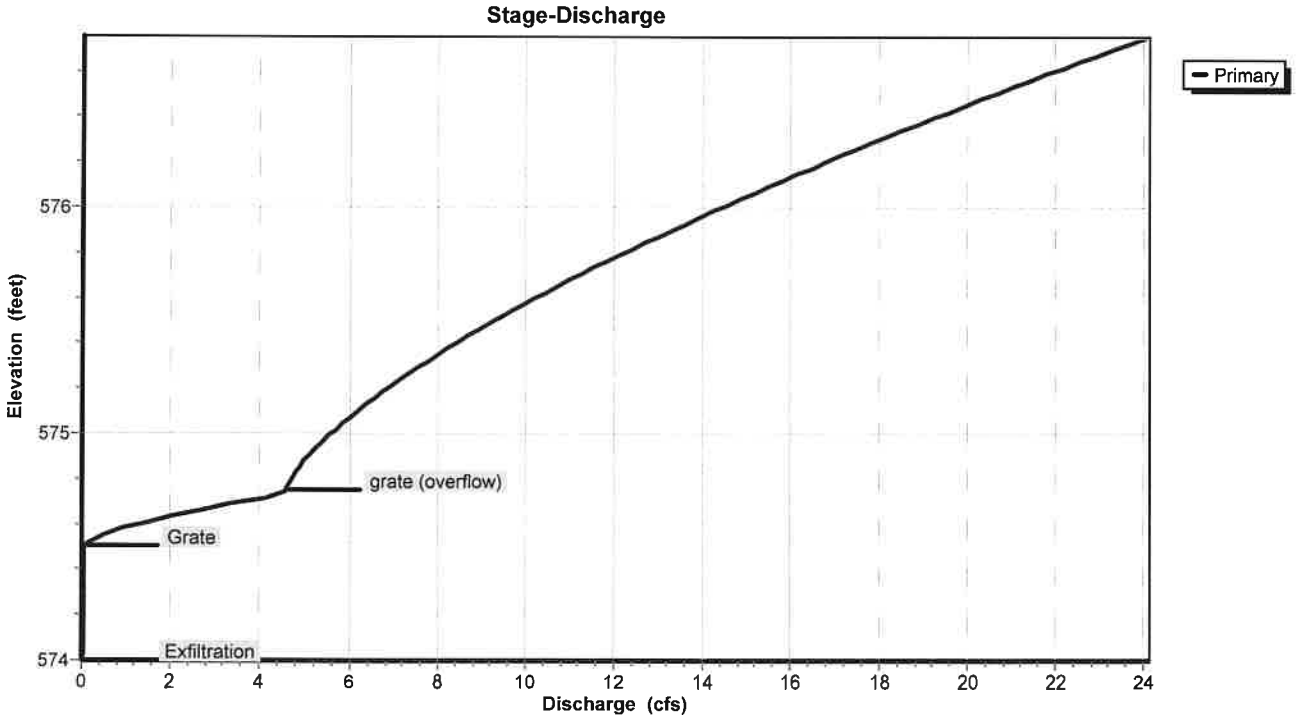
Primary OutFlow Max=0.42 cfs @ 12.29 hrs HW=574.54' (Free Discharge)
- **1=8" pipe** (Passes 0.42 cfs of 4.43 cfs potential flow)
  - **2=Grate** (Weir Controls 0.39 cfs @ 0.69 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

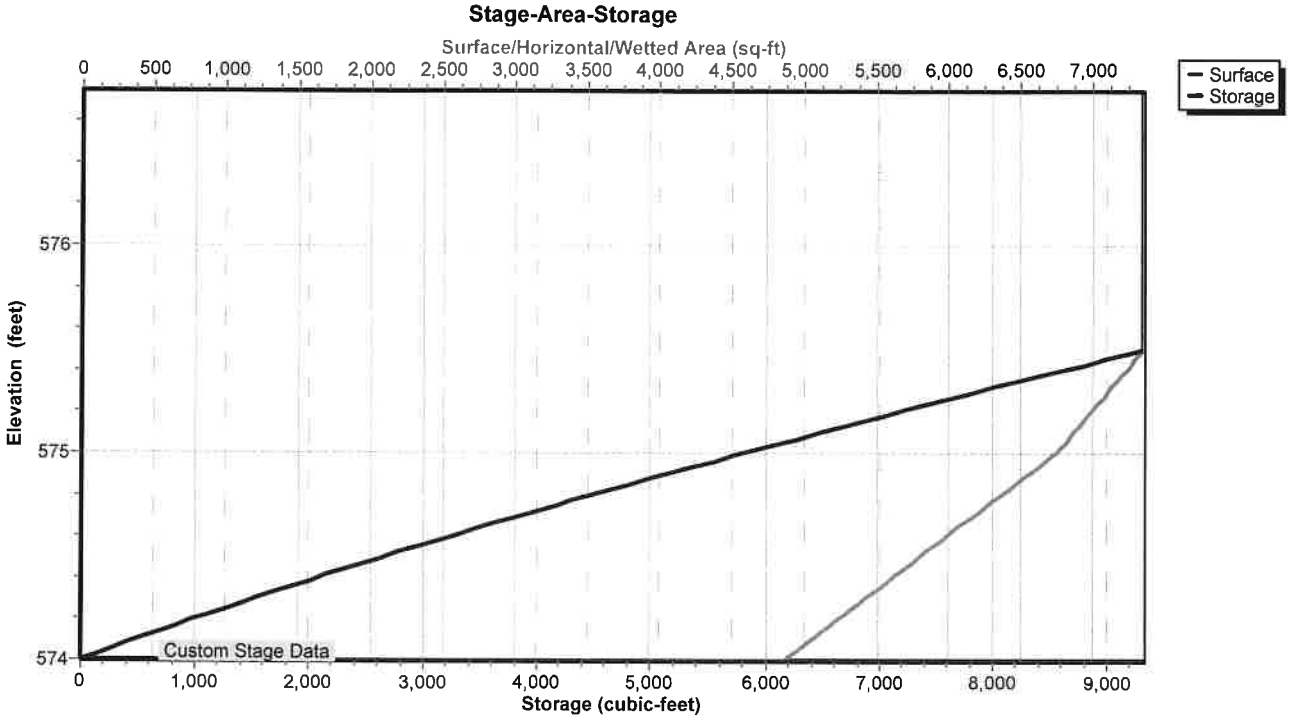


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.00	0	574.00	0.00
8.00	0.01	9	574.00	0.00
10.00	0.03	70	574.01	0.01
12.00	**2.63**	**1,806**	**574.35**	**0.03**
14.00	**0.09**	**2,731**	**574.51**	**0.11**
16.00	0.06	2,688	574.50	0.06
18.00	0.04	2,673	574.50	0.05
20.00	0.03	2,662	574.50	0.03
22.00	0.03	2,636	574.50	0.03
24.00	0.03	2,594	574.49	0.03
26.00	0.00	2,362	574.45	0.03
28.00	0.00	2,119	574.40	0.03
30.00	0.00	1,881	574.36	0.03
32.00	0.00	1,647	574.32	0.03
34.00	0.00	1,417	574.28	0.03
36.00	0.00	1,190	574.23	0.03
38.00	0.00	968	574.19	0.03
40.00	0.00	750	574.15	0.03
42.00	0.00	536	574.11	0.03
44.00	0.00	326	574.07	0.03
46.00	0.00	120	574.02	0.03
48.00	0.00	26	574.01	0.01
50.00	0.00	6	574.00	0.00
52.00	0.00	1	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=1.34"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=3.03 cfs 0.190 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=1.42"
Flow Length=345' Tc=9.1 min CN=92 Runoff=3.32 cfs 0.177 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=570.46' Storage=5,990 cf Inflow=4.15 cfs 0.367 af
Outflow=0.68 cfs 0.324 af

Pond 9P: Bioretention Area 3 Peak Elev=574.60' Storage=3,274 cf Inflow=3.32 cfs 0.177 af
Outflow=1.41 cfs 0.177 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.367 af Average Runoff Depth = 1.38"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

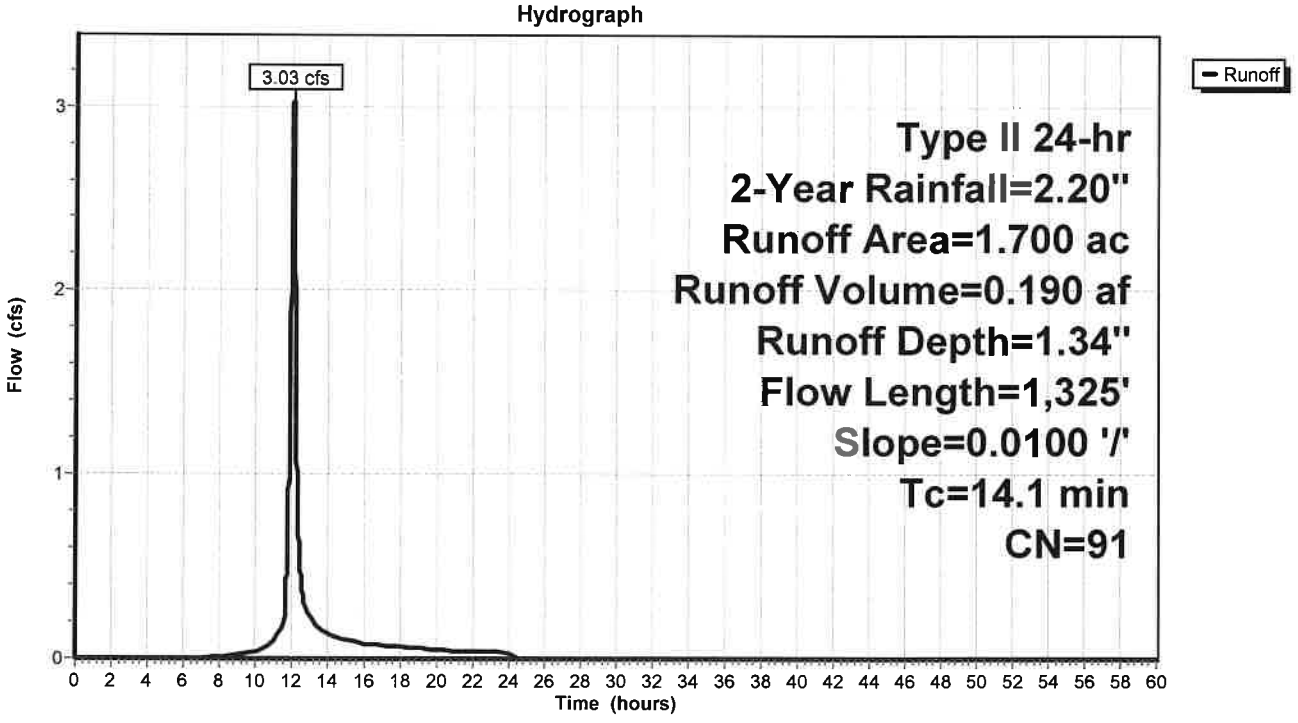
Runoff = 3.03 cfs @ 12.06 hrs, Volume= 0.190 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass**
					Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.05	0.00	0.00
3.00	0.08	0.00	0.00
4.00	0.11	0.00	0.00
5.00	0.14	0.00	0.00
6.00	0.18	0.00	0.00
7.00	0.22	0.00	0.00
8.00	0.26	0.00	0.01
9.00	0.32	0.01	0.02
10.00	0.40	0.03	0.04
11.00	0.52	0.08	0.10
12.00	1.46	0.71	**2.64**
13.00	1.70	0.90	**0.23**
14.00	1.80	0.99	0.13
15.00	1.88	1.06	0.10
16.00	1.94	1.11	0.08
17.00	1.98	1.15	0.07
18.00	2.03	1.19	0.06
19.00	2.06	1.22	0.05
20.00	2.09	1.25	0.05
21.00	2.12	1.27	0.04
22.00	2.15	1.30	0.04
23.00	2.18	1.32	0.04
24.00	**2.20**	**1.34**	0.04
25.00	2.20	1.34	0.00
26.00	2.20	1.34	0.00
27.00	2.20	1.34	0.00
28.00	2.20	1.34	0.00
29.00	2.20	1.34	0.00
30.00	2.20	1.34	0.00
31.00	2.20	1.34	0.00
32.00	2.20	1.34	0.00
33.00	2.20	1.34	0.00
34.00	2.20	1.34	0.00
35.00	2.20	1.34	0.00
36.00	2.20	1.34	0.00
37.00	2.20	1.34	0.00
38.00	2.20	1.34	0.00
39.00	2.20	1.34	0.00
40.00	2.20	1.34	0.00
41.00	2.20	1.34	0.00
42.00	2.20	1.34	0.00
43.00	2.20	1.34	0.00
44.00	2.20	1.34	0.00
45.00	2.20	1.34	0.00
46.00	2.20	1.34	0.00
47.00	2.20	1.34	0.00
48.00	2.20	1.34	0.00
49.00	2.20	1.34	0.00
50.00	2.20	1.34	0.00
51.00	2.20	1.34	0.00
52.00	2.20	1.34	0.00
53.00	2.20	1.34	0.00
54.00	2.20	1.34	0.00
55.00	2.20	1.34	0.00
56.00	2.20	1.34	0.00
57.00	2.20	1.34	0.00
58.00	2.20	1.34	0.00
59.00	2.20	1.34	0.00
60.00	2.20	1.34	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

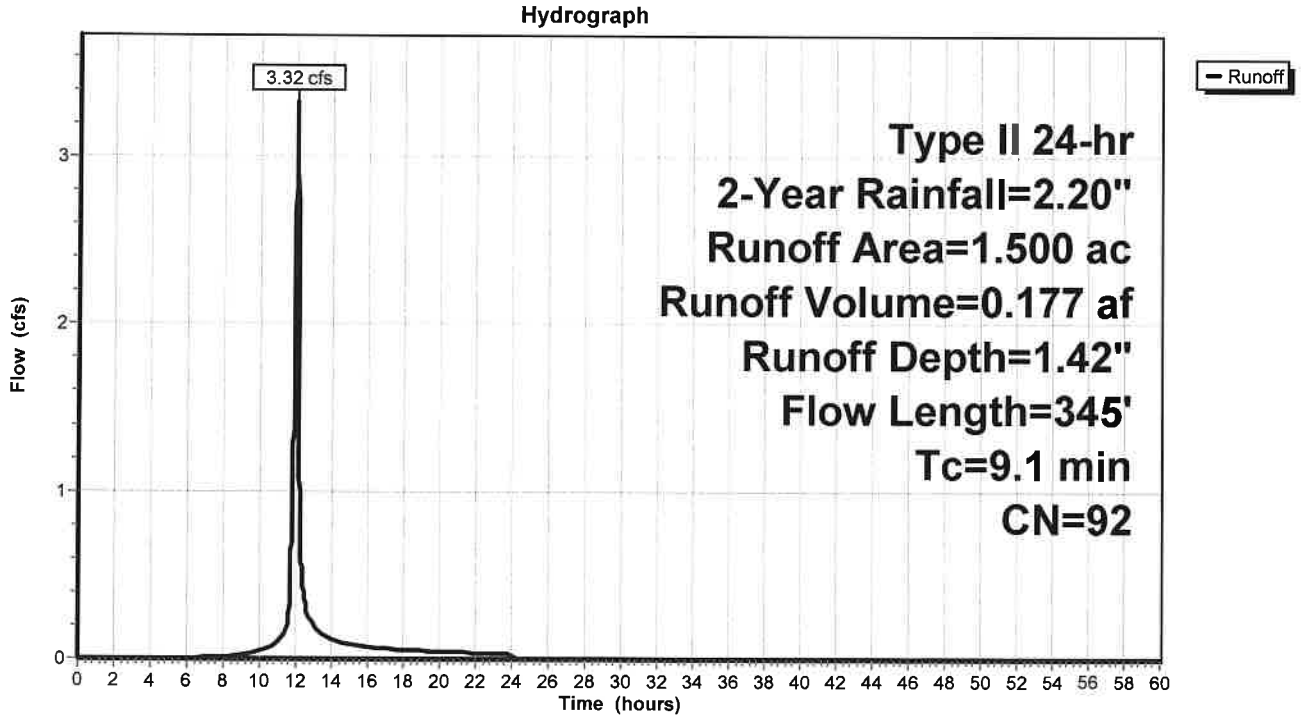
Runoff = 3.32 cfs @ 12.00 hrs, Volume= 0.177 af, Depth= 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	2.20	1.42	0.00
1.00	0.02	0.00	0.00	53.00	2.20	1.42	0.00
2.00	0.05	0.00	0.00	54.00	2.20	1.42	0.00
3.00	0.08	0.00	0.00	55.00	2.20	1.42	0.00
4.00	0.11	0.00	0.00	56.00	2.20	1.42	0.00
5.00	0.14	0.00	0.00	57.00	2.20	1.42	0.00
6.00	0.18	0.00	0.00	58.00	2.20	1.42	0.00
7.00	0.22	0.00	0.01	59.00	2.20	1.42	0.00
8.00	0.26	0.01	0.01	60.00	2.20	1.42	0.00
9.00	0.32	0.02	0.03				
10.00	0.40	0.05	0.04				
11.00	0.52	0.10	0.10				
12.00	1.46	0.77	**3.32**				
13.00	1.70	0.97	0.20				
14.00	1.80	1.06	0.12				
15.00	1.88	1.13	0.09				
16.00	1.94	1.18	0.07				
17.00	1.98	1.22	0.06				
18.00	2.03	1.26	0.05				
19.00	2.06	1.29	0.05				
20.00	2.09	1.32	0.04				
21.00	2.12	1.35	0.04				
22.00	2.15	1.37	0.04				
23.00	2.18	1.40	0.03				
24.00	**2.20**	**1.42**	0.03				
25.00	2.20	1.42	0.00				
26.00	2.20	1.42	0.00				
27.00	2.20	1.42	0.00				
28.00	2.20	1.42	0.00				
29.00	2.20	1.42	0.00				
30.00	2.20	1.42	0.00				
31.00	2.20	1.42	0.00				
32.00	2.20	1.42	0.00				
33.00	2.20	1.42	0.00				
34.00	2.20	1.42	0.00				
35.00	2.20	1.42	0.00				
36.00	2.20	1.42	0.00				
37.00	2.20	1.42	0.00				
38.00	2.20	1.42	0.00				
39.00	2.20	1.42	0.00				
40.00	2.20	1.42	0.00				
41.00	2.20	1.42	0.00				
42.00	2.20	1.42	0.00				
43.00	2.20	1.42	0.00				
44.00	2.20	1.42	0.00				
45.00	2.20	1.42	0.00				
46.00	2.20	1.42	0.00				
47.00	2.20	1.42	0.00				
48.00	2.20	1.42	0.00				
49.00	2.20	1.42	0.00				
50.00	2.20	1.42	0.00				
51.00	2.20	1.42	0.00				

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 1.38" for 2-Year event
Inflow = 4.15 cfs @ 12.10 hrs, Volume= 0.367 af
Outflow = 0.68 cfs @ 12.65 hrs, Volume= 0.324 af, Atten= 84%, Lag= 33.2 min
Primary = 0.68 cfs @ 12.65 hrs, Volume= 0.324 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 570.46' @ 12.65 hrs Surf.Area= 10,145 sf Storage= 5,990 cf

Plug-Flow detention time= 401.0 min calculated for 0.324 af (88% of inflow)
Center-of-Mass det. time= 229.7 min (1,287.9 - 1,058.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

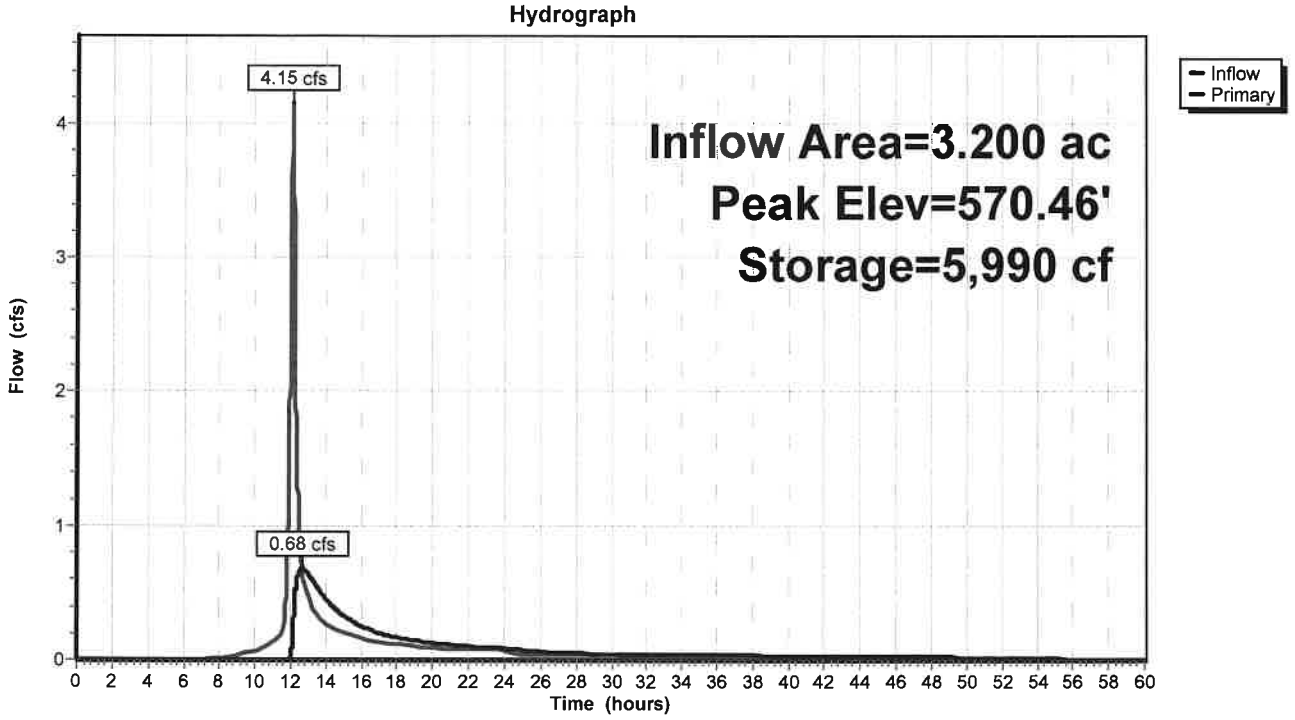
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

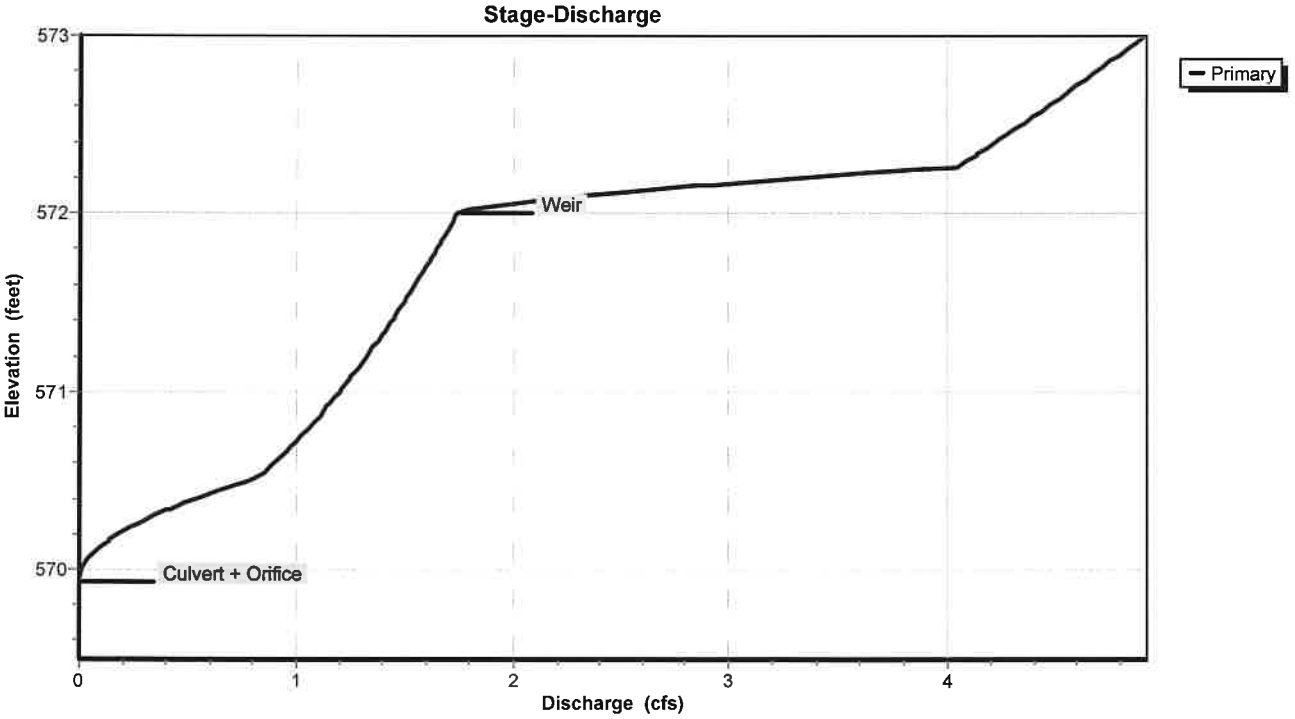
Primary OutFlow Max=0.68 cfs @ 12.65 hrs HW=570.46' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.68 cfs @ 2.31 fps)
└**2=Orifice** (Passes 0.68 cfs of 0.76 cfs potential flow)
└**3=Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

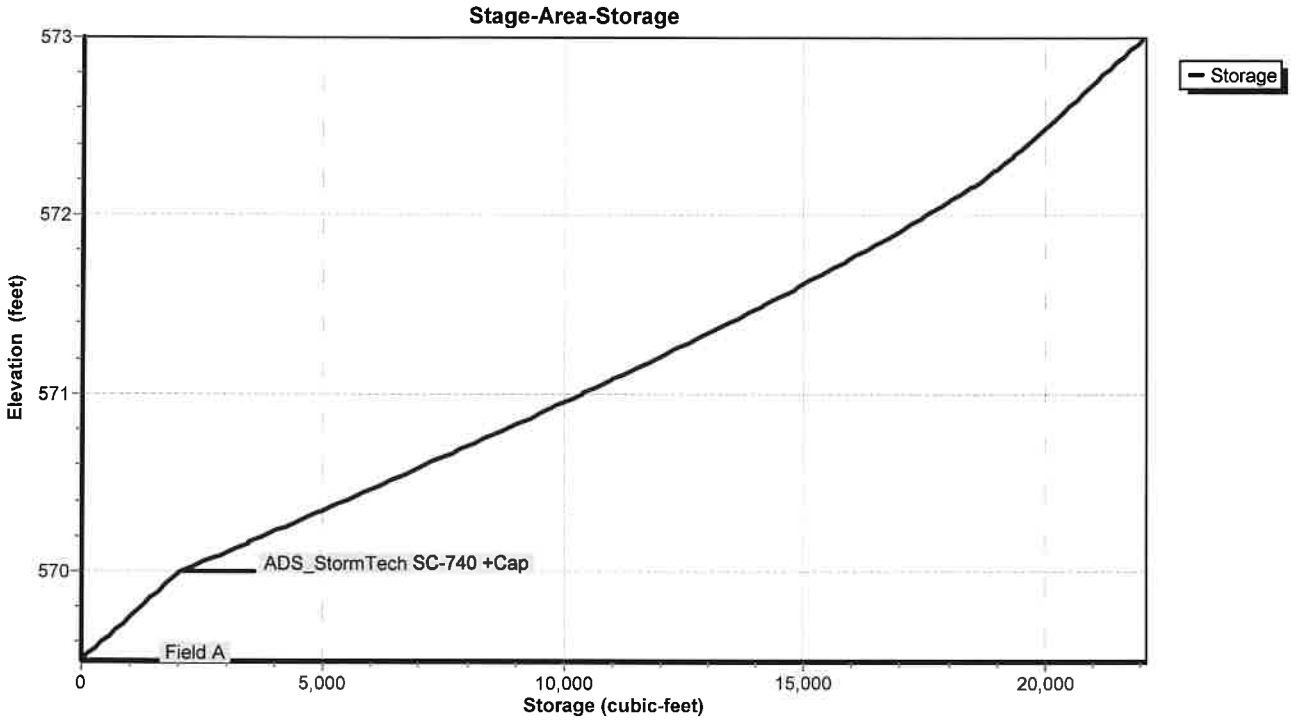


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.00	0	569.50	0.00
8.00	0.01	32	569.51	0.00
10.00	0.06	286	569.57	0.00
12.00	**2.68**	**2,414**	**570.04**	**0.03**
14.00	**0.27**	**5,111**	**570.36**	**0.45**
16.00	0.16	4,155	570.25	0.25
18.00	0.12	3,660	570.19	0.17
20.00	0.09	3,359	570.15	0.12
22.00	0.08	3,149	570.13	0.10
24.00	0.07	3,029	570.12	0.09
26.00	0.03	2,788	570.09	0.06
28.00	0.03	2,647	570.07	0.05
30.00	0.03	2,566	570.06	0.04
32.00	0.03	2,517	570.06	0.04
34.00	0.03	2,484	570.05	0.04
36.00	0.03	2,459	570.05	0.03
38.00	0.03	2,441	570.05	0.03
40.00	0.03	2,426	570.05	0.03
42.00	0.03	2,413	570.04	0.03
44.00	0.03	2,402	570.04	0.03
46.00	0.03	2,392	570.04	0.03
48.00	0.01	2,323	570.03	0.03
50.00	0.00	2,199	570.02	0.02
52.00	0.00	2,091	570.01	0.01
54.00	0.00	2,010	570.00	0.01
56.00	0.00	1,957	569.98	0.01
58.00	0.00	1,919	569.97	0.00
60.00	0.00	1,891	569.97	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)
569.50	0
569.55	203
569.60	406
569.65	609
569.70	812
569.75	1,014
569.80	1,217
569.85	1,420
569.90	1,623
569.95	1,826
570.00	2,029
570.05	2,459
570.10	2,889
570.15	3,318
570.20	3,746
570.25	4,173
570.30	4,598
570.35	5,022
570.40	5,444
570.45	5,865
570.50	6,284
570.55	6,701
570.60	7,116
570.65	7,529
570.70	7,940
570.75	8,349
570.80	8,756
570.85	9,160
570.90	9,562
570.95	9,962
571.00	10,359
571.05	10,754
571.10	11,145
571.15	11,534
571.20	11,919
571.25	12,301
571.30	12,680
571.35	13,056
571.40	13,428
571.45	13,797
571.50	14,161
571.55	14,522
571.60	14,879
571.65	15,230
571.70	15,577
571.75	15,917
571.80	16,252
571.85	16,582
571.90	16,906
571.95	17,224
572.00	17,535
572.05	17,838
572.10	18,133
572.15	18,417
572.20	18,690
572.25	18,946
572.30	19,188
572.35	19,417
572.40	19,637
572.45	19,850
572.50	20,057
572.55	20,260
572.60	20,463
572.65	20,665
572.70	20,868
572.75	21,071
572.80	21,274
572.85	21,477
572.90	21,680
572.95	21,883
573.00	**22,086**

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 1.42" for 2-Year event
Inflow = 3.32 cfs @ 12.00 hrs, Volume= 0.177 af
Outflow = 1.41 cfs @ 12.13 hrs, Volume= 0.177 af, Atten= 58%, Lag= 7.6 min
Primary = 1.41 cfs @ 12.13 hrs, Volume= 0.177 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.60' @ 12.13 hrs Surf.Area= 5,993 sf Storage= 3,274 cf

Plug-Flow detention time= 499.6 min calculated for 0.177 af (100% of inflow)
Center-of-Mass det. time= 499.8 min (1,311.6 - 811.8)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

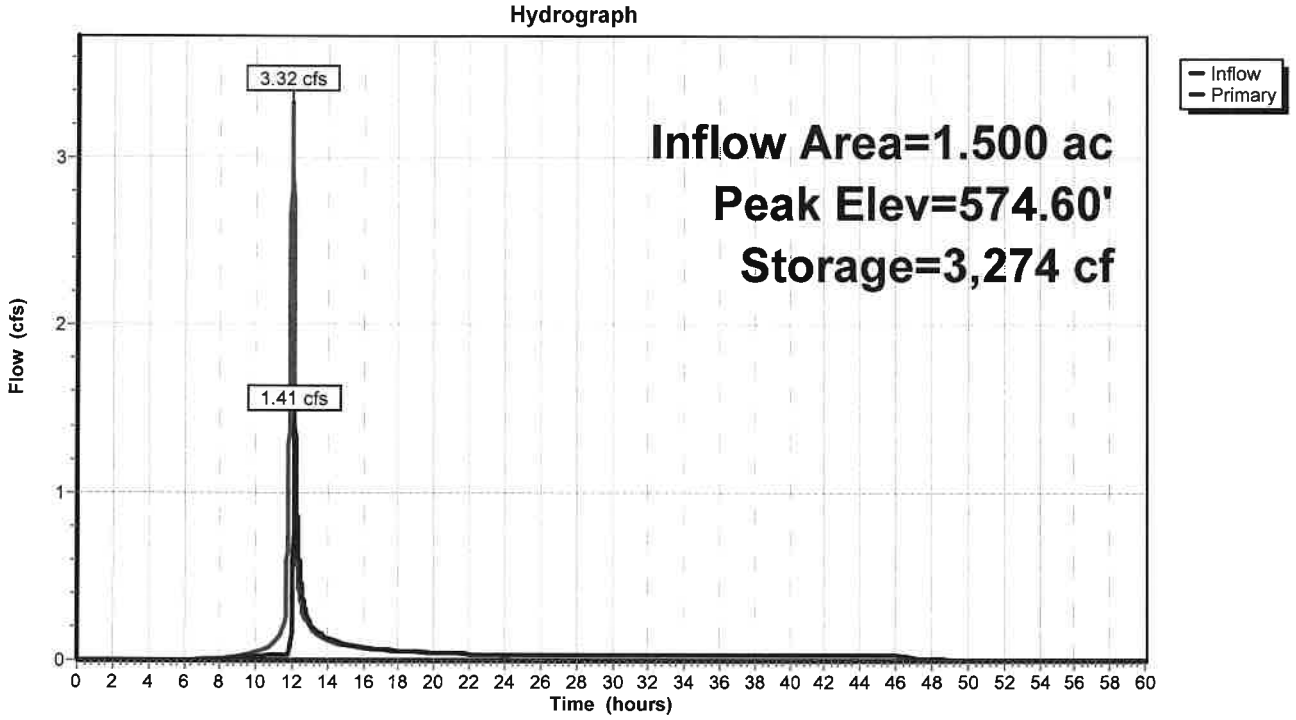
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

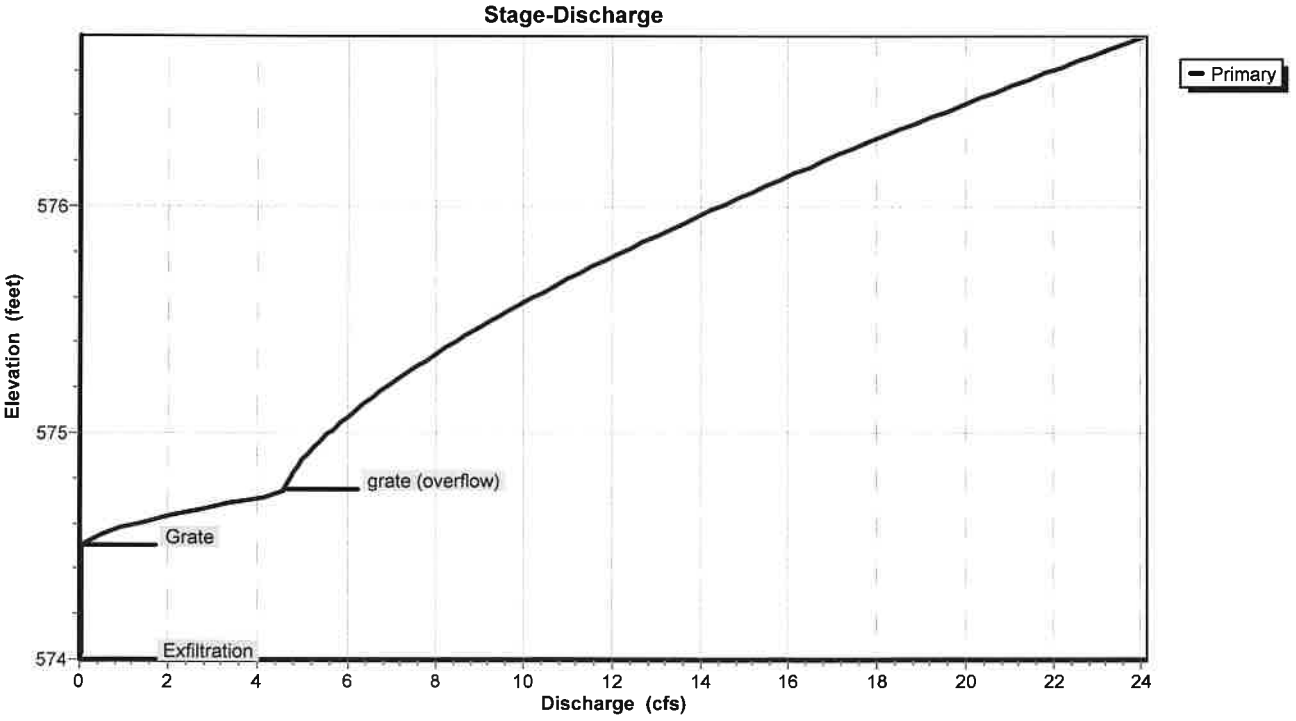
Primary OutFlow Max=1.41 cfs @ 12.13 hrs HW=574.60' (Free Discharge)
- **1=8" pipe** (Passes 1.41 cfs of 4.48 cfs potential flow)
  - **2=Grate** (Weir Controls 1.37 cfs @ 1.05 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

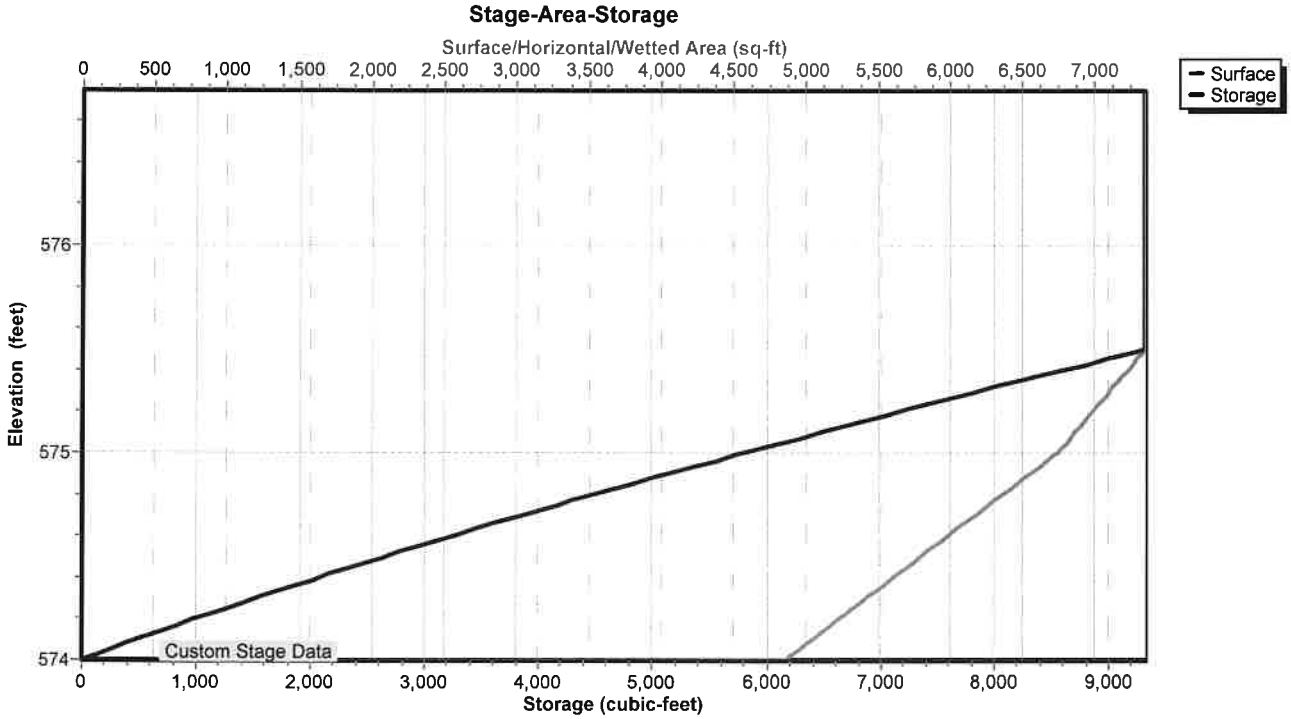


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.00	0	574.00	0.00
8.00	0.01	26	574.01	0.01
10.00	0.04	116	574.02	0.02
12.00	**3.32**	**2,442**	**574.46**	**0.03**
14.00	0.12	**2,754**	**574.52**	**0.13**
16.00	0.07	2,701	574.51	0.08
18.00	0.05	2,683	574.50	0.06
20.00	0.04	2,669	574.50	0.04
22.00	0.04	2,664	574.50	0.04
24.00	0.03	2,661	574.50	0.03
26.00	0.00	2,430	574.46	0.03
28.00	0.00	2,186	574.42	0.03
30.00	0.00	1,947	574.37	0.03
32.00	0.00	1,712	574.33	0.03
34.00	0.00	1,480	574.29	0.03
36.00	0.00	1,253	574.25	0.03
38.00	0.00	1,030	574.20	0.03
40.00	0.00	810	574.16	0.03
42.00	0.00	595	574.12	0.03
44.00	0.00	384	574.08	0.03
46.00	0.00	176	574.04	0.03
48.00	0.00	40	574.01	0.01
50.00	0.00	9	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=1.79"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=4.02 cfs 0.254 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=1.88"
Flow Length=345' Tc=9.1 min CN=92 Runoff=4.35 cfs 0.235 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=570.79' Storage=8,639 cf Inflow=7.03 cfs 0.489 af
Outflow=1.05 cfs 0.446 af

Pond 9P: Bioretention Area 3 Peak Elev=574.68' Storage=3,708 cf Inflow=4.35 cfs 0.235 af
Outflow=3.06 cfs 0.235 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.489 af Average Runoff Depth = 1.83"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

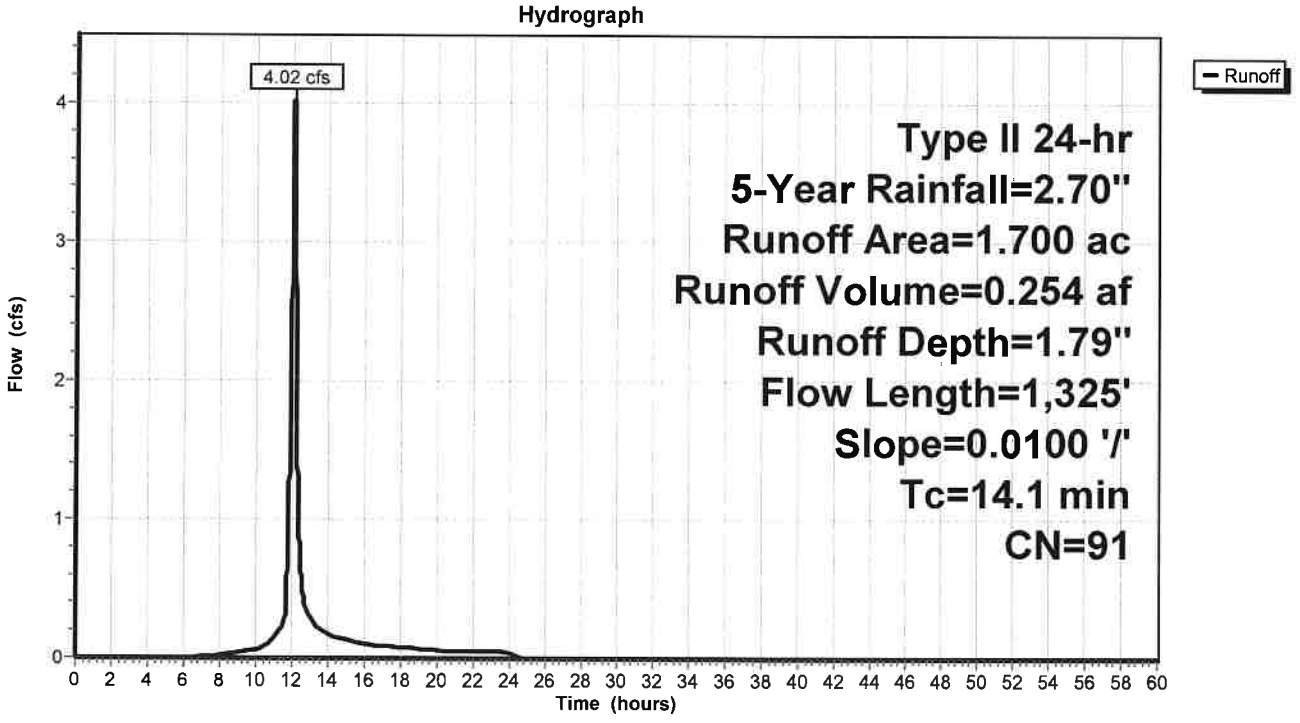
Runoff = 4.02 cfs @ 12.06 hrs, Volume= 0.254 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.00
7.00	0.27	0.00	0.01
8.00	0.32	0.01	0.02
9.00	0.40	0.03	0.04
10.00	0.49	0.07	0.06
11.00	0.63	0.13	0.14
12.00	1.79	0.98	**3.54**
13.00	2.08	1.24	**0.30**
14.00	2.21	1.35	0.17
15.00	2.30	1.43	0.13
16.00	2.38	1.50	0.10
17.00	2.43	1.55	0.09
18.00	2.49	1.60	0.08
19.00	2.53	1.64	0.07
20.00	2.57	1.67	0.06
21.00	2.60	1.71	0.05
22.00	2.64	1.74	0.05
23.00	2.67	1.77	0.05
24.00	**2.70**	**1.79**	0.05
25.00	2.70	1.79	0.00
26.00	2.70	1.79	0.00
27.00	2.70	1.79	0.00
28.00	2.70	1.79	0.00
29.00	2.70	1.79	0.00
30.00	2.70	1.79	0.00
31.00	2.70	1.79	0.00
32.00	2.70	1.79	0.00
33.00	2.70	1.79	0.00
34.00	2.70	1.79	0.00
35.00	2.70	1.79	0.00
36.00	2.70	1.79	0.00
37.00	2.70	1.79	0.00
38.00	2.70	1.79	0.00
39.00	2.70	1.79	0.00
40.00	2.70	1.79	0.00
41.00	2.70	1.79	0.00
42.00	2.70	1.79	0.00
43.00	2.70	1.79	0.00
44.00	2.70	1.79	0.00
45.00	2.70	1.79	0.00
46.00	2.70	1.79	0.00
47.00	2.70	1.79	0.00
48.00	2.70	1.79	0.00
49.00	2.70	1.79	0.00
50.00	2.70	1.79	0.00
51.00	2.70	1.79	0.00
52.00	2.70	1.79	0.00
53.00	2.70	1.79	0.00
54.00	2.70	1.79	0.00
55.00	2.70	1.79	0.00
56.00	2.70	1.79	0.00
57.00	2.70	1.79	0.00
58.00	2.70	1.79	0.00
59.00	2.70	1.79	0.00
60.00	2.70	1.79	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

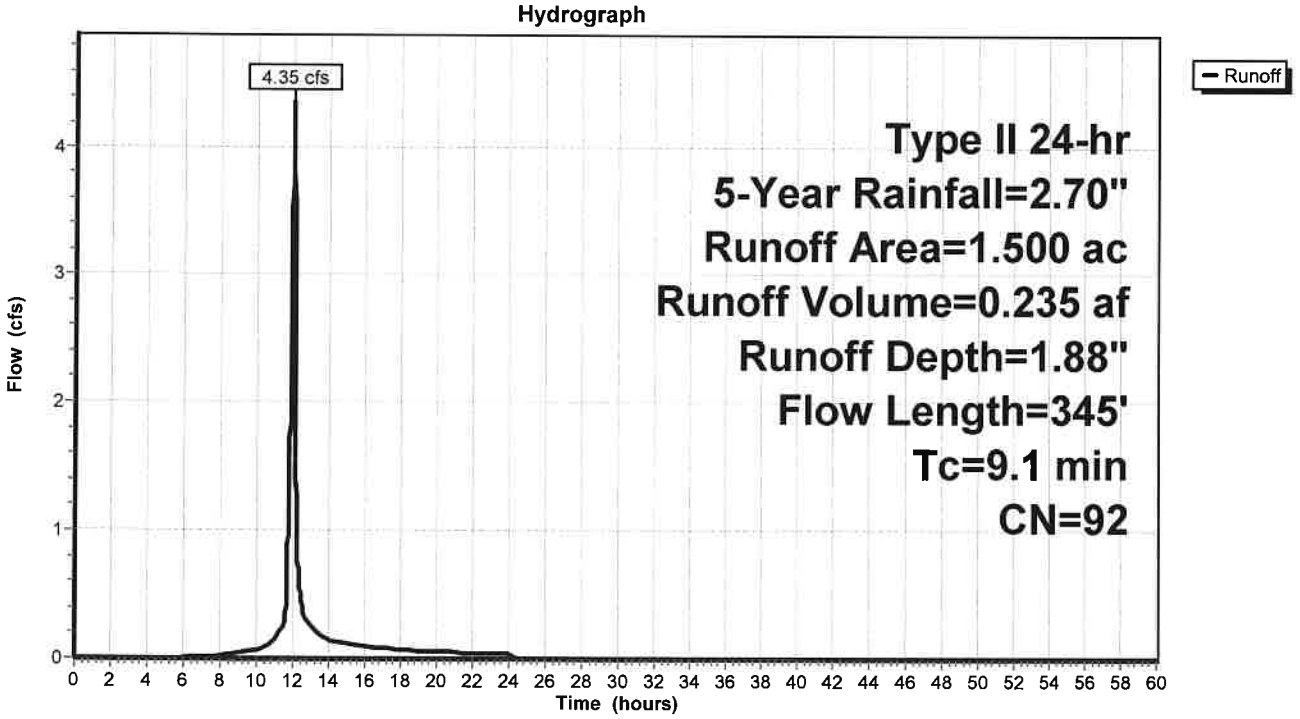
Runoff = 4.35 cfs @ 12.00 hrs, Volume= 0.235 af, Depth= 1.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.01
7.00	0.27	0.01	0.01
8.00	0.32	0.02	0.02
9.00	0.40	0.05	0.04
10.00	0.49	0.08	0.07
11.00	0.63	0.16	0.15
12.00	1.79	1.05	**4.35**
13.00	2.08	1.31	0.25
14.00	2.21	1.43	0.15
15.00	2.30	1.51	0.12
16.00	2.38	1.58	0.09
17.00	2.43	1.63	0.08
18.00	2.49	1.68	0.07
19.00	2.53	1.72	0.06
20.00	2.57	1.76	0.05
21.00	2.60	1.79	0.05
22.00	2.64	1.82	0.05
23.00	2.67	1.85	0.04
24.00	**2.70**	**1.88**	0.04
25.00	2.70	1.88	0.00
26.00	2.70	1.88	0.00
27.00	2.70	1.88	0.00
28.00	2.70	1.88	0.00
29.00	2.70	1.88	0.00
30.00	2.70	1.88	0.00
31.00	2.70	1.88	0.00
32.00	2.70	1.88	0.00
33.00	2.70	1.88	0.00
34.00	2.70	1.88	0.00
35.00	2.70	1.88	0.00
36.00	2.70	1.88	0.00
37.00	2.70	1.88	0.00
38.00	2.70	1.88	0.00
39.00	2.70	1.88	0.00
40.00	2.70	1.88	0.00
41.00	2.70	1.88	0.00
42.00	2.70	1.88	0.00
43.00	2.70	1.88	0.00
44.00	2.70	1.88	0.00
45.00	2.70	1.88	0.00
46.00	2.70	1.88	0.00
47.00	2.70	1.88	0.00
48.00	2.70	1.88	0.00
49.00	2.70	1.88	0.00
50.00	2.70	1.88	0.00
51.00	2.70	1.88	0.00
52.00	2.70	1.88	0.00
53.00	2.70	1.88	0.00
54.00	2.70	1.88	0.00
55.00	2.70	1.88	0.00
56.00	2.70	1.88	0.00
57.00	2.70	1.88	0.00
58.00	2.70	1.88	0.00
59.00	2.70	1.88	0.00
60.00	2.70	1.88	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 1.83" for 5-Year event
Inflow = 7.03 cfs @ 12.07 hrs, Volume= 0.489 af
Outflow = 1.05 cfs @ 12.55 hrs, Volume= 0.446 af, Atten= 85%, Lag= 29.0 min
Primary = 1.05 cfs @ 12.55 hrs, Volume= 0.446 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 570.79' @ 12.55 hrs Surf.Area= 10,145 sf Storage= 8,639 cf

Plug-Flow detention time= 321.6 min calculated for 0.446 af (91% of inflow)
Center-of-Mass det. time= 190.4 min (1,183.7 - 993.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

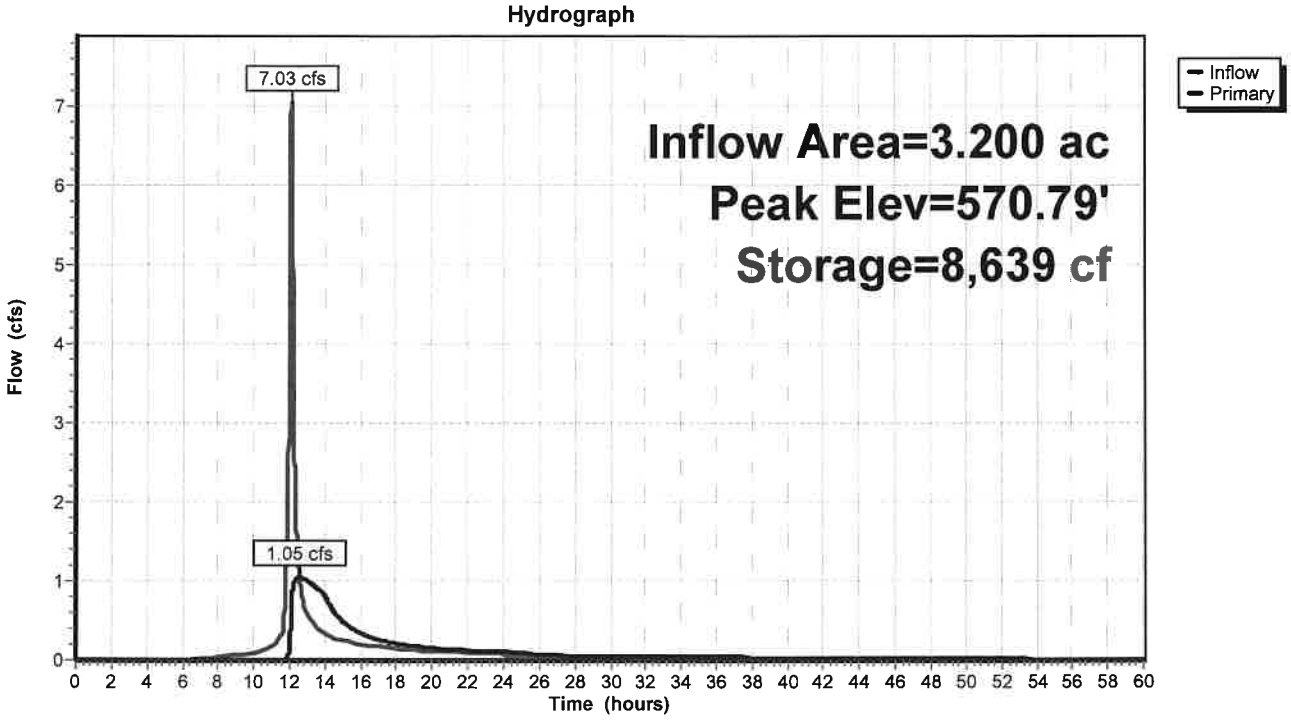
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

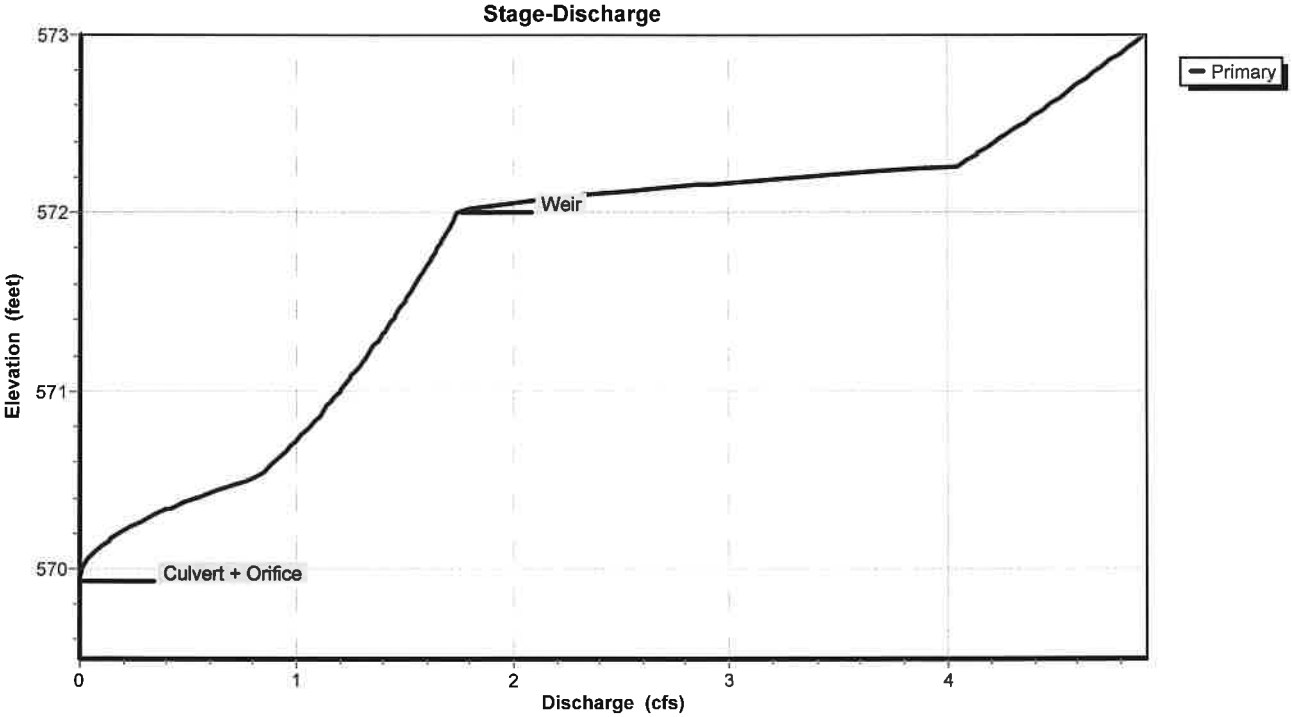
Primary OutFlow Max=1.05 cfs @ 12.55 hrs HW=570.79' (Free Discharge)
↑**1=Culvert** (Passes 1.05 cfs of 1.53 cfs potential flow)
↑**2=Orifice** (Orifice Controls 1.05 cfs @ 4.00 fps)
3=Weir (Controls 0.00 cfs)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

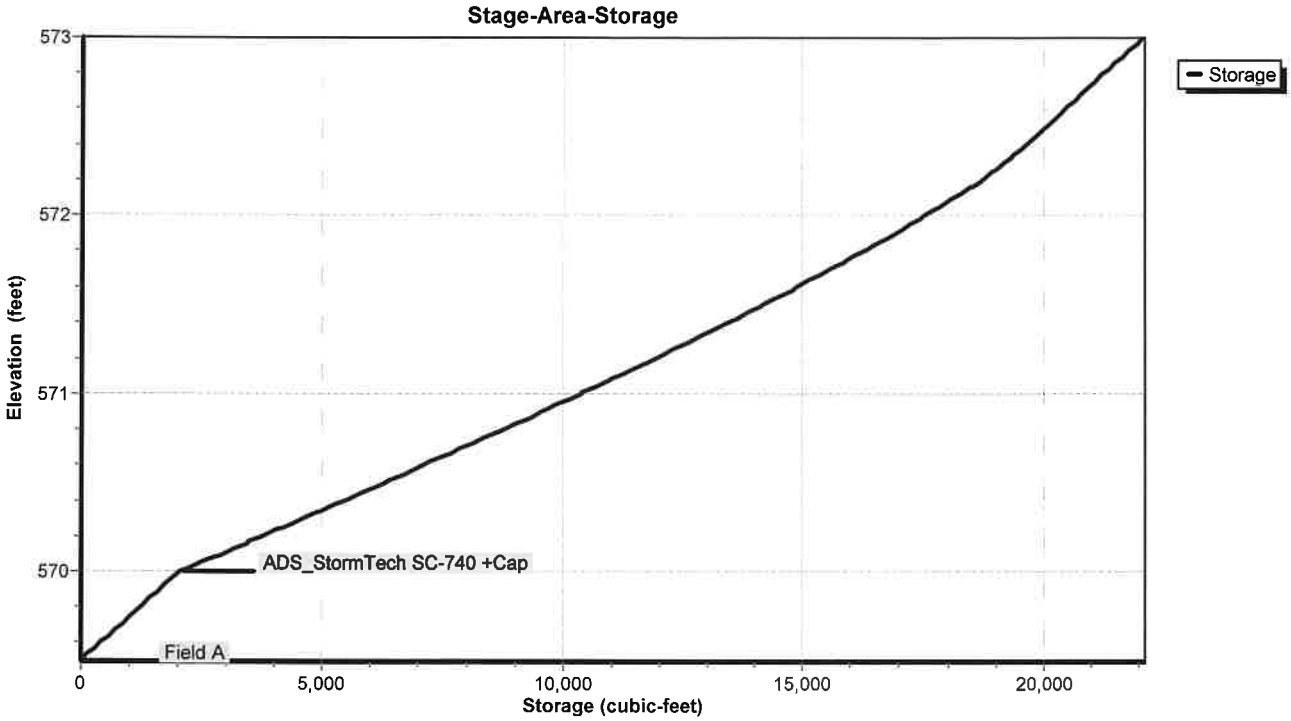


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.00	2	569.50	0.00
8.00	0.03	119	569.53	0.00
10.00	0.09	566	569.64	0.00
12.00	**5.13**	**3,593**	**570.18**	**0.16**
14.00	**0.33**	**6,444**	**570.52**	**0.81**
16.00	0.20	4,602	570.30	0.34
18.00	0.15	3,932	570.22	0.21
20.00	0.11	3,570	570.18	0.15
22.00	0.10	3,332	570.15	0.12
24.00	0.09	3,200	570.14	0.10
26.00	0.03	2,873	570.10	0.07
28.00	0.03	2,693	570.08	0.05
30.00	0.03	2,592	570.07	0.04
32.00	0.03	2,532	570.06	0.04
34.00	0.03	2,493	570.05	0.04
36.00	0.03	2,465	570.05	0.03
38.00	0.03	2,445	570.05	0.03
40.00	0.03	2,428	570.05	0.03
42.00	0.03	2,415	570.04	0.03
44.00	0.03	2,403	570.04	0.03
46.00	0.03	2,393	570.04	0.03
48.00	0.01	2,328	570.03	0.03
50.00	0.00	2,203	570.02	0.02
52.00	0.00	2,095	570.01	0.01
54.00	0.00	2,013	570.00	0.01
56.00	0.00	1,959	569.98	0.01
58.00	0.00	1,920	569.97	0.00
60.00	0.00	1,892	569.97	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 1.88" for 5-Year event
Inflow = 4.35 cfs @ 12.00 hrs, Volume= 0.235 af
Outflow = 3.06 cfs @ 12.08 hrs, Volume= 0.235 af, Atten= 30%, Lag= 4.6 min
Primary = 3.06 cfs @ 12.08 hrs, Volume= 0.235 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.68' @ 12.08 hrs Surf.Area= 6,129 sf Storage= 3,708 cf

Plug-Flow detention time= 384.2 min calculated for 0.235 af (100% of inflow)
Center-of-Mass det. time= 384.1 min (1,187.9 - 803.8)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

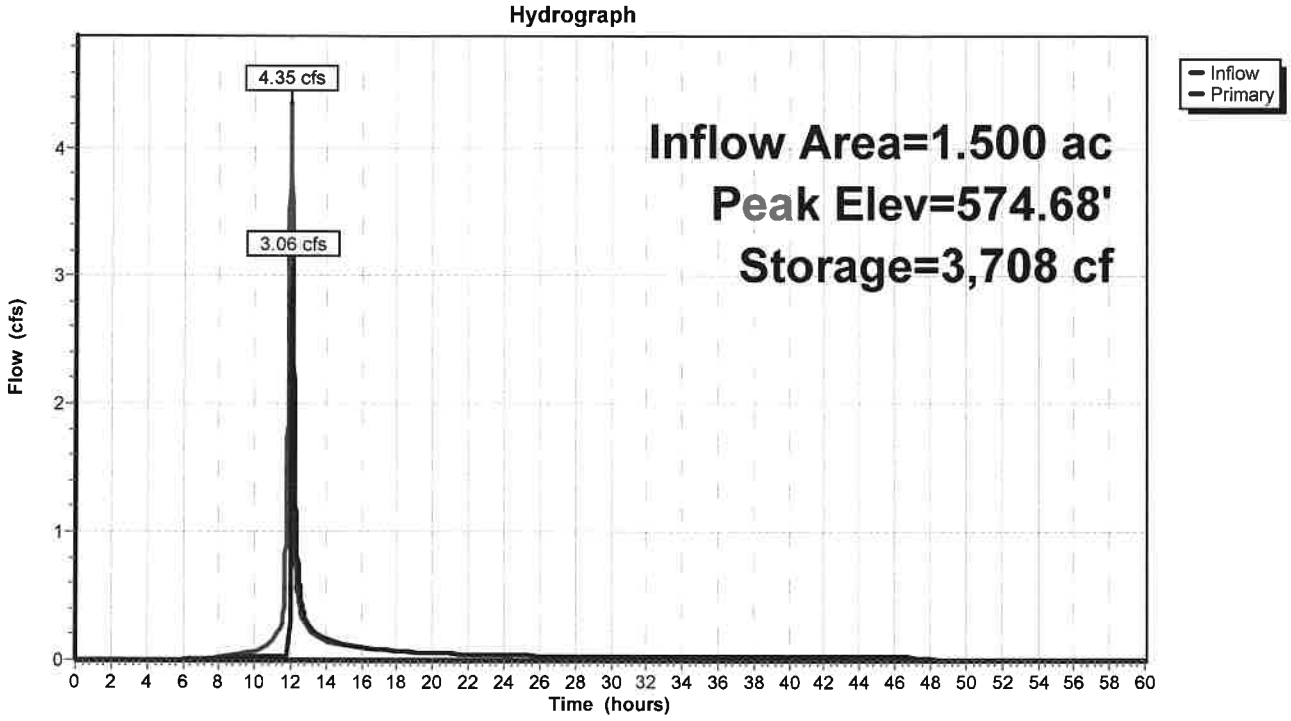
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

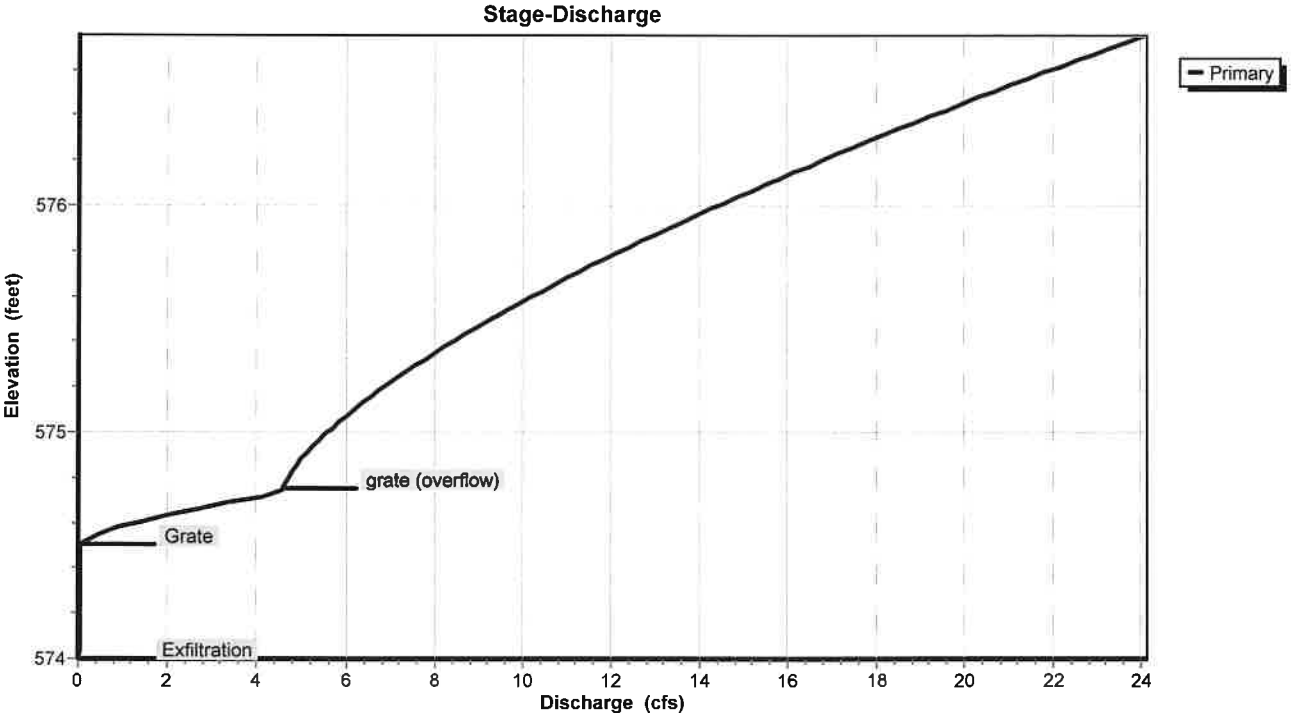
Primary OutFlow Max=3.05 cfs @ 12.08 hrs HW=574.68' (Free Discharge)
- **1=8" pipe** (Passes 3.05 cfs of 4.54 cfs potential flow)
  - **2=Grate** (Weir Controls 3.02 cfs @ 1.37 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

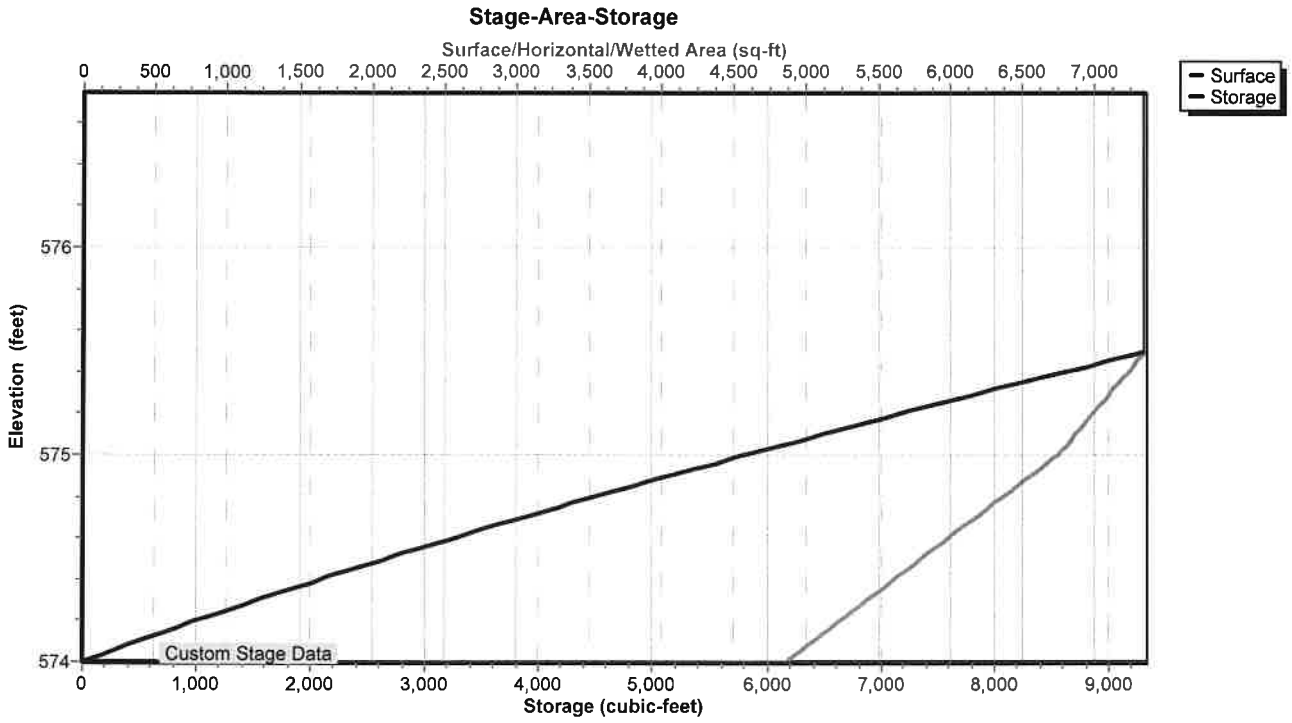


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.01	6	574.00	0.00
8.00	0.02	61	574.01	0.01
10.00	0.07	208	574.04	0.03
12.00	**4.35**	**3,326**	**574.61**	**1.59**
14.00	0.15	**2,783**	**574.52**	**0.16**
16.00	0.09	2,721	574.51	0.10
18.00	0.07	2,697	574.51	0.07
20.00	0.05	2,679	574.50	0.05
22.00	0.05	2,673	574.50	0.05
24.00	0.04	2,670	574.50	0.04
26.00	0.00	2,439	574.46	0.03
28.00	0.00	2,196	574.42	0.03
30.00	0.00	1,956	574.38	0.03
32.00	0.00	1,720	574.33	0.03
34.00	0.00	1,489	574.29	0.03
36.00	0.00	1,262	574.25	0.03
38.00	0.00	1,038	574.21	0.03
40.00	0.00	819	574.16	0.03
42.00	0.00	603	574.12	0.03
44.00	0.00	392	574.08	0.03
46.00	0.00	184	574.04	0.03
48.00	0.00	42	574.01	0.01
50.00	0.00	9	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=2.21"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=4.91 cfs 0.313 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=2.30"
Flow Length=345' Tc=9.1 min CN=92 Runoff=5.28 cfs 0.288 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=571.13' Storage=11,342 cf Inflow=9.17 cfs 0.601 af
Outflow=1.28 cfs 0.558 af

Pond 9P: Bioretention Area 3 Peak Elev=574.72' Storage=4,001 cf Inflow=5.28 cfs 0.288 af
Outflow=4.27 cfs 0.288 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.601 af Average Runoff Depth = 2.25"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

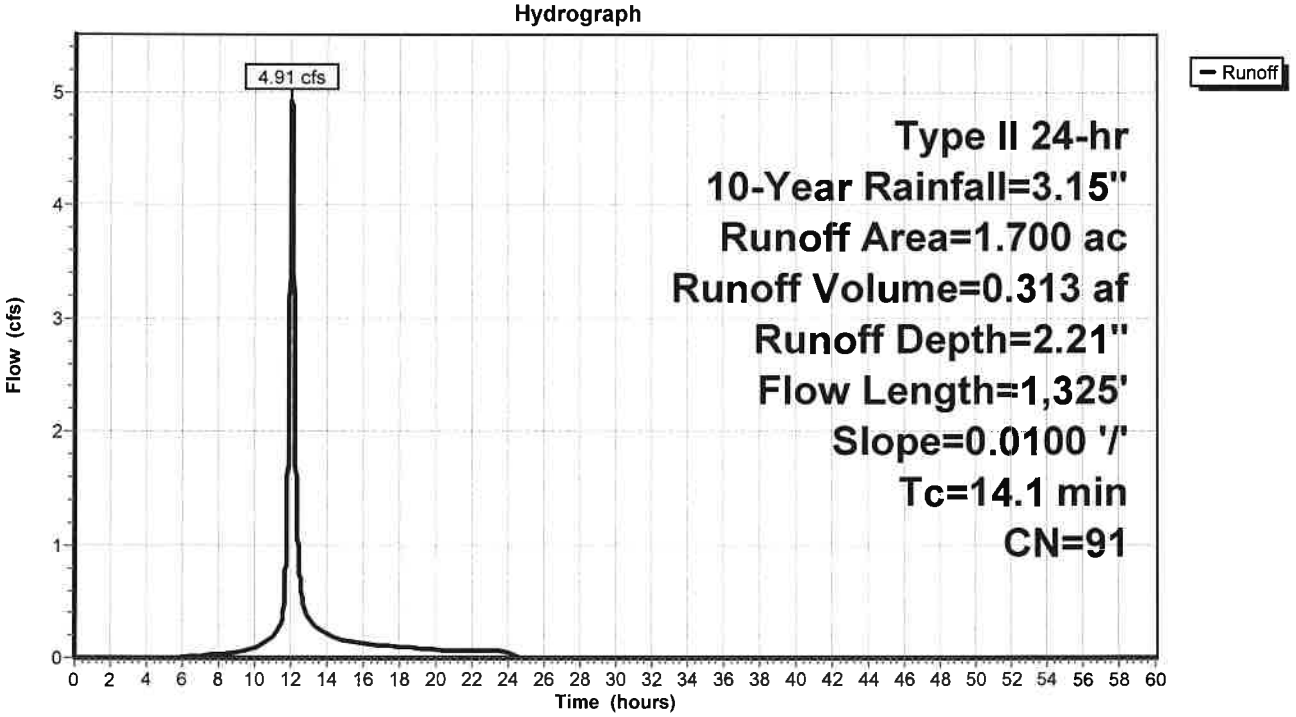
Runoff = 4.91 cfs @ 12.05 hrs, Volume= 0.313 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.15	2.21	0.00
1.00	0.03	0.00	0.00	53.00	3.15	2.21	0.00
2.00	0.07	0.00	0.00	54.00	3.15	2.21	0.00
3.00	0.11	0.00	0.00	55.00	3.15	2.21	0.00
4.00	0.15	0.00	0.00	56.00	3.15	2.21	0.00
5.00	0.20	0.00	0.00	57.00	3.15	2.21	0.00
6.00	0.25	0.00	0.01	58.00	3.15	2.21	0.00
7.00	0.31	0.01	0.02	59.00	3.15	2.21	0.00
8.00	0.38	0.03	0.03	60.00	3.15	2.21	0.00
9.00	0.46	0.06	0.06				
10.00	0.57	0.10	0.09				
11.00	0.74	0.19	0.19				
12.00	2.09	1.24	**4.35**				
13.00	2.43	1.55	**0.35**				
14.00	2.58	1.69	0.20				
15.00	2.69	1.78	0.16				
16.00	2.77	1.86	0.12				
17.00	2.84	1.92	0.11				
18.00	2.90	1.98	0.09				
19.00	2.95	2.03	0.08				
20.00	3.00	2.07	0.07				
21.00	3.04	2.11	0.06				
22.00	3.08	2.14	0.06				
23.00	3.11	2.18	0.06				
24.00	**3.15**	**2.21**	0.06				
25.00	3.15	2.21	0.00				
26.00	3.15	2.21	0.00				
27.00	3.15	2.21	0.00				
28.00	3.15	2.21	0.00				
29.00	3.15	2.21	0.00				
30.00	3.15	2.21	0.00				
31.00	3.15	2.21	0.00				
32.00	3.15	2.21	0.00				
33.00	3.15	2.21	0.00				
34.00	3.15	2.21	0.00				
35.00	3.15	2.21	0.00				
36.00	3.15	2.21	0.00				
37.00	3.15	2.21	0.00				
38.00	3.15	2.21	0.00				
39.00	3.15	2.21	0.00				
40.00	3.15	2.21	0.00				
41.00	3.15	2.21	0.00				
42.00	3.15	2.21	0.00				
43.00	3.15	2.21	0.00				
44.00	3.15	2.21	0.00				
45.00	3.15	2.21	0.00				
46.00	3.15	2.21	0.00				
47.00	3.15	2.21	0.00				
48.00	3.15	2.21	0.00				
49.00	3.15	2.21	0.00				
50.00	3.15	2.21	0.00				
51.00	3.15	2.21	0.00				

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

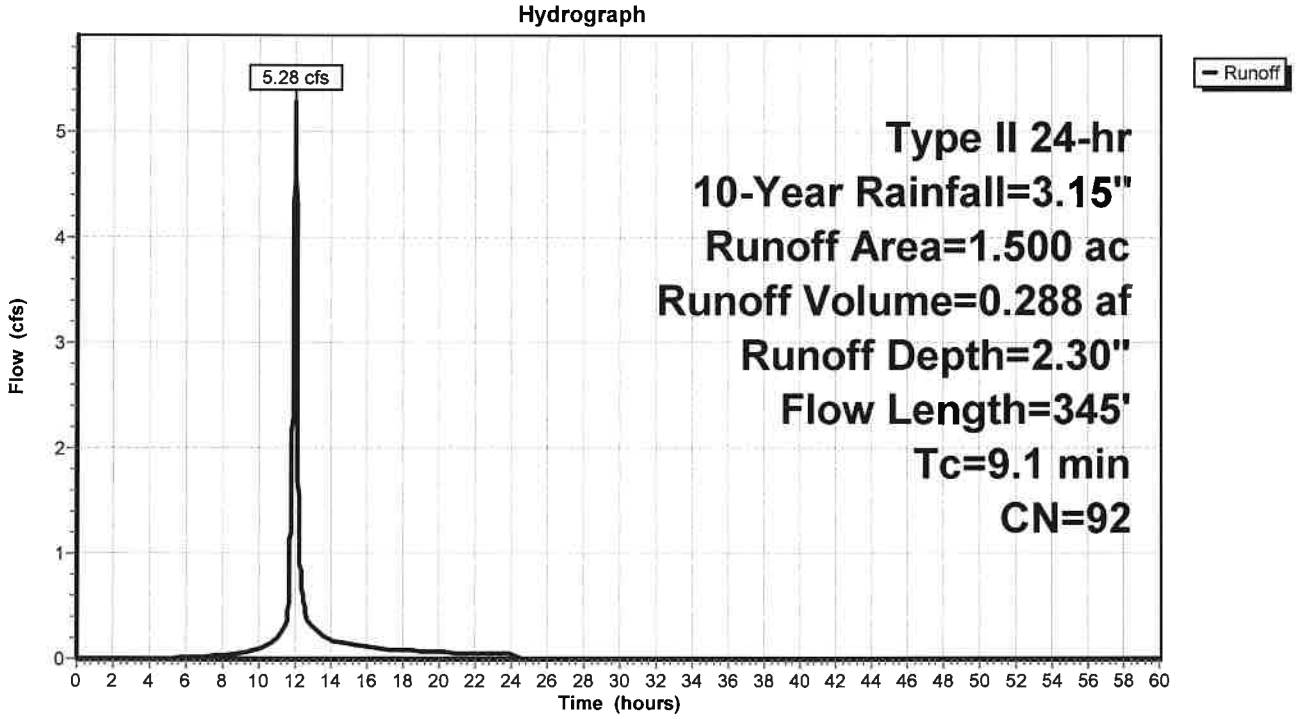
Runoff = 5.28 cfs @ 12.00 hrs, Volume= 0.288 af, Depth= 2.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.15	2.30	0.00
1.00	0.03	0.00	0.00	53.00	3.15	2.30	0.00
2.00	0.07	0.00	0.00	54.00	3.15	2.30	0.00
3.00	0.11	0.00	0.00	55.00	3.15	2.30	0.00
4.00	0.15	0.00	0.00	56.00	3.15	2.30	0.00
5.00	0.20	0.00	0.00	57.00	3.15	2.30	0.00
6.00	0.25	0.01	0.01	58.00	3.15	2.30	0.00
7.00	0.31	0.02	0.02	59.00	3.15	2.30	0.00
8.00	0.38	0.04	0.03	60.00	3.15	2.30	0.00
9.00	0.46	0.07	0.06				
10.00	0.57	0.12	0.09				
11.00	0.74	0.22	0.20				
12.00	2.09	1.32	**5.27**				
13.00	2.43	1.63	0.30				
14.00	2.58	1.77	0.18				
15.00	2.69	1.87	0.14				
16.00	2.77	1.95	0.11				
17.00	2.84	2.01	0.09				
18.00	2.90	2.07	0.08				
19.00	2.95	2.12	0.07				
20.00	3.00	2.16	0.06				
21.00	3.04	2.20	0.06				
22.00	3.08	2.23	0.05				
23.00	3.11	2.27	0.05				
24.00	**3.15**	**2.30**	0.05				
25.00	3.15	2.30	0.00				
26.00	3.15	2.30	0.00				
27.00	3.15	2.30	0.00				
28.00	3.15	2.30	0.00				
29.00	3.15	2.30	0.00				
30.00	3.15	2.30	0.00				
31.00	3.15	2.30	0.00				
32.00	3.15	2.30	0.00				
33.00	3.15	2.30	0.00				
34.00	3.15	2.30	0.00				
35.00	3.15	2.30	0.00				
36.00	3.15	2.30	0.00				
37.00	3.15	2.30	0.00				
38.00	3.15	2.30	0.00				
39.00	3.15	2.30	0.00				
40.00	3.15	2.30	0.00				
41.00	3.15	2.30	0.00				
42.00	3.15	2.30	0.00				
43.00	3.15	2.30	0.00				
44.00	3.15	2.30	0.00				
45.00	3.15	2.30	0.00				
46.00	3.15	2.30	0.00				
47.00	3.15	2.30	0.00				
48.00	3.15	2.30	0.00				
49.00	3.15	2.30	0.00				
50.00	3.15	2.30	0.00				
51.00	3.15	2.30	0.00				

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 2.25" for 10-Year event
Inflow = 9.17 cfs @ 12.06 hrs, Volume= 0.601 af
Outflow = 1.28 cfs @ 12.54 hrs, Volume= 0.558 af, Atten= 86%, Lag= 29.2 min
Primary = 1.28 cfs @ 12.54 hrs, Volume= 0.558 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 571.13' @ 12.54 hrs Surf.Area= 10,145 sf Storage= 11,342 cf

Plug-Flow detention time= 284.1 min calculated for 0.558 af (93% of inflow)
Center-of-Mass det. time= 176.3 min (1,132.0 - 955.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

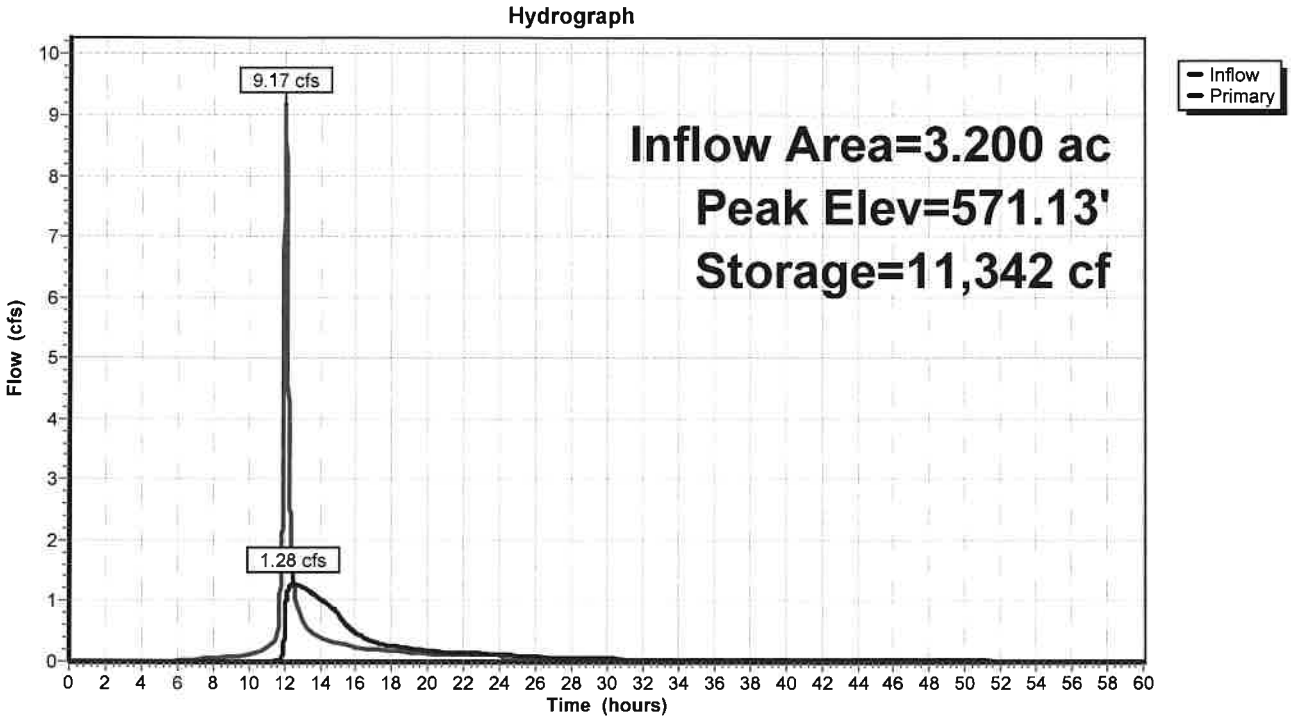
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

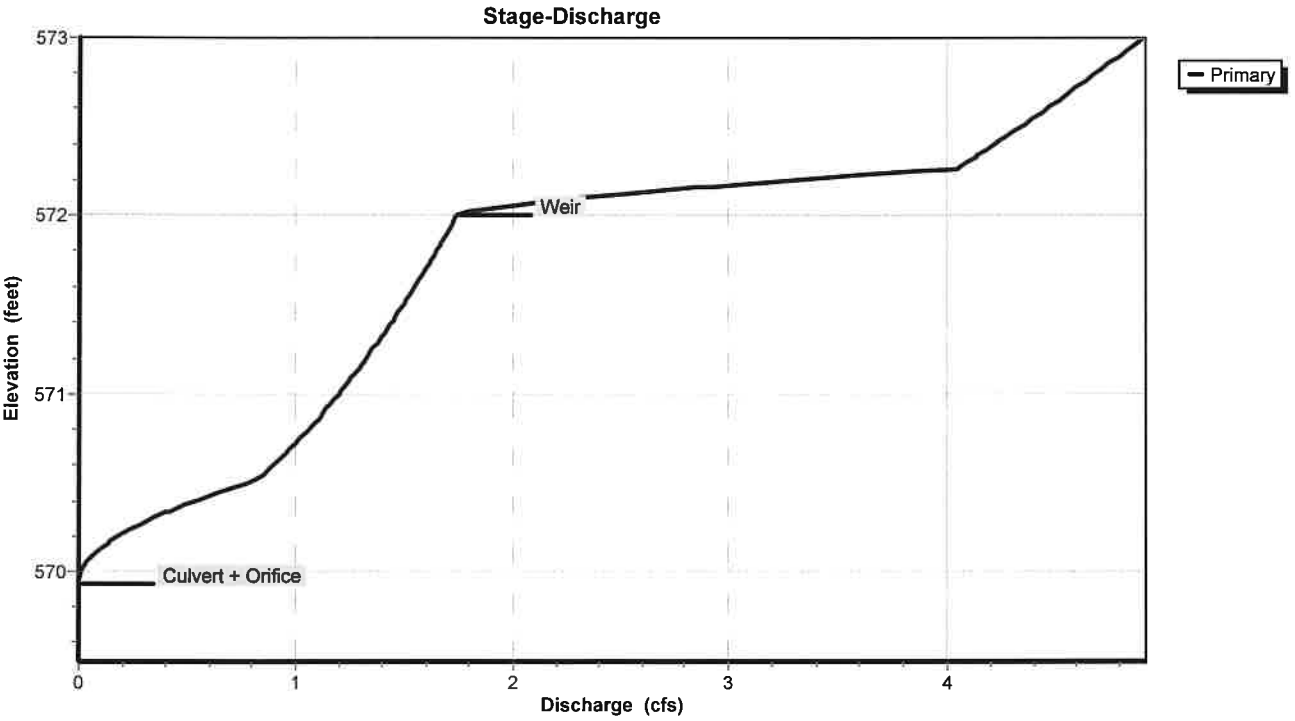
Primary OutFlow Max=1.28 cfs @ 12.54 hrs HW=571.13' (Free Discharge)
└**1=Culvert** (Passes 1.28 cfs of 2.37 cfs potential flow)
├**2=Orifice** (Orifice Controls 1.28 cfs @ 4.88 fps)
└**3=Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

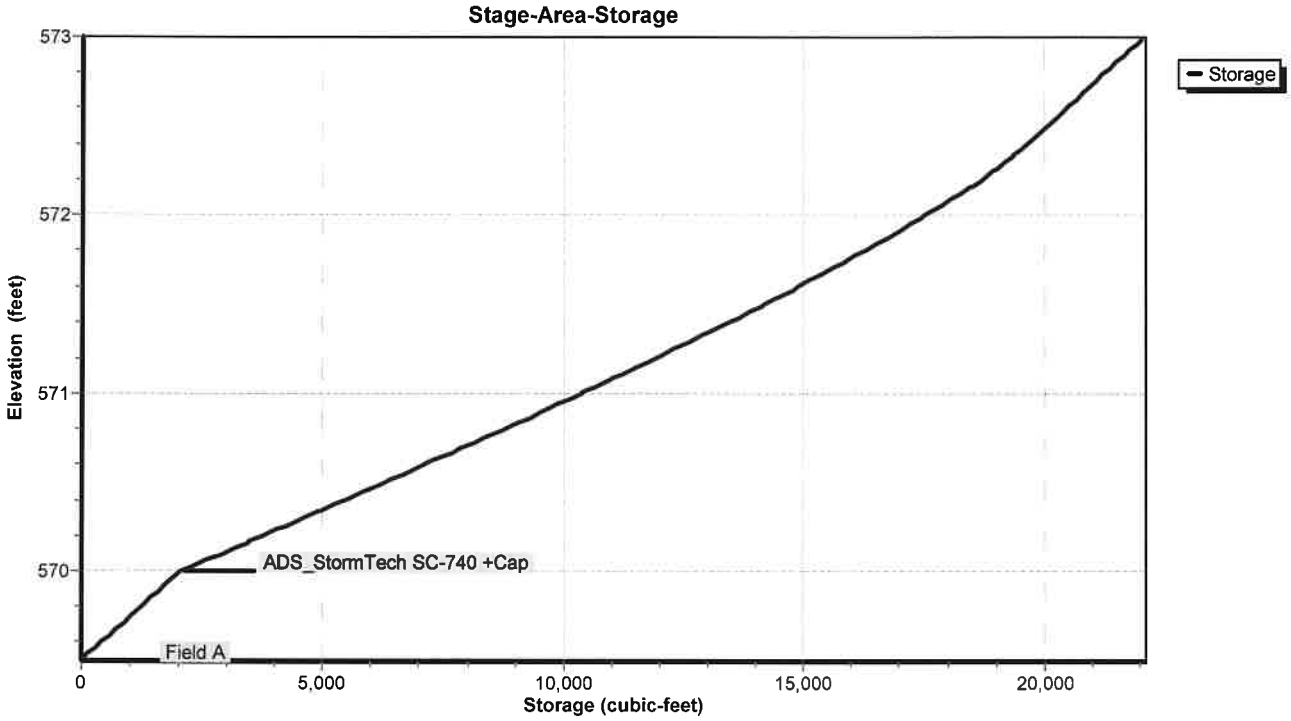


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.01	18	569.50	0.00
8.00	0.05	241	569.56	0.00
10.00	0.12	846	569.71	0.00
12.00	**7.80**	**5,030**	**570.35**	**0.43**
14.00	**0.39**	**8,504**	**570.77**	**1.03**
16.00	0.24	5,183	570.37	0.47
18.00	0.18	4,195	570.25	0.26
20.00	0.13	3,754	570.20	0.18
22.00	0.12	3,484	570.17	0.14
24.00	0.11	3,343	570.15	0.12
26.00	0.03	2,942	570.11	0.08
28.00	0.03	2,728	570.08	0.05
30.00	0.03	2,611	570.07	0.05
32.00	0.03	2,544	570.06	0.04
34.00	0.03	2,500	570.05	0.04
36.00	0.03	2,470	570.05	0.03
38.00	0.03	2,448	570.05	0.03
40.00	0.03	2,430	570.05	0.03
42.00	0.03	2,416	570.05	0.03
44.00	0.03	2,404	570.04	0.03
46.00	0.03	2,393	570.04	0.03
48.00	0.01	2,331	570.04	0.03
50.00	0.00	2,206	570.02	0.02
52.00	0.00	2,098	570.01	0.01
54.00	0.00	2,015	570.00	0.01
56.00	0.00	1,960	569.98	0.01
58.00	0.00	1,921	569.97	0.00
60.00	0.00	1,893	569.97	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 2.30" for 10-Year event
Inflow = 5.28 cfs @ 12.00 hrs, Volume= 0.288 af
Outflow = 4.27 cfs @ 12.06 hrs, Volume= 0.288 af, Atten= 19%, Lag= 3.5 min
Primary = 4.27 cfs @ 12.06 hrs, Volume= 0.288 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.72' @ 12.06 hrs Surf.Area= 6,219 sf Storage= 4,001 cf

Plug-Flow detention time= 318.6 min calculated for 0.288 af (100% of inflow)
Center-of-Mass det. time= 318.8 min (1,116.8 - 798.1)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

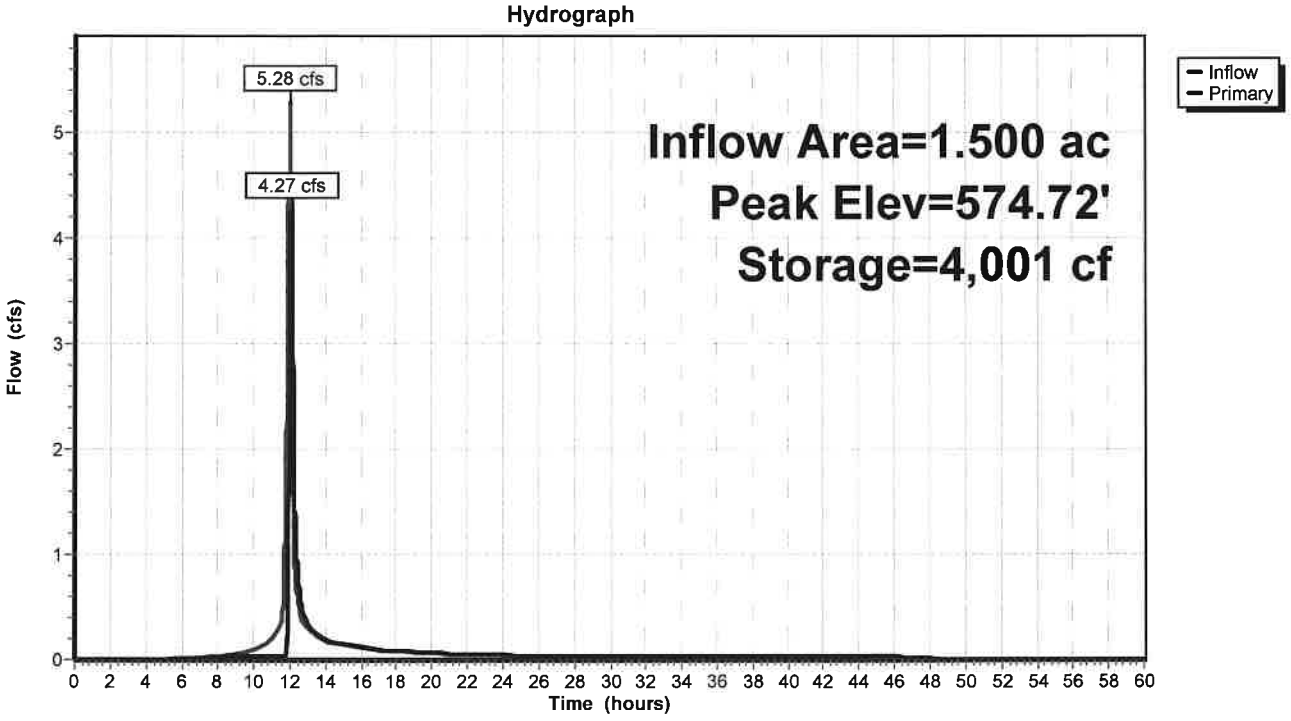
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

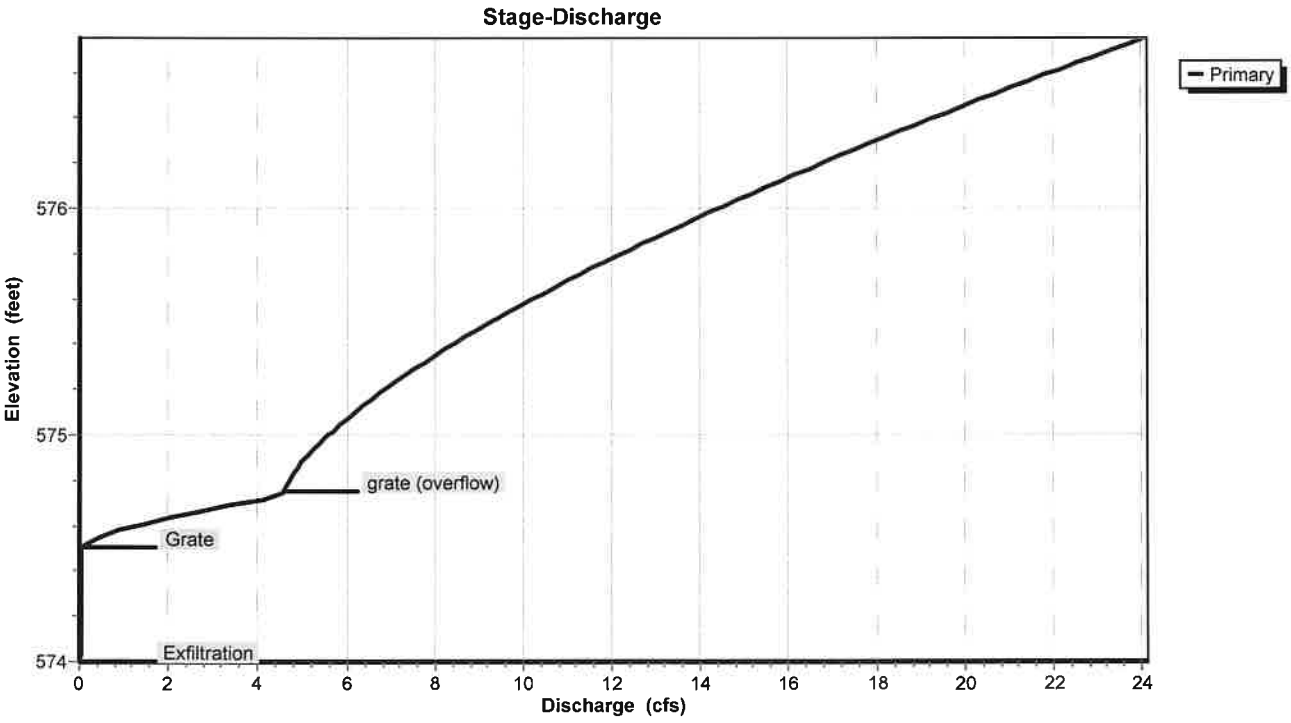
Primary OutFlow Max=4.36 cfs @ 12.06 hrs HW=574.72' (Free Discharge)
- **1=8" pipe** (Passes 4.36 cfs of 4.57 cfs potential flow)
  - **2=Grate** (Weir Controls 4.32 cfs @ 1.54 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

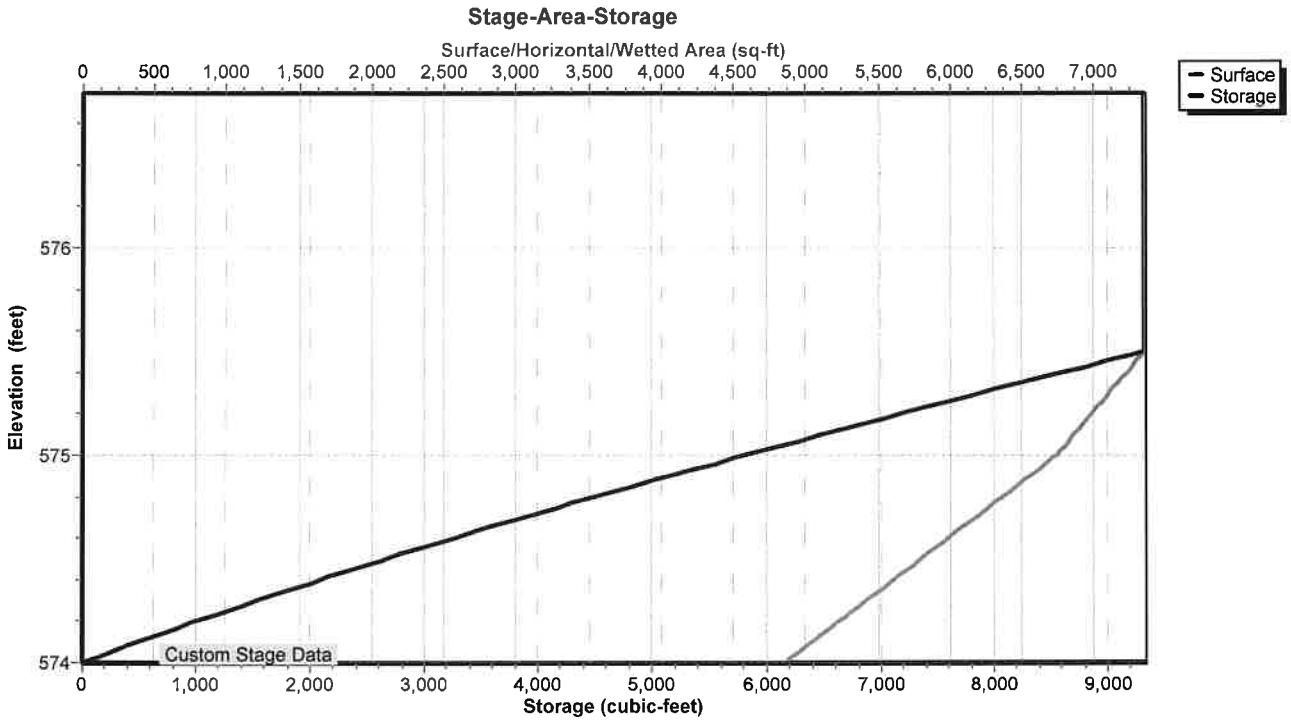


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.01	21	574.00	0.00
8.00	0.03	99	574.02	0.02
10.00	0.09	335	574.07	0.03
12.00	**5.27**	**3,799**	**574.69**	**3.45**
14.00	0.18	**2,801**	**574.52**	**0.19**
16.00	0.11	2,738	574.51	0.12
18.00	0.08	2,710	574.51	0.09
20.00	0.06	2,689	574.50	0.06
22.00	0.05	2,681	574.50	0.06
24.00	0.05	2,677	574.50	0.05
26.00	0.00	2,445	574.46	0.03
28.00	0.00	2,201	574.42	0.03
30.00	0.00	1,961	574.38	0.03
32.00	0.00	1,726	574.33	0.03
34.00	0.00	1,494	574.29	0.03
36.00	0.00	1,267	574.25	0.03
38.00	0.00	1,043	574.21	0.03
40.00	0.00	824	574.16	0.03
42.00	0.00	608	574.12	0.03
44.00	0.00	397	574.08	0.03
46.00	0.00	189	574.04	0.03
48.00	0.00	44	574.01	0.01
50.00	0.00	10	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=2.89"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=6.35 cfs 0.410 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=2.99"
Flow Length=345' Tc=9.1 min CN=92 Runoff=6.75 cfs 0.374 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=571.73' Storage=15,804 cf Inflow=11.11 cfs 0.784 af
Outflow=1.61 cfs 0.740 af

Pond 9P: Bioretention Area 3 Peak Elev=574.82' Storage=4,638 cf Inflow=6.75 cfs 0.374 af
Outflow=4.78 cfs 0.374 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.784 af Average Runoff Depth = 2.94"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

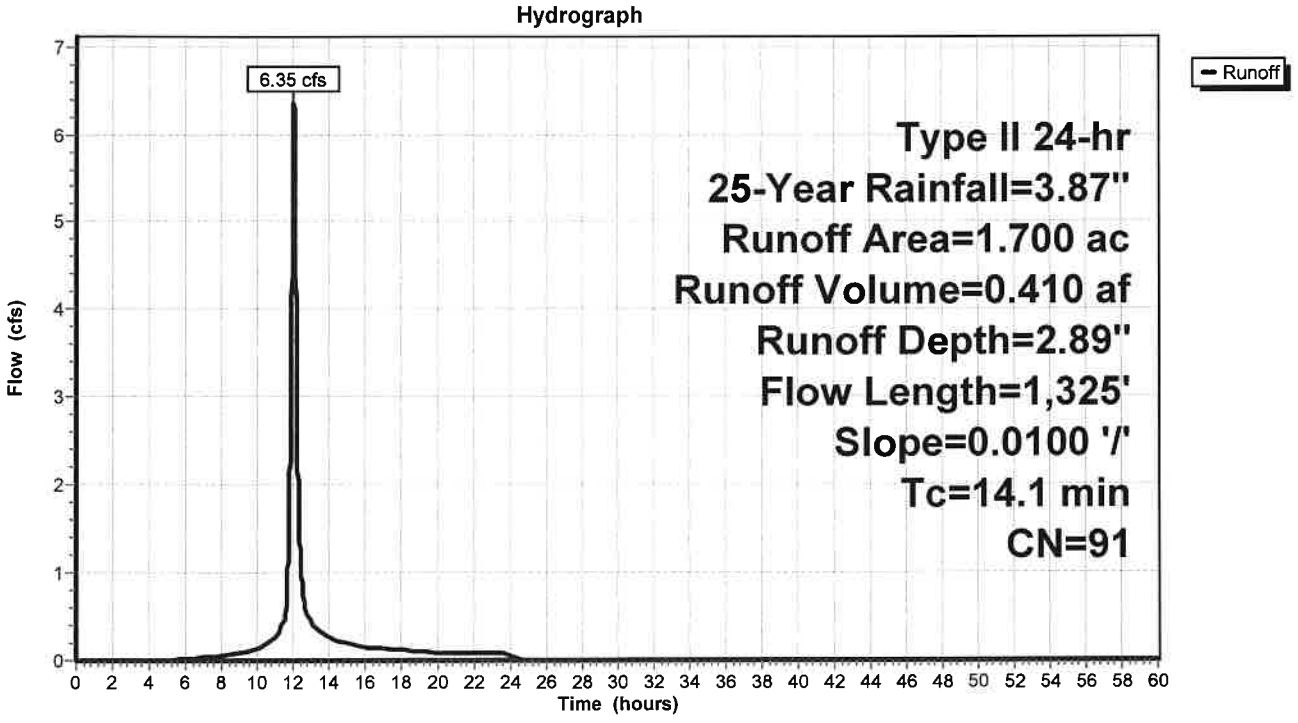
Runoff = 6.35 cfs @ 12.05 hrs, Volume= 0.410 af, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.04	0.00	0.00
2.00	0.09	0.00	0.00
3.00	0.13	0.00	0.00
4.00	0.19	0.00	0.00
5.00	0.24	0.00	0.01
6.00	0.31	0.01	0.02
7.00	0.38	0.03	0.04
8.00	0.46	0.06	0.05
9.00	0.57	0.10	0.09
10.00	0.70	0.17	0.13
11.00	0.91	0.30	0.27
12.00	2.57	1.67	**5.66**
13.00	2.99	2.06	**0.45**
14.00	3.17	2.23	0.26
15.00	3.30	2.36	0.20
16.00	3.41	2.45	0.15
17.00	3.49	2.53	0.13
18.00	3.56	2.60	0.12
19.00	3.63	2.66	0.10
20.00	3.68	2.72	0.09
21.00	3.73	2.76	0.08
22.00	3.78	2.81	0.08
23.00	3.83	2.85	0.07
24.00	**3.87**	**2.89**	0.07
25.00	3.87	2.89	0.00
26.00	3.87	2.89	0.00
27.00	3.87	2.89	0.00
28.00	3.87	2.89	0.00
29.00	3.87	2.89	0.00
30.00	3.87	2.89	0.00
31.00	3.87	2.89	0.00
32.00	3.87	2.89	0.00
33.00	3.87	2.89	0.00
34.00	3.87	2.89	0.00
35.00	3.87	2.89	0.00
36.00	3.87	2.89	0.00
37.00	3.87	2.89	0.00
38.00	3.87	2.89	0.00
39.00	3.87	2.89	0.00
40.00	3.87	2.89	0.00
41.00	3.87	2.89	0.00
42.00	3.87	2.89	0.00
43.00	3.87	2.89	0.00
44.00	3.87	2.89	0.00
45.00	3.87	2.89	0.00
46.00	3.87	2.89	0.00
47.00	3.87	2.89	0.00
48.00	3.87	2.89	0.00
49.00	3.87	2.89	0.00
50.00	3.87	2.89	0.00
51.00	3.87	2.89	0.00
52.00	3.87	2.89	0.00
53.00	3.87	2.89	0.00
54.00	3.87	2.89	0.00
55.00	3.87	2.89	0.00
56.00	3.87	2.89	0.00
57.00	3.87	2.89	0.00
58.00	3.87	2.89	0.00
59.00	3.87	2.89	0.00
60.00	3.87	2.89	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

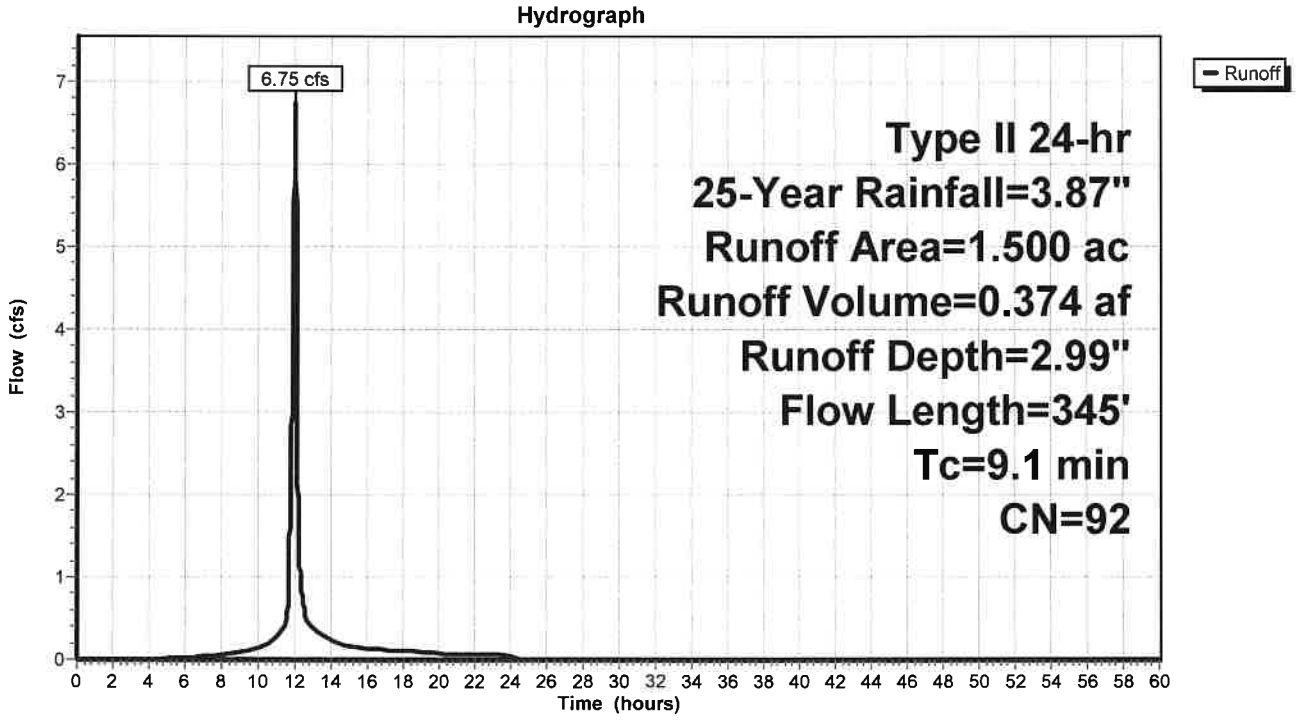
Runoff = 6.75 cfs @ 12.00 hrs, Volume= 0.374 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.87	2.99	0.00
1.00	0.04	0.00	0.00	53.00	3.87	2.99	0.00
2.00	0.09	0.00	0.00	54.00	3.87	2.99	0.00
3.00	0.13	0.00	0.00	55.00	3.87	2.99	0.00
4.00	0.19	0.00	0.00	56.00	3.87	2.99	0.00
5.00	0.24	0.01	0.01	57.00	3.87	2.99	0.00
6.00	0.31	0.02	0.02	58.00	3.87	2.99	0.00
7.00	0.38	0.04	0.04	59.00	3.87	2.99	0.00
8.00	0.46	0.07	0.05	60.00	3.87	2.99	0.00
9.00	0.57	0.12	0.09				
10.00	0.70	0.20	0.13				
11.00	0.91	0.34	0.27				
12.00	2.57	1.75	**6.75**				
13.00	2.99	2.15	0.38				
14.00	3.17	2.33	0.22				
15.00	3.30	2.45	0.17				
16.00	3.41	2.55	0.13				
17.00	3.49	2.63	0.12				
18.00	3.56	2.70	0.10				
19.00	3.63	2.76	0.09				
20.00	3.68	2.81	0.08				
21.00	3.73	2.86	0.07				
22.00	3.78	2.91	0.07				
23.00	3.83	2.95	0.07				
24.00	**3.87**	**2.99**	0.06				
25.00	3.87	2.99	0.00				
26.00	3.87	2.99	0.00				
27.00	3.87	2.99	0.00				
28.00	3.87	2.99	0.00				
29.00	3.87	2.99	0.00				
30.00	3.87	2.99	0.00				
31.00	3.87	2.99	0.00				
32.00	3.87	2.99	0.00				
33.00	3.87	2.99	0.00				
34.00	3.87	2.99	0.00				
35.00	3.87	2.99	0.00				
36.00	3.87	2.99	0.00				
37.00	3.87	2.99	0.00				
38.00	3.87	2.99	0.00				
39.00	3.87	2.99	0.00				
40.00	3.87	2.99	0.00				
41.00	3.87	2.99	0.00				
42.00	3.87	2.99	0.00				
43.00	3.87	2.99	0.00				
44.00	3.87	2.99	0.00				
45.00	3.87	2.99	0.00				
46.00	3.87	2.99	0.00				
47.00	3.87	2.99	0.00				
48.00	3.87	2.99	0.00				
49.00	3.87	2.99	0.00				
50.00	3.87	2.99	0.00				
51.00	3.87	2.99	0.00				

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 2.94" for 25-Year event
Inflow = 11.11 cfs @ 12.06 hrs, Volume= 0.784 af
Outflow = 1.61 cfs @ 12.54 hrs, Volume= 0.740 af, Atten= 85%, Lag= 29.2 min
Primary = 1.61 cfs @ 12.54 hrs, Volume= 0.740 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 571.73' @ 12.54 hrs Surf.Area= 10,145 sf Storage= 15,804 cf

Plug-Flow detention time= 252.2 min calculated for 0.740 af (94% of inflow)
Center-of-Mass det. time= 168.6 min (1,084.7 - 916.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

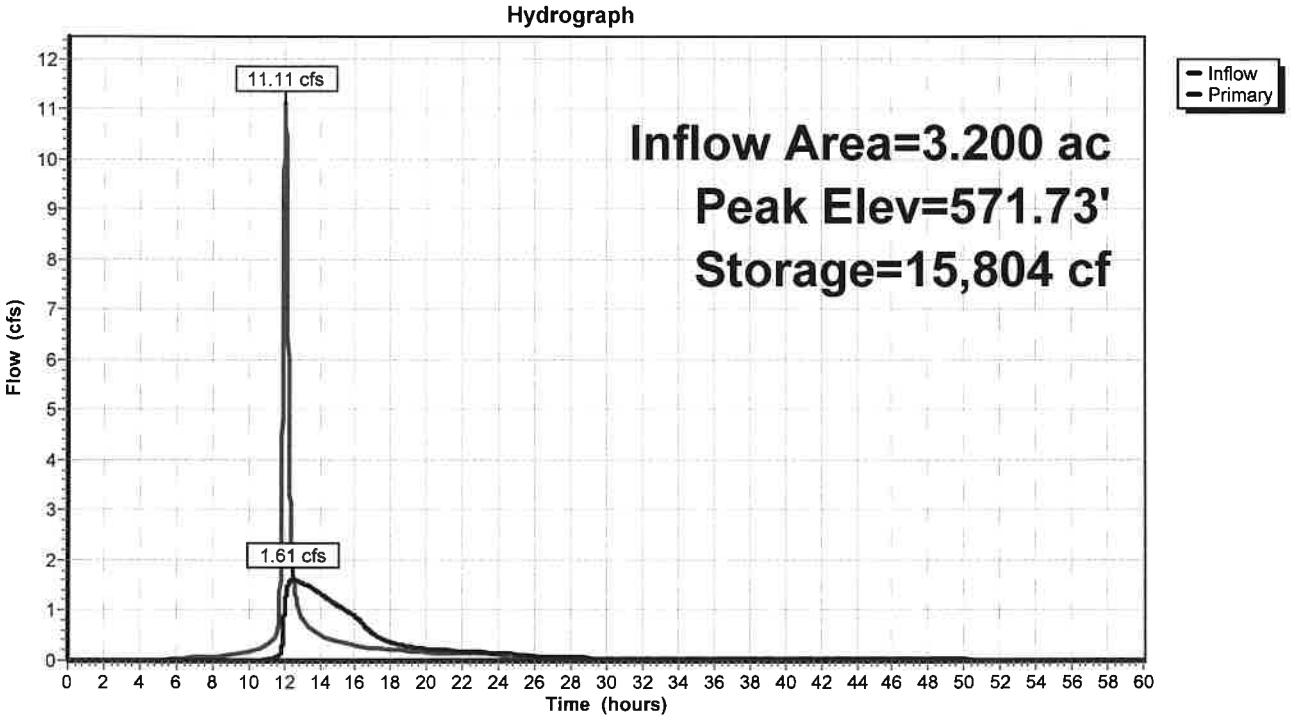
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

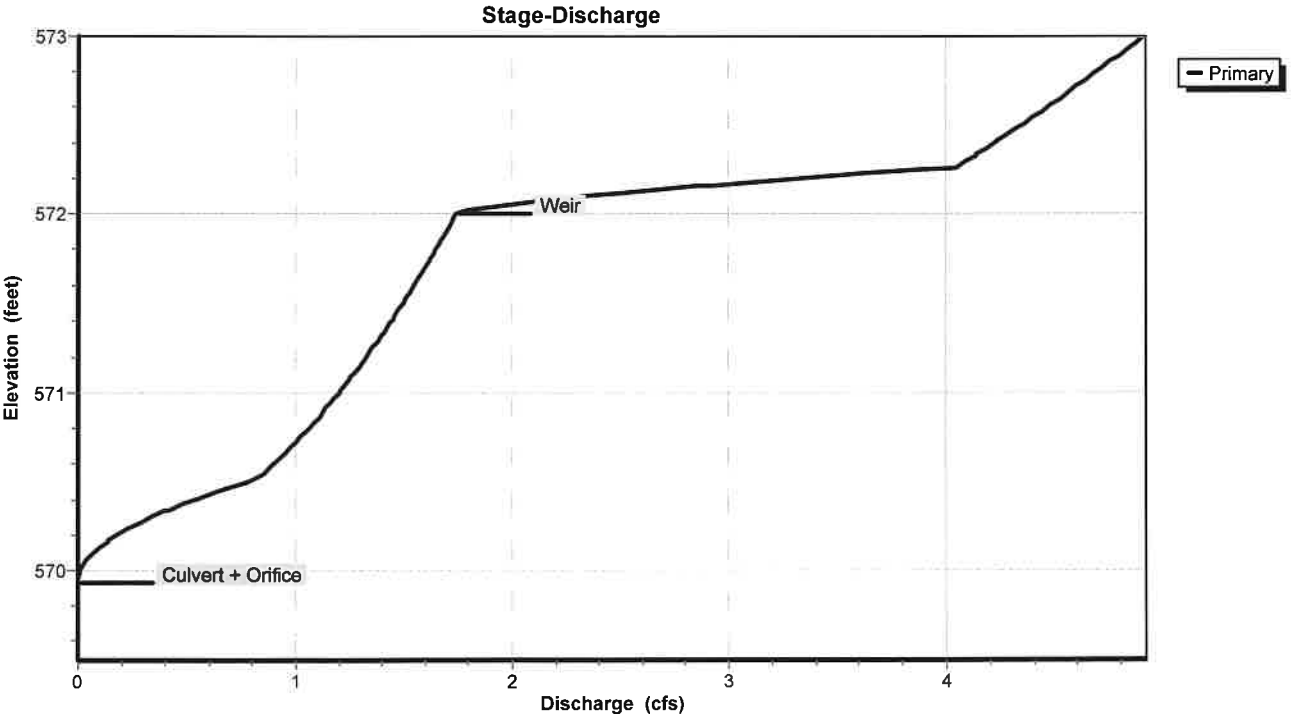
Primary OutFlow Max=1.61 cfs @ 12.54 hrs HW=571.73' (Free Discharge)
└**1=Culvert** (Passes 1.61 cfs of 3.29 cfs potential flow)
  ├**2=Orifice** (Orifice Controls 1.61 cfs @ 6.16 fps)
  └**3=Weir** (Controls 0.00 cfs)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

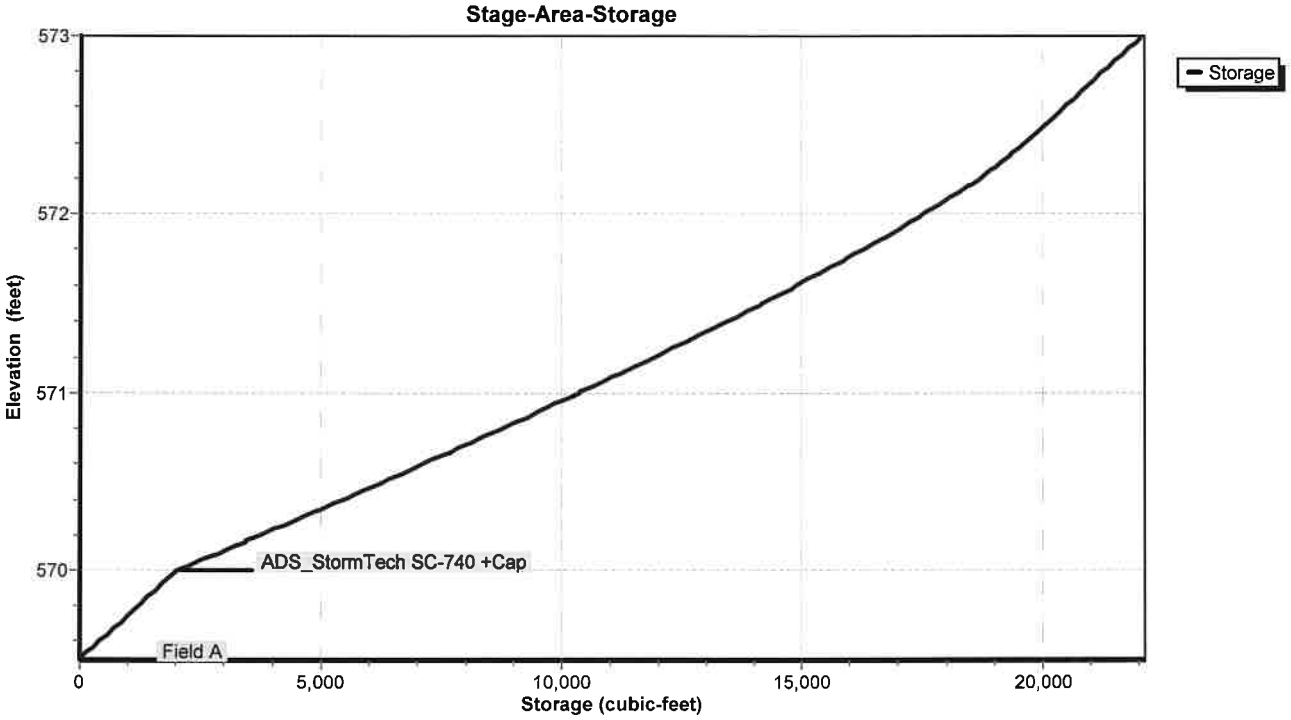


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.03	85	569.52	0.00
8.00	0.08	499	569.62	0.00
10.00	0.16	1,337	569.83	0.00
12.00	**10.28**	**7,562**	**570.65**	**0.94**
14.00	**0.49**	**12,132**	**571.23**	**1.34**
16.00	0.30	6,914	570.58	0.87
18.00	0.22	4,703	570.31	0.36
20.00	0.16	4,045	570.24	0.23
22.00	0.15	3,711	570.20	0.17
24.00	0.13	3,549	570.18	0.15
26.00	0.03	3,038	570.12	0.09
28.00	0.03	2,775	570.09	0.06
30.00	0.03	2,637	570.07	0.05
32.00	0.03	2,558	570.06	0.04
34.00	0.03	2,510	570.06	0.04
36.00	0.03	2,476	570.05	0.04
38.00	0.03	2,451	570.05	0.03
40.00	0.03	2,433	570.05	0.03
42.00	0.03	2,418	570.05	0.03
44.00	0.03	2,405	570.04	0.03
46.00	0.03	2,394	570.04	0.03
48.00	0.01	2,335	570.04	0.03
50.00	0.00	2,210	570.02	0.02
52.00	0.00	2,101	570.01	0.01
54.00	0.00	2,017	570.00	0.01
56.00	0.00	1,961	569.98	0.01
58.00	0.00	1,922	569.97	0.00
60.00	0.00	1,894	569.97	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 2.99" for 25-Year event
Inflow = 6.75 cfs @ 12.00 hrs, Volume= 0.374 af
Outflow = 4.78 cfs @ 12.08 hrs, Volume= 0.374 af, Atten= 29%, Lag= 4.5 min
Primary = 4.78 cfs @ 12.08 hrs, Volume= 0.374 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.82' @ 12.08 hrs Surf.Area= 6,409 sf Storage= 4,638 cf

Plug-Flow detention time= 252.6 min calculated for 0.374 af (100% of inflow)
Center-of-Mass det. time= 252.8 min (1,043.6 - 790.7)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

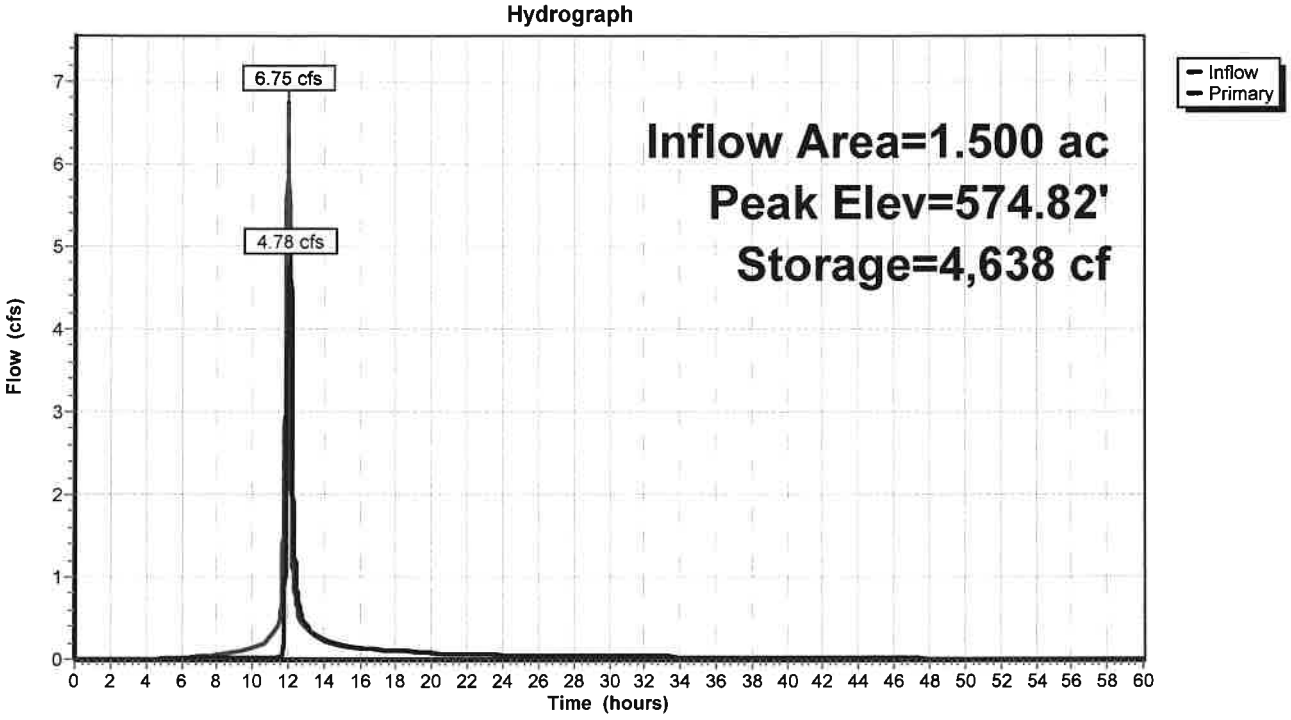
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

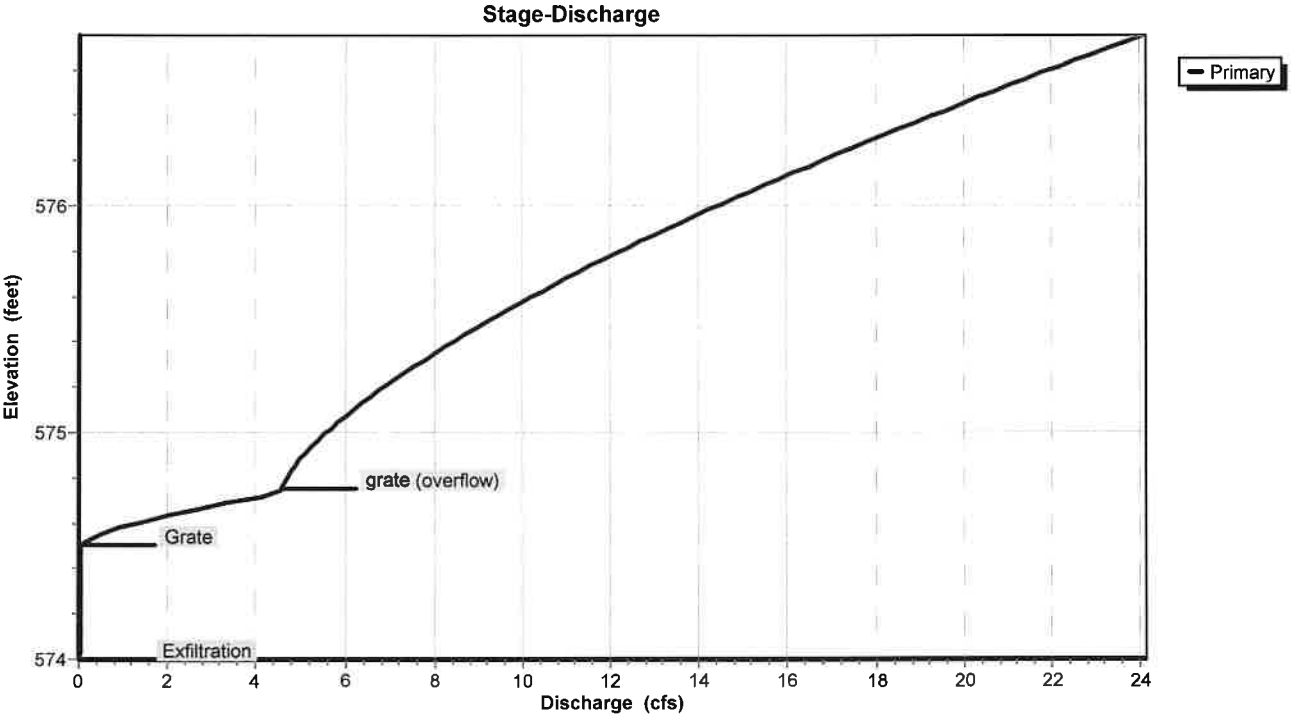
Primary OutFlow Max=4.78 cfs @ 12.08 hrs HW=574.82' (Free Discharge)
- **1=8" pipe** (Barrel Controls 4.65 cfs @ 5.92 fps)
  - **2=Grate** (Passes < 5.74 cfs potential flow)
  - **3=Exfiltration** (Passes < 0.04 cfs potential flow)
- **4=grate (overflow)** (Orifice Controls 0.13 cfs @ 0.87 fps)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

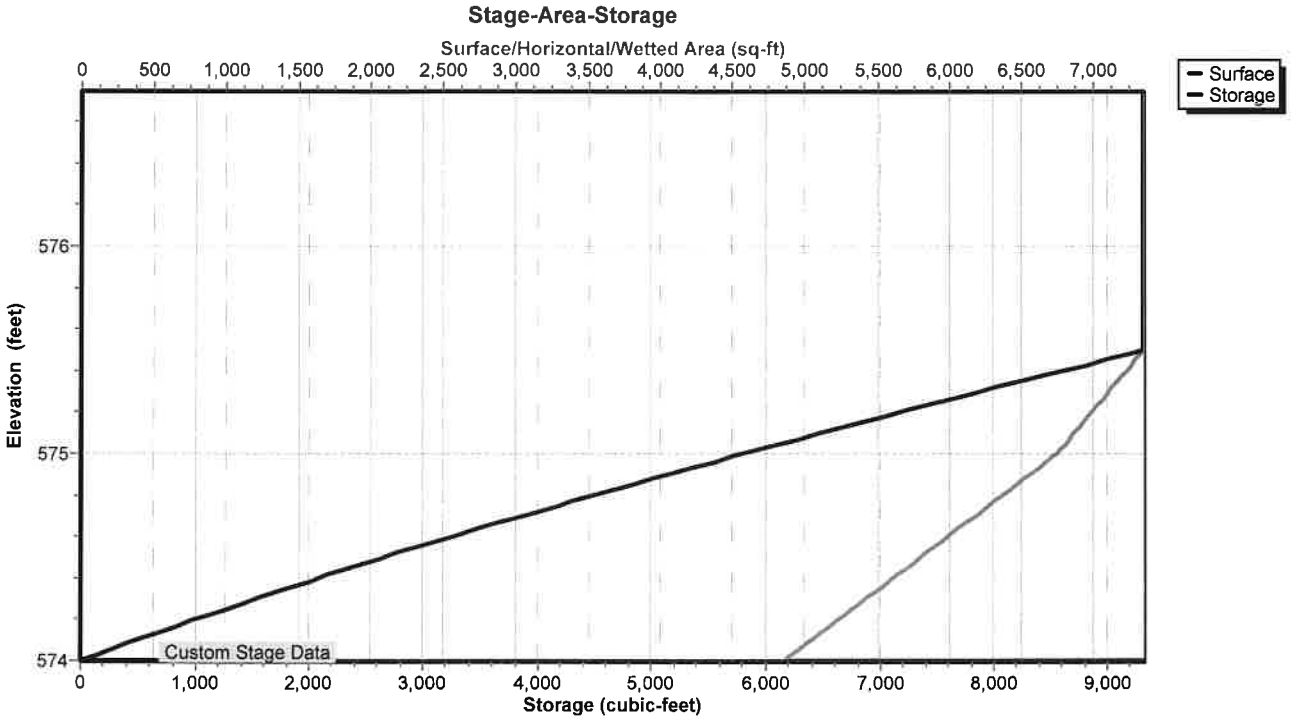


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.02	55	574.01	0.01
8.00	0.05	177	574.04	0.03
10.00	0.13	612	574.12	0.03
12.00	**6.75**	**4,265**	**574.77**	**4.62**
14.00	0.22	**2,825**	**574.53**	**0.24**
16.00	0.13	2,765	574.52	0.14
18.00	0.10	2,730	574.51	0.11
20.00	0.08	2,704	574.51	0.08
22.00	0.07	2,694	574.51	0.07
24.00	0.06	2,689	574.50	0.06
26.00	0.00	2,452	574.46	0.03
28.00	0.00	2,208	574.42	0.03
30.00	0.00	1,968	574.38	0.03
32.00	0.00	1,733	574.34	0.03
34.00	0.00	1,501	574.29	0.03
36.00	0.00	1,273	574.25	0.03
38.00	0.00	1,050	574.21	0.03
40.00	0.00	830	574.17	0.03
42.00	0.00	614	574.12	0.03
44.00	0.00	403	574.08	0.03
46.00	0.00	195	574.04	0.03
48.00	0.00	46	574.01	0.01
50.00	0.00	10	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=3.52"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=7.64 cfs 0.498 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=3.62"
Flow Length=345' Tc=9.1 min CN=92 Runoff=8.07 cfs 0.453 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=572.23' Storage=18,837 cf Inflow=12.80 cfs 0.951 af
Outflow=3.61 cfs 0.907 af

Pond 9P: Bioretention Area 3 Peak Elev=574.93' Storage=5,333 cf Inflow=8.07 cfs 0.453 af
Outflow=5.22 cfs 0.453 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.951 af Average Runoff Depth = 3.57"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

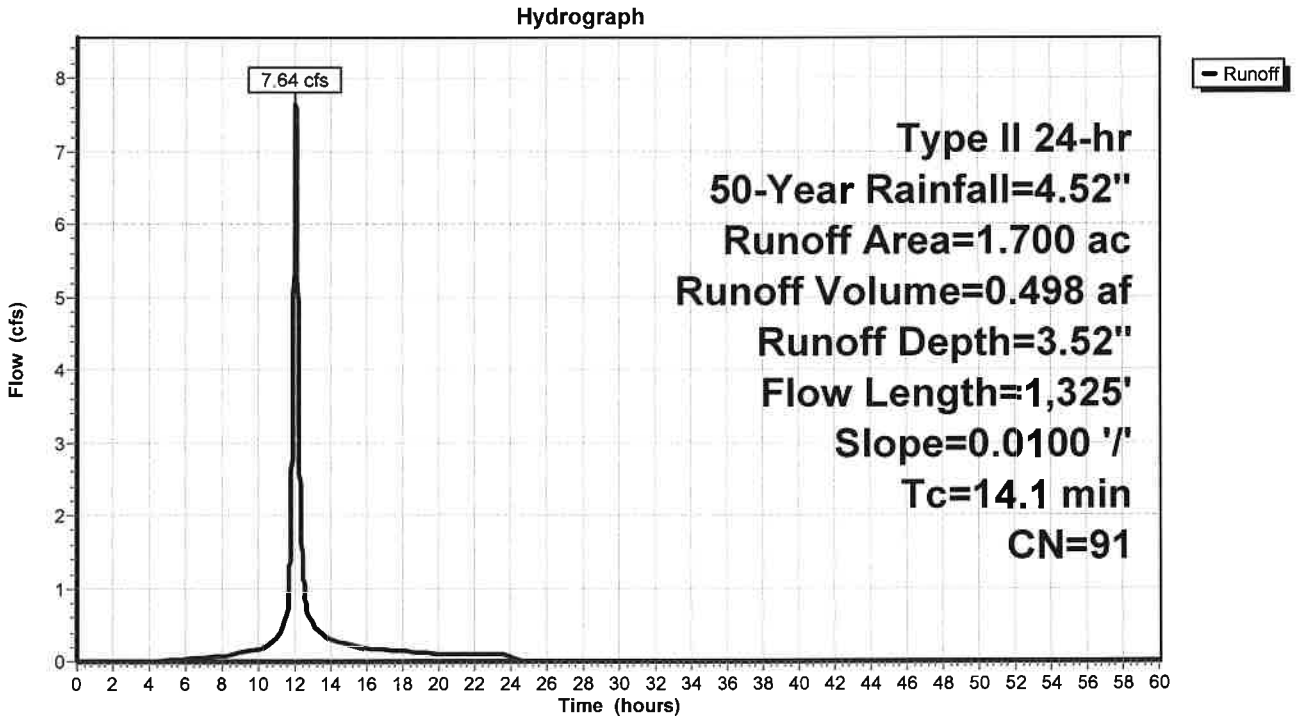
Runoff = 7.64 cfs @ 12.05 hrs, Volume= 0.498 af, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.10	0.00	0.00
3.00	0.16	0.00	0.00
4.00	0.22	0.00	0.00
5.00	0.28	0.01	0.02
6.00	0.36	0.02	0.03
7.00	0.45	0.05	0.05
8.00	0.54	0.09	0.07
9.00	0.66	0.15	0.12
10.00	0.82	0.24	0.17
11.00	1.06	0.40	0.34
12.00	3.00	2.07	**6.84**
13.00	3.49	2.53	**0.53**
14.00	3.71	2.74	0.30
15.00	3.86	2.88	0.23
16.00	3.98	3.00	0.18
17.00	4.08	3.09	0.16
18.00	4.16	3.17	0.14
19.00	4.24	3.25	0.12
20.00	4.30	3.31	0.10
21.00	4.36	3.36	0.09
22.00	4.42	3.42	0.09
23.00	4.47	3.47	0.09
24.00	**4.52**	**3.52**	0.08
25.00	4.52	3.52	0.00
26.00	4.52	3.52	0.00
27.00	4.52	3.52	0.00
28.00	4.52	3.52	0.00
29.00	4.52	3.52	0.00
30.00	4.52	3.52	0.00
31.00	4.52	3.52	0.00
32.00	4.52	3.52	0.00
33.00	4.52	3.52	0.00
34.00	4.52	3.52	0.00
35.00	4.52	3.52	0.00
36.00	4.52	3.52	0.00
37.00	4.52	3.52	0.00
38.00	4.52	3.52	0.00
39.00	4.52	3.52	0.00
40.00	4.52	3.52	0.00
41.00	4.52	3.52	0.00
42.00	4.52	3.52	0.00
43.00	4.52	3.52	0.00
44.00	4.52	3.52	0.00
45.00	4.52	3.52	0.00
46.00	4.52	3.52	0.00
47.00	4.52	3.52	0.00
48.00	4.52	3.52	0.00
49.00	4.52	3.52	0.00
50.00	4.52	3.52	0.00
51.00	4.52	3.52	0.00
52.00	4.52	3.52	0.00
53.00	4.52	3.52	0.00
54.00	4.52	3.52	0.00
55.00	4.52	3.52	0.00
56.00	4.52	3.52	0.00
57.00	4.52	3.52	0.00
58.00	4.52	3.52	0.00
59.00	4.52	3.52	0.00
60.00	4.52	3.52	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

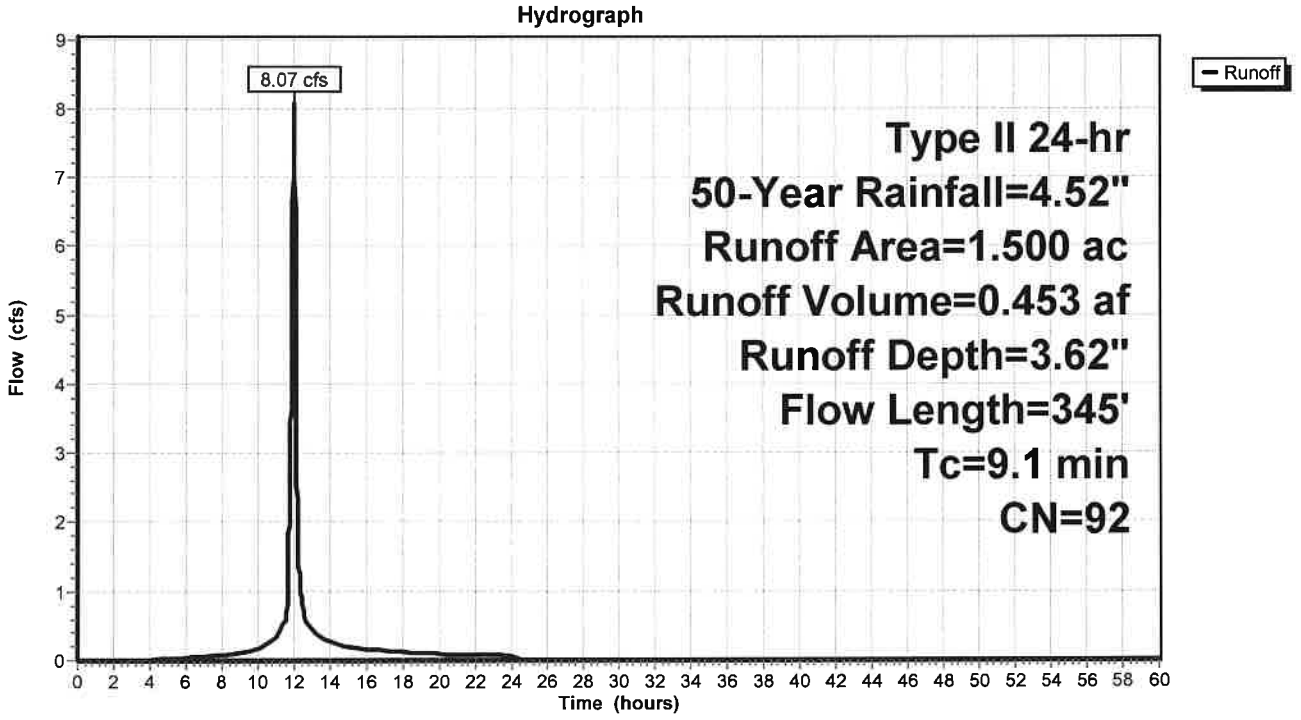
Runoff = 8.07 cfs @ 12.00 hrs, Volume= 0.453 af, Depth= 3.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.10	0.00	0.00
3.00	0.16	0.00	0.00
4.00	0.22	0.00	0.01
5.00	0.28	0.01	0.02
6.00	0.36	0.03	0.04
7.00	0.45	0.07	0.06
8.00	0.54	0.11	0.07
9.00	0.66	0.18	0.12
10.00	0.82	0.27	0.17
11.00	1.06	0.45	0.34
12.00	3.00	2.16	**8.07**
13.00	3.49	2.63	0.45
14.00	3.71	2.83	0.26
15.00	3.86	2.98	0.20
16.00	3.98	3.10	0.16
17.00	4.08	3.19	0.14
18.00	4.16	3.28	0.12
19.00	4.24	3.35	0.11
20.00	4.30	3.41	0.09
21.00	4.36	3.47	0.08
22.00	4.42	3.52	0.08
23.00	4.47	3.57	0.08
24.00	**4.52**	**3.62**	0.07
25.00	4.52	3.62	0.00
26.00	4.52	3.62	0.00
27.00	4.52	3.62	0.00
28.00	4.52	3.62	0.00
29.00	4.52	3.62	0.00
30.00	4.52	3.62	0.00
31.00	4.52	3.62	0.00
32.00	4.52	3.62	0.00
33.00	4.52	3.62	0.00
34.00	4.52	3.62	0.00
35.00	4.52	3.62	0.00
36.00	4.52	3.62	0.00
37.00	4.52	3.62	0.00
38.00	4.52	3.62	0.00
39.00	4.52	3.62	0.00
40.00	4.52	3.62	0.00
41.00	4.52	3.62	0.00
42.00	4.52	3.62	0.00
43.00	4.52	3.62	0.00
44.00	4.52	3.62	0.00
45.00	4.52	3.62	0.00
46.00	4.52	3.62	0.00
47.00	4.52	3.62	0.00
48.00	4.52	3.62	0.00
49.00	4.52	3.62	0.00
50.00	4.52	3.62	0.00
51.00	4.52	3.62	0.00
52.00	4.52	3.62	0.00
53.00	4.52	3.62	0.00
54.00	4.52	3.62	0.00
55.00	4.52	3.62	0.00
56.00	4.52	3.62	0.00
57.00	4.52	3.62	0.00
58.00	4.52	3.62	0.00
59.00	4.52	3.62	0.00
60.00	4.52	3.62	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 3.57" for 50-Year event
Inflow = 12.80 cfs @ 12.06 hrs, Volume= 0.951 af
Outflow = 3.61 cfs @ 12.36 hrs, Volume= 0.907 af, Atten= 72%, Lag= 17.7 min
Primary = 3.61 cfs @ 12.36 hrs, Volume= 0.907 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 572.23' @ 12.36 hrs Surf.Area= 10,145 sf Storage= 18,837 cf

Plug-Flow detention time= 228.3 min calculated for 0.907 af (95% of inflow)
Center-of-Mass det. time= 158.8 min (1,051.4 - 892.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

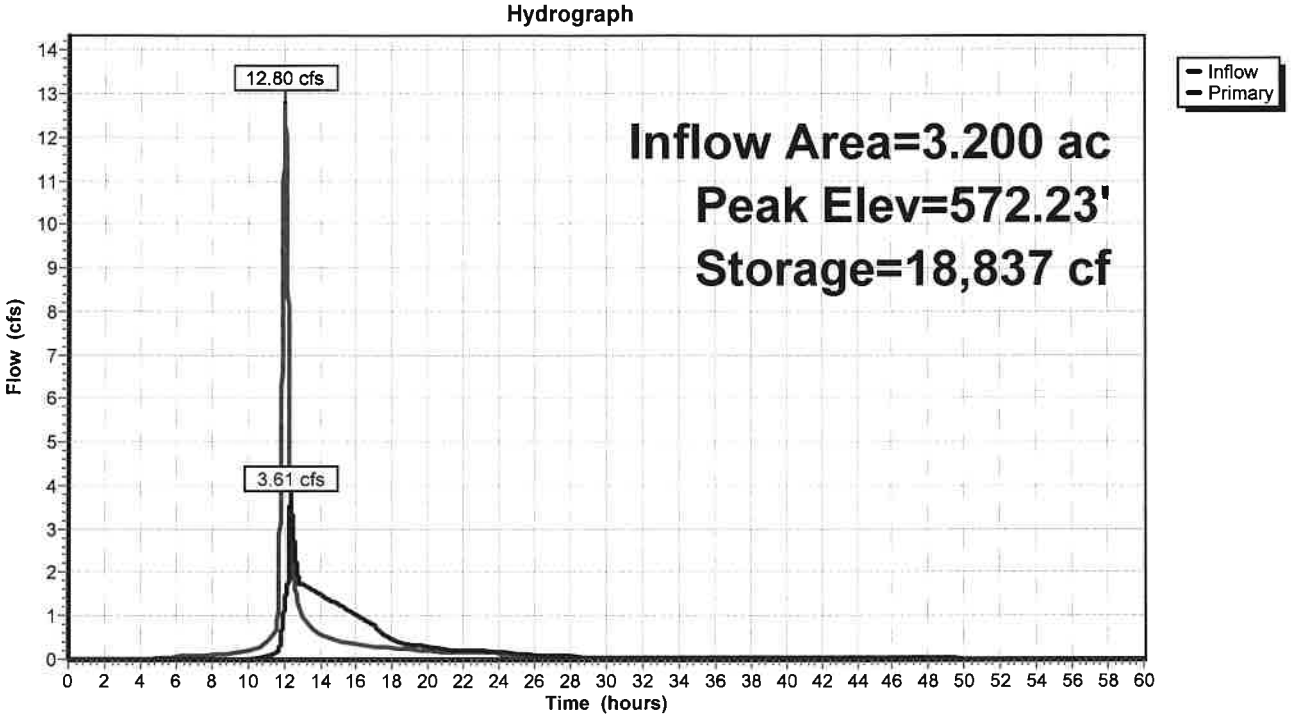
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

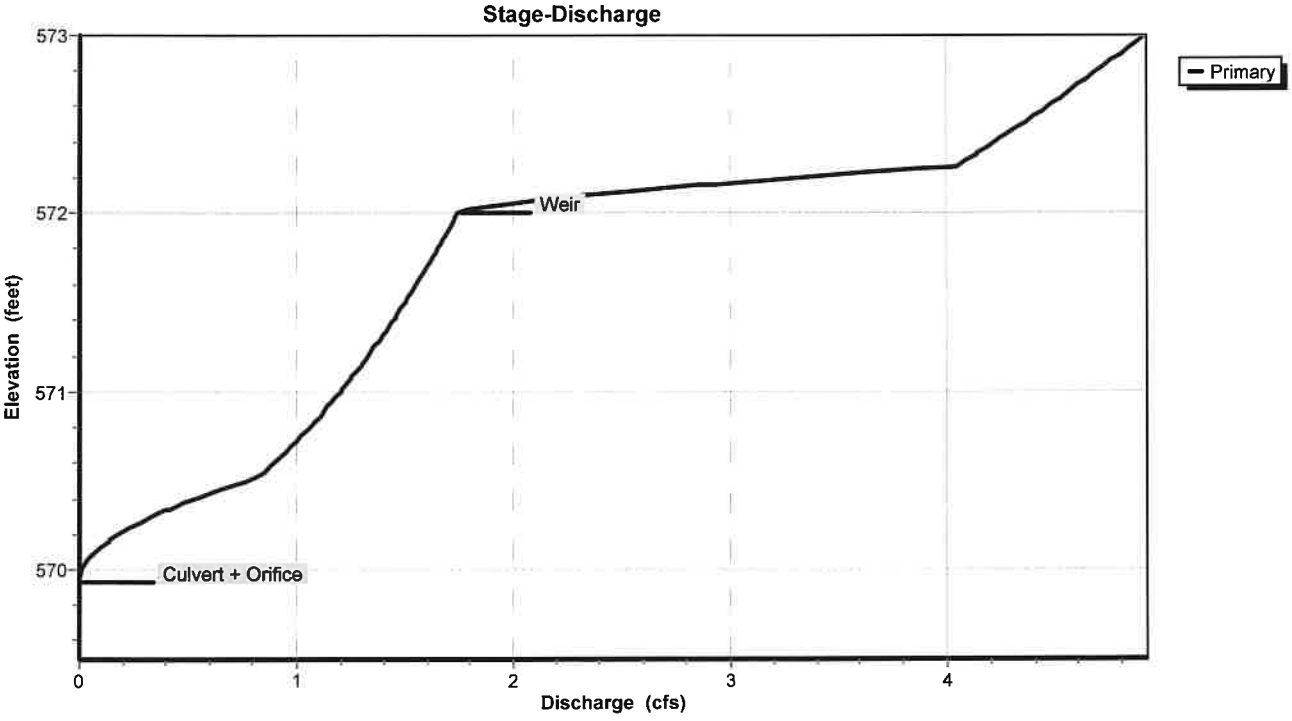
Primary OutFlow Max=3.60 cfs @ 12.36 hrs HW=572.23' (Free Discharge)
└**1=Culvert** (Passes 3.60 cfs of 4.00 cfs potential flow)
  ├**2=Orifice** (Orifice Controls 1.84 cfs @ 7.03 fps)
  └**3=Weir** (Weir Controls 1.76 cfs @ 1.56 fps)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

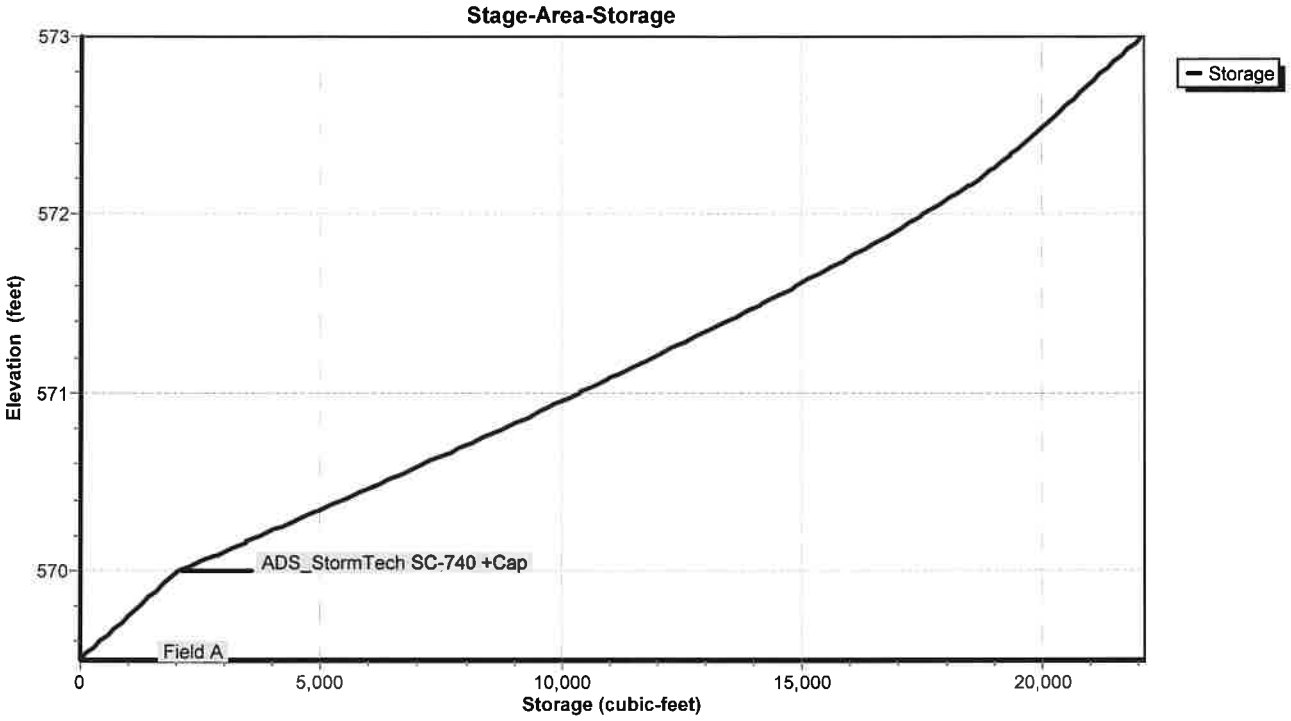


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	1	569.50	0.00
6.00	0.05	184	569.55	0.00
8.00	0.10	755	569.69	0.00
10.00	0.20	1,811	569.95	0.00
12.00	**11.66**	**9,752**	**570.92**	**1.15**
14.00	**0.59**	**14,219**	**571.51**	**1.50**
16.00	0.35	8,385	570.75	1.02
18.00	0.26	5,166	570.37	0.47
20.00	0.19	4,282	570.26	0.27
22.00	0.17	3,893	570.22	0.20
24.00	0.16	3,718	570.20	0.18
26.00	0.03	3,113	570.13	0.09
28.00	0.03	2,810	570.09	0.06
30.00	0.03	2,657	570.07	0.05
32.00	0.03	2,569	570.06	0.04
34.00	0.03	2,516	570.06	0.04
36.00	0.03	2,480	570.05	0.04
38.00	0.03	2,454	570.05	0.03
40.00	0.03	2,435	570.05	0.03
42.00	0.03	2,419	570.05	0.03
44.00	0.03	2,406	570.04	0.03
46.00	0.03	2,395	570.04	0.03
48.00	0.01	2,338	570.04	0.03
50.00	0.00	2,213	570.02	0.02
52.00	0.00	2,103	570.01	0.01
54.00	0.00	2,018	570.00	0.01
56.00	0.00	1,962	569.98	0.01
58.00	0.00	1,923	569.97	0.00
60.00	0.00	1,894	569.97	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 3.62" for 50-Year event
Inflow = 8.07 cfs @ 12.00 hrs, Volume= 0.453 af
Outflow = 5.22 cfs @ 12.09 hrs, Volume= 0.453 af, Atten= 35%, Lag= 5.1 min
Primary = 5.22 cfs @ 12.09 hrs, Volume= 0.453 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.93' @ 12.09 hrs Surf.Area= 6,611 sf Storage= 5,333 cf

Plug-Flow detention time= 214.9 min calculated for 0.453 af (100% of inflow)
Center-of-Mass det. time= 215.2 min (1,000.7 - 785.5)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

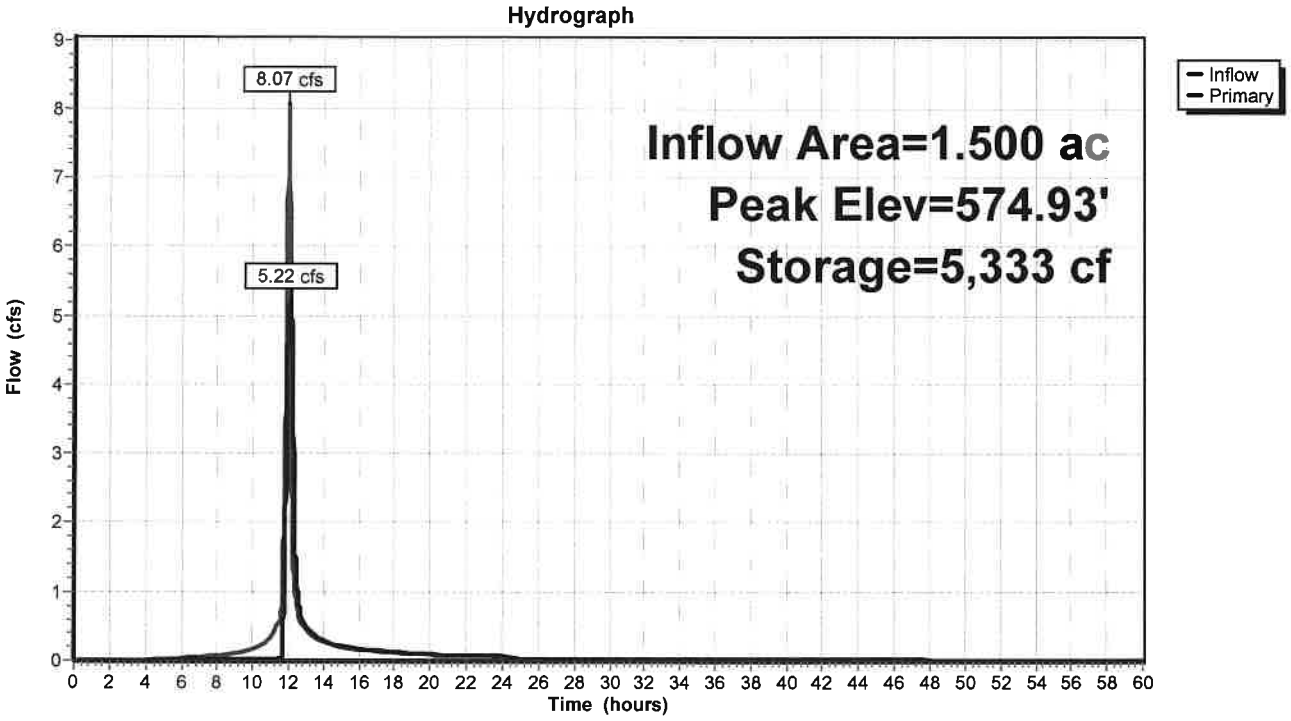
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

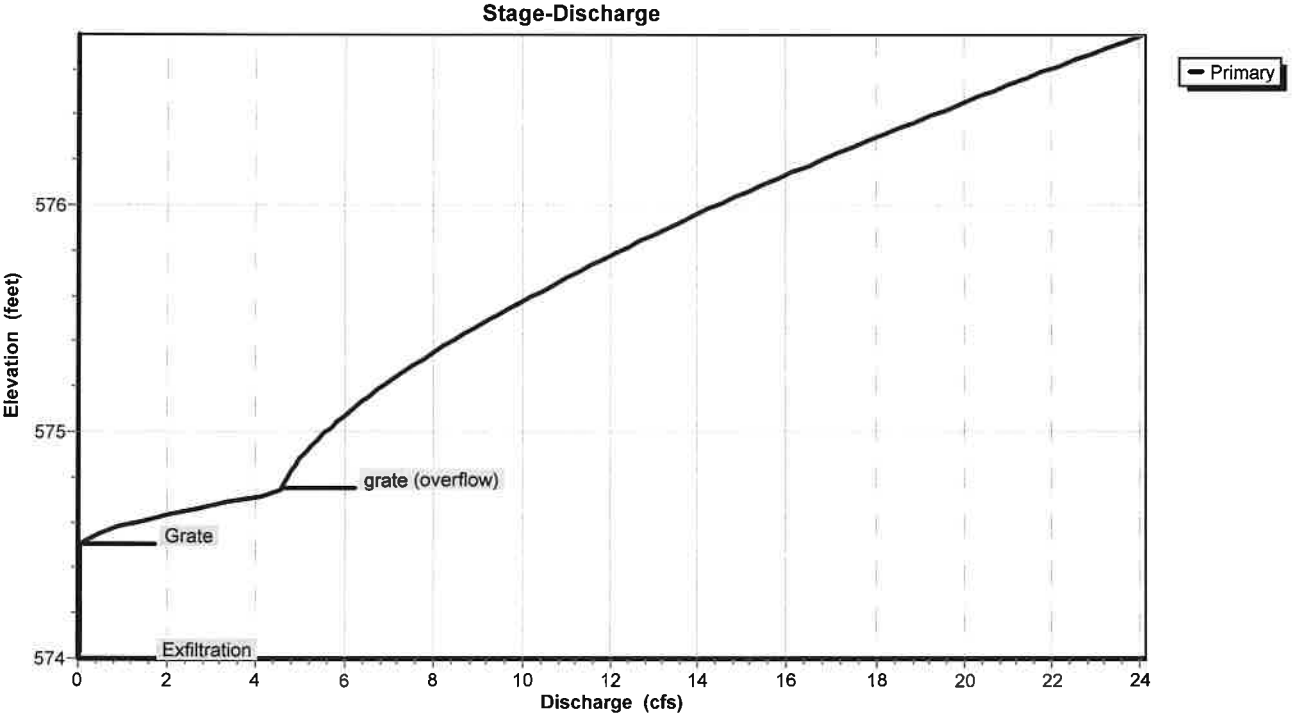
Primary OutFlow Max=5.22 cfs @ 12.09 hrs HW=574.93' (Free Discharge)
- **1=8" pipe** (Barrel Controls 4.73 cfs @ 6.02 fps)
  - **2=Grate** (Passes < 6.61 cfs potential flow)
  - **3=Exfiltration** (Passes < 0.04 cfs potential flow)
- **4=grate (overflow)** (Orifice Controls 0.49 cfs @ 1.36 fps)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

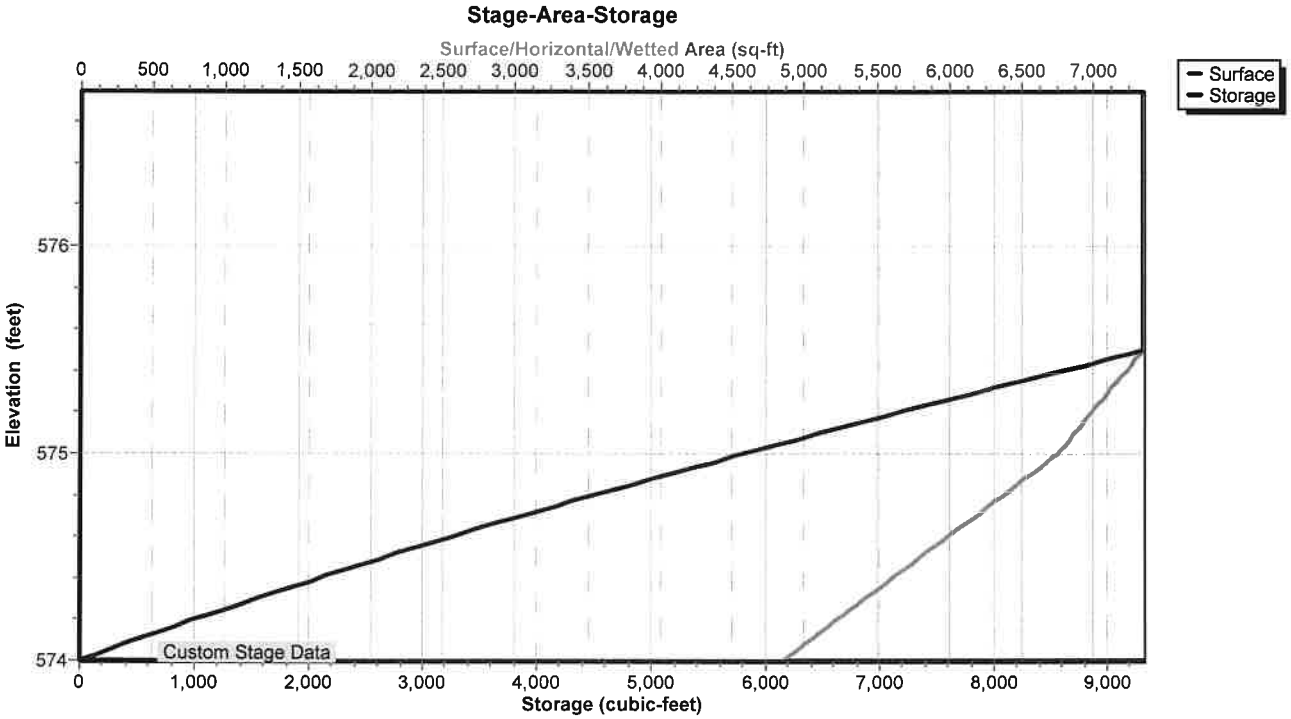


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.01	6	574.00	0.00
6.00	0.04	95	574.02	0.02
8.00	0.07	296	574.06	0.03
10.00	0.17	928	574.18	0.03
12.00	**8.07**	**4,720**	**574.84**	**4.83**
14.00	0.26	**2,846**	**574.53**	**0.28**
16.00	0.16	2,787	574.52	0.17
18.00	0.12	2,748	574.51	0.13
20.00	0.09	2,717	574.51	0.09
22.00	0.08	2,706	574.51	0.08
24.00	0.07	2,699	574.51	0.07
26.00	0.00	2,457	574.46	0.03
28.00	0.00	2,213	574.42	0.03
30.00	0.00	1,974	574.38	0.03
32.00	0.00	1,738	574.34	0.03
34.00	0.00	1,506	574.29	0.03
36.00	0.00	1,278	574.25	0.03
38.00	0.00	1,055	574.21	0.03
40.00	0.00	835	574.17	0.03
42.00	0.00	619	574.12	0.03
44.00	0.00	407	574.08	0.03
46.00	0.00	199	574.04	0.03
48.00	0.00	47	574.01	0.01
50.00	0.00	10	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=4.25"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=9.15 cfs 0.603 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=4.36"
Flow Length=345' Tc=9.1 min CN=92 Runoff=9.61 cfs 0.545 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=572.92' Storage=21,772 cf Inflow=14.92 cfs 1.148 af
Outflow=4.83 cfs 1.105 af

Pond 9P: Bioretention Area 3 Peak Elev=575.05' Storage=6,150 cf Inflow=9.61 cfs 0.545 af
Outflow=5.89 cfs 0.545 af

Total Runoff Area = 3.200 ac Runoff Volume = 1.148 af Average Runoff Depth = 4.31"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 8S: Front Area 2

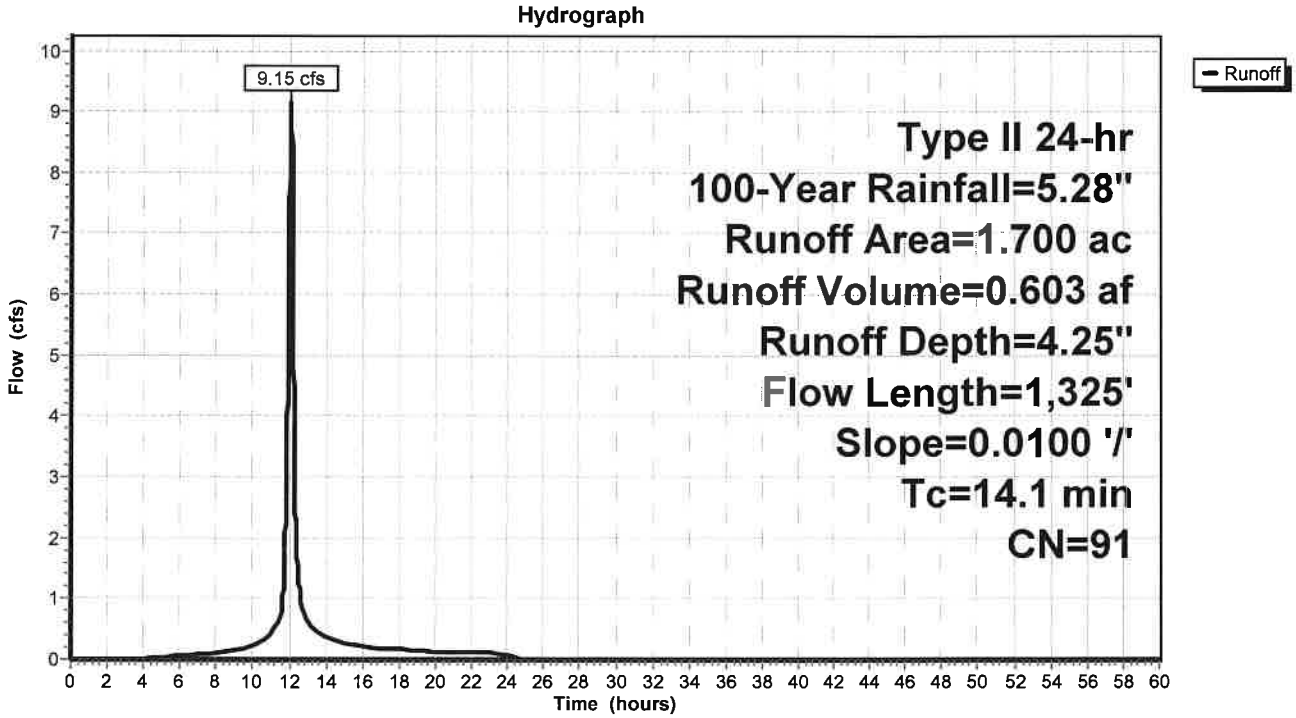
Runoff = 9.15 cfs @ 12.05 hrs, Volume= 0.603 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.28	4.25	0.00
1.00	0.06	0.00	0.00	53.00	5.28	4.25	0.00
2.00	0.12	0.00	0.00	54.00	5.28	4.25	0.00
3.00	0.18	0.00	0.00	55.00	5.28	4.25	0.00
4.00	0.25	0.00	0.01	56.00	5.28	4.25	0.00
5.00	0.33	0.02	0.03	57.00	5.28	4.25	0.00
6.00	0.42	0.04	0.05	58.00	5.28	4.25	0.00
7.00	0.52	0.08	0.07	59.00	5.28	4.25	0.00
8.00	0.63	0.13	0.10	60.00	5.28	4.25	0.00
9.00	0.78	0.21	0.16				
10.00	0.96	0.33	0.22				
11.00	1.24	0.54	0.43				
12.00	3.50	2.54	**8.21**				
13.00	4.08	3.09	**0.63**				
14.00	4.33	3.33	0.36				
15.00	4.51	3.50	0.28				
16.00	4.65	3.64	0.21				
17.00	4.76	3.75	0.18				
18.00	4.86	3.85	0.16				
19.00	4.95	3.93	0.14				
20.00	5.03	4.01	0.12				
21.00	5.09	4.07	0.11				
22.00	5.16	4.14	0.11				
23.00	5.22	4.20	0.10				
24.00	**5.28**	**4.25**	0.10				
25.00	5.28	4.25	0.00				
26.00	5.28	4.25	0.00				
27.00	5.28	4.25	0.00				
28.00	5.28	4.25	0.00				
29.00	5.28	4.25	0.00				
30.00	5.28	4.25	0.00				
31.00	5.28	4.25	0.00				
32.00	5.28	4.25	0.00				
33.00	5.28	4.25	0.00				
34.00	5.28	4.25	0.00				
35.00	5.28	4.25	0.00				
36.00	5.28	4.25	0.00				
37.00	5.28	4.25	0.00				
38.00	5.28	4.25	0.00				
39.00	5.28	4.25	0.00				
40.00	5.28	4.25	0.00				
41.00	5.28	4.25	0.00				
42.00	5.28	4.25	0.00				
43.00	5.28	4.25	0.00				
44.00	5.28	4.25	0.00				
45.00	5.28	4.25	0.00				
46.00	5.28	4.25	0.00				
47.00	5.28	4.25	0.00				
48.00	5.28	4.25	0.00				
49.00	5.28	4.25	0.00				
50.00	5.28	4.25	0.00				
51.00	5.28	4.25	0.00				

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Subcatchment 10S: Rear Area 2

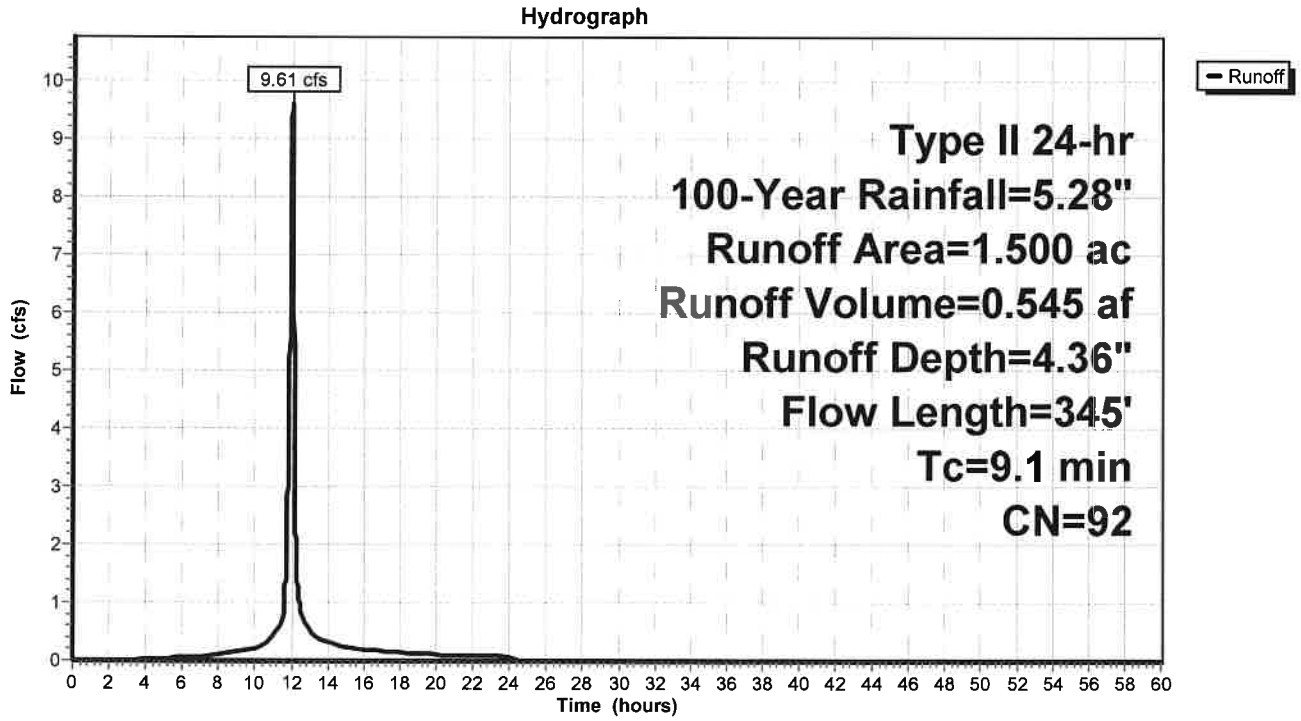
Runoff = 9.61 cfs @ 12.00 hrs, Volume= 0.545 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.18	0.00	0.00
4.00	0.25	0.01	0.02
5.00	0.33	0.02	0.03
6.00	0.42	0.06	0.05
7.00	0.52	0.10	0.08
8.00	0.63	0.16	0.10
9.00	0.78	0.25	0.16
10.00	0.96	0.37	0.22
11.00	1.24	0.59	0.42
12.00	3.50	2.64	**9.61**
13.00	4.08	3.19	0.53
14.00	4.33	3.44	0.31
15.00	4.51	3.61	0.24
16.00	4.65	3.74	0.19
17.00	4.76	3.86	0.16
18.00	4.86	3.96	0.14
19.00	4.95	4.04	0.12
20.00	5.03	4.12	0.10
21.00	5.09	4.18	0.10
22.00	5.16	4.24	0.09
23.00	5.22	4.30	0.09
24.00	**5.28**	**4.36**	0.09
25.00	5.28	4.36	0.00
26.00	5.28	4.36	0.00
27.00	5.28	4.36	0.00
28.00	5.28	4.36	0.00
29.00	5.28	4.36	0.00
30.00	5.28	4.36	0.00
31.00	5.28	4.36	0.00
32.00	5.28	4.36	0.00
33.00	5.28	4.36	0.00
34.00	5.28	4.36	0.00
35.00	5.28	4.36	0.00
36.00	5.28	4.36	0.00
37.00	5.28	4.36	0.00
38.00	5.28	4.36	0.00
39.00	5.28	4.36	0.00
40.00	5.28	4.36	0.00
41.00	5.28	4.36	0.00
42.00	5.28	4.36	0.00
43.00	5.28	4.36	0.00
44.00	5.28	4.36	0.00
45.00	5.28	4.36	0.00
46.00	5.28	4.36	0.00
47.00	5.28	4.36	0.00
48.00	5.28	4.36	0.00
49.00	5.28	4.36	0.00
50.00	5.28	4.36	0.00
51.00	5.28	4.36	0.00
52.00	5.28	4.36	0.00
53.00	5.28	4.36	0.00
54.00	5.28	4.36	0.00
55.00	5.28	4.36	0.00
56.00	5.28	4.36	0.00
57.00	5.28	4.36	0.00
58.00	5.28	4.36	0.00
59.00	5.28	4.36	0.00
60.00	5.28	4.36	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 4.31" for 100-Year event
Inflow = 14.92 cfs @ 12.06 hrs, Volume= 1.148 af
Outflow = 4.83 cfs @ 12.36 hrs, Volume= 1.105 af, Atten= 68%, Lag= 18.1 min
Primary = 4.83 cfs @ 12.36 hrs, Volume= 1.105 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 572.92' @ 12.36 hrs Surf.Area= 10,145 sf Storage= 21,772 cf

Plug-Flow detention time= 201.7 min calculated for 1.105 af (96% of inflow)
Center-of-Mass det. time= 143.6 min (1,016.5 - 873.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

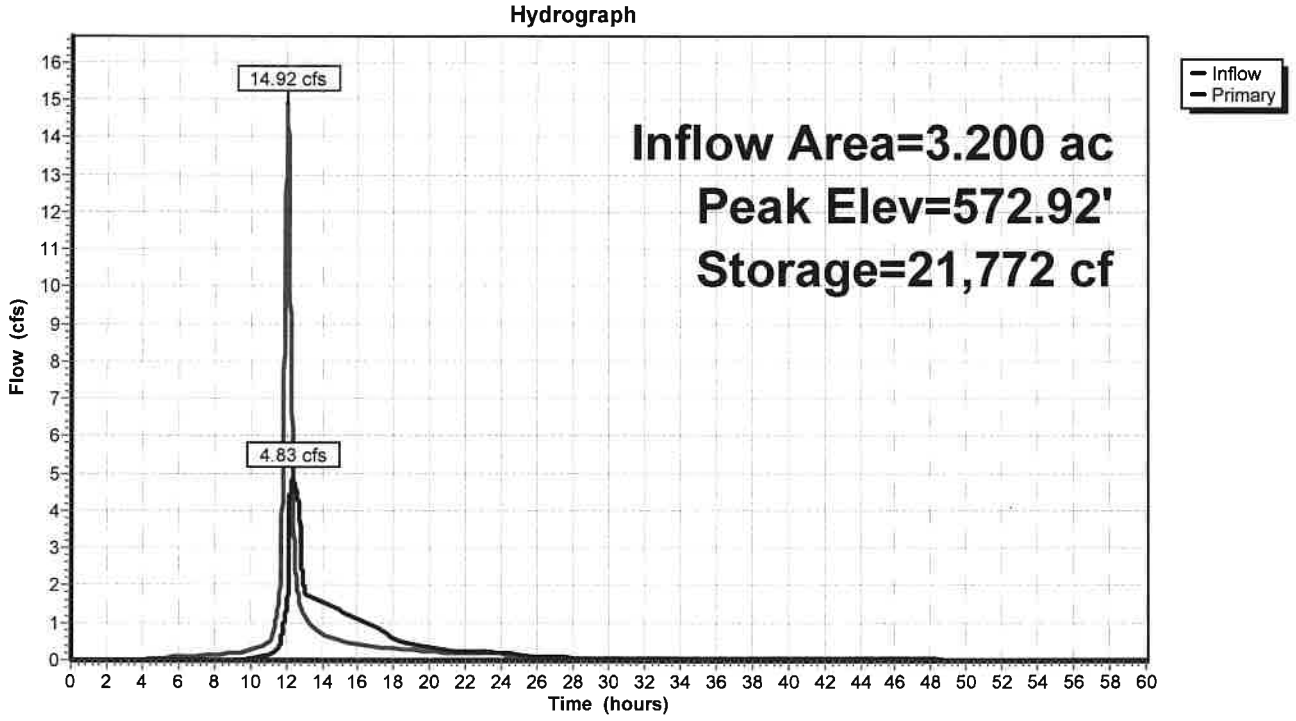
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

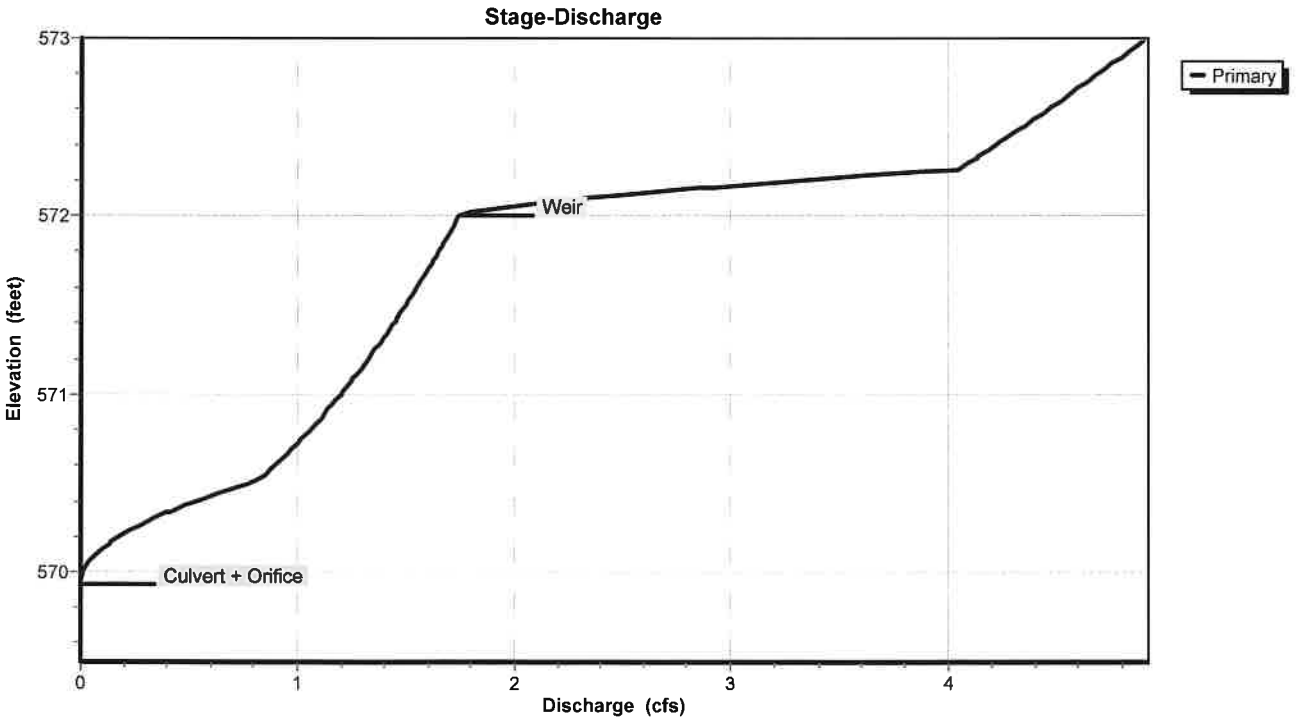
Primary OutFlow Max=4.83 cfs @ 12.36 hrs HW=572.92' (Free Discharge)
↑**1=Culvert** (Barrel Controls 4.83 cfs @ 6.16 fps)
↑**2=Orifice** (Passes < 2.12 cfs potential flow)
3=Weir (Passes < 13.95 cfs potential flow)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)

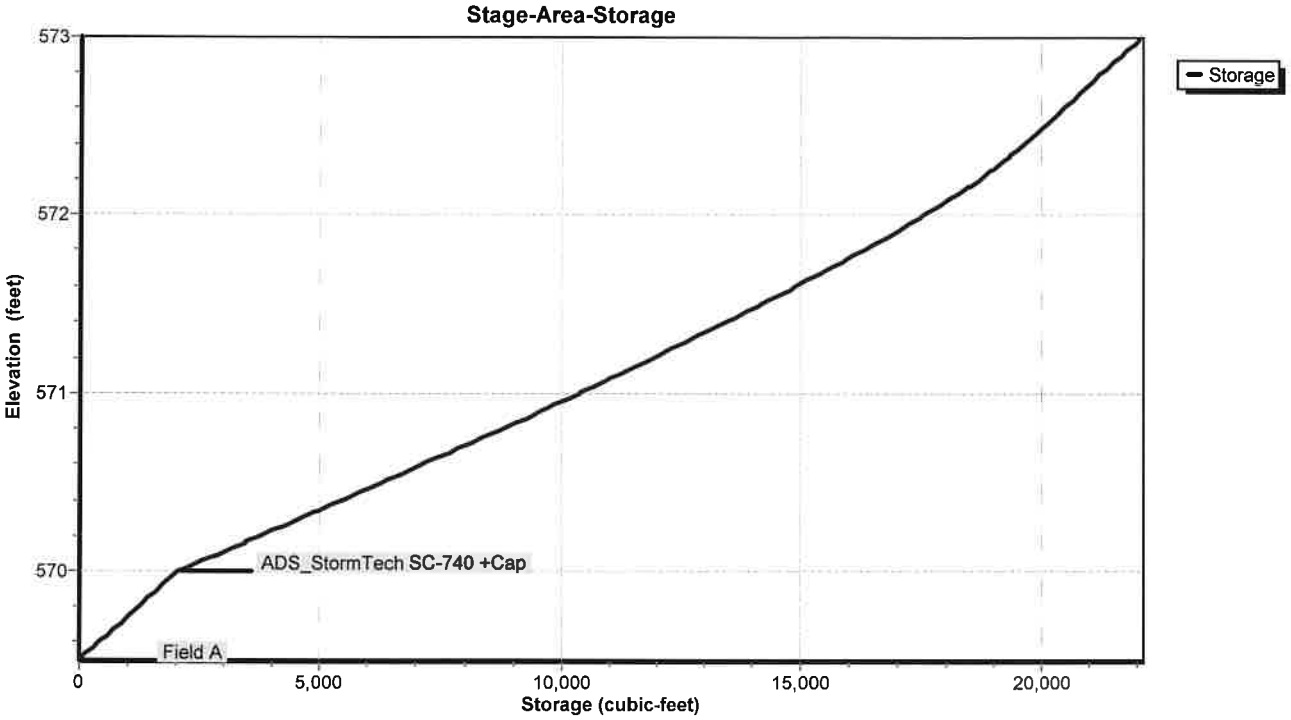


Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 7P: Underground Storage (SMA #2)



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.01	16	569.50	0.00
6.00	0.08	340	569.58	0.00
8.00	0.13	1,076	569.77	0.00
10.00	0.25	2,364	570.04	0.03
12.00	**13.40**	**12,150**	**571.23**	**1.34**
14.00	**0.69**	**15,059**	**571.63**	**1.56**
16.00	0.41	9,280	570.86	1.10
18.00	0.31	5,592	570.42	0.57
20.00	0.23	4,514	570.29	0.32
22.00	0.20	4,084	570.24	0.24
24.00	0.19	3,896	570.22	0.21
26.00	0.03	3,188	570.13	0.10
28.00	0.03	2,846	570.09	0.07
30.00	0.03	2,675	570.08	0.05
32.00	0.03	2,579	570.06	0.04
34.00	0.03	2,522	570.06	0.04
36.00	0.03	2,484	570.05	0.04
38.00	0.03	2,457	570.05	0.03
40.00	0.03	2,436	570.05	0.03
42.00	0.03	2,420	570.05	0.03
44.00	0.03	2,407	570.04	0.03
46.00	0.03	2,395	570.04	0.03
48.00	0.01	2,341	570.04	0.03
50.00	0.00	2,216	570.02	0.02
52.00	0.00	2,105	570.01	0.01
54.00	0.00	2,020	570.00	0.01
56.00	0.00	1,963	569.98	0.01
58.00	0.00	1,923	569.97	0.00
60.00	0.00	1,895	569.97	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 4.36" for 100-Year event
Inflow = 9.61 cfs @ 12.00 hrs, Volume= 0.545 af
Outflow = 5.89 cfs @ 12.09 hrs, Volume= 0.545 af, Atten= 39%, Lag= 5.5 min
Primary = 5.89 cfs @ 12.09 hrs, Volume= 0.545 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.05' @ 12.09 hrs Surf.Area= 6,805 sf Storage= 6,150 cf

Plug-Flow detention time= 184.7 min calculated for 0.545 af (100% of inflow)
Center-of-Mass det. time= 185.0 min (965.5 - 780.5)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

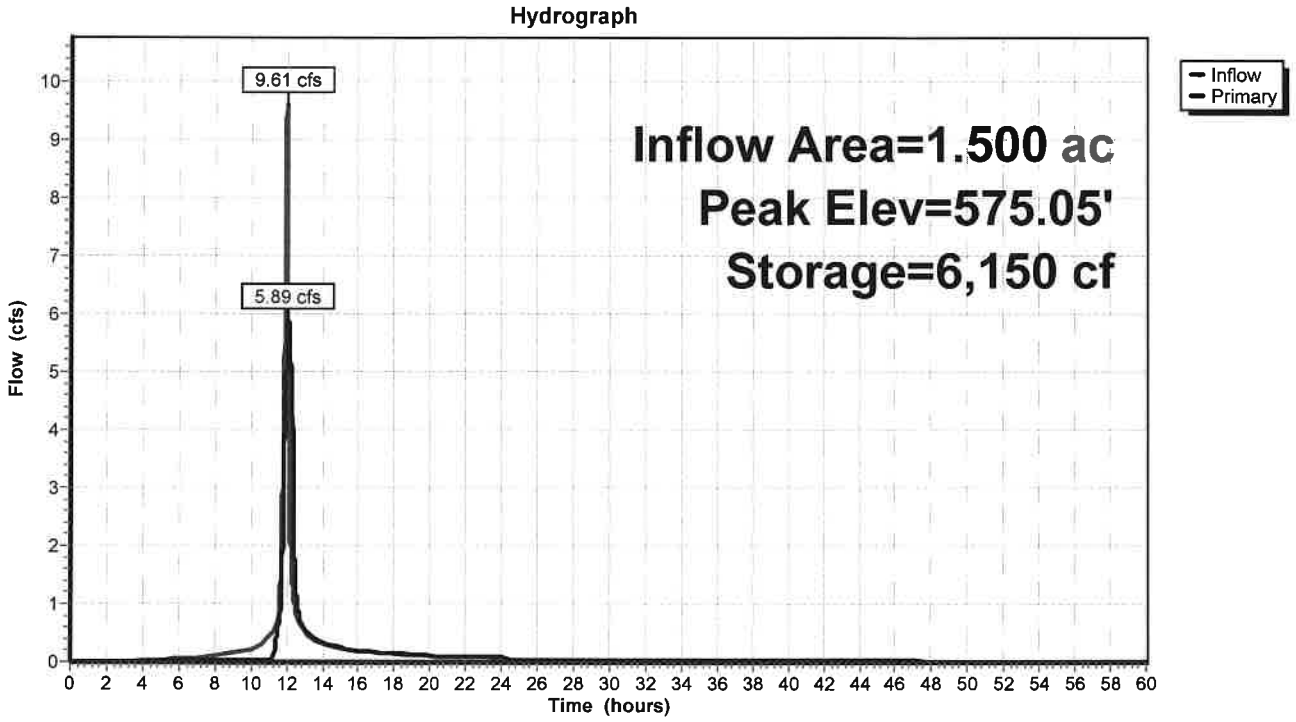
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

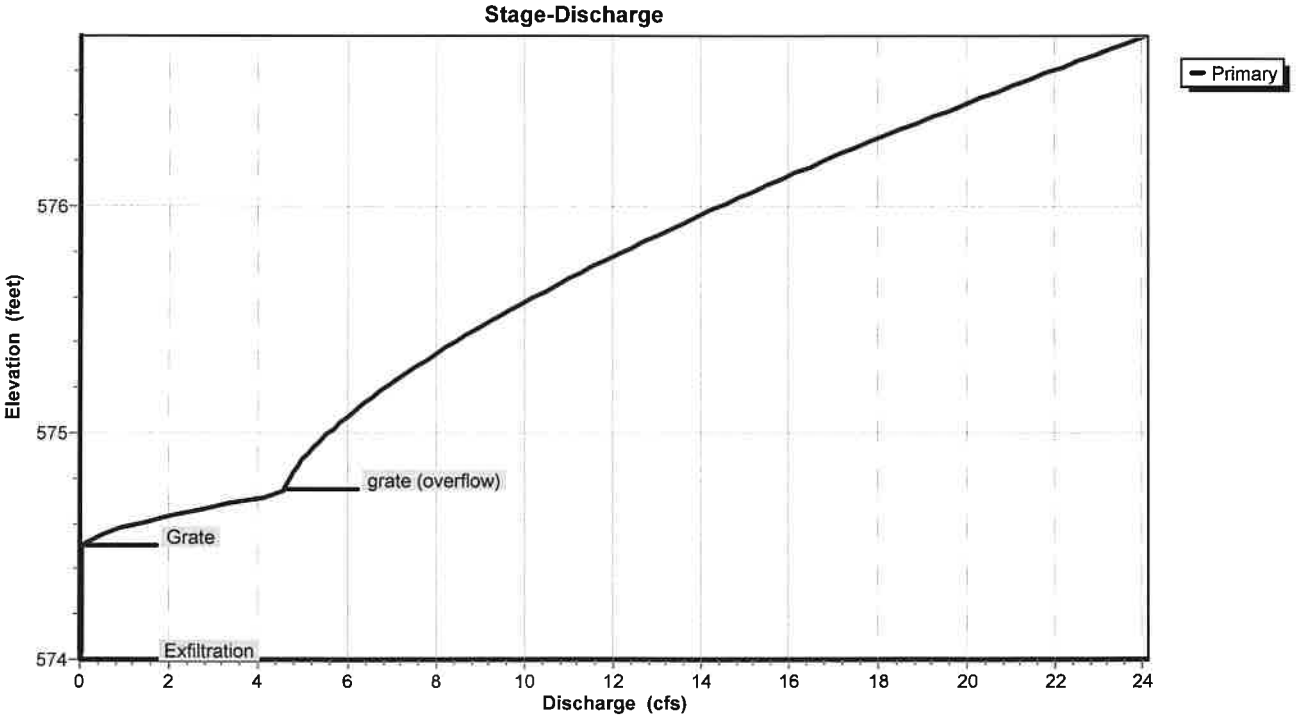
Primary OutFlow Max=5.88 cfs @ 12.09 hrs HW=575.05' (Free Discharge)
- **1=8" pipe** (Barrel Controls 4.82 cfs @ 6.14 fps)
  - **2=Grate** (Passes < 7.49 cfs potential flow)
  - **3=Exfiltration** (Passes < 0.04 cfs potential flow)
- **4=grate (overflow)** (Orifice Controls 1.06 cfs @ 1.76 fps)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3

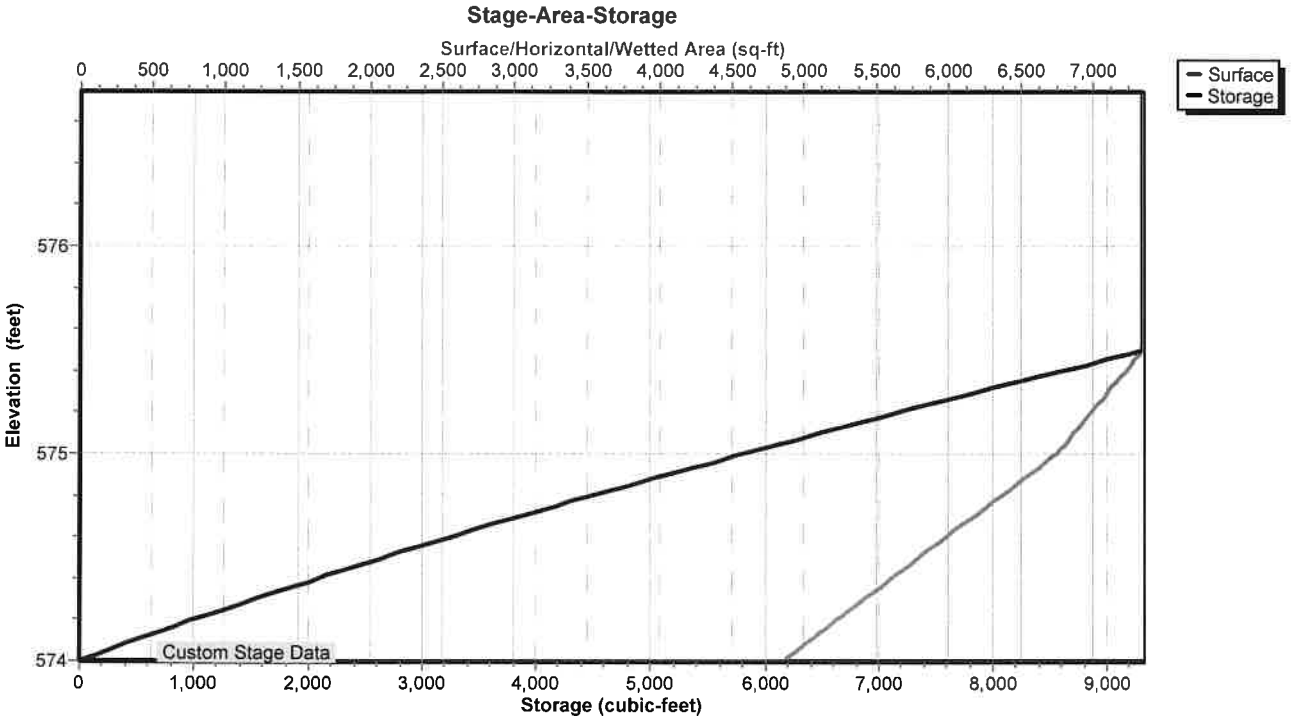


Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Pond 9P: Bioretention Area 3



Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.02	22	574.00	0.00
6.00	0.05	149	574.03	0.03
8.00	0.10	484	574.10	0.03
10.00	0.22	1,353	574.27	0.03
12.00	**9.61**	**5,288**	**574.92**	**5.19**
14.00	0.31	**2,872**	**574.54**	**0.33**
16.00	0.19	2,803	574.52	0.19
18.00	0.14	2,769	574.52	0.15
20.00	0.10	2,732	574.51	0.11
22.00	0.09	2,719	574.51	0.10
24.00	0.09	2,712	574.51	0.09
26.00	0.00	2,463	574.47	0.03
28.00	0.00	2,219	574.42	0.03
30.00	0.00	1,979	574.38	0.03
32.00	0.00	1,743	574.34	0.03
34.00	0.00	1,511	574.29	0.03
36.00	0.00	1,283	574.25	0.03
38.00	0.00	1,059	574.21	0.03
40.00	0.00	839	574.17	0.03
42.00	0.00	624	574.13	0.03
44.00	0.00	412	574.08	0.03
46.00	0.00	204	574.04	0.03
48.00	0.00	49	574.01	0.01
50.00	0.00	11	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	1	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

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Green Infrastructure & Water Quality Calculations

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Version 1.7
Last Updated: 2/22/21

Total Water Quality Volume Calculation
WQv(acre-feet) = [(P)(Rv)(A)] /12

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?.....	

Design Point:	1	
P=	1.00	*inch*

Breakdown of Subcatchments

Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Rv	WQv *(ft^3)*	Description
1	6.10	3.30	54%	0.54	11,888	
2	1.00	0.00	0%	0.05	182	
3	4.40	2.70	61%	0.60	9,620	
4	1.70	1.00	59%	0.58	3,576	
5	1.50	1.00	67%	0.65	3,539	
6						
7						
8						
9						
10						
Subtotal (1-30)	14.70	8.00	54%	0.54	**28,804**	**Subtotal 1**
Total	14.70	8.00	54%	0.54	**28,804**	**Initial WQv**

Identify Runoff Reduction Techniques By Area

Technique	Total Contributing Area *(Acre)*	Contributing Impervious Area *(Acre)*	Notes
Conservation of Natural Areas	1.00	0.00	*minimum 10,000 sf*
Riparian Buffers	0.00	0.00	*maximum contributing length 75 feet to 150 feet*
Filter Strips	0.00	0.00	
Tree Planting	0.00	0.00	*Up to 100 sf directly connected impervious area may be subtracted per tree*
Total	**1.00**	**0.00**	

Recalculate WQv after application of Area Reduction Techniques

	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Runoff Coefficient Rv	WQv *(ft^3)*
"<<Initial WQv"	14.70	8.00	54%	0.54	28,804
Subtract Area	-1.00	0.00			
WQv adjusted after Area Reductions	**13.70**	**8.00**	58%	0.58	28,623
Disconnection of Rooftops		0.00			
Adjusted WQv after Area Reduction and Rooftop Disconnect	13.70	8.00	58%	0.58	**28,623**
WQv reduced by Area Reduction techniques					182

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Total Water Quality Volume Calculation

WQv(acre-feet) = [(P)(Rv)(A)] /12

All Subcatchments						
Catchment	**Total Area** *(Acres)*	**Impervious Cover** *(Acres)*	**Percent Impervious** *%*	**Runoff Coefficient** *Rv*	**WQv** *(ft^3)*	**Description**
1	6.10	3.30	0.54	0.54	11888.25	
2	1.00	0.00	0.00	0.05	182	
3	4.40	2.70	0.61	0.60	9619.50	
4	1.70	1.00	0.59	0.58	3575.55	
5	1.50	1.00	0.67	0.65	3539.25	
6						
7						
8						
9						
10						
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12						
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Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor &

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
1	6.10	3.30	0.54	0.54	11888.25	1.00	
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	54%	0.54	11,888	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information			
Soil Group	D		
Soil Infiltration Rate	0.00	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		11,888	*ft^3*	
Enter Depth of Soil Media	*df*	1.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**8916**	***ft^2***	

Determine Actual Bio-Retention Area			
Filter Width	100	*ft*	
Filter Length	110	*ft*	
Filter Area	11000	*ft^2*	
Actual Volume Provided	14667	*ft^3*	

Determine Runoff Reduction				
Is the Bioretention contributing flow to another practice?			Select Practice	
RRv	5,867			
RRv applied	**5,867**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	6,022	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	
Volume Directed	0	*ft^3*	This volume is directed another practice	
Sizing √	OK		*Check to be sure Area provided ≥ Af*	

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Bioretention Worksheet

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor & Schueler, 1996)

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
5	1.50	1.00	0.67	0.65	3539.25	1.00	
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	67%	0.65	3,539	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information			
Soil Group	D		
Soil Infiltration Rate	0.00	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		3,539	*ft^3*	
Enter Depth of Soil Media	*df*	1.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**2654**	***ft^2***	

Determine Actual Bio-Retention Area			
Filter Width	49	*ft*	
Filter Length	100	*ft*	
Filter Area	4900	*ft^2*	
Actual Volume Provided	6533	*ft^3*	

Determine Runoff Reduction				
Is the Bioretention contributing flow to another practice?		No	Select Practice	
RRv	2,613			
RRv applied	**2,613**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	926	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	
Volume Directed	0	*ft^3*	This volume is directed another practice	
Sizing √	OK		*Check to be sure Area provided ≥ Af*	

(For use on HSG C or D Soils with underdrains)

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Conservation of Natural Areas

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice

Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (ft^3)	Precipitation (in)	Description
2	1.00	0.00	0.00	0.05	181.50	1.00	

Design Elements

Is Contiguous Area ≥ 10,000 ft2?	*Yes*
Will limits of disturbance be clearly shown on all construction drawings and marked in field/project development site with structural barriers?	*Yes*
Is the Conservation area located in an acceptable conservation easement instrument that ensures perpetual protection of proposed area?	*Yes*
Does the easement specify how the natural area vegetation will be managed and boundaries will be marked?	*Yes*
Does the conservation area receive runoff from other contributing areas?	*No*
Does Conservation Area drain to a Design Point?	*No*
Is Sheet Flow to Riparian Buffer or another area based practice already being Used for this area?	*No*

Are All Criteria in Section 5.3.1 Met?	*Yes*

Area Reduction Adjustments

Subtract	***1.00***	***Acres from Total Area***
Subtract	***0.00***	***Acres from Total Impervious Area***

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Minimum RRv

Enter the Soils Data for the site		
Soil Group	Acres	S
A		55%
B		40%
C		30%
D	**17.40**	20%
Total Area	17.4	
Calculate the Minimum RRv		
S =	**0.20**	
Impervious =	8.00	*acre*
Precipitation	1	*in*
Rv	0.95	
Minimum RRv	**5,518**	***ft3***
	0.13	af

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NOI QUESTIONS

#	NOI Question	Reported Value	
		cf	af
28	Total Water Quality Volume (WQv) Required	28804	*0.661*
30	Total RRV Provided	8662	*0.199*
31	Is RRv Provided ≥WQv Required?	No	
32	Minimum RRv	5518	*0.127*
32a	Is RRv Provided ≥ Minimum RRv Required?	Yes	
33a	Total WQv Treated	159626	*3.664*
34	Sum of Volume Reduced & Treated	168287	*3.863*
34	Sum of Volume Reduced and Treated	168287	*3.863*
35	Is Sum RRv Provided and WQv Provided ≥WQv Required?	Yes	

Apply Peak Flow Attenuation			
36	Channel Protection	*Cpv*	
37	Overbank	*Qp*	
37	Extreme Flood Control	*Qf*	
	Are Quantity Control requirements met?		

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Runoff Reduction Volume and Treated volumes						
	Runoff Reduction Techiques/Standard SMPs		Total Contributing Area	Total Contributing Impervious Area	WQv Reduced (RRv)	WQv Treated
			(acres)	(acres)	cf	cf
Area/Volume Reduction	Conservation of Natural Areas	RR-1	1.00	0.00		
	Sheetflow to Riparian Buffers/Filter Strips	RR-2	0.00	0.00		
	Tree Planting/Tree Pit	RR-3	0.00	0.00		
	Disconnection of Rooftop Runoff	RR-4		0.00		
	Vegetated Swale	RR-5	0.00	0.00	0	
	Rain Garden	RR-6	0.00	0.00	0	
	Stormwater Planter	RR-7	0.00	0.00	0	
	Rain Barrel/Cistern	RR-8	0.00	0.00	0	
	Porous Pavement	RR-9	0.00	0.00	0	
	Green Roof (Intensive & Extensive)	RR-10	0.00	0.00	0	
Standard SMPs w/RRv Capacity	Infiltration Trench	I-1	0.00	0.00	0	0
	Infiltration Basin	I-2	0.00	0.00	0	0
	Dry Well	I-3	0.00	0.00	0	0
	Underground Infiltration System	I-4	0.00			
	Bioretention & Infiltration Bioretention	F-5	7.60	4.30	8480	6948
	Dry swale	O-1	0.00	0.00	0	0
Standard SMPs	Micropool Extended Detention (P-1)	P-1				
	Wet Pond (P-2)	P-2				
	Wet Extended Detention (P-3)	P-3				
	Multiple Pond system (P-4)	P-4				
	Pocket Pond (p-5)	P-5	9.8	3.40		152678.000
	Surface Sand filter (F-1)	F-1				
	Underground Sand filter (F-2)	F-2				
	Perimeter Sand Filter (F-3)	F-3				
	Organic Filter (F-4	F-4				
	Shallow Wetland (W-1)	W-1				
	Extended Detention Wetland (W-2	W-2				
	Pond/Wetland System (W-3)	W-3				
	Pocket Wetland (W-4)	W-4				
	Wet Swale (O-2)	O-2				
Totals by Area Reduction →			1.00	0.00	182	
Totals by Volume Reduction →			0.00	0.00	0	
Totals by Standard SMP w/RRV →			7.60	4.30	8480	6948
Totals by Standard SMP →			9.80	3.40		152678
Totals (Area + Volume + all SMPs) →			18.40	7.70	8,662	159,626
	Impervious Cover √	error				

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Stage-Area-Storage for Pond 6P: WQv

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
563.00	710	0
563.15	776	111
563.30	843	233
563.45	909	364
563.60	975	506
563.75	1,042	657
563.90	1,108	818
564.05	1,181	989
564.20	1,267	1,173
564.35	1,353	1,369
564.50	1,439	1,579
564.65	1,524	1,801
564.80	1,610	2,036
564.95	1,696	2,284
565.10	1,796	2,546
565.25	1,901	2,823
565.40	2,007	3,116
565.55	2,113	3,425
565.70	2,219	3,750
565.85	2,324	4,090
566.00	2,430	4,447
566.15	2,561	4,821
566.30	2,692	5,215
566.45	2,822	5,629
566.60	2,953	6,062
566.75	3,084	6,515
566.90	3,215	6,987
567.05	3,356	7,479
567.20	3,519	7,995
567.35	3,681	8,535
567.50	3,844	9,100
567.65	4,007	9,688
567.80	4,169	10,301
567.95	4,332	10,939
568.10	4,731	11,613
568.25	5,249	12,361
568.40	5,767	13,188
568.55	6,285	14,091
568.70	6,802	15,073
568.85	7,320	16,132
569.00	7,838	17,269
569.15	8,402	18,487
569.30	8,965	19,790
569.45	9,529	21,177
569.60	10,093	22,648
569.75	10,657	24,204
569.90	11,220	25,845
570.05	11,796	27,571
570.20	12,398	29,385
570.35	13,000	31,290
570.50	13,601	33,285
570.65	14,202	35,371
570.80	14,804	37,546
570.95	15,406	39,812
571.10	16,056	42,170
571.25	16,731	44,629
571.40	17,406	47,189
571.55	18,081	49,851
571.70	18,756	52,614
571.85	19,431	55,478
572.00	20,106	58,443
572.15	20,820	61,512
572.30	21,534	64,689
572.45	22,248	67,973
572.60	22,961	71,363
572.75	23,675	74,861
572.90	24,389	78,466
573.05	25,107	82,178
573.20	25,834	85,998
573.35	26,561	89,928
573.50	27,288	93,967
573.65	28,014	98,114
573.80	28,741	102,371
573.95	29,468	106,737
574.10	32,660	111,335
574.25	37,086	116,565
574.40	41,511	122,460
574.55	45,937	129,019
574.70	50,362	136,241
574.85	54,788	144,127
575.00	**59,213**	**152,678**

WQv

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Appendix O

NYSDEC Stormwater Management Inspection Lists

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Bioretetion Areas (F-5)



Description: Shallow stormwater basin or landscaped area which utilizes engineered soils and vegetation to capture and treat runoff. The practice is often located in parking lot islands, and can also be used to treat residential areas.

KEY CONSIDERATIONS

CONVEYANCE

- Provide overflow for the 10-year storm to the conveyance system.
- Conveyance to the system is typically overland flow delivered to the surface of the system, typically through curb cuts or over a concrete lip.

PRETREATMENT

- Pretreatment consists of a grass channel or grass filter strip, a gravel diaphragm, and a mulch layer, sized based on the methodologies described in Section 6.4.2.

TREATMENT

- Treatment area should have a four foot deep planting soil bed, a surface mulch layer, and a 6" ponding layer.
- Size the treatment area using equations provided in Chapter 6.

LANDSCAPING

- Detailed landscaping plan required.

MAINTENANCE

- Inspect and repair/replace treatment area components
- Stone drop (at least 6") provided at the inlet
- Remulch annually

STORMWATER MANAGEMENT SUITABILITY

- [X] Water Quality
- [ ] Channel Protection
- [ ] Overbank Flood Protection
- [ ] Extreme Flood Protection

Accepts Hotspot Runoff: *Yes*
(requires impermeable liner)

IMPLEMENTATION CONSIDERATIONS

- [M] Capital Cost
- [M] Maintenance Burden

Residential
Subdivision Use: *Yes*

High Density/Ultra-Urban: *Yes*

Drainage Area: *5 acres max.*

Soils: *Planting soils must meet specified criteria; No restrictions on surrounding soils*

Other Considerations:

- *Use of native plants is recommended*

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	Key: **L**=Low **M**=Medium **H**=High **POLLUTANT REMOVAL** G Phosphorus G Nitrogen G Metals - Cadmium, Copper, Lead, and Zinc removal F Pathogens – Coliform, Streptococci, E.Coli removal Key: **G**=Good **F**=Fair **P**=Poor

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Bioretention Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
1. Pre-Construction		
Pre-construction meeting		
Runoff diverted		
Facility area cleared		
If designed as exfilter, soil testing for permeability		
Facility location staked out		
2. Excavation		
Size and location		
Lateral slopes completely level		
If designed as exfilter, ensure that excavation does not compact susoils.		
Longitudinal slopes within design range		

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CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
3. Structural Components		
Stone diaphragm installed correctly		
Outlets installed correctly		
Underdrain		
Pretreatment devices installed		
Soil bed composition and texture		
4. Vegetation		
Complies with planting specs		
Topsoil adequate in composition and placement		
Adequate erosion control measures in place		
5. Final Inspection		
Dimensions		
Proper stone diaphragm		
Proper outlet		
Soil/ filter bed permeability testing		
Effective stand of vegetation and stabilization		
Construction generated sediments removed		
Contributing watershed stabilized before flow is diverted to the practice		

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Comments:

Actions to be Taken:

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Bioretention Operation, Maintenance and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Bioretention and contributing areas clean of debris		
No dumping of yard wastes into practice		
Litter (branches, etc.) have been removed		
2. Vegetation (Monthly)		
Plant height not less than design water depth		
Fertilized per specifications		
Plant composition according to approved plans		
No placement of inappropriate plants		
Grass height not greater than 6 inches		
No evidence of erosion		
3. Check Dams/Energy Dissipaters/Sumps (Annual, After Major Storms)		
No evidence of sediment buildup		

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MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
Sumps should not be more than 50% full of sediment		
No evidence of erosion at downstream toe of drop structure		
4. Dewatering (Monthly)		
Dewaters between storms		
No evidence of standing water		
5. Sediment Deposition (Annual)		
Swale clean of sediments		
Sediments should not be > 20% of swale design depth		
6. Outlet/Overflow Spillway (Annual, After Major Storms)		
Good condition, no need for repair		
No evidence of erosion		
No evidence of any blockages		
7. Integrity of Filter Bed (Annual)		
Filter bed has not been blocked or filled inappropriately		

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Comments:

Actions to be Taken:

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

SRF ASSOCIATES
Transportation Planning / Engineering / Design

3495 Winton Place
Building E, Suite 110
Rochester, NY 14623

phone 585.272.4660

May 31, 2022

Severyn Development
43 Central Ave Suite 300
Lancaster, NY 14086
c/o Chris Wood

RE: Sawyer's Landing Development, Town of Amherst, NY
Updated Traffic Signal Warrant Analysis

Dear Mr. Severyn:

This letter documents the results of the updated traffic signal warrant analysis at the intersection of Dodge Rd & North Forest Rd in the Town of Amherst, NY. The traffic signal warrant analysis has been updated to include a review of crash data and application of Warrant 7 Crash Experience.

Hourly traffic count data was collected on each approach of the Dodge Rd/North Forest Rd intersection on Thursday March 3, 2022. All traffic count data and signal warrant analysis calculations are attached.

A traffic signal warrant analysis was completed at the Dodge Rd/North Forest Rd intersection under both existing and full build conditions. The need for a traffic signal is determined by comprehensive investigation of existing and projected traffic conditions and physical characteristics at the location. The Standard Specifications Update for the adoption of the National MUTCD (FHWA) and the New York State Supplement were reviewed to investigate the need for a traffic control signal at this location under full build conditions. There are nine (9) warrants as follows:

Warrant 1	Eight-Hour vehicular volume
Warrant 2	Four-Hour vehicular volume
Warrant 3	Peak Hour
Warrant 4	Pedestrian Volume
Warrant 5	School Crossing
Warrant 6	Coordinated Signal System
Warrant 7	Crash Experience
Warrant 8	Roadway Network
Warrant 9	Intersection Near a Grade Crossing

Detailed signal warrant calculations are attached. Prior to applying warrants, the MUTCD suggests consideration of the effects of right-turn volumes on the minor street approach, and a reduction taken in the number of right turning vehicles, where appropriate. A certain number of right-turn vehicles will execute a right-turn on the red indication without actuating a traffic signal (if one were in place). For purposes of this analysis, no reduction was taken for right turn on red movements resulting in a conservative evaluation of the signal warrants. The posted speed limit on Dodge Rd

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at the proposed intersection is 40 MPH, therefore, 70 percent thresholds in Table 4C-1, Figure 4C-2 and Figure 4C-4 are used as a basis for analysis.

Warrant 1 is subdivided into Condition A and Condition B. The Minimum Vehicular Volume, Condition A, is intended for application at locations where a large volume of intersecting traffic is the principal reason to consider installing a traffic control signal. The Interruption of Continuous Traffic, Condition B, is intended for application at locations where Condition A is not satisfied and where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street. These conditions are satisfied when, for each of any eight hours of an average day, anticipated volumes on the artery and side road exceed the minimum values presented in Tables 4C-1 in the MUTCD. **Condition A is not met under either existing or full build conditions. Condition B is not met under either existing or full build conditions.**

Warrant 2, the Four-Hour Vehicular Volume signal warrant conditions, are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal. This warrant stipulates that for any four hours of a day, minimum threshold volumes are met on the artery and side road. **This warrant is not met under either existing or full build conditions.**

Warrant 3 is intended for application where minor street traffic suffers undue delay in entering or crossing the major street for one hour of the day. It stipulates that the warrant shall be applied in unusual cases (high-occupancy vehicle facilities – i.e., shopping centers) where a large number of vehicles discharge over a short period of time. Based on the development, this warrant may be applicable. **This warrant is not applicable at this location.**

Warrant 4 is met when pedestrians experience excessive delay in crossing the major street (Dodge Rd) because the traffic volumes are so heavy. The intersection currently has low pedestrian activity. **This warrant is not met.**

Warrant 5 is met when a sufficient number of gaps in traffic do not exist for certain size and frequency of school children to cross the major roadway. **This warrant is not applicable at this location and is not met.**

Warrant 6 is met when a traffic signal is needed to maintain progressive movement and vehicle platooning in a coordinated signal system. **Based on the current signal system along Dodge Rd, this warrant is not met.**

Warrant 7 is intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal. The purpose of analyzing crash data is to identify inherent safety issues by studying and quantifying historical crashes at the study intersections and identifying potential crash patterns and clusters.

A crash cluster is defined as an abnormal occurrence of similar crash types occurring at approximately the same location or involving the same geometric features. The severity of the crashes should also be considered. A history of crashes is an indication that further analysis is required to determine the cause(s) of the crash(es) and to identify what actions, if any, could be taken to mitigate the crashes.

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

A crash investigation within the study area was conducted to assess the safety history from January 1, 2017 through December 31, 2019. The data was provided by the New York State Department of Motor Vehicles (NYSDMV) through a Freedom of Information (FOIL) request.

Reportable (non-injury, injury, and fatal injury) type crashes are defined as damage to one person's property in the amount of $1,001 or more. The Non-Reportable type crashes result in property damage of $1,000 or less. Crash rates were computed for the study intersections and compared with New York State Department of Transportation average crash rates for similar intersections, as summarized in the following table. Intersection rates are listed as accidents (crashes) per million entering vehicle (Acc/MEV). Pertinent crash data is provided in the Appendices.

TABLE I: EXISTING CRASH INVESTIGATION

INTERSECTION	TOTAL NO. OF CRASHES	ACTUAL CRASH RATE	STATEWIDE AVERAGE CRASH RATE
Dodge Rd/N Forest Rd	5	0.46	0.18

As shown in Table I, the study intersection has a crash rate that is approximately 2.56 times higher than the statewide average crash rate for similar intersections. Of the five crashes, there were two fixed object crashes, one left turn crash, one rear end, and one right turn crash. No discernible crash patterns were identified related to geometric conditions and no apparent safety deficiencies exist.

The need for a traffic control signal shall be considered if *all* of the following criteria are met:

a. Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce crash frequency. **Condition A is not satisfied.**

b. Five (5) or more reported crashes, of types susceptible to correction by a traffic signal, to have occurred within a 12-month period, each crash involving a personal injury or property damage. Five (5) crashes were documented in the crash analysis over a 36-month period. **Condition B is not satisfied.**

Given that both Conditions A and B are not satisfied, this warrant is not satisfied.

Warrant 8 is met when a traffic signal might encourage concentration and organization of traffic flow on a roadway network. **This warrant primarily focuses on two major intersecting roadways, which is not the case at the study intersection therefore, this warrant is not met.**

Warrant 9 is applicable when an intersection is located near an at-grade rail crossing. **This warrant is not applicable at this location.**

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TABLE II: TRAFFIC SIGNAL WARRANT SUMMARY

WARRANT	SATISFACTION OF WARRANTS AT DODGE RD/NORTH FOREST RD EXISTING CONDITIONS	SATISFACTION OF WARRANTS AT DODGE RD/NORTH FOREST RD FULL BUILD CONDITIONS
1A – Eight-Hour Condition A	NOT SATISFIED	NOT SATISFIED
1B – Eight-Hour Condition B	NOT SATISFIED	NOT SATISFIED
2 – Four-Hour	NOT SATISFIED	NOT SATISFIED
3 – Peak-Hour	N/A	N/A
4 – Pedestrian Volume	N/A	N/A
5 – School Crossing	N/A	N/A
6 – Coordinated Signal System	N/A	N/A
7 – Crash Experience	NOT SATISFIED	NOT SATISFIED
8 – Roadway Network	N/A	N/A
9 – Intersection Near a Grade Crossing	N/A	N/A

Table II summarizes each warrant under existing and full build conditions and the result of the investigation. The results of the Traffic Signal Warrant Analysis indicate that none of the traffic volume related warrants are met at this location under either existing or full build conditions.

If you have any questions or are in need of additional information, please do not hesitate to contact our office.

Very truly yours,
SRF Associates

Amy C. Dake, P.E., P.T.O.E.
Senior Managing Traffic Engineer

cc: Scott Marshall, Town of Amherst Planning Department
Christopher Schregel, Traffic Safety Coordinator
Joshua Ulinger, Ciminelli Real Estate Corporation
Sean Hopkins, Esq.
Christopher Wood, P.E.

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

ATTACHMENT

May 31, 2022

Letter to
Mr. Chris Wood
Severyn Development

Proposed Sawyer Landings Development

Updated Traffic Signal Warrant Analysis

Town of Amherst, NY
Erie County, New York

SRF ASSOCIATES

3495 Winton Place
Building E, Suite 110
Rochester, NY 14623

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Leg	Dodge Rd				Dodge Rd				N.Forest Rd				
Direction	Eastbound				Westbound				Northbound				
Start Time	Thru	Right	U-Turn	**App Total**	Left	Thru	U-Turn	**App Total**	Left	Right	U-Turn	**App Total**	**Int Total**
2022-03-03 07:00:00	155	70	0	**225**	22	160	0	**182**	16	5	0	**21**	**428**
2022-03-03 08:00:00	203	66	0	**269**	25	172	0	**197**	36	16	0	**52**	**518**
2022-03-03 09:00:00	157	51	0	**208**	20	137	0	**157**	30	11	0	**41**	**406**
2022-03-03 10:00:00	133	42	0	**175**	15	120	0	**135**	44	12	0	**56**	**366**
2022-03-03 11:00:00	136	48	0	**184**	17	130	0	**147**	54	12	0	**66**	**397**
2022-03-03 12:00:00	155	61	0	**216**	20	139	0	**159**	60	18	0	**78**	**453**
2022-03-03 13:00:00	116	52	0	**168**	20	149	0	**169**	58	14	2	**74**	**411**
2022-03-03 14:00:00	152	46	0	**198**	16	147	0	**163**	58	20	0	**78**	**439**
2022-03-03 15:00:00	191	55	0	**246**	21	185	0	**206**	62	21	0	**83**	**535**
2022-03-03 16:00:00	181	49	0	**230**	13	210	0	**223**	95	38	0	**133**	**586**
2022-03-03 17:00:00	171	38	0	**209**	21	184	0	**205**	67	25	0	**92**	**506**
2022-03-03 18:00:00	103	25	0	**128**	19	117	0	**136**	45	24	1	**70**	**334**
Grand Total	1853	603	0	**2456**	229	1850	0	**2079**	625	216	3	**844**	**5379**
% Approach	75.4%	24.6%	0.0%		11.0%	89.0%	0.0%		74.1%	25.6%	0.4%		
% Total	34.4%	11.2%	0.0%	**45.7%**	4.3%	34.4%	0.0%	**38.7%**	11.6%	4.0%	0.1%	**15.7%**	
Motorcycles	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
% Motorcycles	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	**0.0%**	**0.0%**
Lights	1796	591	0	**2387**	227	1808	0	**2035**	616	211	3	**830**	**5252**
% Lights	96.9%	98.0%	0.0%	**97.2%**	99.1%	97.7%	0.0%	**97.9%**	98.6%	97.7%	100.0%	**98.3%**	**97.6%**
Heavy	57	12	0	**69**	2	42	0	**44**	9	5	0	**14**	**127**
% Heavy	3.1%	2.0%	0.0%	**2.8%**	0.9%	2.3%	0.0%	**2.1%**	1.4%	2.3%	0.0%	**1.7%**	**2.4%**

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EXISTING CONDITIONS
Traffic Signal Warrant Analysis - Dodge Rd & North Forest Rd- Sawyer's Landing
Town of Amherst, Erie County

Hour			Existing Fluctuation in Artery Volumes per SRF Count on March 3, 2022			Total Hourly VolumesExiting North Forest Rd	Warrant Analysis		
			per SRF count on Dodge Rd	per SRF count on Dodge Rd	per SRF count on Dodge Rd		Warrant 1 Condition A	Warrant 1 Condition B	Warrant 2 (4-hour)
			EB	WB	Two-Way	**NB**	350/140	525/53	60 vph
7:00 AM	to	8:00 AM	225	182	407	**21**	N	N	N
8:00 AM	to	9:00 AM	269	197	466	**52**	N	N	N
9:00 AM	to	10:00 AM	208	157	365	**41**	N	N	N
10:00 AM	to	11:00 AM	175	135	310	**56**	N	N	N
11:00 AM	to	12:00 PM	184	147	331	**66**	N	N	N
12:00 PM	to	1:00 PM	216	159	375	**78**	N	N	N
1:00 PM	to	2:00 PM	168	169	337	**74**	N	N	N
2:00 PM	to	3:00 PM	198	163	361	**78**	N	N	N
3:00 PM	to	4:00 PM	246	206	452	**83**	N	N	N
4:00 PM	to	5:00 PM	230	223	453	**133**	N	N	N
5:00 PM	to	6:00 PM	209	205	414	**92**	N	N	N
6:00 PM	to	7:00 PM	128	136	264	**70**	N	N	N
							0	0	0

Key: N = Warrant not met for that hour
Y = Warrant is met for that hour
Hours when warrant is met

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

SRF ASSOCIATES
www.srfa.net
Transportation Planning / Engineering / Design

FULL BUILD CONDITIONS
Traffic Signal Warrant Analysis - Dodge Rd & North Forest Rd- Sawyer's Landing
Town of Amherst, Erie County

Hour			Existing Fluctuation in Artery Volumes per SRF Count on March 3, 2022				Warrant Analysis		
			per SRF count on Dodge Rd	per SRF count on Dodge Rd	per SRF count on Dodge Rd	**Total Hourly VolumesExiting North Forest Rd**	Warrant 1 Condition A	Warrant 1 Condition B	Warrant 2 (4-hour)
			EB	WB	Two-Way	**NB**	350/140	525/53	60 vph
7:00 AM	to	8:00 AM	225	182	407	**21**	N	N	N
8:00 AM	to	9:00 AM	**308**	**211**	**519**	**59**	N	N	N
9:00 AM	to	10:00 AM	208	157	365	**41**	N	N	N
10:00 AM	to	11:00 AM	175	135	310	**56**	N	N	N
11:00 AM	to	12:00 PM	184	147	331	**66**	N	N	N
12:00 PM	to	1:00 PM	216	159	375	**78**	N	N	N
1:00 PM	to	2:00 PM	168	169	337	**74**	N	N	N
2:00 PM	to	3:00 PM	198	163	361	**78**	N	N	N
3:00 PM	to	4:00 PM	246	206	452	**83**	N	N	N
4:00 PM	to	5:00 PM	230	223	453	**133**	N	N	N
5:00 PM	to	6:00 PM	**246**	**237**	**483**	**108**	N	N	N
6:00 PM	to	7:00 PM	128	136	264	**70**	N	N	N
							0	0	0

Key: N = Warrant not met for that hour
Y = Warrant is met for that hour
Hours when warrant is met

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)

Int #	N Forest Rd/Dodge Rd	Left turn	Rear-end	Overtaking	Right Angle	Right Turn	Head On	Side-swipe	Fixed Object	Backing	Other	Animal	Bike/Ped	Total	Injury	Non Injury	Non-Repo	Sum
1		1	1			1			2					5		4	1	5
	TOTALS	1	1	0	0	1	0	0	2	0	0	0	0		0	4	1	

	Northbound	Southbound	Eastbound	Westbound	Unknown	Totals
Left turn	1					1
Rear-end				1		1
Overtaking						0
Right Angle						0
Right Turn	1					1
Head On						0
Side-swipe						0
Fixed Object	2					2
Backing						0
Other						0
Bike/Ped						0
Animal						0
Totals	**4**	**0**	**0**	**1**	**0**	**5**

---

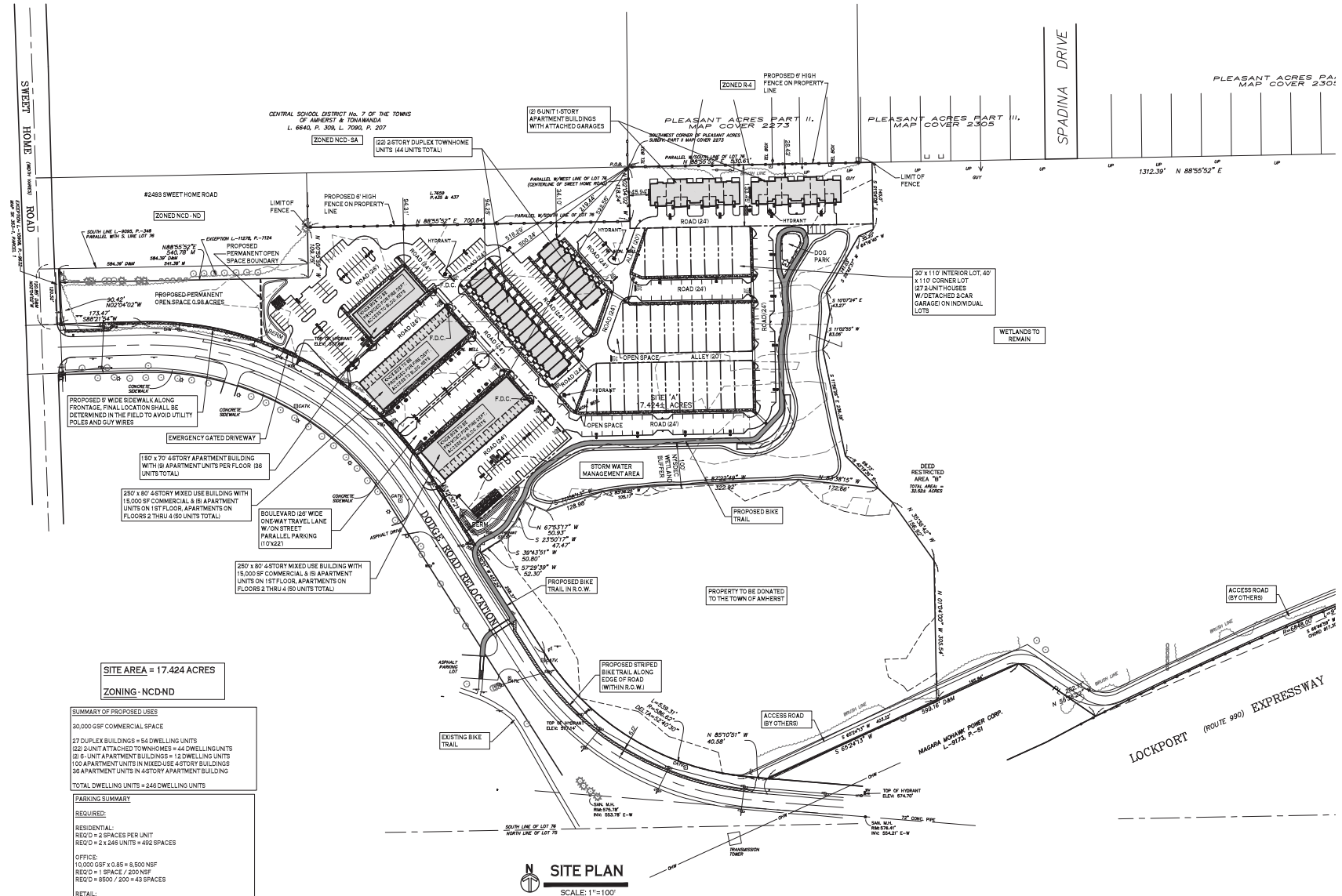
1 **N Forest Rd/Dodge Rd - 36 months**

ADT = Peak hour entering volume / k factor

ADT = 941 VPH / 0.10 = 9905.26316 VPD

$$\text{Rate} = \frac{5 \text{ Acc.} \times 1{,}000{,}000}{9905.26316 \text{ VPD} \times 365 \text{ Days} \times 3.000 \text{ Yrs.}} = 0.46 \text{ Crash / MEV}$$

Attachment: SP-2021-05_application_092222 (23057 : Sp-2021-05)



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REVISIONS:

No.	Description	Date:
1	Plan revised per town comments	05/19/22
2	Plan revised per town comments	07/26/22

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 3/22/22
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Overall Site Plan

DRAWING NO.
C-1
Project no.: 2

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

SITE DEVELOPMENT DRAWINGS

AGENCIES

ENGINEERING DEPARTMENT
NAME/TITLE: JEFFERY BURROUGHS, P.E. – TOWN ENGINEER
COMPANY/DEPT: TOWN OF AMHERST ENGINEERING DEPARTMENT
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WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716–631–7154

PLANNING & ZONING DEPARTMENT
NAME/TITLE: DANIEL HOWARD – PLANNING DIRECTOR
COMPANY/DEPT: TOWN OF AMHERST PLANNING DEPARTMENT
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WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716–631–7051

LAND SURVEYOR
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COMPANY/DEPT: 4950 GENESEE STREET, SUITE 100
ADDRESS: BUFFALO, NEW YORK 14225
TELEPHONE 716–633–4844

UTILITIES

NATURAL GAS
COMPANY/DEPT:. NATIONAL FUEL GAS CORP.
ADDRESS: 6363 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716–857–7000

TELEPHONE COMPANY
COMPANY/DEPT: VERIZON
ADDRESS: 65 FRANKLIN STREET
BUFFALO, NEW YORK 14203
TELEPHONE 716–840–8748

CABLE COMPANY
COMPANY/DEPT: TIME WARNER
ADDRESS: 789 CHURCH ROAD
WEST SENECA, NEW YORK
TELEPHONE 716–558–8615

ELECTRIC COMPANY
COMPANY/DEPT: NATIONAL GRID
ADDRESS: 144 KENSINGTON AVENUE
BUFFALO, NEW YORK 14214
TELEPHONE 716–236–2738

WATER
COMPANY/DEPT:. ERIE COUNTY WATER AUTHORITY
ADDRESS: 3030 UNION ROAD
CHEEKTOWAGA, NEW YORK 14227
TELEPHONE 716–684–1510

DIG SAFELY NEW YORK
TELEPHONE 1–800–962–7962

OWNER/DEVELOPER

NAME: Sawyer's Landing LLC
ADDRESS 43 Central Ave Suite #300
Lancaster, NY 14086

TELEPHONE 716 818-0207

ENGINEER

Carmina • Wood • Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
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DWG NO.	DRAWING TITLE
–	COVER SHEET
–	TOPOGRAPHIC MAP
–	BOUNDARY SURVEY
C–001	DEMOLITION & EROSION CONTROL PLAN
C–002	DEMOLITION & EROSION CONTROL DETAILS
C–100	OVERALL SITE PLAN
C–101	SITE PLAN
C–102	PARCEL MAP
C–103	SITE DETAILS
C–104	SITE DETAILS
C–200	GRADING PLAN
C–300	STORM DRAINAGE PLAN
C–301	STORM DRAINAGE DETAILS
C–302	STORM DRAINAGE DETAILS
C–303	STORM DRAINAGE DETAILS
C–400	UTILITY PLAN
C–401	SANITARY SEWER DETAILS
C–402	SANITARY SEWER DETAILS
C–403	SANITARY SEWER GENERAL NOTES
C–404	WATER DETAILS
C–405	WATER DETAILS
C–406	WATER DETAILS & NOTES
C–407	INSULATED ENCLOSURE DETAIL
L–100	LANDSCAPE PLAN
LP–100	PHOTOMETRIC PLAN
LP–101	PHOTOMETRIC DETAILS
TT–100	FIRE TRUCK PLAN

December 2021

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

Attachment: SP-2021-05_drawings_092222 (23057 : Sp-2021-05)

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF SECTION 7209 PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

MAP COVER 2305

SWEET HOME (WIDTH VARIES) ROAD

EXCEPTION L.-10908, P.-3632
MAP OF 353-1 PARCEL 1

CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA
L. 6640, P. 309, L. 7090, P. 207

PLEASANT ACRES PART II, MAP COVER 2273

PLEASANT ACRES PART III, MAP COVER 2305

SPADINA DRIVE

PLEASANT ACRES PART III, MAP COVER 2305

CATCH BASIN RIM:574.64' N INV:573.44'

SOUTHWEST CORNER OF PLEASANT ACRES SUBDIV. PART II MAP COVER 2273

PARALLEL W/SOUTH LINE OF LOT 76

N 88°55'52" E 530.61'

TEL. BOX

BRUSH LINE

GUY

1312.39' N 88°55'52" E

POINT OF BEGINNING
AREA "B"
LAT: 43°01'40.40785"
LON: -78°47'14.98366"

PARALLEL W/WEST LINE OF LOT 76 (CENTERLINE OF SWEET HOME ROAD)

N 02°04'02" W 1187.24'

L.7659 P.435 & 437

N 88°55'52" E 700.84'

N 88°55'52" E 396.51'

PARALLEL W/SOUTH LINE OF LOT 76

N 29°36'12" E 62.65'

MON. WELL

S 01°04'08" E 145.00'

35.20' S 64°16'46" W

S 10°07'24" E 43.27'

S 11°02'55" W 83.05'

S 39°42'37" W 141.03'

DEED RESTRICTED AREA "B"
TOTAL AREA: = 32.52± ACRES

S 11°56'26" E 236.39'

S 45°19'36" E 99.73'

N 33°58'42" W 159.92'

N 01°04'08" W 305.54'

SOUTH LINE L.-9095, P.-348
PARALLEL WITH S. LINE LOT 76

EXCEPTION L.-11278, P.-7124

N88°55'52"E 540.78' M
584.39' D&M
541.38' M

N 02°05'59" W 1087.72'

120.85' D&M
N03°04'02"W

90.42'
N02°04'02"W

S88°21'54"W 245.48' D&M

173.47'

CATCH BASIN RIM:574.52' W INV:568.27' 12" E INV:568.32'

CATCH BASIN RIM:574.42' W INV:569.90' E INV:569.97'

CATCH BASIN RIM:573.70' W INV:569.90' E INV:569.97'

12" CMP

CONCRETE SIDEWALK

DEED RESTRICTED AREA "A"
TOTAL AREA = 3.9144 ACRES

TOP OF HYDRANT ELEV: 577.69'

LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC
REPUTED OWNERS
L.11307, PG.4915

SITE 'A'
17.424± ACRES

MON. WELL

N 01°01'14" W 515.36'

STONE DRIVE

N 67°53'17" W 50.93'

S 71°08'13" W 128.98'

S 87°22'49" W 322.92'

N 83°38'15" W 172.66'

S 83°36'25" W 105.17'

S 23°50'17" W 47.47'

S 39°43'51" W 59.80'

S 57°29'39" W 52.30'

TOP OF HYDRANT ELEV: 577.27'

S 22°30'57" W 198.05'

ASPHALT DRIVE

DODGE ROAD RELOCATION

ASPHALT PARKING LOT

15"HDPE INV=573.72

ASPHALT SIDEWALK

15"HDPE INV=571.32 (FLAP VALVE)

EDGE OF WATER

6"PVC INV=572.14

ELLICOTT CREEK DIVERSION CHANNEL

TOP OF BANK

L=539.31'
R=586.62'
DELTA=52°40'30"

N 85°10'51" W 40.58'

S 65°24'13" W 403.22'

599.16' D&M

S 65°24'13" W

NIAGARA MOHAWK POWER CORP. L.-9173, P.-51

202.71' N 58°38'22" W

BRUSH LINE

R=6848.00' L=918.07'
S 66°46'59" W
CHORD 917.39

SECTION II

LOCKPORT (ROUTE 990) EXPRESSWAY

TOP OF HYDRANT ELEV: 574.70'

SAN. M.H. RIM: 575.76' INV: 553.78' E-W

SAN. M.H. RIM: 576.41' INV: 554.21' E-W

72" CONC. PIPE

SOUTH LINE OF LOT 76
NORTH LINE OF LOT 75

TRANSMISSION TOWER

DWE

CATCH BASIN
CONIFEROUS TREE
DECIDUOUS SHRUB
DECIDUOUS TREE
GAS VALVE
GUY WIRE
WATER SERVICE VALVE
WATER VALVE
COMMUNICATIONS BOX
HYDRANT
LIGHT POLE
SANITARY SEWER MANHOLE
SIGN (SINGLE POLE)
SIGN (DOUBLE POLE)
UTILITY POLE

SURVEY OF
PART OF LOT 76, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK

GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE
4900 GENESEE STREET, SUITE 100
BUFFALO, NEW YORK 14225
(716) 633-4844 FAX 633-4940

Job No. 2013062-SITE A Date: JUNE 27, 2019
Scale: 1" = 100' TAX No.

Attachment: SP-2021-05_drawings_092222 (23057 : Sp-2021-05)

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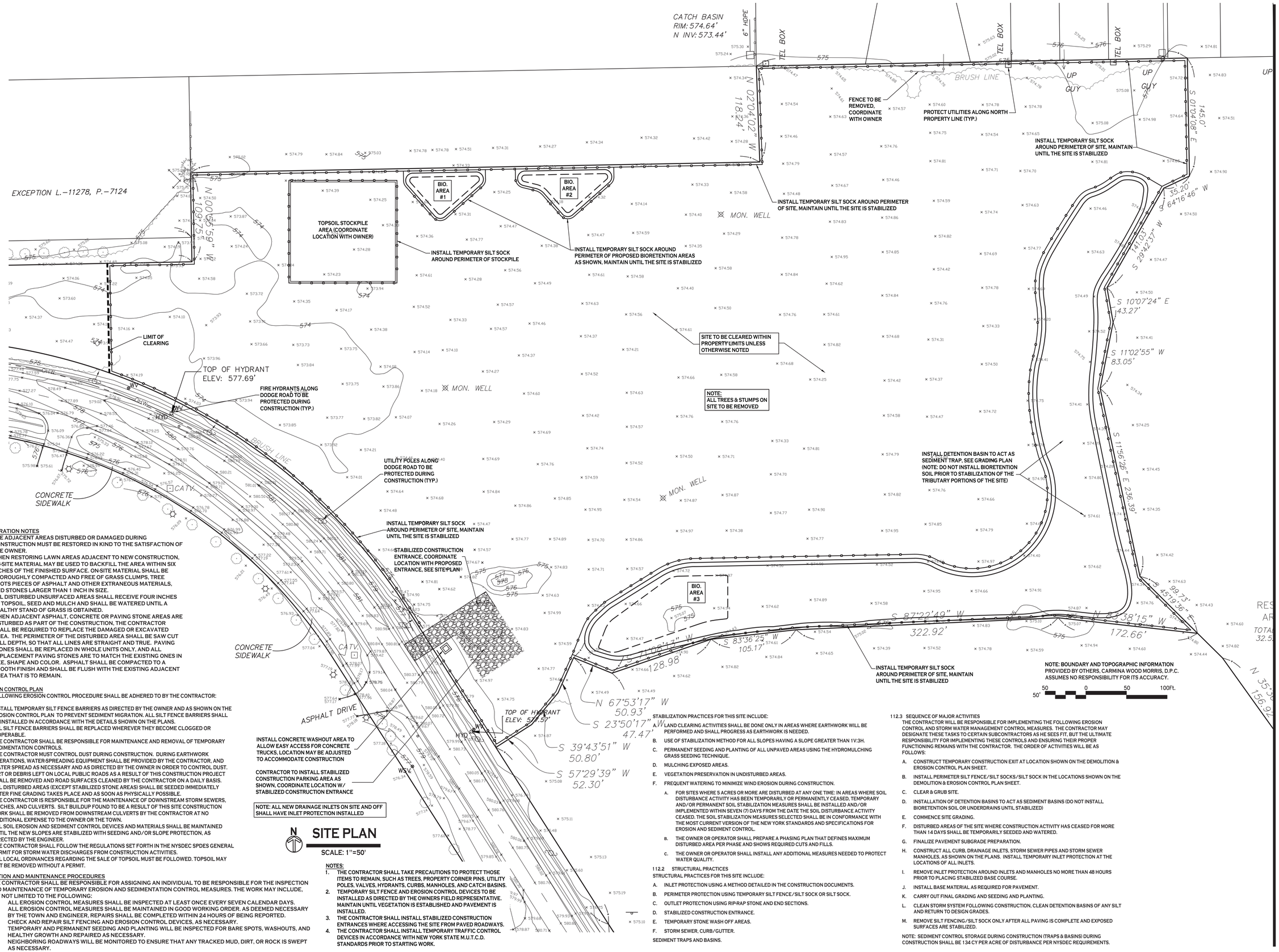

SITE PLAN

SCALE: 1"=50'

RESTORATION NOTES

1. THE ADJACENT AREAS DISTURBED OR DAMAGED DURING CONSTRUCTION MUST BE RESTORED IN KIND TO THE SATISFACTION OF THE OWNER.
2. WHEN RESTORING LAWN AREAS ADJACENT TO NEW CONSTRUCTION, ON-SITE MATERIAL MAY BE USED TO BACKFILL THE AREA WITHIN SIX INCHES OF THE FINISHED SURFACE. ON-SITE MATERIAL SHALL BE THOROUGHLY COMPACTED AND FREE OF GRASS CLUMPS, TREE ROOTS PIECES OF ASPHALT AND OTHER EXTRANEOUS MATERIALS, AND STONES LARGER THAN 1 INCH IN SIZE.
3. ALL DISTURBED UNSURFACED AREAS SHALL RECEIVE FOUR INCHES OF TOPSOIL, SEED AND MULCH AND SHALL BE WATERED UNTIL A HEALTHY STAND OF GRASS IS OBTAINED.
4. WHEN ADJACENT ASPHALT, CONCRETE OR PAVING STONE AREAS ARE DISTURBED AS PART OF THE CONSTRUCTION, THE CONTRACTOR SHALL BE REQUIRED TO REPLACE THE DAMAGED OR EXCAVATED AREA. THE PERIMETER OF THE DISTURBED AREA SHALL BE SAW CUT FULL DEPTH, SO THAT ALL LINES ARE STRAIGHT AND TRUE. PAVING STONES SHALL BE REPLACED IN WHOLE UNITS ONLY, AND ALL REPLACEMENT PAVING STONES ARE TO MATCH THE EXISTING ONES IN SIZE, SHAPE AND COLOR. ASPHALT SHALL BE COMPACTED TO A SMOOTH FINISH AND SHALL BE FLUSH WITH THE EXISTING ADJACENT AREA THAT IS TO REMAIN.

EROSION CONTROL PLAN

THE FOLLOWING EROSION CONTROL PROCEDURE SHALL BE ADHERED TO BY THE CONTRACTOR:

1. INSTALL TEMPORARY SILT FENCE BARRIERS AS DIRECTED BY THE OWNER AND AS SHOWN ON THE EROSION CONTROL PLAN TO PREVENT SEDIMENT MIGRATION. ALL SILT FENCE BARRIERS SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS SHOWN ON THE PLANS.
2. ALL SILT FENCE BARRIERS SHALL BE REPLACED WHEREVER THEY BECOME CLOGGED OR INOPERABLE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE AND REMOVAL OF TEMPORARY SEDIMENTATION CONTROLS.
4. THE CONTRACTOR MUST CONTROL DUST DURING CONSTRUCTION. DURING EARTHWORK OPERATIONS, WATER-SPREADING EQUIPMENT SHALL BE PROVIDED BY THE CONTRACTOR, AND WATER SPREAD AS NECESSARY AND AS DIRECTED BY THE OWNER IN ORDER TO CONTROL DUST.
5. DIRT OR DEBRIS LEFT ON LOCAL PUBLIC ROADS AS A RESULT OF THIS CONSTRUCTION PROJECT SHALL BE REMOVED AND ROAD SURFACES CLEANED BY THE CONTRACTOR ON A DAILY BASIS.
6. ALL DISTURBED AREAS (EXCEPT STABILIZED STONE AREAS) SHALL BE SEEDED IMMEDIATELY AFTER FINE GRADING TAKES PLACE AND AS SOON AS PHYSICALLY POSSIBLE.
7. THE CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE OF DOWNSTREAM STORM SEWERS, DITCHES, AND CULVERTS. SILT BUILDUP FOUND TO BE A RESULT OF THIS SITE CONSTRUCTION WORK SHALL BE REMOVED FROM DOWNSTREAM CULVERTS BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER OR THE TOWN.
8. ALL SOIL EROSION AND SEDIMENT CONTROL DEVICES AND MATERIALS SHALL BE MAINTAINED UNTIL THE NEW SLOPES ARE STABILIZED WITH SEEDING AND/OR SLOPE PROTECTION, AS DIRECTED BY THE ENGINEER.
9. THE CONTRACTOR SHALL FOLLOW THE REGULATIONS SET FORTH IN THE NYSDEC SPDES GENERAL PERMIT FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES.
10. ALL LOCAL ORDINANCES REGARDING THE SALE OF TOPSOIL MUST BE FOLLOWED. TOPSOIL MAY NOT BE REMOVED WITHOUT A PERMIT.

INSPECTION AND MAINTENANCE PROCEDURES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ASSIGNING AN INDIVIDUAL TO BE RESPONSIBLE FOR THE INSPECTION AND MAINTENANCE OF TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES. THE WORK MAY INCLUDE, BUT NOT LIMITED TO THE FOLLOWING:
   - 1.1. ALL EROSION CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS.
   - 1.2. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED IN GOOD WORKING ORDER. AS DEEMED NECESSARY BY THE TOWN AND ENGINEER, REPAIRS SHALL BE COMPLETED WITHIN 24 HOURS OF BEING REPORTED.
   - 1.3. CHECK AND REPAIR SILT FENCING AND EROSION CONTROL DEVICES, AS NECESSARY.
   - 1.4. TEMPORARY AND PERMANENT SEEDING AND PLANTING WILL BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND HEALTHY GROWTH AND REPAIRED AS NECESSARY.
   - 1.5. NEIGHBORING ROADWAYS WILL BE MONITORED TO ENSURE THAT ANY TRACKED MUD, DIRT, OR ROCK IS SWEPT AS NECESSARY.

NOTES:

1. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PROTECT THOSE ITEMS TO REMAIN, SUCH AS TREES, PROPERTY CORNER PINS, UTILITY POLES, VALVES, HYDRANTS, CURBS, MANHOLES, AND CATCH BASINS.
2. TEMPORARY SILT FENCE AND EROSION CONTROL DEVICES TO BE INSTALLED AS DIRECTED BY THE OWNERS FIELD REPRESENTATIVE. MAINTAIN UNTIL VEGETATION IS ESTABLISHED AND PAVEMENT IS INSTALLED.
3. THE CONTRACTOR SHALL INSTALL STABILIZED CONSTRUCTION ENTRANCES WHERE ACCESSING THE SITE FROM PAVED ROADWAYS.
4. THE CONTRACTOR SHALL INSTALL TEMPORARY TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH NEW YORK STATE M.U.T.C.D. STANDARDS PRIOR TO STARTING WORK.

STABILIZATION PRACTICES FOR THIS SITE INCLUDE:

A. LAND CLEARING ACTIVITIES SHALL BE DONE ONLY IN AREAS WHERE EARTHWORK WILL BE PERFORMED AND SHALL PROGRESS AS EARTHWORK IS NEEDED.
B. USE OF STABILIZATION METHOD FOR ALL SLOPES HAVING A SLOPE GREATER THAN 1V:3H.
C. PERMANENT SEEDING AND PLANTING OF ALL UNPAVED AREAS USING THE HYDROMULCHING GRASS SEEDING TECHNIQUE.
D. MULCHING EXPOSED AREAS.
E. VEGETATION PRESERVATION IN UNDISTURBED AREAS.
F. FREQUENT WATERING TO MINIMIZE WIND EROSION DURING CONSTRUCTION.
   - A. FOR SITES WHERE 5 ACRES OR MORE ARE DISTURBED AT ANY ONE TIME: IN AREAS WHERE SOIL DISTURBANCE ACTIVITY HAS BEEN TEMPORARILY OR PERMANENTLY CEASED, TEMPORARY AND/OR PERMANENT SOIL STABILIZATION MEASURES SHALL BE INSTALLED AND/OR IMPLEMENTED WITHIN SEVEN (7) DAYS FROM THE DATE THE SOIL DISTURBANCE ACTIVITY CEASED. THE SOIL STABILIZATION MEASURES SELECTED SHALL BE IN CONFORMANCE WITH THE MOST CURRENT VERSION OF THE NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL.
   - B. THE OWNER OR OPERATOR SHALL PREPARE A PHASING PLAN THAT DEFINES MAXIMUM DISTURBED AREA PER PHASE AND SHOWS REQUIRED CUTS AND FILLS.
   - C. THE OWNER OR OPERATOR SHALL INSTALL ANY ADDITIONAL MEASURES NEEDED TO PROTECT WATER QUALITY.

112.2 STRUCTURAL PRACTICES

STRUCTURAL PRACTICES FOR THIS SITE INCLUDE:

A. INLET PROTECTION USING A METHOD DETAILED IN THE CONSTRUCTION DOCUMENTS.
B. PERIMETER PROTECTION USING TEMPORARY SILT FENCE/SILT SOCK OR SILT SOCK.
C. OUTLET PROTECTION USING RIP-RAP STONE AND END SECTIONS.
D. STABILIZED CONSTRUCTION ENTRANCE.
E. TEMPORARY STONE WASH OFF AREAS.
F. STORM SEWER, CURB/GUTTER.

SEDIMENT TRAPS AND BASINS.

112.3 SEQUENCE OF MAJOR ACTIVITIES

THE CONTRACTOR WILL BE RESPONSIBLE FOR IMPLEMENTING THE FOLLOWING EROSION CONTROL AND STORM WATER MANAGEMENT CONTROL MEASURES. THE CONTRACTOR MAY DESIGNATE THESE TASKS TO CERTAIN SUBCONTRACTORS AS HE SEES FIT, BUT THE ULTIMATE RESPONSIBILITY FOR IMPLEMENTING THESE CONTROLS AND ENSURING THEIR PROPER FUNCTIONING REMAINS WITH THE CONTRACTOR. THE ORDER OF ACTIVITIES WILL BE AS FOLLOWS:

A. CONSTRUCT TEMPORARY CONSTRUCTION EXIT AT LOCATION SHOWN ON THE DEMOLITION & EROSION CONTROL PLAN SHEET.
B. INSTALL PERIMETER SILT FENCE/SILT SOCKS/SILT SOCK IN THE LOCATIONS SHOWN ON THE DEMOLITION & EROSION CONTROL PLAN SHEET.
C. CLEAR & GRUB SITE.
D. INSTALLATION OF DETENTION BASINS TO ACT AS SEDIMENT BASINS (DO NOT INSTALL BIORETENTION SOIL OR UNDERDRAINS UNTIL STABILIZED)
E. COMMENCE SITE GRADING.
F. DISTURBED AREAS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS CEASED FOR MORE THAN 14 DAYS SHALL BE TEMPORARILY SEEDED AND WATERED.
G. FINALIZE PAVEMENT SUBGRADE PREPARATION.
H. CONSTRUCT ALL CURB, DRAINAGE INLETS, STORM SEWER PIPES AND STORM SEWER MANHOLES, AS SHOWN ON THE PLANS. INSTALL TEMPORARY INLET PROTECTION AT THE LOCATIONS OF ALL INLETS.
I. REMOVE INLET PROTECTION AROUND INLETS AND MANHOLES NO MORE THAN 48 HOURS PRIOR TO PLACING STABILIZED BASE COURSE.
J. INSTALL BASE MATERIAL AS REQUIRED FOR PAVEMENT.
K. CARRY OUT FINAL GRADING AND SEEDING AND PLANTING.
L. CLEAN STORM SYSTEM FOLLOWING CONSTRUCTION, CLEAN DETENTION BASINS OF ANY SILT AND RETURN TO DESIGN GRADES.
M. REMOVE SILT FENCING/SILT SOCK ONLY AFTER ALL PAVING IS COMPLETE AND EXPOSED SURFACES ARE STABILIZED.

NOTE: SEDIMENT CONTROL STORAGE DURING CONSTRUCTION (TRAPS & BASINS) DURING CONSTRUCTION SHALL BE 134 CY PER ACRE OF DISTURBANCE PER NYSDEC REQUIREMENTS.

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STATE OF NEW YORK · CHRISTOPHER WOOD · 076394 · PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Demolition & Erosion Control Plan

DRAWING NO.

C-001

Project no.: 21-011

Attachment: SP-2021-05_drawings_092222 (23057 : Sp-2021-05)

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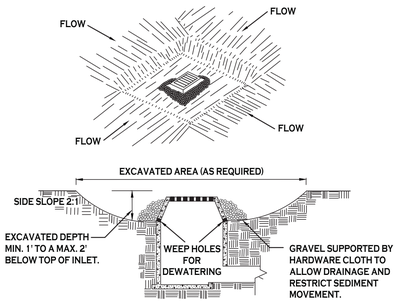
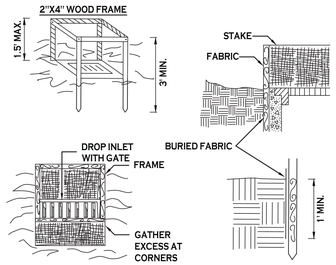


CONSTRUCTION SPECIFICATIONS

1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER EXCAVATION.
2. GRADE APPROACH TO THE INLET UNIFORMLY AROUND THE BASIN.
3. WEEP HOLES SHALL BE PROTECTED BY GRAVEL.
4. UPON STABILIZATION OF CONTRIBUTING DRAINAGE AREA, SEAL WEEP HOLES, FILL BASIN WITH STABLE SOIL TO FINAL GRADE, COMPACT IT PROPERLY AND STABILIZE WITH PERMANENT SEEDING.

   MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 1
NOT TO SCALE

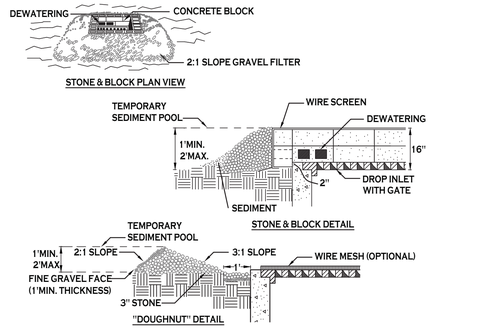


CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2" x 4" WOOD OR EQUIVALENT. METAL WITH A MINIMUM LENGTH OF 3 FEET.
4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2" x 4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.

   MAXIMUN DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 2
NOT TO SCALE



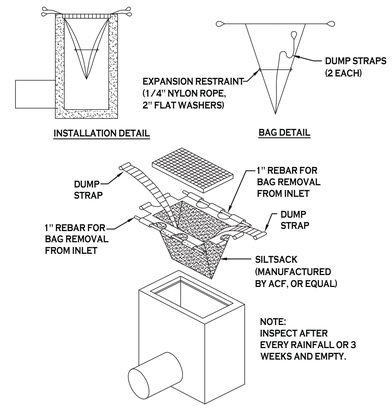
CONSTRUCTION SPECIFICATIONS

1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE FOR DEWATERING. FOUNDATION SHALL BE 2 INCHES MINIMUM BELOW REST OF INLET AND BLOCKS SHALL BE PLACED AGAINST INLET FOR SUPPORT.
2. HARDWARE CLOTH OR 1/2" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.
3. USE CLEAN STONE OR GRAVEL 1/2-3/4 INCH IN DIAMETER PLACED 2 INCHES BELOW TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER.
4. FOR STONE STRUCTURES ONLY, A 1 FOOT THICK LAYER OF THE FILTER STONE WILL BE PLACED AGAINST THE 3 INCH STONE AS SHOWN ON THE DRAWINGS.

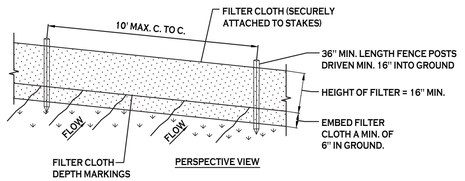
   MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 3
NOT TO SCALE

NOTE: INSTALL ONE OF THE INLET PROTECTION OPTIONS SHOWN PRIOR TO CONSTRUCTION



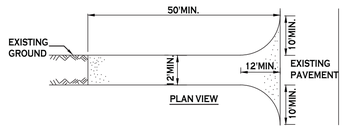
SILT SACK DETAIL
NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. WOVEN FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
3. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

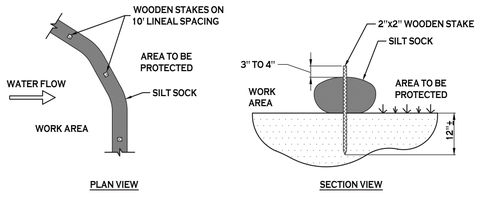
SILT FENCE DETAIL
NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

STABILIZED CONSTRUCTION ENTRANCE DETAIL
NOT TO SCALE

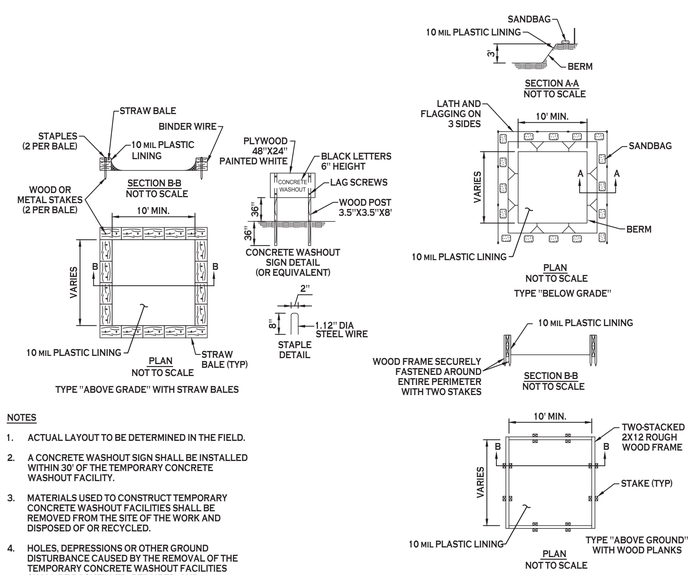


NOTES:

CONTRACTOR SHALL INSPECT AND MAINTAIN SILT SOCK AS NEEDED DURING THE DURATION OF CONSTRUCTION PROJECT.

CONTRACTOR SHALL REMOVE SEDIMENT COLLECTED AT THE BASE OF THE SILT SOCK WHEN IT HAS REACHED ½ OF THE EXPOSED HEIGHT OF THE SILT SOCK. ALTERNATIVELY, RATHER THAN CREATE A SOIL DISTURBING ACTIVITY, THE ENGINEER MAY CALL FOR ADDITIONAL SILT SOCK TO BE ADDED AT AREAS OF HIGH SEDIMENTATION, PLACED IMMEDIATELY ON TOP OF THE EXISTING SEDIMENT LADEN SILT SOCK.

SILT SOCK DETAIL
NOT TO SCALE



NOTES

1. ACTUAL LAYOUT TO BE DETERMINED IN THE FIELD.
2. A CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30' OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
3. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF OR RECYCLED.
4. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE BACKFILLED, REPAIRED, AND STABILIZED TO PREVENT EROSION.

CONCRETE WASHOUT DETAIL
NOT TO SCALE

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STATE OF NEW YORK · CHRISTOPHER WOOD · 076364 · LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Demolition & Erosion Control Details

DRAWING NO.

C-002

Project no.: 21-011

Attachment: SP-2021-05_drawings_092222 (23057 : Sp-2021-05)

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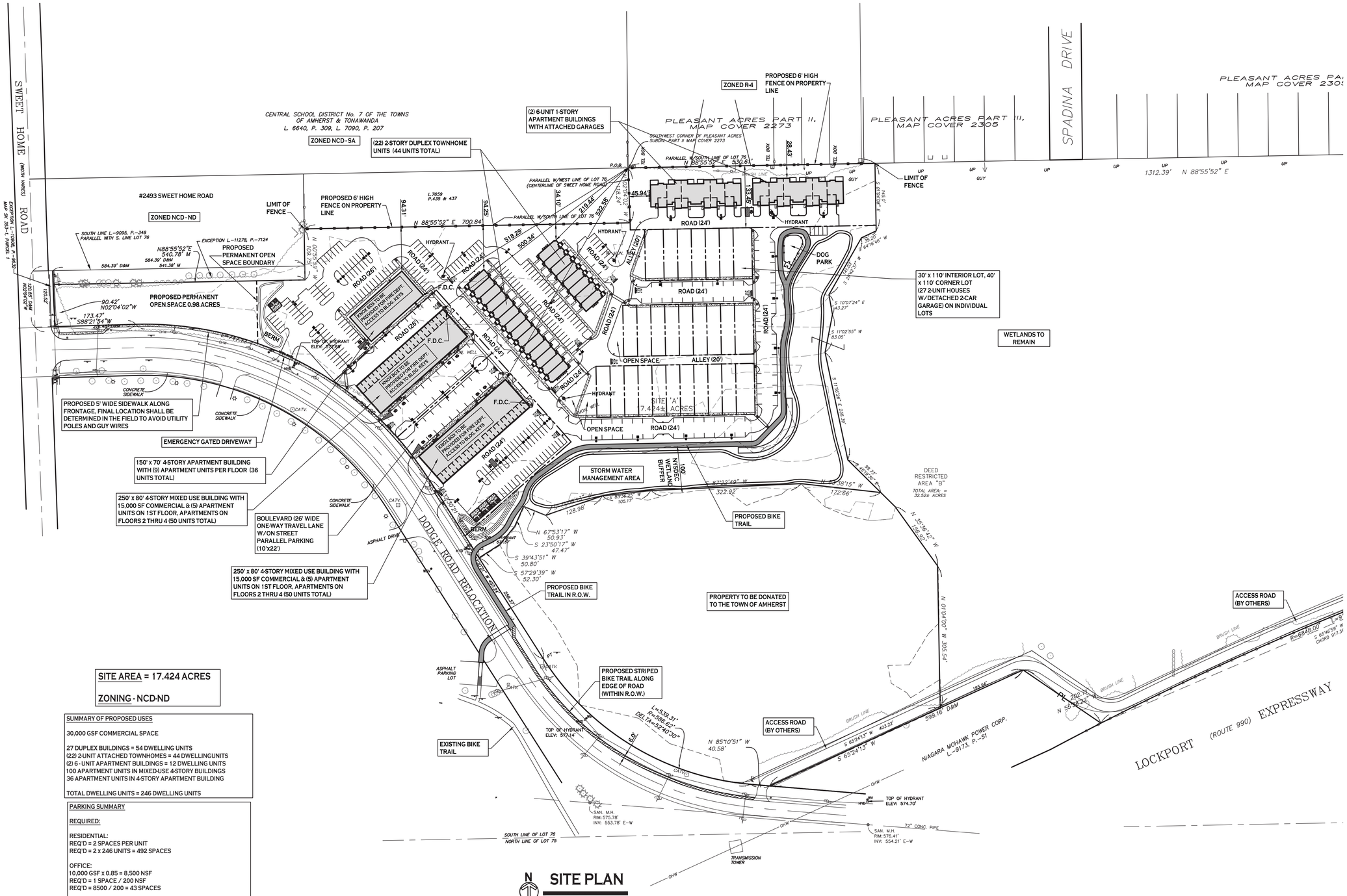

SITE PLAN

SCALE: 1"=100'

SITE AREA = 17.424 ACRES

ZONING - NCD-ND

SUMMARY OF PROPOSED USES

30,000 GSF COMMERCIAL SPACE

27 DUPLEX BUILDINGS = 54 DWELLING UNITS
(22) 2-UNIT ATTACHED TOWNHOMES = 44 DWELLINGUNITS
(2) 6 - UNIT APARTMENT BUILDINGS = 12 DWELLING UNITS
100 APARTMENT UNITS IN MIXED-USE 4-STORY BUILDINGS
36 APARTMENT UNITS IN 4-STORY APARTMENT BUILDING

TOTAL DWELLING UNITS = 246 DWELLING UNITS

PARKING SUMMARY

REQUIRED:

RESIDENTIAL:
REQ'D = 2 SPACES PER UNIT
REQ'D = 2 x 246 UNITS = 492 SPACES

OFFICE:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 1 SPACE / 200 NSF
REQ'D = 8500 / 200 = 43 SPACES

RETAIL:
10,000 GSF x 0.85 = 8,500 NSF
REQ'D = 5.5 SPACES / 1,000 NSF
REQ'D = 8500 / 1000 x 5.5 = 47 SPACES

RESTAURANT:
REQ'D = 1 SPACE / 3 SEATS + 1 SPACE / 100 SF TAKE OUT AREA
REQ'D = 100 SEAT / 3 + 500 SF / 100 = 38 SPACES

TOTAL REQ'D = 620 SPACES

PROVIDED:

134 PARALLEL PARKING SPACES
250 9'x19' SPACES *
40 GARAGE SPACES IN 4-STORY BLDGS
64 GARAGE SPACES IN DETACHED GARAGES
488 TOTAL SPACES

* INCLUDES SPACES IN FRONT OF APARTMENT GARAGES

WETLAND SUMMARY

FEDERAL IMPACTS PROPOSED = 6.089 AC
FEDERAL IMPACTS PREVIOUSLY PROPOSED = 13.01 AC
DECREASE = 6.921 AC (53% DECREASE)

NYSDEC IMPACTS PROPOSED = 1.20 AC
NYSDEC IMPACTS PREVIOUSLY PROPOSED = 9.46 AC
DECREASE = 8.26 AC (87% DECREASE)

NYSDEC BUFFER IMPACT PROPOSED = 3.65 AC
NYSDEC BUFFER IMPACTS PREVIOUSLY PROPOSED = 4.20 AC
DECREASE = 0.55 AC (13% DECREASE)

NOTE: NYSDEC IMPACTS INCLUDES FEDERAL WETLAND IMPACT OVERLAP AREAS

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

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STATE OF NEW YORK CHRISTOPHER WOOD 076354 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 3/22/22
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Overall Site Plan

DRAWING NO.

C-100

Project no.: 21-011

Attachment: SP-2021-05_drawings_092222 (23057 : Sp-2021-05)

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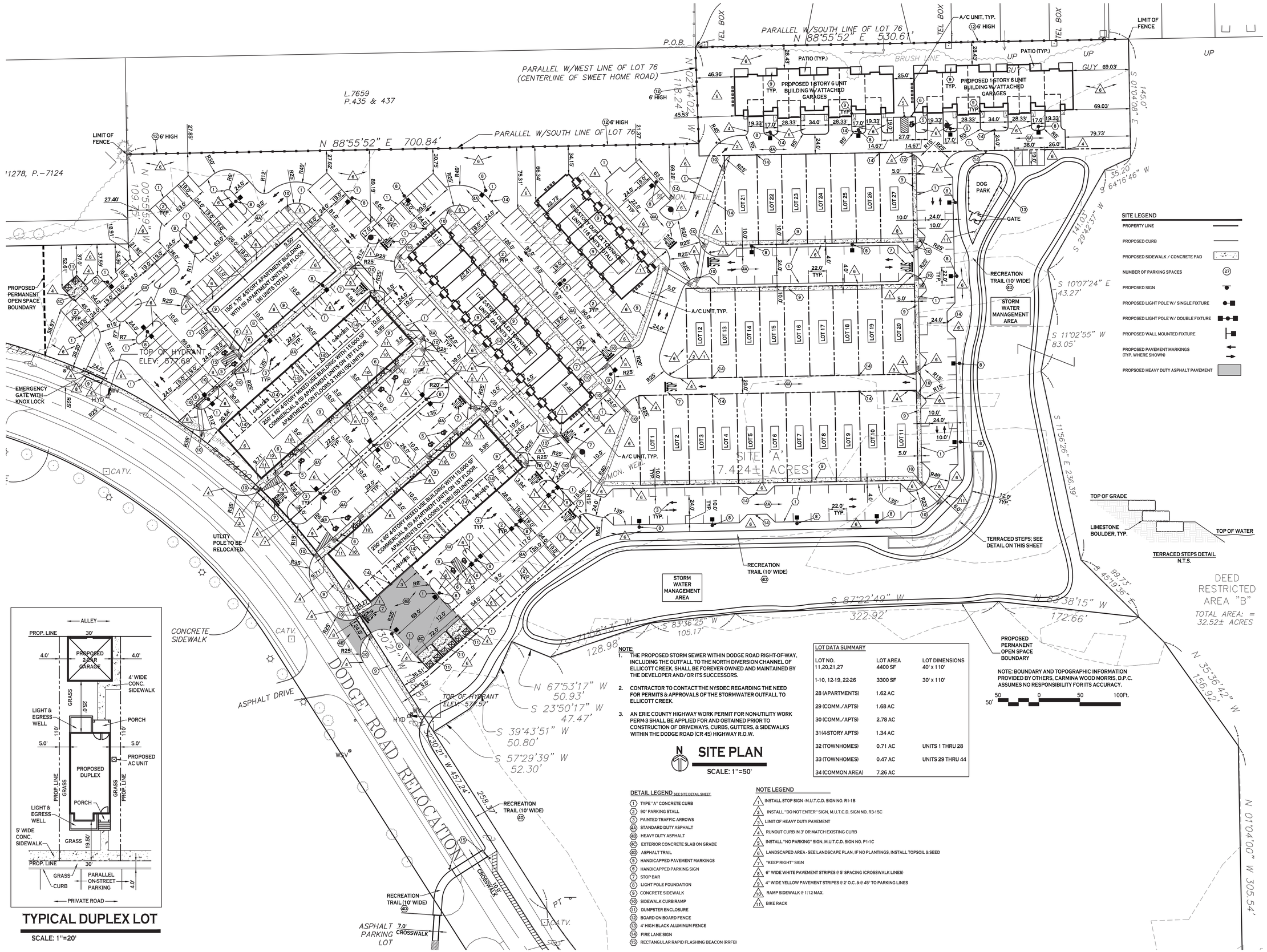

SITE LEGEND

- PROPERTY LINE
- PROPOSED CURB
- PROPOSED SIDEWALK / CONCRETE PAD
- NUMBER OF PARKING SPACES (27)
- PROPOSED SIGN
- PROPOSED LIGHT POLE W/ SINGLE FIXTURE
- PROPOSED LIGHT POLE W/ DOUBLE FIXTURE
- PROPOSED WALL MOUNTED FIXTURE
- PROPOSED PAVEMENT MARKINGS (TYP. WHERE SHOWN)
- PROPSOED HEAVY DUTY ASPHALT PAVEMENT

NOTE:
1. THE PROPOSED STORM SEWER WITHIN DODGE ROAD RIGHT-OF-WAY, INCLUDING THE OUTFALL TO THE NORTH DIVERSION CHANNEL OF ELLICOTT CREEK, SHALL BE FOREVER OWNED AND MAINTAINED BY THE DEVELOPER AND/OR ITS SUCCESSORS.
2. CONTRACTOR TO CONTACT THE NYSDEC REGARDING THE NEED FOR PERMITS & APPROVALS OF THE STORMWATER OUTFALL TO ELLICOTT CREEK.
3. AN ERIE COUNTY HIGHWAY WORK PERMIT FOR NON-UTILITY WORK PERM-3 SHALL BE APPLIED FOR AND OBTAINED PRIOR TO CONSTRUCTION OF DRIVEWAYS, CURBS, GUTTERS, & SIDEWALKS WITHIN THE DODGE ROAD (CR 45) HIGHWAY R.O.W.

SITE PLAN
SCALE: 1"=50'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

LOT DATA SUMMARY		
LOT NO. 11,20,21,27	LOT AREA 4400 SF	LOT DIMENSIONS 40' x 110'
1-10, 12-19, 22-26	3300 SF	30' x 110'
28 (APARTMENTS)	1.62 AC	
29 (COMM./APTS)	1.68 AC	
30 (COMM./APTS)	2.78 AC	
31(4-STORY APTS)	1.34 AC	
32 (TOWNHOMES)	0.71 AC	UNITS 1 THRU 28
33 (TOWNHOMES)	0.47 AC	UNITS 29 THRU 44
34 (COMMON AREA)	7.26 AC	

DETAIL LEGEND SEE SITE DETAIL SHEET

1. TYPE "A" CONCRETE CURB
2. 90° PARKING STALL
3. PAINTED TRAFFIC ARROWS
4A. STANDARD DUTY ASPHALT
4B. HEAVY DUTY ASPHALT
4C. EXTERIOR CONCRETE SLAB ON GRADE
4D. ASPHALT TRAIL
5. HANDICAPPED PAVEMENT MARKINGS
6. HANDICAPPED PARKING SIGN
7. STOP BAR
8. LIGHT POLE FOUNDATION
9. CONCRETE SIDEWALK
10. SIDEWALK CURB RAMP
11. DUMPSTER ENCLOSURE
12. BOARD ON BOARD FENCE
13. 4' HIGH BLACK ALUMINUM FENCE
14. FIRE LANE SIGN
15. RECTANGULAR RAPID FLASHING BEACON (RRFB)

NOTE LEGEND

1. INSTALL STOP SIGN - M.U.T.C.D. SIGN NO. R1-1B
2. INSTALL "DO NOT ENTER" SIGN, M.U.T.C.D. SIGN NO. R3-15C
3. LIMIT OF HEAVY DUTY PAVEMENT
4. RUNOUT CURB IN 3' OR MATCH EXISTING CURB
5. INSTALL "NO PARKING" SIGN, M.U.T.C.D. SIGN NO. P1-1C
6. LANDSCAPED AREA - SEE LANDSCAPE PLAN, IF NO PLANTINGS, INSTALL TOPSOIL & SEED
7. "KEEP RIGHT" SIGN
8. 6" WIDE WHITE PAVEMENT STRIPES @ 5' SPACING (CROSSWALK LINES)
9. 4" WIDE YELLOW PAVEMENT STRIPES @ 2' O.C. & @ 45° TO PARKING LINES
10. RAMP SIDEWALK @ 1:12 MAX.
11. BIKE RACK

TYPICAL DUPLEX LOT
SCALE: 1"=20'

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

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STATE OF NEW YORK CHRISTOPHER WOOD 076384 LICENSED PROFESSIONAL ENGINEER

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 3/22/22
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Site Plan

DRAWING NO.
C-101
Project no.: 21-011

Attachment: SP-2021-05_drawings_092222 (23057 : Sp-2021-05)

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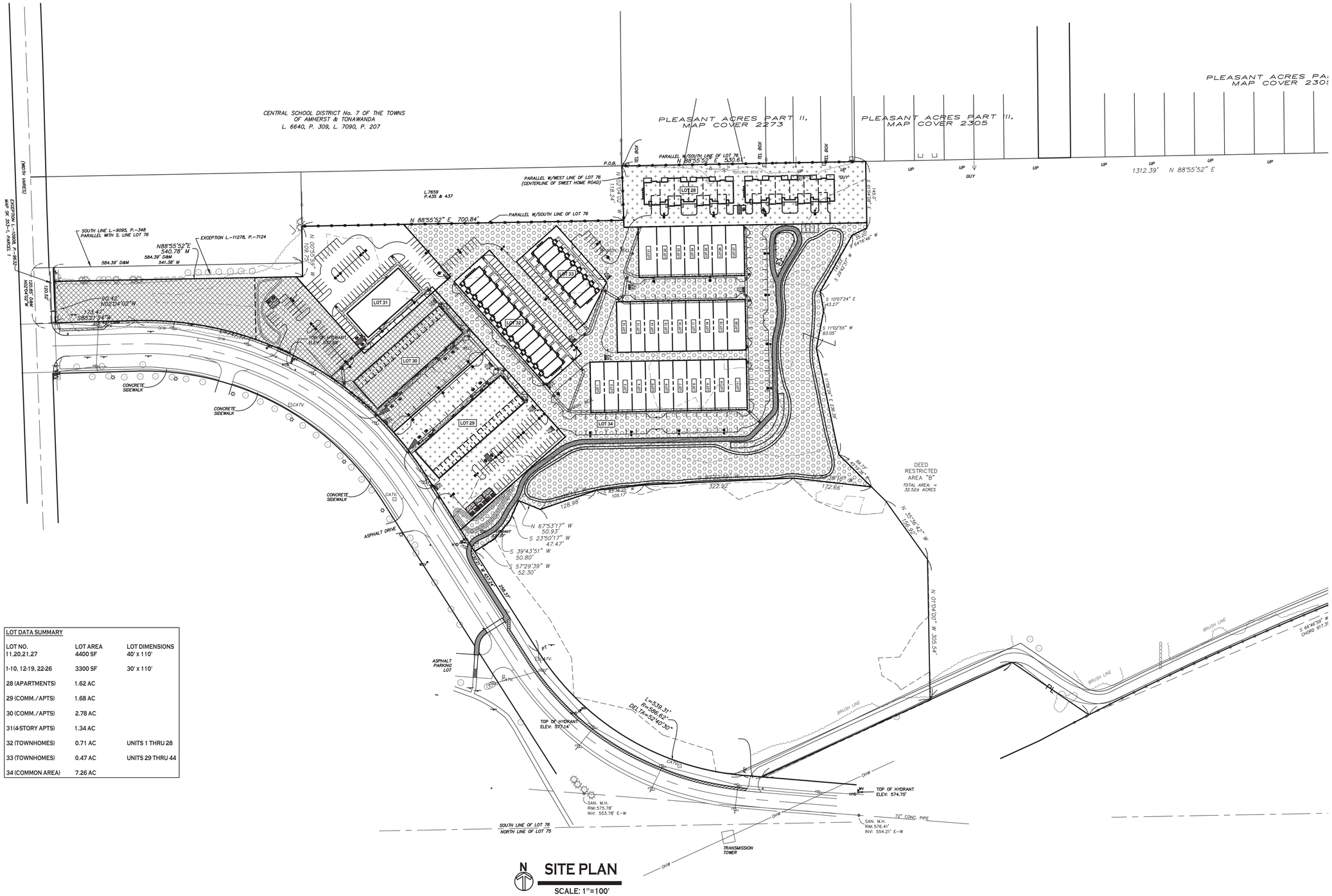

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SITE PLAN

SCALE: 1"=100'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

LOT DATA SUMMARY

LOT NO.	LOT AREA	LOT DIMENSIONS
11,20,21,27	4400 SF	40' x 110'
1-10, 12-19, 22-26	3300 SF	30' x 110'
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29 (COMM./APTS)	1.68 AC	
30 (COMM./APTS)	2.78 AC	
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32 (TOWNHOMES)	0.71 AC	UNITS 1 THRU 28
33 (TOWNHOMES)	0.47 AC	UNITS 29 THRU 44
34 (COMMON AREA)	7.26 AC	

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STATE OF NEW YORK CHRISTOPHER WOOD 076384 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Parcel Map

DRAWING NO.

C-102

Project no.: 21.011

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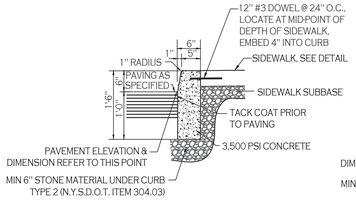
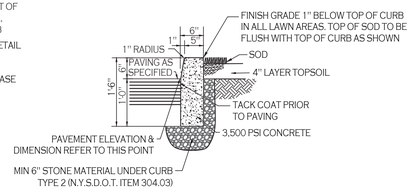


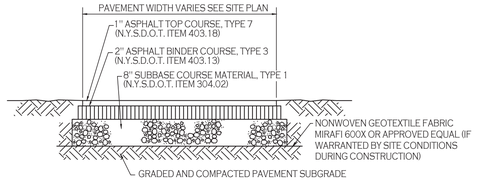
ABUTTING SIDEWALK



ABUTTING LANDSCAPE/GRASS

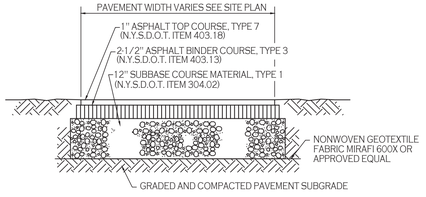
NOTES:
1. CONTROL JOINTS TO BE 2" DEEP AT 15'-0" O.C. - SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
2. WHERE THE CURB DROPS IS FLUSH WITH ASPHALT) THE DEPTH OF CURB BELOW GRADE SHALL BE INCREASED TO 1'-6" AND OTHER DIMENSIONS ADJUSTED ACCORDINGLY.

TYPE "A" CONCRETE CURB - 1



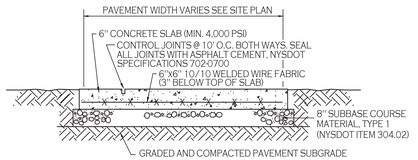
NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 401-3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304-3.

STANDARD DUTY ASPHALT SECTION - 4A



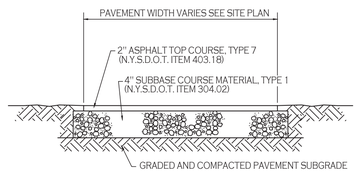
NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 401-3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304-3.

HEAVY DUTY ASPHALT SECTION - 4B



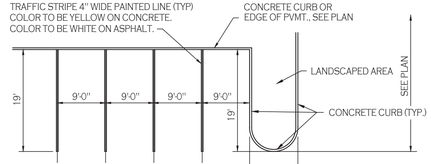
NOTE: CONCRETE PAVEMENT MATERIAL SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 501 AND CONSTRUCTION METHODS SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 502-3.

EXTERIOR CONCRETE SLAB-ON-GRADE SECTION - 4C

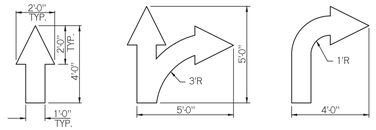


NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 401-3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304-3.

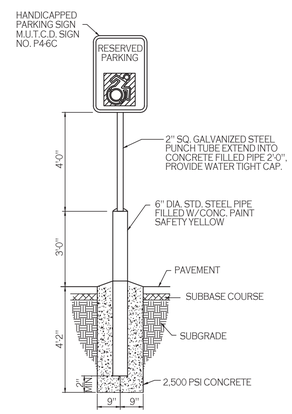
ASPHALT TRAIL SECTION - 4D



90° PARKING STALL LAYOUT - 2

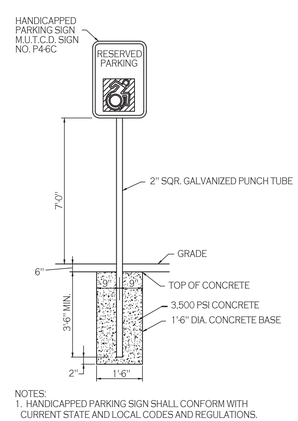


PAINTED TRAFFIC ARROWS - 3



HANDICAPPED PARKING SIGN - 6

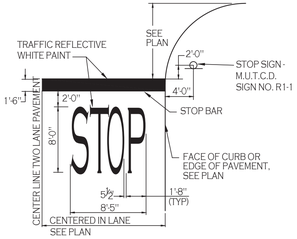
INSTALLED IN PAVEMENT



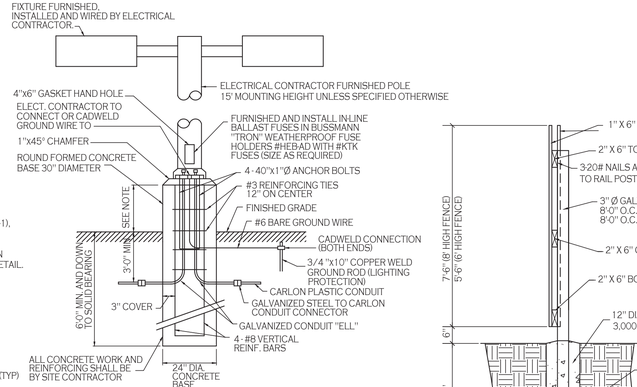
NOTES:
1. HANDICAPPED PARKING SIGN SHALL CONFORM WITH CURRENT STATE AND LOCAL CODES AND REGULATIONS.

HANDICAP PARKING SIGNS - 6

INSTALLED IN GRASS/LANDSCAPED AREA



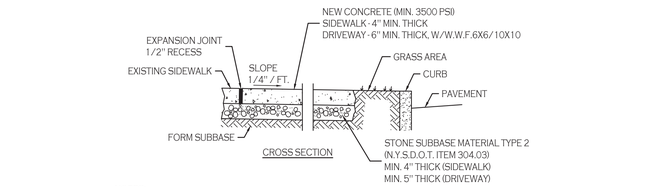
STOP BAR DETAIL - 7



NOTES:
1. FOR LOCATIONS OF FOUNDATIONS SEE SITE PLAN
2. FOR LIGHT FIXTURE ORDERING INFORMATION SEE SITE LIGHTING PLAN
3. LIGHT POLE BASE EXPOSURE ABOVE GRADE SHALL BE:
   IN CURBED ISLANDS: 6" ABOVE TOP OF CURB ELEVATION
   IN PAVEMENT: 3' ABOVE GRADE
   IN NONCURBED GRASS AREAS: 6" ABOVE GRADE

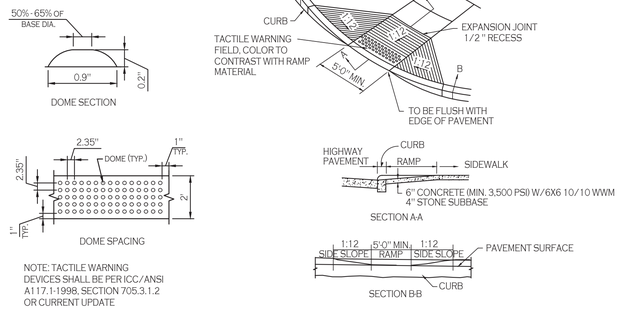
LIGHT POLE FOUNDATION - 8

USE FOR 15' MOUNTING HEIGHT L.E.D. FIXTURES



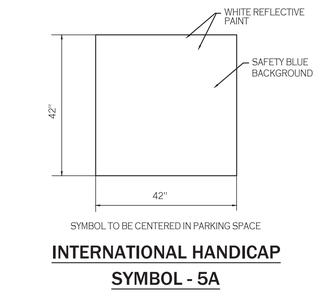
NOTES:
1. CONTROL JOINTS TO BE AT 5'-0" O.C., BOTH WAYS WHERE APPLICABLE. SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
2. CONCRETE SIDEWALK AND DRIVEWAY MATERIAL SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 501 AND CONSTRUCTION METHODS SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 608-3.
3. SUBBASE GRADE SHALL FOLLOW THE PROPOSED GRADE OF THE SIDEWALK AND SLOPE AWAY FROM BUILDING WHERE APPLICABLE, PROVIDE CONTINUOUS STONE PATH TO CURB UNDERDRAIN WHERE PROVIDED.
4. FULL DEPTH EXPANSION JOINTS SHALL BE INSTALLED EVERY 20' O.C., BOTHWAYS WHERE APPLICABLE. SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
5. SEE CURB DETAIL FOR DOWLING REQUIREMENTS WHERE ABUTTING CURB.
6. INSTALL 6" LONG #3 DOWELS @ 12" O.C. WHERE SIDEWALK ABUTS A BUILDING WALL AT AN ENTRANCE, THICKEN SIDEWALK TO 6" AT BUILDING WALL AND INSTALL DOWEL CENTERED IN THE 6" DEPTH. DOWELS AND THICKENING OF SIDEWALK SHALL EXTEND 18" EITHER SIDE OF ENTRANCE.
7. INSTALL 1/2" PREMOLDED EXPANSION JOINT WITH BACKER ROD & SEALANT WHERE SIDEWALK ABUTS BUILDING OR OTHER STRUCTURE.

CONCRETE SIDEWALK - 9



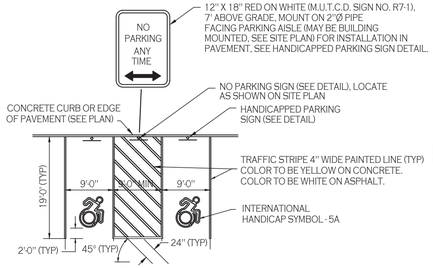
NOTE: TACTILE WARNING DEVICES SHALL BE PER ICC/ANSI A117.1-1998, SECTION 705.3.1.2 OR CURRENT UPDATE

SIDEWALK CURB RAMP - 10

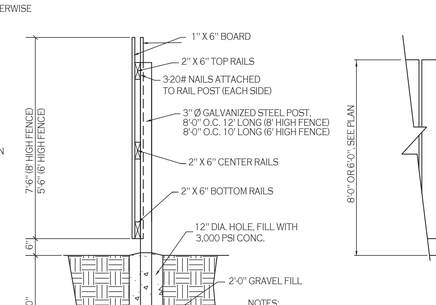


SYMBOL TO BE CENTERED IN PARKING SPACE

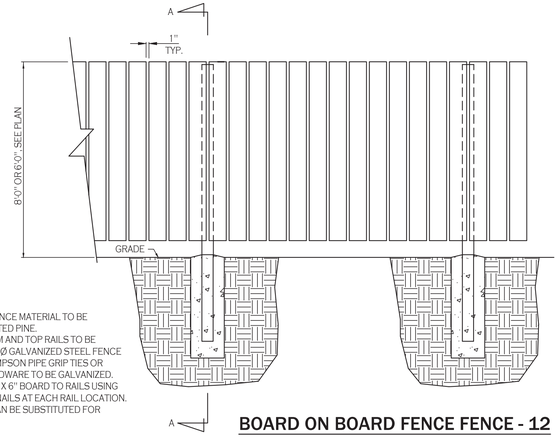
INTERNATIONAL HANDICAP SYMBOL - 5A



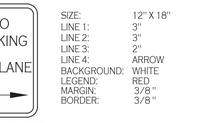
HANDICAPPED PAVEMENT MARKINGS & SIGNAGE - 5



NOTES:
1. ALL WOODEN FENCE MATERIAL TO BE PRESSURE TREATED PINE.
2. CENTER, BOTTOM AND TOP RAILS TO BE FASTENED TO 3" Ø GALVANIZED STEEL FENCE POSTS USING SIMPSON PIPE GRIP TIES OR EQUAL. ALL HARDWARE TO BE GALVANIZED.
3. ATTACH EACH 1" X 6" BOARD TO RAILS USING (3) GALVANIZED NAILS AT EACH RAIL LOCATION.
4. WOOD POSTS CAN BE SUBSTITUTED FOR STEEL.



BOARD ON BOARD FENCE FENCE - 12



SIZE:	12" X 18"
LINE 1:	3"
LINE 2:	3"
LINE 3:	2"
LINE 4:	ARROW
BACKGROUND:	WHITE
LEGEND:	RED
MARGIN:	3/8 "
BORDER:	3/8 "

INSTALLATION

1) SIGNS SHALL BE LOCATED ON THE RIGHT SIDE OF THE ROADWAY FACING APPROACHING TRAFFIC.
2) SIGNS SHALL BE INSTALLED APPROXIMATELY TWO FEET OFF OF PAVEMENT EDGE OR FACE OF CURB.
3) THE HEIGHT OF THE SIGN SHALL BE A MINIMUM OF SEVEN (7) FEET, MEASURED FROM THE BOTTOM OF THE SIGN TO THE GROUND.
4) ALL SIGNS SHALL BE INSTALLED FACING TRAFFIC AT AN ANGLE OF BETWEEN 30 AND 45 DEGREES WITH A LINE PARALLEL TO THE FLOW OF TRAFFIC. THE SIGN LEGENDS SHALL INCLUDE SINGLE-HEADED ARROWS POINTING IN THE DIRECTION OF THE REGULATION IF THE SIGNS ARE AT THE END OF THE ZONE, OR DOUBLE-HEADED ARROWS POINTING IN BOTH DIRECTIONS IF THE SIGNS ARE AT INTERMEDIATE POINTS WITHIN A ZONE.
5) BUILDING MOUNT WHERE REQUIRED @ 50' O.C..

FIRE LANE SIGN - 14

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STATE OF NEW YORK CHRISTOPHER WOOD 076394 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Site Details

DRAWING NO.

C-103

Project no.: 21-011

Attachment: SP-2021-05 drawings, 092222 (23057 : Sp-2021-05)

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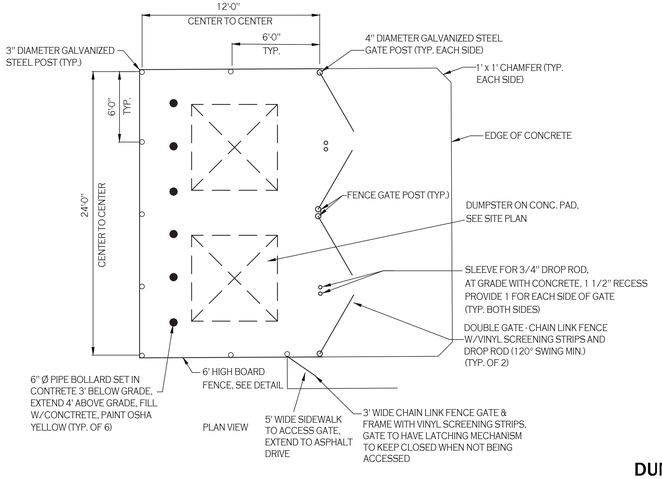
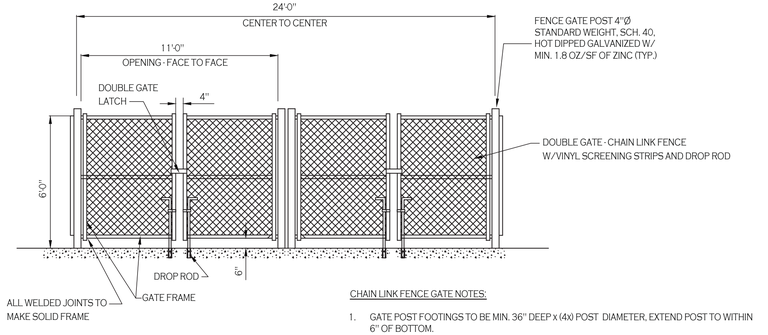


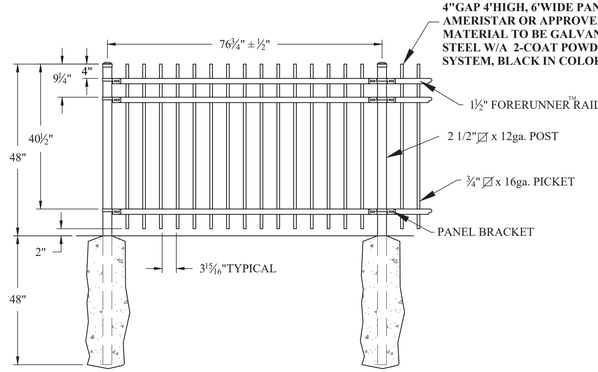


DUMPSTER ENCLOSURE - 11

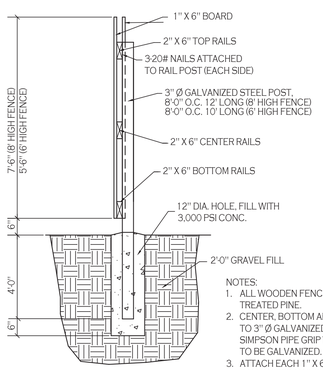
CHAIN LINK FENCE GATE NOTES:

1. GATE POST FOOTINGS TO BE MIN. 36" DEEP x (4x) POST DIAMETER, EXTEND POST TO WITHIN 6" OF BOTTOM.
2. GATE FRAMES TO BE 2" SQ. GALVANIZED STEEL, WEIGHING 2.60 LB./FT IN ACCORDANCE WITH ASTM F 900.
3. CHAIN LINK FENCE FABRIC SHALL BE 2" MESH, 9 GAUGE, ZINC COATED STEEL CORE WIRE. INSTALL MESH WITH HOOK BOLTS AND TENSION BARS ON ALL 4 SIDES, ATTACH AT 15" MAX.
4. DOUBLE GATE LATCH TO BE FORKED TYPE CAPABLE OF RETAINING GATE IN CLOSED POSITION AND HAVE PROVISION FOR PAD LOCK. LATCH SHALL BE OPERABLE FROM EITHER SIDE OF GATE.
5. ALL HARDWARE TO BE HOT DIPPED GALVANIZED STEEL TO SUIT GATE SIZE.

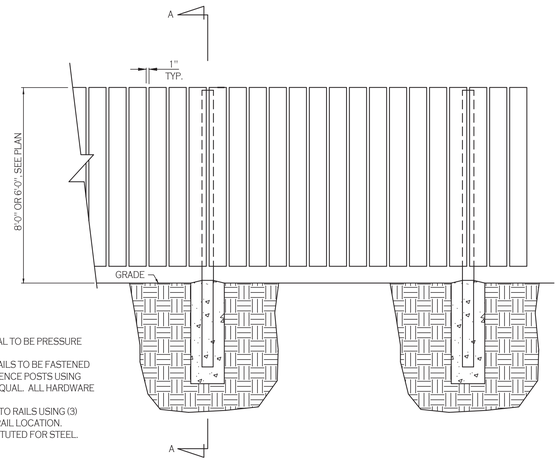
AEGIS PLUS PANEL GENESIS 3 RAIL 4"GAP 4'HIGH, 6'WIDE PANELS BY AMERISTAR OR APPROVED EQUAL. MATERIAL TO BE GALVANIZED STEEL W/A 2-COAT POWDER COAT SYSTEM, BLACK IN COLOR.



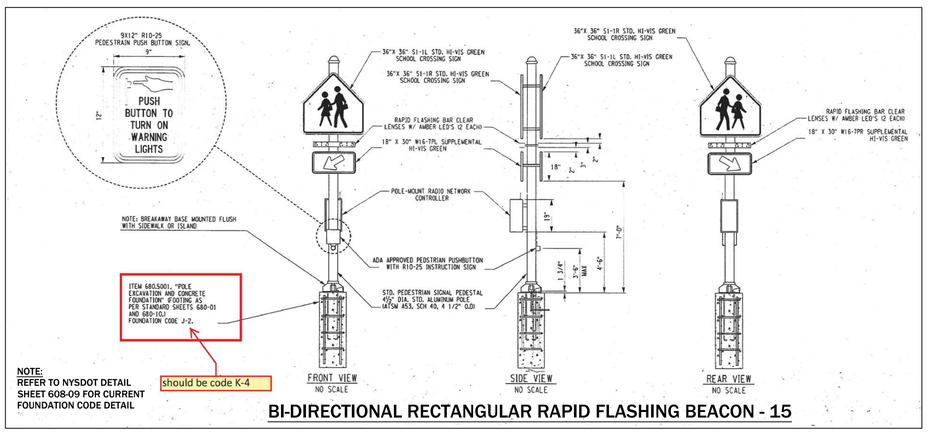
4' HIGH BLACK ALUMINUM FENCE - 13



NOTES:
1. ALL WOODEN FENCE MATERIAL TO BE PRESSURE TREATED PINE.
2. CENTER, BOTTOM AND TOP RAILS TO BE FASTENED TO 3" Ø GALVANIZED STEEL FENCE POSTS USING SIMPSON PIPE GRIP TIES OR EQUAL. ALL HARDWARE TO BE GALVANIZED.
3. ATTACH EACH 1" X 6" BOARD TO RAILS USING (3) GALVANIZED NAILS AT EACH RAIL LOCATION.
4. WOOD POSTS CAN BE SUBSTITUTED FOR STEEL.

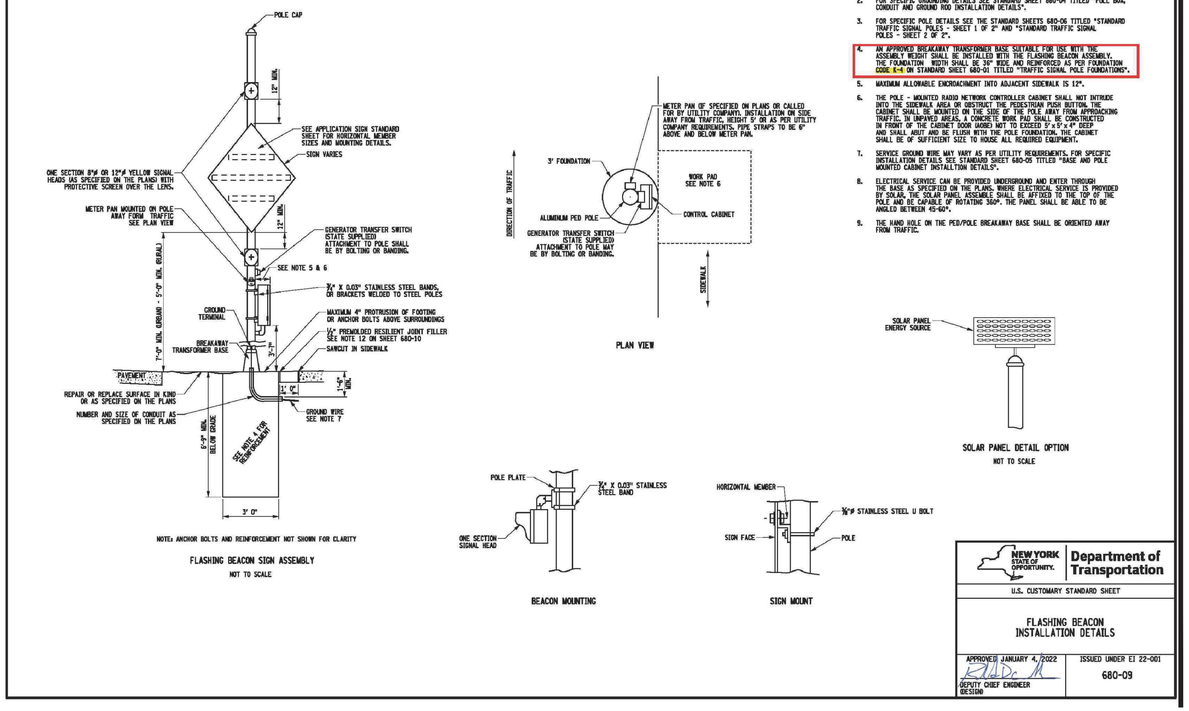


BOARD ON BOARD FENCE FENCE - FOR DUMPSTER ENCLOSURE



NOTE:
REFER TO NYSDOT DETAIL SHEET 608-09 FOR CURRENT FOUNDATION CODE DETAIL

BI-DIRECTIONAL RECTANGULAR RAPID FLASHING BEACON - 15



NOTES:

1. FOR SPECIFIC FOOTING DETAILS SEE STANDARD SHEET 680-01TITLED "TRAFFIC SIGNAL POLE FOUNDATIONS".
2. FOR SPECIFIC GROUNDING DETAILS SEE STANDARD SHEET 680-04 TITLED "PULL BOX, CONDUIT AND GROUND ROD INSTALLATION DETAILS".
3. FOR SPECIFIC POLE DETAILS SEE THE STANDARD SHEETS 680-06 TITLED "STANDARD TRAFFIC SIGNAL POLES - SHEET 1 OF 2" AND "STANDARD TRAFFIC SIGNAL POLES - SHEET 2 OF 2".
4. AN APPROVED BREAKAWAY TRANSFORMER BASE SUITABLE FOR USE WITH THE ASSEMBLY WEIGHT SHALL BE INSTALLED WITH THE FLASHING BEACON ASSEMBLY. THE FOUNDATION WIDTH SHALL BE 36" WIDE AND REINFORCED AS PER FOUNDATION CODE K-4 ON STANDARD SHEET 680-01 TITLED "TRAFFIC SIGNAL POLE FOUNDATIONS".
5. MAXIMUM ALLOWABLE ENCROACHMENT INTO ADJACENT SIDEWALK IS 12".
6. THE POLE - MOUNTED RADIO NETWORK CONTROLLER CABINET SHALL NOT INTRUDE INTO THE SIDEWALK AREA OR OBSTRUCT THE PEDESTRIAN PUSH BUTTON. THE CABINET SHALL BE MOUNTED ON THE SIDE OF THE POLE AWAY FROM APPROACHING TRAFFIC. IN IMPAVED AREAS, A CONCRETE WORK PAD SHALL BE CONSTRUCTED IN FRONT OF THE CABINET DOOR WHERE NOT TO EXCEED 5' x 5' x 4" DEEP AND SHALL ADJUT AND BE FLUSH WITH THE POLE FOUNDATION. THE CABINET SHALL BE OF SUFFICIENT SIZE TO HOUSE ALL REQUIRED EQUIPMENT.
7. SERVICE GROUND WIRE MAY VARY AS PER UTILITY REQUIREMENTS. FOR SPECIFIC INSTALLATION DETAILS SEE STANDARD SHEET 680-05 TITLED "BASE AND POLE MOUNTED CABINET INSTALLTION DETAILS".
8. ELECTRICAL SERVICE CAN BE PROVIDED UNDERGROUND AND ENTER THROUGH THE BASE AS SPECIFIED ON THE PLANS. WHERE ELECTRICAL SERVICE IS PROVIDED BY SOLAR, THE SOLAR PANEL ASSEMBLY SHALL BE AFFIXED TO THE TOP OF THE POLE AND BE CAPABLE OF ROTATING 360°. THE PANEL SHALL BE ABLE TO BE ANGLED BETWEEN 45-60°.
9. THE HAND HOLE ON THE PED/POLE BREAKAWAY BASE SHALL BE ORIENTED AWAY FROM TRAFFIC.

SOLAR PANEL DETAIL OPTION
NOT TO SCALE

NEW YORK STATE OF OPPORTUNITY.	Department of Transportation
U.S. CUSTOMARY STANDARD SHEET	
FLASHING BEACON INSTALLATION DETAILS	
APPROVED JANUARY 4, 2022 DEPUTY CHIEF ENGINEER GESTOW	ISSUED UNDER EI 22-061 680-09

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STATE OF NEW YORK CHRISTOPHER WOOD 076394 PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Site Details

DRAWING NO.
C-104

Project no.: 21-011

Attachment: SP-2021-05_drawings_092222 (23057 : Sp-2021-05)

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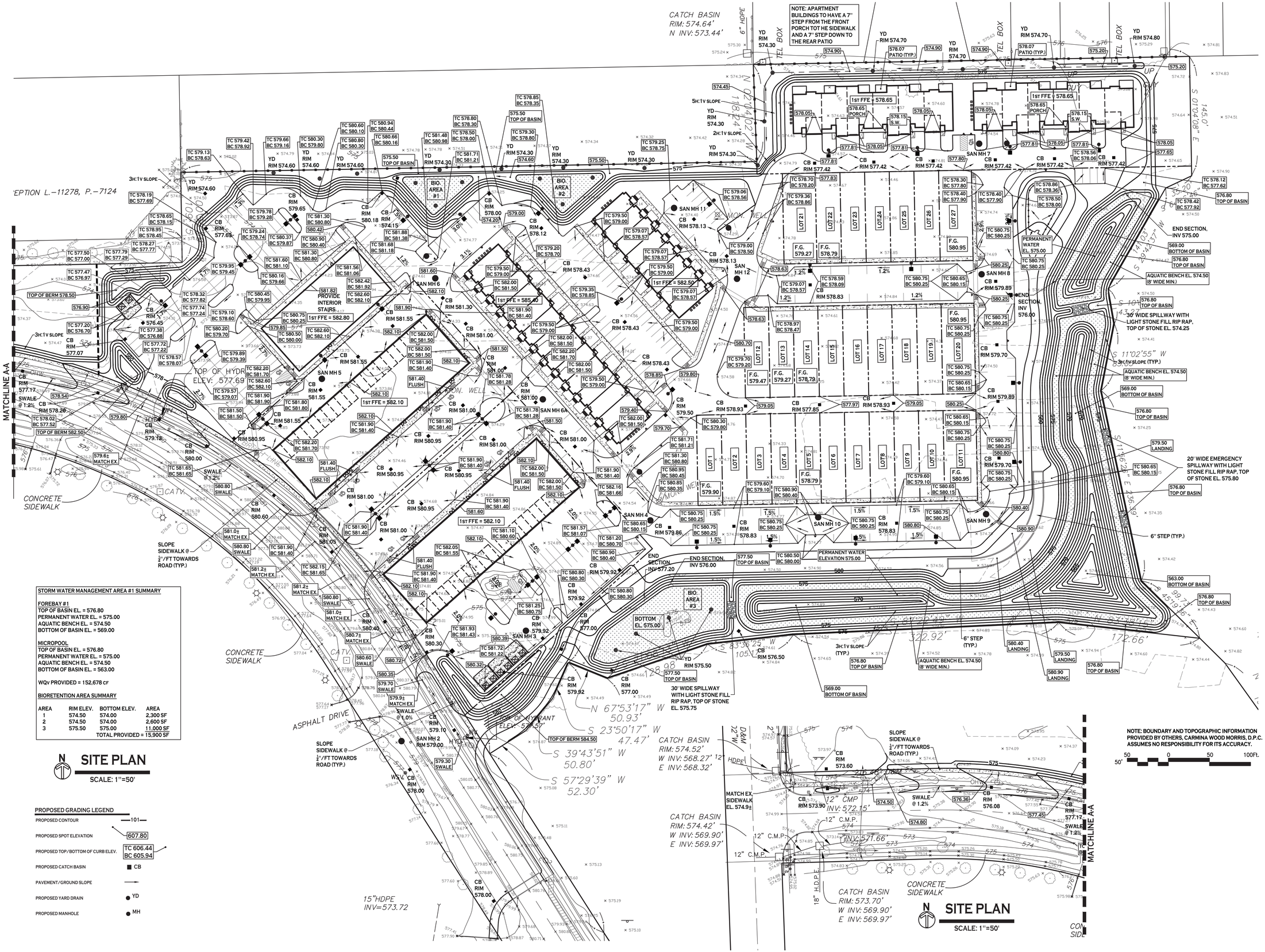

STORM WATER MANAGEMENT AREA #1 SUMMARY

FOREBAY #1
TOP OF BASIN EL. = 576.80
PERMANENT WATER EL. = 575.00
AQUATIC BENCH EL. = 574.50
BOTTOM OF BASIN EL. = 569.00

MICROPOOL
TOP OF BASIN EL. = 576.80
PERMANENT WATER EL. = 575.00
AQUATIC BENCH EL. = 574.50
BOTTOM OF BASIN EL. = 563.00

WQv PROVIDED = 152,678 CF

BIORETENTION AREA SUMMARY

AREA	RIM ELEV.	BOTTOM ELEV.	AREA
1	574.50	574.00	2,300 SF
2	574.50	574.00	2,600 SF
3	575.50	575.00	11,000 SF
		TOTAL PROVIDED =	15,900 SF

PROPOSED GRADING LEGEND

PROPOSED CONTOUR	101
PROPOSED SPOT ELEVATION	607.80
PROPOSED TOP/BOTTOM OF CURB ELEV.	TC 606.44 BC 605.94
PROPOSED CATCH BASIN	CB
PAVEMENT/GROUND SLOPE	
PROPOSED YARD DRAIN	YD
PROPOSED MANHOLE	MH

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STATE OF NEW YORK CHRISTOPHER M. GUY 076394 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
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2	Plan revised per town comments	07/26/22

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Grading Plan

DRAWING NO.
C-200

Project no.: 21.011

Attachment: SP-2021-05_drawings_092222 (23057 : Sp-2021-05)

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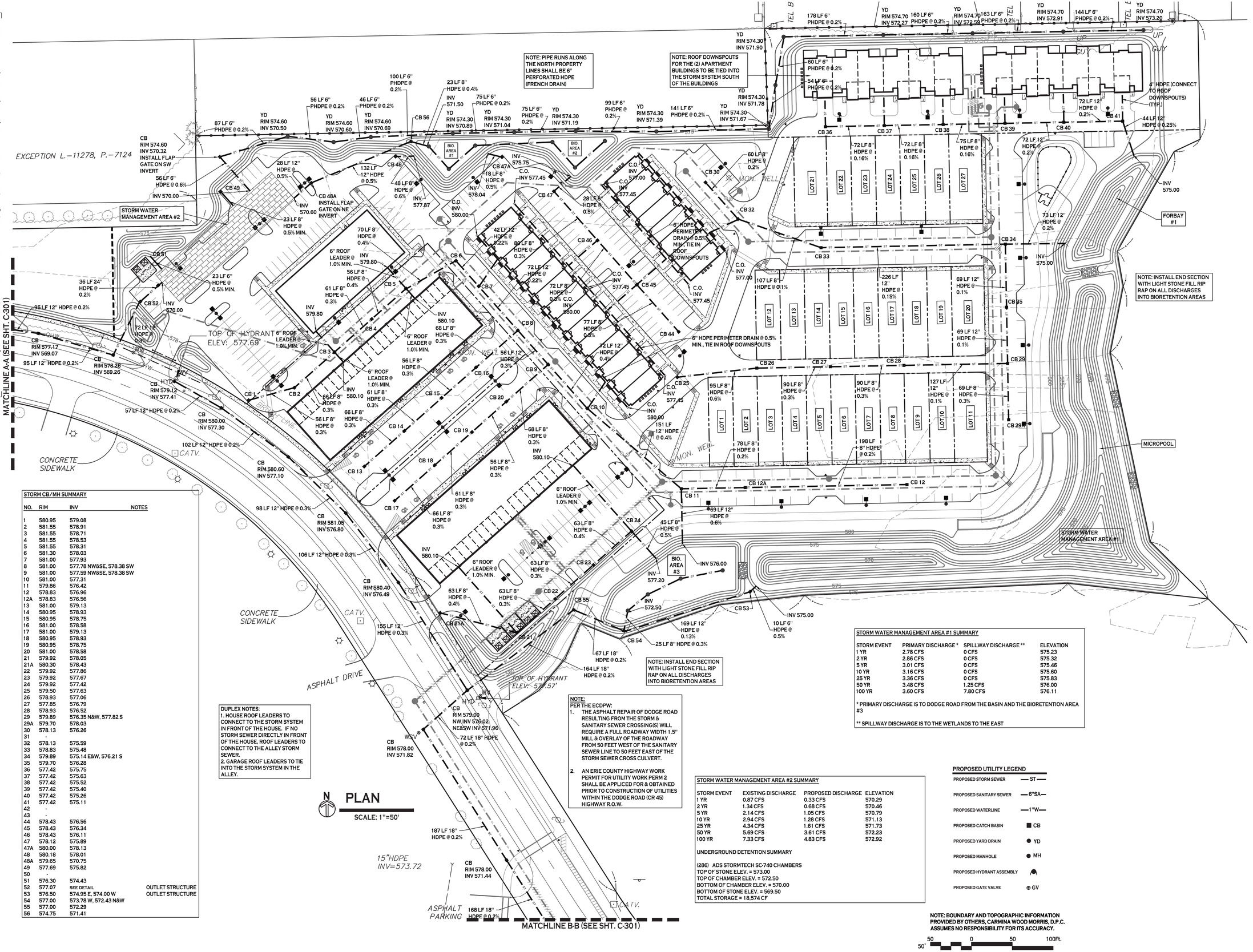

PLAN

SCALE: 1"=50'

STORM CB/MH SUMMARY			
NO.	RIM	INV	NOTES
1	580.95	579.08	
2	581.55	578.91	
3	581.55	578.71	
4	581.55	578.53	
5	581.55	578.31	
6	581.30	578.03	
7	581.00	577.93	
8	581.00	577.78 NW&SE, 578.38 SW	
9	581.00	577.59 NW&SE, 578.38 SW	
10	581.00	577.31	
11	579.86	576.42	
12	578.83	576.96	
12A	578.83	576.56	
13	581.00	579.13	
14	580.95	578.93	
15	580.95	578.75	
16	581.00	578.58	
17	581.00	579.13	
18	580.95	578.93	
19	580.95	578.75	
20	581.00	578.58	
21	579.92	578.05	
21A	580.30	578.43	
22	579.92	577.86	
23	579.92	577.67	
24	579.92	577.42	
25	579.50	577.63	
26	578.93	577.06	
27	577.85	576.79	
28	578.93	576.52	
29	579.89	576.35 N&W, 577.82 S	
29A	579.70	578.03	
30	578.13	576.26	
31	-	-	
32	578.13	575.59	
33	578.83	575.48	
34	579.89	575.14 E&W, 576.21 S	
35	579.70	576.28	
36	577.42	575.75	
37	577.42	575.63	
38	577.42	575.52	
39	577.42	575.40	
40	577.42	575.26	
41	577.42	575.11	
42	-	-	
43	-	-	
44	578.43	576.56	
45	578.43	576.34	
46	578.43	576.11	
47	578.12	575.89	
47A	580.00	578.13	
48	580.18	578.01	
48A	579.65	570.75	
49	577.69	575.82	
50	-	-	
51	576.30	574.43	
52	577.07	SEE DETAIL	OUTLET STRUCTURE
53	576.50	574.95 E, 574.00 W	OUTLET STRUCTURE
54	577.00	573.78 W, 572.43 N&W	
55	577.00	572.29	
56	574.75	571.41	

DUPLEX NOTES:
1. HOUSE ROOF LEADERS TO CONNECT TO THE STORM SYSTEM IN FRONT OF THE HOUSE. IF NO STORM SEWER DIRECTLY IN FRONT OF THE HOUSE, ROOF LEADERS TO CONNECT TO THE ALLEY STORM SEWER.
2. GARAGE ROOF LEADERS TO TIE INTO THE STORM SYSTEM IN THE ALLEY.

NOTE:
PER THE ECDPW:
1. THE ASPHALT REPAIR OF DODGE ROAD RESULTING FROM THE STORM & SANITARY SEWER CROSSING(S) WILL REQUIRE A FULL ROADWAY WIDTH 1.5" MILL & OVERLAY OF THE ROADWAY FROM 50 FEET WEST OF THE SANITARY SEWER LINE TO 50 FEET EAST OF THE STORM SEWER CROSS CULVERT.
2. AN ERIE COUNTY HIGHWAY WORK PERMIT FOR UTILITY WORK PERM 2 SHALL BE APPLICED FOR & OBTAINED PRIOR TO CONSTRUCTION OF UTILITIES WITHIN THE DODGE ROAD (CR 45) HIGHWAY R.O.W.

STORM WATER MANAGEMENT AREA #1 SUMMARY			
STORM EVENT	PRIMARY DISCHARGE *	SPILLWAY DISCHARGE **	ELEVATION
1 YR	2.78 CFS	0 CFS	575.23
2 YR	2.86 CFS	0 CFS	575.32
5 YR	3.01 CFS	0 CFS	575.46
10 YR	3.16 CFS	0 CFS	575.60
25 YR	3.36 CFS	0 CFS	575.83
50 YR	3.48 CFS	1.25 CFS	576.00
100 YR	3.60 CFS	7.80 CFS	576.11

* PRIMARY DISCHARGE IS TO DODGE ROAD FROM THE BASIN AND THE BIORETENTION AREA #3

** SPILLWAY DISCHARGE IS TO THE WETLANDS TO THE EAST

STORM WATER MANAGEMENT AREA #2 SUMMARY			
STORM EVENT	EXISTING DISCHARGE	PROPOSED DISCHARGE	ELEVATION
1 YR	0.87 CFS	0.33 CFS	570.29
2 YR	1.34 CFS	0.68 CFS	570.46
5 YR	2.14 CFS	1.05 CFS	570.79
10 YR	2.94 CFS	1.28 CFS	571.13
25 YR	4.34 CFS	1.61 CFS	571.73
50 YR	5.69 CFS	3.61 CFS	572.23
100 YR	7.33 CFS	4.83 CFS	572.92

UNDERGROUND DETENTION SUMMARY

(286) ADS STORMTECH SC-740 CHAMBERS
TOP OF STONE ELEV. = 573.00
TOP OF CHAMBER ELEV. = 572.50
BOTTOM OF CHAMBER ELEV. = 570.00
BOTTOM OF STONE ELEV. = 569.50
TOTAL STORAGE = 18,574 CF

PROPOSED UTILITY LEGEND

PROPOSED STORM SEWER	ST
PROPOSED SANITARY SEWER	6"SA
PROPOSED WATERLINE	1"W
PROPOSED CATCH BASIN	CB
PROPOSED YARD DRAIN	YD
PROPOSED MANHOLE	MH
PROPOSED HYDRANT ASSEMBLY	
PROPOSED GATE VALVE	GV

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

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STATE OF NEW YORK CHRISTOPHER WOOD 076998 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Storm Drainage Plan

DRAWING NO.
C-300

Project no.: 21-011

Attachment: SP-2021-05_drawings_092222 (23057 : Sp-2021-05)

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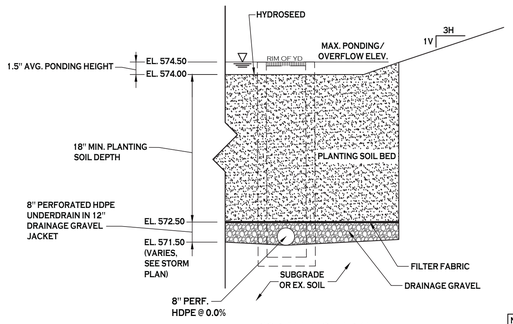
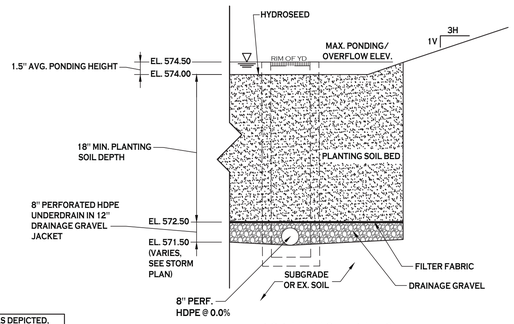
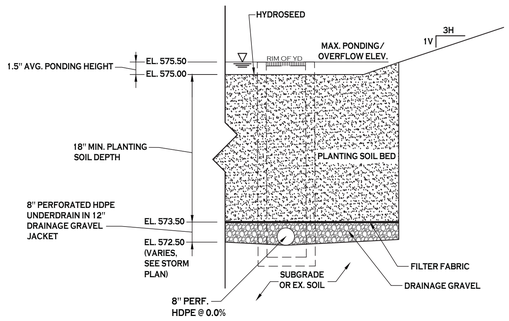


BIORETENTION AREA #1



BIORETENTION AREA #2

NOTE: AS DEPICTED, YARD DRAIN RIM ELEVATIONS ARE TO BE SET 6" ABOVE PROPOSED GRADE IN BIORETENTION AREAS.



BIORETENTION AREA #3

NOTES:
1. FILTER FABRIC TO BE NON-WOVEN CLASS 'C', MIRAFI 180-N OR APPROVED EQUIVALENT
2. MULCH TO BE SHREDDED HARDWOOD, AGED 12 MONTHS MIN.
3. DRAINAGE GRAVEL TO MEET AASHTO M-43. NO.67, SIZE 0.25" TO 0.75"
4. CONTRACTOR TO PROVIDE PLANTING SOIL SUBMITTAL SPECIFICATION FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.

NOTE: PLANTING SOIL SHALL BE LOAM/SAND MIX CONTAINING A MINIMUM OF 35 TO 60% SAND BY VOLUME AND LESS THAN 25% CLAY. SOIL SHOULD FALL WITHIN USCS TYPES SM OR ML WITH PERMEABILITY OF AT LEAST 0.5 FEET PER DAY. SOIL SHOULD BE FREE FROM STONES, STUMPS, ROOTS OR OTHER WOODY MATERIAL OVER 1" IN DIAMETER. PLACEMENT OF THE PLANTING SOIL SHOULD BE IN LIFTS OF 12" TO 18", LOOSELY COMPACTED.

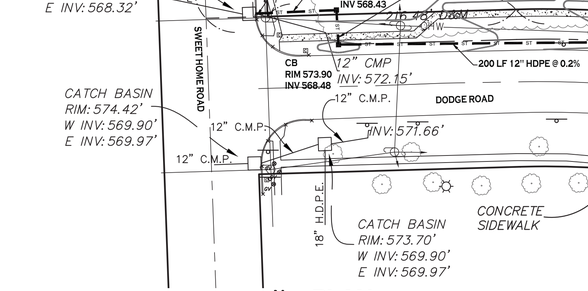
CHARACTERISTICS SHALL BE:
PH RANGE: 5.2 - 7.00
ORGANIC MATTER: 1.5 - 4.0%
MAGNESIUM: 35 LBS PER ACRE MIN.
PHOSPHORUS: 75 LBS PER ACRE MIN.
POTASSIUM: 85 LBS PER ACRE MIN.
SOLUBLE SALTS: 500 PPM
CLAY: 10 TO 25%
SILT: 30 TO 55%
SAND: 35 TO 60%

BIO-RETENTION AREA SEEDING SPEC (NORTHEAST WETLAND GRASS SEED MIX):

SEED MIXTURE	VARIETY	PERCENT BY NO. OF SEEDS
CREEPING BENTGRASS	AGROSTIS STOLONIFERA	63.0
ROUGH BLUEGRASS	POA TRIVIALIS	17.0
MEADOW FOXTAIL	ALOPECURUS ARUNDINACEUS	11.0
ANNUAL RYEGRASS	LOLIUM MULTIFLORUM	4.5
DEERTONGUE	PANICUM CLANDESTINUM	4.5

BIORETENTION AREA - TYPICAL SECTIONS

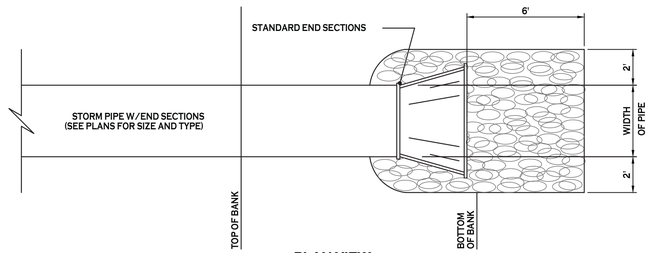
NOT TO SCALE



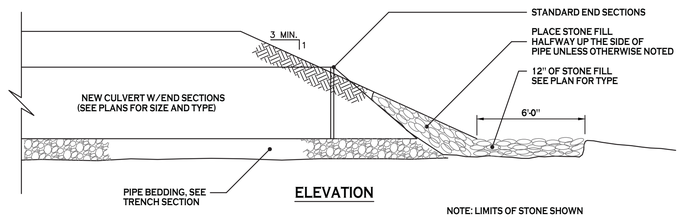
NOTE:
FOR INLINE DRAINS, THE ELBOW SHALL BE REPLACED BY A TEE

NOTE:
SEE TYPICAL TRENCH SECTION FOR BEDDING REQUIREMENTS

TYPICAL YARD DRAIN DETAIL



PLAN VIEW

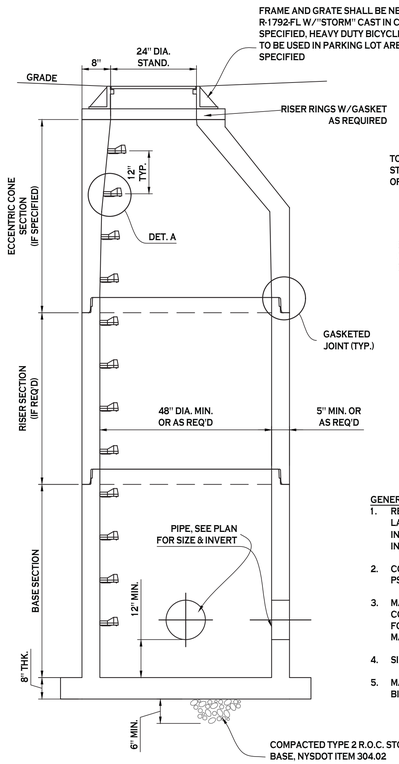


ELEVATION

NOTE: LIMITS OF STONE SHOWN ARE MINIMUMS, PLAN MAY INDICATE GREATER LIMITS

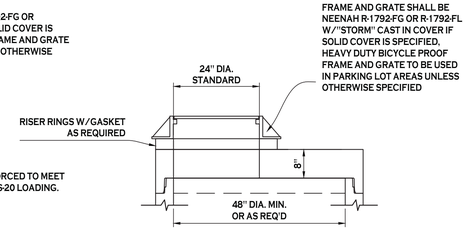
TYPICAL PIPE OUTLET W/ END SECTION & RIP RAP

NOT TO SCALE



TYPICAL STORM MANHOLE DETAIL

NOT TO SCALE



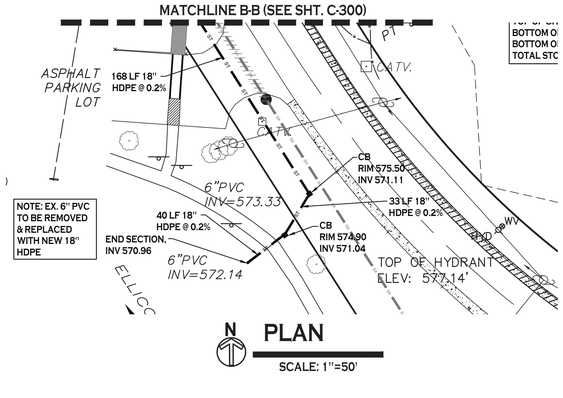
NOTE: ECCENTRIC CONE SECTION SHALL BE USED UNLESS DEPTH WARRANTS TOP SLAB PER MANUFACTURER

ALTERNATE TOP SLAB



DETAIL A

GENERAL NOTES:
1. REINFORCED STEEL TO CONFORM TO LATEST A.S.T.M. A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) IN BASE SLAB.
2. CONCRETE COMPRESSIVE STRENGTH - 4000 PSI MINIMUM.
3. MANHOLE DESIGN SPECIFICATIONS TO CONFORM TO LATEST A.S.T.M. C478 SPEC. FOR PRE-CAST REINFORCED CON-CRETE MANHOLE SECTIONS.
4. SINGLE POUR MONOLITHIC BASE SECTION.
5. MANHOLE TO BE COATED ON OUTSIDE WITH BITUMASTIC SEALER.



TYPICAL PIPE OUTLET W/ END SECTION & RIP RAP

NOT TO SCALE

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

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STATE OF NEW YORK
CHRISTOPHER WOOD
079394
PROFESSIONAL ENGINEER

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Storm Drainage Details

DRAWING NO.
C-301

Project no.: 21-011

Attachment: SP-2021-05_drawings_092222 (23057 : Sp-2021-05)

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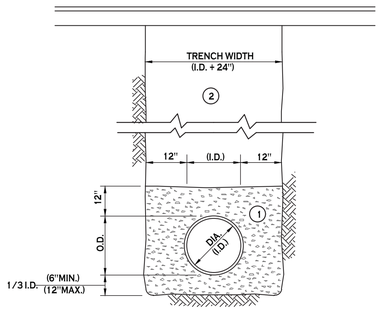


NOTES:

A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.

C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT 1985 EDITION)

(1) NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

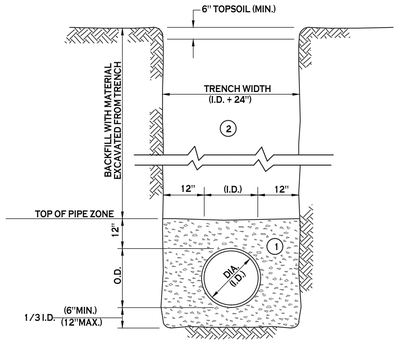
NO SLAG SHALL BE ALLOWED FOR MATERIAL (1)

(2) TYPE 2 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 304-2.02 TYPE 2. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN TWO INCHES AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL (2)

STORM SEWER TRENCH SECTION IN PAVED AREAS

NOT TO SCALE



NOTES:

A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.

C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT 1985 EDITION)

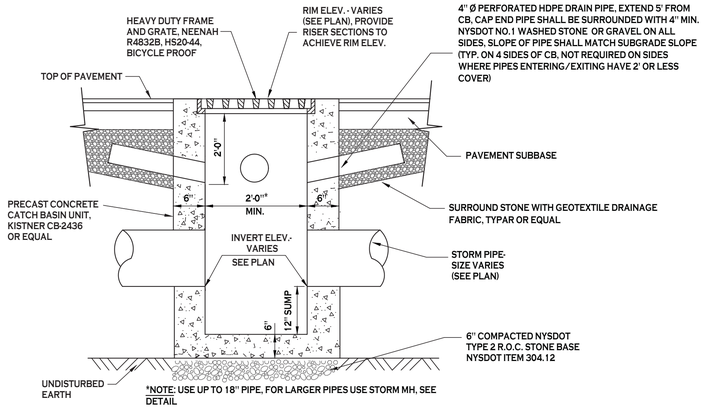
(1) NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL (1)

(2) BACKFILL MATERIAL SHALL BE NATIVE SOIL CONTAINING NO UNSUITABLE MATERIAL COMPACTED IN 6" LIFTS.

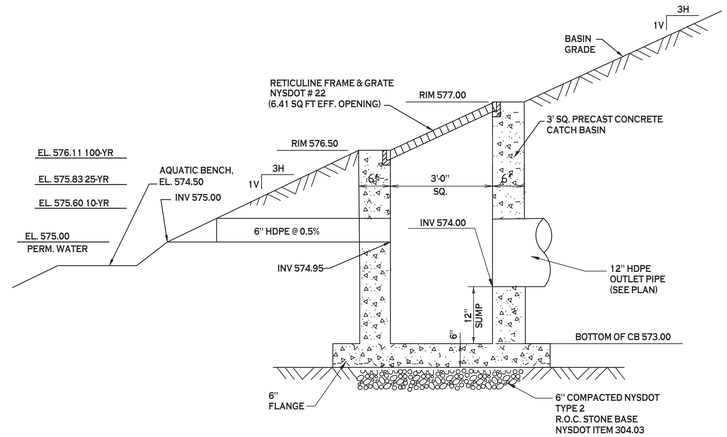
STORM SEWER TRENCH SECTION IN UNPAVED AREAS

NOT TO SCALE



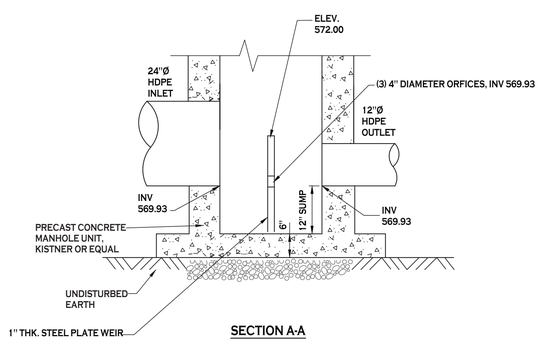
TYPICAL PRECAST CATCH BASIN

NOT TO SCALE



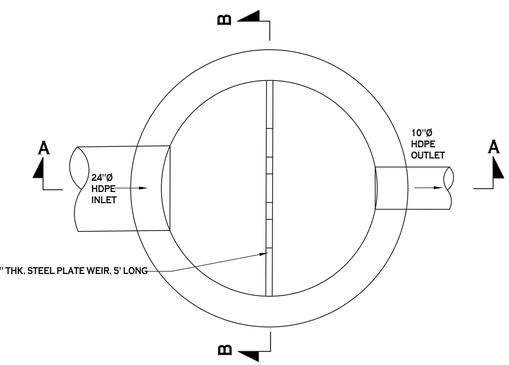
DETENTION BASIN OUTLET STRUCTURE - CB 53

N.T.S.



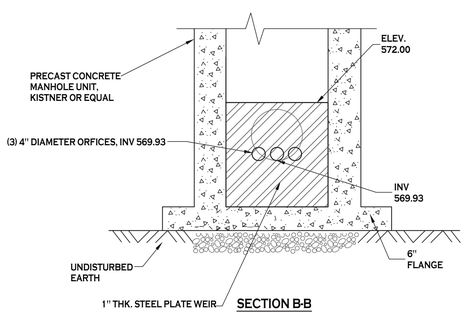
SECTION A-A

NOTES:
1. FASTEN STEEL PLATE TO CB WALL WITH ANGLE CLIPS AND BOLTS
2. STEEL PLATE, ANGLE CLIPS, AND BOLTS TO BE HOT DIPPED GALVANIZED



PLAN

* NOTE: USE 5'-0" I.D. MANHOLE



SECTION B-B

OUTLET CONTROL STRUCTURE - CB 52

NOT TO SCALE

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REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Storm Drainage Details

DRAWING NO.

C-302

Project no.: 21-011

Attachment: SP-2021-05_drawings_092222 (23057 : Sp-2021-05)

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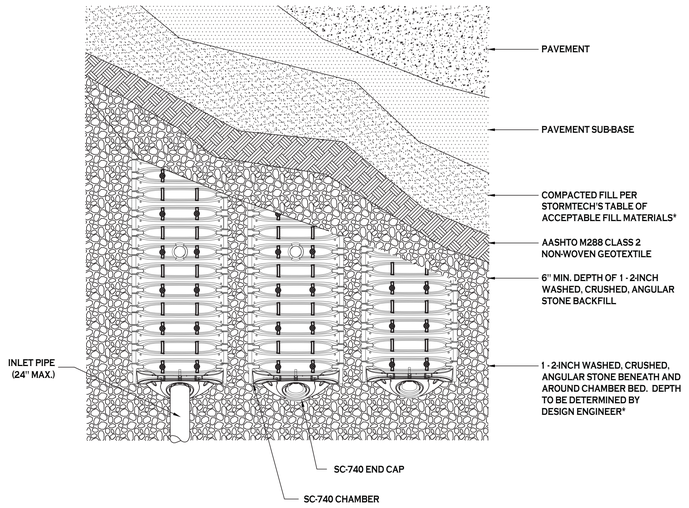


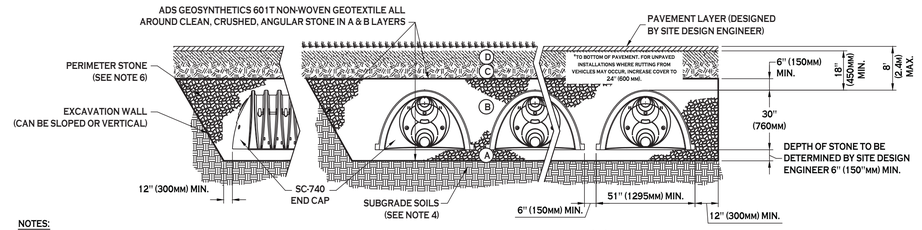
STORMTECH SC-740 CHAMBER SYSTEM
PLAN VIEW DETAIL
NOT TO SCALE

*SEE STORMTECH'S DESIGN MANUAL

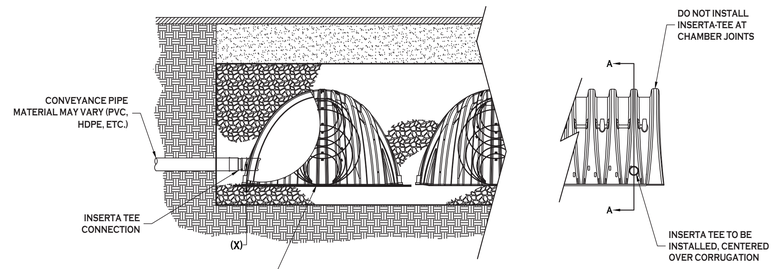
ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION/DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 MM) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LATER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 MM) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 MM) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 LBS (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 LBS (89 kN).
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. [2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 MM) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



NOTES:
1. SC-740 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
6. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



SECTION A-A

SIDE VIEW

NOTE:
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 MM)	4" (100 MM)
SC-740	10" (250 MM)	4" (100 MM)
DC-780	10" (250 MM)	4" (100 MM)
MC-3500	12" (300 MM)	6" (150 MM)
MC-4500	12" (300 MM)	8" (200 MM)
INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON		

INSERTA TEE DETAIL
NOT TO SCALE

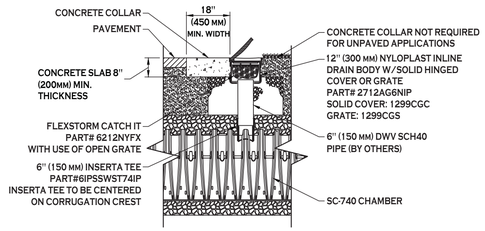
INSPECTION AND MAINTENANCE
STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
A. INSPECTION PORTS (IF PRESENT)
A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 MM) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
B. ALL ISOLATOR ROWS
B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 MM) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 M) OR MORE IS PREFERRED
B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES:
1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



SC-740 6" INSPECTION PORT DETAIL
NOT TO SCALE

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STATE OF NEW YORK CHRISTOPHER WOOD 076394 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: 2/24/21
Scale: As Noted

DRAWING NAME:
Storm Drainage Details

DRAWING NO.
C-303

Project no.: 21-011

Attachment: SP-2021-05_drawings_092222 (23057 : Sp-2021-05)

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PROPOSED UTILITY LEGEND

PROPOSED STORM SEWER	— ST —
PROPOSED SANITARY SEWER	— 6"SA —
PROPOSED WATERLINE	— 1"W —
PROPOSED CATCH BASIN	■ CB
PROPOSED YARD DRAIN	● YD
PROPOSED MANHOLE	● MH
PROPOSED HYDRANT ASSEMBLY	
PROPOSED GATE VALVE	⊕ GV

TION L.–11278, P.–7124

INSULATED METER & RPZ ENCLOSURE

8" D.I. COMBINED WATER SERVICE FROM MAIN IN & THROUGH ENCLOSURE

8" G.V. (BY ECWA)

EX. 12" WATER MAIN

INSTALL 12"x12"x8" TEE (BY ECWA)

ELEVATION OF EXISTING HYDRANTS ALONG DODGE ROAD TO BE ADJUSTED TO ACCOMMODATE FILLING OF THE SITE. COORDINATE WITH ECWA

UTILITY POLES AND GUY WIRES ALONG DODGE ROAD TO BE EVALUATED AND ADJUSTED TO ACCOMMODATE FILLING OF THE SITE, COORDINATE WITH UTILITY COMPANIES

UTILITY POLE TO BE RELOCATED, COORDINATE WITH UTILITY COMPANIES

CONCRETE SIDEWALK

CATV.

HYDRANT ASSEMBLY

SAN MH 6

8" G.V. (TYP. OF 3)

6" AWWA C-900 PVC COMB. SERVICE, SPLIT INTO FIRE AND DOM. INSIDE BLDG (TYP. 4-STORY BLDGS.)

F.F.E. = 582.80

FDC

INVERT 577.80

C.O. TRAP & VENT, VENT UP THROUGH BUILDING WALL

TOP OF HYDRANT ELEV: 577.69

SAN MH 5

145 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

6" AWWA C900 PVC PRIVATE WATERMAIN

25 LF 6" SDR-35 PVC @ 1.0% MIN.

INVERT 577.60

INSTALL FITTINGS AND BLOCKING (TYP.)

F.F.E. = 582.10

25 LF 6" SDR-35 PVC @ 1.0% MIN. (COMMERCIAL LATERAL)

6" G.V.

6" AWWA C-900 PVC COMB. SERVICE, SPLIT INTO FIRE AND DOM. INSIDE BLDG (TYP. 4-STORY BLDGS.)

FDC

8" G.V.

F.F.E. = 582.10

INVERT 577.60

C.O. TRAP & VENT, VENT UP THROUGH BUILDING WALL

87 LF 6" SDR-35 PVC @ 1.0% MIN. (COMMERCIAL LATERAL)

WYE CONNECT

SAN MH 3

202 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

SAN MH 2

INSTALL SELECT FILL ACROSS ROAD

WV

HYD

322 LF 8" SDR-35 PVC PUBLIC SANITARY MAIN @ 0.4%

20'

ASPHALT DRIVE

15"HDPE INV=573.72

INSTALL SELECT FILL ACROSS DRIVEWAY

ASPHALT PARKING LOT

SAN MH 1

MATCHLINE A-A

SEE NOTE FOR WATER AND SEWER SERVICE TO TOWNHOME BUILDING

SAN MH 11

HYDRANT ASSEMBLY

MON. WELL

8" G.V.

197 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

8" AWWA C900 PVC PRIVATE WATER MAIN

HYDRANT ASSEMBLY

SAN MH 4

204 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN@ 0.4%

SAN MH 10

8" AWWA C-900 PVC PRIVATE WATER MAIN

8" G.V.

HYDRANT ASSEMBLY

F.F.E. =578.65

INV 574.15

INSTALL C.O., TRAP & VENT INV 574.15

6" SDR-35 PVC SANITARY LATERAL @ 1.0% MIN.

F.F.E. =578.65

SAN MH 7

HYDRANT ASSEMBLY

2" TYPE "K" COPPER WATER SERVICE

2" TAP & CURB STOP/BOX

159 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

LOT 21 LOT 22 LOT 23 LOT 24 LOT 25 LOT 26 LOT 27

145 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

SAN MH 8

298 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

SAN MH 12

8" AWWA C-900 PVC PRIVATE WATER MAIN

INSTALL FITTINGS AND BLOCKING (TYP.)

8" G.V. (TYP. OF 3)

LOT 12 LOT 13 LOT 14 LOT 15 LOT 16 LOT 17 LOT 18 LOT 19 LOT 20

292 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

LOT 1 LOT 2 LOT 3 LOT 4 LOT 5 LOT 6 LOT 7 LOT 8 LOT 9 LOT 10 LOT 11

8" AWWA C-900 PRIVATE WATER MAIN

SAN MH 9

204 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

INSTALL FITTINGS AND BLOCKING (TYP.)

ALLEY

NOTE: COORDINATE UTILITY ENTRY POINTS WITH ARCH. PLANS

1st FFE = FINISHED GRADE + 4'

PROPOSED DUPLEX

INV = BASEMENT FFE - 2'

PROPOSED AC UNIT

INSTALL C.O., TRAP & VENT

COORDINATE CONNECTION POINT WITH UTILITY CO.'S

3/4" TYPE "K" COPPER DOMESTIC & FIRE WATER SERVICES

3/4" CURB STOP & BOX

4" SDR-35 PVC SANITARY LATERAL @ 1.0% MIN.

WYE CONNECT

8" PRIVATE SEWER MAIN

TAP WATER MAIN

8" PRIVATE WATER MAIN

TYPICAL DUPLEX LOT

SCALE: 1"=20'

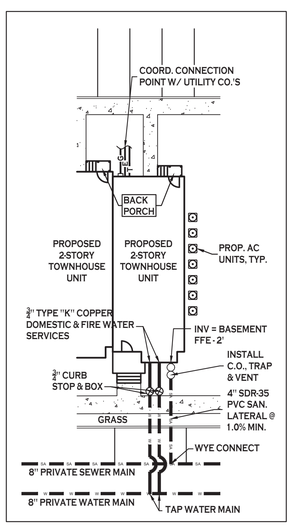
NOTE: AN EXTERIOR GREASE TRAP SIZED IN ACCORDANCE WITH THE TOWN OF AMHERST CRITERIA MUST BE PROVIDED FOR ANY RESTAURANT

TOWNHOME NOTES:

1. ALL TOWNHOMES TO HAVE A 3/4" TYPE "K" COPPER DOMESTIC AND FIRE WATER SERVICES WITH 4.5' MIN. COVER, SEE DETAIL
2. ALL TOWNHOMES TO HAVE A 4" SDR-35 PVC SANITARY SEWER LATERAL @ 1.0% MIN. WITH 4' MON. COVER
3. ALL TOWNHOME UNITS TO HAVE A NFPA 13R FIRE SUPPRESSION SYSTEM (SPRINKLER SYSTEM).

DUPLEX NOTES:

1. ALL DUPLEXES TO HAVE A 3/4" TYPE "K" COPPER DOMESTIC AND FIRE WATER SERVICES WITH 4.5' MIN. COVER, SEE DETAIL
2. ALL DUPLEXES TO HAVE A 4" SDR-35 PVC SANITARY SEWER LATERAL, SEE DETAIL
3. ALL DUPLEX UNITS TO HAVE A NFPA 13R FIRE SUPPRESSION SYSTEM (SPRINKLER SYSTEM).



TYP. TOWNHOUSE UTILITY LAYOUT

SCALE: 1"=20'

PLAN

SCALE: 1"=50'

SANITARY MANHOLE CHART

SAN MH	RIM	INV IN	INV OUT
1	580.00	563.64	563.54
2	579.00	565.03	564.93
3	580.40	565.94	565.84
4	580.20	566.85 (E) 573.98 (W)	566.75
5	581.80	576.67	576.50
6	581.45	575.76	575.66
6A	581.15	574.87	574.77
7	577.90	-	571.00
8	580.15	569.96 (W) 570.36 (N)	569.86
9	580.35	568.69	568.59
10	578.40	567.77	567.67
11	578.50	-	571.83
12	578.45	571.25	571.15

NOTE:
PER THE ECDPW:

1. THE ASPHALT REPAIR OF DODGE ROAD RESULTING FROM THE STORM & SANITARY SEWER CROSSING(S) WILL REQUIRE A FULL ROADWAY WIDTH 1.5" MILL & OVERLAY OF THE ROADWAY FROM 50 FEET WEST OF THE SANITARY SEWER LINE TO 50 FEET EAST OF THE STORM SEWER CROSS CULVERT.
2. AN ERIE COUNTY HIGHWAY WORK PERMIT FOR UTILITY WORK PERM 2 SHALL BE APPLICED FOR & OBTAINED PRIOR TO CONSTRUCTION OF UTILITIES WITHIN THE DODGE ROAD (CR 45) HIGHWAY R.O.W.

MATCHLINE A-A

ARKING LOT

SAN MH 1

CATV.

6"PVC INV=573.33

6"PVC INV=572.14

319 LF 8" SDR-35 PVC PUBLIC SANITARY MAIN @ 0.4%

TOP OF HYDRANT ELEV: 577.14'

HYD

WV

ELLICOTT CREEK DIVERSION CHANNEL

CORE DRILL & CONNECT TO EX. MANHOLE INV 562.37, INSTALL INSIDE DROP

SAN. M.H. RIM: 575.78' INV: 553.78' E–W

PLAN

SCALE: 1"=50'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

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STATE OF NEW YORK CHRISTOPHER WOOD 076394 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/22/22
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Utility Plan

DRAWING NO.

C-400

Project no.: 21-011

Attachment: SP-2021-05_drawings_092222 (23057 : Sp-2021-05)

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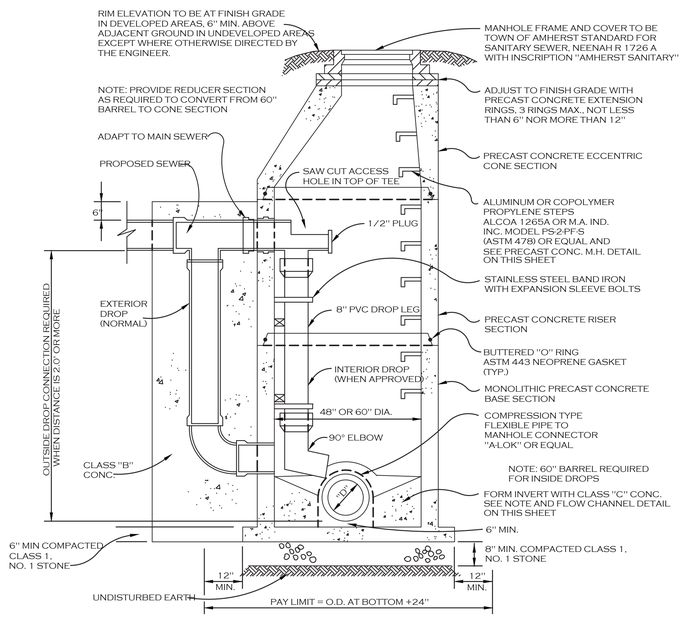
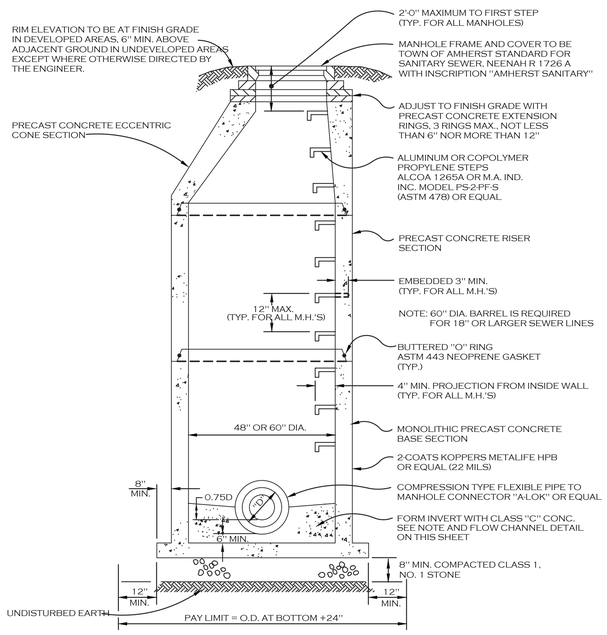
NOTIFY UNITED UNDERGROUND LOCATING SERVICE (U.U.L.S.) 72 HOURS BEFORE STARTING THE JOB

NOTIFY SUN OIL PIPELINE CORPORATION 72 HOURS BEFORE EXCAVATING (SEE DRAWING NO. 18)

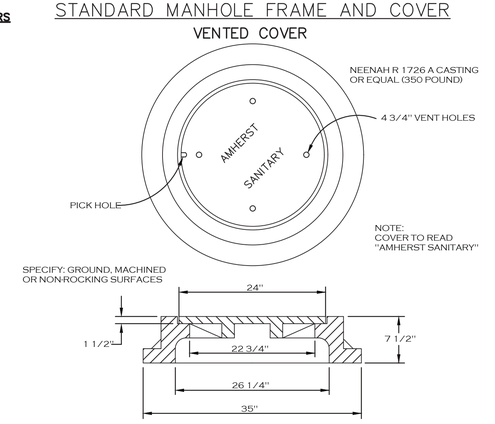
PRECAST CONCRETE DROP MANHOLE



PRECAST CONCRETE MANHOLE

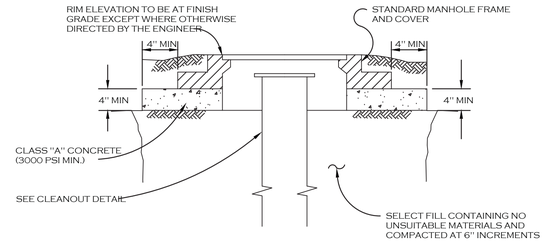


STANDARD MANHOLE FRAME AND COVER



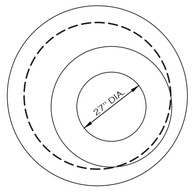
CLEANOUT WITH STANDARD MANHOLE FRAME AND COVER

(TO BE USED IN LOCATIONS ONLY AS APPROVED BY TOWN ENGINEER)

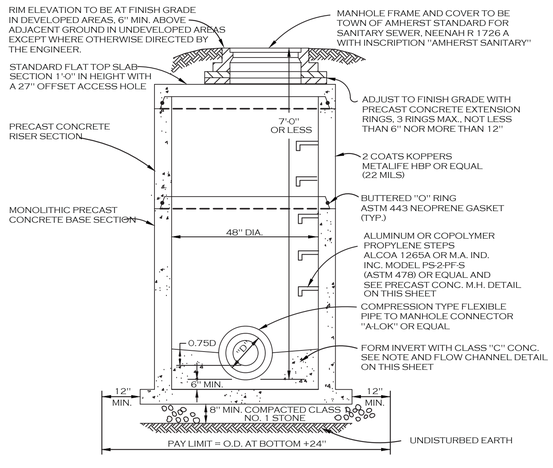


NOTE:
CLEANOUT NOT TO BE INSTALLED WHEN DISTANCE FROM M.H. EXCEEDS 150

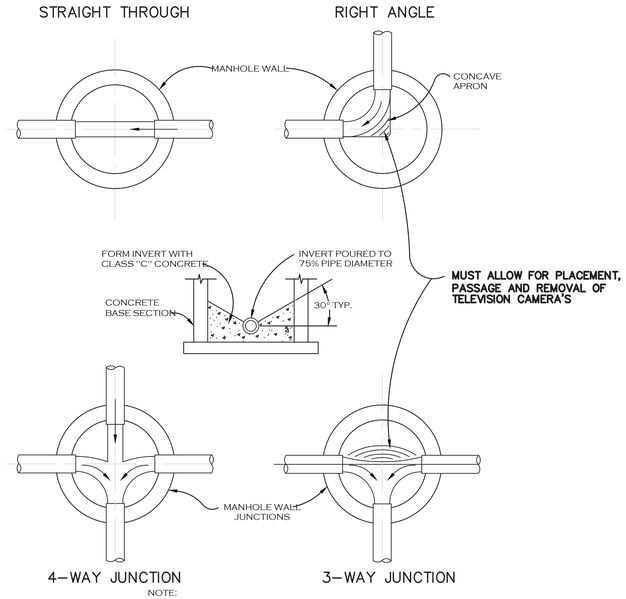
FLAT TOP MANHOLE ASSEMBLY



NOTE:
TO BE USED WHEN LOWEST INVERT TO RIM MEASUREMENT IS 7'-0" OR LESS



FLOW CHANNEL DETAIL SANITARY SEWERS

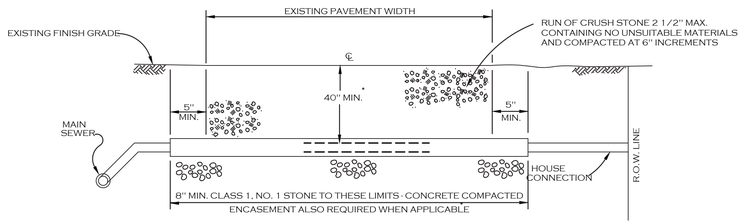


NOTE:
FLOW CHANNELS MUST ALLOW PLACEMENT, REMOVAL AND PASSAGE OF T.V. CAMERAS. THE CAMERA DIMENSIONS ARE APPROXIMATELY 26" LONG x 6 1/2" SQUARE. A BLOCK OF WOOD OF THESE DIMENSIONS MAY BE USED TO SIMULATE THE SIZE OF THE CAMERA. THIS WILL SIMPLIFY THE FORMATION OF FLOW CHANNELS AND INVERTS.

DEPTH OF ALL CHANNELS TO BE 75% OF PIPE DIAMETER.

FINISH ALL CHANNELS AT PROPER GRADE AS TO ALLOW SMOOTH & UNOBSTRUCTED FLOW ALL INVERTS TO BE FLUSH WITH THE INSIDES.

SANITARY TYPICAL PAVEMENT CROSSING FOR HOUSE CONNECTION



* WHEN DEPTH FROM TOP OF HOUSE CONNECTION PIPE TO SURFACE IS LESS THAN 6.0 FEET, A CONCRETE ENCASEMENT WILL BE REQUIRED TO THE LIMITS SHOWN (SEE WATER CROSSING DETAIL SAN. SEWERS DWG. #4 - PG. #2 OF 4)

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STATE OF NEW YORK CHRISTOPHER WOOD 076398 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: 12/1/21
Scale: As Noted

DRAWING NAME:
Sanitary Sewer Details

DRAWING NO.
C-401

Project no.: 21-011

Attachment: SP-2021-05_drawings_092222 (23057 : Sp-2021-05)

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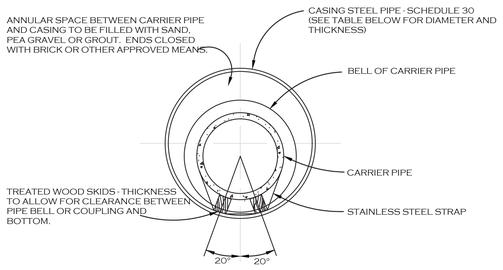
TOWN ROAD CROSSING BY JACKING AND BORING METHOD 8"–24" DIAMETER CARRIER PIPE

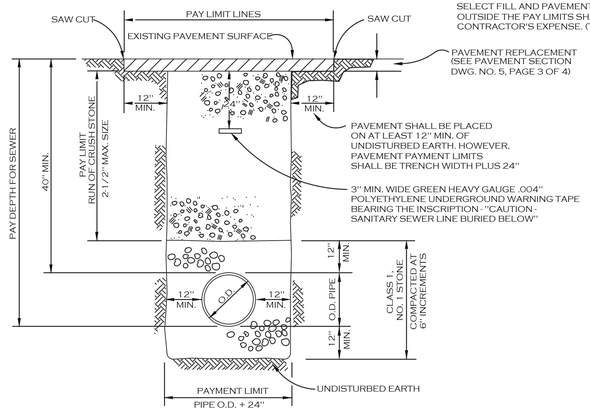


SCHEDULE FOR DIAMETER AND THICKNESS OF CASING PIPE

CARRIER PIPE DIAMETER	CASING PIPE DIAMETER	CASING PIPE WALL THICKNESS
8"	16" OR 20"	0.375
10"	20"	0.375
12"	24"	0.375
15"	27"	0.375 MIN.
18"	30"	0.375
21"	36"	0.469
24"	42"	0.469

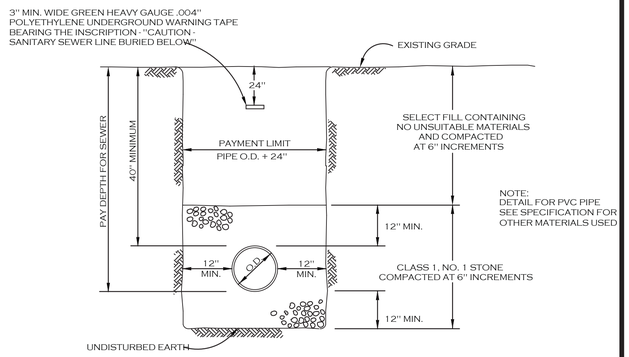
TYPICAL TRENCH DETAIL – TOWN ROAD CROSSING FOR MAIN SEWERS & HOUSE AND BUILDING CONNECTIONS

NOTE:
WHERE THE CONTRACTOR EXCAVATES BEYOND THE PAY LIMITS SHOWN; SELECT FILL AND PAVEMENT, SIDEWALK & DRIVEWAY REPLACEMENT OUTSIDE THE PAY LIMITS SHALL BE FURNISHED AND PLACED AT THE CONTRACTOR'S EXPENSE. (TYP.)

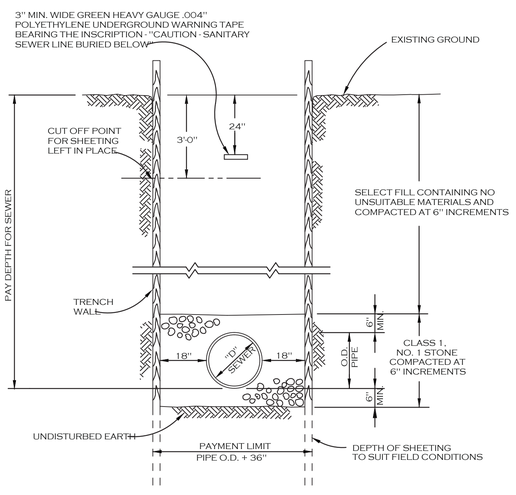


NOTE:
IF CONCRETE ENCASEMENT IS REQUIRED, IT SHALL BE INSTALLED IN PLACE OF (AND TO THE DIMENSIONS OF) THE PIPE BEDDING AND COVER TO 12" MIN. ABOVE AND BELOW THE PIPE (SEE WATER CROSSING DETAIL ON THIS SHEET)

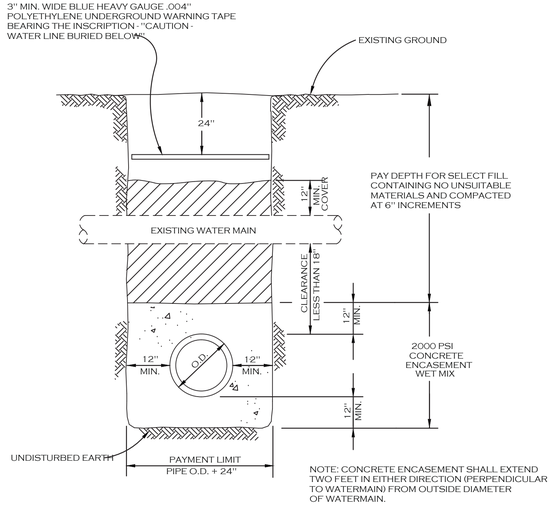
TYPICAL EARTH TRENCH DETAIL UNPAVED AND UNTRAVELED AREAS



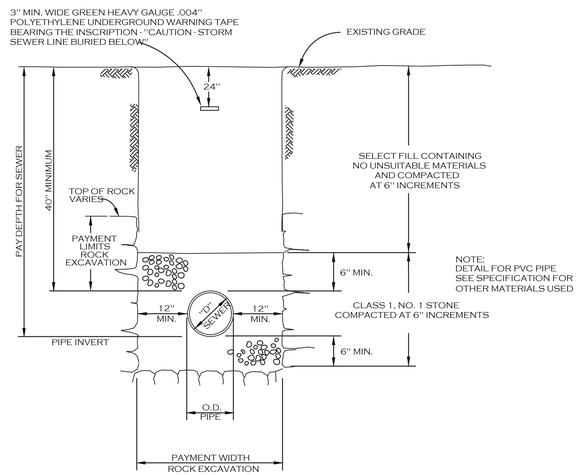
SHEETED TRENCH DETAIL



WATER CROSSING DETAIL CLEARANCE LESS THAN 18"



TYPICAL ROCK TRENCH DETAIL



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STATE OF NEW YORK CHRISTOPHER WOOD 076394 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
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2	Plan revised per town comments	07/26/22

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Sanitary Sewer Details

DRAWING NO.
C-402

Project no.: 21-011

Attachment: SP-2021-05_drawings_092222 (23057 : Sp-2021-05)

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GENERAL NOTES:

01. THE CONTRACTOR SHALL COMPLY WITH THE TOWN OF AMHERST STANDARD DRAWINGS AND SPECIFICATIONS.

02. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE PROJECT ENGINEER AND THE TOWN OF AMHERST ENG. DEPT. OF ANY HAZARDOUS SUBSTANCE ENCOUNTERED DURING THE CONSTRUCTION OF THE WORK. HE SHALL AT HIS EXPENSE, CONFORM TO ALL LAWS, RULES, REGULATIONS AND DIRECTIONS AS PROMULGATED BY THE UNITED STATES DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, THE NEW YORK STATE DEPARTMENT OF HEALTH AND ANY SUCH LOCAL RULES, ORDINANCES AND LAWS WHEN ENCOUNTERING OR WORKING WITH ANY SUCH HAZARDOUS SUBSTANCE.

03. THE CONTRACTOR SHALL COMPLY IN ALL RESPECTS TO THE INDUSTRIAL CODE PART (RULE NO.) 53 RELATING TO CONSTRUCTION, EXCAVATION AND DEMOLITION OPERATIONS AT OR NEAR UNDERGROUND FACILITIES, AS ISSUED BY THE STATE OF NEW YORK DEPARTMENT OF LABOR, BOARD OF STANDARD AND APPEALS.

04. SINCE THE ERIE COUNTY WATER AUTHORITY OPERATES AND MAINTAINS THE EXISTING WATER LINES, THEY ARE TO BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE OF THE START OF CONSTRUCTION. ALL EXISTING VALVES ARE TO BE OPERATED BY THE ERIE COUNTY WATER AUTHORITY PERSONNEL.

05. THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AHEAD OF THE PIPE LAYING OPERATION, SO THAT, IF MINOR ADJUSTMENTS MUST BE MADE IN ELEVATION AND/OR ALIGNMENT DUE TO INTERFERENCE FROM THESE UTILITIES, SAID CHANGES CAN BE MADE IN ADVANCE OF THE WORK.

06. WHERE SUCH FACILITIES ARE UNDER THE SUPERVISION OF A PROFESSIONAL ENGINEER, HE SHALL CERTIFY TO THE ENGINEERING DEPARTMENT OF THE TOWN OF AMHERST THAT SAID FACILITIES AS CONSTRUCTED WERE SUPERVISED BY HIMSELF (HERSELF) AND THAT THE WORKS HAVE BEEN FULLY COMPLETED IN ACCORDANCE WITH THE APPROVED ENGINEERING REPORTS, PLANS, SPECIFICATIONS, CONTRACT DOCUMENTS AND ANY AND ALL ADDENDA TO SAME.

07. THE CONSTRUCTION OF THE FACILITIES SHALL BE UNDER THE SUPERVISION OF A PERSON OR FIRM QUALIFIED TO PRACTICE PROFESSIONAL ENGINEERING IN NEW YORK STATE UNDER THE EDUCATION LAW OF THE STATE, WHENEVER ENGINEERING SERVICES ARE REQUIRED BY SUCH LAW FOR SUCH PURPOSES.

08. A WRITTEN CERTIFICATE OF CONSTRUCTION COMPLIANCE, INCLUDING THE RESULTS OF HYDROSTATIC LEAKAGE TESTS, MADE BY THE PROFESSIONAL ENGINEER SUPERVISING THE CONSTRUCTION, SHALL BE SUBMITTED TO THE ERIE COUNTY DEPART. OF ENVIRONMENT PLANNING AND NEW YORK DEPARTMENT OF ENVIRONMENTAL CONSERVATION WITHIN THIRTY (30) DAYS AFTER CONSTRUCTION COMPLETION.

09. UNSUITABLE MATERIALS SUCH AS FROZEN ORGANIC AND/OR VEGETABLE MATERIAL, DEBRIS, TREES, LUMBER, LARGE STONES OR CLODS (6.0" OR LARGER), MUCK, PEAT, ORGANIC SILT WILL NOT BE ACCEPTABLE FILL AND CERTAIN MAN-MADE DEPOSITS OF INDUSTRIAL WASTE, SLUDGE OR LANDFILL MAY ALSO BE DETERMINED AS UNSUITABLE HAZARDOUS MATERIAL.

10. THE COMPACTION OF ALL MATERIALS WILL OCCUR AT 6" INCREMENTS.

11. VERIFICATION OF ALL EXISTING EASEMENTS IS THE RESPONSIBILITY OF THE DESIGN ENGINEER AND THEY MUST BE SHOWN ALONG WITH ALL PROPOSED EASEMENTS ON PLAN DRAWINGS.

12. SHOULD A FLUID CONDITION BE ENCOUNTERED AT THE TRENCH BOTTOM, THE CONTRACTOR IS TO INSTALL ADDITIONAL STONE CRADLE AS ORDERED BY THE ENGINEER.

13. ALL PIPE CROSSING UNDER PAVED AREAS ARE TO BE BACKFILLED TO SUBGRADE WITH COMPACTED SELECT MATERIAL TO FIVE (5) FEET OUTSIDE THE PAVEMENT EDGES.

14. THE CONTRACTOR SHALL RETAIN THE SERVICES OF A QUALIFIED TREE EXPERT TO REMOVE, WHERE NECESSARY, BRANCHES WHICH INTERFERE WITH THE CONSTRUCTION OPERATION, OR REPAIR TREES HAVING SUFFERED DAMAGE BY CONSTRUCTION ACTIVITIES. THE COST INVOLVED IN THE ABOVE IS TO BE INCLUDED IN THE VARIOUS ITEMS OF THE CONTRACT.

15. SEWERS SHALL BE LAID AT LEAST TEN (10) FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATERMAIN. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE. IN CASES WHERE IT IS NOT PRACTICAL TO MAINTAIN A TEN FOOT SEPARATION, THE APPROPRIATE REVIEWING AGENCY MAY ALLOW DEVIATION ON A CASE-BY-CASE BASIS, IF SUPPORTED BY DATA FROM THE DESIGN ENGINEER. SUCH DEVIATION MAY ALLOW INSTALLATION OF THE SEWER CLOSER TO A WATERMAIN, PROVIDED THAT THE WATERMAIN IS IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF LOCATED ON ONE SIDE OF THE SEWER AND AT AN ELEVATION SO THE BOTTOM OF THE WATERMAIN IS AT LEAST 18" (46CM) ABOVE THE TOP OF THE SEWER.

16. SEWERS CROSSING WATERMAINS SHALL BE LAID TO PROVIDE MINIMUM VERTICAL DISTANCE OF 18" (46CM) BETWEEN THE OUTSIDE OF A WATERMAIN AND THE OUTSIDE OF THE SEWER. THIS SHALL BE THE CASE WHERE THE WATERMAIN IS EITHER ABOVE OR BELOW THE SEWER. THE CROSSING SHALL BE ARRANGED SO THAT THE SEWER JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE WATERMAIN JOINTS. WHERE A WATERMAIN CROSSES UNDER A SEWER, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER, TO PREVENT DAMAGE TO THE WATERMAIN.

17. WHEN IT IS IMPOSSIBLE TO OBTAIN PROPER HORIZONTAL AND VERTICAL SEPARATION AS STIPULATED ABOVE, THE SEWER SHALL BE DESIGNED AND CONSTRUCTED EQUAL TO WATER PIPE AND SHALL BE PRESSURE TESTED AS TO ASSURE WATERTIGHTNESS PRIOR TO BACKFILLING.

18. THE PIPE SHALL BE P.V.C. SEWER PIPE CONFORMING TO THE LATEST REVISIONS OF ASTM DESIGNATION D-3034, SDR-35, INSTALLED IN ACCORDANCE WITH ASTM.

19. THE MANHOLE COVERS ARE TO BEAR THE INSCRIPTION "AMHERST SANITARY".

SANITARY SEWER TESTING METHODS

GENERAL NOTES

(A) LEAKAGE TESTS

01. THE TEST PERIOD WHEREIN THE MEASUREMENTS ARE TAKEN SHALL NOT BE LESS THAN 24 HOURS, REGARDLESS OF THE TEST METHOD USED.

02. THE TOTAL LEAKAGE OF ANY SECTION TESTED BY ANY TEST METHOD SHALL NOT EXCEED THE RATE OF 200 GALLONS PER MILE OF PIPE PER 24 HOURS PER INCH OF NOMINAL PIPE DIAMETER.

03. MANHOLES SHALL BE CONSIDERED AS SECTIONS OF 48" DIAMETER PIPE AND THE EQUIVALENT LEAKAGE ALLOWANCE SHALL BE COMPUTED PER NOTE 02 USING THE SUBMERGED HEIGHT OF MANHOLE AS THE LENGTH.

04. WHEN MANHOLES ARE TESTED SEPARATELY, ALL PIPE OPENINGS SHALL BE PLUGGED AND THE TEST PROCEDURES AND CRITERIA SHALL BE APPLIED IN THE SAME MANNER AS FOR TESTS INVOLVING ONLY THE PIPE OR A COMBINATION OF PIPE AND MANHOLES.

(B) INFILTRATION TEST CRITERIA FOR USE

01. THIS TEST METHOD MAY ONLY BE USED WHEN GROUND WATER LEVELS ARE AT LEAST TWO (2) FEET ABOVE THE TOP OF THE PIPE FOR THE ENTIRE LENGTH OF THE SECTION TO BE TESTED DURING THE ENTIRE PERIOD OF THE TESTS.

02. GROUND WATER LEVELS MAY BE MEASURED IN AN OPEN TRENCH OR IN STANDPIPES PREVIOUSLY PLACED IN BACKFILLED TRENCHES DURING BACKFILLING.

03. THE NUMBER OF STANDPIPES REQUIRED AND LOCATION OF THE SAME ARE TO BE AS ORDERED BY THE ENGINEER. STANDPIPES MAY BE OF ANY PIPE MATERIAL BUT MUST BE OF SUCH DIAMETER (2-1/2" MINIMUM) AS TO PERMIT THE INSERTION OF A RULE OR LEVEL ROD. CRUSHED STONE SHALL BE PLACED AROUND THE LOWER OPEN ENDS OF THE STANDPIPES.

04. STANDPIPES ARE TO BE REMOVED AT THE SATISFACTORY COMPLETION OF THE TESTS.

05. IF IN LIEU OF STANDPIPES, THE TRENCH IS TO BE LEFT OPEN FOR GROUND WATER OBSERVATION, THE LENGTH OF UNBACKFILLED TRENCH AT ANY ONE TIME MAY HAVE TO BE LIMITED FOR REASONS OF SAFETY.

(C) EXFILTRATION TEST CRITERIA FOR USE

01. THIS TEST CONSISTS OF FILLING THE PIPE WITH WATER TO PROVIDE A HEAD OF AT LEAST TWO (2) FEET ABOVE THE TOP OF THE PIPE OR ABOVE GROUND WATER WHICHEVER IS HIGHER AT THE HIGHEST POINT OF THE PIPE LINE UNDER TEST, AND THEN MEASURING THE LOSS OF WATER TO MAINTAIN THE ORIGINAL LEVEL.

02. IN THIS TEST THE PIPE LINE MUST BE FILLED WITH WATER AND ALLOWED TO REMAIN SO FILLED FOR AT LEAST 24 HOURS PRIOR TO TAKING MEASUREMENTS.

03. REGARDING GROUND WATER MEASUREMENTS: SEE NOTES 02 THROUGH 05 ABOVE.

04. REGARDING THE TEST STANDPIPE: THERE MUST BE SOME POSITIVE METHOD OF RELEASING ENTRAPPED AIR IN THE SEWER PRIOR TO TAKING MEASUREMENTS.

(D) DEFLECTION TEST FOR PVC SEWER PIPE

01. DEFLECTION TESTS SHALL BE PERFORMED ON ALL FLEXIBLE GRAVITY SEWER PIPE. TESTS SHALL BE CONDUCTED AFTER THE FINAL BACKFILL HAS BEEN IN PLACE FOR AT LEAST 30 DAYS.

02. NO PIPE SHALL EXCEED DEFLECTION OF 5%. DEFLECTION GAGE MAY BE BORROWED FROM THE TOWN ENGINEER FOR 8" AND 10" PIPE. THE DEFLECTION TEST MUST BE EXECUTED AFTER 30 DAYS OF PLACEMENT OF FINAL BACKFILL. THE TEST WILL ALSO BE DONE WITHOUT MECHANICAL PULLING DEVICES.

MANHOLE PLACEMENT AND MAINTENANCE DURING CONSTRUCTION AND DEVELOPMENT

CONTRACTOR AND/OR DEVELOPERS SHALL CONSTRUCT ALL MANHOLE STRUCTURES IN ACCORDANCE WITH THE TOWN OF AMHERST STANDARD SPECIFICATIONS OR THE SPECIFICATIONS OF THE DESIGN ENGINEER WHEN REQUIRED BY THE TOWN.

ALL MANHOLES ARE TO BE DESIGNED AND FURNISHED WITH RIM ELEVATIONS AT FINAL FINISHED GRADES. THE CONTRACTOR, DEVELOPER, OR HOME BUILDER SHALL BE RESPONSIBLE FOR ALL CORRECTIONS, ADJUSTMENTS, AND MODIFICATIONS NEEDED FOR RAISING, LOWERING, OR REPLACING ANY AND ALL MANHOLES AS PROPOSED FOR THE FACILITY.

ALL AS-BUILT STATIONING, LINE AND GRADE IMPROVEMENTS, INVERT AND RIM ELEVATIONS, "Y" LOCATIONS, INSPECTION REPORTS, ROADWAY OR STREET NAMES, RIGHT-OF-WAY WIDTHS, AND EASEMENT LINES SHALL BE FURNISHED TO THE TOWN ON A SET OF MYLAR DRAWINGS PRIOR TO TAP-IN APPROVAL, PIP ACCEPTANCE, AND/OR RELEASE OF FINAL PAYMENT.

ALL MANHOLE STRUCTURES SHALL BE MADE ACCESSIBLE TO THE TOWN OF AMHERST TELEVISION/MAINTENANCE CREWS. THE CONTRACTOR AND/OR DEVELOPER SHALL PROVIDE A DRY, WELL COMPACTED, STABLE SURFACE FREE FROM SHOW AND OBSTRUCTIONS FOR SAFE AND OPEN ACCESS WITH TOWN VEHICLES. SHOULD THE CONTRACTOR AND/OR DEVELOPER WISH TV INSPECTIONS DURING WET WEATHER/WET SOFT SOIL CONDITIONS, HE SHALL PROVIDE ALL NECESSARY GRANULAR BACKFILL, DISTRIBUTED AND COMPACTED TO SUPPLY ACCESS TO EACH MANHOLE. THE CONTRACTOR AND/OR DEVELOPER SHALL BEAR ALL COSTS OF TOWING, DOWN TIME, CREW TIME, AND DAMAGE ALONG WITH RESTORATION, SHOULD SUCH ACCESSWAYS FAIL.

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STATE OF NEW YORK CHRISTOPHER WOOD 076394 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Sanitary Sewer General Notes

DRAWING NO.
C-403

Project no.: 21-011

Attachment: SP-2021-05_drawings_092222 (23057 : Sp-2021-05)

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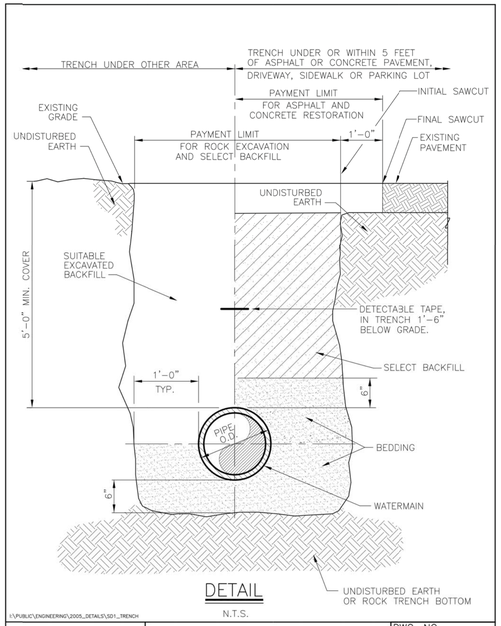
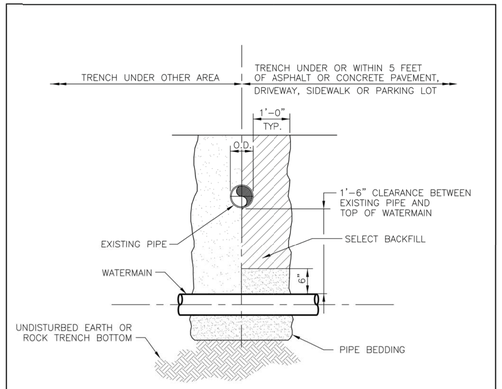


DETAIL
N.T.S.

I:\PUBLIC\ENGINEERING\2005_DETAILS\SD1_TRENCH

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TRENCH THROUGH 12–INCH DIAMETER WATERMAIN	DWG. NO. SD1	
		DATE 4/28/92	REVISED 10/05



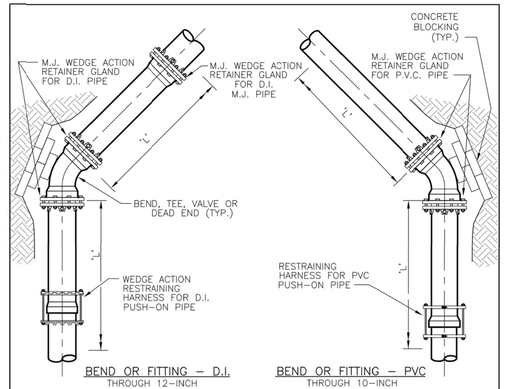
NOTES:

1. ALL EXISTING UTILITIES MUST BE SUPPORTED DURING CONSTRUCTION OF THE NEW WATERMAIN.
2. WHEN CROSSING A SEWERLINE WITH A NEW WATERMAIN, ONE FULL PIPE LENGTH (18 FT. MIN.) SHALL BE USED AT THE POINT OF CROSSING. THE WATERMAIN SHALL BE PLACED SO THAT BOTH JOINT ENDS ARE AS FAR AS POSSIBLE FROM THE EXISTING SEWERLINE.

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\2005_DETAILS\SD2_PIPE_CROSSING

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL PIPE CROSSING	DWG. NO. SD2	
		DATE 4/28/92	REVISED 10/05



BEND OR FITTING – D.I. THROUGH 12–INCH

BEND OR FITTING – PVC THROUGH 10–INCH

RESTRAINED JOINT SCHEDULE					
PIPE SIZE	PIPE TYPE	11.25° ELBOW	22.5° ELBOW	45° ELBOW	TEE BRANCH, 90° BEND, VALVE OR DEAD END
		'L'	'L'	'L'	'L'
6"	PVC	13'	25'	50'	120' MIN.
8"	PVC	15'	30'	59'	122' MIN.
8"	D.I.P.	15'	30'	59'	122' MIN.

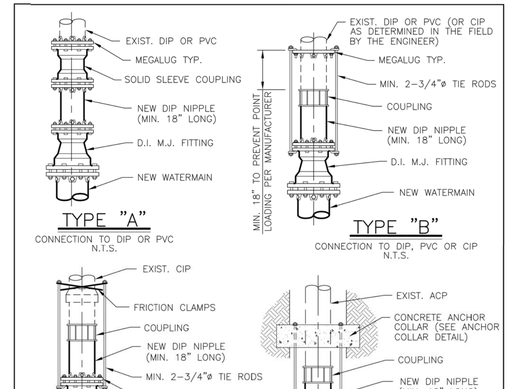
NOTES:

1. DIMENSION 'L' REPRESENTS THE LENGTH OF RESTRAINED PIPE REQUIRED IN FEET EACH SIDE OF THE PIPE FITTING.

PLAN
N.T.S.

I:\PUBLIC\ENGINEERING\2005_DETAILS\SD4_REST_JOINT_SCHED

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL RESTRAINED JOINT SCHEDULE	DWG. NO. SD4	
		DATE 4/28/92	REVISED 10/05

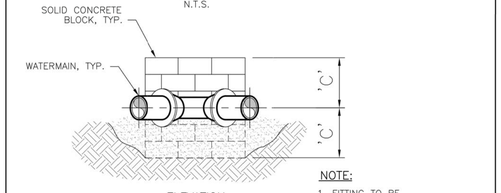


NOTES:

1. VALVES AND TEES MAY BE HARNESSED SIMILARLY.
2. HARNESSING IS FOR RESISTANCE TO INTERNAL PRESSURE–PIPE ITSELF MUST BE SUPPORTED ON FIRM BEDDING AND CAREFULLY BACKFILLED.
3. COAT ALL EXPOSED SURFACES OF HARNESS ASSEMBLY WITH BITUMINOUS COATING.
4. TIE RODS SHALL BE PLACED ON SIDES OF PIPE.

I:\PUBLIC\ENGINEERING\2005_DETAILS\SD5_CONN_EXIST_WMAIN

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TYPICAL CONNECTION TO EXISTING WATERMAIN THROUGH 12–INCH DIAMETER WATERMAIN	DWG. NO. SD5	
		DATE 3/05	REVISED 10/05



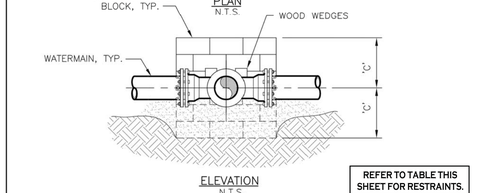
NOTE:

1. FITTING TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.

DIMENSION SCHEDULE												
PIPE SIZE	11.25° ELBOW			22.5° ELBOW			45° ELBOW			90° ELBOW		
	'A'	'B'	'C'	'A'	'B'	'C'	'A'	'B'	'C'	'A'	'B'	'C'
8"	1.5'	1.5'	2.5'	2.5'	1.5'	2.5'	3.0'	1.5'	3.5'	3.5'	1.5'	5.0'

I:\PUBLIC\ENGINEERING\2005_DETAILS\SD6_THRUST_BLOCKS_ELBOW

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR ELBOW FITTING	DWG. NO. SD6	
		DATE 4/28/92	REVISED 10/05



NOTES:

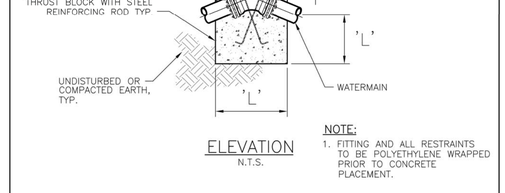
1. THRUST BLOCK REQUIRED FOR TEES, HYDRANT LATERAL TEES AND TAPPING SLEEVE INSTALLATIONS.
2. FITTING TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.

BRANCH TEE SIZE	DIMENSION SCHEDULE		
	'A'	'B'	'C'
6"	1'-0"	1'-0"	0'-6"
8"	1'-6"	1'-0"	0'-6"

REFER TO TABLE THIS SHEET FOR RESTRAINTS.

I:\PUBLIC\ENGINEERING\2005_DETAILS\SD7_THRUST_BLOCKS_TEE

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR TEE OR "DEAD END" FITTING	DWG. NO. SD7	
		DATE 4/28/92	REVISED 10/05



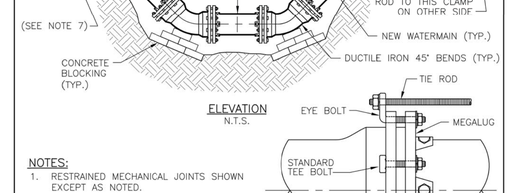
NOTE:

1. FITTING AND ALL RESTRAINTS TO BE POLYETHYLENE WRAPPED PRIOR TO CONCRETE PLACEMENT.

DIMENSION SCHEDULE															
PIPE SIZE	PIPE TYPE	11.25° ELBOW				22.5° ELBOW				45° ELBOW					
		'A'	'W'	'L'	ROD ø	'A'	'W'	'L'	ROD ø	'A'	'W'	'L'	ROD ø		
8"	D.I.P	12"	1'-0"	1'-0"	1/2"	12"	1'-9"	1'-9"	1/2"	1'-6"	2'-0"	2'-0"	1/2"		

I:\PUBLIC\ENGINEERING\2005_DETAILS\SD8_THRUST_BLOCKS_VBEND

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR VERTICAL BEND	DWG. NO. SD8	
		DATE 4/28/92	REVISED 10/05



NOTES:

1. RESTRAINED MECHANICAL JOINTS SHOWN EXCEPT AS NOTED.
2. TIE TOP BENDS BACK TO FULL LENGTH OF PIPE IN UNEXCAVATED TRENCH.
3. VALVES, TEES AND HYDRANTS MAY BE HARNESSED SIMILARLY.
4. HARNESSING IS FOR RESISTANCE TO INTERNAL PRESSURES–PIPE ITSELF MUST BE SUPPORTED ON FIRM BEDDING AND CAREFULLY BACKFILLED.
5. COAT ALL EXPOSED SURFACES OF HARNESS ASSEMBLY WITH BITUMINOUS COATING.
6. TIE RODS SHALL BE PLACED ON SIDES OF PIPE.
7. IF EXISTING PIPE IS CIP OR PVC, CONNECT TO NEW FITTING ONLY WHEN ALLOWED BY ENGINEER.

TIE ROD SCHEDULE			
PIPE SIZE	PIPE TYPE	ROD ø	NUMBER OF RODS
8"	PVC	3/4"	2

I:\PUBLIC\ENGINEERING\2005_DETAILS\SD10_HARN_OFFSET_EXIST_WMAIN

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL HARNESSING DETAILS–INSTALL OFFSET IN EXISTING WATERMAIN	DWG. NO. SD10	
		DATE 6/00	REVISED 10/05

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STATE OF NEW YORK CHRISTOPHER WOOD 076304 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Water Details

DRAWING NO.

C-404

Project no.: 21-011

Attachment: SP-2021-05_drawings_092222 (23057 : Sp-2021-05)

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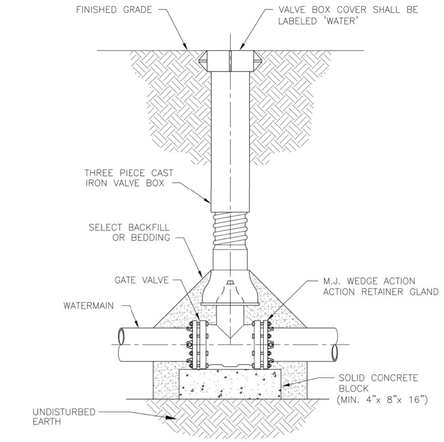
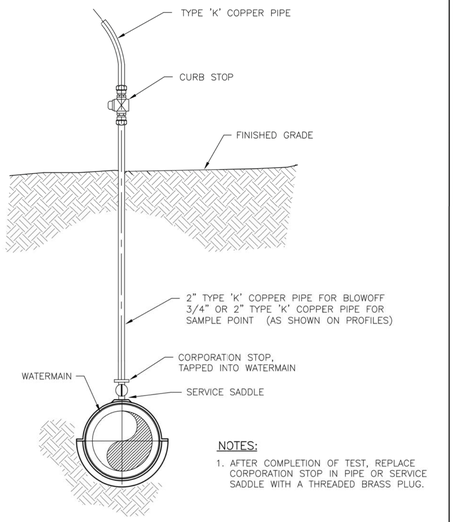


NOTES:
1. VALVE SHALL NOT SUPPORT VALVE BOX.
2. GATE VALVE SHALL BE INSTALLED LEVEL.
3. VALVE BOX SHALL BE PLUMB TO GRADE, WITH OPERATING NUT CENTERED IN BOX.

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD11_GATE_VALVE_SET

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GATE VALVE SETTING	DWG. NO. SD11	
		DATE 4/28/92	REVISED 02/17

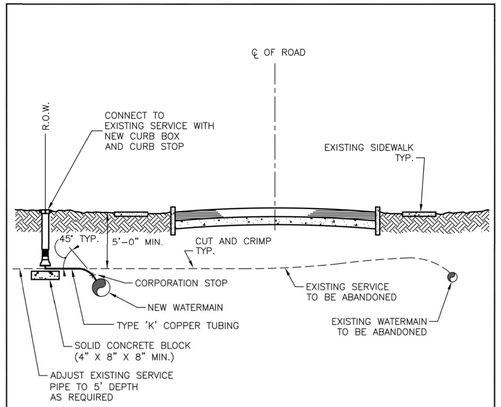


NOTES:
1. AFTER COMPLETION OF TEST, REPLACE CORPORATION STOP IN PIPE OR SERVICE SADDLE WITH A THREADED BRASS PLUG.

ELEVATION
N.T.S.

I:\PUBLIC\ENGINEERING\2005_DETAILS\SD17_TEMP_BO_SAMP_PT

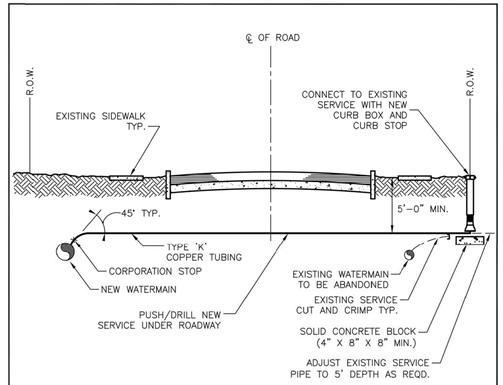
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TEMPORARY BLOW-OFF/SAMPLING POINT	DWG. NO. SD17	
		DATE 4/28/92	REVISED 10/05



NOTES:
1. EXISTING SERVICES SHALL BE CRIMPED AND ABANDONED IN PLACE.
2. SERVICE SADDLES SHALL BE USED UNDER THE FOLLOWING CONDITIONS:
   A. WHEN SERVICES ARE PLACED ON 4" OR SMALLER PIPES.
   B. WHEN SERVICES LARGER THAN 1" ARE PLACED ON A 6" PIPE.
   C. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON AN 8" PIPE.
   D. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON DUCTILE IRON PIPE.
   E. WHEN TAPPING ALL PLASTIC (PVC) PIPE.
   F. WHEN TAPPING ALL ASBESTOS-CEMENT PIPE.
3. CURB BOXES SHALL NOT BE PLACED IN SIDEWALKS, DRIVEWAYS, OR CURB RAMPS.
4. UNIONS ON COPPER TUBING ARE NOT ALLOWED UNLESS APPROVED BY ECWA PRIOR TO INSTALLATION.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD15_NS_SERV_REPLACE

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL NEAR SIDE SERVICE REPLACEMENT/INSTALLATION	DWG. NO. SD15	
		DATE 4/92	REVISED 09/16



NOTES:
1. EXISTING SERVICES SHALL BE CRIMPED AND ABANDONED IN PLACE.
2. SERVICE SADDLES SHALL BE USED UNDER THE FOLLOWING CONDITIONS:
   A. WHEN SERVICES AND PLACED ON 4" OR SMALLER PIPES.
   B. WHEN SERVICES LARGER THAN 1" ARE PLACED ON A 6" PIPE.
   C. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON AN 8" PIPE.
   D. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON DUCTILE IRON PIPE.
   E. WHEN TAPPING ALL PLASTIC (PVC) PIPE.
   F. WHEN TAPPING ALL ASBESTOS-CEMENT PIPE.
3. CURB BOXES SHALL NOT BE PLACED IN SIDEWALKS, DRIVEWAYS, OR CURB RAMPS.
4. USE POLYETHYLENE FOR 3/4" AND 1" SERVICES GREATER THAN 100 FEET IN LENGTH, AND FOR 1-1/2" AND 2" SERVICES GREATER THAN 60 FEET IN LENGTH. ALL POLYETHYLENE SERVICES SHALL INCLUDE A TRACER WIRE FOR DETECTION BY ECWA FORCES.
5. UNIONS ON COPPER TUBING ARE NOT ALLOWED UNLESS APPROVED BY ECWA PRIOR TO INSTALLATION.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD16_FS_SERV_REPLACE

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL FAR SIDE SERVICE REPLACEMENT/INSTALLATION	DWG. NO. SD16	
		DATE 4/92	REVISED 09/16

TEE – PLAN
N.T.S.

VERTICAL BEND – ELEVATION
N.T.S.

HORIZONTAL BEND – PLAN
N.T.S.

GATE VALVE – ELEVATION
N.T.S.

NOTES:
1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP IS NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PIPE (OR POLYWRAP IF DIP) WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD39A_POLYWRAPPING_FITTINGS

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING CAST/DUCTILE IRON FITTINGS	DWG. NO. SD39A	
		DATE 3/18	REVISED 12/18

BUTTERFLY VALVE – ELEVATION
N.T.S.

END CAP / PLUG
N.T.S.

SOLID SLEEVE OR RESTRAINED COUPLING
N.T.S.

EXTERNAL JOINT RESTRAINT
N.T.S.

NOTES:
1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP IS NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PIPE (OR POLYWRAP IF DIP) WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD39B_POLYWRAPPING_FITTINGS

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING CAST/DUCTILE IRON FITTINGS	DWG. NO. SD39B	
		DATE 12/18	REVISED

TEE – PLAN
N.T.S.

VERTICAL BEND – ELEVATION
N.T.S.

HORIZONTAL BEND – PLAN
N.T.S.

GATE VALVE – ELEVATION
N.T.S.

NOTES:
1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON GATE VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PVC PIPE WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD39_POLYWRAPPING_FITTINGS

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING DUCTILE IRON FITTINGS ON PVC PIPE	DWG. NO. SD39	
		DATE 3/18	REVISED

STEP 1.
CUT A SECTION OF POLYETHYLENE TUBE APPROXIMATELY 2 FEET LONGER THAN THE PIPE SECTION. REMOVE ALL LUMPS OF CLAY, MUD, CINDERS, OR OTHER MATERIALS THAT MIGHT HAVE ACCUMULATED ON THE PIPE SURFACE DURING STORAGE. SLIP THE POLYETHYLENE TUBE ACCORDION-FASHION ON THE END OF THE PIPE. PULL BACK THE OVERHANGING END OF THE TUBE UNTIL IT CLEARS THE PIPE END.

STEP 2.
DIG A SHALLOW BELL HOLE IN THE TRENCH BOTTOM AT THE JOINT LOCATION TO FACILITATE INSTALLATION OF THE POLYETHYLENE TUBE. LOWER THE PIPE INTO THE TRENCH AND MAKE UP THE PIPE JOINT WITH THE PROCEDURE SECTION OF PIPE.

STEP 3.
MOVE THE CABLE TO THE BELL END OF THE PIPE AND LIFT THE PIPE SLIGHTLY TO PROVIDE ENOUGH CLEARANCE TO EASILY SLIDE THE TUBE. SPREAD THE TUBE OVER THE ENTIRE BARREL OF THE PIPE. NOTE: MAKE SURE THAT NO DIRT OR OTHER BEDDING MATERIAL BECOMES TRAPPED BETWEEN THE WRAP AND THE PIPE.

STEP 4.
MAKE THE OVERLAP OF POLYETHYLENE TUBE BY PULLING BACK THE BUNCHED POLYETHYLENE FROM THE PRECEDING LENGTH OF PIPE AND SECURING IT IN PLACE. NOTE: THE POLYETHYLENE MAY BE SECURED IN PLACE BY USING TAPE OR PLASTIC TIE STRAPS.

STEP 5.
OVERLAP THE SECURED TUBE END WITH THE END OF THE NEW PIPE SECTION, FOR A MINIMUM OF 12 INCHES. SECURE THE NEW TUBE END IN PLACE. PIPE JOINT SHOULD HAVE TWO LAYERS OF POLYWRAP, EACH SECURED IN PLACE.

STEP 6.
TAKE UP THE SLACK IN THE TUBE ALONG THE BARREL OF THE PIPE TO MAKE A SNUG, BUT NOT TIGHT, FIT. FOLD EXCESS POLYETHYLENE BACK OVER THE TOP OF THE PIPE.

STEP 7.
SECURE THE FOLD AT SEVERAL LOCATIONS ALONG THE PIPE BARREL (APPROXIMATELY EVERY 3 FEET, MAXIMUM OF 5 FEET).

STEP 8.
REPAIR ALL THE SMALL RIPS, TEARS, OR OTHER TUBE DAMAGE WITH ADHESIVE TAPE. IF THE POLYETHYLENE IS BADLY DAMAGED, REPAIR THE DAMAGED AREA WITH A SHEET OF POLYETHYLENE AND SEAL THE EDGES OF THE REPAIR WITH ADHESIVE TAPE.

STEP 9.
CAREFULLY BACKFILL THE TRENCH ACCORDING TO THE PROCEDURES IN AWWA C600 STANDARD. TO PREVENT DAMAGE DURING BACKFILLING ALLOW ADEQUATE SLACK IN THE TUBE AT THE JOINT. BACKFILL SHOULD BE FREE OF CINDERS, ROCKS, BOULDERS, NAILS, STICKS, OR OTHER MATERIALS THAT MIGHT DAMAGE THE POLYETHYLENE. AVOID DAMAGING THE POLYETHYLENE WHEN USING TAMPING DEVICES.

NOTES:
1 – POLYETHYLENE WRAP (POLYWRAP) SHALL BE OF PROPER DIAMETER TO FIT OVER BELLS AND EXTERNAL WEDGE-ACTION RETAINER GLANDS.
2 – CAST AND DUCTILE IRON FITTINGS (BENDS, TEES, VALVES, ETC.) ARE TO BE WRAPPED IN POLYWRAP AND SECURED IN PLACE.
3 – DO NOT USE CHAINS, METAL WIRE, OR OTHER SUPPORTING SYSTEMS WHICH MAY DAMAGE THE POLYETHYLENE ENCASEMENT. REPLACE DAMAGED POLYWRAP ACCORDINGLY.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD32_POLY_WRAP

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYETHYLENE ENCASEMENT OF DUCTILE IRON PIPE	DWG. NO. SD32	
		DATE 06/16	REVISED 02/19

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STATE OF NEW YORK CHRISTOPHER WOOD 076994 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Water Details

DRAWING NO.
C-405

Project no.: 21-011

Attachment: SP-2021-05_drawings_092222 (23057 : Sp-2021-05)

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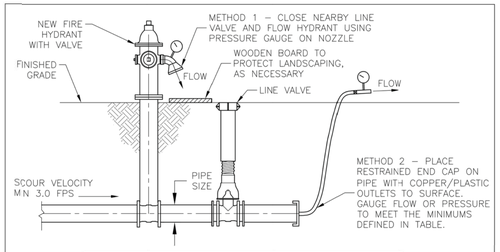


PIPE SIZE (IN)	REQUIRED FLOW (GPM)	METHOD 1 HYDRANT FLOW		METHOD 2 END CAP FLOW	
		2 1/2" NOZZLE PRESSURE (PSI)	4" NOZZLE PRESSURE (PSI)	2" I.D. PRESSURE (PSI)	3" I.D. PRESSURE (PSI)
6	275	7	1	7	2
8	500	9	2	22	5
10	750	20	4	50	10
12	1100	44	7	–	22
16	1900	–	20	–	62
20	3000	–	50	–	–

I.D. = INNER DIAMETER

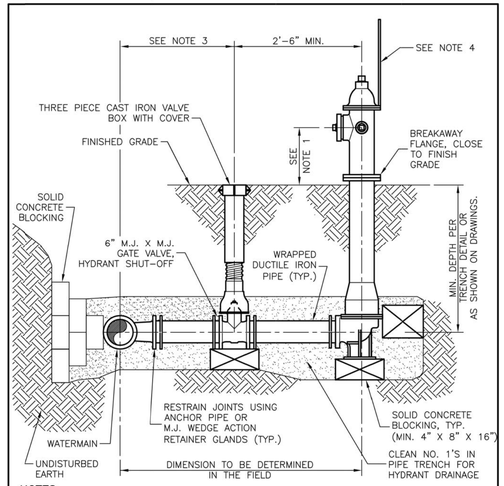
NOTES:

1. TO OBTAIN SCOUR VELOCITY (3.0 FPS) IN THE WATERLINE, CONTRACTOR SHALL ACHIEVE FLOWRATE AT NOZZLE DEFINED IN TABLE. PRESSURE GAUGE USED SHALL SHOW A HIGHER PRESSURE THAN THE MINIMUMS DEFINED IN THE TABLE.
2. OUTLET PRESSURE MEASURED BY PITOT GAUGE.
3. ENGINEER SHALL PROVIDE CALCULATIONS IF CONNECTIONS ARE OTHER THAN THOSE SHOWN, IF MULTIPLE CONNECTIONS ARE USED, OR AS REQUESTED BY ECWA.
4. TO FLUSH THREE PIPE VOLUMES, MINIMUM FLUSHING TIME (IN SECONDS) EQUALS THE LENGTH OF PIPE BEING FLUSHED, IN FEET.

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD36_WATERLINE_FLUSHING

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL WATERLINE FLUSHING	DWG. NO. SD36	
		DATE 6/16	REVISED 3/18



NOTES:

1. CENTERLINE OF THE LOWEST NOZZLE TO FINISHED GRADE SHALL BE A MIN. OF 15" & MAX. OF 18".
2. HYDRANT RISER SHALL BE INSTALLED PLUMB.
3. VALVE BOX SHALL NOT BE PLACED IN PAVEMENT.
4. RELOCATE HYDRANT MARKER (IF PRESENT), FOR WATERLINE REPLACEMENT PROJECTS ONLY.
5. HYDRANT FACE TO BE A MINIMUM OF 3' FROM THE BACK FACE OF ALL CURBS OR A MINIMUM OF 5' FROM ALL EDGES OF PAVEMENT (IF NO CURB).

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD13_HYD_INST

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL FIRE HYDRANT INSTALLATION	DWG. NO. SD13	
		DATE 6/00	REVISED 11/16

NOTES

1. All elevations refer to USGS NAVD83 datum.
2. The CONTRACTOR shall obtain necessary permits and furnish copies to the ENGINEER prior to commencing work.
3. The CONTRACTOR'S work area shall be confined to the limits of the right-of-ways and easements. The CONTRACTOR shall obtain any additional easements or work releases should the CONTRACTOR require additional area to accommodate his operations.
4. The CONTRACTOR shall provide maintenance and protection of traffic in accordance with the Erie County Highway Department standards and the NYSDOT Manual of Uniform Traffic Control Devices.
5. The locations and depths of existing underground utilities as shown on the plans and profiles are approximate. Other underground utilities not shown may be encountered. The CONTRACTOR shall perform test pits to verify the location and elevation of utilities at interconnections and crossings as shown, directed, or required. The CONTRACTOR shall excavate in advance of the pipe laying operation and expose all existing underground utilities to prevent damage during construction and to determine required changes in grade necessary to install the watermain to avoid conflicts.
6. The CONTRACTOR shall install those measures required to limit erosion of areas disturbed by the work. Clearing shall be performed on an as-needed basis, phased to reduce erosion and visual impact.
7. Blasting will not be permitted.
8. No more than one connection may be made to any existing watermain prior to testing, disinfection, and approval of the Waterline Installation Completed Works Approval Report(s) by the Erie County Water Authority and the Erie County Health Department.
9. The Erie County Water Authority shall only operate existing valves and fire hydrants, including newly installed valves and fire hydrants that have been placed into service. The CONTRACTOR is advised that watertight conditions may not exist when existing valves are closed.
10. The CONTRACTOR shall have all equipment, manpower, and materials required on site and ready for use prior to commencing any shut-down or removing any existing facilities from service. The CONTRACTOR shall notify all affected customers in writing of any shut-down at least 48 hours in advance. The CONTRACTOR shall notify the appropriate fire stations 48 hours in advance prior to taking any fire hydrants out of service. Any fire hydrants not in service shall be bagged in burlap or plastic. Any shut-down shall be limited to 4 consecutive hours. It may be necessary to schedule shut-downs at night, weekends, or other off hours so as to not affect schools, businesses or other customers, as determined by the ENGINEER. Shut-down requests shall be submitted to the Erie County Water Authority a minimum of 5 business days in advance of the requested shut-down date.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD29_GENERAL_NOTES

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GENERAL NOTES	DWG. NO. SD29	
		DATE 3/05	REVISED 7/17

11. All watermain piping shall be installed with a minimum of 5'-0" of cover.
12. All watermain piping shall be installed with a minimum of 1'-6" of vertical clearance and 10'-0" of horizontal clearance from sanitary and storm piping, measured from the outside of the pipes at the point of crossing.
13. If the material at the design grade is unsuitable as determined by the ENGINEER, the CONTRACTOR, when ordered in writing, shall excavate additional material to the depth necessary and shall backfill to the proposed grade with the select granular material.
14. The installation of 90 degree bends in the watermain is not allowed, unless approved by the Erie County Water Authority.
15. Thrust restraint for watermain piping through 12-inch diameter shall consist of thrust blocks and pipe joint restraint.
16. The CONTRACTOR shall notify the owner of any utility pole in advance of any excavation work that will take place within 5'-0" of the utility pole. The CONTRACTOR shall include the cost of temporary pole support in the appropriate bid item.Where utility poles are required to be supported during construction, the CONTRACTOR shall make all necessary arrangements with the utility company.
17. If materials are encountered during the construction that are suspected of being contaminated, the CONTRACTOR shall immediately notify the NYSDEC for direction regarding testing, separation, containment, and disposal procedures.
18. Existing fire hydrants removed during construction and not reinstalled as part of the work shall be scheduled and returned to the Erie County Water Authority Service Center, 3030 Union Road, Cheektowaga, New York 14227.
19. The CONTRACTOR shall cold patch all trench excavations in traveled areas including roads, driveways, sidewalks, and parking areas.
20. The CONTRACTOR shall not restrict access for school buses or any emergency vehicles.
21. The use of existing fire hydrants for any reason is prohibited without prior approval of the Erie County Water Authority. This includes newly installed fire hydrants that have been placed into service.
22. The CONTRACTOR shall submit procedures for testing and disinfection of the watermain to the ENGINEER for review prior to the start of testing.
23. The CONTRACTOR shall be present and assist in the Final Walk inspection. The CONTRACTOR shall provide sufficient personnel and equipment to demonstrate to the ENGINEER that all valves, fire hydrants, and curb stops operate as required.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD30_GENERAL_NOTES

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GENERAL NOTES	DWG. NO. SD30	
		DATE 3/05	REVISED 7/17

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STATE OF NEW YORK · CHRISTOPHER WOOD · 076394 · PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Water Details & Notes

DRAWING NO.
C-406

Project no.: 21-011

Attachment: SP-2021-05_drawings_092222 (23057 : Sp-2021-05)

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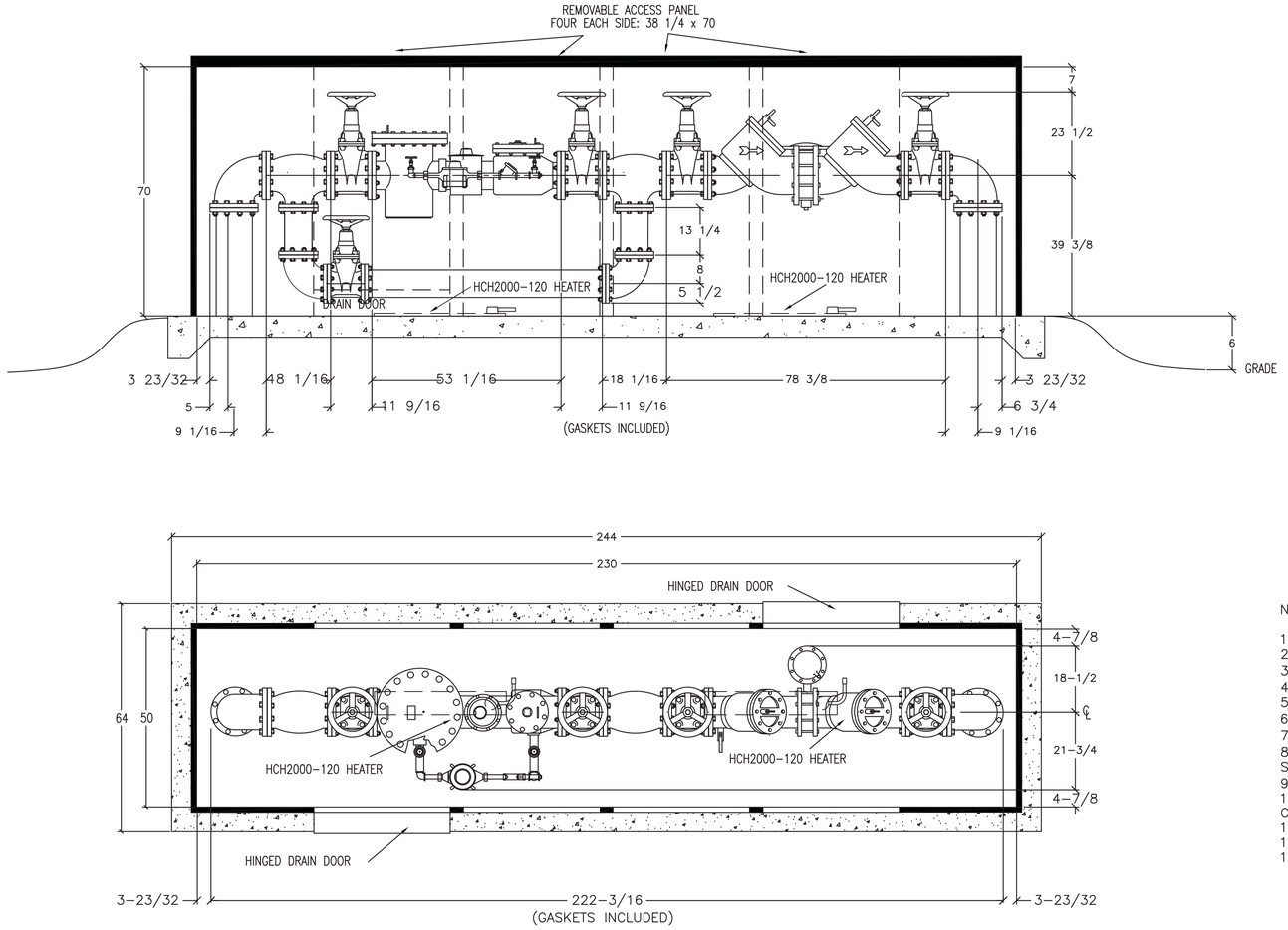

NOTES:

1. BACKFLOW PREVENTER DIMENSIONS FURNISHED BY WATTS
2. ALL DIMENSIONS ARE IN INCHES
3. WALL & INSULATION THICKNESS IS 1 1/2"
4. ROOF & INSULATION THICKNESS IS 3"
5. ENCLOSURE SHOWN IS SAFE-T-COVER MODEL 1000D-ALC00-17
6. EXTERIOR ENCLOSURE DIMENSIONS: 53"W x 233"L x 73" H
7. CONCRETE PAD IS 64"W x 244"L x 6"THK W/W.W.F. 6X6/10X10
8. METER SHOWN: 8" PROTECTUS III, SPOOL PIECE & METER SUPPLIED BY ECWA, VERIFY DIMENSIONS PRIOR TO ORDERING
9. RPZ SHOWN: 8" WATTS 909 NRS
10. CONTRACTOR TO INSTALL ELECTRIC SERVICE TO ENCLOSURE, COORDINATE SOURCE WITH OWNER
11. INSTALL A 120V GFI OUTLET IN THE ENCLOSURE
12. HEATERS TO HAVE THERMOSTAT CONTROL
13. ALL PIPING WITHIN THE ENCLOSURE SHALL BE DUCTILE IRON

LEGEND:

REMOVABLE ACCESS PANEL 38 1/4"W x 70"H w/DRAIN DOOR

REMOVABLE ACCESS PANEL 38 1/4"W x 70"H

8"METER & RPZ INSULATED ENCLOSURE

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STATE OF NEW YORK
CHRISTOPHER WOOD
076394
LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Insulated
Enclosure Detail

DRAWING NO.
C-407

Project no.: 21-011

Attachment: SP-2021-05_drawings_092222 (23057 : Sp-2021-05)

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NOTE:
PETITIONER AND PETITIONER'S CONTRACTOR SHALL TAKE ALL REASONABLE MEASURE TO PROTECT EXISTING TREES WHICH ARE TO BE PRESERVED FROM ALL POSSIBLE TYPES OF ROOT, TRUNK, AND LIMB DAMAGE; INCLUDING BUT NOT LIMITED TO, RETAINING WALLS WHICH PREVENT FILLING ON TOP OF ROOTS OR EXCAVATING TREE ROOTS AS REQUIRED BY §203-7-2-3 B (3) OF TOWN CODE.

PROPOSED TOWNHOUSE UNITS - SEE 'DETAIL-A' ON THIS SHEET FOR TYPICAL PLANTING DETAIL

PROPOSED DUPLEX LOTS - SEE 'DETAIL-B' ON THIS SHEET FOR TYPICAL PLANTING DETAIL

PROPOSED 1-STORY 6 UNIT BUILDING W/ ATTACHED GARAGES

PROPOSED 1-STORY 6 UNIT BUILDING W/ ATTACHED GARAGES

@ 2-STORY DUPLEX TOWNHOME UNITS (16 UNITS TOTAL)

150' x 70' 4-STORY APARTMENT BUILDING WITH (12) APARTMENT UNITS PER FLOOR (48 UNITS TOTAL)

@ 2-STORY DUPLEX TOWNHOME UNITS (24 UNITS TOTAL)

225' x 80' 4-STORY MIXED USE BUILDING WITH 15,000 SF COMMERCIAL & (9) APARTMENT UNITS ON 1ST FLOOR, APARTMENTS ON FLOORS 2 THRU (50 UNITS)

225' x 80' 4-STORY MIXED USE BUILDING WITH 15,000 SF COMMERCIAL & (9) APARTMENT UNITS ON 1ST FLOOR, APARTMENTS ON FLOORS 2 THRU (50 UNITS)

6 GARAGES

7 GARAGES

DOG PARK

RECREATION TRAIL (10' WIDE)

STORM WATER MANAGEMENT AREA

TERRACED STEPS

DODGE ROAD RELOCATION

PARALLEL W/WEST LINE OF LOT 76 (CENTERLINE OF SWEET HOME ROAD)

PARALLEL W/SOUTH LINE OF LOT 76

N 88°55'52" E 700.84'

N 88°55'52" E 930.61'

L.7659 P.435 & 437

L.-11278, P.-7124

P.O.B.

N 02°14'22" W 118.34'

S 01°24'08" E 145.0'

S 64°16'46" W 35.20'

S 10°07'24" E 43.27'

S 11°02'55" W 83.05'

S 11°56'26" E 236.32'

S 29°42'37" W 141.02'

N 01°04'00" W 305.54'

S 87°22'49" W 322.92'

N 02°38'15" W 172.66'

S 45°19'36" E 99.73'

N 35°36'42" W 156.92'

S 83°36'25" W 105.17'

S 67°11'17" W 128.98'

N 67°53'17" W 50.93'

S 23°50'17" W 47.47'

S 39°43'51" W 50.80'

S 57°29'39" W 52.30'

DEED RESTRICTED AREA "B"
TOTAL AREA: = 32.52± ACRES

LOT 1 LOT 2 LOT 3 LOT 4 LOT 5 LOT 6 LOT 7 LOT 8 LOT 9 LOT 10 LOT 11

LOT 12 LOT 13 LOT 14 LOT 15 LOT 16 LOT 17 LOT 18 LOT 19 LOT 20

LOT 21 LOT 22 LOT 23 LOT 24 LOT 25 LOT 26 LOT 27

CATV. HYD. WATER WELL TOP OF HYDRANT ELEV.=91.68 CONCRETE SIDEWALK ASPHALT DRIVE ASPHALT PARKING LOT

SITE PLAN

SCALE: 1"=50'

ROBERT C. WALTER
REGISTERED LANDSCAPE ARCHITECT
MEMBER AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS
2765 DODGE ROAD, EAST AMHERST N.Y. 14051-2113
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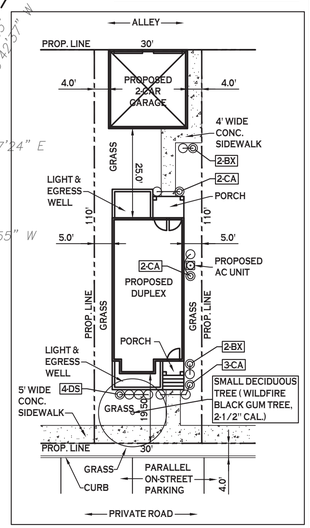
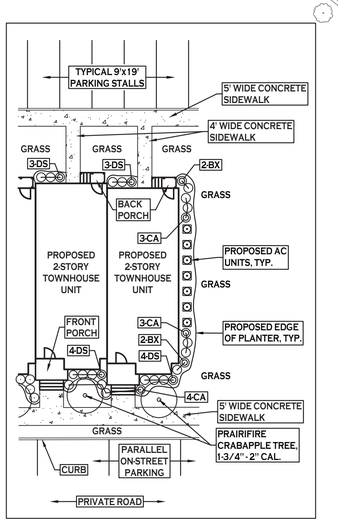


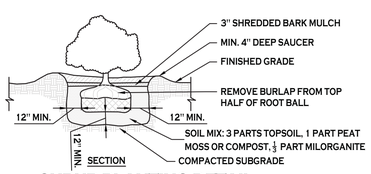
TYP. DUPLEX LOT (DETAIL-B)

SCALE: 1"=20'

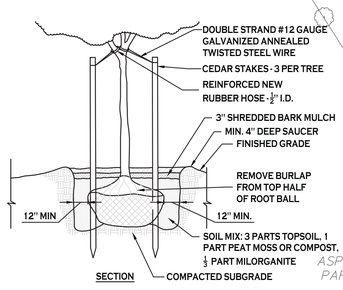


TYP. TOWNHOUSE LOT (DETAIL-A)

SCALE: 1"=20'



SHRUB PLANTING DETAIL



TREE PLANTING DETAIL

PLANTING NOTES:

1. ALL INTERIOR LANDSCAPED AREAS SHALL HAVE A MINIMUM PLANTING SOIL DEPTH OF THREE (3) FEET AND BE FREE FROM ALL FORMS OF CONSTRUCTION DEBRIS AND FOREIGN MATERIAL.
2. ALL TREE PIT SAUCERS, SHRUB BEDS, ORNAMENTAL GRASS BEDS, AND PERENNIAL FLOWER BEDS SHALL RECEIVE "PREEN" HERBICIDE AND THREE (3) INCHES DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
3. ALL SEASONAL FLOWER BEDS SHALL BE A MINIMUM OF TWELVE (12) INCHES DEEP WITH A WELL-BLENDED MIXTURE OF 50% PEAT MOSS. SEASONAL FLOWER BEDS SHALL RECEIVE "PREEN" HERBICIDE. NO MULCH SHALL BE INSTALLED IN THE SEASONAL FLOWER BEDS. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
4. ALL DECIDUOUS AND EVERGREEN TREES SHALL BE STAKED WITH THREE (3) TREE STAKES AS PER TREE PLANTING DETAIL.

PLANTING SCHEDULE - SAWYER'S LANDING, NORTH FRENCH ROAD, AMHERST NY

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		DECIDUOUS TREES			
CM	17	ACER X FREEMANII 'CELZAM'	CELEBRATION MAPLE	2 1/2" – 3" CAL.	B&B, 25' WIDE
CO	1	CELTIS OCCIDENTALIS	HACKBERRY	2 1/2" – 3" CAL.	B&B
AF	12	ACER X FREEMANII 'JEFFERSRED'	AUTUMN BLAZE MAPLE	2 1/2" – 3" CAL.	B&B
BN	21	BETULA NIGRA 'CULLY'	HERITAGE RIVER BIRCH	10'–12' HT.	B&B; MULTI-STEM (3-BOLE MIN)
AH	8	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2 1/2" – 3" CAL.	B&B
GT	27	GLEDITSIA TRIACANTHOS INERMIS 'SKYCOLE'	SKYLINE HONEYLOCUST	2 1/2" – 3" CAL.	B&B
NS	33	NYSSA SYLVATICA 'WILDFIRE'	WILDFIRE BLACK GUM	2 1/2" – 3" CAL.	B&B
QR	22	QUERCUS RUBRA	NORTHERN RED OAK	2 1/2" – 3" CAL.	B&B
UA	16	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2 1/2" – 3" CAL.	B&B
AR	14	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	1 1/2" – 2" CAL.	B&B
		SMALL/ORNAMENTAL TREES			
AC	10	AMELANCHIER CANADENSIS	SERVICEBERRY	8' – 10' HT.	B&B, MULTI-STEM
AG	7	AMELANCHIER GRANDIFLORA 'AUTUMN BRILLIANCE'	APPLE SERVICEBERRY	1–3/4" – 2" CAL.	B&B
CC	10	CERCIS CANADENSIS	EASTERN REDBUD	8' – 10' HT.	B&B, MULTI-STEM
KP	3	KOELREUTERIA PANICULATA	GOLDEN RAIN TREE	8' – 10' HT.	B&B
MA	3	MALUS 'ADIRONDACK'	ADIRONDACK CRABAPPLE	1–3/4" – 2" CAL.	B&B
MP	36	MALUS 'PRAIRIFIRE'	PRAIRIFIRE CRABAPPLE	1–3/4" – 2" CAL.	B&B
MR	22	MALUS "ROYAL RAINDROPS"	ROYAL RAINDROP CRABAPPLE	1–3/4" – 2" CAL.	B&B
PS	3	PRUNUS CERASIFERA 'THUNDERCLOUD'	THUNDERCLOUD PLUM	1–3/4" – 2" CAL.	B&B, DUPLEX LOTS 33–49

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		EVERGREEN TREES			
CF	69	ABIES CONCOLOR	CONCOLOR FIR	5' MIN. HT.	FULL TO GROUND
PG	81	PICEA GLAUCA	WHITE SPRUCE	5' MIN. HT.	FULL TO GROUND
PP	51	PICEA PUNGENS 'GLAUCA'	COLORADO BLUE SPRUCE	5' MIN. HT.	FULL TO GROUND
		SHRUBS			
BX	245	BUXUS "GREEN VELVET"	GREEN VELVET BOXWOOD	24" MIN. HT.	NO. 5 CONT.
CS	54	CORNUS SERICEA 'FARROW'	ARCTIC FIRE RED TWIG DOGWOOD	24" MIN. HT.	NO. 5 CONT.
DS	296	DIERVILLA SPLENDENS 'G2X88544'	KODIAK ORANGE DIERVILLA	24" MIN. HT.	NO. 5 CONT.
FX	31	FORSYTHIA X INTERMEDIA 'KOLGOLD'	MAGICAL GOLD FORSYTHIA	24" MIN. HT.	NO. 5 CONT.
SJ	128	SPIRAEA BUMALDA "GOLD MOUND"	GOLD MOUND SPIREA	24" MIN. HT.	
TO	16	THUJA OCCIDENTALIS 'TECHNY'	TECHNY ARBORVITAE	4' MIN. HT.	B&B, FULL TO GROUND
		ORNAMENTAL GRASS			
CA	346	CALAMAGROSTIS X ACUTIFOLIA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	NO. 2 CONT.	
PA	75	PENNISETUM ALOPECUROIDES	FOUNTAIN GRASS	NO. 2 CONT.	SEE NOTE 1

LANDSCAPE NOTES:

1. ORNAMENTAL GRASSES SHOULD BE PRUNED BACK IN LATE FALL OR EARLY SPRING TO ALLOW FOR NEW FOLIAGE TO GROW IN SPRING.
2. ALL PLANTING BEDS & TREE PLANTING PITS SHALL RECEIVE A MINIMUM 3-INCH DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH.
3. ALL EVERGREEN TREES SHALL BE MEASURED FROM THE BOTTOM OF LEADER.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 0 50 100Ft.

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Landscape Plan

DRAWING NO.
L-100

Project no.: 21-011

Attachment: SP-2021-05_drawings_092222 (23057 : Sp-2021-05)

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CATCH BASIN
RIM: 574.64'
N INV: 573.44'

6" HDPE

SOUTHWEST CORNER OF PLEASANT ACRES SUBDIV. PART II MAP COVER 2273

TEL BOX

TEL BOX

TEL BOX

P.O.B.

PARALLEL W/SOUTH LINE OF LOT 76
N 88°55'52" E 530.61'

BRUSH LINE

UP

GUY

UP

GUY

PARALLEL W/WEST LINE OF LOT 76
(CENTERLINE OF SWEET HOME ROAD)

N 02°04'02" W
118.24'

L.7659
P.435 & 437

PROPOSED 1 STORY 6 UNIT BUILDING W/ ATTACHED GARAGES

PROPOSED 1 STORY 6 UNIT BUILDING W/ ATTACHED GARAGES

S 01°04'08" E
145.0'

PARALLEL W/SOUTH LINE OF LOT 76

N 88°55'52" E 700.84'

EXCEPTION L.-11278, P.-7124

N 00°55'52" E
409.75'

S 64°16'46" W
35.20'

S 29°42'37" W
141.03'

S 10°07'24" E
43.27'

S 11°02'55" W
83.05'

S 11°56'26" E 236.39'

S 45°19'36" E
99.73'

S 87°22'49" W
322.92'

N 83°38'15" W
172.66'

S 83°36'25" W
105.17'

S 71°08'12" W
128.98'

N 67°53'17" W
50.93'

S 23°50'17" W
47.47'

S 39°43'51" W
50.80'

S 57°29'39" W
52.30'

S 22°30'21" W 457.24'

258.37'

150' x 70' 4 STORY APARTMENT BUILDING WITH (10) APARTMENT UNITS PER FLOOR (40) UNITS TOTAL)

(8) 2 STORY DUPLEX TOWNHOME UNITS (16 UNITS TOTAL)

(14) 2 STORY DUPLEX TOWNHOME UNITS (28 UNITS TOTAL)

225' x 80' 4 STORY MIXED USE BUILDING WITH 15,000 SF COMMERCIAL & (5) APARTMENT UNITS ON 1ST FLOOR. APARTMENTS ON FLOORS 2 THRU 4 (50 UNITS)

225' x 80' 4 STORY MIXED USE BUILDING WITH 15,000 SF COMMERCIAL & (5) APARTMENT UNITS ON 1ST FLOOR. APARTMENTS ON FLOORS 2 THRU 4 (50 UNITS)

SITE 'A'
7.424± ACRES

OHW

OHW

R.O.W. LINE

DODGE ROAD RELOCATION

15"HDPE
INV=573.72

PT

Calculation Summary					
Label	CalcType	Units	Avg	Max	Min
Perimeter	Illuminance	Fc	0.21	7.5	0.0
Surface	Illuminance	Fc	2.05	11.1	0.0

Luminaire Schedule			
Symbol	Qty	Label	Description
	50	S1	Gardco ECF-S-32L-1A-NW-G2-3

NOTE:
THIS PLAN WAS PREPARED BY VERTEX SOLUTIONS - CONTACT PHIL GUNDEL @ 716-362-3500 FOR ORDERING INFORMATION.

MOUNTING HEIGHT FOR LIGHT FIXTURES TO BE 15' MAX.

N

SITE PLAN

SCALE: 1"=50'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

STATE OF NEW YORK
CHRISTOPHER WOOD
076394
LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Site Photometric Plan

DRAWING NO.

LP-100

Project no.: 21-011

Attachment: SP-2021-05_drawings_092222 (23057 : Sp-2021-05)

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GARDCO by Signify

Site & Area

EcoForm

ECF-S small area light



Gardco EcoForm Gen-2 combines economy with performance in an LED area luminaire. Capable of delivering up to 26,400 lumens or more in a compact, low profile LED luminaire, EcoForm offers a new level of customer value. EcoForm features an innovative retrofit arm kit, simplifying site conversions to LED by eliminating the need to drill additional holes in most existing poles. Integral control systems available for further energy savings. Includes Service Tag, our innovative way to provide assistance throughout the life of the product.

Project:
Location:
Cat.No.
Type:
Lamps: Qty:
Notes:

Ordering guide

example: ECF-S-64L-900-NW-G2-AR-5-120-HS-MGY

Prefix	Number of LEDs	Drive Current	LED Color - Generation	Mounting	Distribution	Voltage	Options	Motion sensing term	Photo-sensing	Electrical	Luminaire	Finish
ECF-S												
ECF-S: EcoForm site and area, small	32L: 32 LEDs (2 modules)	530: 530 mA 700: 700 mA 1A: 1050 mA	WW-G2: Warm White 3000K, 70 CRI Generation 2 NW-G2: Neutral White 4000K, 70 CRI Generation 2 CW-G2: Cool White 5000K, 70 CRI Generation 2	AR: Arm Mount (standard) The following mounting kits must be ordered separately (See accessories) SF: Slip Fitter Mount (fits to 2¼" O.D. tenon) WS: Wall mount with surface conduit entry permitted RAM: Retrofit arm mount kit[1]	Type 2 2: Type 2 2-90: Rotated left 90° 2-270: Rotated right 270° Type 3 3: Type 3 3-90: Rotated left 90° 3-270: Rotated right 270° Type 4 4: Type 4 4-90: Rotated left 90° 4-270: Rotated right 270° Type 5 5: Type 5 SW: Type SW AFR: Auto Front Row AFR-90: Auto Front Row, Rotated left 90° AFR-270: Auto Front Row, Rotated right 270°	120: 120V 208: 208V 240: 240V 277: 277V 347: 347V 480: 480V UNV: 120-277V (50/60Hz) HVU: 347-480V (50/60Hz)	DS: 0-10V External dimming (by others)[2] DCC: Dual Circuit Control[3][4] FAWS: Field Adjustable Wattage Selector[5] SW: Interface module for SiteWise[6][7] LC: Integral wireless module[7][8] BL: Bi-level functionality[9] DynaDimmer: Automatic Profile Dimming CS50: Safety 50% Dimming, 7 hours[10] CM50: Median 50% Dimming, 8 hours[10] CE50: Economy 50% Dimming, 9 hours[10] DA50: All Night 50% Dimming[10] CS30: Safety 30% Dimming, 7 hours[10] CM30: Median 30% Dimming, 8 hours[10] CE30: Economy 30% Dimming, 9 hours[10] DA30: All Night 30% Dimming[10]	IMR3: Integral with #3 lens[11] IMR7: Integral with #7 lens[11] IMRO: Pole-mounted motion sensor[12] (see accessories)	PCB: Photocontrol Button[13] TLRDS: Twist Lock Receptacle 5 Pin[14] TLRD7: Twist Lock Receptacle 7 Pin[14] TLRPC: Twist Lock Receptacle w/ Photocell[13]	Fusing F1: Single (120, 277, 347VAC)[15] F2: Double (208, 240, 480VAC)[15] Pole Mount Fusing FP1: Single (120, 277, 347VAC)[15] FP2: Double (208, 240, 480VAC)[15] FP3: Canadian Double Pull (208, 240, 480VAC)[15] Surge Protection (10kA standard) SP2: Increased 20kA[16]	Square Pole Adapter included in standard product TB: Terminal Block[17] RPA: Round Pole Adapter (fits to 3"-3.9" O.D. pole)[17] HS: Internal Housing Side Shield[18]	Textured BK: Black WH: White BZ: Bronze DGY: Dark Gray MGY: Medium Gray Customer specified RAL: Specify optional color or RAL (ex: RAL7024) CC: Custom color (Must supply color chip for required factory quote)

1. BL=IMR3/7 equipped with out-boarded sensor housing when voltage is HVU (347-480V).
2. Mounts to a 4" round pole with adapter included for square poles.
3. Limited to a maximum of 45 degrees aiming above horizontal.
4. Not available with other dimming control options.
5. Not available with motion sensor.
6. Not available with photocontrol.
7. Available only in 120 or 277V.
8. Not available in 347 or 480V.
9. Must specify input voltage.
10. Dimming will not be connected to NEMA receptacle if ordering with other control options.
11. Not available in 480V.
12. Not available with DCC.
13. Not available with SF and WS. RPAs provided with black finish standard.
14. HS not available with Type 5 and SW optics.
15. Available only with SW, LLC, and BL control options.
16. Available only with SW and BL control options.

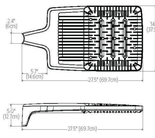
ECF-S EcoForm small

Area luminaire

Dimensions

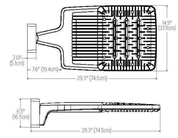
Standard Arm (AR)

Weight: 22 Lbs (9.9 kg) EPA: 0.29ft² (.026m²)



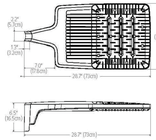
Wall (WS)

Weight: 27 Lbs. (12. 2Kg)EPA: 0.22ft² (.026m²)



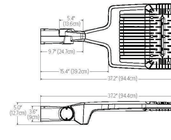
Retrofit Arm (RAM)

Weight: 24 Lbs (10.9 Kg) EPA: 0.24ft² (.022m²)



Slip fitter (SF)

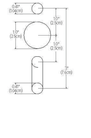
Weight: 27 Lbs (12.2 Kg) EPA: 0.33ft² (.031m²)



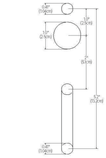
Outboard IMR-HVU sensor



Standard Arm (AR) drill pattern



Retrofit Arm (RAM) drill pattern



ECF-S EcoForm small

Area luminaire

EcoForm Accessories (ordered separately, field installed)

Controls Accessories

Pole Mount Motion Sensor
- MS-A-120V 120V Input
- MS-A-277V 277V Input

Wireless system
Remote mount module
- LLCR3-(F) #3 lens

Central Remote Motion Response
(pack comes with 2 stainless male panel)
- MS2-A-F/HS
- MS2-A-F/VR-7

Shielding Accessories

Horse Side Shield
Standard optic orientations
- NBS-60-H[19] Internal House Side Shield for 60 LEDs (5 modules)
- NBS-96-H[19] Internal House Side Shield for 96 LEDs (6 modules)

Optic at 90 or 270 orientation
- NBS-60-V[19] Internal House Side Shield for 60 LEDs (5 modules)
- NBS-96-V[19] Internal House Side Shield for 96 LEDs (6 modules)

14. Not available with Type 5 or SW optics

Luminaire Accessories

- ECF-BD-G2 Bird deterrent
- ECF-RAM-G2-(F) Retrofit Arm mount kit
- ECF-SF-G2-(F) Slip Fitter Mount (fits to 2 3/8" O.D. tenon)
- ECF-WS-G2-(F) Wall mount with surface conductor entry permitted

EcoForm PTF2
(pole top fitter fits 2 3/8"-3½" OD x 4" depth tenon)
- PTF2-ECF-S/L-1-90-(F) 1 luminaire at 90°
- PTF2-ECF-S/L-2-90-(F) 2 luminaires at 90°
- PTF2-ECF-S/L-2-180-(F) 2 luminaires at 180°
- PTF2-ECF-S/L-3-90-(F) 3 luminaires at 90°
- PTF2-ECF-S/L-4-90-(F) 4 luminaires at 90°
- PTF2-ECF-S/L-3-120-(F) 3 luminaires at 120°

EcoForm PTF3
(pole top fitter fits 3-3½" OD x 6" depth tenon)
- PTF3-ECF-S/L-1-90-(F) 1 luminaire at 90°
- PTF3-ECF-S/L-2-90-(F) 2 luminaires at 90°
- PTF3-ECF-S/L-2-180-(F) 2 luminaires at 180°
- PTF3-ECF-S/L-3-90-(F) 3 luminaires at 90°
- PTF3-ECF-S/L-4-90-(F) 4 luminaires at 90°
- PTF3-ECF-S/L-3-120-(F) 3 luminaires at 120°

EcoForm PTF4
(pole top fitter fits 3½"-4" OD x 6" depth tenon)
- PTF4-ECF-S/L-1-90-(F) 1 luminaire at 90°
- PTF4-ECF-S/L-2-90-(F) 2 luminaires at 90°
- PTF4-ECF-S/L-2-180-(F) 2 luminaires at 180°
- PTF4-ECF-S/L-3-90-(F) 3 luminaires at 90°
- PTF4-ECF-S/L-4-90-(F) 4 luminaires at 90°
- PTF4-ECF-S/L-3-120-(F) 3 luminaires at 120°

(F) = Specify finish

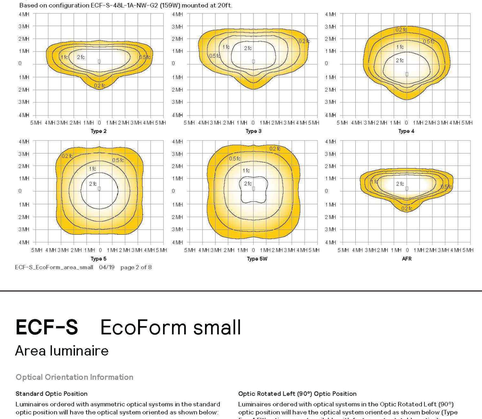
Predicted Lumen Depreciation Data

Predicted performance derived from LED manufacturer's data and engineering design estimates, based on IESNA LM-80 methodology. Actual experience may vary due to field application conditions. L_{70} is the predicted time when LED performance depreciates to 70% of initial luminous flux. Calculated per IESNA TM-21. Published L_{70} hours limited to 6 times test hours.

Ambient Temperature °C	Drive mA	Calculated L_{70} Hours	L_{70} per TM-21	Lumen Maintenance % at 60,000 hrs
25°C	up to 1200 mA	>300,000 hours	>60,000 hours	>80%

Optical distribution

Based on configuration ECF-S-48L-1A-NW-G2 (159W) mounted at 20ft.



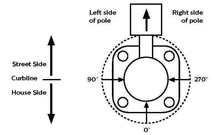
ECF-S EcoForm small

Area luminaire

Optical Orientation Information

Standard Optic Position

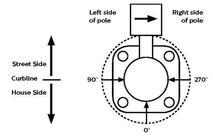
Luminaires ordered with asymmetric optical systems in the standard optic position will have the optical system oriented as shown below:



Note: The hand hole will normally be located on the pole at the 0° point.

Optic Rotated Right (270°) Optic Position

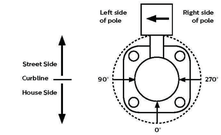
Luminaires ordered with optical systems in the Optic Rotated Right (270°) optic position will have the optical system oriented as shown below (Type 5 and 5W optics are not available with factory set rotatable optics):



Note: The hand hole will normally be located on the pole at the 0° point.

Optic Rotated Left (90°) Optic Position

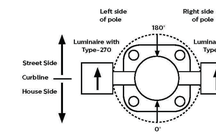
Luminaires ordered with optical systems in the Optic Rotated Left (90°) optic position will have the optical system oriented as shown below (Type 5 and 5W optics are not available with factory set rotatable optics):



Note: The hand hole will normally be located on the pole at the 0° point.

Twin Luminaire Assemblies with Type-90/Type-270 Rotated Optical Systems

Twin luminaire assemblies installed with rotated optical systems are an excellent way to direct light toward the interior of the site (Street Side) without additional equipment. It is important, however, that care be exercised to insure that luminaires are installed in the proper location.



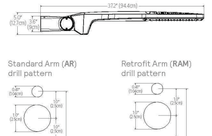
Luminaires with Optic Rotated Right (270°) are installed on the LEFT Side of Pole

Luminaires with Optic Rotated Left (90°) are installed on the RIGHT Side of Pole

Note: The hand hole location will depend on the drilling configuration ordered for the pole.

Optic Rotated Right (270°) Optic Position

Luminaires ordered with optical systems in the Optic Rotated Right (270°) optic position will have the optical system oriented as shown below (Type 5 and 5W optics are not available with factory set rotatable optics):



Note: The hand hole will normally be located on the pole at the 0° point.

ECF-S EcoForm small

Area luminaire

Specifications

Housing

One-piece die-cast aluminum housing with integral arm and separate, self-retained hinged, one-piece die cast door frame. Luminaire housing rated to IP66, tested in accordance to Section 9 of IEC 60598-1.

Vibration resistance

Luminaire is tested and rated 3G over 100,000 cycles conforming to standards set forth by ANSI C136.31-2010. Testing includes vibration in three axes, all performed on the same luminaire.

Light engine

Light engine comprises of a module of 16-LED aluminum metal clad board fully sealed with optics offered in multiples of 2, 3, and 4 modules or 32, 48, and 64 LEDs. Module is RoHS compliant. Color temperatures: 3000K +/-125K, 4000K, 5000K +/- 200K. Minimum CRI of 70. LED light engine is rated IP66 in accordance to Section 9 of IEC 60598-1.

Energy saving benefits

System efficacy up to 133 lms/W with significant energy savings over Pulse Start Metal Halide luminaires. Optional control options provide added energy savings during unoccupied periods.

Optical systems

Type 2, 3, 4, 5, SW, and AFR distributions available. Internal Shield option mounts to LED optics and is available with Type 2, 3, 4, and AFR distributions. Types 2, 3, 4, and AFR when specified and used as rotated, are factory set only. Performance tested per LM-79 and TM-15 (IESNA) certifying its photometric performance. Luminaire designed with 0% uplight (0.0 per IESNA TM-15).

Mounting

Standard luminaire arm mounts to 4" O.D. round poles. Can also be used with 5" O.D. poles. Square pole adapter included with every luminaire. Round Pole Adapter (RPA) required for 3-3.9" poles. EcoForm features a retrofit arm kit. When specified with the retrofit arm (RAM) option, EcoForm seamlessly simplifies site conversions to LED by eliminating the need for additional pole drilling on most existing poles. RAM will be boxed separately. Also optional are slipfitter and wall mounting accessories.

Control options

0-10V dimming (DD): Access to 0-10V dimming leads supplied through back of luminaire (for secondary dimming controls by others). Cannot be used with other control options.

Dual Circuit Control (DCC): Luminaire equipped with the ability to have two separate circuits controlling drivers and light engines independently. Permits separate switching of separate modules controlled by use of two sets of leads, one for each circuit. Not recommended to be used with other control options, motion response, or photocells.

SiteWise (SW): SiteWise system includes a controller fully integrated in the luminaire that enables the luminaires to communicate with a dimming signal transmitter cabinet located on site using patented central dimming technology. A locally accessible mobile app allows users to access the system and set functionalities such as ON/OFF, dimming levels and scheduling. SiteWise is available with motion response options in order to bring the light back to 100% when motion is detected. Cannot be used with other control options or photocell options. Additional functionalities are available such as communication with indoor lighting and connection to BMS systems. Complete information on the control system can be found on the SiteWise website at philips.com/sitewise.

Automatic Profile Dimming (CS/CM/CE/DA): Standard dimming profile of 30% or 50% provide flexibility towards energy savings goals while optimizing light levels during specific dark hours. When used in combination with not programmed motion response it overrides the controller's schedule when motion is detected. After 5 minutes with no motion, it will return to the automatic dimming profile schedule. Automatic dimming profile scheduled with the following settings:

- **CS50/CS30:** Security for 7 hours night duration (Ex., 11 PM – 6 AM)
- **CM50/CM30:** Median for 8 hours night duration (Ex., 10 PM – 6 AM)
- **CE50/CE30:** Economy for 9 hours night duration (Ex., 9 PM – 6 AM)
- **DA50/DA30:** for all night (during all dark hours)

All above profiles are calculated from mid point of the night. Dimming is set. for 6 hours after the mid point and 1, 2, or 3 hours before depending of the duration of dimming. Cannot be used with other dimming control options.

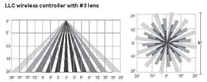
Field Adjustable Wattage Selector (FAWS): Luminaire equipped with the ability to manually adjust the wattage in the field to reduce total luminaire lumen output and light levels. Comes pre-set to the highest position at the lumen output selected. Use chart below to estimate reduction in lumen output desired. Cannot be used with other control options or motion response.

FAWS Position	Percent of Typical Lumen Output
1	25%
2	50%
3	55%
4	65%
5	75%
6	80%
7	85%
8	90%
9	95%
10	100%

Note: Typical value accuracy +/- 5%

Wireless system (LLC): Optional wireless controller integral to luminaire ready to be connected to a Limelight system (sold by others). The system allows you to wirelessly manage the entire site, independent lighting groups- or individual luminaires while on-site or remotely. Based on a high-density mesh network with an easy to use web-based portal, you can conveniently access, monitor and manage your lighting network remotely. Wireless controls can be combined with site and area, pedestrian, and parking garage luminaires as well, for a completely connected outdoor solution. Equipped with motion response with #3 lens for 8-25' mounting heights. Also available with remote pod accessory where pod is mounted separate from luminaire to pole or wall.

LLC wireless controller with #3 lens



Motion response options

Bi-Level Infrared Motion Response (BL-IMR): Motion Response module is mounted integral to luminaire factory pre-programmed to 50% dimming when not ordered with other control options. BL-IMR1 is set/operates in the following fashion: The motion sensor is set to a constant 50%. When motion is detected by the PIR sensor, the luminaire returns to full power/light output. Dimming on low is factory set to 50% with 5 minutes default in "full power" prior to dimming back to low. When no motion is detected for 5 minutes, the motion response system reduces the wattage by 50%, to 50% of the normal constant wattage reducing the light level. Other dimming settings can be provided if different dimming levels are required. This can also be done with FSIR-100 Wireless Remote Programming Tool (contact Technical Support for details).

Infrared Motion Response with Other Controls: When used in combination with other controls (Automatic Dimming Profile and SiteWise), motion response device will simply override controller's schedule with the added benefits of a combined dimming profile and sensor detection. In this configuration, the motion response device cannot be re-programmed with FSIR-100 Wireless Remote Programming Tool. The profile can only be re-programmed via the controller.

ECF-S EcoForm small

Area luminaire

3000K LED Wattage and Lumen Values

Ordering Code	Total LEDs	LED Current (mA)	Color Temp.	Average System Watts	Type 2 Lumen Output	Type 2 BUG Rating	Type 2 Efficacy (LPW)	Type 3 Lumen Output	Type 3 BUG Rating	Type 3 Efficacy (LPW)	Type 4 Lumen Output	Type 4 BUG Rating	Type 4 Efficacy (LPW)
ECF-S-32L-530-WW-G2-x	32	530	3000	56	4,178	B2-U0-G2	111	4,044	B1-U0-G2	108	4,123	B1-U0-G2	114
ECF-S-32L-700-WW-G2-x	32	700	3000	73	3,968	B2-U0-G2	109	7,795	B1-U0-G2	107	8,156	B1-U0-G2	112
ECF-S-32L-1A-WW-G2-x	32	1050	3000	106	11,318	B2-U0-G2	106	10,974	B2-U0-G2	104	11,482	B2-U0-G2	109
ECF-S-32L-124-WW-G2-x	32	1200	3000	122	12,440	B3-U0-G2	102	12,073	B2-U0-G2	100	12,736	B2-U0-G2	105
ECF-S-48L-900-WW-G2-x	48	900	3000	135	14,798	B3-U0-G2	110	14,448	B3-U0-G2	107	15,196	B2-U0-G2	112
ECF-S-48L-1A-WW-G2-x	48	1050	3000	159	16,723	B3-U0-G3	105	16,360	B3-U0-G3	103	17,196	B2-U0-G3	108
ECF-S-64L-124-WW-G2-x	48	1200	3000	183	18,954	B3-U0-G2	102	18,512	B3-U0-G3	99	19,005	B3-U0-G4	104
ECF-S-64L-900-WW-G2-x	64	900	3000	178	19,123	B3-U0-G3	108	20,005	B3-U0-G4	113	20,005	B3-U0-G4	113
ECF-S-64L-1A-WW-G2-x	64	1050	3000	206	22,020	B3-U0-G3	107	21,543	B3-U0-G4	105	22,538	B3-U0-G4	109

Ordering Code	Total LEDs	LED Current (mA)	Color Temp.	Average System Watts	Type 5 Lumen Output	Type 5 BUG Rating	Type 5 Efficacy (LPW)	Type SW Lumen Output	Type SW BUG Rating	Type SW Efficacy (LPW)	Type AFR Lumen Output	Type AFR BUG Rating	Type AFR Efficacy (LPW)
ECF-S-32L-530-WW-G2-x	32	530	3000	56	6,400	B2-U0-G2	115	6,672	B3-U0-G2	120	6,416	B3-U0-G2	116
ECF-S-32L-700-WW-G2-x	32	700	3000	73	8,254	B2-U0-G2	113	8,606	B3-U0-G2	118	8,330	B4-U0-G2	114
ECF-S-32L-1A-WW-G2-x	32	1050	3000	106	11,431	B3-U0-G2	109	12,116	B4-U0-G2	115	11,727	B4-U0-G2	111
ECF-S-32L-124-WW-G2-x	32	1200	3000	122	12,890	B3-U0-G2	106	13,440	B4-U0-G2	110	13,008	B4-U0-G2	107
ECF-S-48L-900-WW-G2-x	48	900	3000	135	15,299	B3-U0-G2	113	15,953	B4-U0-G2	118	15,436	B4-U0-G2	114
ECF-S-48L-1A-WW-G2-x	48	1050	3000	159	17,124	B3-U0-G2	109	18,062	B4-U0-G2	114	17,482	B5-U0-G3	110
ECF-S-48L-124-WW-G2-x	48	1200	3000	183	19,218	B3-U0-G2	105	20,051	B5-U0-G3	110	19,407	B5-U0-G3	106
ECF-S-64L-900-WW-G2-x	64	900	3000	178	20,247	B3-U0-G2	114	21,111	B5-U0-G3	119	20,402	B5-U0-G3	115
ECF-S-64L-1A-WW-G2-x	64	1050	3000	206	22,881	B3-U0-G2	111	23,784	B5-U0-G3	116	23,020	B5-U0-G3	112

4000K LED Wattage and Lumen Values

Ordering Code	Total LEDs	LED Current (mA)	Color Temp.	Average System Watts	Type 2 Lumen Output	Type 2 BUG Rating	Type 2 Efficacy (LPW)	Type 3 Lumen Output	Type 3 BUG Rating	Type 3 Efficacy (LPW)	Type 4 Lumen Output	Type 4 BUG Rating	Type 4 Efficacy (LPW)
ECF-S-32L-530-NW-G2-x	32	530	4000	56	4,384	B2-U0-G2	117	4,246	B1-U0-G2	113	4,329	B1-U0-G2	120
ECF-S-32L-700-NW-G2-x	32	700	4000	73	8,953	B2-U0-G2	121	8,661	B2-U0-G2	119	9,082	B1-U0-G2	124
ECF-S-32L-1A-NW-G2-x	32	1050	4000	106	12,464	B3-U0-G2	118	12,934	B2-U0-G2	115	12,757	B2-U0-G2	121
ECF-S-32L-124-NW-G2-x	32	1200	4000	122	13,926	B3-U0-G2	114	13,526	B2-U0-G2	111	14,113	B2-U0-G2	116
ECF-S-48L-900-NW-G2-x	48	900	4000	135	16,409	B3-U0-G2	121	16,053	B2-U0-G2	119	16,795	B2-U0-G2	124
ECF-S-48L-1A-NW-G2-x	48	1050	4000	159	18,518	B3-U0-G2	117	18,178	B3-U0-G3	115	19,018	B2-U0-G4	120
ECF-S-48L-124-NW-G2-x	48	1200	4000	183	20,621	B3-U0-G2	113	20,180	B3-U0-G4	110	21,122	B3-U0-G4	116
ECF-S-64L-900-NW-G2-x	64	900	4000	178	21,717	B3-U0-G2	122	21,245	B3-U0-G4	119	22,228	B3-U0-G4	125
ECF-S-64L-1A-NW-G2-x	64	1050	4000	206	24,467	B3-U0-G3	119	23,936	B3-U0-G4	116	25,043	B3-U0-G4	122

Ordering Code	Total LEDs	LED Current (mA)	Color Temp.	Average System Watts	Type 5 Lumen Output	Type 5 BUG Rating	Type 5 Efficacy (LPW)	Type SW Lumen Output	Type SW BUG Rating	Type SW Efficacy (LPW)	Type AFR Lumen Output	Type AFR BUG Rating	Type AFR Efficacy (LPW)
ECF-S-32L-530-NW-G2-x	32	530	4000	56	7,414	B3-U0-G2	133	7,715	B3-U0-G2	138	7,715	B2-U0-G2	138
ECF-S-32L-700-NW-G2-x	32	700	4000	73	9,563	B4-U0-G2	131	9,955	B4-U0-G2	137	9,972	B2-U0-G3	136
ECF-S-32L-1A-NW-G2-x	32	1050	4000	106	13,452	B4-U0-G2	127	13,930	B4-U0-G2	123	13,912	B3-U0-G2	122
ECF-S-32L-124-NW-G2-x	32	1200	4000	122	14,933	B4-U0-G2	123	14,453	B4-U0-G2	119	14,322	B3-U0-G2	118
ECF-S-48L-900-NW-G2-x	48	900	4000	135	17,721	B4-U0-G2	131	17,164	B5-U0-G3	127	16,999	B3-U0-G2	126
ECF-S-48L-1A-NW-G2-x	48	1050	4000	159	20,069	B5-U0-G3	126	19,424	B5-U0-G3	122	19,248	B3-U0-G2	121
ECF-S-48L-124-NW-G2-x	48	1200	4000	183	22,279	B5-U0-G3	122	21,563	B5-U0-G3	118	21,368	B3-U0-G2	117
ECF-S-64L-900-NW-G2-x	64	900	4000	178	23,456	B5-U0-G3	132	22,702	B5-U0-G3	128	22,497	B3-U0-G2	127
ECF-S-64L-1A-NW-G2-x	64	1050	4000	206	26,427	B5-U0-G3	128	25,577	B5-U0-G3	124	25,346	B3-U0-G2	123

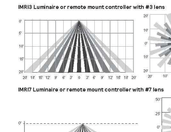
ECF-S EcoForm small

Area luminaire

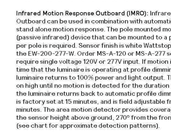
Specifications

Infrared Motion Response Lenses (IMR3/IMR7): Infrared Motion Response Integral module is available with two different sensor lens types to accommodate various mounting heights and occupancy detection ranges. Lens #3 (IMR3) is designed for mounting heights up to 20' with a 40' diameter coverage area. Lens #7 is designed for higher mounting heights up to 40' with larger coverage areas up to 100' diameter coverage area. See charts for approximate detection patterns:

IMR3 Luminaire or remote mount controller with #3 lens



IMR7 Luminaire or remote mount controller with #7 lens



Infrared Motion Response Outboard (IMRO): Infrared Motion Response Outboard can be used in combination with automatic profile dimming and stand alone motion response. The pole mounted motion sensor is a PIR (passive infrared) device that can be mounted to a pole. One motion sensor per pole is required. Sensor finish is white Wattstopper EW-200-120-W or the EW-200-277-W. Order MS-A-120 or MS-A-277 separately. IMRO sensors require single voltage 120V or 277V input. If motion is detected during the time that the luminaire is operating at profile dimming mode specified, the luminaire returns to 100% power and light output. The luminaire remains on high until no motion is detected for the duration period, after which the luminaire returns back to automatic profile dimming. Duration period is factory set at 15 minutes, and is field adjustable from 5 minutes up to 15 minutes. The area motion detector provides coverage equal to up to 6 times the sensor height above ground, 270° from the front-center of the sensor (see chart for approximate detection patterns).



Pole Details: IMRO requires that the pole include additional hand hole 15 feet above the pole base, normally oriented 180° to the standard hand hole. For Gardco poles, order the pole with the Motion Sensor Mounting (MSM) option which includes the hand hole and a special hand hole cover plate for the sensor with a 1/2" NPT receptacle centered on the hand hole cover plate into which the motion sensor mounts. Once the motion sensor is connected to the hand hole cover plate, then wiring connections are completed in the pole. The plate (complete with motion sensor attached and wired) is then mounted to the hand hole. If poles are supplied by others, the customer is responsible for providing suitable mounting accommodations for the motion sensor in the pole (see Gardco Poles specification sheets for more information).

Electrical

Twist-Lock Receptacle (TLRDS/TLRD7/TLRPC): Twist Lock Receptacle with 5 pins enabling dimming or with 7 pins with additional functionality (by others) can be used with a twistlock photoelectric cell or a shorting cap. Dimming Receptacle Type B (5-pin) and Type D (7-pin) in accordance to ANSI C136.41. Can be used with third-party control system. Receptacle located on top of luminaire housing. When specifying receptacle with twistlock photoelectric cell, voltage must be specified. When ordering Twist-lock receptacle (TLRDS or TLRD7), photocell or shorting cap is not included.

Driver: Driver efficiency (>90% standard). 120-480V available (restrictions apply). Open/short circuit protection. Optional 0-10V dimming to 10% power. RoHS compliant.

Button Photocontrol (PCB): Button style design for internal luminaires mounting applications. The photocontrol is constructed of a high impact UV stabilized polycarbonate housing. Rated voltage of 120V or 208-277V with a load rating of 1000 VA. The photocell will turn on with 1-4fc of ambient light.

Surge protection (SP1/SP2): Surge protection device tested in accordance with ANSI/IEEE C62.41 per ANSI/IEEE C62.41.2 Scenario I Category C1 High Exposure 10kV/10kA waveforms for Line-Ground, Line-Neutral and Neutral-Ground, and in accordance with DOE MSSLC Model Specification for LED Roadway Luminaires Appendix D Electrical Immunity High test level 10kV/10kA. 20kV / 10kA surge protection device that provides extra protection beyond the SP1 10kV/10kA level.

Listings

UL/cUL wet location listed to the UL 1598 standard, suitable for use in ambient temperatures from -40° to 40°C (-40° to 104°F). Most EcoForm configurations are qualified under Premium and Standard DesignLights Consortium® categories. Consult DLC Qualified Products list to confirm your specific luminaire selection is approved. CCTs 3000K and warmer are Dark Sky Approved.

Finish

Each standard color luminaire receives a fade and abrasion resistant, electrostatically applied, thermally cured, triglycidal isocyanurate (TGIC) textured polyester powder coat finish. Standard colors include bronze (BZ), black (BK), white (WH), dark gray (DGY), and medium gray (MGY). Consult factory for specs on optional or custom colors.

Service Tag

Each individual luminaire is uniquely identifiable, thanks to the Service tag application. With a simple scan of a QR code, placed on the inside of the mast door, you gain instant access to the luminaire configuration, making installation and maintenance operations faster and easier, no matter what stage of the luminaire's lifetime. Just download the APP and register your product right away. For more details visit: signify.com

Warranty

EcoForm luminaires feature a 5-year limited warranty
See signify.com/warranties for complete details and exclusions.

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signify

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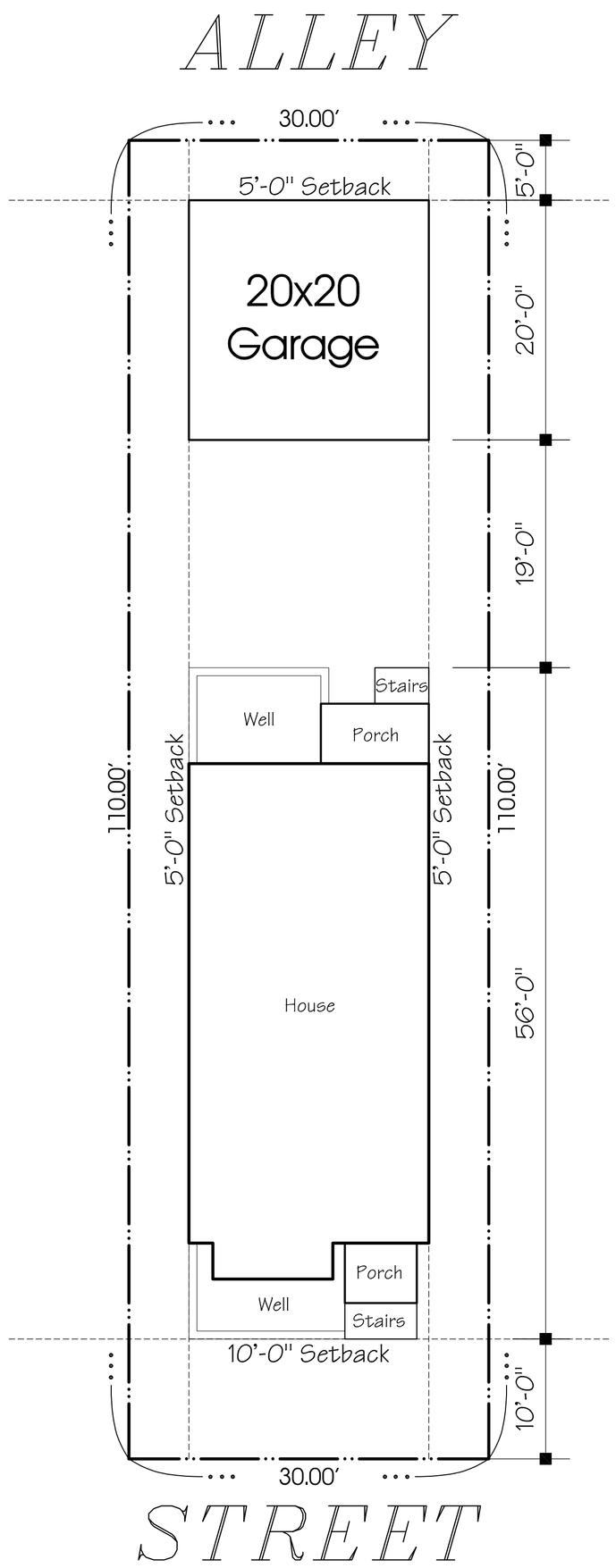
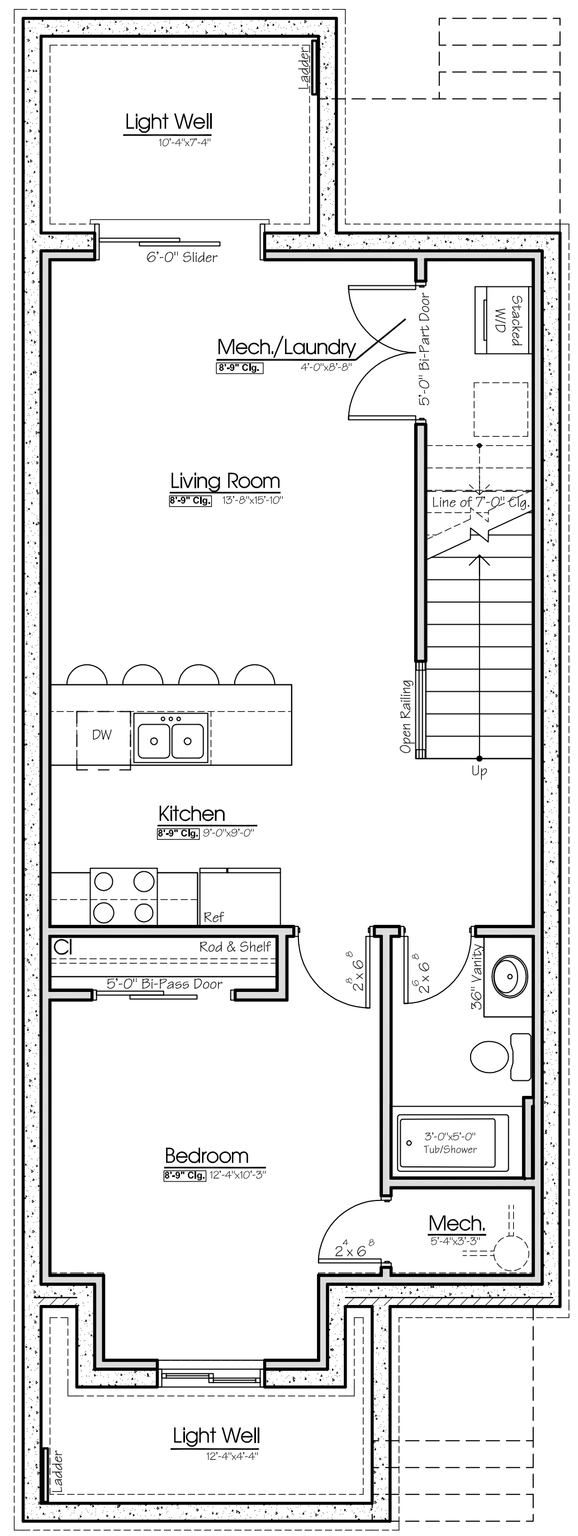
Attachment: SP-2021-05_drawings_092222 (23057 : SP-2021-05)



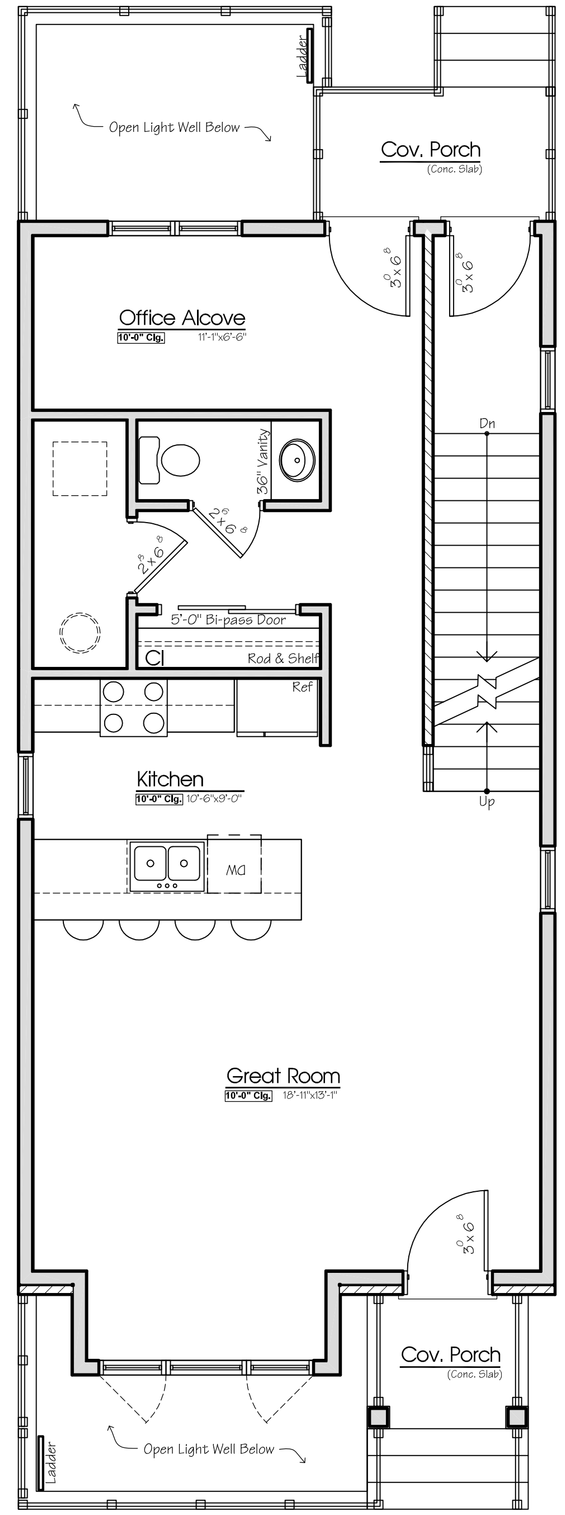
A1.1 Lot Plan

1/8" = 1'-0"



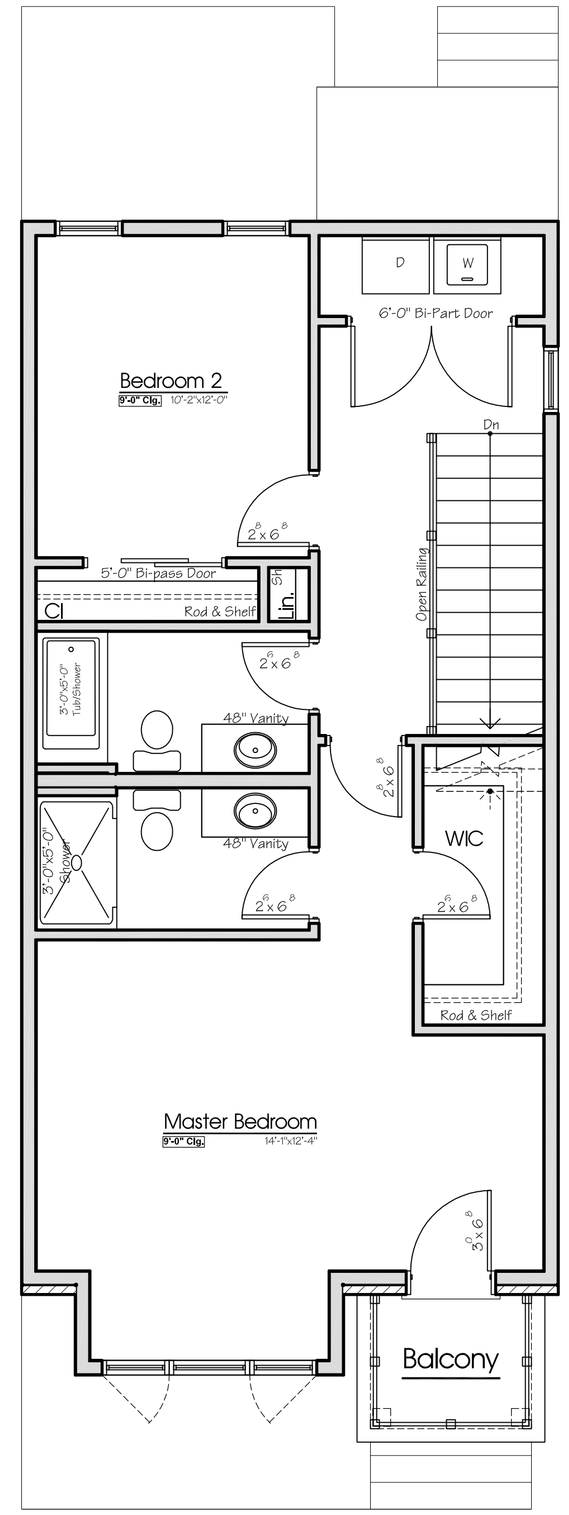
A1.2 Lower Level

1/4" = 1'-0"



A1.3 1st Floor Level

1/4" = 1'-0"



A1.4 2nd Floor Level

1/4" = 1'-0"

Progress Drawings Not For Construction

No.	Description	Date	By

WARNING:
It is a violation of Article 147, Section 7303 of the New York State Education Law for any person to alter an item, in any way, on this document, unless under the direction of a licensed Architect.

SEVERYN DEVELOPMENT
BETTER BUILT HOMES
Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyers Landing
2-Unit Houses

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SUTTON architecture
"Design 2 Build"
5409 Main Street
(Second Floor)
Williamsville, NY 14221
(716) 932-7156 Fax 932-7873

Job Number: 21-119

Title: Lot Plan & Floor Plans

Drawn By: Jonathan M.	Sheet No.: A-1
Date: 8-31-22	
Checked: D. Sutton	
Scale: As Noted	

Attachment: SP-2021-05_drawings_092222 (23057 : SP-2021-05)

Finish Material Legend

Mark	Material	Remarks
Exterior Wall Finish		
1	Face Brick	
2	Wood Look Fiber Cement Siding	
3	Vinyl/Fiberglass Windows	
4	Precast Conc. Water Table	
5	Fypon/Azek Trim & Cornice	
6	Aluminum Storefront Windows	
7	Hollow Metal Door/Frames	
8	Aluminum Railings	
9	Metal Canopy	
10	Faux Steel Framing	
11	Asphalt Shingles	

Note: All Color And Material Selections Are Dependant To Material Availability
And Subject To Alternate Selection Of Similar Size, Color, & Texture.



A2.1 Flat Roof

1/4" = 1'-0"



A2.2 Mansard Roof

1/4" = 1'-0"



A2.3 Standard Roof

1/4" = 1'-0"

Progress Drawings - Not For Construction

No.	Description	Date	By

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Sawyers Landing
2-Unit Houses

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(Second Floor)
Williamsville, NY 14221
(716) 932-7156 Fax 932-7873

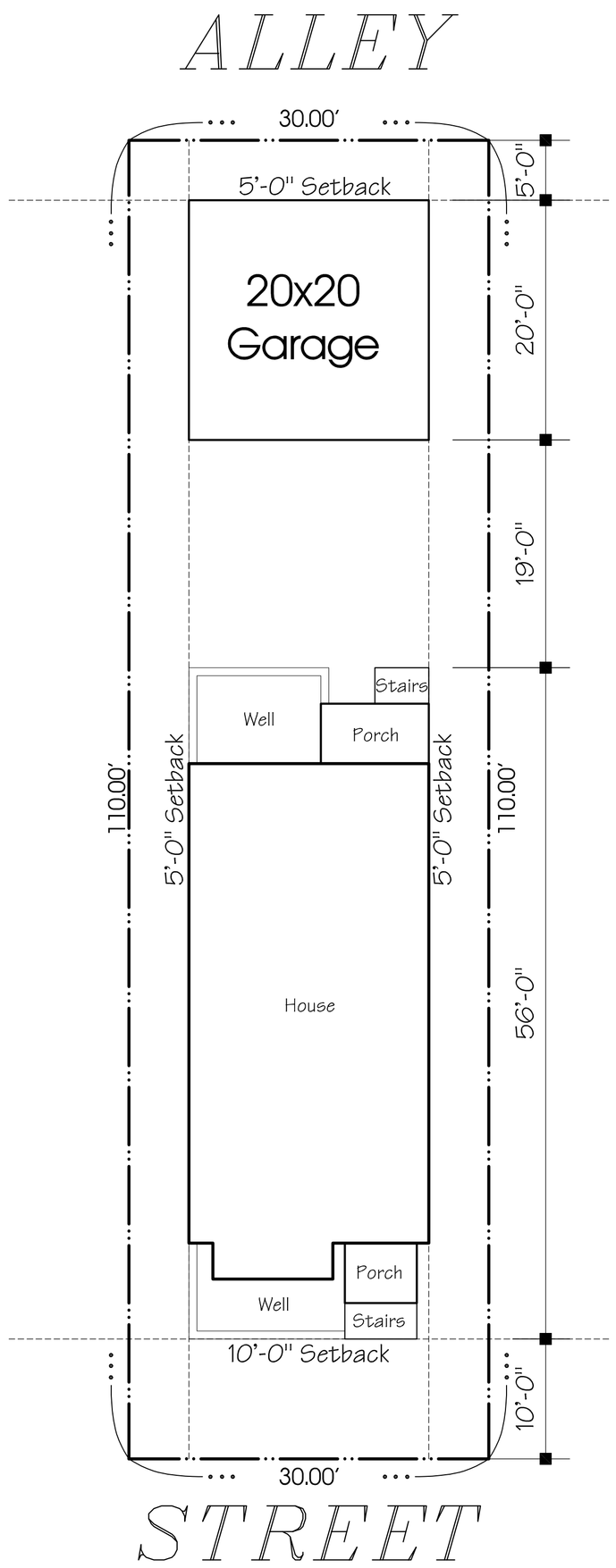
Job Number: 21-119

Title: Front Elevations

Drawn By: Jonathan M.
Date: 8-31-22
Checked: D. Sutton
Scale: As Noted

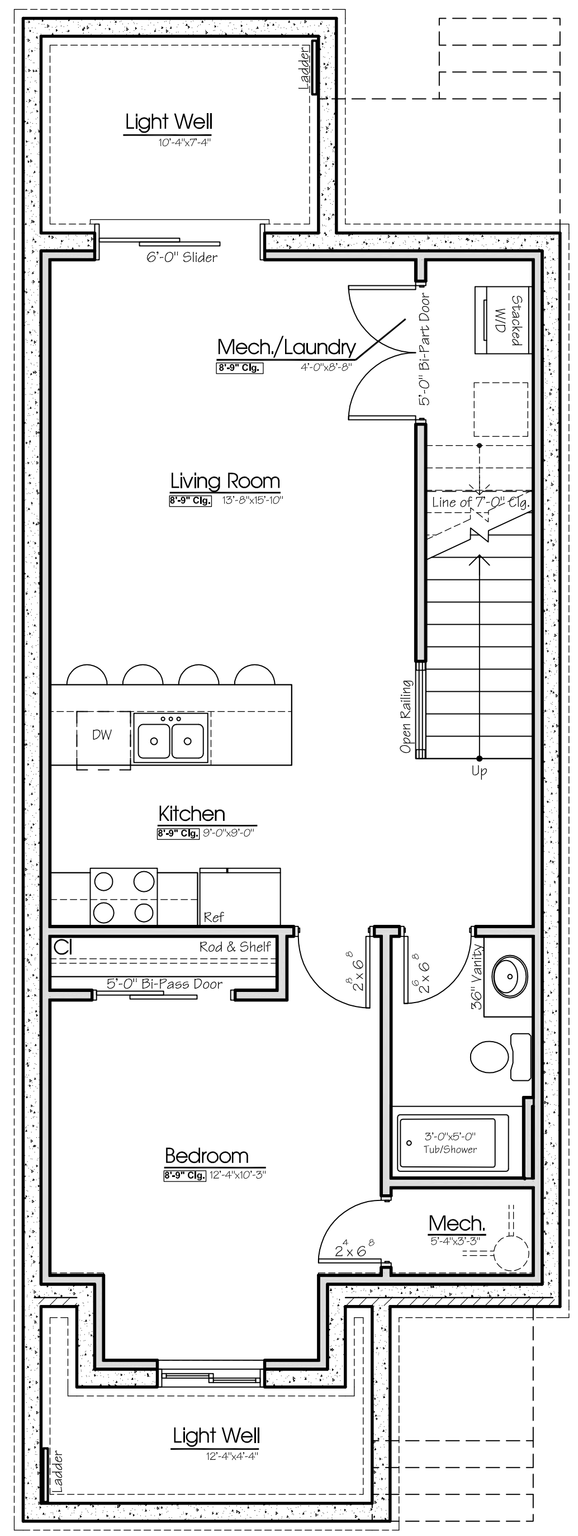
Sheet No.: A-2

Attachment: SP-2021-05_drawings_092222 (23057 : SP-2021-05)



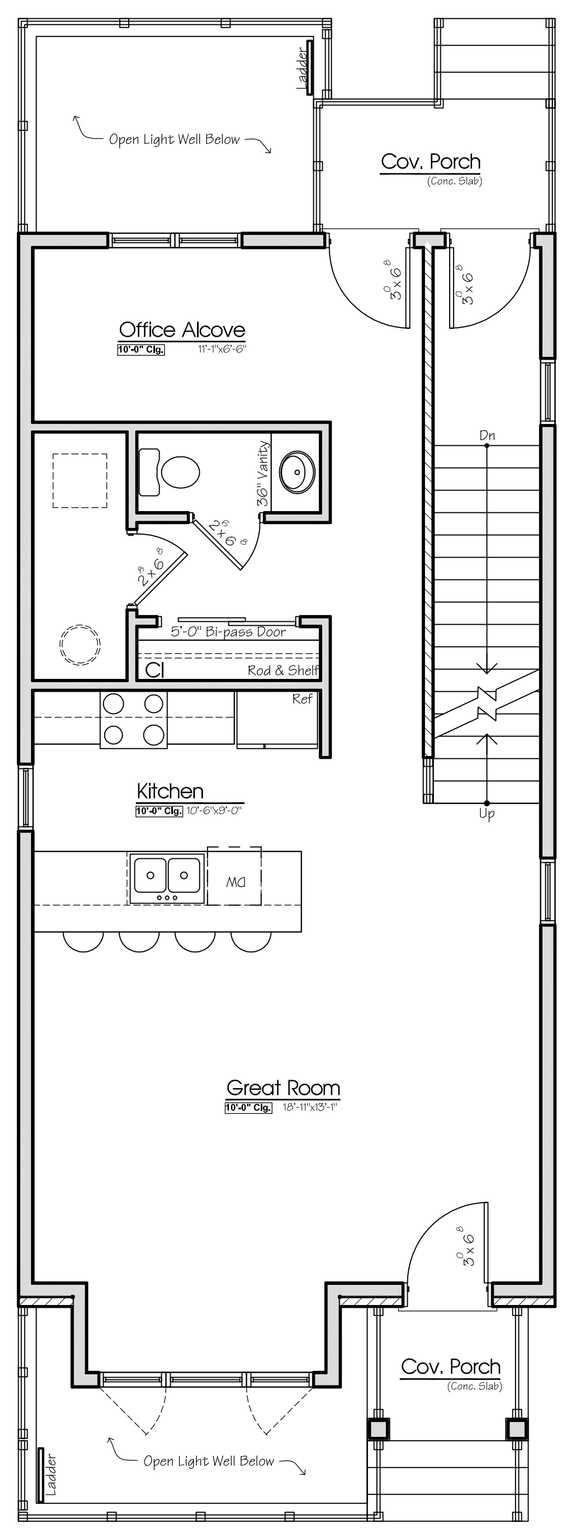
A1.1 Lot Plan

1/8" = 1'-0"



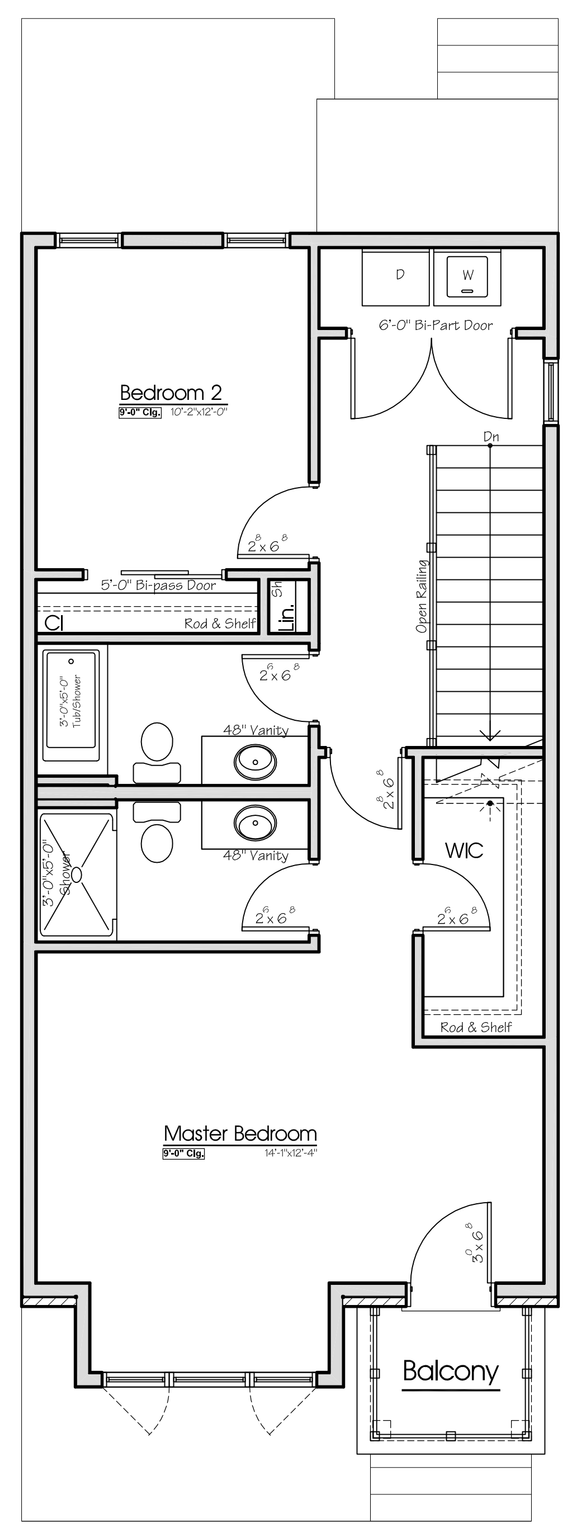
A1.2 Lower Level

1/4" = 1'-0"



A1.3 1st Floor Level

1/4" = 1'-0"



A1.4 2nd Floor Level

1/4" = 1'-0"

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No.	Description	Date	By

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Job Number: 21-119

Title: Lot Plan & Floor Plans

Drawn By:	Sheet No.:
Jonathan M.	A-1
Date: 8-31-22	
Checked: D. Sutton	
Scale: As Noted	

Attachment: SP-2021-05_drawings_092222 (23057 : SP-2021-05)

Finish Material Legend

Mark	Material	Remarks
Exterior Wall Finish		
1	Face Brick	
2	Wood Look Fiber Cement Siding	
3	Vinyl/Fiberglass Windows	
4	Precast Conc. Water Table	
5	Fypon/Azek Trim & Cornice	
6	Aluminum Storefront Windows	
7	Hollow Metal Door/Frames	
8	Aluminum Railings	
9	Metal Canopy	
10	Faux Steel Framing	
11	Asphalt Shingles	

Note: All Color And Material Selections Are Dependant To Material Availability
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A2.1 Flat Roof

1/4" = 1'-0"



A2.2 Mansard Roof

1/4" = 1'-0"



A2.3 Standard Roof

1/4" = 1'-0"

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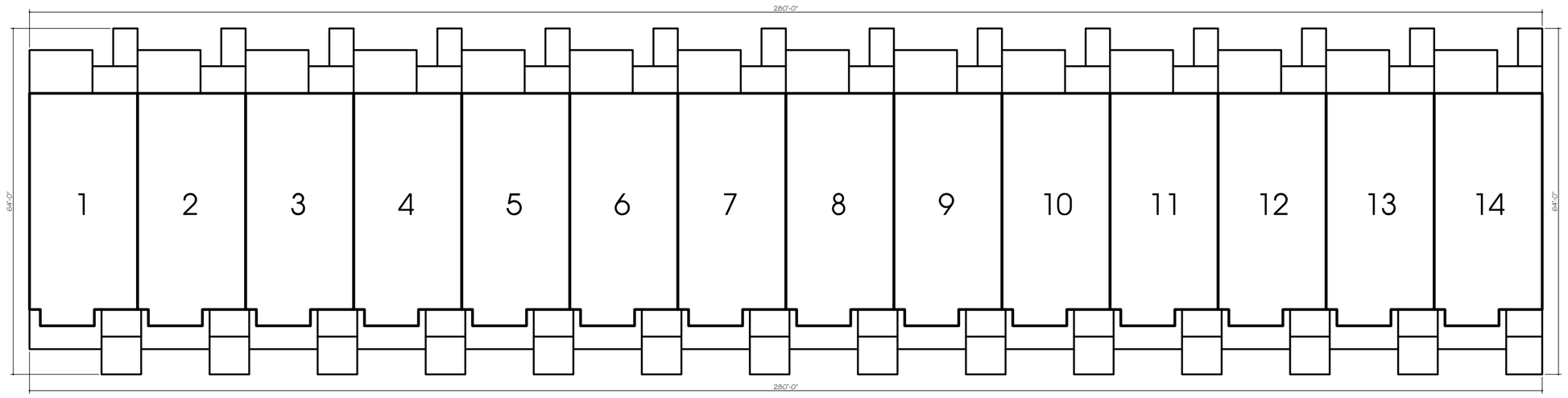
Job Number: 21-119

Title: Front Elevations

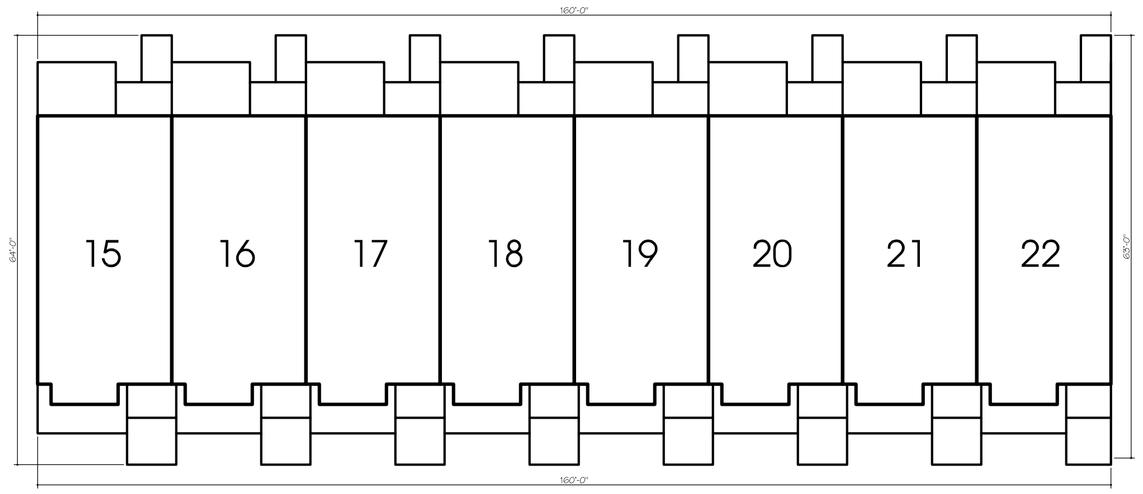
Drawn By: Jonathan M.
Date: 8-31-22
Checked: D. Sutton
Scale: As Noted

Sheet No.: A-2

Attachment: SP-2021-05_drawings_092222 (23057 : SP-2021-05)



A1.1 Townhouse Building 1 Key Plan



A1.2 Townhouse Building 2 Key Plan

Apartment Breakdown:

Building 1: 28 Units
- 1 Bedroom: 14
- 2 Bedroom: 14

Total Building Sq.Ft.: 34,230

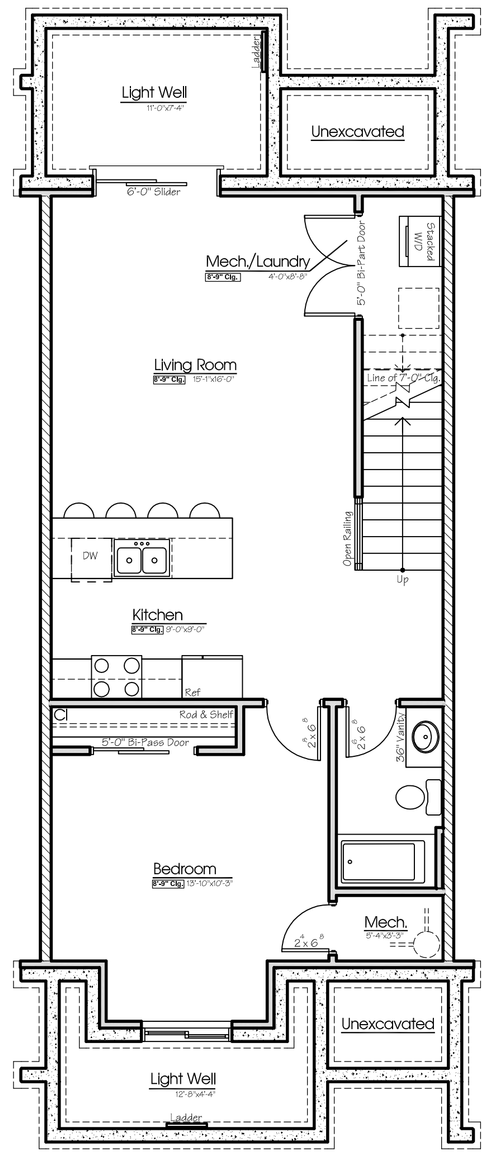
Building 2: 16 Units
- 1 Bedroom: 8
- 2 Bedroom: 8

Total Building Sq.Ft.: 19,560

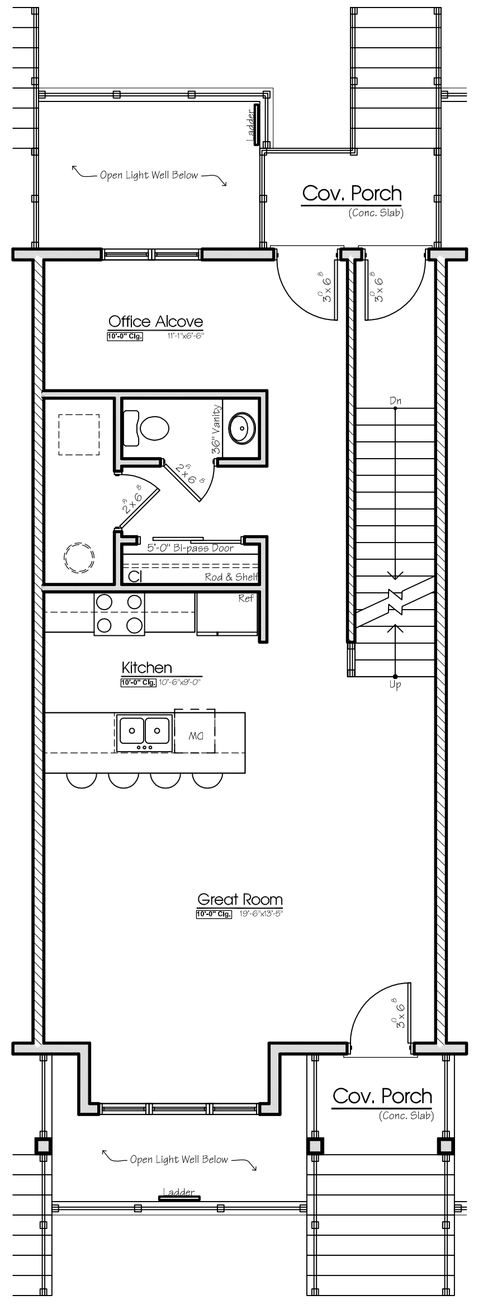
Apartment Breakdown:

Upper Unit: 1580 Total Sq.Ft.
- 1st Floor: 795 Sq.Ft.
- 2nd Floor: 785 Sq.Ft.

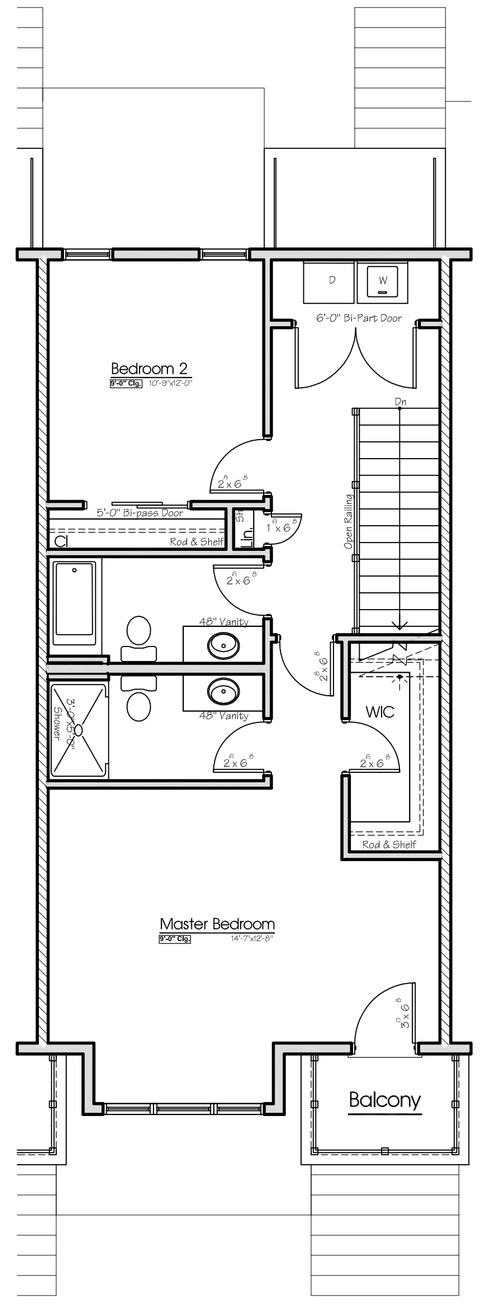
Lower Level Unit: 865 Total Sq.Ft.



A1.3 Lower Unit Plan



A1.4 First Floor Plan



A1.5 Second Floor Plan

Progress Drawings - Not For Construction

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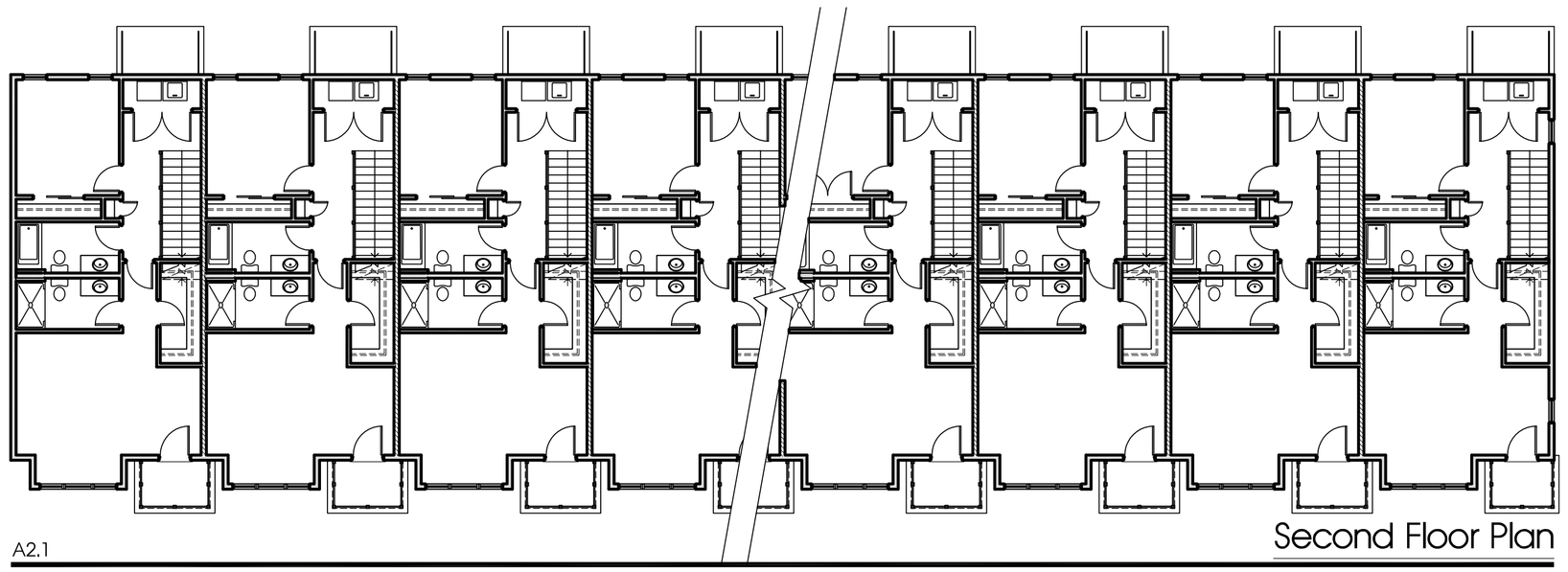
Job Number: 21-119

Title: Key Plan & Individual Unit Plans

Drawn By: Jonathan M.
Date: 8-31-22
Checked: D. Sutton
Scale: 3/16" = 1'-0"

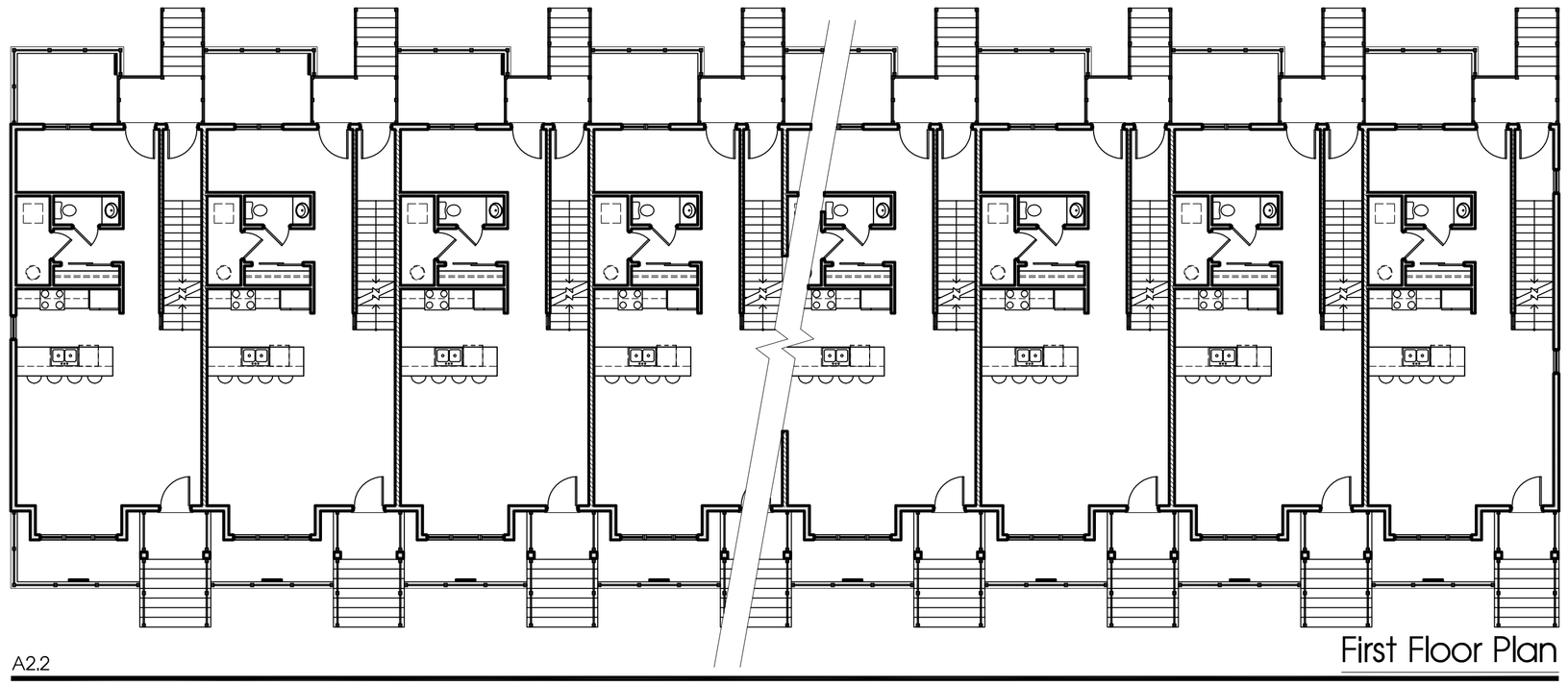
Sheet No.: A-1

Attachment: SP-2021-05_drawings_092222 (23057 : SP-2021-05)



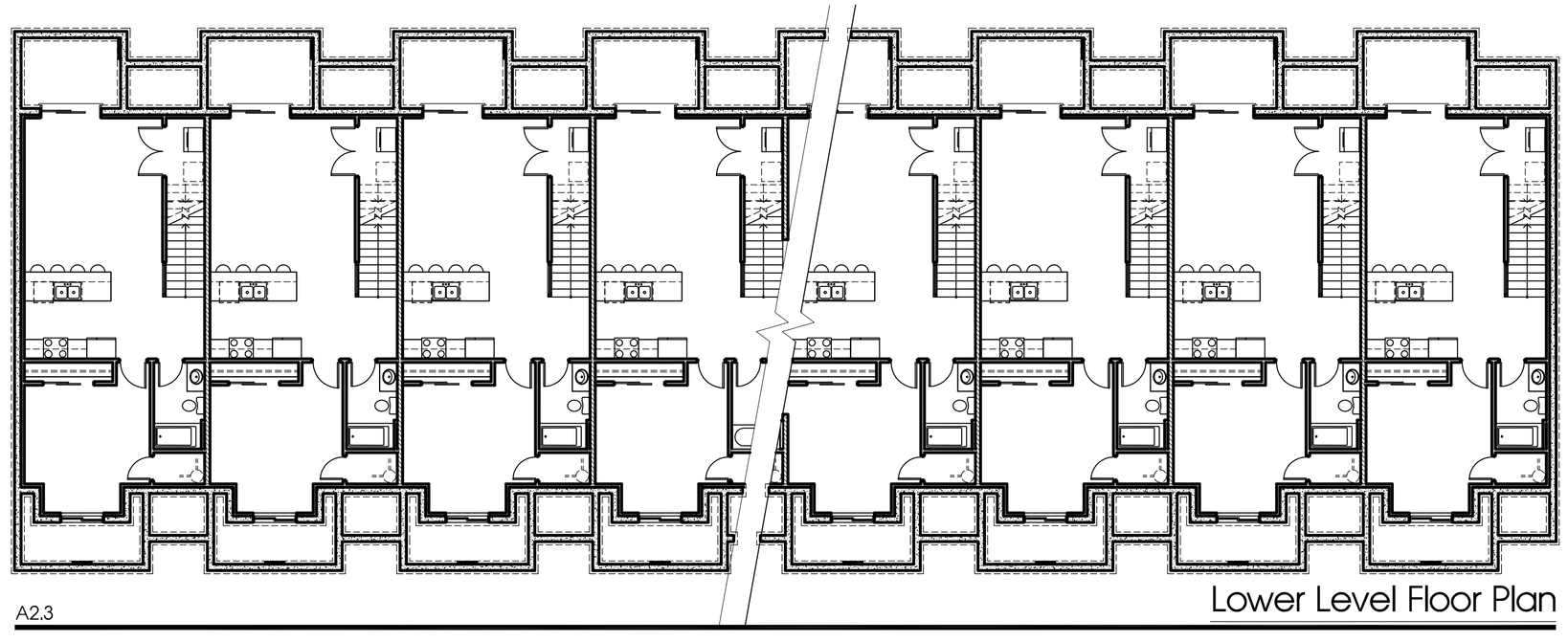
A2.1

Second Floor Plan



A2.2

First Floor Plan



A2.3

Lower Level Floor Plan

Progress Drawings Not For Construction

No.	Description	Date	By

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Job Number: 21-119

Title: Building Floor Plans

Drawn By: Jonathan M.
Date: 8-31-22
Checked: D. Sutton
Scale: 3/32" = 1'-0"

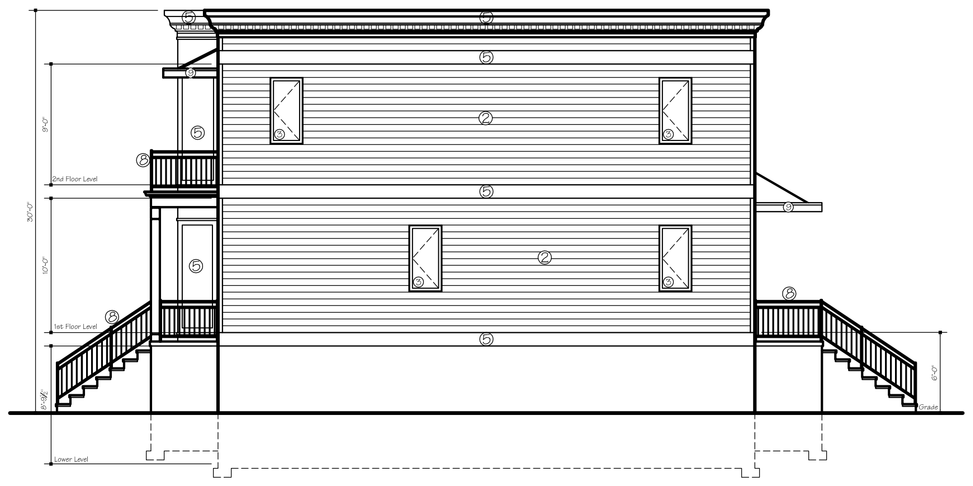
Sheet No.: A-2

Attachment: SP-2021-05_drawings_092222 (23057 : SP-2021-05)



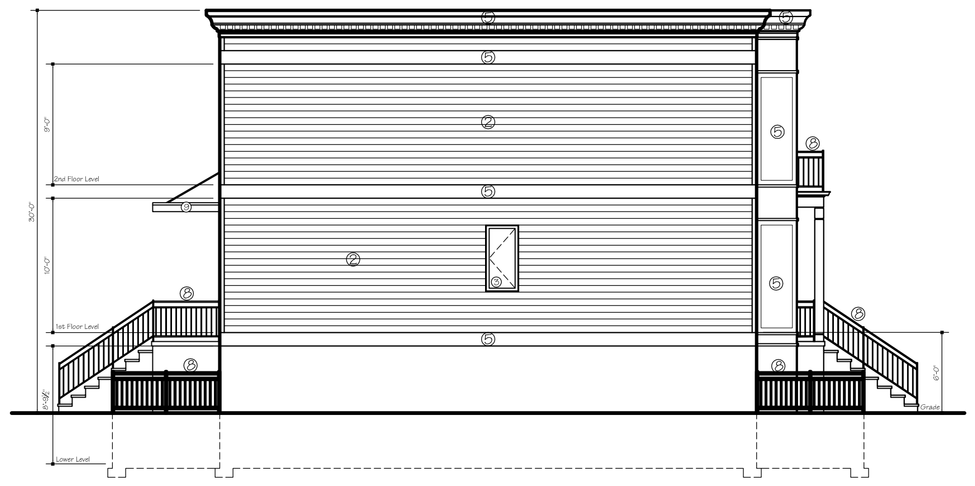
A3.1

Front Elevation



A3.2

Right Elevation



A3.3

Left Elevation



A3.4

Rear Elevation

Finish Material Legend

Mark	Material	Remarks
Exterior Wall Finish		
1	Face Brick	
2	Wood Look Fiber Cement Siding	
3	Vinyl/Fiberglass Windows	
4	Precast Conc. Water Table	
5	Fypon/Azek Trim & Cornice	
6	Aluminum Storefront Windows	
7	Hollow Metal Door/Frames	
8	Aluminum Railings	
9	Metal Canopy	
10	Faux Steel Framing	
11	Asphalt Shingles	

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Progress Drawings Not For Construction

No.	Description	Date	By

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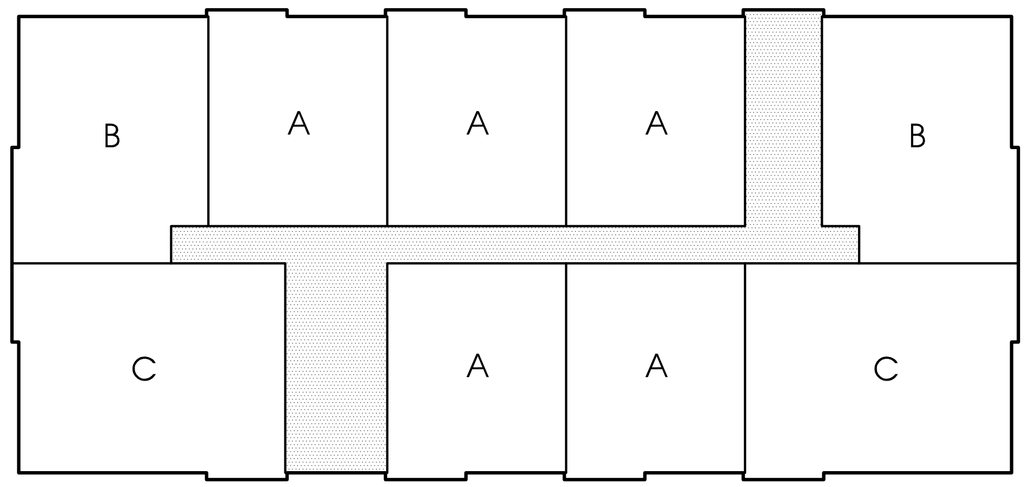
Job Number: 21-119

Title: Elevations

Drawn By: Jonathan M.
Date: 8-31-22
Checked: D. Sutton
Scale: 1/8" = 1'-0"

Sheet No.: A-3

Attachment: SP-2021-05_drawings_092222 (2305?: SP-2021-05)



A1.1 **Key Plan**

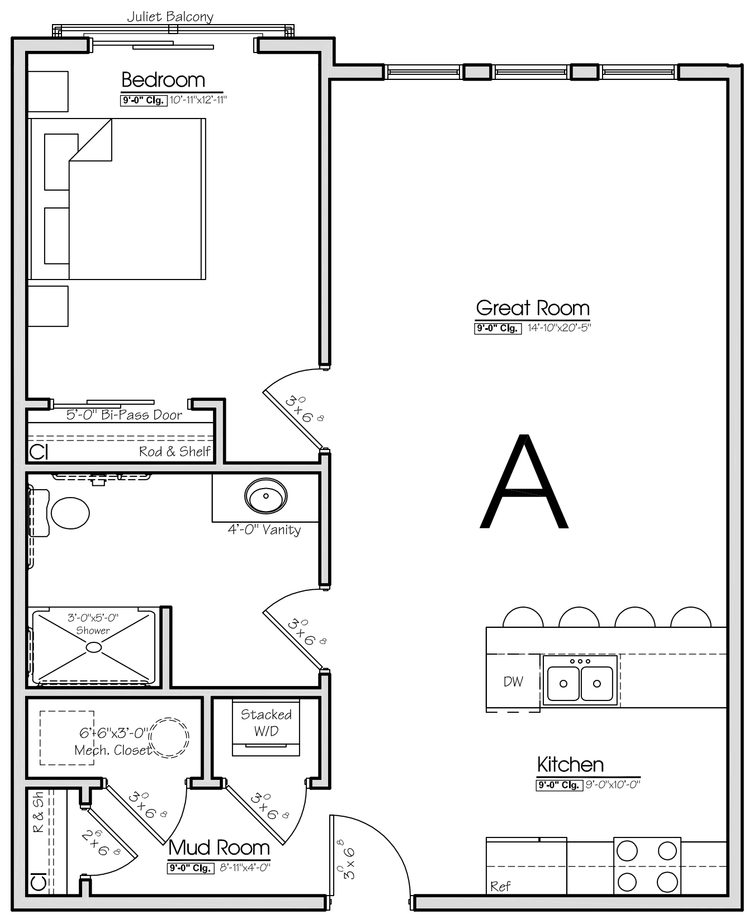
Apartment Breakdown:

Total Apartments: **36** (9 Per Floor)
Total Apartment Sq.Ft.: **35,220**
Total Building Sq.Ft.: 40,872

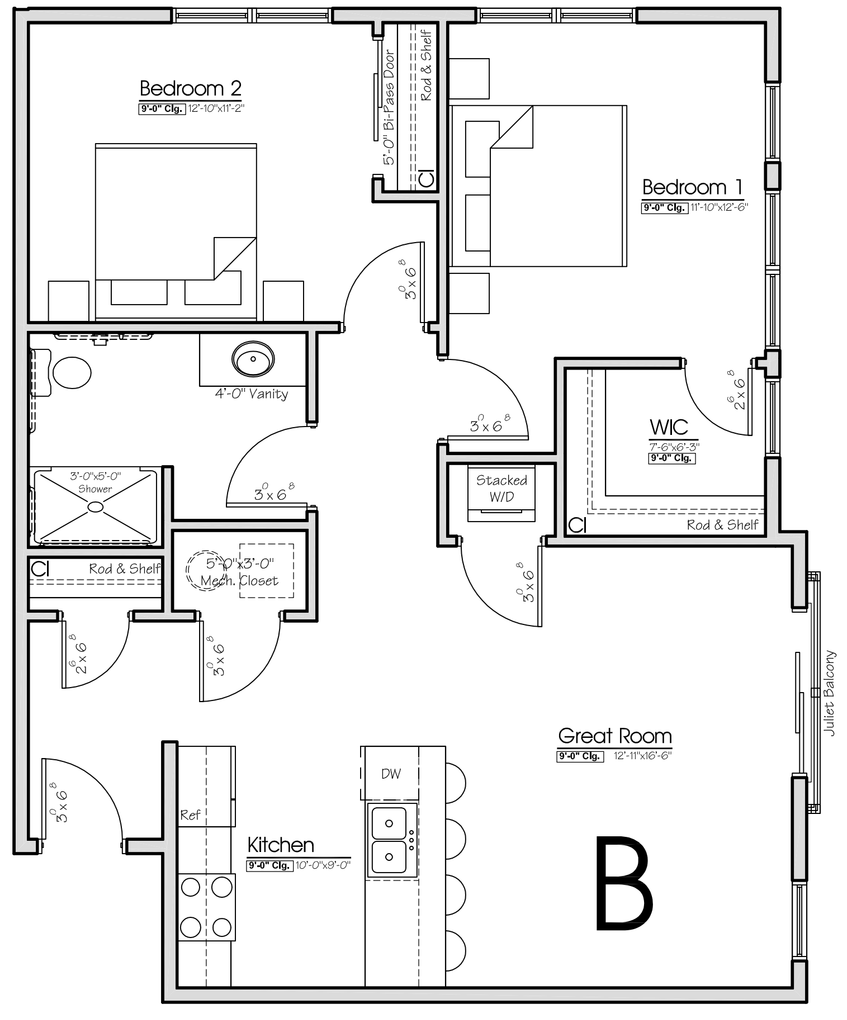
All Floors: **9 Total Apartments/Floor**
2 Bedroom: 4/Floor
1 Bedroom: 5/Floor



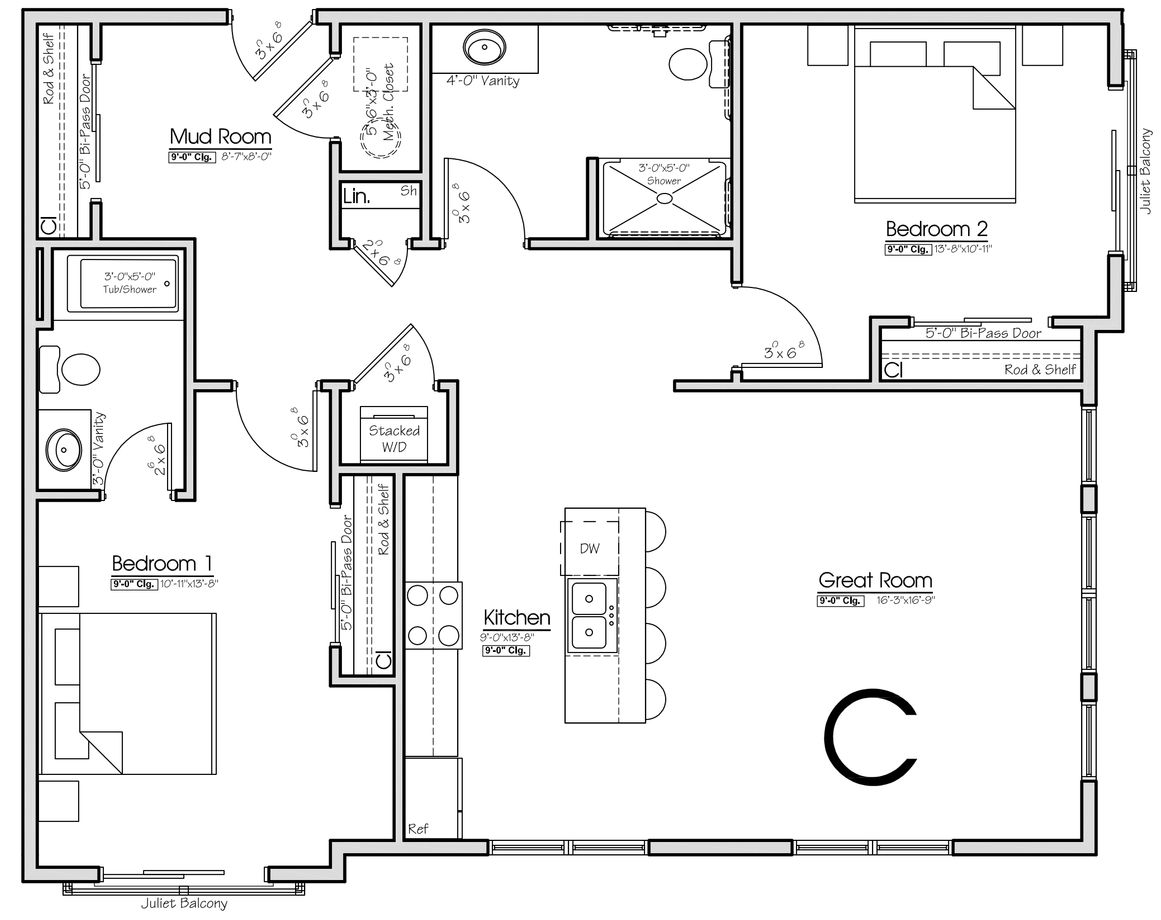
A1.2 **Square Footage Plan**



A1.3 **1 Bedroom: 845 Sq.Ft.**



A1.4 **2 Bedroom: 1026 Sq.Ft.**



A1.5 **2 Bedroom Luxury: 1264 Sq.Ft.**

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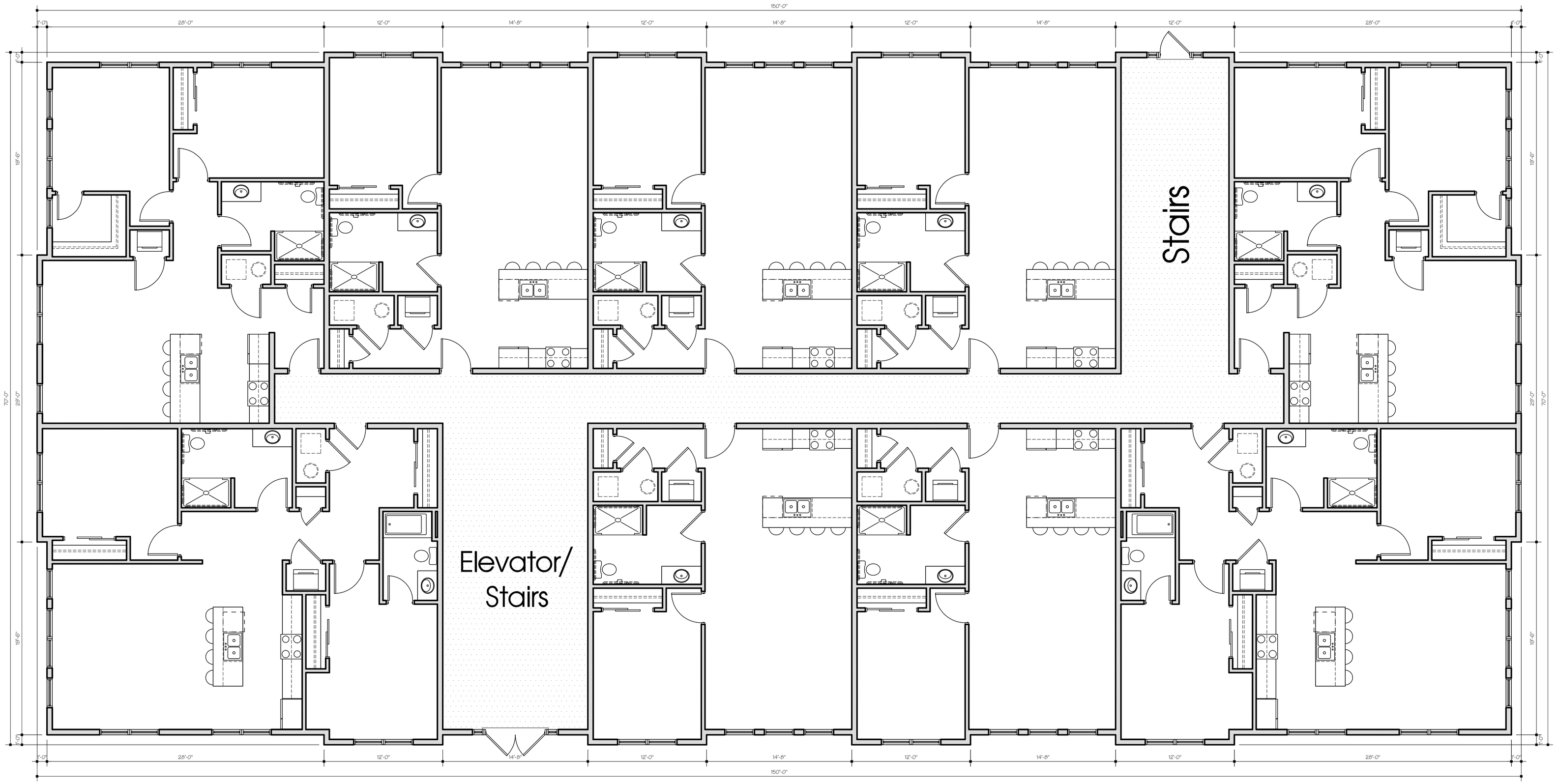
Job Number: **21-119**

Title: Key Plan & Individual Unit Plans

Drawn By: Jonathan M.
Date: 8-31-22
Checked: D. Sutton
Scale: 1/4" = 1'-0"

Sheet No.: **A-1**

Attachment: SP-2021-05_drawings_092222 (23057 : SP-2021-05)



A2.1

First Floor Plan

Progress Drawings Not For Construction

No.	Description	Date	By

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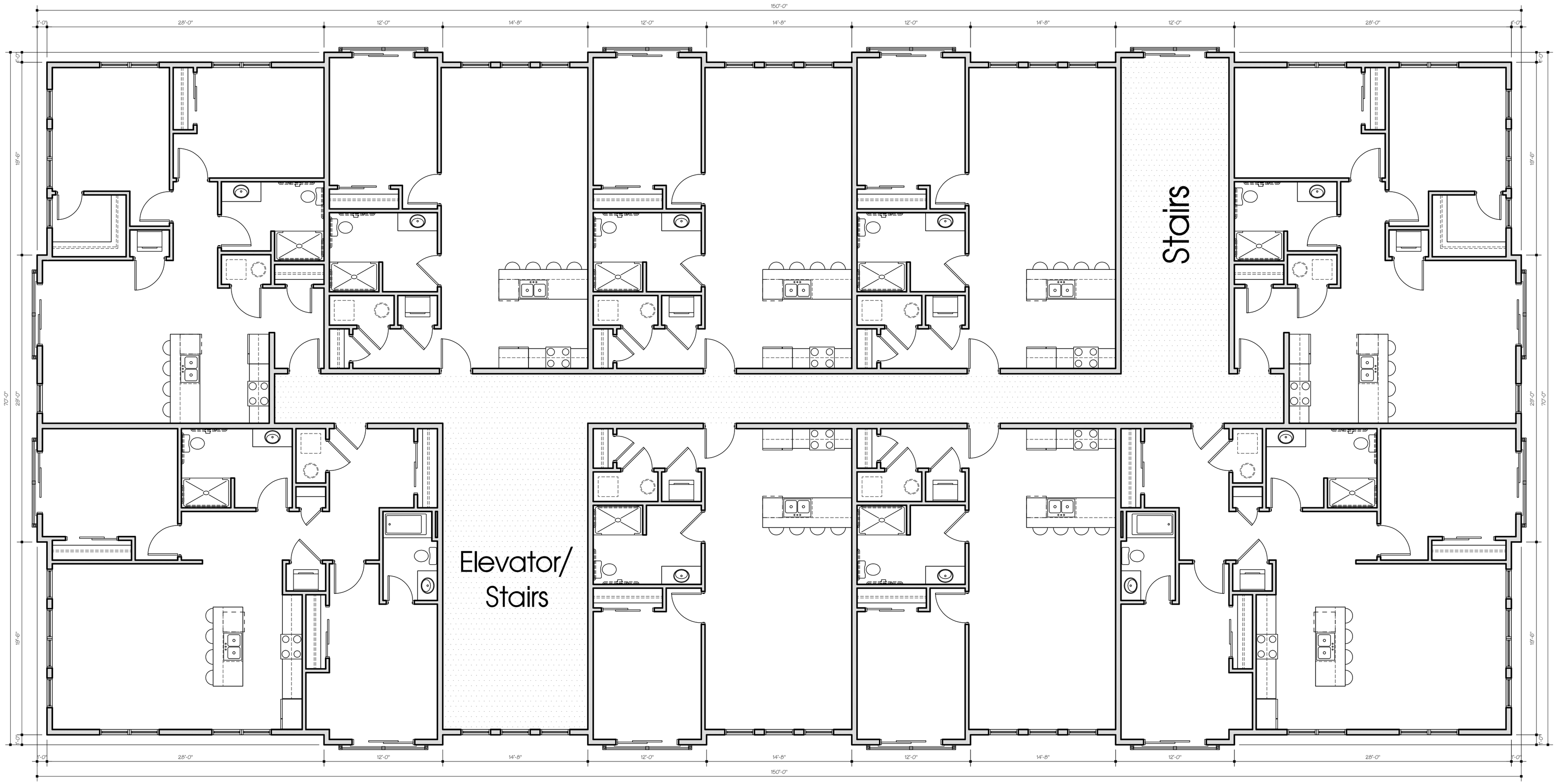
Job Number: 21-119

Title: First Floor Plan

Drawn By: Jonathan M.	Sheet No.: A-2
Date: 8-31-22	
Checked: D. Sutton	
Scale: 3/16" = 1'-0"	

Attachment: SP-2021-05_drawings_092222 (23057 : SP-2021-05)



A3.1

2nd-4th Floor Plans

Progress Drawings Not For Construction

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Job Number: 21-119

Title: 2nd -4th Floor Plans

Drawn By: Jonathan M.
Date: 8-31-22
Checked: D. Sutton
Scale: 3/16" = 1'-0"

Sheet No.: A-3

Attachment: SP-2021-05_drawings_092222 (23057 : SP-2021-05)



A4.1 Front Elevation



A4.2 Rear Elevation

Progress Drawings

Not For Construction

No.	Description	Date	By

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Job Number: 21-119

Title: Front & Rear Elevations

Drawn By:	Sheet No.:
Jonathan M.	A-4
Date: 8-31-22	
Checked: D. Sutton	
Scale: 3/16" = 1'-0"	

Attachment: SP-2021-05_drawings_092222 (23057 : SP-2021-05)



A5.1 Right Elevation



A5.2 Left Elevation

Finish Material Legend

Mark	Material	Remarks
Exterior Wall Finish		
1	Face Brick	
2	Wood Look Fiber Cement Siding	
3	Vinyl/Fiberglass Windows	
4	Precast Conc. Water Table	
5	Fypon/Azek Trim & Cornice	
6	Aluminum Storefront Windows	
7	Hollow Metal Door/Frames	
8	Aluminum Railings	
9	Metal Canopy	
10	Faux Steel Framing	
11	Asphalt Shingles	

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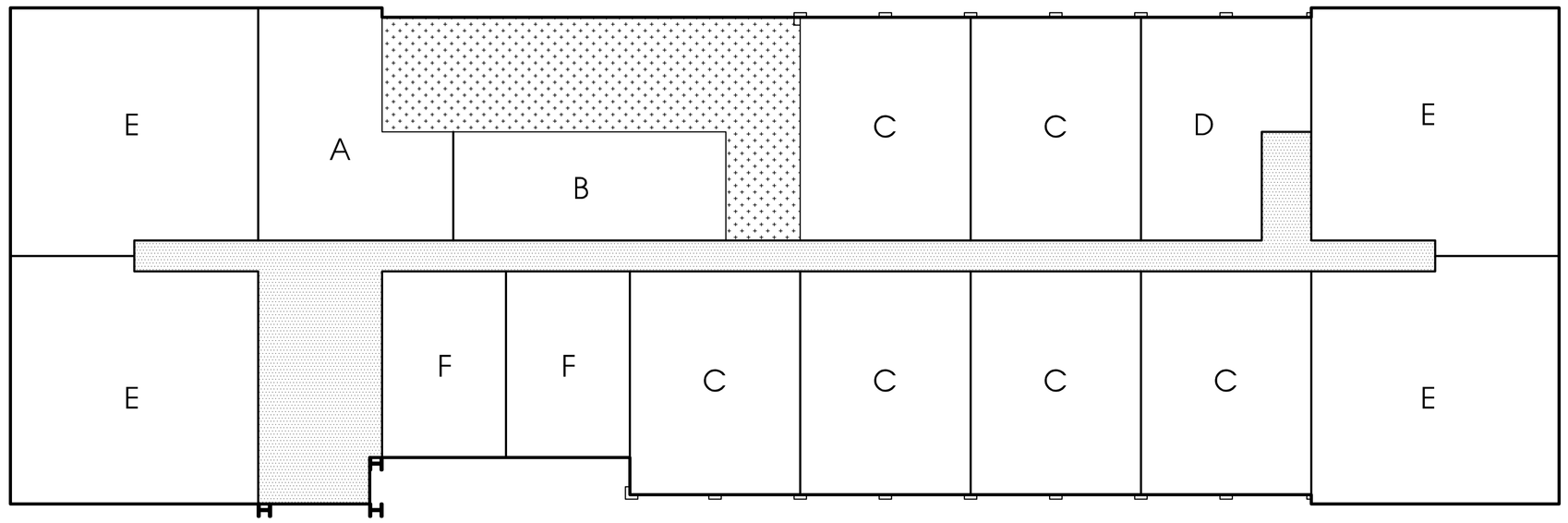
Job Number: 21-119

Title: Side Elevations

Drawn By:	Sheet No.:
Jonathan M.	A-5
Date: 8-31-22	
Checked: D. Sutton	
Scale: 3/16" = 1'-0"	

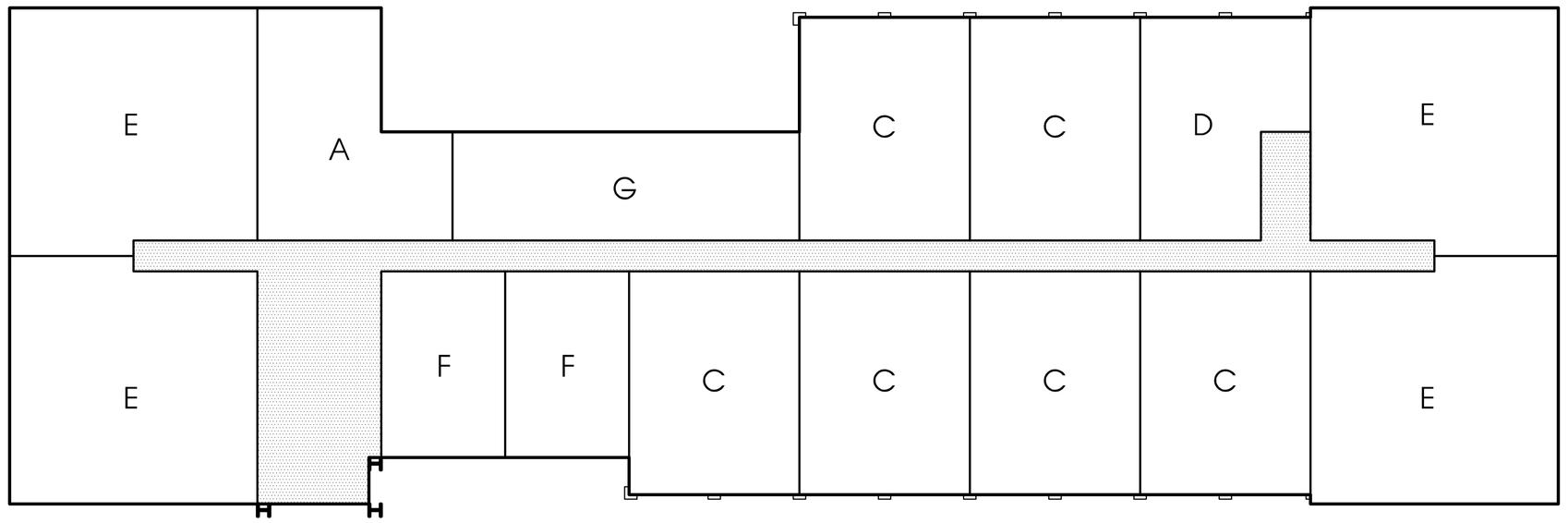
Attachment: SP-2021-05_drawings_092222 (23057 : SP-2021-05)



Terrace: 1,459 Sq.Ft.
Apartments: 15,911 Sq.Ft.
Circulation: 1,925 Sq.Ft.
Total Sq.Ft.: 19,295 Sq.Ft.

A1.1

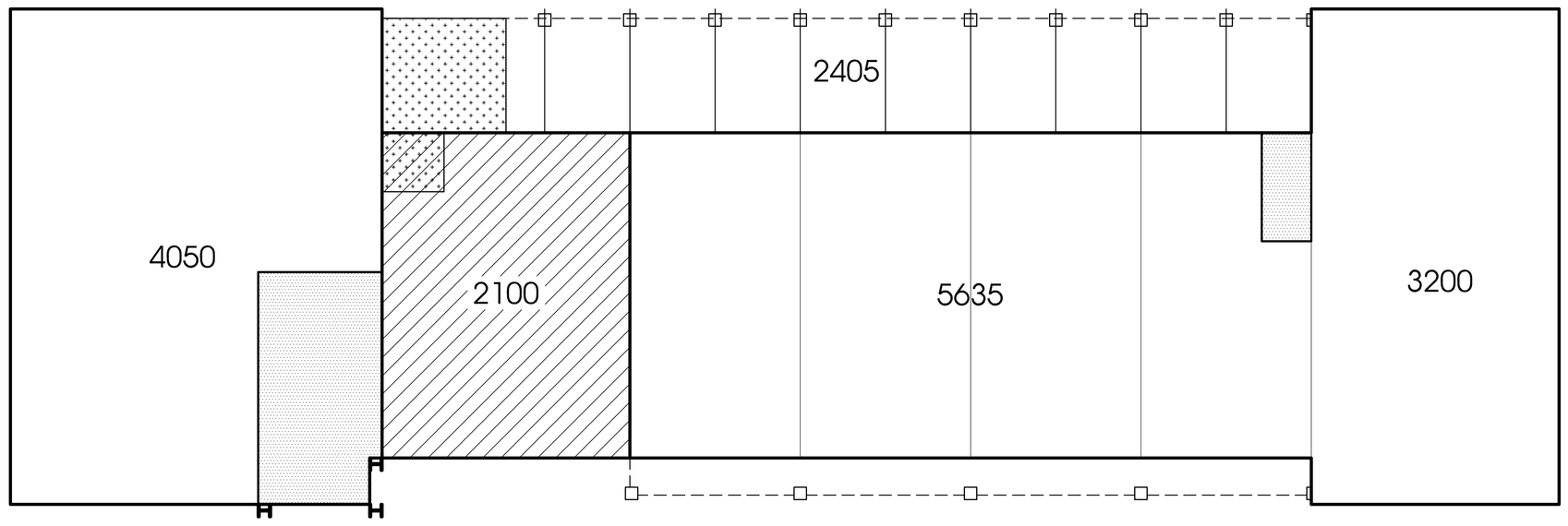
2nd Floor Key Plan



Apartments: 16,075 Sq.Ft.
Circulation: 1,925 Sq.Ft.
Total Sq.Ft.: 18,000 Sq.Ft.

A1.3

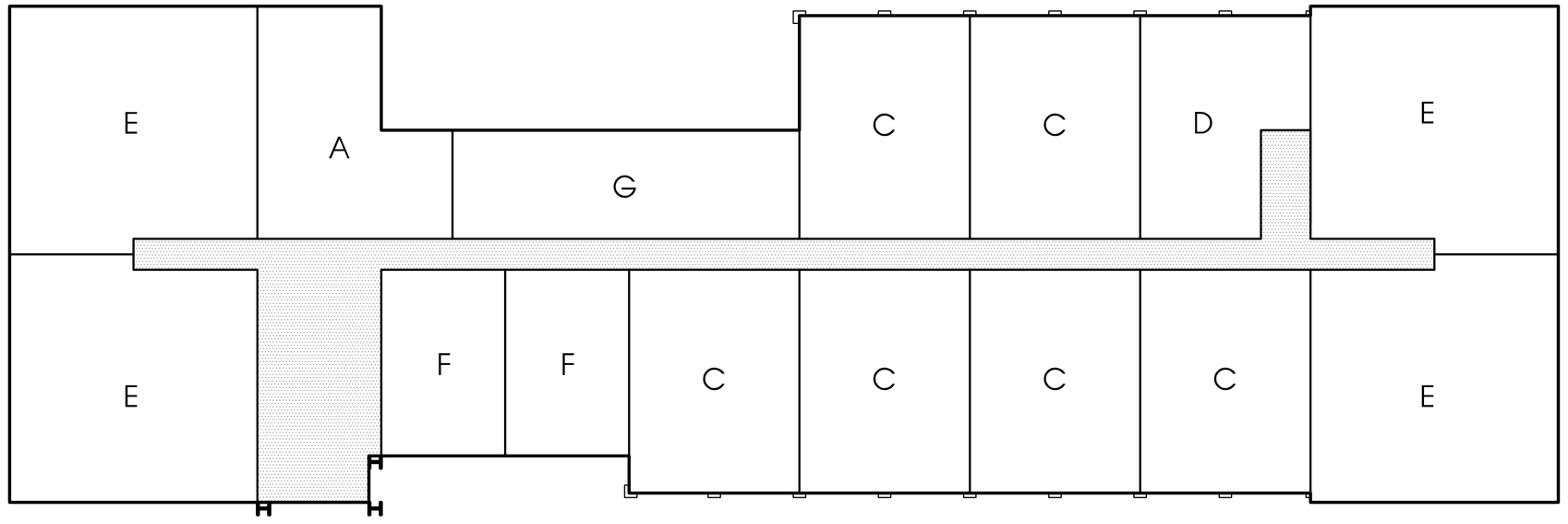
4th Floor Key Plan



Tenant Space: 12885 Sq.Ft.
Circulation: 875 Sq.Ft.
Covered Outdoor: 2100 Sq.Ft.
Total Sq.Ft.: 15,860 Sq.Ft.

A1.2

1st Floor Key Plan



Apartments: 16,075 Sq.Ft.
Circulation: 1,925 Sq.Ft.
Total Sq.Ft.: 18,000 Sq.Ft.

A1.4

3rd Floor Key Plan

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Sawyers Landing
4-Story Mixed Use

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SUTTON architecture
"Design 2 Build"
5409 Main Street
(Second Floor)
Williamsville, NY 14221
(716) 932-7156 Fax 932-7873

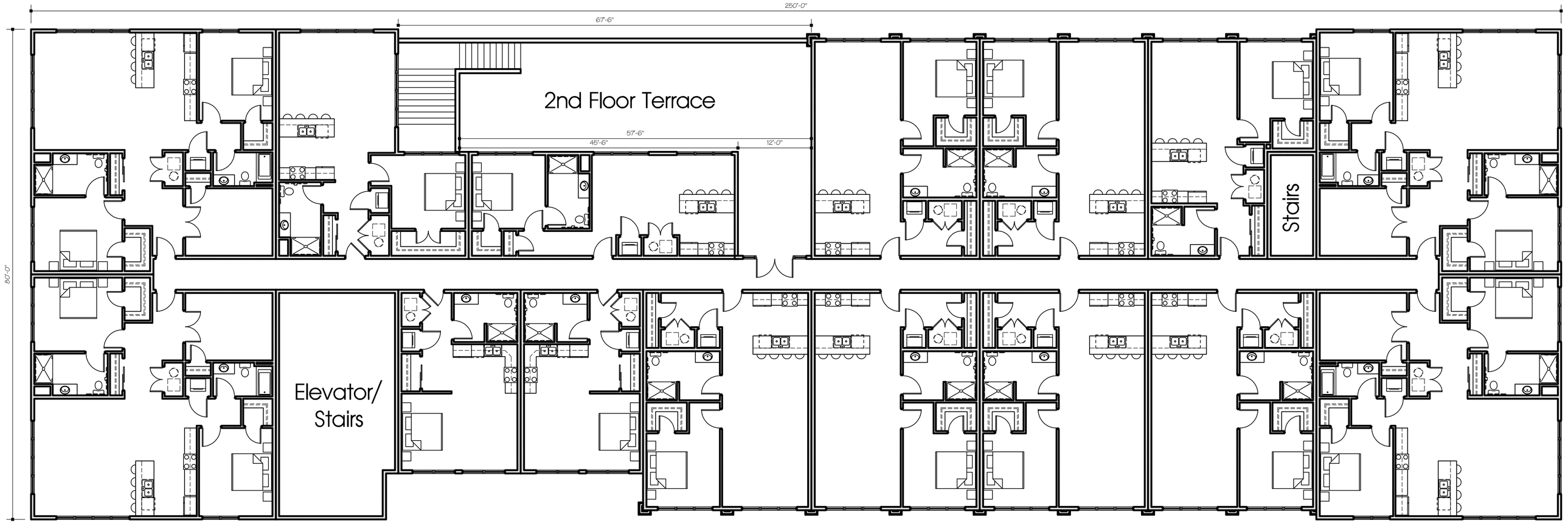
Job Number: 21-119

Title: Key Plans

Drawn By: Jonathan M.
Date: 8-31-22
Checked: D. Sutton
Scale: 1/16" = 1'-0"

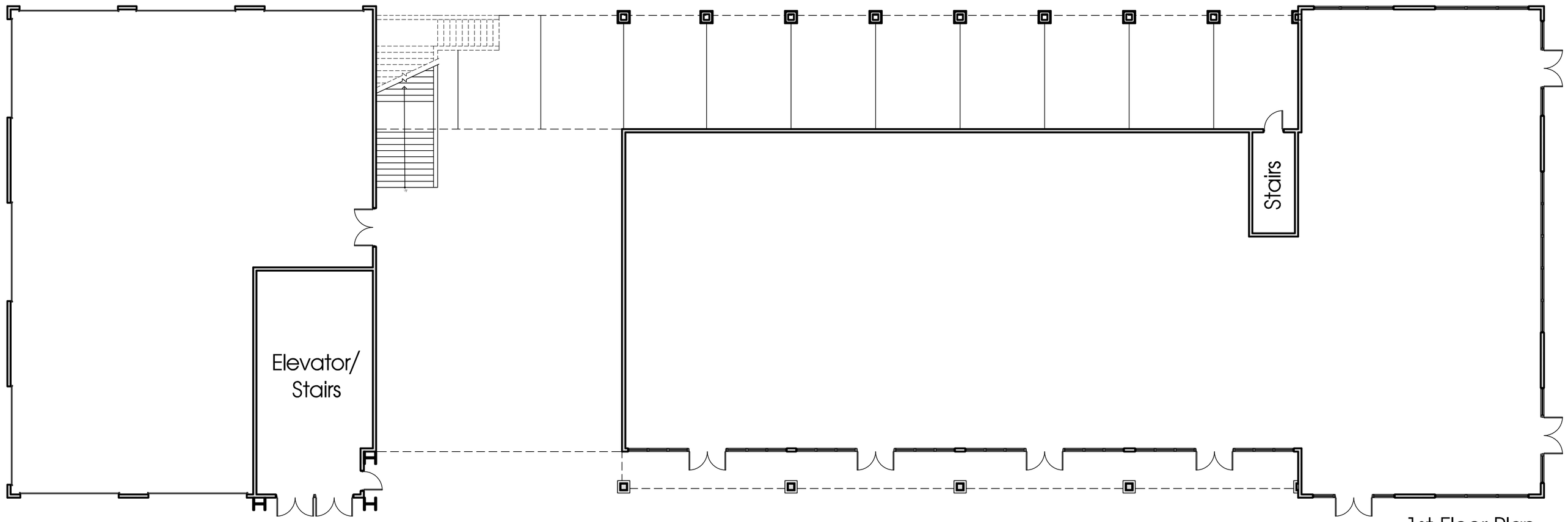
Sheet No.: A-1

Attachment: SP-2021-05_drawings_092222 (23057 : SP-2021-05)



A2.1

2nd Floor Plan



A2.2

1st Floor Plan

Progress Drawings - Not For Construction

No.	Description	Date	By

WARNING:
It is a violation of Article 147, Section 7303 of the New York State Education Law for any person to alter an item, in any way, on this document, unless under the direction of a licensed Architect.

SEVERYN DEVELOPMENT
BETTER BUILT HOMES
Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyers Landing
4-Story Mixed Use

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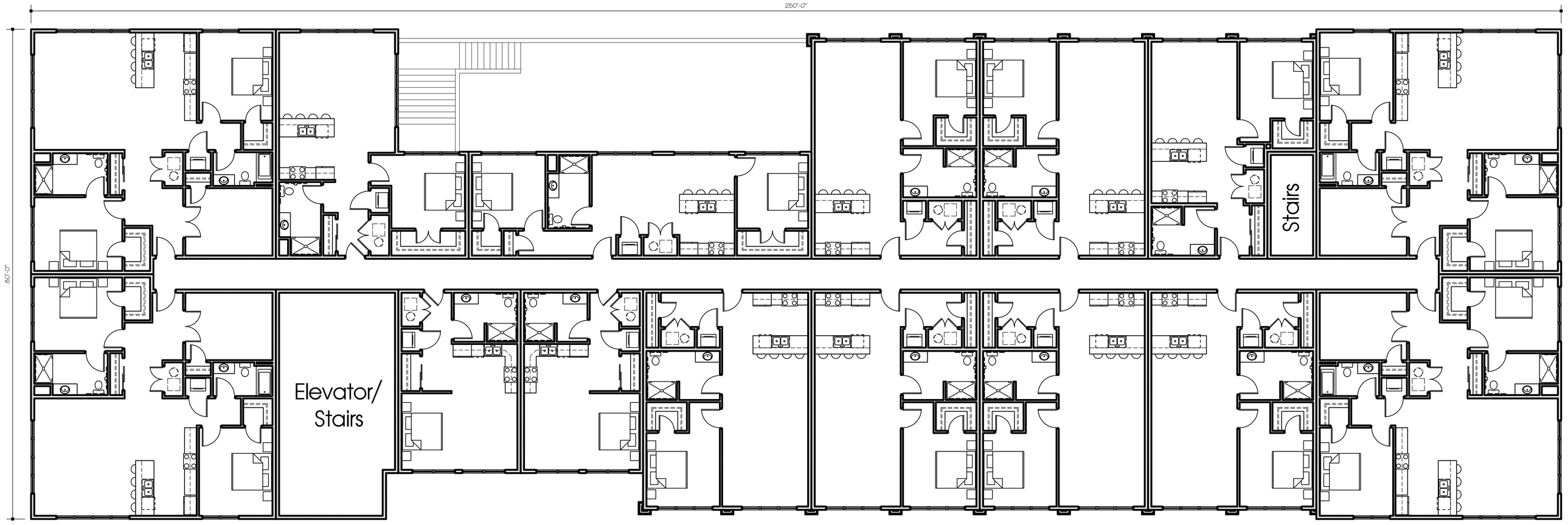
(716) 932-7156 Fax 932-7873

Job Number: 21-119

Title: First Floor Plan & Second Floor Plan

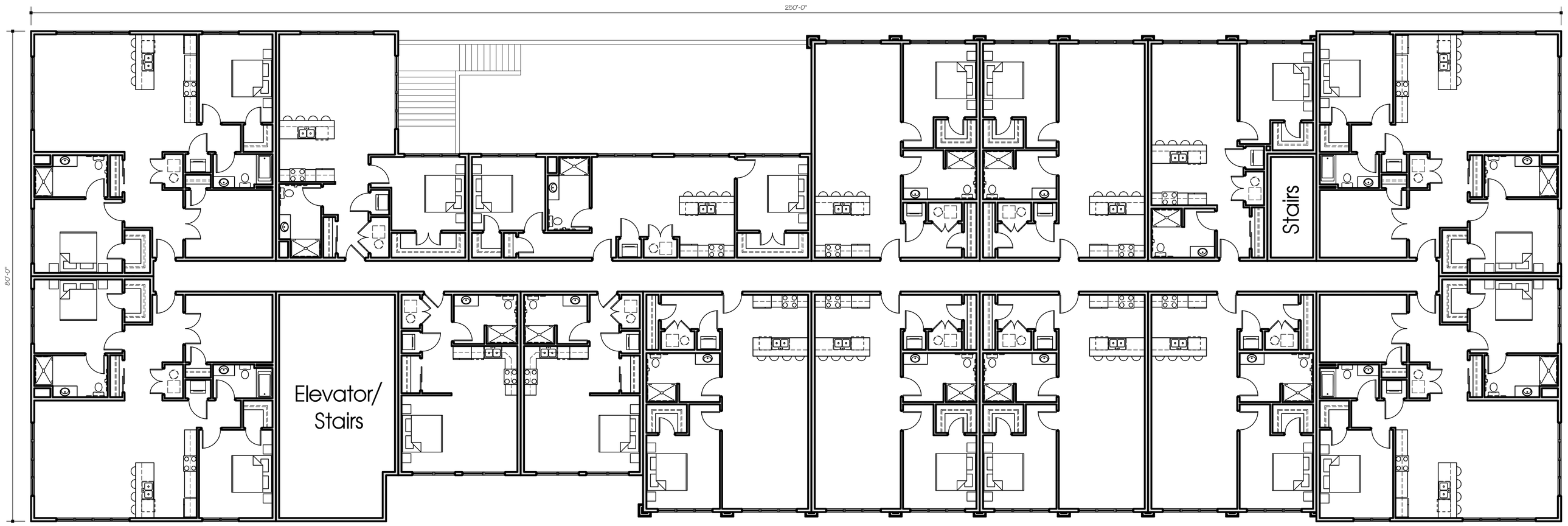
Drawn By:	Sheet No.:
Jonathan M.	A-2
Date: 8-31-22	
Checked: D. Sutton	
Scale: 3/32" = 1'-0"	

Attachment: SP-2021-05_drawings_092222 (23057 : SP-2021-05)



A3.1

4th Floor Plan



A3.2

3rd Floor Plan

Progress Drawings Not For Construction

No.	Description	Date	By

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Sawyers Landing
4-Story Mixed Use

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5409 Main Street
(Second Floor)
Williamsville, NY 14221
(716) 932-7156 Fax 932-7873

Job Number: 21-119

Title: Third Floor Plan & Fourth Floor Plan

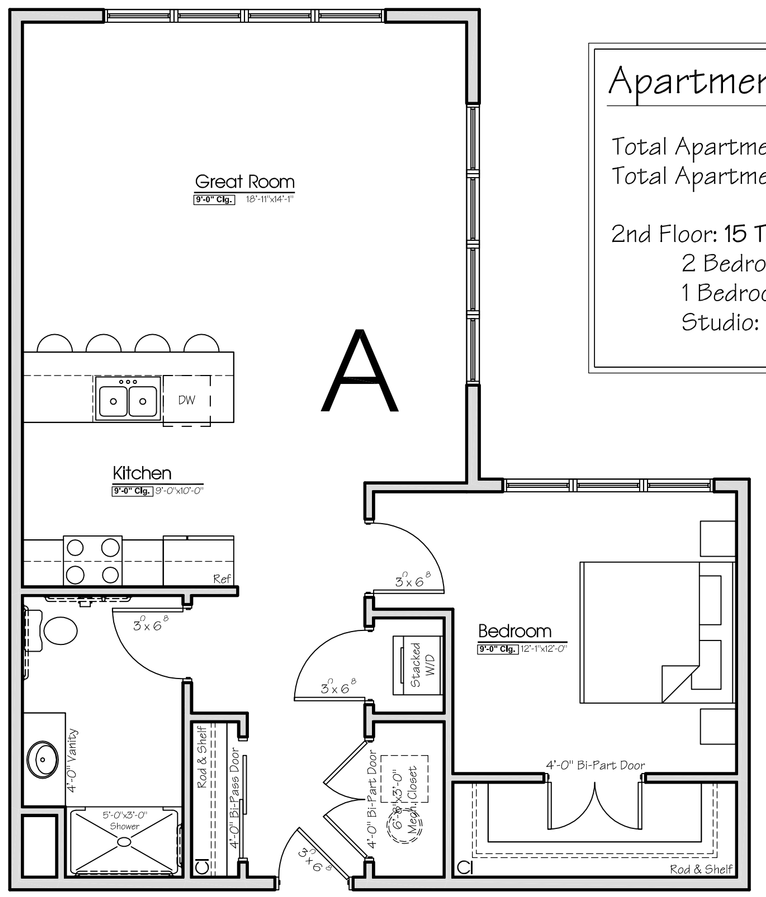
Drawn By: Jonathan M.	Sheet No.: A-3
Date: 8-31-22	
Checked: D. Sutton	
Scale: 3/32" = 1'-0"	

Attachment: SP-2021-05_drawings_092222 (23057 : SP-2021-05)

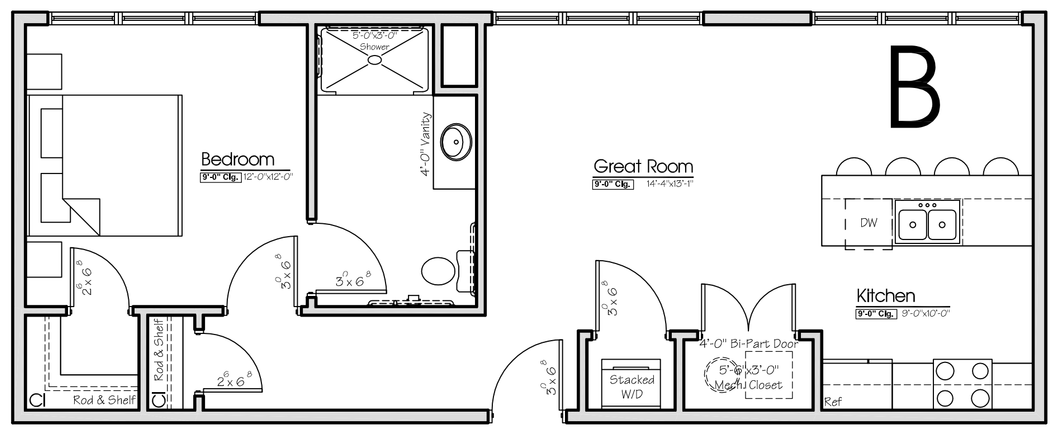
Apartment Breakdown:

Total Apartments: 45 (15 Per Floor)
Total Apartment Sq.Ft.: 48,063

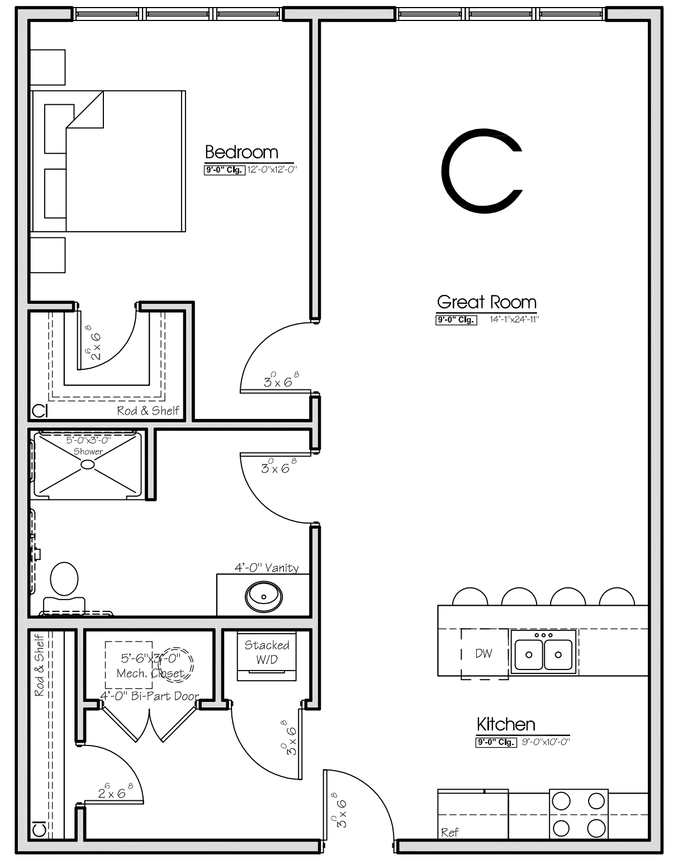
2nd Floor: 15 Total Apartments		3rd Floor: 15 Total Apartments		4th Floor: 15 Total Apartments	
2 Bedroom:	4	2 Bedroom:	5	2 Bedroom:	5
1 Bedroom:	9	1 Bedroom:	8	1 Bedroom:	8
Studio:	2	Studio:	2	Studio:	2



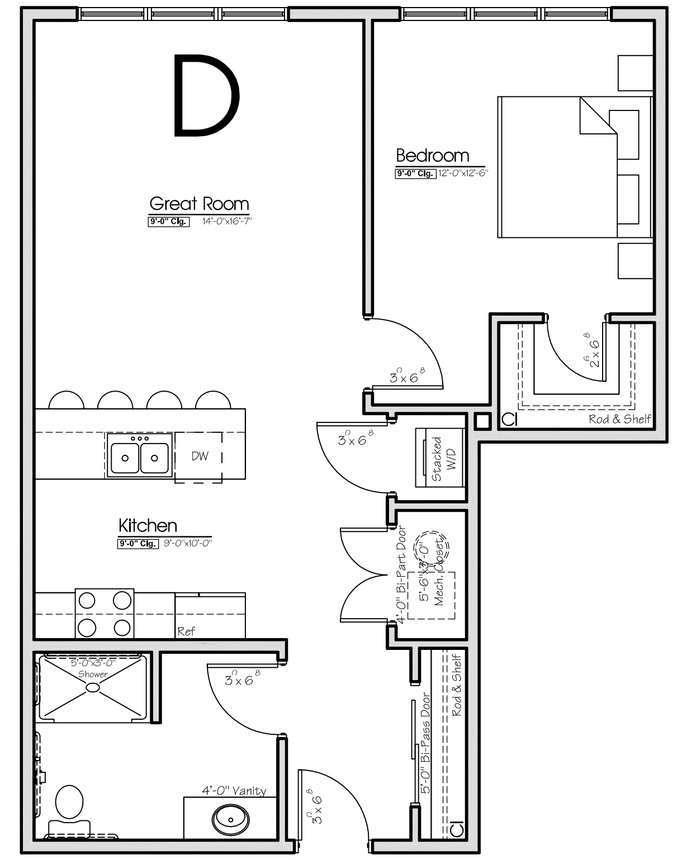
A4.1 — 1 Bedroom: 950 Sq.Ft.



A4.2 — 1 Bedroom: 770 Sq.Ft.



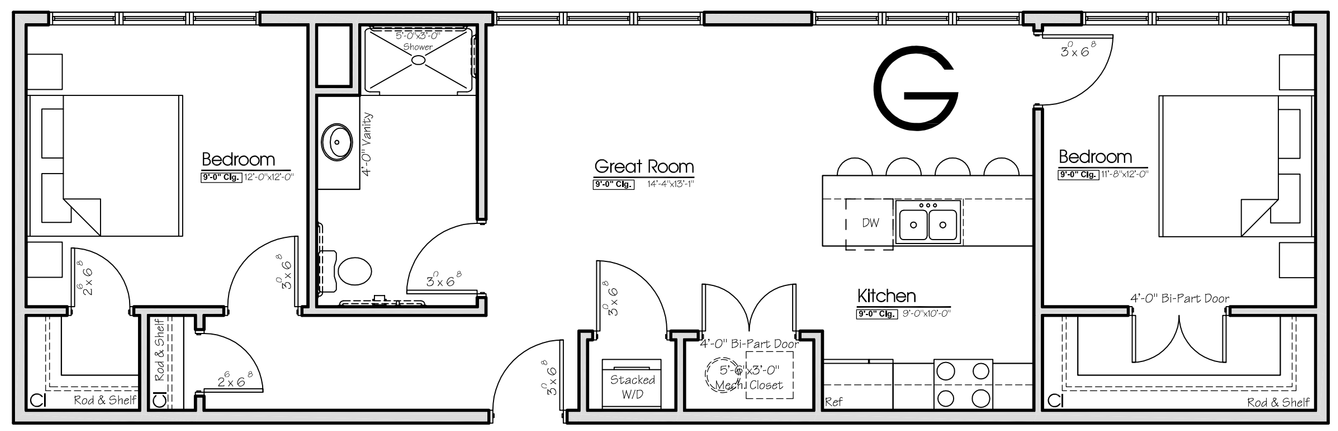
A4.3 — 1 Bedroom: 990 Sq.Ft.



A4.4 — 1 Bedroom: 770 Sq.Ft.

A4.5 — 2 Bedroom: 1550 Sq.Ft.

A4.6 — Studio: 600 Sq.Ft.



A4.7 — 2 Bedroom: 980 Sq.Ft. *3rd & 4th Floor Only

Progress Drawings - Not For Construction

No.	Description	Date	By

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SEVERYN DEVELOPMENT
BETTER BUILT HOMES
Severyn Development, Inc.
43 Central Ave Suite 300
Lancaster, NY 14086
Office Phone: 716-818-0207

Sawyers Landing
4-Story Mixed Use

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SUTTON architecture
"Design 2 Build"
5409 Main Street
(Second Floor)
Williamsville, NY 14221
(716) 932-7156 Fax 932-7873

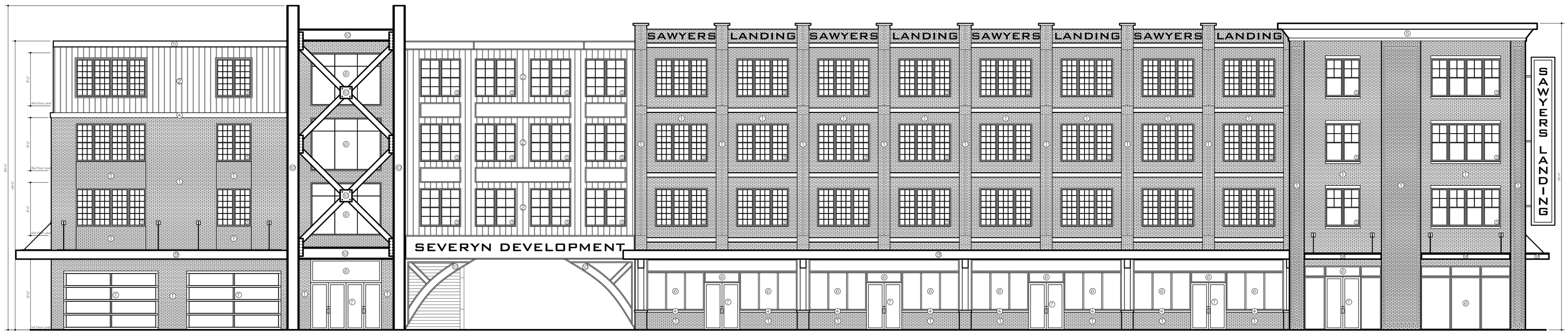
Job Number: 21-119

Title: Individual Unit Plans

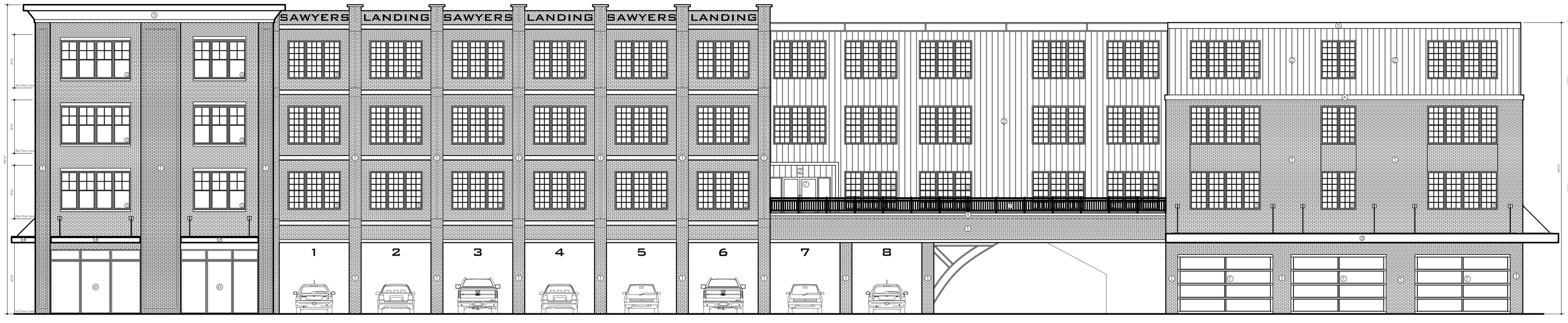
Drawn By: Jonathan M.
Date: 8-31-22
Checked: D. Sutton
Scale: 7/32"=1'-0"

Sheets No.: A-4

Attachment: SP-2021-05_drawings_092222 (23057 : SP-2021-05)



A5.1 Front Elevation



A5.2 Rear Elevation

Progress Drawings Not For Construction

No.	Description	Date	By

WARNING:
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Sawyers Landing
4-Story Mixed Use

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"Design 2 Build"
5409 Main Street
(Second Floor)
Williamsville, NY 14221
(716) 932-7156 Fax 932-7873

Job Number: 21-119

Title: Front Elevation & Rear Elevation

Drawn By: Jonathan M.
Date: 8-31-22
Checked: D. Sutton
Scale: 1/8" = 1'-0"

Sheet No.: A-5

Attachment: SP-2021-05_drawings_092222 (23057 : SP-2021-05)



A6.1 Right Elevation



A6.2 Left Elevation

Finish Material Legend

Mark	Material	Remarks
Exterior Wall Finish		
1	Face Brick	
2	Wood Look Fiber Cement Siding	
3	Vinyl/Fiberglass Windows	
4	Precast Conc. Water Table	
5	Fypon/Azek Trim & Cornice	
6	Aluminum Storefront Windows	
7	Hollow Metal Door/Frames	
8	Aluminum Railings	
9	Metal Canopy	
10	Faux Steel Framing	
11	Asphalt Shingles	

Note: All Color And Material Selections Are Dependant To Material Availability
And Subject To Alternate Selection Of Similar Size, Color, & Texture.









A6.3 Concept Images

Progress Drawings - Not For Construction

No.	Description	Date	By

WARNING:
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BETTER BUILT HOMES

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Sawyers Landing
4-Story Mixed Use

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5409 Main Street
(Second Floor)
Williamsville, NY 14221
(716) 932-7156 Fax 932-7873

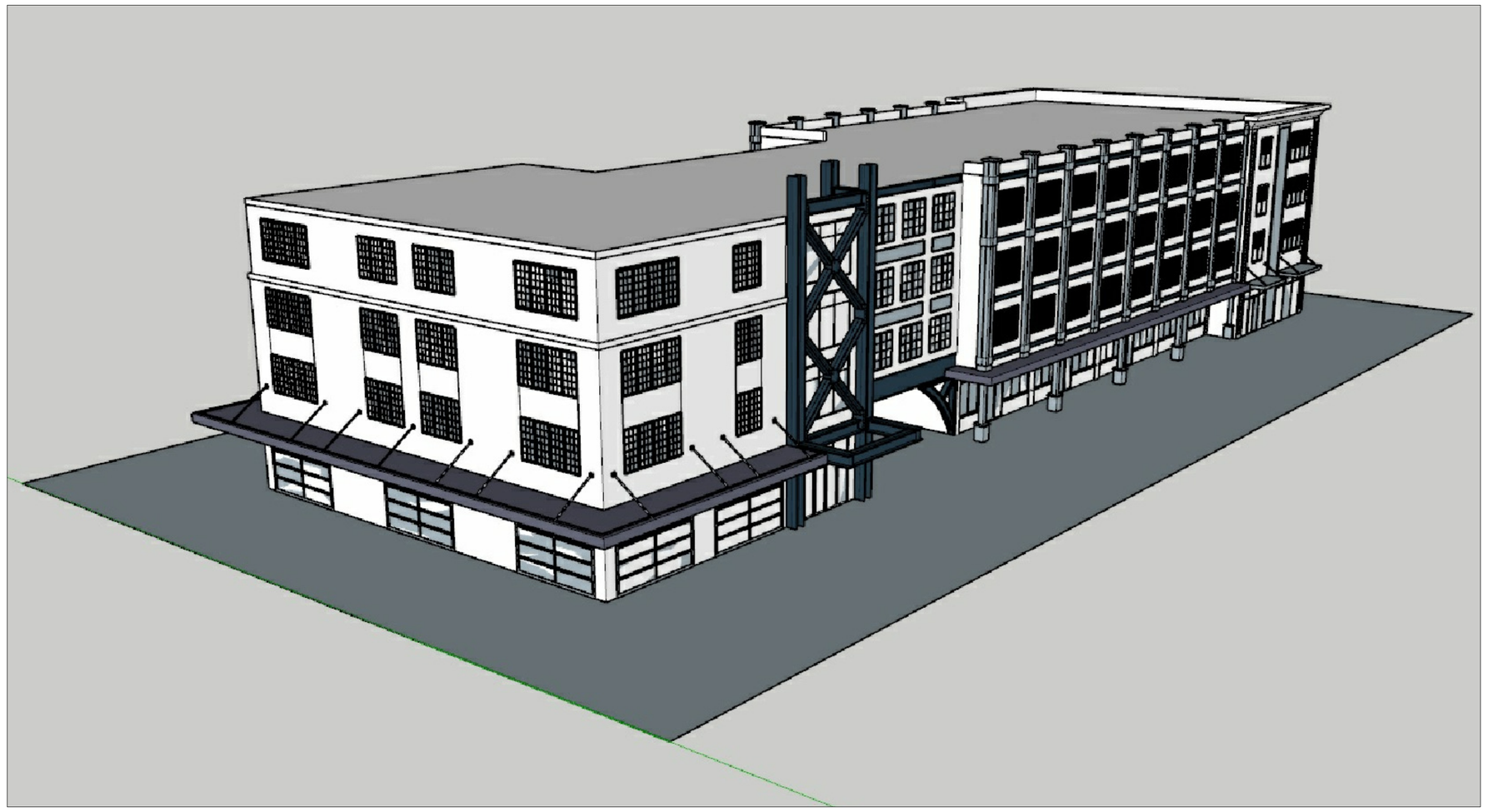
Job Number: 21-119

Title: Right Elevation & Left Elevation

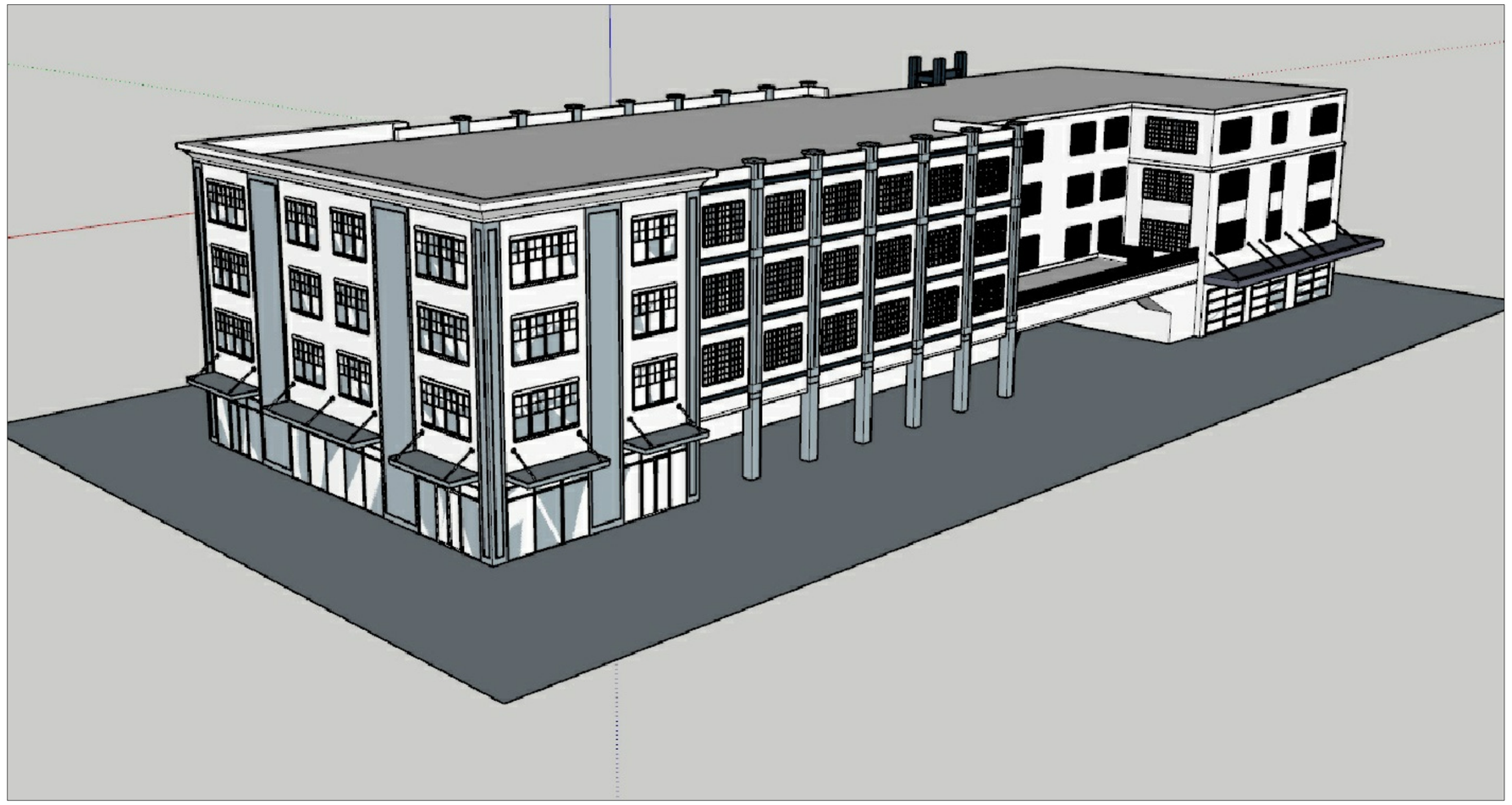
Drawn By: Jonathan M.
Date: 8-31-22
Checked: D. Sutton
Scale: 1/8" = 1'-0"

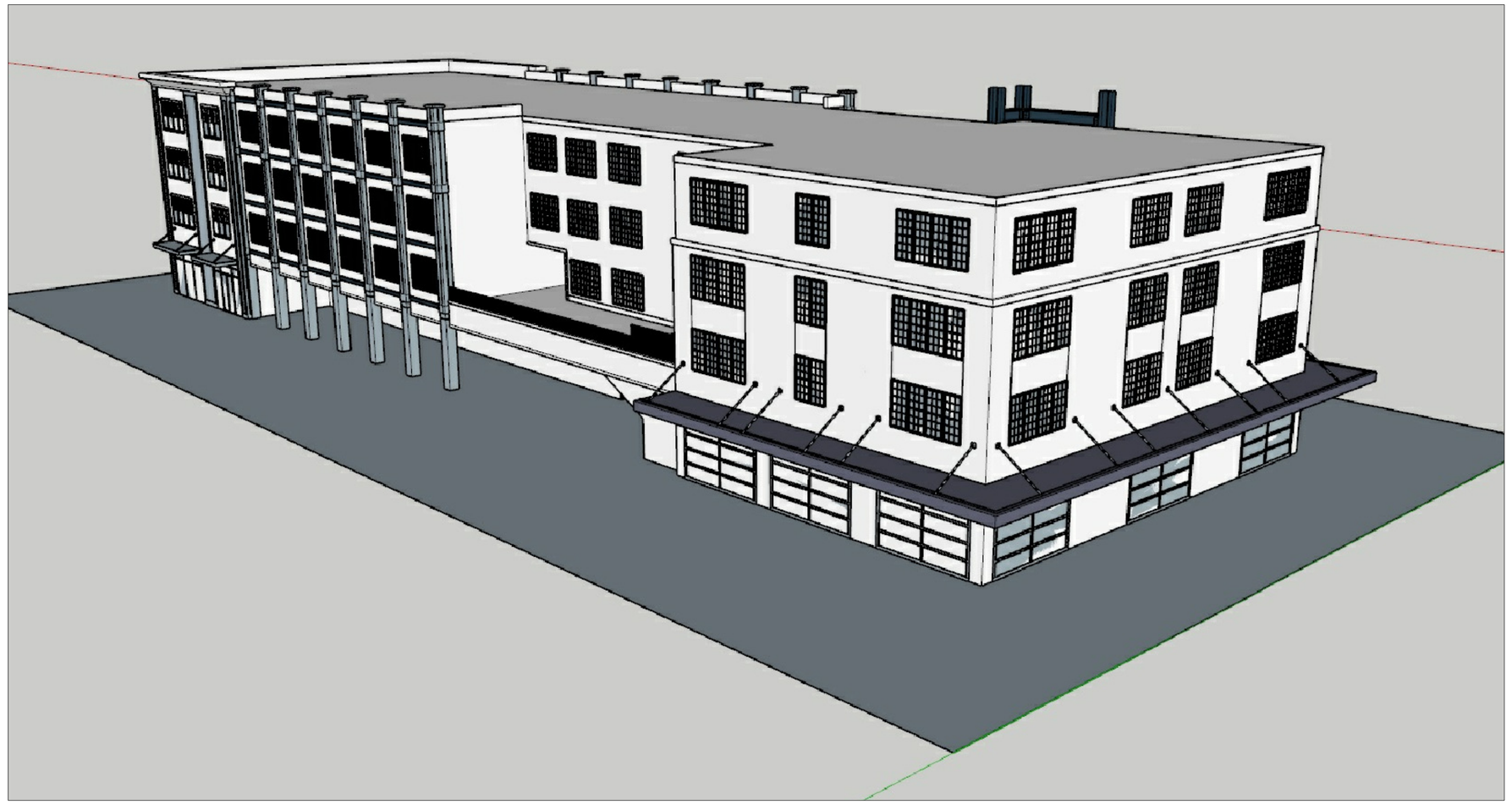
Sheet No.: A-6

Attachment: SP-2021-05_drawings_092222 (23057 : SP-2021-05)









No.	Description	Date	By

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SEVERYN DEVELOPMENT
BETTER BUILT HOMES
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43 Central Ave Suite 300
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Office Phone: 716-818-0207

Sawyers Landing
4-Story Mixed Use

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"Design 2 Build"
5409 Main Street
(Second Floor)
Williamsville, NY 14221
(716) 932-7156 Fax 932-7873

Job Number: 21-119

Title: Massing Model

Drawn By: Jonathan M.
Date: 8-31-22
Checked: D. Sutton
Scale: NTS

Sheet No.: A-7

DRAFT (9/22/2022)
TOWN OF AMHERST
PLANNING BOARD
SITE PLAN RESOLUTION
SP-2021-05

PETITIONER

Sawyer's Landing LLC
c/o Sean Hopkins, Esq.
5500 Main Street, Suite 343
Williamsville, NY 14221

PROPERTY LOCATION

1081 North French Road (portion) (NCD)

WHEREAS, the Town of Amherst Planning Board on Thursday, September 22, 2022 held a public hearing on a Site Plan for a mixed-use development, and

WHEREAS, the Planning Board reviewed the plans and specifications for the proposed project, and

WHEREAS, the Site Plan was referred to the Town's various review agencies, and

WHEREAS, in accordance with Section 8-7-8 of the Zoning Ordinance, the Planning Board finds that:

A. The site plan includes usable space for active and passive recreation, including pedestrian connections.

B. The site plan includes open space lands for public ownership and use offered for dedication or other disposition to the Town or other public entity.

C. School sites and facilities are adequate to accommodate the proposed site plan.

D. The site plan does not include the extension of roadways to adjacent property.

WHEREAS, in accordance with Section 8-7-9 of the Zoning Ordinance, the Planning Board finds that:

A. The proposed site plan is consistent with the development plan if one is required.

B. The proposed site plan is consistent with the purpose and specific requirements of the Zoning Ordinance and generally consistent with the policies of the Comprehensive Plan.

C. Adequate services and utilities will be available prior to occupancy.

D. The site plan is consistent with all other applicable laws.

Attachment: SP-2021-05_draft resolution_092222 (23057 : Sp-2021-05)

DRAFT (9/22/2022)
TOWN OF AMHERST
PLANNING BOARD
SITE PLAN RESOLUTION
SP-2021-05

PETITIONER	PROPERTY LOCATION
Sawyer's Landing LLC	1081 North French Road (portion) (NCD)

E. Pursuant to Local Law #3-82, as amended, the Planning Board has determined that the requirements of SEQR are complete and that the subject proposal is not expected to have a significant adverse effect on the environment. The previously undertaken SEQR process included a DEIS, FEIS and culminated in the Town Board's issuance of a SEQR Findings Statement on December 17, 2007. Lead Agency was re-established for review of the proposed amendment to the Findings Statement to allow the proposed mixed-use development, and the Findings Statement was revised on September 27, 2021.

F. Wetland permits were issued for this project by NYSDEC on December 17, 2019 and the US Army Corps of Engineers under Section 404 of the Clean Water Act on December 12, 2019. Both permits authorize work on the project until November 30, 2024.

NOW THEREFORE BE IT FURTHER RESOLVED that the Planning Board, in accordance with Section 8-7 of the Zoning Ordinance approves said Site Plan subject to the following conditions:

1. That the consideration of signs is specifically excluded from this approval as they will require a separate site plan review and approval by the Town.

2. That all dumpsters/trash containers and all mechanical equipment, utility structures, multiple meter boards, generators, and similar appurtenances, including those which are mounted on any part of a primary structure shall be appropriately screened with a fence, wall, and/or landscaping. Provide gate on dumpster enclosure that shall be closed whenever dumpster is not being serviced, enclosure shall be high enough to screen the dumpster(s) within.

3. That as-built record drawings, including location of utilities, be provided to the Engineering Department prior to issuance of a Certificate of Occupancy by the Building Department.

4. That the proposed 27 lots for 2 unit homes is excluded from this approval as it will require separate open development area and subdivision approvals.

5. That the petitioner obtain the required variances for remoteness of the secondary emergency access from the NYS Department of State prior to issuance of final approved site plan drawings by the Planning Department.

6. That the comments in the Amherst Fire Chief's Association Inc. communication dated June 8, 2022 be addressed to the satisfaction of the association.

Attachment: SP-2021-05_draft resolution_092222 (23057 : Sp-2021-05)

DRAFT (9/22/2022)
TOWN OF AMHERST
PLANNING BOARD
SITE PLAN RESOLUTION
SP-2021-05

PETITIONER	PROPERTY LOCATION
Sawyer's Landing LLC	1081 North French Road (portion) (NCD)

7. That the requirements outlined in the Engineering Department letter dated June 1, 2022 are adhered to or are addressed to the satisfaction of that department.

8. That the requirements outlined in the Stormwater Management Officers letter dated June 27, 2022 are adhered to or are addressed to the satisfaction of that officer.

9. That an address plan for the development be submitted and approved as indicated Assessor's review dated March 10, 2021.

10. That the Zoning Enforcement Officers comments in the Planning Department letter dated September 14, 2022 be addressed to the satisfaction of that officer.

11. That the departmental comments in the Planning Department letter dated September 14, 2022 be addressed to the satisfaction of that department.

12. That the Town's Landscape Architects comments in the Planning Department letter dated September 14, 2022 be addressed to the satisfaction of the architect.

13. That the properties as required by the Findings Statement be deeded over to the Town of Amherst prior to issuance of final approved site plan drawings for the development.

14. That the petitioner and or his contractor obtain any required permits for work with the Dodge Road right-of-way from the Erie County Department of Public Works Division of Highways.

15. That the petitioner and or his contractor obtain any required permits for work with the Sweet Home Road right-of-way from the New York State Department of Transportation.

16. That the petitioner is required to obtain a Floodplain Development Permit from the Building Department.

The foregoing resolution was adopted by the Town of Amherst Planning Board, _____; moved by _____; seconded by _____; ayes _, noes _; absent - ____.

_____ _____
Robert J. Gilmour, Chair Date

Attachment: SP-2021-05_draft resolution_092222 (23057 : Sp-2021-05)

DRAFT (9/22/2022)
TOWN OF AMHERST
PLANNING BOARD
SITE PLAN RESOLUTION
SP-2021-05

PETITIONER	PROPERTY LOCATION
Sawyer's Landing LLC	1081 North French Road (portion) (NCD)

SM/ac
X:\Current_Planning\Files\Site Plans\2021\SP-2021-05_(1081 N_FrenchRd_NCD)_2021\SP-2021-05_draft resolution_092222.doc

cc: Town Clerk
Commissioner of Building
Town Engineer
Fire Chiefs
Traffic/Safety
Highway Superintendent
ECDEP
NYSDOT
NYSDEC
Sean Hopkins, Hopkins Sorgi & McCarthy, 5500 Main St., Suite 343, Williamsville, NY 14221
William Severyn, Severyn Development, 43 Central Ave. Suite 300, Lancaster, NY 14086
Adam Faeth, Ciminelli Real Estate Corp., 50 Fountain Plaza, Suite 500, Buffalo, NY 14202
Chris Wood, Carmina Wood Morris, 487 Main St, Suite 500, Buffalo, NY 14203
David Sutton, Sutton Architects, 5409 Main St, 2nd Floor, Williamsville, NY 14221

Approved Plan: July 26, 2022
Received: August 1, 2022
September 6, 2022

Attachment: SP-2021-05_draft resolution_092222 (23057 : Sp-2021-05)

TOWN OF AMHERST
PLANNING BOARD
SITE PLAN RESOLUTION
SP-2021-05

PETITIONER

Sawyer's Landing LLC
c/o Sean Hopkins, Esq.
5500 Main Street, Suite 343
Williamsville, NY 14221

PROPERTY LOCATION

1081 North French Road (portion) (NCD)

'22 SEP 29 PM4:1!

WHEREAS, the Town of Amherst Planning Board on Thursday, September 22, 2022 held a public hearing on a Site Plan for a mixed-use development, and

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WHEREAS, the Site Plan was referred to the Town's various review agencies, and

WHEREAS, in accordance with Section 8-7-8 of the Zoning Ordinance, the Planning Board finds that:

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D. The site plan does not include the extension of roadways to adjacent property.

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C. Adequate services and utilities will be available prior to occupancy.

D. The site plan is consistent with all other applicable laws.

Attachment: SP-2021-05 signed resolution 092222 (23057 : Sp-2021-05)

TOWN OF AMHERST
PLANNING BOARD
SITE PLAN RESOLUTION
SP-2021-05

PETITIONER	PROPERTY LOCATION
Sawyer's Landing LLC	1081 North French Road (portion) (NCD)

'22 SEP 29 PM4:1

E. Pursuant to Local Law #3-82, as amended, the Planning Board has determined that the requirements of SEQR are complete and that the subject proposal is not expected to have a significant adverse effect on the environment. The previously undertaken SEQR process included a DEIS, FEIS and culminated in the Town Board's issuance of a SEQR Findings Statement on December 17, 2007. Lead Agency was re-established for review of the proposed amendment to the Findings Statement to allow the proposed mixed-use development, and the Findings Statement was revised on September 27, 2021.

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Attachment: SP-2021-05 signed resolution 092222 (23057 : Sp-2021-05)

TOWN OF AMHERST
PLANNING BOARD
SITE PLAN RESOLUTION
SP-2021-05

PETITIONER

Sawyer's Landing LLC

PROPERTY LOCATION

1081 North French Road (portion) (NCD)

'22 SEP 29 PM4:11

7. That the requirements outlined in the Engineering Department letter dated June 1, 2022 are adhered to or are addressed to the satisfaction of that department.

8. That the requirements outlined in the Stormwater Management Officers letter dated June 27, 2022 are adhered to or are addressed to the satisfaction of that officer.

9. That an address plan for the development be submitted and approved as indicated Assessor's review dated March 10, 2021.

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12. That the Town's Landscape Architects comments in the Planning Department letter dated September 14, 2022 be addressed to the satisfaction of the architect.

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14. That the petitioner and or his contractor obtain any required permits for work with the Dodge Road right-of-way from the Erie County Department of Public Works Division of Highways.

15. That the petitioner and or his contractor obtain any required permits for work with the Sweet Home Road right-of-way from the New York State Department of Transportation.

16. That the petitioner is required to obtain a Floodplain Development Permit from the Building Department.

The foregoing resolution was adopted by the Town of Amherst Planning Board, September 22, 2022; moved by Chmiel; seconded by Giuliani; ayes 5, noes 0; absent 2 (Kahn, Raffaele).

Robert J. Gilmour, Planning Board Chair

9-29-22
Date

Attachment: SP-2021-05 signed resolution 092222 (23057 : Sp-2021-05)

TOWN OF AMHERST
PLANNING BOARD
SITE PLAN RESOLUTION
SP-2021-05

PETITIONER

Sawyer's Landing LLC

PROPERTY LOCATION

'22 SEP 29 PM4:1[illegible]

1081 North French Road (portion) (NCD)

SM/ac
X:\Current_Planning\Files\Site Plans\2021\SP-2021-05_(1081 N_FrenchRd_NCD)_2021\SP-2021-05_resolution_092222.doc

cc: Town Clerk
Commissioner of Building
Town Engineer
Fire Chiefs
Traffic/Safety
Highway Superintendent
ECDEP
NYSDOT
NYSDEC
Sean Hopkins, Hopkins Sorgi & McCarthy, 5500 Main St., Suite 343, Williamsville, NY 14221
William Severyn, Severyn Development, 43 Central Ave. Suite 300, Lancaster, NY 14086
Adam Faeth, Ciminelli Real Estate Corp., 50 Fountain Plaza, Suite 500, Buffalo, NY 14202
Chris Wood, Carmina Wood Morris, 487 Main St, Suite 500, Buffalo, NY 14203
David Sutton, Sutton Architects, 5409 Main St, 2nd Floor, Williamsville, NY 14221

Approved Plan: July 26, 2022
Received: August 1, 2022
September 6, 2022

Attachment: SP-2021-05 signed resolution 092222 (23057 : Sp-2021-05)

Amherst Planning Board
5583 Main Street
Williamsville, NY 14221

TABLED

Meeting: 09/22/22 06:30 PM
Department: Planning
Category: Subdivisions & Relief from Conditions
Prepared By: Amy Carrato
Initiator: Dan Howard
Sponsors:
DOC ID: 26194

PLANNING BOARD ITEM (ID # 26194)

SEQR Hearing for a Proposed 8-Lot Subdivision, SUB-2022-01PP

Property located at 468 Harding Road
Harding Road LLC, Petitioner

Proposal to subdivide 1.44± acres into 8 lots in order to allow construction of eight single-family residences. Proposed lots are along existing public streets (Harding Road and McKinley Avenue) and includes the extensions of water and sanitary sewer service. Subdivision is comprised of 6 internal lots being a minimum of 50 feet in width by 132 feet in depth, and 2 corner lots being 78± feet in width and 132 feet in depth.

Jeffrey Palumbo, Esq., Block. Longo, LaMarca & Brzezinski, represented the petitioner, explained the proposal and was available to answer questions from the Board.

In response to the Board's questions, Mr. Palumbo stated the number of lots in the subdivison is required for the SEQR process.

Judson Paige, 375 Harding Road; Mark Bechtel, 442 Harding Road; Suzanne Paige, 375 Harding Road; Jennifer Colwell, 435 McKinley Avenue and Frank Cascino, 381 Harding Road spoke in opposition of the proposal.

No further comments were heard on this proposal. The hearing was closed.

Following discussion, Mr. Chmiel moved to approve the Negative Declaration. The motion was seconded by Mr. Giuliani and failed. Ayes 3, Noes 2 (Gill, Penberthy), Absent 2 (Kahn, Raffaele).

Ms. Penberthy moved to approve the Negative Declaration based on a 6 lot subdivison. The motion was seconded by Mr. Gill. The motion was withdrawn by Ms. Penberthy.

Ms. Penberthy moved to adjourn the proposal. The motion was seconded by Mr. Gill and carried. Ayes 5, Noes 0, Absent 2 (Kahn, Raffaele).

ATTACHMENTS:

- SUB-2022-01PP_application_092222 (PDF)
- SUB-2022-01PP_drawings_092222 (PDF)
- SUB-2022-01PP_draft_neg dec_092222 (PDF)

RESULT:	**ADJOURNED [UNANIMOUS]**	**Next: 10/20/2022 6:30 PM**
MOVER:	Brittany Lee Penberthy, Board Member	
SECONDER:	Harbinder Gill, Board Member	
AYES:	Gilmour, Chmiel, Gill, Giuliani, Penberthy	
ABSENT:	Joseph P. Raffaele Jr., Carrie H. Kahn	

TOWN OF AMHERST PLANNING DEPARTMENT

Subdivision Application

For Official Use

File # _____ **Acreage** _____ **Fee $** _____

Type of Subdivision Application (check one):

Sketch Plan _____
Preliminary Plat _____
Final Plat _____

Address Verified by Assessor's Office _____ (VERIFIED BY / DATE)

Materials Received by Planning Department _____ (RECEIVED BY / DATE)

Fee Paid to Town Clerk _____ (RECEIVED BY / DATE)

		Fill In Applicable Fees
Sketch Plan	**$1,150.00**	_____
Preliminary Plat		
* 1 acre or less	**$1,250.00**	_____
* Each additional acre or fraction thereof *(fraction to be counted as 1 acre)*	**$ 650.00/acre**	_____
Amendments to Subdivisions	$1,150.00	_____
Request for Relief of / or Change to Conditions of Subdivision Approval	$1,150.00	_____
Request for Extension of Subdivision Approval	$ 450.00	_____
Minor Modification to a Subdivision Plat	$ 325.00	_____
Stormwater Pollution Prevention Plan		
1 - 4.99 Acres	$ 500.00	_____
5 - 10 Acres	$ 750.00	_____
>10 Acres	$1,000.00	_____
Affidavit Fee for Public Hearing	**$ 15.00**	_____
Final Plat	**$ 450.00**	_____
	TOTAL FEE:	$_____

Town of Amherst Planning Department • 5583 Main Street • Williamsville • New York 14221
(716) 631-7051 • Fax: • (716) 631-7153 • Web: www.amherst.ny.us

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

SUBDIVISION APPLICATION (con't) *Page 2*

To Be Completed By Applicant

Petitioner: Name: Harding Road LLC

Address: c/o Carmina Wood Design as agent/engineer - 487 Main Street St 500

Buffalo (city) New York (state) 14203 (zip code)

Phone: (716) 842.3165 ext 112 Fax:

E Mail: rherzellah@carminawooddesign.com

Representative (Architect, Engineer, Landscape Architect, Surveyor, or Attorney)**:**

Name: Rami Herzellah

Address: 487 Main Street, St 500

Buffalo (city) New York (state) 14203 (zip code)

Phone: 716-842.3165 ext 112 Fax:

E Mail: rherzellah@carminawooddesign.com

Subdivision Location & Address: 468 Harding Road, SBL 82.09-6-20

Town of Amherst, Erie County, New York

Zoning District(s): TR-3

Number of Proposed Sublots: 8

Proposed Subdivision Name: Harding Road Subdivision

Proposed Street Names:

McKinley Avenue (existing)	☒ Public	☐ Private
Harding Road (existing)	☒ Public	☐ Private
	☐ Public	☐ Private
	☐ Public	☐ Private

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TOWN OF AMHERST
State Environmental Quality Review
ENVIRONMENTAL ASSESSMENT FORM
-- ADDENDUM --

1. For each applicable category of proposed new structures, including additions to existing structures, provide the following information for all soil types on the project site (*according to Soil Survey of Erie County, NY; Table 11, Building Site Development, pp 294-305):*

Soil Name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets

2. If the Soil survey indicates either "severe" or "moderate" suitability for the proposed types of construction, a geotechnical and hydrological analysis based on one test per 3.5 acres of project area must be provided (per Town Board resolution, 3/17/03, amended 6/16/03).

   _____ Geotechnical report attached __X__ Not applicable

3. Is your property located: On Youngs Road between Dodge and Klein Roads? □ Yes ☒ No
   On Wehrle Dr. between Spindrift Dr. and Oakwood Rd? □ Yes ☒ No

   If so, the property may be within an area of the Town that is affected by a moratorium on connections to the sanitary sewer system.

4. Are there alternative locations on the site for this project? □ Yes ☒ No

5. Location and size of real property owned by petitioner within one (1) mile of subject proposal:
   _____
   _____

6. Are you aware of current or future plans or intentions by others in the Town of Amherst to develop property within 1000± ft. of the present project request: □ Yes ☒ No

   Describe_____
   _____

   (Potential environmental impacts from adjacent or nearby projects undergoing the approval process will receive a coordinated environmental review to determine cumulative effects on common receivers (e.g. traffic and drainage corridors) and other relevant environmental concerns.)

7. Maximum number of vehicular trips to be generated per peak hour upon completion of project 24
   Source: ITE TripGen 11th ed.

8. Will blasting occur during construction? □ Yes ☒ No

9. Does the project propose to connect and be tributary to the public sanitary sewer system? ☒ Yes □ No

10. Proposed net additional gallons per day (gpd) of sanitary sewer discharge upon completion of project:
    3,520 average flow 15,288 peak flow.

    (Average flows of 2,500 gpd or greater will require an Engineer's Report that includes a detailed downstream sewer capacity analysis and the identification of and commitment to required I/I offset work during peak wastewater flow conditions.)

11. Based on the Town's *2011 Reconnaissance Level Survey of Historic Resources*, is your property 'blue-rated' for historic significance? □ Yes ☒ No

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Full Environmental Assessment Form
Part 1 - Project and Setting

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project: Harding Road Subdivision		
Project Location (describe, and attach a general location map): 468 Harding Road - Town of Amherst, NY 14221		
Brief Description of Proposed Action (include purpose or need): Site development project that includes the construction of a single-family subdivision on a 1.44 acre site located between Harding Road and McKinley Avenue in the Town of Amherst. Construction to also include a public sanitary sewer and water main extension.		
Name of Applicant/Sponsor: Harding Road LLC c/o Rami Herzellah - Carmina Wood Design	Telephone: 716.842.3165 x112 E-Mail: rherzellah@carminawooddesign.com	
Address: 487 Main Street, Suite 500		
City/PO: Buffalo	State: NY	Zip Code: 14203
Project Contact (if not same as sponsor; give name and title/role):	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:
Property Owner (if not same as sponsor):	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:

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B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees ☑Yes ☐No	Town Board	
b. City, Town or Village Planning Board or Commission ☑Yes ☐No	Town Planning Board	
c. City, Town or Village Zoning Board of Appeals ☐Yes ☑No		
d. Other local agencies ☑Yes ☐No	Engineering Dept, Building Dept	7/12/22
e. County agencies ☑Yes ☐No	ECDOH	To be determined
f. Regional agencies ☐Yes ☑No		
g. State agencies ☑Yes ☐No	NYSDEC - DSCA	To be determined
h. Federal agencies ☐Yes ☑No		

i. Coastal Resources.
i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐Yes ☑No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☑Yes ☐No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☑Yes ☐No

If Yes, identify the plan(s):
NYS Heritage Areas:West Erie Canal Corridor

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes ☑No

If Yes, identify the plan(s):

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C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
TR-3

b. Is the use permitted or allowed by a special or conditional use permit? ☐ Yes ☑ No

c. Is a zoning change requested as part of the proposed action? ☐ Yes ☑ No
If Yes,
i. What is the proposed new zoning for the site?

C.4. Existing community services.

a. In what school district is the project site located? Clarence Central School Distric

b. What police or other public protection forces serve the project site?
Town of Amherst Police

c. Which fire protection and emergency medical services serve the project site?
Volunteer Fire Department

d. What parks serve the project site?
Patriots and Heroes Park

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)? Residential subdivision

b. a. Total acreage of the site of the proposed action? 1.44 acres
b. Total acreage to be physically disturbed? 1.44 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 1.44 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % _____ Units: _____

d. Is the proposed action a subdivision, or does it include a subdivision? ☑ Yes ☐ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
Residential subdivision
ii. Is a cluster/conservation layout proposed? ☑ Yes ☐ No
iii. Number of lots proposed? 8
iv. Minimum and maximum proposed lot sizes? Minimum 6,649 sf Maximum 10,874 sf

e. Will the proposed action be constructed in multiple phases? ☐ Yes ☑ No
i. If No, anticipated period of construction: 12 months
ii. If Yes:
- Total number of phases anticipated _____
- Anticipated commencement date of phase 1 (including demolition) _____ month _____ year
- Anticipated completion date of final phase _____ month _____ year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases:

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f. Does the project include new residential uses? ☑ Yes ☐ No

If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase				8
At completion of all phases				8

g. Does the proposed action include new non-residential construction (including expansions)? ☐ Yes ☑ No

If Yes,

i. Total number of structures _____

ii. Dimensions (in feet) of largest proposed structure: _____height; _____width; and _____ length

iii. Approximate extent of building space to be heated or cooled: _____ square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☐ Yes ☑ No

If Yes,

i. Purpose of the impoundment: _____

ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☐ Other specify:

_____

iii. If other than water, identify the type of impounded/contained liquids and their source.

_____

iv. Approximate size of the proposed impoundment. Volume: _____ million gallons; surface area: _____ acres

v. Dimensions of the proposed dam or impounding structure: _____ height; _____ length

vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):

_____

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐ Yes ☑ No

If Yes:

i .What is the purpose of the excavation or dredging? _____

ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?

- Volume (specify tons or cubic yards): _____
- Over what duration of time? _____

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.

_____

_____

iv. Will there be onsite dewatering or processing of excavated materials? ☐ Yes ☐ No

If yes, describe. _____

_____

v. What is the total area to be dredged or excavated? _____acres

vi. What is the maximum area to be worked at any one time? _____ acres

vii. What would be the maximum depth of excavation or dredging? _____ feet

viii. Will the excavation require blasting? ☐ Yes ☐ No

ix. Summarize site reclamation goals and plan: _____

_____

_____

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☐ Yes ☑ No

If Yes:

i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): _____

_____

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ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

iii. Will the proposed action cause or result in disturbance to bottom sediments? ☐Yes ☐No
If Yes, describe:

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☐No
If Yes:

- acres of aquatic vegetation proposed to be removed:
- expected acreage of aquatic vegetation remaining after project completion:
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access):
- proposed method of plant removal:
- if chemical/herbicide treatment will be used, specify product(s):

v. Describe any proposed reclamation/mitigation following disturbance:

c. Will the proposed action use, or create a new demand for water? ☑Yes ☐No
If Yes:

i. Total anticipated water usage/demand per day: 3,520 gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑Yes ☐No
If Yes:

- Name of district or service area: ECWA
- Does the existing public water supply have capacity to serve the proposal? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No
- Do existing lines serve the project site? ☐Yes ☑No

iii. Will line extension within an existing district be necessary to supply the project? ☑Yes ☐No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project:
  294 LF of 8" water main extension from hydrant on Harding Rd to northeast corner of Lot #1.
- Source(s) of supply for the district: ECWA existing water main

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐Yes ☑No
If, Yes:

- Applicant/sponsor for new district:
- Date application submitted or anticipated:
- Proposed source(s) of supply for new district:

v. If a public water supply will not be used, describe plans to provide water supply for the project:

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑Yes ☐No
If Yes:

i. Total anticipated liquid waste generation per day: 3,520 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each):
Sanitary wastewater

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑Yes ☐No
If Yes:

- Name of wastewater treatment plant to be used: Town of Amherst Wastewater Treatment Facility
- Name of district: Town of Amherst Sewer District
- Does the existing wastewater treatment plant have capacity to serve the project? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No

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- Do existing sewer lines serve the project site? ☐Yes ☑No
- Will a line extension within an existing district be necessary to serve the project? ☑Yes ☐No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: 361 LF of 8" sanitary sewer extension

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☑No

If Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

_____

_____

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

_____

_____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☐Yes ☑No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or _____ acres (impervious surface)

_____ Square feet or _____ acres (parcel size)

ii. Describe types of new point sources. _____

_____

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

_____

_____

- If to surface waters, identify receiving water bodies or wetlands: _____

_____

_____

- Will stormwater runoff flow to adjacent properties? ☐Yes ☑No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☐Yes ☑No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☑No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

_____

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

_____

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

_____

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☑No

ii. In addition to emissions as calculated in the application, the project will generate:

- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

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h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

_____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

_____

_____

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? ☐Yes ☑No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐Weekend ☐ Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): _____

_____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

_____

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☐Yes ☑No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: _____

_____

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):

_____

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐Yes ☐No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 7:00 am to 7:00 pm
- Saturday: 7:00 am to 7:00 pm
- Sunday: As needed
- Holidays: Not Applicable

ii. During Operations:

- Monday - Friday: 7:00 am to 7:00 pm
- Saturday: 7:00 am to 7:00 pm
- Sunday: As needed
- Holidays: Not Applicable

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m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

Construction activities in furtherance of the construction of the proposed commercial building project will result in temporary unavoidable adverse noise impacts during daytime hours. The project will not result in any long-term adverse noise impacts.

ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☑ No

Describe: _____

n. Will the proposed action have outdoor lighting? ☐ Yes ☑ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☐ No

Describe: _____

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures: _____

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored _____

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally, describe the proposed storage facilities: _____

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☐ Yes ☑ No

If Yes:

i. Describe proposed treatment(s):

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☐ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☐ Yes ☑ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: _____ tons per _____ (unit of time)
- Operation : _____ tons per _____ (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: _____
- Operation: _____

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: _____
- Operation: _____

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s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☐ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)
☐ Forest ☐ Agriculture ☐ Aquatic ☐ Other (specify): _____

ii. If mix of uses, generally describe:

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces			
• Forested			
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	1.44	1.44	0.00
• Agricultural (includes active orchards, field, greenhouse etc.)			
• Surface water features (lakes, ponds, streams, rivers, etc.)			
• Wetlands (freshwater or tidal)			
• Non-vegetated (bare rock, earth or fill)			
• Other Describe: _____			

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c. Is the project site presently used by members of the community for public recreation? ☐ Yes ☑ No
i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☐ Yes ☑ No
If Yes,
i. Identify Facilities:

_____
_____

e. Does the project site contain an existing dam? ☐ Yes ☑ No
If Yes:
i. Dimensions of the dam and impoundment:

- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____
iii. Provide date and summarize results of last inspection:

_____
_____

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐ Yes ☑ No
If Yes:
i. Has the facility been formally closed? ☐ Yes ☐ No

- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:

_____
_____

iii. Describe any development constraints due to the prior solid waste activities: _____

_____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐ Yes ☑ No
If Yes:
i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:

_____
_____

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐ Yes ☑ No
If Yes:
i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐ Yes ☐ No

☐ Yes – Spills Incidents database — Provide DEC ID number(s): _____
☐ Yes – Environmental Site Remediation database — Provide DEC ID number(s): _____
☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures: _____

_____
_____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☑ Yes ☐ No
If yes, provide DEC ID number(s): 915043

iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):

_____
_____

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v. Is the project site subject to an institutional control limiting property uses? ☐ Yes ☑ No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐ Yes ☐ No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? 3 feet

b. Are there bedrock outcroppings on the project site? ☐ Yes ☑ No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____%

c. Predominant soil type(s) present on project site:

Claverack loamy fine sand	76 %
Wassaic solt loam	24 %
	%

d. What is the average depth to the water table on the project site? Average: 2 feet

e. Drainage status of project site soils:

☐	Well Drained:	% of site
☑	Moderately Well Drained:	100 % of site
☐	Poorly Drained	% of site

f. Approximate proportion of proposed action site with slopes:

☑	0-10%:	100 % of site
☐	10-15%:	% of site
☐	15% or greater:	% of site

g. Are there any unique geologic features on the project site? ☐ Yes ☑ No
If Yes, describe: _____

h. Surface water features.

i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☐ Yes ☑ No

ii. Do any wetlands or other waterbodies adjoin the project site? ☐ Yes ☑ No

If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.

iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☐ Yes ☑ No

iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name _____ Approximate Size _____
- Wetland No. (if regulated by DEC) _____

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐ Yes ☑ No

If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐ Yes ☑ No

j. Is the project site in the 100-year Floodplain? ☐ Yes ☑ No

k. Is the project site in the 500-year Floodplain? ☐ Yes ☑ No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐ Yes ☑ No
If Yes:

i. Name of aquifer: _____

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m. Identify the predominant wildlife species that occupy or use the project site: _____

_____ _____ _____

_____ _____ _____

n. Does the project site contain a designated significant natural community? ☐ Yes ☑ No

If Yes:

i. Describe the habitat/community (composition, function, and basis for designation): _____

ii. Source(s) of description or evaluation: _____

iii. Extent of community/habitat:

- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐ Yes ☑ No

If Yes:

i. Species and listing (endangered or threatened): _____

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☐ Yes ☑ No

If Yes:

i. Species and listing: _____

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐ Yes ☑ No

If yes, give a brief description of how the proposed action may affect that use: _____

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐ Yes ☑ No

If Yes, provide county plus district name/number: _____

b. Are agricultural lands consisting of highly productive soils present? ☐ Yes ☑ No

i. If Yes: acreage(s) on project site? _____

ii. Source(s) of soil rating(s): _____

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐ Yes ☑ No

If Yes:

i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature

ii. Provide brief description of landmark, including values behind designation and approximate size/extent: _____

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐ Yes ☑ No

If Yes:

i. CEA name: _____

ii. Basis for designation: _____

iii. Designating agency and date: _____

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e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? ☐ Yes ☐ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: _____

iii. Brief description of attributes on which listing is based:

_____

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☑ Yes ☐ No

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☐ No

If Yes:

i. Describe possible resource(s): _____

ii. Basis for identification: _____

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☐ Yes ☐ No

If Yes:

i. Identify resource: _____

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.): _____

iii. Distance between project and resource: _____ miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation: _____

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

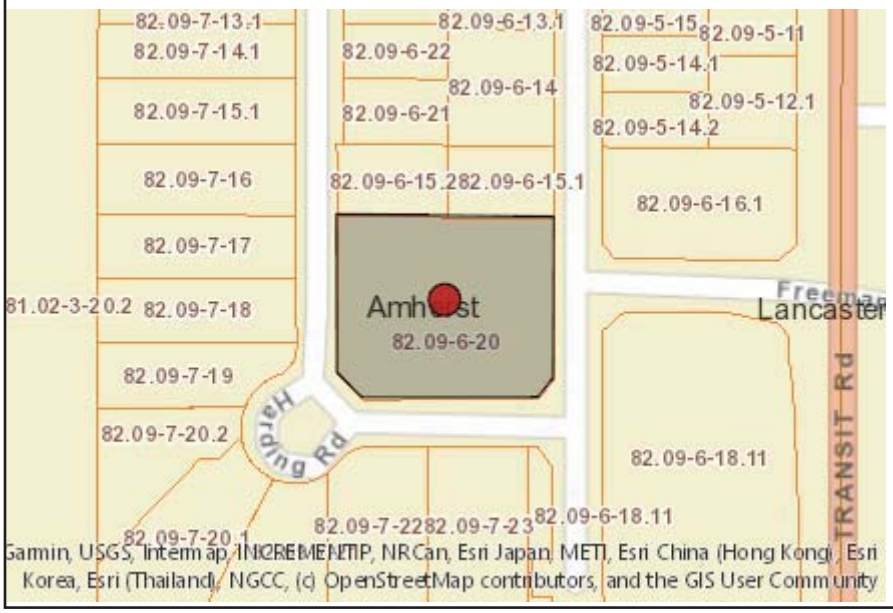
I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name Rami Herzellah Date 7/12/2022

Signature  Title Civil Engineering

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

PRINT FORM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.



B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Yes - Digital mapping data are not available for all Special Planning Districts. Refer to EAF Workbook.
C.2.b. [Special Planning District - Name]	NYS Heritage Areas:West Erie Canal Corridor
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	Yes
E.1.h.iii [Within 2,000' of DEC Remediation Site - DEC ID]	915043
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	No
E.2.h.ii [Surface Water Features]	No
E.2.h.iii [Surface Water Features]	No
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	No
E.2.k. [500 Year Floodplain]	No
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	No

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E.2.o. [Endangered or Threatened Species]	No
E.2.p. [Rare Plants or Animals]	No
E.3.a. [Agricultural District]	No
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.3.f. [Archeological Sites]	Yes
E.3.i. [Designated River Corridor]	No

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

CARMINAWOOD
DESIGN

AUTHORIZATION

Harding Road, LLC, record property owner of 468 Harding Road, 82.09-6-20, in the Town of Amherst hereby authorizes the engineering firm of Carmina Wood Design, to file an application, along with any necessary supporting documentation, with the Town of Amherst in connection with approvals sought for the above referenced property.

Agreed and Accepted:

Date: 7/11/22

David Capretto
Harding Road, LLC

State of New York
County of Erie ss:

On this 11th day of July, 2022, before me the undersigned, a notary public in and for said state, personally appeared DAVID J. CAPRETTO, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signatures on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

Notary Public

JULIE A RAUSCHER
Notary Public - State of New York
No. 01RA4997720
Qualified in Erie County
My Commission Expires 06/15/26

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Stormwater Pollution Prevention Plan

Harding Road Subdivision - Harding Road & McKinley Avenue

Town of Amherst, New York



Owner/Operator:
Forbes Capretto Homes
470 Cayuga Road, Buffalo, NY 14225
dcapretto@forbeshomes.com

Prepared by:

Carmina Wood Design

Christopher Wood, PE

487 Main Street Buffalo, NY 14203

716-842-3165, ext 103

cwood@carminawooddesign.com

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

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Appendices

Appendix A- NYSDEC SPDES General Permit from Storm Water Discharges Associated from Construction Activity Permit No. GP-0-20-001

Appendix B-Notice of Intent

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Appendix D- Hydrologic Soil Group

Appendix E- Erosion and Sediment Control Details

Appendix F- Subdivision Plan

Appendix G- Weekly Soil Erosion and Sediment Control Inspection Checklist

Appendix H- Notice of Termination

Appendix I – Certification Forms

Appendix J – MS4 SWPPP Acceptance Form

Appendix K – NYSDEC Letter of Acknowledgement

Appendix L – SHPO Map

Appendix M – Engineer's Report

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

I. Introduction

The Clean Water Act states that storm water discharges associated with construction activity from a point source, including through a separate municipal storm sewer system, is unlawful unless authorized by the National Pollutant Discharge Elimination System (NPDES) permit. In New York State, the New York State Department of Environmental Conservation (NYSDEC) administers the NPDES through the State Pollution Discharge Elimination System (SPDES) program. According to the SPDES General Permit, Appendix B, construction activity that involves soil disturbances for a single family residential subdivision, with 25% or less impervious cover at total site buildout and not located in one of the watersheds listed in Appendix C of the permit, and not directly discharging to impaired waters will only require the Erosion and Sediment Control portion of the Stormwater Pollution Prevention Plan (SWPPP).

This plan outlines the manner in which the owner/operator has selected, will install, implement and maintain control measures to minimize the discharge of pollutants to prevent a violation of the water quality standard. The requirements of the SWPPP are to be met at the commencement of construction activity until all areas of disturbance have achieved final stabilization. The SWPPP was developed based on the SPDES General Permit for Storm Water Discharges from Construction Activity Permit No. GP-0-20-001, dated January 29, 2020.

A copy of this plan will remain on site until final stabilization occurs and the site has been closed out with the filing of a Notice of Termination.

Any inspection and maintenance report forms generated for this project are to be maintained by the permittee for five years following the final stabilization of the site.

II. Notice of Intent Requirements

To obtain coverage under a general permit, a Notice of Intent (NOI) must be submitted by the owner at least five (5) business days prior to commencement of construction activities. Once completed, the NOI shall be submitted electronically through the New York State Department of Environmental Conservation website.

Owner Contact:

David Capretto

470 Cayuga Road

716-688-5597

dcapretto@forbeshomes.com

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

III. Site Description

Overall Site Description

This project is a development of a 1.44 acre site located in between Harding Road and McKinley Avenue near Stiles Court in the Town of Amherst for a single family subdivision. Construction will consist of a public sanitary sewer and water main extension. Eight (8) lots are proposed for this subdivision, of which all will be building lots. Currently the site is a vacant large open grass area. The proposed site development area to be disturbed for this project is 1.44 acres when construction is completed.

The owner/operator of the permit will be responsible for installing, implementing and maintaining all control measures in this SWPPP. They will be given a copy of the Basic Home-Owner's SWPPP found in the NYS Standards and Specifications for Erosion and Sediment Control, which this plan has been modeled after.

Refer to Appendix C for an aerial photo and proposed plans

Refer to Appendix F for plans with erosion and sediment control

Soil Description

The soils at this site were reviewed for their hydrologic soil group (HSG) through the USDA's NRCS Soil Survey. The soil survey is located in Appendix D.

Map Unit Symbol	Map Unit Name	Hydrologic Group	Acres in AOI	Percent of AOI
CrA	Claverack loamy fine	C/D	1.1	75.7%
WaB	Wassaic silt loam	C	0.3	24.3%

Wetlands and Floodplains

There are no federal wetlands on.

There are not any NYS Wetlands on site.

The site is not in a 100 year floodplain.

IV. Construction Activities

Below is a description of the intended sequence of major construction activities which involve soil disturbance:

1. Install temporary erosion and sediment controls.
2. Install Stabilized construction entrance.
3. Excavation and grading of house.
4. Construction of home, driveway, grading of the remaining site.
5. Replace topsoil where needed and seed all disturbed area.
6. After site stabilization remove temporary erosion and sediment controls.

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Soil Restoration and Stabilization Plan

Upon completion of grading and soil disturbance work, soils that have become compacted due to construction actives should be de-compacted in order to restore the soils to their original condition. Aeration is the most common method to do this. The site will then have top-soil applied and will be seeded within fourteen days from the date that disturbance ceases in order to stabilize the site with ground cover. Seeding should take place in spring or fall during the growing season to ensure proper growth.

Pollution and Prevention Measures

All petroleum product spills, if such occurs, shall be cleaned up immediately, the source of the spill repaired and removed from site, and the contaminated material disposed of as required by applicable law. The Inspector shall be informed of the spill in a timely manner. If the spill does not meet the below criteria the Inspector shall contact the NYSDEC Spills Hotline at 1-800-475-7362:

1. The quantity is known to be less than 5 gallons; and
2. The spill is contained and under the control of the spiller; and
3. The spill has not and will not reach the State's water or any land; and
4. The spill is cleaned up within 2 hours of discovery.
5. A spill is considered to have not impacted land if it occurs on a paved surface.

V. Structural Practices

Silt Sock- Silt sock will be used in order to reduce runoff velocity and allow for sediment retention through a settling process. It will be located as shown on the plans in order to protect the neighboring properties and the ditch. The silt sock will be installed in accordance with the NYSDEC Construction Standards and the manufactures recommendations. Maintenance shall be performed as needed and material removed as required. Silt sock will remain in place until site stabilization has been achieved.

Refer to Appendix E for Erosion and Sediment Control details.

VI. Management Measures

Protecting adjacent properties- All sediment must be kept on-site and not allowed to be transported to adjacent properties. Whenever possible a vegetative buffer should be preserved around the site boundary. Structural practices will be utilized and if necessary others may be incorporated to keep sediment laden water from leaving the site.

Maintenance- Inspections are important for visually evaluating potential storm water runoff pollution sources. The Owner shall inspect the erosion and sediment control practices and pollution prevention measures daily to ensure that they are being maintained in effective operating conditions at all times. If deficiencies are identified, corrective actions should begin to take place within one business day and completed in a timely manner. The Village of East Aurora will complete two inspections annually to ensure that all temporary erosion and sediment controls are in place.

Refer to Appendix G for an example of an erosion and sediment control inspection checklist.

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

VII. Other Requirements

All elements of the design are in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosions and Sediment Control. Additional controls may be necessary to protect existing ditches and adjacent properties.

VIII. Notice of Termination Requirements

Prior to filing a Notice of Termination (NOT) the Owner shall have a qualified inspector perform a final site inspection. The qualified inspector shall certify that all disturbed areas have achieved final stabilization and all temporary, structural erosion and sediment control measures have been removed. Signature of the MS4 designated individual is also required on the NOT prior to filing.

When the project has been completed and the site stabilized, the Owner must submit a NOT. The form shall be submitted to the following address:

NYS DEC "Notice of Termination"
Bureau of Water Permits
625 Broadway
Albany, NY 12233-3505

Refer to Appendix H for Notice of Termination

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Appendix A- NYSDEC SPDES General Permit from Storm Water Discharges Associated from Construction Activity Permit No. GP-0-20-001

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70

of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

1-23-20

Authorized Signature

Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

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Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;

2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State.*

3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

*Discharge*s authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the *Stormwater Pollution Prevention Plan* ("SWPPP") the reason(s) for the

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deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:

   (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharge*s;

   (ii) Control stormwater *discharge*s, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;

   (iii) *Minimize* the amount of soil exposed during *construction activity*;

   (iv) *Minimize* the disturbance of *steep slopes*;

   (v) *Minimize* sediment *discharge*s from the site;

   (vi) Provide and maintain *natural buffer*s around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharge*s, unless *infeasible*;

   (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;

   (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and

   (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.

b. **Soil Stabilization**. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments

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listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

c. **Dewatering**. *Discharge*s from *dewatering* activities, including *discharge*s from *dewatering* of trenches and excavations, must be managed by appropriate control measures.

d. **Pollution Prevention Measures**. Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be designed, installed, implemented and maintained to:

(i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;

(ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and

(iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

e. **Prohibited *Discharges*.** The following *discharge*s are prohibited:

(i) Wastewater from washout of concrete;

(ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

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(iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;

(iv) Soaps or solvents used in vehicle and equipment washing; and

(v) Toxic or hazardous substances from a spill or other release.

f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices ("SMPs") are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

(i) Runoff Reduction Volume ("RRv"): Reduce the total Water Quality Volume ("WQv") by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

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For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site discharges directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria ("Qp"): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria ("Qf"): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

b. *Sizing Criteria* for *New Development* in Enhanced Phosphorus Removal Watershed

(i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be

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calculated in accordance with the criteria in Section 10.3 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible.*

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site *discharge*s directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

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c. Sizing Criteria for Redevelopment Activity

(i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.

(1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or

(2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or

(3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or

(4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

(ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iii) *Overbank* Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

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d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharge*s necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;

2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharge*s authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharge*s authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharge*s will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

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E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharge*s; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.

3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: “Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned”; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharge*s from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.

4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **not** authorized by this permit:

1. *Discharge*s after *construction activities* have been completed and the site has undergone *final stabilization*;

2. *Discharge*s that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;

3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;

4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

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operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;

6. *Construction activities* for residential, commercial and institutional projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

7. *Construction activities* for linear transportation projects and linear utility projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

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8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:

   a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.

      - 1-5 acres of disturbance - 20 feet
      - 5-20 acres of disturbance - 50 feet
      - 20+ acres of disturbance - 100 feet, or

   b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
      (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
      (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
      (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
      (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or

   c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

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(i) No Affect
(ii) No Adverse Affect
(iii) Executed Memorandum of Agreement, or

d. Documentation that:

(i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharge*s from *construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the "MS4 SWPPP Acceptance" form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.

3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of *Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4* . This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

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B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (http://www.dec.ny.gov/). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

   NOTICE OF INTENT
   NYS DEC, Bureau of Water Permits
   625 Broadway, 4th Floor
   Albany, New York 12233-3505

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.

3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.

4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.

2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:

   a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (http://www.dec.ny.gov/) for more information,

   b. where required, all necessary Department permits subject to the *Uniform Procedures Act ("UPA")* (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators* of *construction activities* that are required to obtain *UPA* permits

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must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

c. the final SWPPP has been prepared, and

d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.

3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

   a. For *construction activities* that are not subject to the requirements of a *regulated, traditional land use control MS4*:

      (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or

      (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has not been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;

      (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

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b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:

(i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed "*MS4* SWPPP Acceptance" form, or

(ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed "MS4 SWPPP Acceptance" form.

4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination ("NOT") has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor's or subcontractor's certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land*

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use control MS4, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

a. The *owner or operator* shall have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.

c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

d. The *owner or operator* shall install any additional site-specific practices needed to protect water quality.

e. The *owner or operator* shall include the requirements above in their SWPPP.

4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..

5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.

6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

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regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of *a construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

   An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4,* the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.

2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

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operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.

2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.

3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.

4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:

    a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

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b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*;

c. to address issues or deficiencies identified during an inspection by the *qualified inspector,* the Department or other regulatory authority; and

d. to document the final construction conditions.

5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.

6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor.* The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

   The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

   "I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with

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the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharge*s from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:

    a. Background information about the scope of the project, including the location, type and size of project

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b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge*(s);

c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);

d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;

e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;

f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;

g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;

h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;

i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection

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schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;

k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and

l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

   Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

   The post-construction stormwater management practice component of the SWPPP shall include the following:

   a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

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b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;

c. A Stormwater Modeling and Analysis Report that includes:
   (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;

   (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;

   (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;

   (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;

   (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and

   (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;

d. Soil testing results and locations (test pits, borings);

e. Infiltration test results, when required; and

f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

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3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria,* Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators* of *construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators* of the *construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

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begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- New York State Erosion and Sediment Control Certificate Program holder
- Registered Landscape Architect, or
- someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:

   a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located

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in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:

a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.

b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

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d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization,* and all temporary, structural erosion and sediment control measures have been removed*;* and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.B.1 of this permit.

e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization,* all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site*, and all points of *discharge* from the *construction site*.

4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

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a. Date and time of inspection;

b. Name and title of person(s) performing inspection;

c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

d. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This shall include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;

f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;

g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;

i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);

k. Identification and status of all corrective actions that were required by previous inspection; and

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l. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the *qualified inspector.* Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.

2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:

   a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

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b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;

c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.

d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.

3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.

4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the "MS4 Acceptance" statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector*'s final site inspection certification(s) required in Part V.A.3. of this permit.

5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:

a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

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b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),

c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,

d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

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Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator,* its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to $37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

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E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit , or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:

    a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

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(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(i) the chief executive officer of the agency, or

(ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

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superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.

3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.

4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4,* or by a duly authorized representative of that person.

   It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

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include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge*(s), the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner’s or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

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3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.

4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.

2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

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(Part VII.R)

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

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APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

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Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property –means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both "sewage" and "stormwater".

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for "*Construction Activity(ies)*" also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for "*Commence (Commencement of) Construction Activities"* and "*Larger Common Plan of Development or Sale" also.*

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system

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and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

Embankment –means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department's rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

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Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term “plan” in “larger common plan of development or sale” is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same “common plan” is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State*;*
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a *combined sewer*; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer –means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

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New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

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Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

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SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

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Steep Slope – means land area designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint source*s. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint source*s, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

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training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

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APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single family home not located in one of the watersheds listed in Appendix C or not *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E
- Construction of a barn or other *agricultural building*, silo, stock yard or pen.

The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects
- Pond construction
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover
- Cross-country ski trails and walking/hiking trails
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

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Table 1 (Continued) Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Table 2
CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

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Table 2 (Continued)

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover,* and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

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APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River - Figure 1
- Onondaga Lake Watershed - Figure 2
- Greenwood Lake Watershed -Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

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Figure 1 - New York City Watershed East of the Hudson

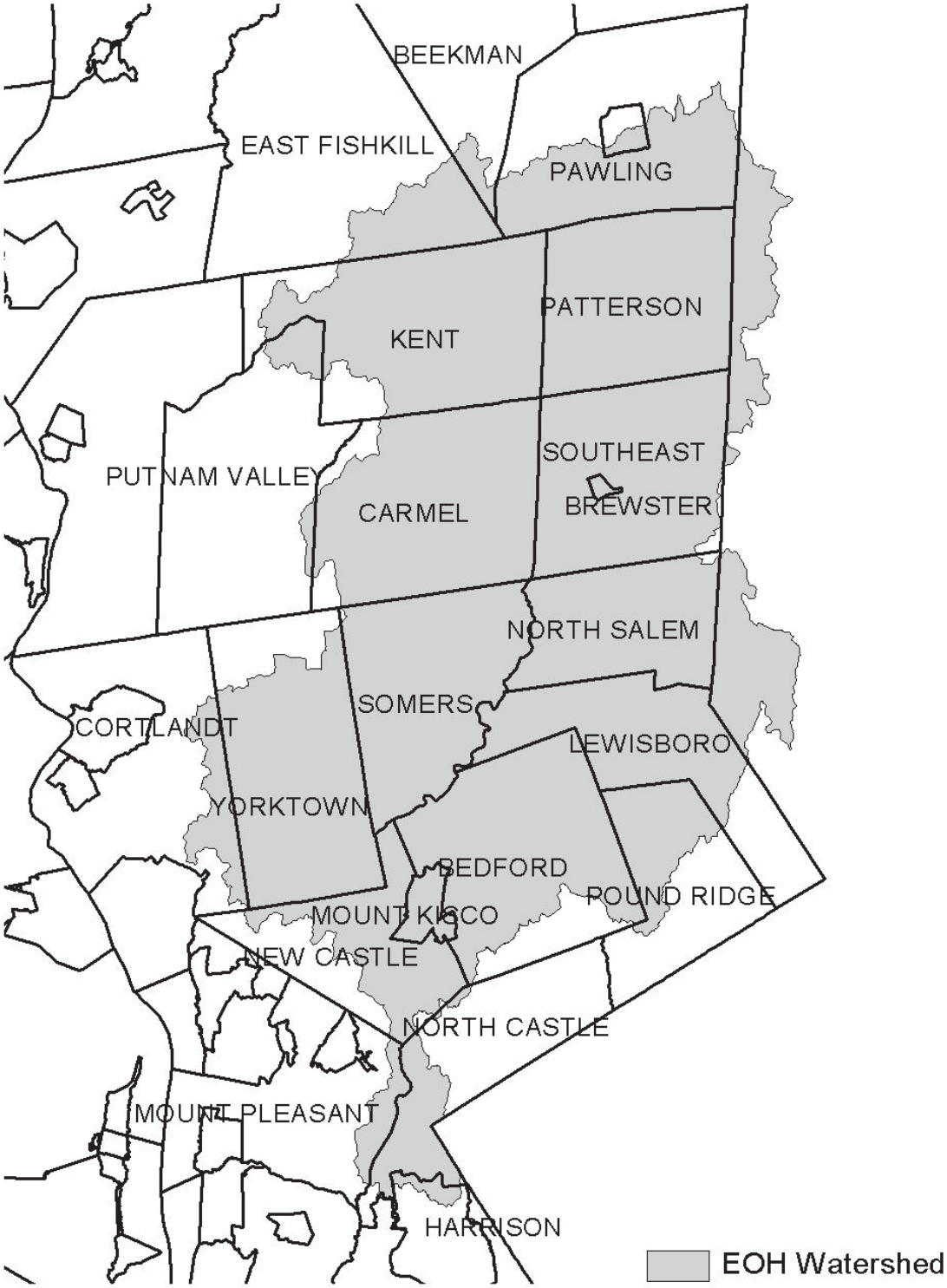

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Figure 2 - Onondaga Lake Watershed

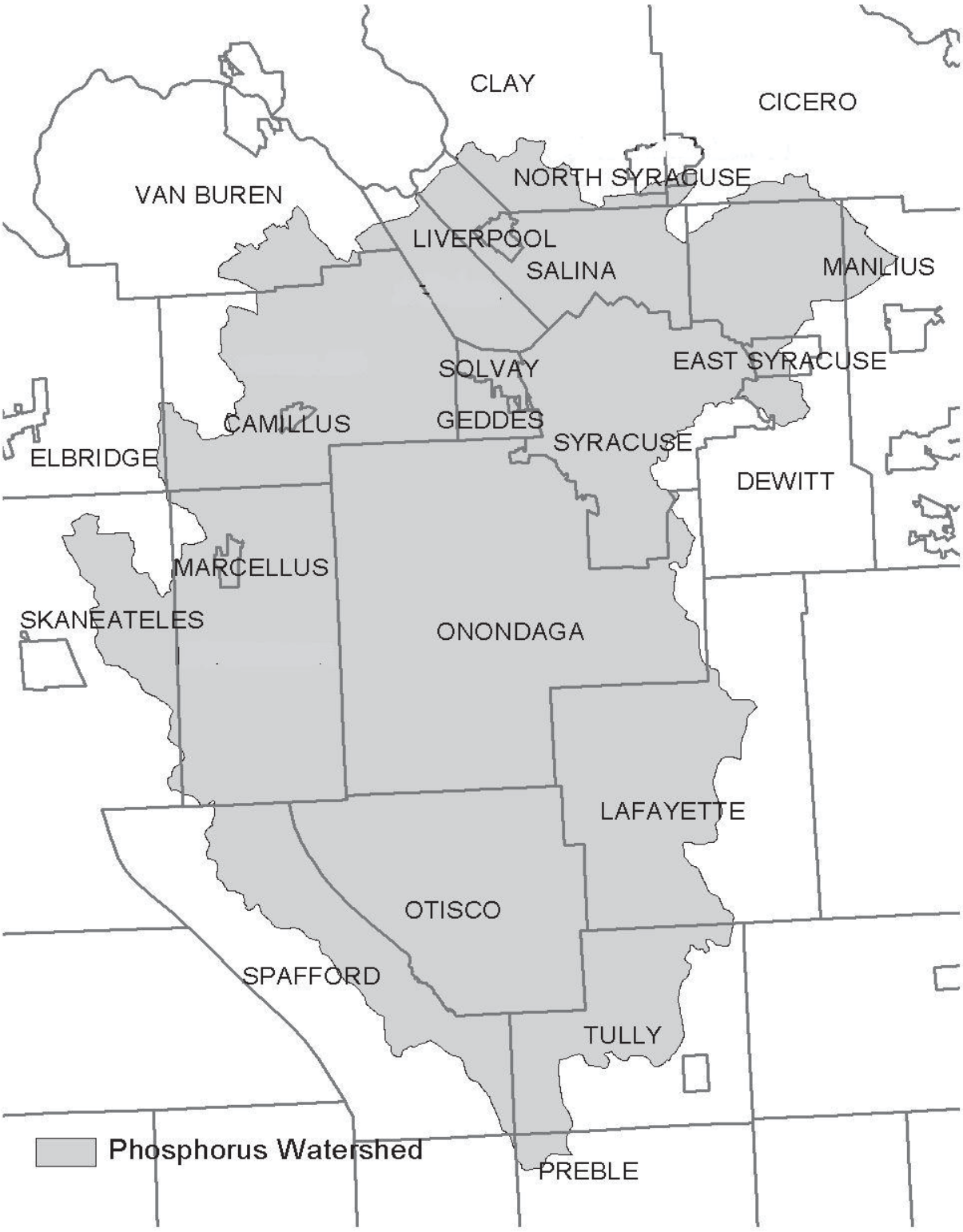

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Figure 3 - Greenwood Lake Watershed



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Figure 4 - Oscawana Lake Watershed

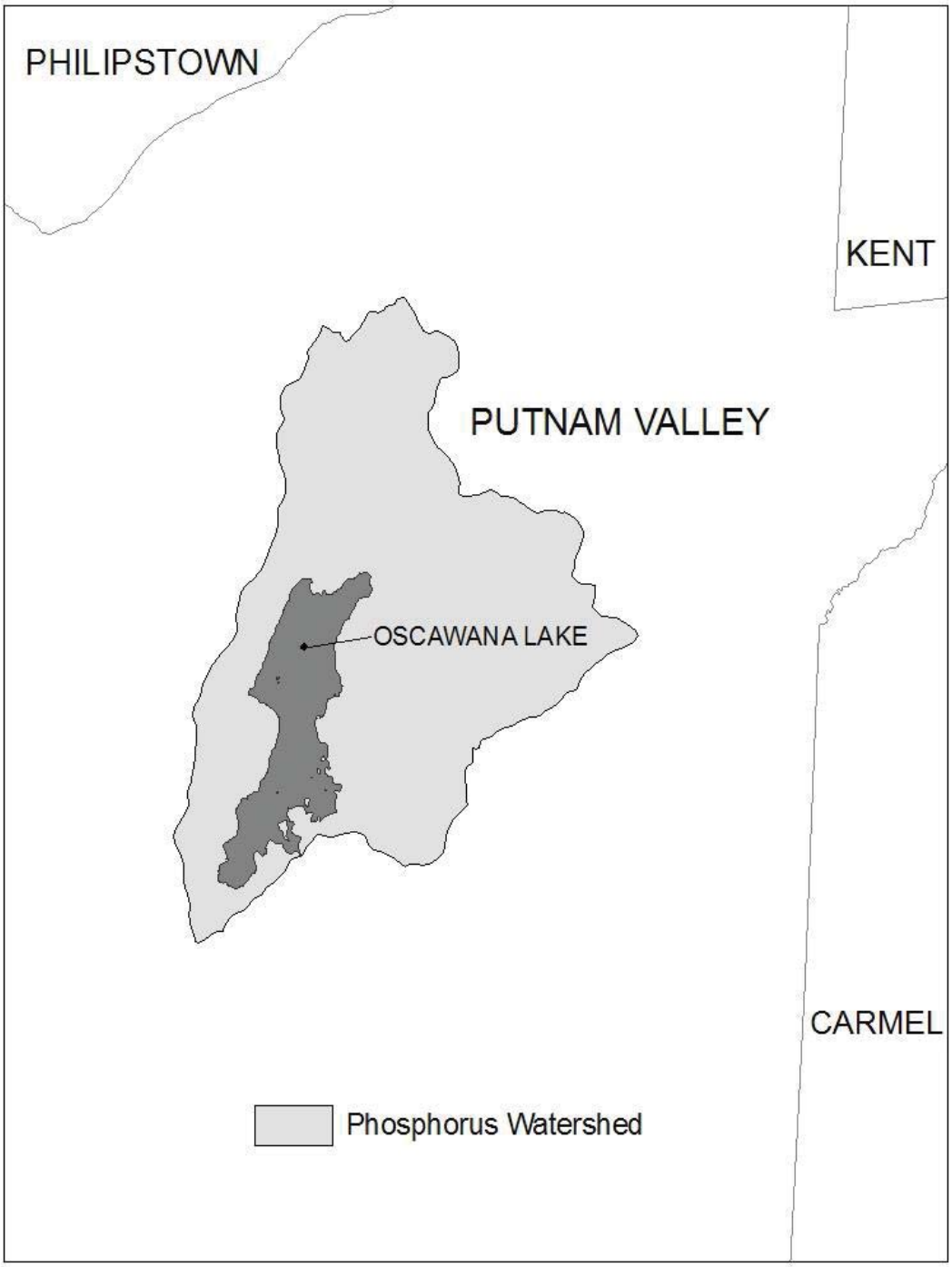

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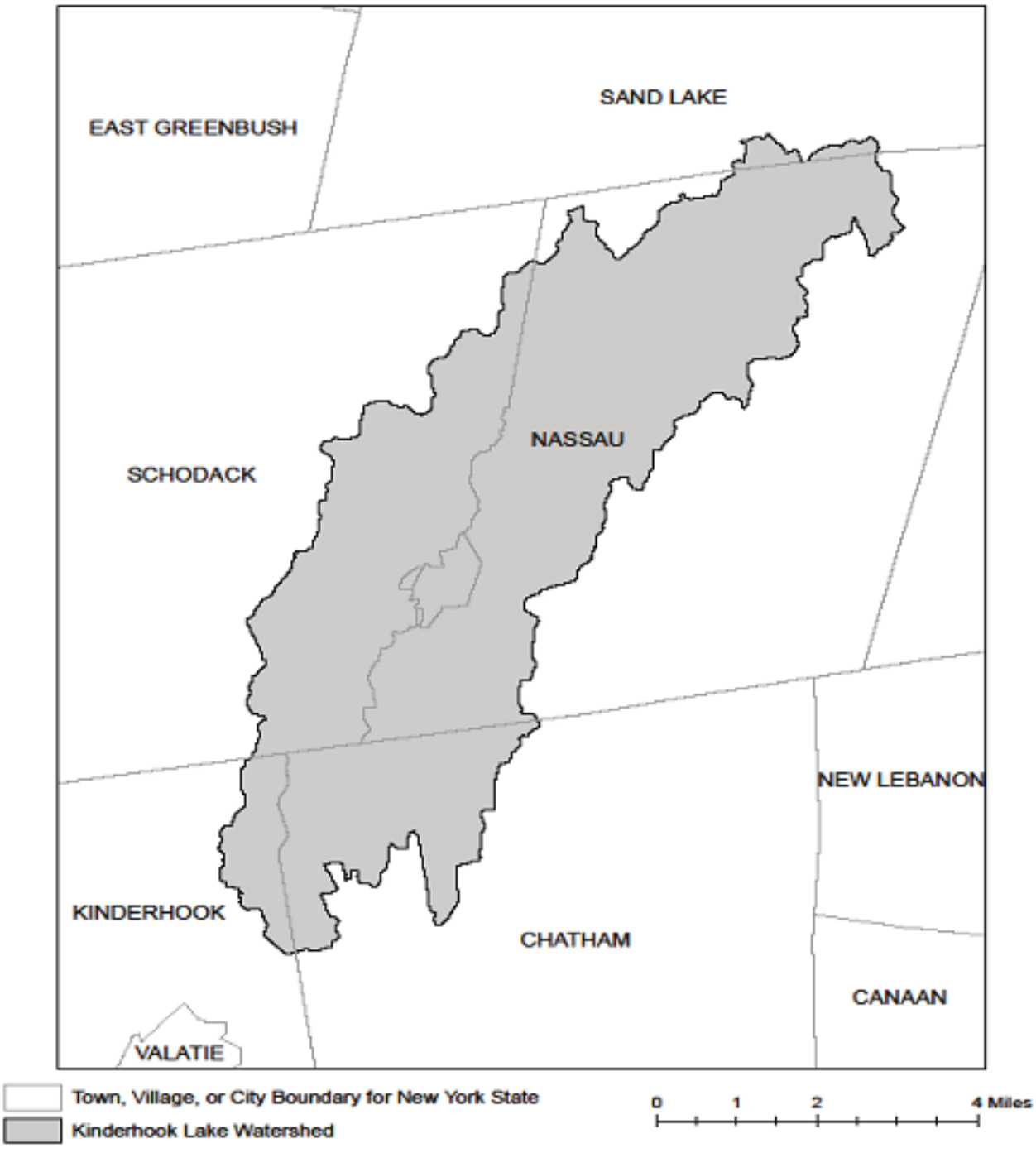
Figure 5 - Kinderhook Lake Watershed



Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River - See Figure 1 in Appendix C

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APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

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303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

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303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

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303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

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303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

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303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

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APPENDIX F – List of NYS DEC Regional Offices

Region	Covering the following counties:	DIVISION OF ENVIRONMENTAL PERMITS (DEP) Permit Administrators	DIVISION OF WATER (DOW) Water (SPDES) Program
1	Nassau and Suffolk	50 Circle Road Stony Brook, NY 11790 Tel. (631) 444-0365	50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0405
2	Bronx, Kings, New York, Queens and Richmond	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4997	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4933
3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester	21 South Putt Corners Road New Paltz, NY 12561-1696 Tel. (845) 256-3059	100 Hillside Avenue, Suite 1W White Plains, NY 10603 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1150 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2069	1130 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	1115 State Route 86, Po Box 296 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, NY 12885-1172 Tel. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

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Appendix B-Notice of Intent

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

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NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR _____ (for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-20-001

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-
RETURN THIS FORM TO THE ADDRESS ABOVE
OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)
Forbes Capretto Homes

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
Capretto

Owner/Operator Contact Person First Name
David

Owner/Operator Mailing Address
470 Cayuga Road

City
Buffalo

State: NY
Zip: 14225-

Phone (Owner/Operator): 716-688-5597
Fax (Owner/Operator): ---

Email (Owner/Operator)
dcapretto@forbeshomes.com

FED TAX ID
-- (not required for individuals)

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Project Site Information

Project/Site Name

Harding Road Subdivision

Street Address (NOT P.O. BOX)

Harding Road & McKinley Avenue

Side of Street

○ **North** ○ **South** ● **East** ○ **West**

City/Town/Village (THAT ISSUES BUILDING PERMIT)

Amherst

State: NY

Zip: 14221 -

County: Erie

DEC Region: 9

Name of Nearest Cross Street

Freeman Road

Distance to Nearest Cross Street (Feet)

0

Project In Relation to Cross Street

○ **North** ○ **South** ○ **East** ● **West**

Tax Map Numbers
Section-Block-Parcel

82.09-6-20

Tax Map Numbers

1. Provide the Geographic Coordinates for the project site. To do this, go to the NYSDEC Stormwater Interactive Map on the DEC website at:

https://gisservices.dec.ny.gov/gis/stormwater/

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located the centroid of your project site, go to the bottom right hand corner of the map for the X, Y coordinates. Enter the coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)

-7 8699

Ex. -73.749

Y Coordinates (Northing)

42952

Ex. 42.652

2. What is the nature of this construction project?

● **New Construction**

○ **Redevelopment with increase in impervious area**

○ **Redevelopment with no increase in impervious area**

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3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use

- ○ FOREST
- ○ PASTURE/OPEN LAND
- ○ CULTIVATED LAND
- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY
- ○ PARKING LOT
- ● OTHER

vacant land

Post-Development Future Land Use

- ○ SINGLE FAMILY HOME
- ● SINGLE FAMILY SUBDIVISION — Number of Lots: 8
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ MUNICIPAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY (water, sewer, gas, etc.)
- ○ PARKING LOT
- ○ CLEARING/GRADING ONLY
- ○ DEMOLITION, NO REDEVELOPMENT
- ○ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
- ○ OTHER

***Note**: for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

Total Site Area	Total Area To Be Disturbed	Existing Impervious Area To Be Disturbed	Future Impervious Area Within Disturbed Area
1.4	1.4	0.0	0.0

5. Do you plan to disturb more than 5 acres of soil at any one time? ○ **Yes** ● **No**

6. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	B	C	D
%	%	100 %	%

7. Is this a phased project? ○ **Yes** ● **No**

8. Enter the planned start and end dates of the disturbance activities.

Start Date 9/1/2022 - **End Date** 9/1/2023

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9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.

Name: Ellicott Creek

9a. Type of waterbody identified in Question 9?

- ○ Wetland / State Jurisdiction On Site (Answer 9b)
- ○ Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 9b)
- ○ Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ● Stream / Creek Off Site
- ○ River On Site
- ○ River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ○ Other Type Off Site

9b. How was the wetland identified?

- ○ Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ○ Other (identify)

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001? ● **Yes** ○ **No**

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001? ○ **Yes** ● **No**

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? ○ **Yes** ● **No**
If no, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ○ **Yes** ● **No**
If Yes, what is the acreage to be disturbed?

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ○ **Yes** ● **No**

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15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ◉ Yes ○ No ○ Unknown

16. What is the name of the municipality/entity that owns the separate storm sewer system?

Town of Amherst

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ Yes ◉ No ○ Unknown

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law? ○ Yes ◉ No

19. Is this property owned by a state authority, state agency, federal government or local government? ○ Yes ◉ No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) ○ Yes ◉ No

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? ◉ Yes ○ No

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)? ○ Yes ◉ No
If No, skip questions 23 and 27-39.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? ○ Yes ○ No

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24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- (●) Professional Engineer (P.E.)
- ( ) Soil and Water Conservation District (SWCD)
- ( ) Registered Landscape Architect (R.L.A)
- ( ) Certified Professional in Erosion and Sediment Control (CPESC)
- ( ) Owner/Operator
- ( ) Other

SWPPP Preparer
Carmina Wood Design

Contact Name (Last, Space, First)
Wood Christopher

Mailing Address
487 Main St

City
Buffalo

State Zip
NY 14203-

Phone
716-842-3165

Fax
716-842-0263

Email
cwood@carminawooddesign.com

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name
Christopher

MI

Last Name
Wood

Signature

Date
07 / 06 / 2022

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25. Has a construction sequence schedule for the planned management practices been prepared? ● Yes ○ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ○ Check Dams
- ○ Construction Road Stabilization
- ● Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ○ Sediment Basin
- ○ Sediment Traps
- ● Silt Fence
- ● Stabilized Construction Entrance
- ○ Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ○ Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ○ Mulching
- ● Protecting Vegetation
- ○ Recreation Area Improvement
- ● Seeding
- ● Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ○ Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ○ Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ○ Retaining Wall
- ○ Riprap Slope Protection
- ○ Rock Outlet Protection
- ○ Streambank Protection

Other

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Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

- ○ **Preservation of Undisturbed Areas**
- ○ **Preservation of Buffers**
- ○ **Reduction of Clearing and Grading**
- ○ **Locating Development in Less Sensitive Areas**
- ○ **Roadway Reduction**
- ○ **Sidewalk Reduction**
- ○ **Driveway Reduction**
- ○ **Cul-de-sac Reduction**
- ○ **Building Footprint Reduction**
- ○ **Parking Reduction**

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

- ○ All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).
- ○ Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

			.				**acre-feet**

29. Identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required(#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

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Table 1 - Runoff Reduction (RR) Techniques and Standard Stormwater Management Practices (SMPs)

	Total Contributing Area (acres)		Total Contributing Impervious Area(acres)
RR Techniques (Area Reduction)			
○ Conservation of Natural Areas (RR-1)	.	and/or	.
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)	.	and/or	.
○ Tree Planting/Tree Pit (RR-3)	.	and/or	.
○ Disconnection of Rooftop Runoff (RR-4)	.	and/or	.
RR Techniques (Volume Reduction)			
○ Vegetated Swale (RR-5)			.
○ Rain Garden (RR-6)			.
○ Stormwater Planter (RR-7)			.
○ Rain Barrel/Cistern (RR-8)			.
○ Porous Pavement (RR-9)			.
○ Green Roof (RR-10)			.
Standard SMPs with RRv Capacity			
○ Infiltration Trench (I-1)			.
○ Infiltration Basin (I-2)			.
○ Dry Well (I-3)			.
○ Underground Infiltration System (I-4)			.
○ Bioretention (F-5)			.
○ Dry Swale (O-1)			.
Standard SMPs			
○ Micropool Extended Detention (P-1)			.
○ Wet Pond (P-2)			.
○ Wet Extended Detention (P-3)			.
○ Multiple Pond System (P-4)			.
○ Pocket Pond (P-5)			.
○ Surface Sand Filter (F-1)			.
○ Underground Sand Filter (F-2)			.
○ Perimeter Sand Filter (F-3)			.
○ Organic Filter (F-4)			.
○ Shallow Wetland (W-1)			.
○ Extended Detention Wetland (W-2)			.
○ Pond/Wetland System (W-3)			.
○ Pocket Wetland (W-4)			.
○ Wet Swale (O-2)			.

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Table 2 - Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Alternative SMP	Total Contributing Impervious Area(acres)
○ Hydrodynamic	___.___
○ Wet Vault	___.___
○ Media Filter	___.___
○ Other _____	___.___

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Name _____

Manufacturer _____

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

Total RRv provided

___.___ **acre-feet**

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28).

○ **Yes** ○ **No**

If Yes, go to question 36.
If No, go to question 32.

32. Provide the Minimum RRv required based on HSG.
[Minimum RRv Required = (P)(0.95)(Ai)/12, Ai=(S)(Aic)]

Minimum RRv Required

___.___ **acre-feet**

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

○ **Yes** ○ **No**

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

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33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRv Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question 29.

WQv Provided

[ ][ ][ ].[ ][ ][ ] **acre-feet**

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRv provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a). [ ][ ][ ].[ ][ ][ ]

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? ○ **Yes** ○ **No**

If Yes, go to question 36.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.

CPv Required

[ ][ ][ ].[ ][ ][ ] **acre-feet**

CPv Provided

[ ][ ][ ].[ ][ ][ ] **acre-feet**

36a. The need to provide channel protection has been waived because:

○ Site discharges directly to tidal waters or a fifth order or larger stream.

○ Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (37a), if applicable.

Total Overbank Flood Control Criteria (Qp)

Pre-Development

[ ][ ][ ].[ ][ ][ ] **CFS**

Post-development

[ ][ ][ ].[ ][ ][ ] **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development

[ ][ ][ ].[ ][ ][ ] **CFS**

Post-development

[ ][ ][ ].[ ][ ][ ] **CFS**

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37a. The need to meet the Qp and Qf criteria has been waived because:

- ○ Site discharges directly to tidal waters or a fifth order or larger stream.
- ○ Downstream analysis reveals that the Qp and Qf controls are not required

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? ○ **Yes** ○ **No**

If Yes, Identify the entity responsible for the long term Operation and Maintenance

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required(#28). (See question 32a) This space can also be used for other pertinent project information.

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40. Identify other DEC permits, existing and new, that are required for this project/facility.

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Solid Waste
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ○ Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers
- ○ Stream Bed or Bank Protection / Article 15
- ○ Endangered or Threatened Species(Incidental Take Permit)
- ○ Individual SPDES
- ○ SPDES Multi-Sector GP [N][Y][R][ ][ ][ ][ ][ ][ ]
- ○ Other [ ]
- ● None

41. Does this project require a US Army Corps of Engineers Wetland Permit? ○ **Yes** ● **No**
If Yes, Indicate Size of Impact. [ ][ ][ ][ ][ ][ ].[ ]

42. Is this project subject to the requirements of a regulated, traditional land use control MS4? ● **Yes** ○ **No**
(If No, skip question 43)

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ● **Yes** ○ **No**

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. [N][Y][R][ ][ ][ ][ ][ ][ ]

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Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name: David

MI:

Print Last Name: Capretto

Owner/Operator Signature: 

Date: 7/06/2022

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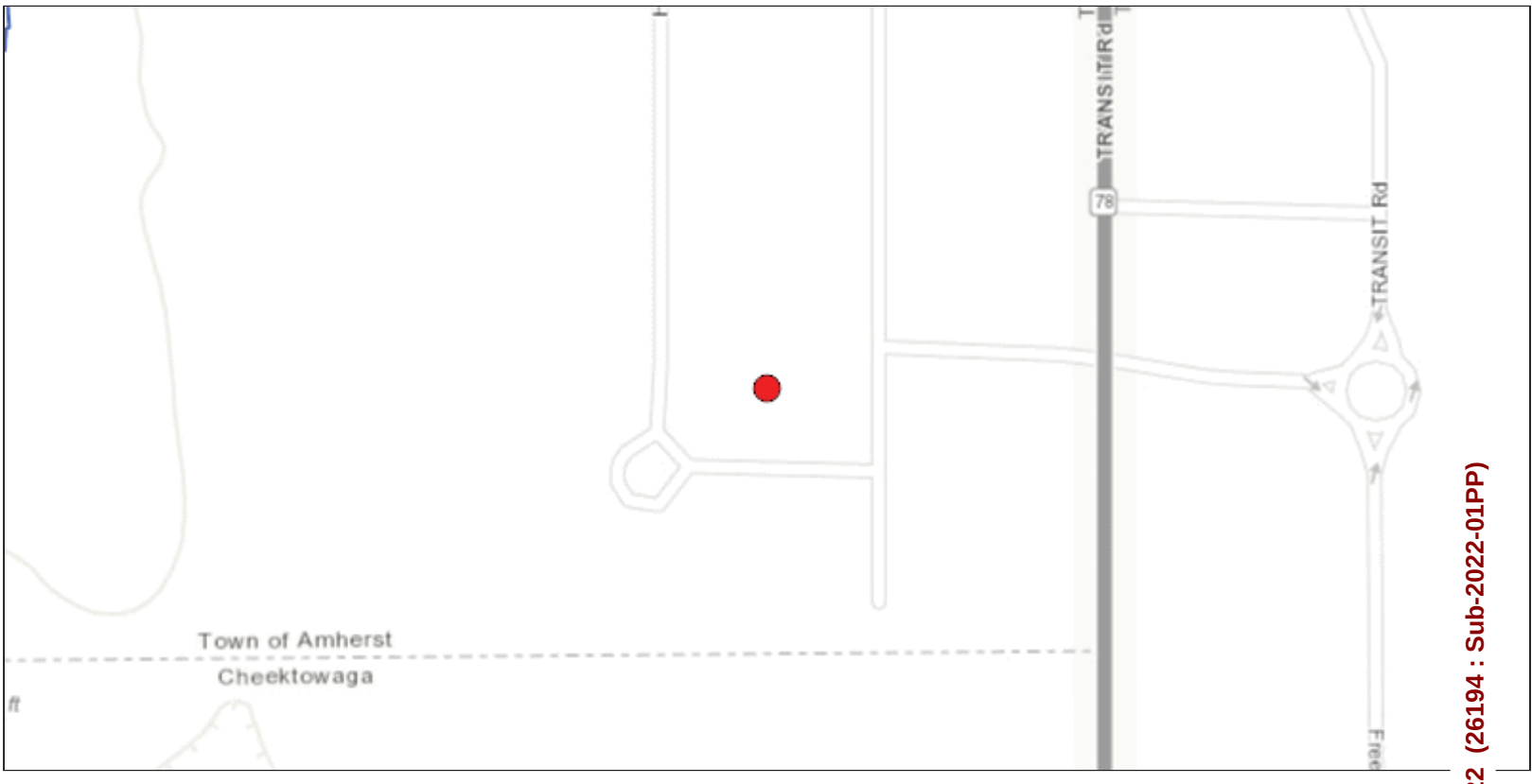
Appendix C- Site Maps

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Stormwater Interactive Map



The coordinates of the point you clicked on are:

UTM 18	**Easting:**	198268.768	**Northing:**	4762157.939
Longitude/Latitude	**Longitude:**	-78.699	**Latitude:**	42.952

The approximate address of the point you clicked on is:
468 Harding Rd, Buffalo, New York, 14221

County: Erie
Town: Amherst
USGS Quad: LANCASTER

DEC Administrative Boundaries

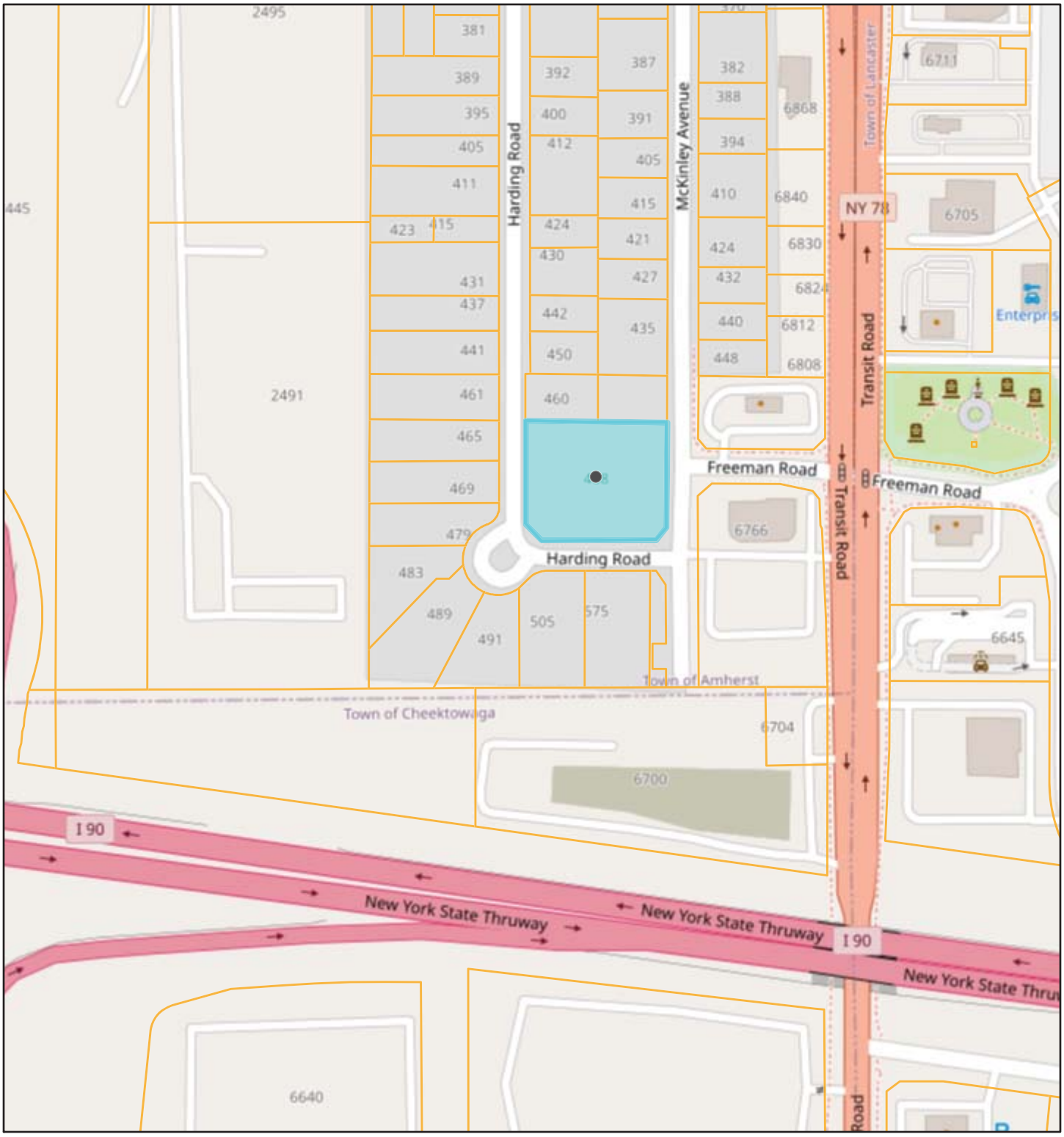
Region 9:
(Western New York) Allegany, Chautauqua, Cattaraugus, Erie, Niagara and Wyoming counties. For more information visit http://www.dec.ny.gov/about/617.html.

Regulated MS4s

UA 2000: 11350
Standard: Buffalo
Municipality: AMHERST
SWIS: 142200
Regulated: Automatic

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

468 Harding Road



2/4/2022, 8:50:30 AM

Parcels

1:4,514

0 0.03 0.06 0.11 mi

0 0.04 0.09 0.17 km

© OpenStreetMap (and) contributors, CC-BY-SA

USGS TNM – National Hydrography Dataset. Data Refreshed January, 2022. | NYS GIS Program Office | Telephone: (518) 242-5029 | Email: its.sm.SAM.

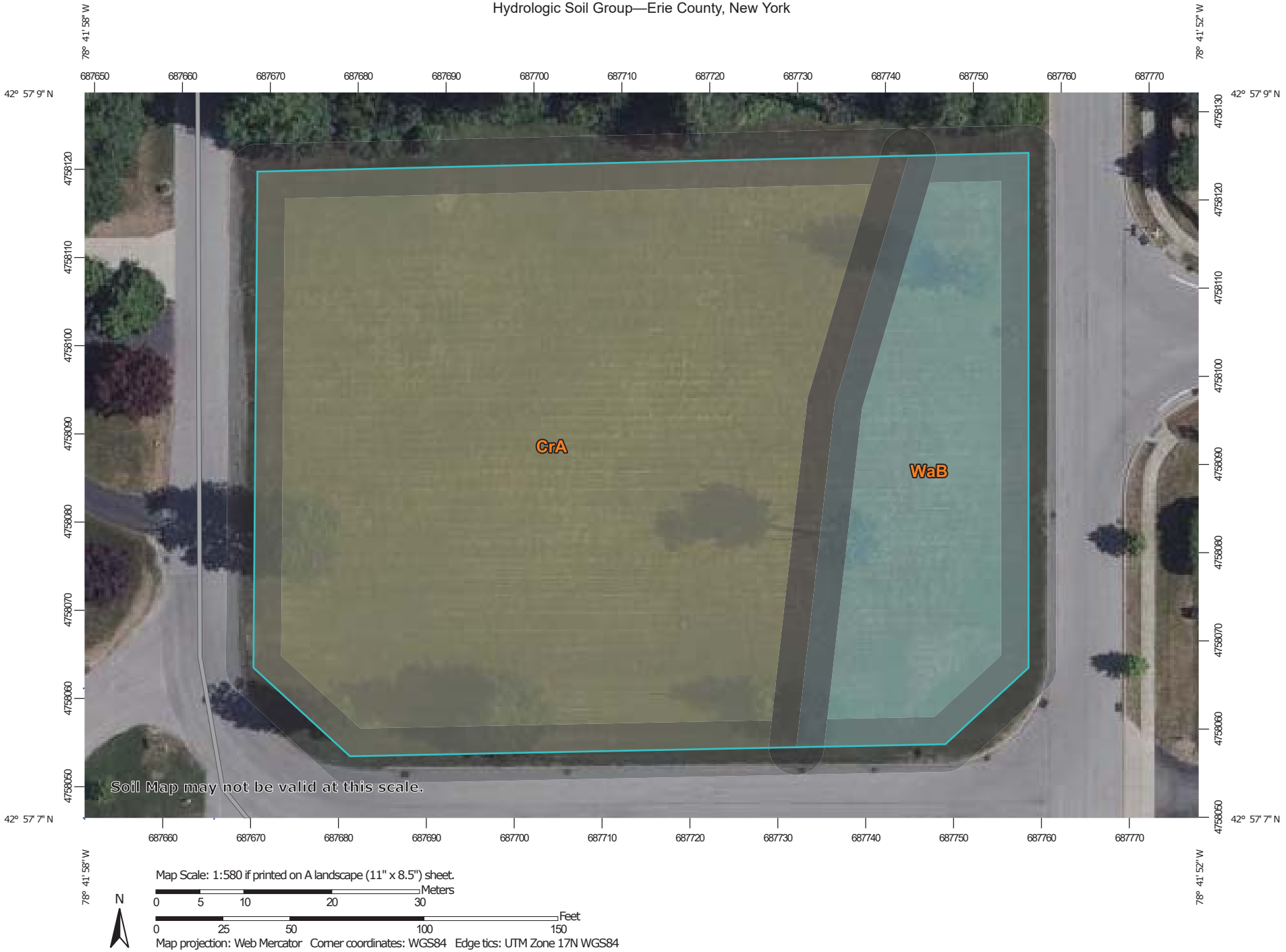
Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Appendix D- Hydrologic Soil Group

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Hydrologic Soil Group—Erie County, New York



Map Scale: 1:580 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 5 10 20 30

Feet
0 25 50 100 150

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Lines

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Points

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Water Features

Streams and Canals

Transportation

Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Erie County, New York
Survey Area Data: Version 21, Aug 29, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 4, 2020—Jul 10, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CrA	Claverack loamy fine sand, 0 to 3 percent slopes	C/D	1.1	75.7%
WaB	Wassaic silt loam, 3 to 8 percent slopes	C	0.3	24.3%
Totals for Area of Interest			**1.4**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

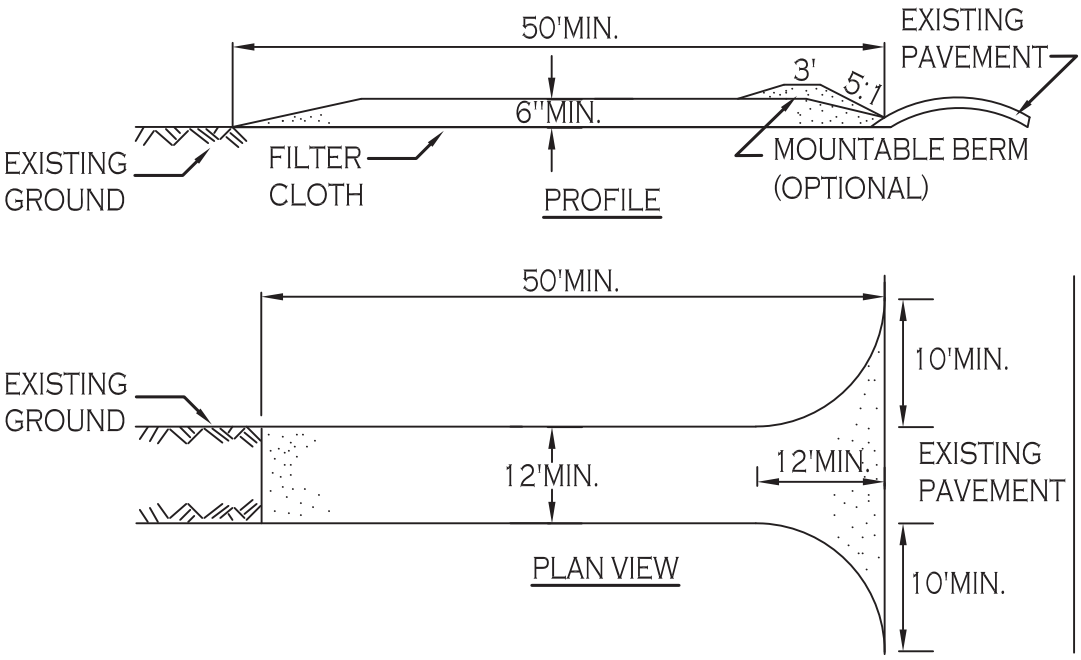
Tie-break Rule: Higher

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Appendix E- Erosion and Sediment Control Details

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.

2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).

3. THICKNESS - NOT LESS THAN SIX (6) INCHES.

4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.

5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.

6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.

7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.

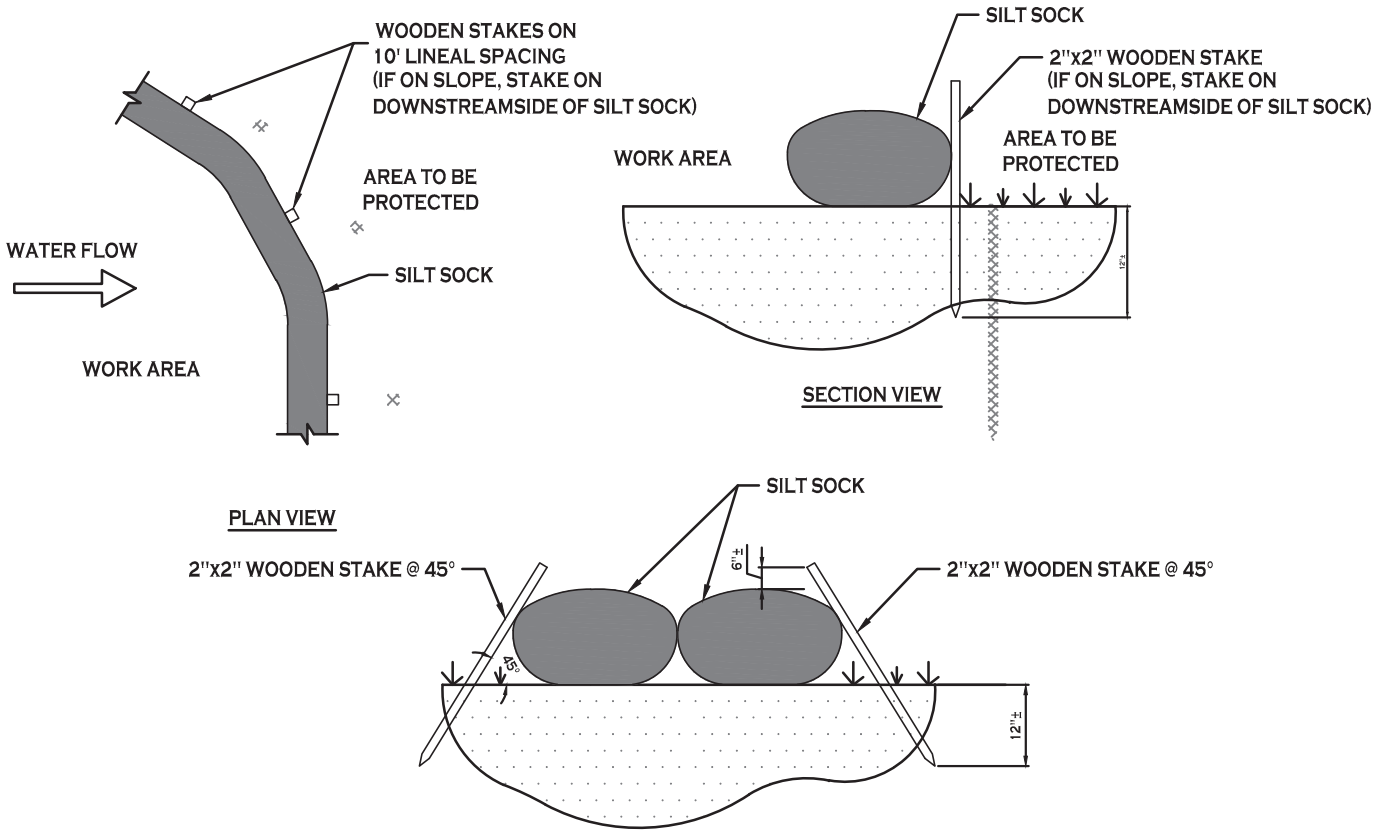
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

STABILIZED CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)



NOTES:

CONTRACTOR SHALL INSPECT AND MAINTAIN SILT SOCK AS NEEDED DURING THE DURATION OF CONSTRUCTION PROJECT.

CONTRACTOR SHALL REMOVE SEDIMENT COLLECTED AT THE BASE OF THE SILT SOCK WHEN IT HAS REACHED $\frac{1}{2}$ OF THE EXPOSED HEIGHT OF THE SILT SOCK. ALTERNATIVELY, RATHER THAN CREATE A SOIL DISTURBING ACTIVITY, THE ENGINEER MAY CALL FOR ADDITIONAL SILT SOCK TO BE ADDED AT AREAS OF HIGH SEDIMENTATION, PLACED IMMEDIATELY ON TOP OF THE EXISTING SEDIMENT LADEN SILT SOCK.

SILT SOCK SHALL BE OVERLAPPED 12" AT JOINTS AND STAKED ON EACH SIDE OF THE SOCK AT A 45° ANGLE

SILT SOCK DETAIL

N.T.S.

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Appendix F-Subdivision Plan

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

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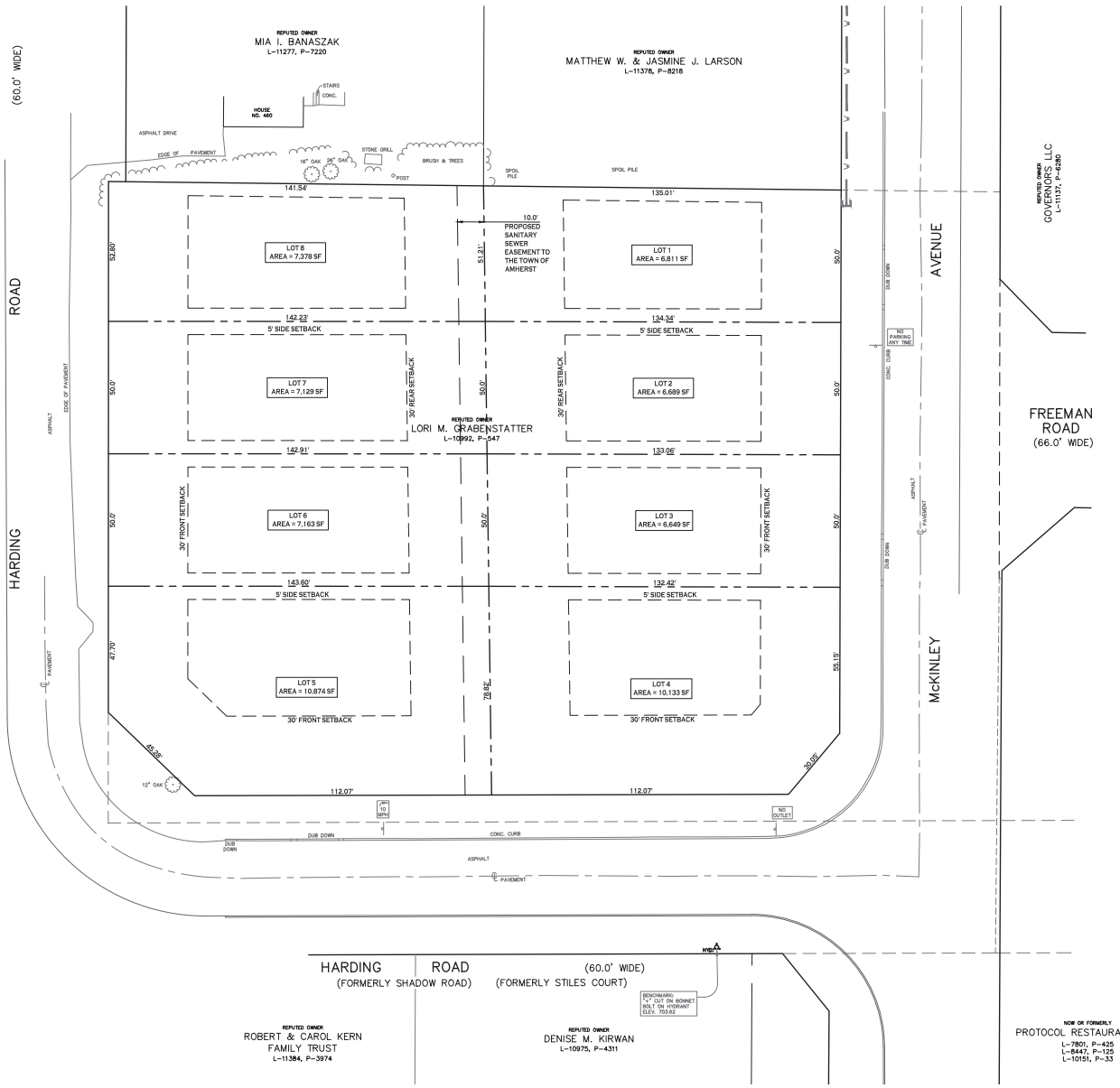


Preliminary Plat Plan

SITE DATA (TR-3 ZONING)
LOT SIZE = 1.44 AC (+/-)
MIN. LOT WIDTH = 50 FT MIN. LOT AREA (INTERIOR) = 5,625 SF MIN. LOT AREA (CORNER) = 7,250 SF
FRONT SETBACK = 30 FT * SIDE SETBACK = 5 FT REAR SETBACK = 30 FT
MINIMUM BUILDING SEPARATION = 10 FT MIN.
MAXIMUM LOT COVERAGE = 35% * MAXIMUM BUILDING HEIGHT = 35 FT
MINIMUM FLOOR AREA = 1,000 SF (1-STORY) MINIMUM FLOOR AREA = 1,200 SF TOTAL (2-STORY)

* PER REZONING CONDITION

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS. CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

CARMINA WOOD DESIGN

Harding Road Subdivision

REVISIONS:
No. Description Date

DRAWING NAME: Preliminary Plan

Date: /28/22
Drawn By: . Wood
Scale: : Noted

DRAWING NO. C-1

Project No:

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Appendix G- Weekly Soil Erosion and Sediment Control Inspection Checklist

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Construction Stormwater Compliance Inspection Report

Project Name and Location:	Date:	Page 1 of 2
	Permit # (if any): NYR	
Municipality: County:	Entry Time:	Exit Time:
On-site Representative(s) and contact information:	Weather Conditions:	
Name and Address of SPDES Permittee/Title/Phone/Fax Numbers Contacted: Yes ☐ No ☐		

INSPECTION CHECKLIST

SPDES Authority

	Yes	No	N/A		Law, rule or permit citation
1.	☐	☐	☐	Is a copy of the NOI posted at the construction site for public viewing?	
2.	☐	☐	☐	Is an up-to-date copy of the signed SWPPP retained at the construction site?	
3.	☐	☐	☐	Is a copy of the SPDES General Permit retained at the construction site?	

SWPPP Content

	Yes	No	N/A		Law, rule or permit citation
4.	☐	☐	☐	Does the SWPPP describe and identify the erosion & sediment control measures to be employed?	
5.	☐	☐	☐	Does the SWPPP provide a maintenance schedule for the erosion & sediment control measures?	
6.	☐	☐	☐	Does the SWPPP describe and identify the post-construction SW control measures to be employed?	
7.	☐	☐	☐	Does the SWPPP identify the contractor(s) and subcontractor(s) responsible for each measure?	
8.	☐	☐	☐	Does the SWPPP include all the necessary "CONTRACTOR CERTIFICATION" statements?	
9.	☐	☐	☐	Is the SWPPP signed/certified by the permittee?	

Recordkeeping

	Yes	No	N/A		Law, rule or permit citation
10.	☐	☐	☐	Are inspections performed as required by the permit (every 7 days and after ½" rain event)?	
11.	☐	☐	☐	Are the site inspections performed by a qualified professional?	
12.	☐	☐	☐	Are all required reports properly signed/certified?	
13.	☐	☐	☐	Does the SWPPP include copies of the monthly/quarterly written summaries of compliance status?	

Visual Observations

	Yes	No	N/A		Law, rule or permit citation
14.	☐	☐	☐	Are all erosion and sediment control measures installed/constructed?	
15.	☐	☐	☐	Are all erosion and sediment control measures maintained properly?	
16.	☐	☐	☐	Have all disturbances of 5 acres or more been approved prior to the disturbance?	
17.	☐	☐	☐	Are stabilization measures initiated in inactive areas?	
18.	☐	☐	☐	Are permanent stormwater control measures implemented?	
19.	☐	☐	☐	Was there a discharge into the receiving water on the day of inspection?	
20.	☐	☐	☐	Are receiving waters free of there evidence of turbidity, sedimentation, or oil ? (If so , complete Page 2)	

Overall Inspection Rating: ☐ Satisfactory ☐ Marginal ☐ Unsatisfactory	
Name/Agency of Lead Inspector:	**Signature of Lead Inspector:**
Names/Agencies of Other Inspectors:	

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Water Quality Observations

Describe the discharge(s) [source(s), impact on receiving waters(), etc.]

Describe the quality of the receiving water(s) both upstream and downstream of the discharge

Describe any other water quality standards or permit violations

Additional Comments:

☐ Photographs attached

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Appendix H- Notice of Termination

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505
(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ___ ___ ___ ___ ___ ___

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person: | 4a.Telephone:

4b. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. □ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP. ***Date final stabilization completed** (month/year): _____

9b. □ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ___ ___ ___ ___ ___ ___
(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. □ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? □ yes □ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? □ yes □ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

_____

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? □ yes □ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

□ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.

□ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).

□ For post-construction stormwater management practices that are privately owned, a mechanism is in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the owner or operator's deed of record.

□ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university or hospital), government agency or authority, or public utility; policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____ (acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? □ yes □ no

(If Yes, complete section VI - "MS4 Acceptance" statement

V. Additional Information/Explanation:

(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:	
Title/Position:	
Signature:	Date:

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

VII. Qualified Inspector Certification - Final Stabilization:

I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):

I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

IX. Owner or Operator Certification

I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2015)

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Appendix I – Certification Forms

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

STORM WATER POLLUTION PREVENTION PLAN
CONTRACTOR'S CERTIFICATION STATEMENT

Harding Road Subdivision – Harding Road & McKinley Avenue

CONTRACTOR'S CERTIFICATION:

"I certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP for the construction site identified in such SWPPP as a condition of authorization to discharge storm water. I also understand that the operator must comply with the terms and conditions of the New York State Pollutant Discharge Elimination System (SPDES) general permit for storm water discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards."

Note: The contractor shall have at least one NYSDEC trained individual onsite at all times when earthwork and other SWPPP associated work is being performed from each contractor(s) and subcontractor(s). Each contractor(s) and subcontractor(s) shall provide copies of these individuals' certifications to the Town of Amherst.

Name: _____
(Print)

Signature: _____

Title: _____

Company Name: _____

Address: _____

Telephone Number: _____

Date: _____

Scope of Services: _____

Trained Individual(s) Responsible for Implementation: _____

This form must be signed by a responsible corporate officer or other party meeting the "Signatory Requirements" of the NYSDEC SPDES General Permit

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

SWPPP Preparer Certification Form

SPDES General Permit for Stormwater Discharges From Construction Activity (GP-0-20-001)

Project Site Information

Project/Site Name

Harding Road Subdivision

Owner/Operator Information

Owner/Operator (Company Name/Private Owner/Municipality Name)

David Capretto

Certification Statement – SWPPP Preparer

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Christopher		Wood
First name	MI	Last Name

Signature

7/7/22

Date

Revised: January 2020

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Owner/Operator Certification Form

SPDES General Permit For Stormwater Discharges From Construction Activity (GP-0-20-001)

Project/Site Name: Harding Road Subdivision

eNOI Submission Number: _____

eNOI Submitted by: ☐ Owner/Operator ☑ SWPPP Preparer ☐ Other

Certification Statement - Owner/Operator

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Owner/Operator First Name: David

M.I.

Last Name: Capretto

Signature

7/6/2022

Date

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Appendix J – MS4 SWPPP Acceptance Form

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit

*(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information
1. Owner/Operator Name:
2. Contact Person:
3. Street Address:
4. City/State/Zip:
II. Project Site Information
5. Project/Site Name:
6. Street Address:
7. City/State/Zip:
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information
8. SWPPP Reviewed by:
9. Title/Position:
10. Date Final SWPPP Reviewed and Accepted:
IV. Regulated MS4 Information
11. Name of MS4:
12. MS4 SPDES Permit Identification Number: NYR20A _____
13. Contact Person:
14. Street Address:
15. City/State/Zip:
16. Telephone Number:

(NYS DEC - MS4 SWPPP Acceptance Form - January 2010)

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s).
Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

Date:

VI. Additional Information

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Appendix K – NYSDEC Letter of Acknowledgement

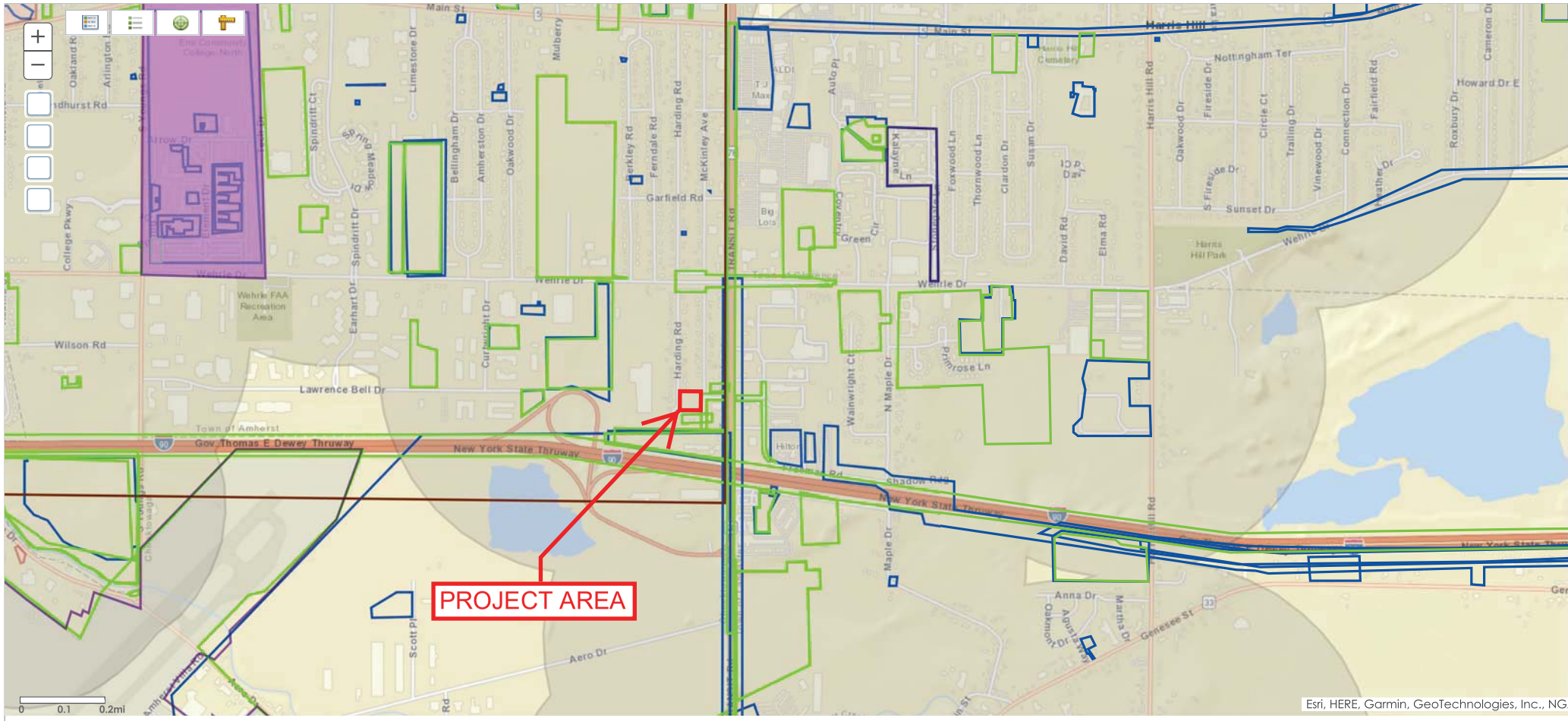
Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Appendix L – SHPO Map

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)



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Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Appendix M – Engineer's Report

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

CARMINAWOOD
DESIGN

ENGINEER'S REPORT

for

Harding Road Subdivision
Harding Road & McKinley Ave
Town of Amherst, Erie County, New York

Prepared for

Forbes Capretto Homes

470 Cayuga Road
Cheektowaga, NY 14225

Prepared by

Carmina Wood Design

487 Main Street, Suite 500
Buffalo, NY 14203

Telephone: (716) 842-3165
Fax: (716) 842-0263

July 2022



Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Table of Contents

Written Engineer's Report

Section 1 - Location & Description
Section 2 - Water Service
Section 3 - Sanitary Sewer Service
Section 4 - Storm Sewer Service

Appendices

Appendix A Sanitary Sewer and Water Demand Calculations

- Downstream Sewer Capacity Analysis

Appendix B 468 Harding Road Geotechnical Report & Soil Borings

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Section 1 - Location & Description

This project is a development of a 1.44 acre site located in between Harding Road and McKinley Avenue near Stiles Court in the Town of Amherst for a single family subdivision. Construction will consist of a public sanitary sewer and water main extension. Eight (8) lots are proposed for this subdivision, of which all will be building lots. Currently the site is a vacant large open grass area. The proposed site development area to be disturbed for this project is 1.44 acres when construction is completed.

Section 2 - Water Service

An existing 8" public PVC water main is located along the south side of Harding Road/Stiles Court that will be the source of water for this project. Approximately 294 LF of new 8" AWWA C-900 PVC water main will be installed across Harding Road/Stiles Court and then along McKinley Avenue. The proposed watermain will connect to both the existing 8" watermain along the south side of Harding Road/Stiles Court, as well as the existing 8" watermain on the west side of McKinley Avenue.

Pipe material for the new main and all fittings will be in accordance with Erie County Water Authority (ECWA) standards. Per hydrant flow test provided by ECWA, the existing static pressure in the 6" PVC water main on Bellingham Drive was approximately 46 psi and the residual pressure was 42 psi. The proposed main will be installed and tested in accordance with ECWA Standard Specifications. Inspection and certification of the installation and testing of the water samples will be done by the ECWA. There are no conflicts with existing utilities in the area, the land is currently vacant. The proposed water main will maintain physical separation from other utilities as specified per Ten States Standards.

Domestic Summary:

Peak Operating Demand:	24 gpm
Water Main:	6" PVC on Bellingham Drive
Static Pressure:	46 psi (per ECWA)

See attached water demand calculations in Appendix A for additional information.

Section 3 - Sanitary Sewer Service

Proposed is 361 lf of 8" SDR-35 PVC public sanitary that will connect to an existing manhole on Harding Road. The proposed sewer extension will run north through a sanitary sewer easement to the Town of Amherst. Each proposed building lot will wye connect to the proposed 8" sanitary sewer via a 4" SDR-35 PVC sanitary lateral at 1.0% minimum slope.

Design Parameters

4-bedroom house: 440 gal/day/house x 8 houses = 3,520 gpd

3,520 gpd * 4.34 = 15,288 gpd *use peaking factor of 4.34

The hydraulic loading rate is per "Design Standards for Intermediate Sized Wastewater Treatment Systems" 2014, NYSDEC.

Downstream sewer capacity analysis is included within the Appendix of this report.

Section 4 - Storm Sewer Service

The project area slopes towards the road and stormwater flows off site. The proposed lots will keep the same general drainage paths following construction of the homes. Swales will be installed to direct the water to the proper locations as required.

The disturbance will be greather than 1 acre but less than 5 acres and therefore the project falls under Appendix B of the NYSDEC SPDES Permit for Stormwater Discharges from Construction Activities Permit no. GP-0-20-001. Appendix B requires only an Erosion and Sediment Control plan for this project. In addition, a full SWPPP is not required, an abbreviated SWPPP has been prepared for the project, refer to that document for further detail.

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Appendix A

Sanitary Sewer and Water Demand Calculations

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

CARMINA WOOD DESIGN
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 22.010 Date: 7/7/2022
Project Name: Harding Road Subdivision
Project Address: 468 Harding Road Amherst, NY
Subject: Sanitary Sewage Calculations
Sheet: 1 of 1

Sanitary Sewage Demand Calculations:

Fair Woods Estates

440 gal/d/unit x 8 unit = 3,520 gpd *use 440 gallons per day per 4-bedroom house

Total Site Sanitary Demand: = 3,520 gpd Average

* The hydraulic loading rate is per "Design Standards for Intermediate Sized Wastewater Treatment Systems" 2014, NYSDEC.

Find Peak Sanitary Demand:

Peaking Factor based on Population:

Total demand: 3,520 gpd / 100 gpcd = 35 per capita

Population (P) = 35 people

Peaking Factor : $(18 + \sqrt{P}) / (4 + \sqrt{P})$ where P is in thousands

Peaking Factor = 4.34

Peak Sanitary Demand = 3,520 x 4.34 = 15,288 gpd
= 0.015 MGD
= 0.024 cfs

Required Infiltration and Inflow Mitigation:

Peak Sanitary Flow = 15,288 gpd = 10.62 gpm

4:1 offset flow per NYSDEC requirements = 10.62 x 4 = 42.47 gpm req'd

Mitigation Credit = $250 / gpm

Mitigation Agreement Amount = $10,616.69

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

CARMINA WOOD MORRIS, D.P.C.
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 22.010 Date: 2/3/2022
Project Name: Harding Road Subdivision
Project Address: Harding Rd & McKinley Ave Amherst, NY
Subject: Domestic Water Demand Calculations
Sheet: 1 of 1

Domestic Water Demand Calculations:

Harding Road Subdivision

Q = 3,300 gpd * use 100% of Total Sanitary Average Daily Demand

Q = 2.29 gpm * assume 24 hour day

Harding Road Subdivision

Q_{peak} = 10 Units @ 3 gpm = 30 gpm Peak Demand
* use 3 gpm per unit (per ECDOH peak flow)

Headlosses:

Q_{peak} = 30 gpm
Pipe = 8 inch C-900 PVC C = 140
Length = 535 LF (approx. distance from HYD L08-B17 to L08-B09)

$$H_L = \frac{10.44\ L\ Q^{1.85}}{C^{1.85}\ D^{4.866}} = \frac{10.44(1450)(57)^{1.85}}{(140)^{1.85}\ (8)^{4.866}} = 0.01 \text{ ft} = 0.01 \text{ psi}$$

Δ elev = 2 ft = 0.87 psi *approximate 2.0' elev. increase from HYD L08-B17 to L08-B09
Total Losses = 0.9 psi
Static Pressure = 46 psi *per ECWA
Residual Pressure in main near HYD L08-B09 = 46 - 0.9 = 45.1 psi

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Downstream Sewer Capacity Analysis

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

CARMINAWOOD
DESIGN

DOWNSTREAM SANITARY SEWER CAPACITY ANALYSIS REPORT

for

Harding Road Subdivision

Harding Road & McKinley Ave
Town of Amherst, Erie County, New York

Prepared for

Forbes Capretto Homes

470 Cayuga Road
Cheektowaga, NY 14225

Prepared by

Carmina Wood Design

487 Main Street, Suite 500
Buffalo, NY 14203

Telephone: (716) 842-3165
Fax: (716) 842-0263

July 2022



Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Project Description

This project is a development of a 1.4 acre +/- site located between Harding Road and McKinley Avenue in the Town of Amherst. The property will be subdivided to accommodate for 10 single family home lots to be built at a later date. Currently the site exists as an undeveloped, open grass area.

370 lf of 8" SDR-35 PVC public sewer main extension is proposed for this development. The sewer will run along the rear center of the lots through a 10' wide easement to the Town of Amherst, and then cross Harding Road to connect to an existing sanitary manhole on the south side of Harding Road. The existing 8" PVC sewer on Harding Road flows north.

Node 1 – 389 Harding Road (8"):

Existing Peak Flow measured (wet weather event)	= 0.050 cfs (0.032 mgd)*
Proposed Harding Rd Subdivision Peak Flow	= 0.024 cfs**
Proposed Total Peak Flow	= 0.074 cfs
Existing Peak Flow measured (wet weather event)	= 0.333 cfs (0.215 mgd)*
Proposed Harding Rd Subdivision Peak Flow	= 0.024 cfs**
Proposed Total Peak Flow	= 0.357 cfs

Theoretical capacity of existing 8" PVC pipe @ 0.25% = 0.872 cfs

Conclusion: The proposed peak flow is less than the capacity of the 8" PVC pipe, therefore there is sufficient capacity. At no time during the monitoring did the flow depth exceed the pipe diameter at Node 1 of the downstream monitoring points during the rain events monitored.

Node 2 – Youngs Road (18"):

Existing Peak Flow measured (wet weather event)	= 5.534 cfs (3.577 mgd)*
Proposed Harding Rd Subdivision Peak Flow	= 0.024 cfs**
Proposed Total Peak Flow	= 5.558 cfs

Theoretical capacity of existing 18" PVC pipe @ 0.17% = 6.251 cfs

Conclusion: The proposed peak flow is less than the capacity of the 18" PVC pipe, therefore there is sufficient capacity. At no time during the monitoring did the flow depth exceed the pipe diameter at Node 1 of the downstream monitoring points during the rain events monitored.

Node 3 – Peanut Line (66"):

Existing Peak Flow	= 56.474 cfs (36.50 mgd)*
Proposed Harding Rd Subdivision Peak Flow	= 0.024 cfs**
Proposed Total Peak Flow	= 56.498 cfs

Theoretical capacity of existing 66" pipe = 88.811 cfs (57.40 mgd)

Conclusion: The proposed peak flow is less than the capacity of the 66" pipe, therefore there is sufficient capacity.

Foot Notes:

Pipe slopes, sizes and materials provided by Town of Amherst

*Converted from measurements in TECSmith report dated 3/17/22

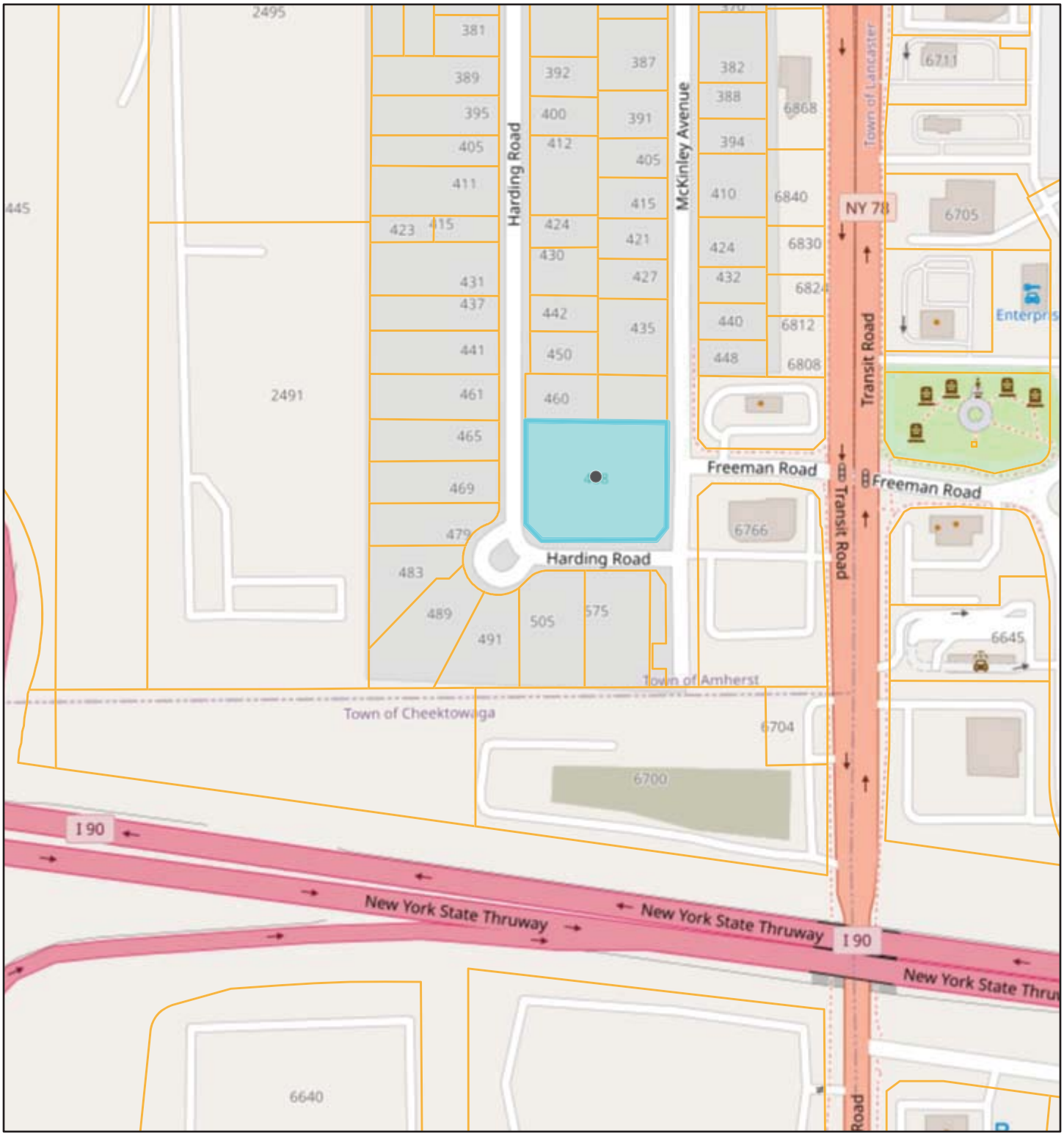
** See Sanitary Sewage Demand Calculations

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Location Map

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

468 Harding Road



2/4/2022, 8:50:30 AM

Parcels

1:4,514

0 0.03 0.06 0.11 mi

0 0.04 0.09 0.17 km

© OpenStreetMap (and) contributors, CC-BY-SA

USGS TNM – National Hydrography Dataset. Data Refreshed January, 2022. | NYS GIS Program Office | Telephone: (518) 242-5029 | Email: its.sm.SAM.

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Sanitary Demand Calculations

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

CARMINA WOOD DESIGN
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 22.010 Date: 7/7/2022
Project Name: Harding Road Subdivision
Project Address: 468 Harding Road Amherst, NY
Subject: Sanitary Sewage Calculations
Sheet: 1 of 1

Sanitary Sewage Demand Calculations:

Fair Woods Estates

440 gal/d/unit x 8 unit = 3,520 gpd *use 440 gallons per day per 4-bedroom house

Total Site Sanitary Demand: = 3,520 gpd Average

* The hydraulic loading rate is per "Design Standards for Intermediate Sized Wastewater Treatment Systems" 2014, NYSDEC.

Find Peak Sanitary Demand:

Peaking Factor based on Population:

Total demand: 3,520 gpd / 100 gpcd = 35 per capita

Population (P) = 35 people

Peaking Factor : $(18 + \sqrt{P}) / (4 + \sqrt{P})$ where P is in thousands

Peaking Factor = 4.34

Peak Sanitary Demand = 3,520 x 4.34 = 15,288 gpd
= 0.015 MGD
= 0.024 cfs

Required Infiltration and Inflow Mitigation:

Peak Sanitary Flow = 15,288 gpd = 10.62 gpm

4:1 offset flow per NYSDEC requirements = 10.62 x 4 = 42.47 gpm req'd

Mitigation Credit = $250 / gpm

Mitigation Agreement Amount = $10,616.69

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

TECSmith Monitoring Report

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

Date: March 17, 2022

SANITARY SEWER FLOW CAPACITY STUDY – Summary Review

Prepared For: 468 Harding Capacity Analysis

R. Christopher Wood, PE
487 Main Street, Suite 500
Buffalo, New York 14203

Project Name: 468 Harding Capacity Analysis

Flow Monitoring Period: February 14, 2022 to March 15, 2022

Rain Events (> 0.5-inches) Monitored: February 17 (1.28”), and February 22 (0.77”)

Number of Monitoring Nodes: Two (2) downstream manholes

Node Locations and Descriptions:

- Node 1 118 Garfield St (8")
- Node 2 Youngs Rd 18in (18")

Summary Conclusion:

Based on the data presented in this report, specifically the flow depth measurements recorded (see graphs below)

- At no time did the flow depth exceed pipe diameter at any of the downstream monitoring points during the wet weather events monitored.
- At no time during the monitoring period did the flow at any point slow or stall which would have caused a backup or flooding at the manhole.

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

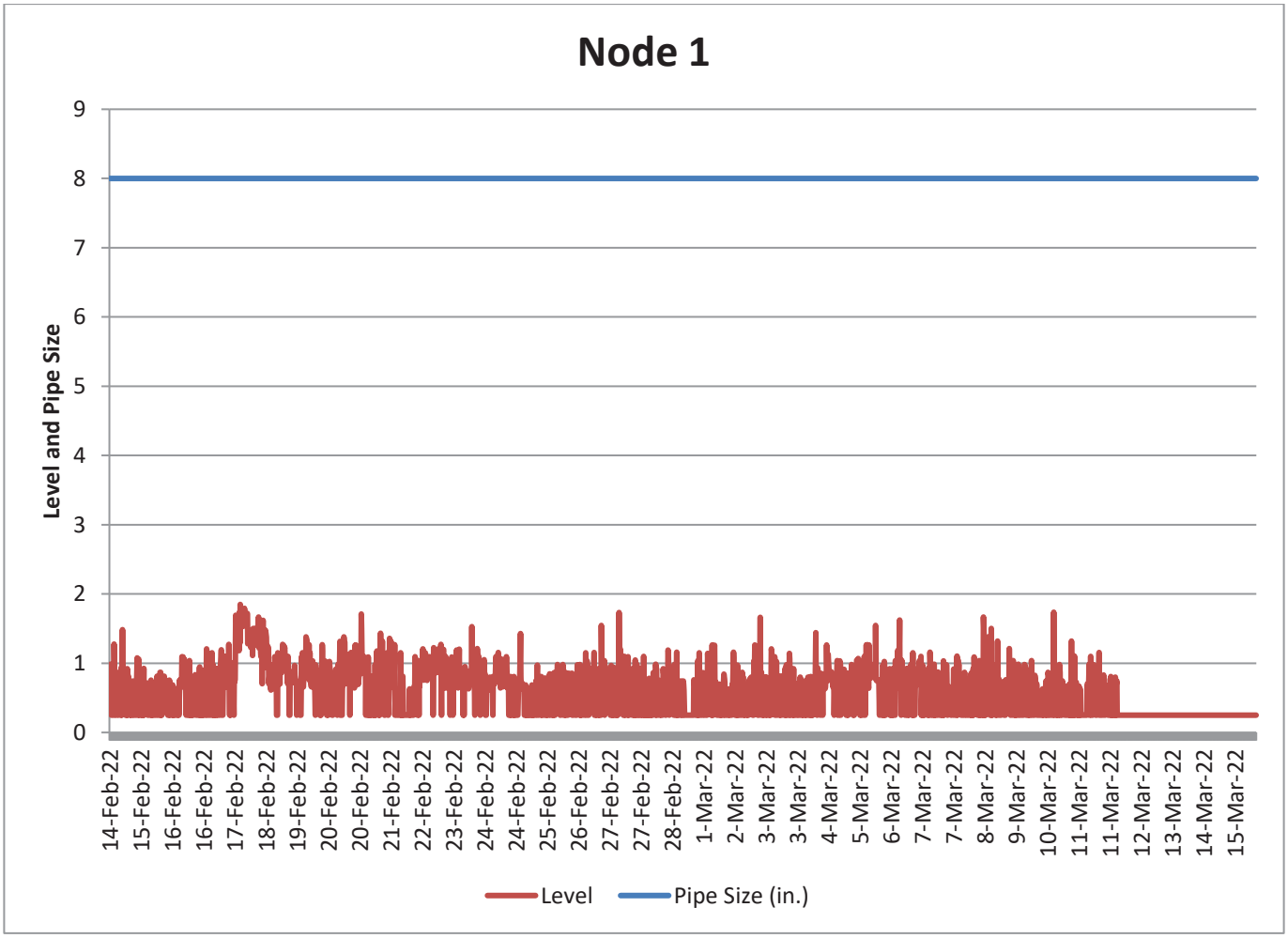
TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

Depth of Flow Capacity Summary:

Depth of flow capacity is based on diameter of pipe. See graphs below.

- At no time during the monitoring period did depth of flow exceed pipe diameter at Node 1.

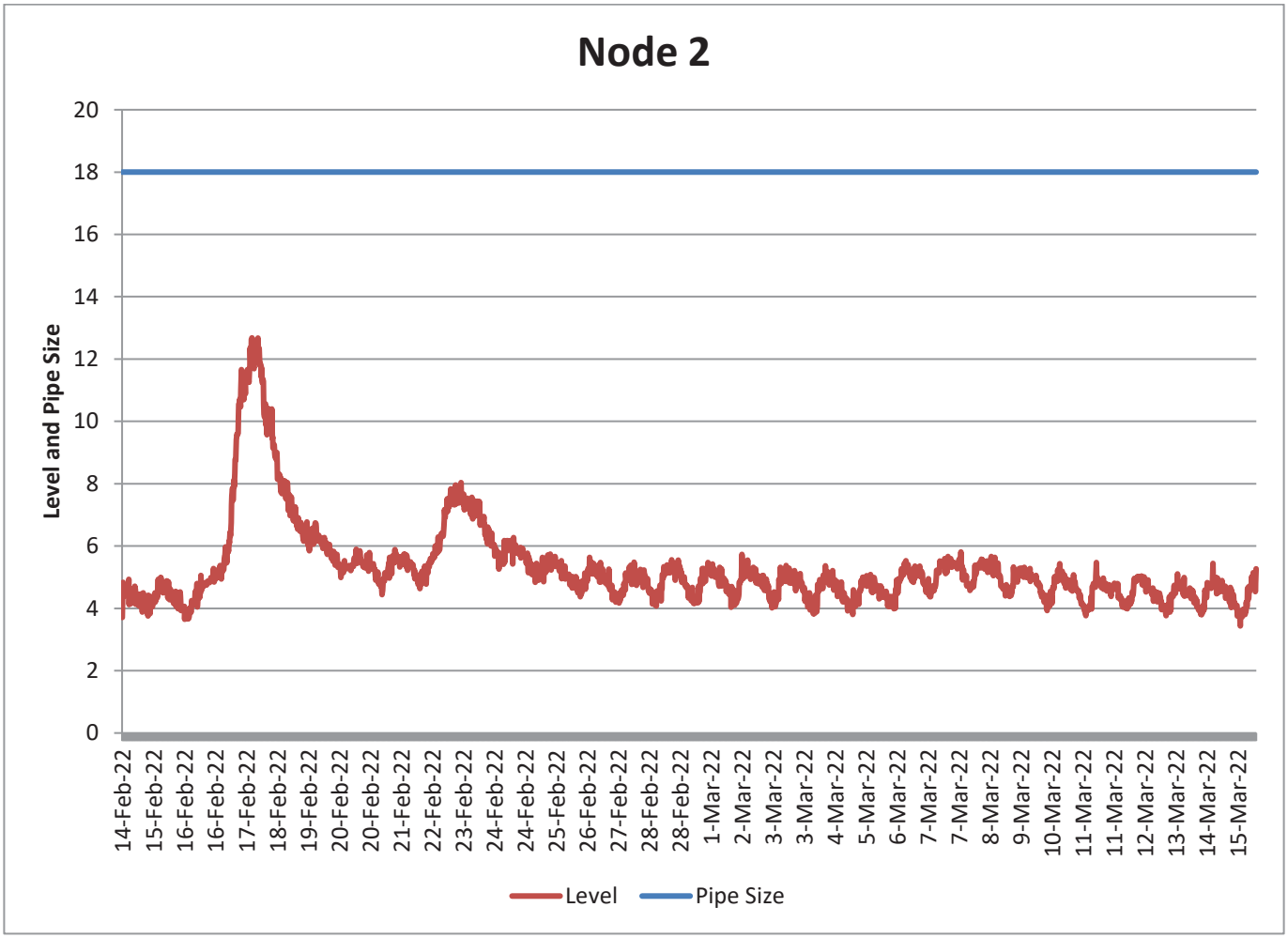


Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

- At no time during the monitoring period did depth of flow exceed pipe diameter at Node 2.



Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Date	Node 1			Node 2			Rain₂	Snow
	389 Harding (8")			Youngs Rd 18in (18")				
	FLOW (GAL x 1,000)	PEAK FLOW (MGD)	PEAK LEVEL (IN)	FLOW (GAL x 1,000)	PEAK FLOW (MDG)	PEAK LEVEL (IN)	(inches)	(inches)
2/14/2022	1.293	0.012	1.486	384.802	1.356	4.933	*0*	*0.02*
2/15/2022	1.107	0.004	1.079	816.541	1.239	4.990	*0*	*0*
2/16/2022	1.722	0.006	1.206	824.265	1.271	5.274	*0*	*0*
2/17/2022	9.356	0.032	1.849	2087.531	3.577	12.680	*1.28*	*0*
2/18/2022	9.187	0.020	1.668	2242.294	3.082	12.672	*0.27*	*3.1*
2/19/2022	2.609	0.014	1.382	1552.399	2.331	6.912	*0.09*	*2*
2/20/2022	5.207	0.215	1.709	1229.671	1.596	5.896	*0*	*0*
2/21/2022	2.327	0.009	1.434	1185.206	1.920	5.882	*0*	*0*
2/22/2022	3.674	0.013	1.274	1427.503	2.814	7.834	*0.77*	*0*
2/23/2022	3.001	0.008	1.530	1979.596	3.086	8.039	*0.01*	*0*
2/24/2022	1.964	0.008	1.427	1377.495	2.015	6.271	*0*	*0*
2/25/2022	1.470	0.006	0.983	1177.301	1.604	5.740	*0.22*	*2.2*
2/26/2022	1.547	0.009	1.545	1033.255	1.410	5.638	*0.08*	*3*
2/27/2022	2.329	0.021	1.731	951.840	1.356	5.478	*0*	*0*
2/28/2022	1.654	0.022	1.192	1000.738	1.451	5.558	*0*	*0*
3/1/2022	1.180	0.006	1.263	957.982	1.421	5.473	*0*	*0*
3/2/2022	1.636	0.014	1.664	988.350	1.568	5.732	*0.12*	*1.5*
3/3/2022	1.512	0.011	1.208	954.518	1.391	5.378	*0*	*0*
3/4/2022	2.172	0.013	1.442	892.487	1.231	5.364	*0*	*0*
3/5/2022	2.509	0.011	1.547	866.713	1.101	5.083	*0*	*0*
3/6/2022	2.365	0.022	1.623	962.175	1.611	5.531	*0.16*	*0*
3/7/2022	2.012	0.009	1.160	1087.132	1.512	5.805	*0.39*	*0.1*
3/8/2022	2.731	0.015	1.667	1142.375	1.471	5.662	*0*	*0*
3/9/2022	1.897	0.009	1.213	1028.584	1.487	5.329	*0*	*0*
3/10/2022	1.434	0.024	1.736	953.154	1.259	5.436	*0*	*0*
3/11/2022	1.568	0.014	1.155	893.810	1.264	5.475	*0.32*	*3.2*
3/12/2022	---	---	---	882.953	1.148	5.037	*0.04*	*0.7*
3/13/2022	---	---	---	830.278	1.176	5.102	*0.05*	*1*
3/14/2022	---	---	---	882.091	1.296	5.446	*0*	*0*
3/15/2022	---	---	---	427.466	1.240	5.271	*0.01*	*0*
---	---	---	---	---	---	---	*3.81*	*16.82*

	MGD	CFS		MGD	CFS
Wet	0.032	0.050	Wet	3.577	5.534
Dry	0.215	0.333	Dry	3.086	4.775

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

(T) Amherst Downstream Routing and Node Maps

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

TOWN OF AMHERST
Erie County, New York

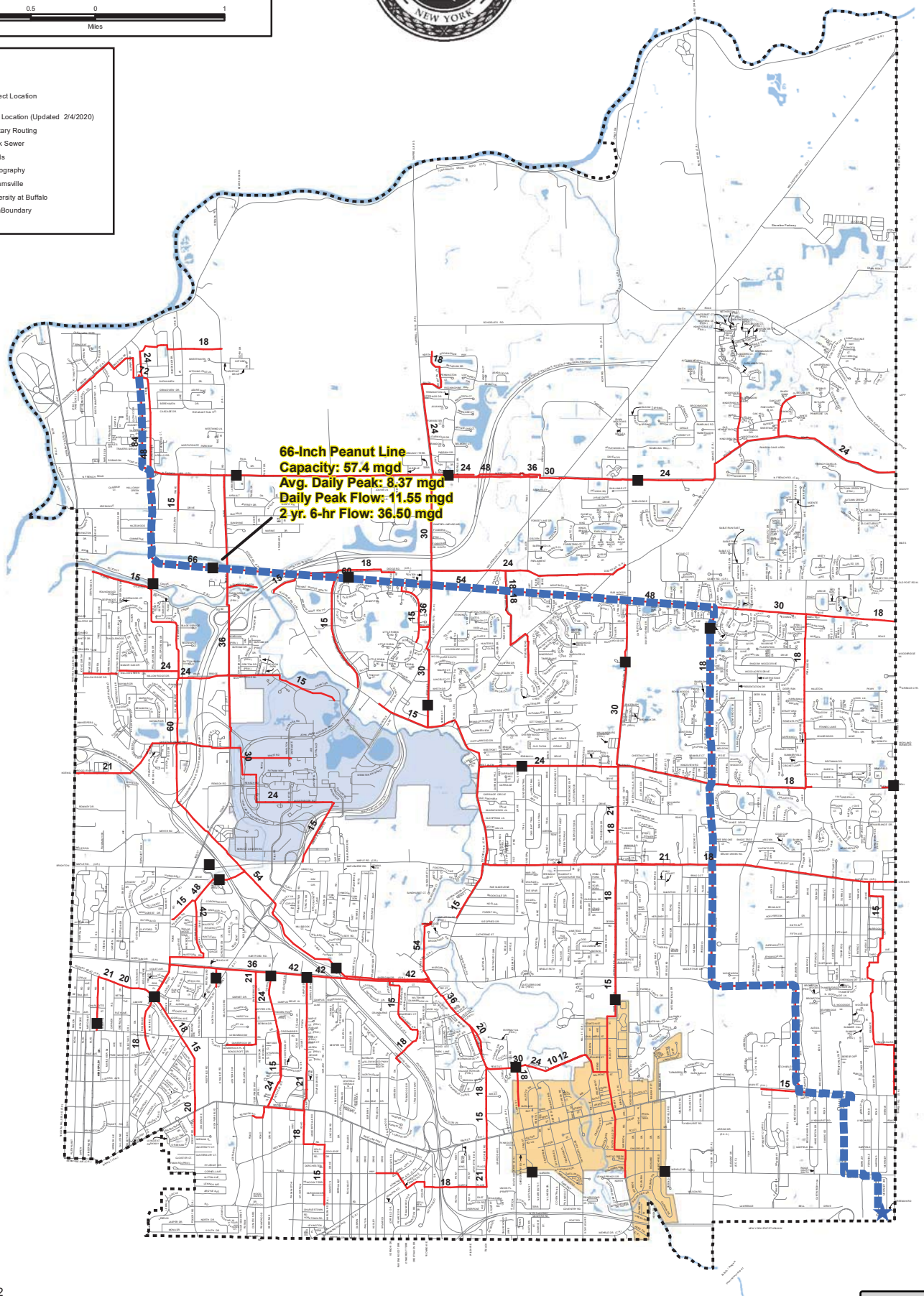
Downstream Sewer Routing
Proposed Site: 468 Harding Road

1 0.5 0 1
Miles

N

Legend
- Project Location
- Flow Location (Updated 2/4/2020)
- Sanitary Routing
- Trunk Sewer
- Roads
- Hydrography
- Williamsville
- University at Buffalo
- TownBoundary

66-Inch Peanut Line
Capacity: 57.4 mgd
Avg. Daily Peak: 8.37 mgd
Daily Peak Flow: 11.55 mgd
2 yr. 6-hr Flow: 36.50 mgd



January 2022

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

TOWN OF AMHERST

Erie County, New York

Sanitary Sewer Downstream Routing

Proposed Meter Location

250 125 0 250

Feet



January 2022

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

TOWN OF AMHERST

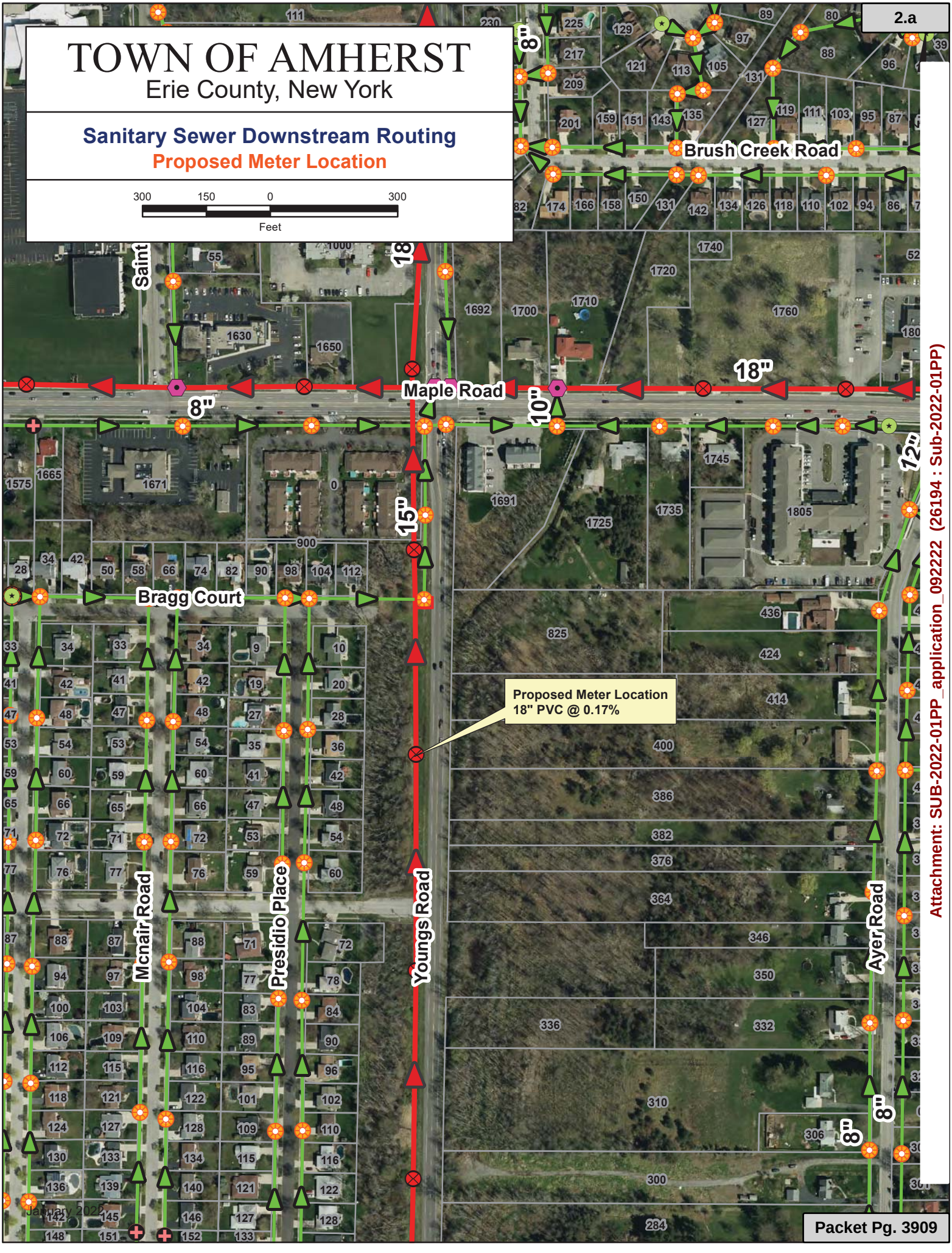
Erie County, New York

Sanitary Sewer Downstream Routing

Proposed Meter Location

300 150 0 300

Feet



Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Appendix B

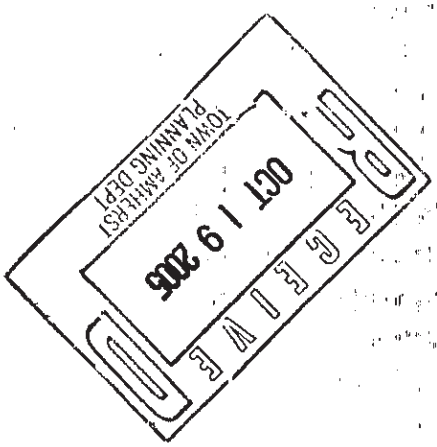
468 Harding Road Geotechnical Report & Soil Borings

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

RAY M. TEETER, P.E.
CONSULTING GEOTECHNICAL ENGINEER

October 17, 2005

Bill Arlow
Grabber & Sons
3242 Harlem Road
Cheektowaga, New York 14225



Subject: Proposed Single-Family Residential Structure
Lot 3, Bore Hole 1-05
468 Harding Road
Town of Amherst, Erie County, New York
Earth Dimensions Project Number 17I05
RMT-11369

Mr. Arlow:

This letter presents geotechnical engineering recommendations and comments regarding the project identified above. All information regarding the site and proposed construction was provided to me by others.

SUBSURFACE EXPLORATION AND CONDITIONS

One subsurface exploration, identified as Bore Hole 1-05, was performed by Earth Dimensions, Inc. on October 6, 2005. The log of that boring will be sent to you directly by Earth Dimensions, Inc.

Rock was encountered less than 3 feet below the ground surface.

It should be noted that short-term observations may not be representative of actual groundwater levels (particularly in fine-grained, low-permeability soils), and that groundwater levels will vary with factors including location, time, precipitation, season, and site activities.

DESIGN AND CONSTRUCTION

General

The site is generally suitable for conventional design and construction. As noted above, however, rock was encountered less than 3 feet below the ground surface.

P.O. BOX 316
CANANDAIGUA, NY 14424

PHONE 585-393-4762
FAX 585-393-4984

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

All design and construction should satisfy the requirements of all applicable codes. The Town of Amherst has specific requirements, including those for reinforcing bars in footings and walls.

The contractor should comply with all applicable requirements, including OSHA; excavate, dewater, backfill, and grade as necessary; protect existing structures and utilities; provide temporary support as necessary; and provide qualified personnel to perform and supervise the work.

Seismic Considerations

With regard to the Building Code of New York State, a Site Class of "B" should be applied to this project. This corresponds to a "Rock" profile.

Spread Footing Foundations

The columns and walls of the proposed structure can be supported by conventional shallow spread footing foundations. All of the following requirements should be satisfied:

- No loose, soft, wet, frozen, organic, unnatural, or otherwise unsuitable material should be left in place below a footing.
- Footings should bear on rock.
- Footings should be designed for a bearing pressure not exceeding 10,000 pounds per square foot, or a footing width of at least 12 inches, whichever results in the wider footing.
- Footings should be seated at least 42 inches below the lowest adjacent surface exposed to freezing temperatures.
- Foundation walls should consist of reinforced concrete.

Floor Slabs

Conventional slab-on-grade floor construction is feasible. No loose, soft, wet, frozen, organic, or otherwise unsuitable materials should be left in place below a floor slab.

Drained, unsaturated conditions should be maintained within the granular material below floor slabs. A vapor barrier could be provided if desired.

Basement Walls

Basement walls should be designed in accordance with applicable code requirements, in consideration of the materials that will be used for backfill. As noted above, the walls should consist of reinforced concrete. The Town of Amherst has specific requirements, including those for reinforcing bars in walls. Drained, unsaturated conditions should be maintained within the backfill.

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Additional Comments on Subsurface Drainage and Waterproofing

In preceding sections of this letter, recommendations were provided regarding the maintenance of drained, unsaturated conditions beneath floor slabs and within the backfill along basement walls. If these drained, unsaturated conditions are maintained, a waterproofing membrane will not be necessary.

Site Grading

The final grading should be such that surface waters are conducted away from structures and paved areas.

CLOSING COMMENTS AND RECOMMENDATIONS

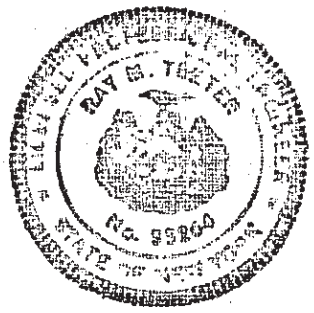
Professional services were performed in accordance with generally accepted geotechnical engineering practices, exclusively for the subject project. No other warranty, expressed or implied, is made.

Conditions between, beyond, and below explorations are likely to vary. It should also be noted that subsurface conditions are often described on the basis of visual examinations of recovered samples, and that these visual descriptions may not always agree well with descriptions made on the basis of laboratory tests. If subsurface conditions are subsequently revealed that appear to be significantly different or less favorable than those described, I should be given the opportunity to revise the statements in this letter.

It has been a pleasure assisting you. If you have questions or comments regarding this letter, please contact me.

Yours truly,

RAY M. TEETER, P.E.



Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

RAY M. TEETER, P.E.
CONSULTING GEOTECHNICAL ENGINEER

October 17, 2005

Bill Arlow
Grabber & Sons
3242 Harlem Road
Cheektowaga, New York 14225

Subject: Proposed Four-Lot Subdivision
468 Harding Road
Town of Amherst, Erie County, New York
Earth Dimensions Project Number 17I05
RMT-11369

Mr. Arlow:

This letter presents preliminary geotechnical engineering comments regarding the project identified above. All information regarding the site and proposed construction was provided to me by others.

This letter addresses the general geotechnical feasibility of the four-lot project. A separate letter (also dated October 17, 2005) provides comments and recommendations specifically for Lot 3.

SUBSURFACE EXPLORATION AND CONDITIONS

One subsurface exploration, identified as Bore Hole 1-05, was performed by Earth Dimensions, Inc. on October 6, 2005. The log of that boring will be sent to you directly by Earth Dimensions, Inc.

Rock was encountered less than 3 feet below the ground surface.

It should be noted that short-term observations may not be representative of actual groundwater levels (particularly in fine-grained, low-permeability soils), and that groundwater levels will vary with factors including location, time, precipitation, season, and site activities.

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

P.O. BOX 316
CANANDAIGUA, NY 14424

PHONE 585-393-4762
FAX 585-393-4984

GEOTECHNICAL FEASIBILITY

Based on the information available, it is my opinion that the four-lot subdivision is geotechnically feasible.

The Town of Amherst will require individual test borings for each structure proposed. It appears likely, however, that the recommendations will be similar to those made for Lot 3.

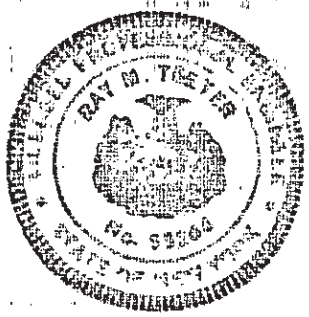
* * *

Professional services were performed in accordance with generally accepted geotechnical engineering practices, exclusively for the subject project. No other warranty, expressed or implied, is made.

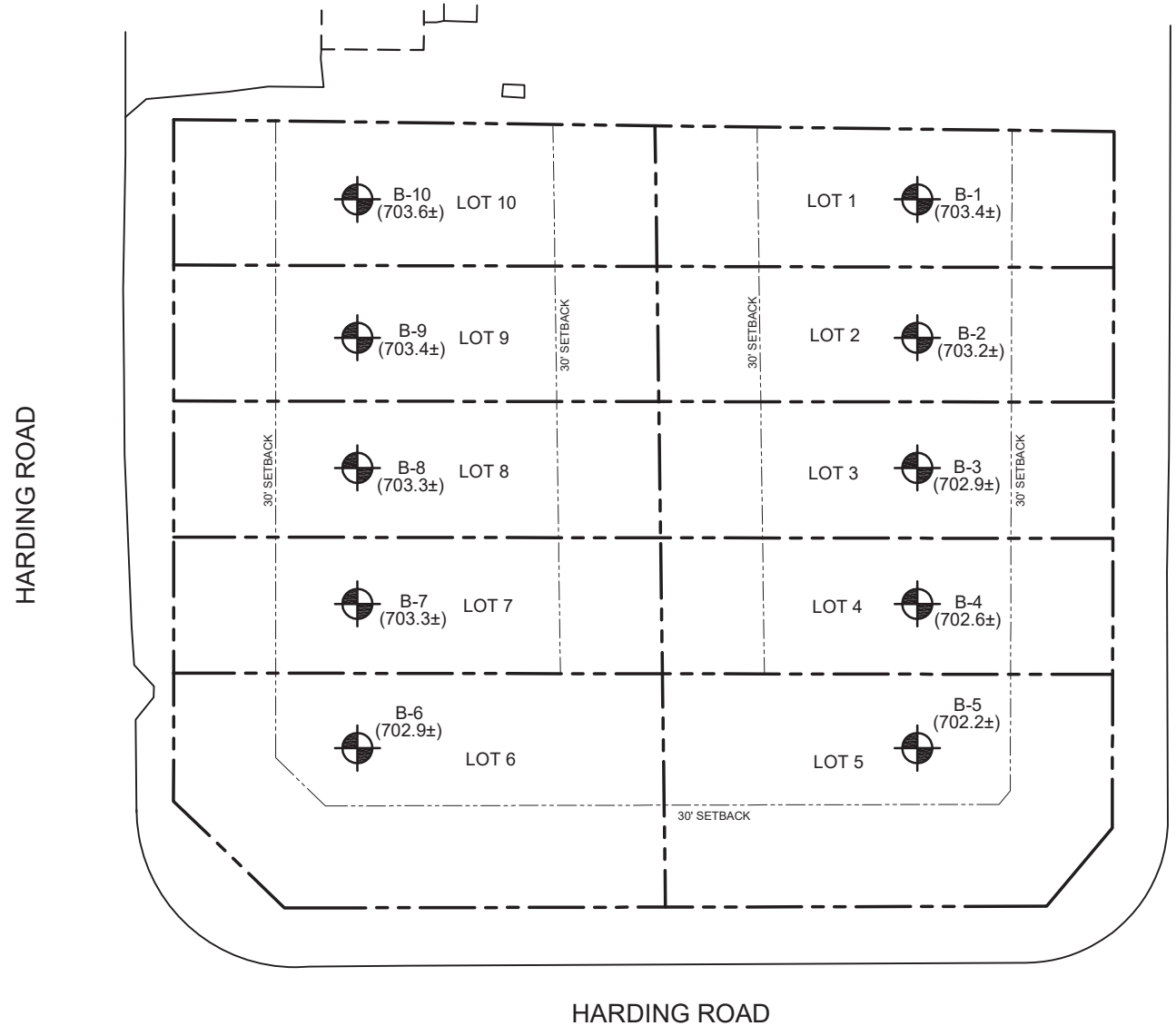
It has been a pleasure assisting you. If you have questions or comments regarding this letter, please contact me.

Yours truly,

RAY M. TEETER, P.E.



Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)



LEGEND	
B-1	= TEST BORING & NO.
(100.0)	= GROUND SURFACE ELEVATION (FT.)
BM	= BENCH MARK ( )

NOTES:

1. BORING, BUILDINGS, SITE FEATURES, PROPERTY LINE LOCATIONS, AND SCALE OF DRAWING ARE APPROXIMATE.
2. BASE MAP REFERENCE PROVIDED BY CARMINA WOOD MORRIS, DPC, TITLED "PRELIMINARY PLAT PLAN - HARDING ROAD SUBDIVISION", PROJECT NO. 22.010, DATED 1/17/2022.

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DRAWN: DAN KASPROWICZ

CLIENT: FORBES-CAPRETTO HOMES
470 CAYUGA ROAD
CHEEKTOWAGA, NEW YORK 14225

PROJECT: PROPOSED HARDING ROAD SUBDIVISION
McKINLEY AVENUE, LOT 1
TOWN OF AMHERST, NEW YORK 14221

TEST BORING LOCATION PLAN

0

JOB NO.: 22-512	SCALE: NOT TO SCALE
DATE: 1/18/2022	FIGURE NO. 2

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

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TEST BORING LOG

2.a

JOB No.: 22-512 **BORING No.:** B-1

PROJECT: Proposed Harding Road Subdivision
McKinley Avenue and Harding Road, Town of Amherst, New York 14221

DRILLER:	J. Stuber	**TYPE OF DRILL RIG:**	CME-75 (4 x 4)
SAMPLING METHODS:	ASTM D1586	**SIZE AND TYPE OF BIT:**	2 1/4" I.D. H.S.A.
DATE STARTED:	2/11/22	**SURFACE ELEVATION (ft.):**	703.4 +/-
DATE COMPLETED:	2/11/22	**GROUNDWATER DEPTH (ft.):** (measured at completion unless indicated below)	None

Elevation/ Depth (feet)	Soil Symbols Sampler Symbols Field Test Data	Sample No. : Range	N-Value	% REC (RQD)	Soil and Rock Description / Remarks
0 / 700	2 2 2 3	S-1 : 0.0'- 2.0'	4	0	Topsoil (6") Dk. brown, m. stiff CLAY, and SILT, little f. Sand, tr. Gravel, tr. Roots, plastic, wet (CL-ML) (No Recovery)
5	3 6 50/4"	S-2 : 2.0'- 3.3'	56+	0	...grade: hard (No Recovery) *(Stone in shoe.)*
695	REFUSAL				
10					Depth to Bottom of Hole: 3.3 feet
690					
15					
685					
20					
680					
25					
675					
30					
670					
35					

Logged by: E. Zinni

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TEST BORING LOG

2.a

JOB No.: 22-512 **BORING No.:** B-2

PROJECT: Proposed Harding Road Subdivision
McKinley Avenue and Harding Road, Town of Amherst, New York 14221

DRILLER:	J. Stuber	**TYPE OF DRILL RIG:**	CME-75 (4 x 4)
SAMPLING METHODS:	ASTM D1586	**SIZE AND TYPE OF BIT:**	2 1/4" I.D. H.S.A.
DATE STARTED:	2/11/22	**SURFACE ELEVATION (ft.):**	703.2 +/-
DATE COMPLETED:	2/11/22	**GROUNDWATER DEPTH (ft.):** (measured at completion unless indicated below)	None

Elevation/ Depth (feet)	Soil Symbols Sampler Symbols Field Test Data	Sample No. : Range	N-Value	% REC (RQD)	Soil and Rock Description / Remarks
0 / 700	2 3 2 50/5" REFUSAL	S-1 : 0.0'- 1.9'	5	100	Topsoil (8") Dk. brown, m. stiff CLAY, and SILT, little f. Sand, tr. Gravel, tr. Roots, plastic, wet (CL-ML)
5 / 695					Depth to Bottom of Hole: 2.0 feet
10 / 690					
15 / 685					
20 / 680					
25 / 675					
30 / 670					
35					

Logged by: E. Zinni

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TEST BORING LOG

2.a

JOB No.: 22-512 **BORING No.:** B-3

PROJECT: Proposed Harding Road Subdivision
McKinley Avenue and Harding Road, Town of Amherst, New York 14221

DRILLER:	J. Stuber	**TYPE OF DRILL RIG:**	CME-75 (4 x 4)
SAMPLING METHODS:	ASTM D1586	**SIZE AND TYPE OF BIT:**	2 1/4" I.D. H.S.A.
DATE STARTED:	2/11/22	**SURFACE ELEVATION (ft.):**	702.9 +/-
DATE COMPLETED:	2/11/22	**GROUNDWATER DEPTH (ft.):** (measured at completion unless indicated below)	None

Elevation/ Depth (feet)	Soil Symbols Sampler Symbols Field Test Data	Sample No. : Range	N-Value	% REC (RQD)	Soil and Rock Description / Remarks
0 / 700	2 3 2 50/3" REFUSAL	S-1 : 0.0'- 1.8'	5	100	Topsoil (10")
					Dk. brown, m. stiff CLAY, and SILT, little f. Sand, tr. Gravel, tr. Roots, plastic, wet (CL-ML)
5 / 695					Depth to Bottom of Hole: 2.0 feet
10 / 690					
15 / 685					
20 / 680					
25 / 675					
30 / 670					
35					

Logged by: E. Zinni

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

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TEST BORING LOG

2.a

JOB No.: 22-512 **BORING No.:** B-4

PROJECT: Proposed Harding Road Subdivision
McKinley Avenue and Harding Road, Town of Amherst, New York 14221

DRILLER:	J. Stuber	**TYPE OF DRILL RIG:**	CME-75 (4 x 4)
SAMPLING METHODS:	ASTM D1586	**SIZE AND TYPE OF BIT:**	2 1/4" I.D. H.S.A.
DATE STARTED:	2/10/22	**SURFACE ELEVATION (ft.):**	702.6 +/-
DATE COMPLETED:	2/10/22	**GROUNDWATER DEPTH (ft.):** (measured at completion unless indicated below)	None

Elevation/ Depth (feet)	Soil Symbols Sampler Symbols Field Test Data	Sample No. : Range	N-Value	% REC (RQD)	Soil and Rock Description / Remarks
0	1 1 2 3 50/1" REFUSAL	S-1 : 0.0'- 2.0'	3	100	Topsoil (8") Dk. brown, soft CLAY, and SILT, little f. Sand, tr. Gravel, tr. Roots, sl. plastic, wet (CL-ML)
700		S-2 : 2.0'- 2.1'	50+	0	...grade: hard (No Recovery)
5					Depth to Bottom of Hole: 2.1 feet
695					
10					
690					
15					
685					
20					
680					
25					
675					
30					
670					
35					

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Logged by: E. Zinni

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TEST BORING LOG

2.a

JOB No.: 22-512 **BORING No.:** B-5

PROJECT: Proposed Harding Road Subdivision
McKinley Avenue and Harding Road, Town of Amherst, New York 14221

DRILLER:	J. Stuber	**TYPE OF DRILL RIG:**	CME-75 (4 x 4)
SAMPLING METHODS:	ASTM D1586	**SIZE AND TYPE OF BIT:**	2 1/4" I.D. H.S.A.
DATE STARTED:	2/10/22	**SURFACE ELEVATION (ft.):**	702.2 +/-
DATE COMPLETED:	2/10/22	**GROUNDWATER DEPTH (ft.):** (measured at completion unless indicated below)	None

Elevation/ Depth (feet)	Soil Symbols Sampler Symbols Field Test Data	Sample No. : Range	N-Value	% REC (RQD)	Soil and Rock Description / Remarks
0 / 700					Topsoil (12") (No Recovery)
	2 3 5 4	S-1 : 0.0'- 2.0'	8	0	Brown, m. stiff CLAY, and SILT, little f. Sand, tr. Gravel, tr. Roots, sl. plastic, wet (CL-ML)
	3 50/1"	S-2 : 2.0'- 2.3'	50+	40	...grade: hard
5 / 695	REFUSAL				Depth to Bottom of Hole: 3.0 feet
10 / 690					
15 / 685					
20 / 680					
25 / 675					
30 / 670					
35					

Logged by: E. Zinni

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TEST BORING LOG

2.a

JOB No.: 22-512 **BORING No.:** B-6

PROJECT: Proposed Harding Road Subdivision
McKinley Avenue and Harding Road, Town of Amherst, New York 14221

DRILLER:	J. Stuber	**TYPE OF DRILL RIG:**	CME-75 (4 x 4)
SAMPLING METHODS:	ASTM D1586	**SIZE AND TYPE OF BIT:**	2 1/4" I.D. H.S.A.
DATE STARTED:	2/10/22	**SURFACE ELEVATION (ft.):**	702.9 +/-
DATE COMPLETED:	2/10/22	**GROUNDWATER DEPTH (ft.):** (measured at completion unless indicated below)	None

Elevation/ Depth (feet)	Soil Symbols Sampler Symbols Field Test Data	Sample No. : Range	N-Value	% REC (RQD)	Soil and Rock Description / Remarks
0 / 700	2 4 6 8 / 6 6 8 12				Topsoil (4") (No Recovery)
		S-1 : 0.0'- 2.0'	10	0	Brown, stiff CLAY, and SILT, little f. Sand, tr. Gravel, tr. Roots, sl. plastic, wet (CL-ML)
		S-2 : 2.0'- 4.0'	14	50	Same as S-1
5 / 695	REFUSAL				Depth to Bottom of Hole: 4.0 feet
10 / 690					
15 / 685					
20 / 680					
25 / 675					
30 / 670					
35					

Logged by: E. Zinni

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

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TEST BORING LOG

2.a

JOB No.: 22-512 **BORING No.:** B-7

PROJECT: Proposed Harding Road Subdivision
McKinley Avenue and Harding Road, Town of Amherst, New York 14221

DRILLER:	J. Stuber	**TYPE OF DRILL RIG:**	CME-75 (4 x 4)
SAMPLING METHODS:	ASTM D1586	**SIZE AND TYPE OF BIT:**	2 1/4" I.D. H.S.A.
DATE STARTED:	2/10/22	**SURFACE ELEVATION (ft.):**	703.3 +/-
DATE COMPLETED:	2/10/22	**GROUNDWATER DEPTH (ft.):** (measured at completion unless indicated below)	None

Elevation/ Depth (feet)	Soil Symbols Sampler Symbols Field Test Data	Sample No. : Range	N-Value	% REC (RQD)	Soil and Rock Description / Remarks
0 / 700	2 3 2 3				Topsoil (5")
		S-1 : 0.0'- 2.0'	5	100	Brown, m. stiff CLAY, and SILT, little f. Sand, tr. Gravel, tr. Roots, sl. plastic, wet (CL-ML)
5 / 695	5 50/4"	S-2 : 2.0'- 2.8'	50+	100	...grade: hard
	REFUSAL				Depth to Bottom of Hole: 4.0 feet
10 / 690					
15 / 685					
20 / 680					
25 / 675					
30 / 670					
35					

Logged by: E. Zinni

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

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TEST BORING LOG

2.a

JOB No.: 22-512 **BORING No.:** B-8

PROJECT: Proposed Harding Road Subdivision
McKinley Avenue and Harding Road, Town of Amherst, New York 14221

DRILLER:	J. Stuber	**TYPE OF DRILL RIG:**	CME-75 (4 x 4)
SAMPLING METHODS:	ASTM D1586	**SIZE AND TYPE OF BIT:**	2 1/4" I.D. H.S.A.
DATE STARTED:	2/11/22	**SURFACE ELEVATION (ft.):**	703.3 +/-
DATE COMPLETED:	2/11/22	**GROUNDWATER DEPTH (ft.):** (measured at completion unless indicated below)	None

Elevation/ Depth (feet)	Soil Symbols Sampler Symbols Field Test Data	Sample No. : Range	N-Value	% REC (RQD)	Soil and Rock Description / Remarks
0 / 700	2 2 2 3				Topsoil (12") (No Recovery)
		S-1 : 0.0'- 2.0'	4	0	Brown, m. stiff CLAY, and SILT, little f. Sand, tr. Gravel, tr. Roots, sl. plastic, wet (CL-ML)
5 / 695	6 50/1"	S-2 : 2.0'- 2.6'	50+	0	...grade: hard
	REFUSAL				Depth to Bottom of Hole: 3.0 feet
10 / 690					
15 / 685					
20 / 680					
25 / 675					
30 / 670					
35					

Logged by: E. Zinni

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

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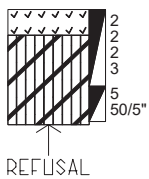
TEST BORING LOG

JOB No.: 22-512 **BORING No.:** B-9

PROJECT: Proposed Harding Road Subdivision
McKinley Avenue and Harding Road, Town of Amherst, New York 14221

DRILLER:	J. Stuber	**TYPE OF DRILL RIG:**	CME-75 (4 x 4)
SAMPLING METHODS:	ASTM D1586	**SIZE AND TYPE OF BIT:**	2 1/4" I.D. H.S.A.
DATE STARTED:	2/11/22	**SURFACE ELEVATION (ft.):**	703.4 +/-
DATE COMPLETED:	2/11/22	**GROUNDWATER DEPTH (ft.):** (measured at completion unless indicated below)	None

Elevation/ Depth (feet)	Soil Symbols Sampler Symbols Field Test Data	Sample No. : Range	N-Value	% REC (RQD)	Soil and Rock Description / Remarks
0					Topsoil (8")
		S-1 : 0.0'- 2.0'	4	10	Brown, m. stiff CLAY, and SILT, little f. Sand, tr. Gravel, tr. Roots, sl. plastic, moist (CL-ML)
		S-2 : 2.0'- 2.9'	50+	20	...grade: hard, wet
700					Depth to Bottom of Hole: 3.0 feet
5					
695					
10					
690					
15					
685					
20					
680					
25					
675					
30					
670					
35					

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TEST BORING LOG

2.a

JOB No.: 22-512 **BORING No.:** B-10

PROJECT: Proposed Harding Road Subdivision
McKinley Avenue and Harding Road, Town of Amherst, New York 14221

DRILLER:	J. Stuber	**TYPE OF DRILL RIG:**	CME-75 (4 x 4)
SAMPLING METHODS:	ASTM D1586	**SIZE AND TYPE OF BIT:**	2 1/4" I.D. H.S.A.
DATE STARTED:	2/11/22	**SURFACE ELEVATION (ft.):**	703.6 +/-
DATE COMPLETED:	2/11/22	**GROUNDWATER DEPTH (ft.):** (measured at completion unless indicated below)	None

Elevation/ Depth (feet)	Soil Symbols Sampler Symbols Field Test Data	Sample No. : Range	N-Value	% REC (RQD)	Soil and Rock Description / Remarks
0 / 700	2 2 2 3	S-1 : 0.0'- 2.0'	4	0	Topsoil (12") (No Recovery)
5 / 695	5 50/4" REFUSAL	S-2 : 2.0'- 2.8'	50+	20	Brown, m. stiff CLAY, and SILT, little f. Sand, tr. Gravel, tr. Roots, sl. plastic, wet (CL-ML) ...grade: hard
10 / 690					Depth to Bottom of Hole: 3.0 feet
15 / 685					
20 / 680					
25 / 675					
30 / 670					
35					

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

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Column Header Descriptions

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TEST BORING LOG

JOB No.: BORING No.:

PROJECT:

EXAMPLE

DRILLER:
SAMPLING METHODS:
DATE STARTED:
DATE COMPLETED:

TYPE OF DRILL RIG:
SIZE AND TYPE OF BIT:
SURFACE ELEVATION (ft.):
GROUNDWATER DEPTH (ft.):
(measured at completion unless indicated below)

Elevation/ Depth (feet)	Soil Symbols Sampler Symbols Field Test Data	Sample No. : Range	N-Value	% REC (RQD)	Soil and Rock Description / Remarks
100 — 0	1 1 1 2 / 6 8 11 14	S-1 : 0.0'- 2.0'	2	50	Dk. brown, soft, CLAY, some Silt, little f. Sand, tr. Gravel, tr. Roots, tr. Organic matter, mod. plastic, wet (CL)
		S-2 : 2.0'- 4.0'	19	50	Brown, m. dense f. SAND, some Silt, tr. Gravel, tr. Clay, tr. Roots, non-plastic, moist (SM)

Elevation/Depth: The depth column provides the vertical scale of the boring log in feet below ground surface.

Sample No. : Range: Disturbed samples are identified with “S” preceding the sample number. Undisturbed (Shelby-tube) samples are identified with “U” preceding the sample number. Rock core samples identified with “C” preceding the core run. The range of elevation/depth where the sample was taken is identified in one-tenth foot increments.

N-value: The Standard Penetration Test N-value, as specified by ASTM D1586, is defined as the number of blows required by a 140-pound hammer falling 30 inches, each blow, to drive a 2-in outside diameter split-spoon sampler 12 inches.

% REC (RQD): “Percent Recovery” is the length of samples recovered divided by the total length sampled. The result is numerically expressed as a percent. The Rock Quality Designation (RQD) is the total length of places >4 inches divided by the total length of core run.

Soil and Rock Description / Remarks: This column denotes the exact depth of recovery and general documentation of drilling efforts. Description and classification are based on visual inspection of samples and boring operations. The stratum lines shown on the boring logs are based upon interpretation and may not represent precise subsurface conditions. Water-level readings have been made in the drill holes at time under conditions stated on the boring logs. Fluctuations in the water level may occur due to other factors than those present the time measurement was taken. See attached sheet.

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Soil and Rock Description / Remarks: Terminology Used for Soil Description

Density Description of Granular Soil

Number of Blows per ft., N	*Relative Density*
0 - 4	Very Loose
4 - 10	Loose
10 - 30	Medium
30 - 50	Dense
Over 50	Very Dense

Abbreviations Used in Soil Sample Classification

f - fine	v - very
m - medium	gr - gray
c - coarse	bn - brown
f/m - fine to medium	yel - yellow
f/c - fine to coarse	sl - slight
tr - trace	dk - dark

Consistency Description of Cohesive Soil

Number of Blows per ft., N	*Consistency*
Below 2	Very Soft
2 - 4	Soft
4 - 8	Medium
8 - 15	Stiff
15 - 30	Very Stiff
Over 30	Hard

Bedding

Parting	Less than 0.02 ft.
Band	0.02 - 0.2 ft.
Thin bed	0.2 - 0.5 ft.
Medium bed	0.5 - 1.0 ft.
Thick bed	1.0 - 2.0 ft.
Massive	Over 2.0 ft.

Grain Size

	Passing / Retained on
Boulder	LARGE / 12-in sieve
Cobble	12-in / 3-in sieve
Gravel	3-in sieve / No. 4 sieve
	No. 4 sieve / No. 10 sieve
Sand	No. 10 sieve / No. 40 sieve
	No. 40 sieve / No. 200 sieve
Silt	No. 200 sieve / 0.005 mm sieve
Clay	Smaller than 0.005 mm

Hardness

Very Soft or Plastic	Can be indented with thumb
Soft	Can be scratched with fingernail
Moderately Hard	Can be scratched with knife
Hard	Difficulty to scratch with knife
Very hard	Cannot be scratched with knife

Percentage Terminology Used in Soil Classification

Trace	0 - 10 %	Some	20 - 35 %
Little	10 - 20 %	And	35 - 50 %

Moisture

Dry	Absence of moisture, dusty, dry to the touch.
Moisture	Small quantity of moisture. Soil usually above groundwater level.
Wet	Moisture noticeable to the touch. Soil may be below groundwater level.
Saturated	Visible free water, usually soil is below groundwater level.

Plasticity

Non-plastic	An 1/8-in thread cannot be rolled at any water content.
Slight plasticity	Thread can be barley rolled.
Moderate plasticity	Thread is easy to roll and little time is required to reach the plastic limit (PL).
Plasticity	Considerable time is required to reach PL. Thread can be re-rolled several times after reaching the PL.

Crystallinity or Texture

Dense	Crystals are to small they cannot be distinguished with the naked eye.
Very Fine Crystalline	Crystals barely discernable with the naked eye.
Crystalline	Crystals are medium size, up to 1/8-in diameter.
Very Coarsely Crystalline	Crystals larger than 1/8-in diameter.

Voids

Porous	Smaller than pinhead. Their presence is indicated by the degree of absorbency.
Pitted	Pinhead size to 1/4 in. If thin walls separate the individuals pits, the core may be described as honeycomb.
Vug	1/4 inch to the diameter of the core. The upper limit will vary with core size.
Cavity	Larger than the diameter of the core.

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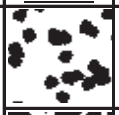
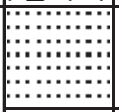
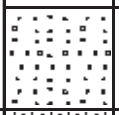
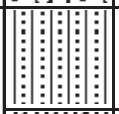
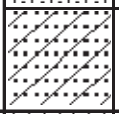
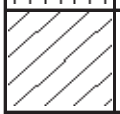
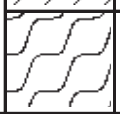
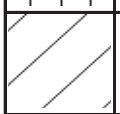
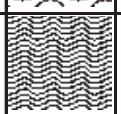
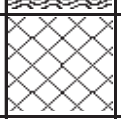
Soil Classification Chart: Unified Soil Classification System (USCS)

Major Divisions			Pattern	USCS ID	Typical Descriptions
Coarse-Grained Soils: More than 50% of material larger than No. 200 sieve	**Gravels**: More than 50% of coarse fraction larger than No. 4 sieve	Clean Gravels (little or no fines)		GW	Well-graded gravels, gravel-sand mixtures, little or no fines
				GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
		Gravels with appreciable amounts of fines		GM	Silty gravels, gravel-sand-silt mixtures
				GC	Clayey gravels, gravel-sand-silt mixtures
	Sands: Less than 50% of coarse fraction larger than No. 4 sieve	Clean sands (little or no fines)		SW	Well-graded sands, gravelly sands, little or no fines
				SP	Poorly-graded sands, gravelly sands, little or no fines
		Sand with appreciable amount of fines		SM	Silty sands, silt-sand mixtures
				SC	Clayey sands, sand-clay mixtures
Fine-Grained Soils: Less than 50% of material larger than No. 200 sieve	**Silts and Clays, Low plasticity**: Liquid Limit < 50%			ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
				CL	Inorganic clays of low to medium plasticity, gravely clays, sandy clays, silty clays, lean clays
				OL	Organic silts and organic silty clays of low plasticity
	Silts and Clays, High plasticity: Liquid Limit > 50%			MH	Inorganic silts, micaceous or diatomaceous fine sand or silty soils
				CH	Inorganic clays of high plasticity, fat clays
				OH	Organic clays of medium to high plasticity, organic silts
Highly Organic Soils				Pt	Peat, humus, swamp soils with organic contents
Miscellaneous Fill				FILL	Miscellaneous fill may belong in any division but is identified as FILL

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

CARMINAWOOD
DESIGN

DOWNSTREAM SANITARY SEWER CAPACITY ANALYSIS REPORT

for

Harding Road Subdivision

Harding Road & McKinley Ave
Town of Amherst, Erie County, New York

Prepared for

Forbes Capretto Homes

470 Cayuga Road
Cheektowaga, NY 14225

Prepared by

Carmina Wood Design

487 Main Street, Suite 500
Buffalo, NY 14203

Telephone: (716) 842-3165
Fax: (716) 842-0263

July 2022



Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Project Description

This project is a development of a 1.4 acre +/- site located between Harding Road and McKinley Avenue in the Town of Amherst. The property will be subdivided to accommodate for 10 single family home lots to be built at a later date. Currently the site exists as an undeveloped, open grass area.

370 lf of 8" SDR-35 PVC public sewer main extension is proposed for this development. The sewer will run along the rear center of the lots through a 10' wide easement to the Town of Amherst, and then cross Harding Road to connect to an existing sanitary manhole on the south side of Harding Road. The existing 8" PVC sewer on Harding Road flows north.

Node 1 – 389 Harding Road (8"):

Existing Peak Flow measured (wet weather event)	= 0.050 cfs (0.032 mgd)*
Proposed Harding Rd Subdivision Peak Flow	= 0.024 cfs**
Proposed Total Peak Flow	= 0.074 cfs
Existing Peak Flow measured (wet weather event)	= 0.333 cfs (0.215 mgd)*
Proposed Harding Rd Subdivision Peak Flow	= 0.024 cfs**
Proposed Total Peak Flow	= 0.357 cfs

Theoretical capacity of existing 8" PVC pipe @ 0.25% = 0.872 cfs

Conclusion: The proposed peak flow is less than the capacity of the 8" PVC pipe, therefore there is sufficient capacity. At no time during the monitoring did the flow depth exceed the pipe diameter at Node 1 of the downstream monitoring points during the rain events monitored.

Node 2 – Youngs Road (18"):

Existing Peak Flow measured (wet weather event)	= 5.534 cfs (3.577 mgd)*
Proposed Harding Rd Subdivision Peak Flow	= 0.024 cfs**
Proposed Total Peak Flow	= 5.558 cfs

Theoretical capacity of existing 18" PVC pipe @ 0.17% = 6.251 cfs

Conclusion: The proposed peak flow is less than the capacity of the 18" PVC pipe, therefore there is sufficient capacity. At no time during the monitoring did the flow depth exceed the pipe diameter at Node 1 of the downstream monitoring points during the rain events monitored.

Node 3 – Peanut Line (66"):

Existing Peak Flow	= 56.474 cfs (36.50 mgd)*
Proposed Harding Rd Subdivision Peak Flow	= 0.024 cfs**
Proposed Total Peak Flow	= 56.498 cfs

Theoretical capacity of existing 66" pipe = 88.811 cfs (57.40 mgd)

Conclusion: The proposed peak flow is less than the capacity of the 66" pipe, therefore there is sufficient capacity.

Foot Notes:

Pipe slopes, sizes and materials provided by Town of Amherst

*Converted from measurements in TECSmith report dated 3/17/22

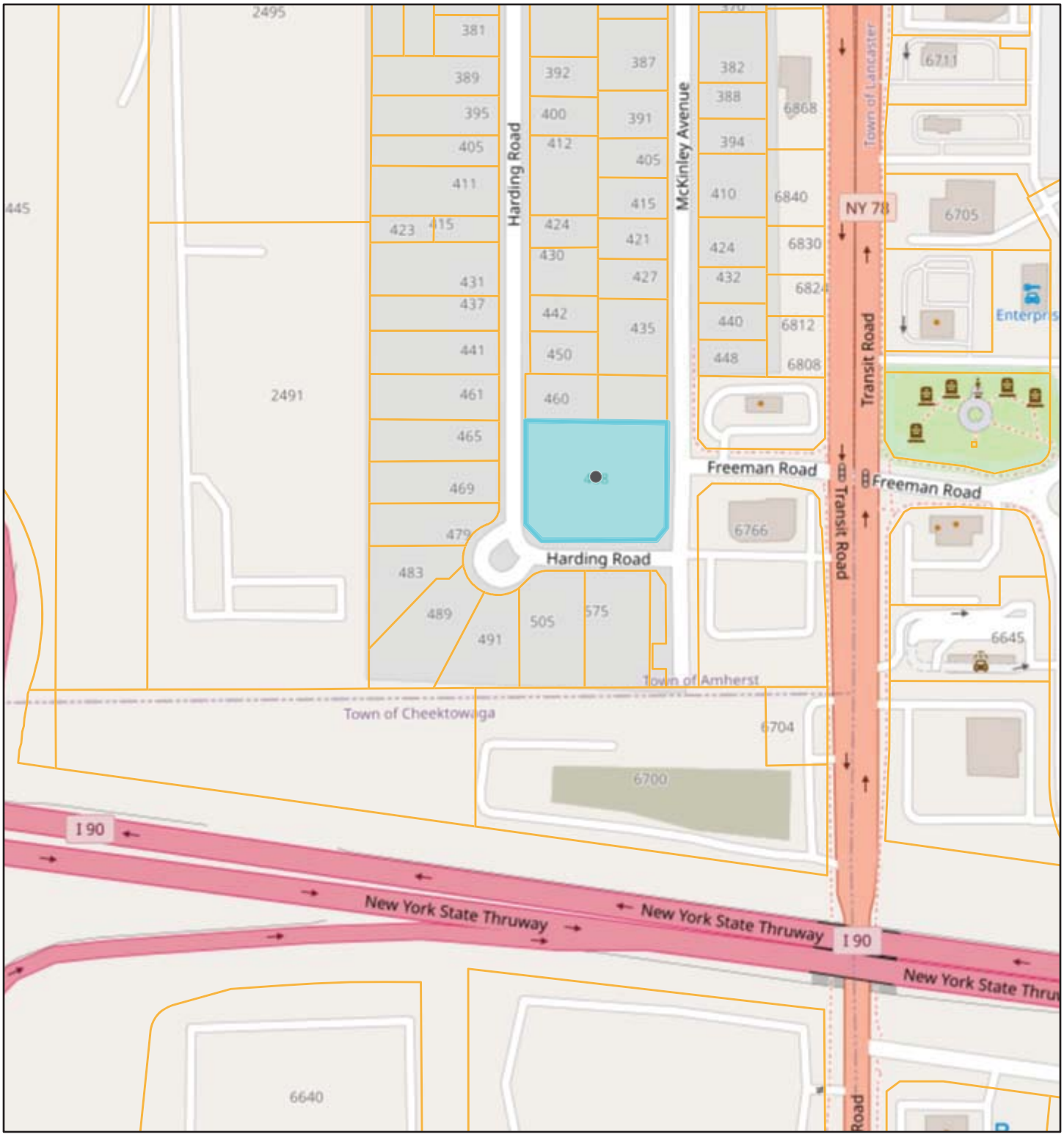
** See Sanitary Sewage Demand Calculations

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Location Map

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

468 Harding Road



2/4/2022, 8:50:30 AM

Parcels

1:4,514

0 0.03 0.06 0.11 mi

0 0.04 0.09 0.17 km

© OpenStreetMap (and) contributors, CC-BY-SA

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

USGS TNM – National Hydrography Dataset. Data Refreshed January, 2022. | NYS GIS Program Office | Telephone: (518) 242-5029 | Email: its.sm.SAM.

Sanitary Demand Calculations

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

CARMINA WOOD DESIGN
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 22.010 Date: 7/7/2022
Project Name: Harding Road Subdivision
Project Address: 468 Harding Road Amherst, NY
Subject: Sanitary Sewage Calculations
Sheet: 1 of 1

Sanitary Sewage Demand Calculations:

Fair Woods Estates

440 gal/d/unit x 8 unit = 3,520 gpd *use 440 gallons per day per 4-bedroom house

Total Site Sanitary Demand: = 3,520 gpd Average

* The hydraulic loading rate is per "Design Standards for Intermediate Sized Wastewater Treatment Systems" 2014, NYSDEC.

Find Peak Sanitary Demand:

Peaking Factor based on Population:

Total demand: 3,520 gpd / 100 gpcd = 35 per capita

Population (P) = 35 people

Peaking Factor : $(18 + \sqrt{P}) / (4 + \sqrt{P})$ where P is in thousands

Peaking Factor = 4.34

Peak Sanitary Demand = 3,520 x 4.34 = 15,288 gpd
= 0.015 MGD
= 0.024 cfs

Required Infiltration and Inflow Mitigation:

Peak Sanitary Flow = 15,288 gpd = 10.62 gpm

4:1 offset flow per NYSDEC requirements = 10.62 x 4 = 42.47 gpm req'd

Mitigation Credit = $250 / gpm

Mitigation Agreement Amount = $10,616.69

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

TECSmith Monitoring Report

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

Date: March 17, 2022

SANITARY SEWER FLOW CAPACITY STUDY – Summary Review

Prepared For: 468 Harding Capacity Analysis

R. Christopher Wood, PE
487 Main Street, Suite 500
Buffalo, New York 14203

Project Name: 468 Harding Capacity Analysis

Flow Monitoring Period: February 14, 2022 to March 15, 2022

Rain Events (> 0.5-inches) Monitored: February 17 (1.28”), and February 22 (0.77”)

Number of Monitoring Nodes: Two (2) downstream manholes

Node Locations and Descriptions:

- Node 1 118 Garfield St (8")
- Node 2 Youngs Rd 18in (18")

Summary Conclusion:

Based on the data presented in this report, specifically the flow depth measurements recorded (see graphs below)

- At no time did the flow depth exceed pipe diameter at any of the downstream monitoring points during the wet weather events monitored.
- At no time during the monitoring period did the flow at any point slow or stall which would have caused a backup or flooding at the manhole.

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

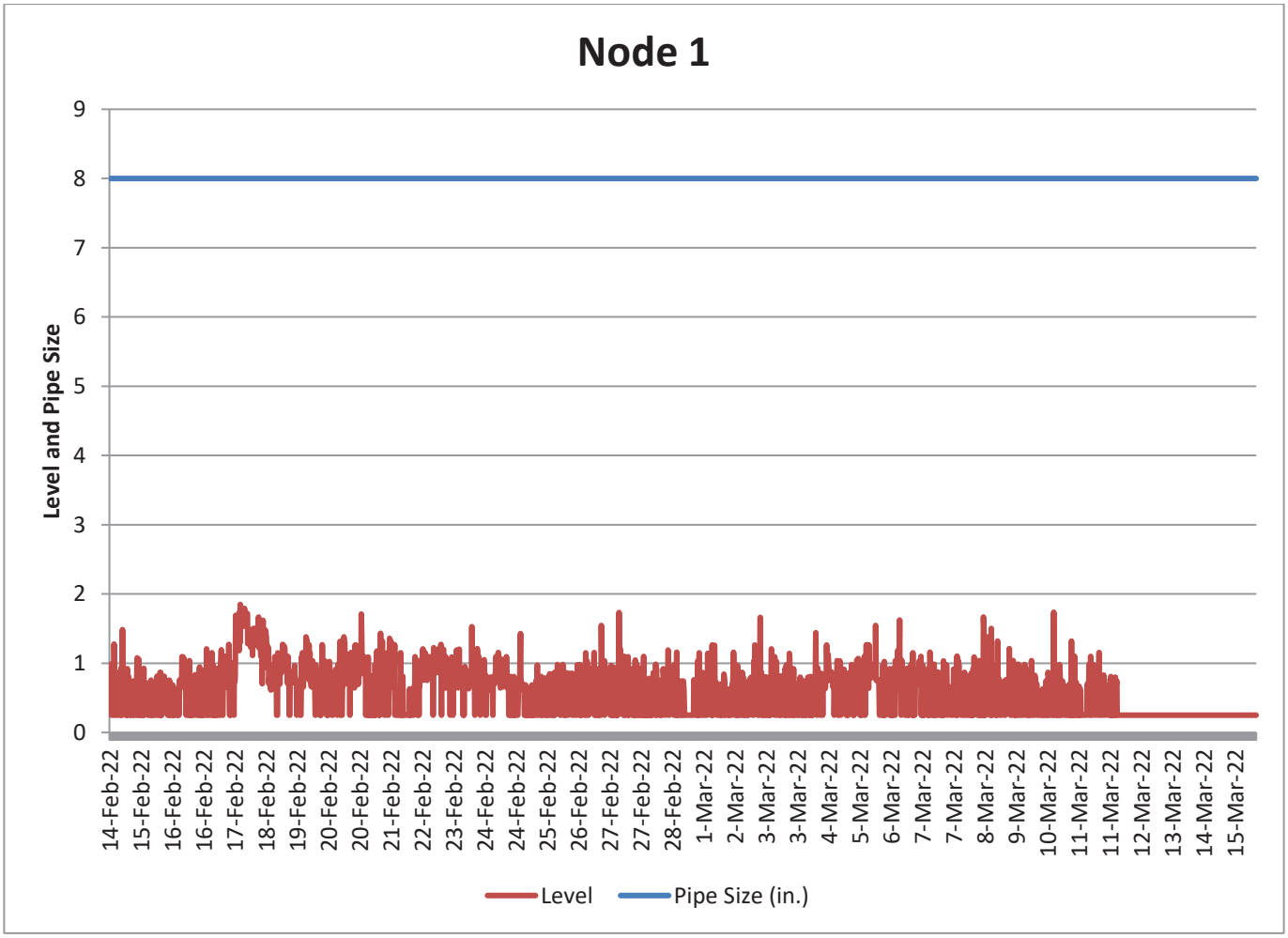
TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

Depth of Flow Capacity Summary:

Depth of flow capacity is based on diameter of pipe. See graphs below.

- At no time during the monitoring period did depth of flow exceed pipe diameter at Node 1.

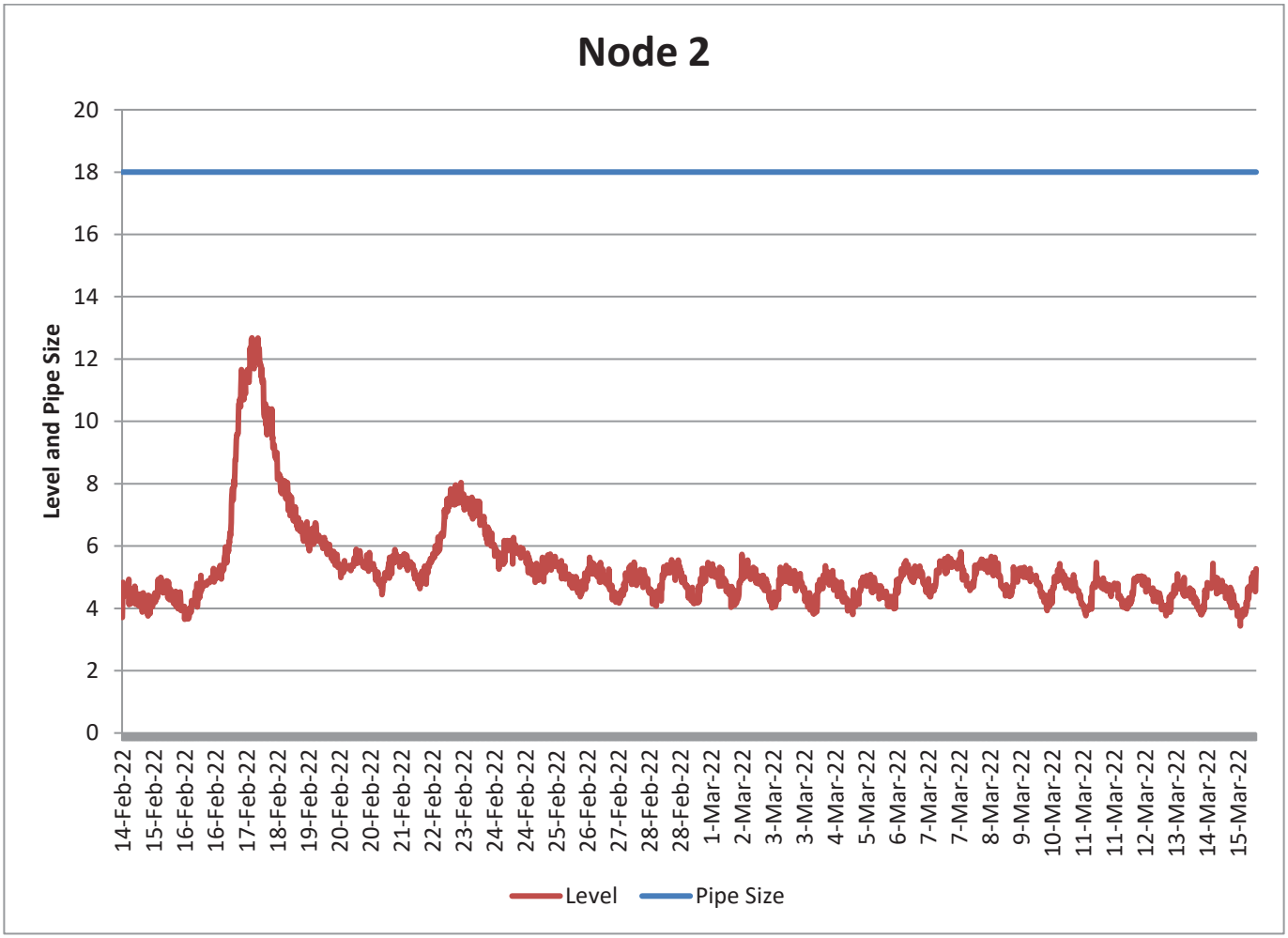


Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

- At no time during the monitoring period did depth of flow exceed pipe diameter at Node 2.



Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Date	Node 1			Node 2			Rain₂	Snow
	389 Harding (8")			Youngs Rd 18in (18")				
	FLOW (GAL x 1,000)	PEAK FLOW (MGD)	PEAK LEVEL (IN)	FLOW (GAL x 1,000)	PEAK FLOW (MDG)	PEAK LEVEL (IN)	(inches)	(inches)
2/14/2022	1.293	0.012	1.486	384.802	1.356	4.933	*0*	*0.02*
2/15/2022	1.107	0.004	1.079	816.541	1.239	4.990	*0*	*0*
2/16/2022	1.722	0.006	1.206	824.265	1.271	5.274	*0*	*0*
2/17/2022	9.356	0.032	1.849	2087.531	3.577	12.680	*1.28*	*0*
2/18/2022	9.187	0.020	1.668	2242.294	3.082	12.672	*0.27*	*3.1*
2/19/2022	2.609	0.014	1.382	1552.399	2.331	6.912	*0.09*	*2*
2/20/2022	5.207	0.215	1.709	1229.671	1.596	5.896	*0*	*0*
2/21/2022	2.327	0.009	1.434	1185.206	1.920	5.882	*0*	*0*
2/22/2022	3.674	0.013	1.274	1427.503	2.814	7.834	*0.77*	*0*
2/23/2022	3.001	0.008	1.530	1979.596	3.086	8.039	*0.01*	*0*
2/24/2022	1.964	0.008	1.427	1377.495	2.015	6.271	*0*	*0*
2/25/2022	1.470	0.006	0.983	1177.301	1.604	5.740	*0.22*	*2.2*
2/26/2022	1.547	0.009	1.545	1033.255	1.410	5.638	*0.08*	*3*
2/27/2022	2.329	0.021	1.731	951.840	1.356	5.478	*0*	*0*
2/28/2022	1.654	0.022	1.192	1000.738	1.451	5.558	*0*	*0*
3/1/2022	1.180	0.006	1.263	957.982	1.421	5.473	*0*	*0*
3/2/2022	1.636	0.014	1.664	988.350	1.568	5.732	*0.12*	*1.5*
3/3/2022	1.512	0.011	1.208	954.518	1.391	5.378	*0*	*0*
3/4/2022	2.172	0.013	1.442	892.487	1.231	5.364	*0*	*0*
3/5/2022	2.509	0.011	1.547	866.713	1.101	5.083	*0*	*0*
3/6/2022	2.365	0.022	1.623	962.175	1.611	5.531	*0.16*	*0*
3/7/2022	2.012	0.009	1.160	1087.132	1.512	5.805	*0.39*	*0.1*
3/8/2022	2.731	0.015	1.667	1142.375	1.471	5.662	*0*	*0*
3/9/2022	1.897	0.009	1.213	1028.584	1.487	5.329	*0*	*0*
3/10/2022	1.434	0.024	1.736	953.154	1.259	5.436	*0*	*0*
3/11/2022	1.568	0.014	1.155	893.810	1.264	5.475	*0.32*	*3.2*
3/12/2022	---	---	---	882.953	1.148	5.037	*0.04*	*0.7*
3/13/2022	---	---	---	830.278	1.176	5.102	*0.05*	*1*
3/14/2022	---	---	---	882.091	1.296	5.446	*0*	*0*
3/15/2022	---	---	---	427.466	1.240	5.271	*0.01*	*0*
---	---	---	---	---	---	---	*3.81*	*16.82*

	MGD	CFS		MGD	CFS
Wet	0.032	0.050	Wet	3.577	5.534
Dry	0.215	0.333	Dry	3.086	4.775

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

(T) Amherst Downstream Routing and Node Maps

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

TOWN OF AMHERST
Erie County, New York

Downstream Sewer Routing
Proposed Site: 468 Harding Road

1 0.5 0 1
Miles

N

Legend
- Project Location
- Flow Location (Updated 2/4/2020)
- Sanitary Routing
- Trunk Sewer
- Roads
- Hydrography
- Williamsville
- University at Buffalo
- TownBoundary

66-Inch Peanut Line
Capacity: 57.4 mgd
Avg. Daily Peak: 8.37 mgd
Daily Peak Flow: 11.55 mgd
2 yr. 6-hr Flow: 36.50 mgd

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

January 2022

TOWN OF AMHERST

Erie County, New York

Sanitary Sewer Downstream Routing

Proposed Meter Location

250 125 0 250

Feet



January 2022

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

TOWN OF AMHERST

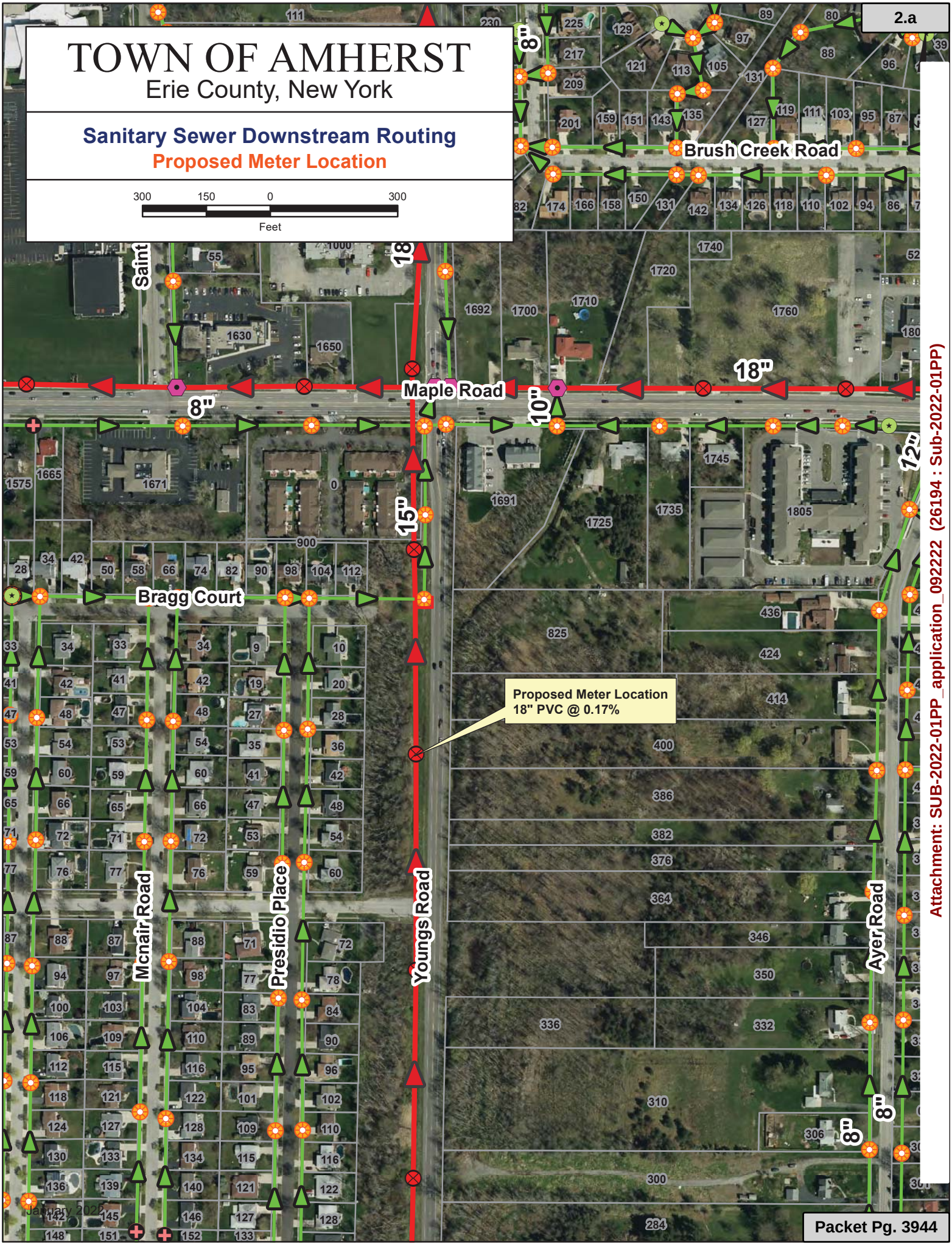
Erie County, New York

Sanitary Sewer Downstream Routing

Proposed Meter Location

300 150 0 300

Feet



Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

January 2022

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water, Region 9
270 Michigan Avenue, Buffalo, NY 14203-2915
P: (716) 851-7070 | F: (716) 851-7009
www.dec.ny.gov

August 12, 2022

Harding Road Subdivision
Harding Road
Town of Amherst, Erie County
Downstream Sewer Capacity Analysis

- The Application for Approval (Form BSP-5) must be signed by an authorized Amherst Town Official.
- Please include correspondence from Amherst (T) regarding their acceptance of the peak and average design flows from the project, a description of the sewer route, and the Town's requirements for I/I Mitigation/Offset-Work necessary for the new project to tie-in.
- Documentation that all SEQRA requirements have been satisfied must be included in the submittal.
- The Erie County Health Department may have additional comments on this project.

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

NEW YORK STATE OF OPPORTUNITY. | Parks, Recreation, and Historic Preservation

KATHY HOCHUL
Governor

ERIK KULLESEID
Commissioner

August 23, 2022

Rami Herzellah
Carmina Wood Design
487 Main Street
Suite 500
Buffalo, NY 14203

Re: DEC
Harding Road Subdivision
468 Harding Rd, Buffalo, NY 14221
22PR05540

Dear Rami Herzellah:

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Historic Preservation Act of 1980 (Section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the OPRHP and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

Based upon this review, it is the opinion of OPRHP that no properties, including archaeological and/or historic resources, listed in or eligible for the New York State and National Registers of Historic Places will be impacted by this project.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

R. Daniel Mackay

Deputy Commissioner for Historic Preservation
Division for Historic Preservation

Attachment: SUB-2022-01PP_application_092222 (26194 : Sub-2022-01PP)

Harding Road Subdivision

Harding Road & McKinley Avenue
Town of Amherst, New York 14221
SITE DEVELOPMENT DRAWINGS

AGENCIES

ENGINEERING DEPARTMENT

NAME/TITLE:	JEFFERY BURROUGHS, P.E. – TOWN ENGINEER
COMPANY/DEPT:	TOWN OF AMHERST ENGINEERING DEPARTMENT
ADDRESS:	1100 NORTH FOREST ROAD WILLIAMSVILLE, NEW YORK 14221
TELEPHONE	716–631–7154

PLANNING & ZONING DEPARTMENT

NAME/TITLE:	DANIEL HOWARD – PLANNING DIRECTOR
COMPANY/DEPT:	TOWN OF AMHERST PLANNING DEPARTMENT
ADDRESS:	5583 MAIN STREET WILLIAMSVILLE, NEW YORK 14221
TELEPHONE	716–631–7051

LAND SURVEYOR

NAME/TITLE:	MILLARD, MACKAY & DELLES LAND SURVEYORS, LLP
COMPANY/DEPT:	150 AERO DRIVE
ADDRESS:	BUFFALO, NEW YORK 14225
TELEPHONE	716–631–5140

UTILITIES

NATURAL GAS

COMPANY/DEPT:.	NATIONAL FUEL GAS CORP.
ADDRESS:	6363 MAIN STREET WILLIAMSVILLE, NEW YORK 14221
TELEPHONE	716–857–7000

TELEPHONE COMPANY

COMPANY/DEPT:	VERIZON
ADDRESS:	65 FRANKLIN STREET BUFFALO, NEW YORK 14203
TELEPHONE	716–840–8748

CABLE COMPANY

COMPANY/DEPT:	TIME WARNER
ADDRESS:	789 CHURCH ROAD WEST SENECA, NEW YORK
TELEPHONE	716–558–8615

ELECTRIC COMPANY

COMPANY/DEPT:	NATIONAL GRID
ADDRESS:	144 KENSINGTON AVENUE BUFFALO, NEW YORK 14214
TELEPHONE	716–236–2738

WATER

COMPANY/DEPT:.	ERIE COUNTY WATER AUTHORITY
ADDRESS:	3030 UNION ROAD CHEEKTOWAGA, NEW YORK 14227
TELEPHONE	716–684–1510

DIG SAFELY NEW YORK

TELEPHONE 1–800–962–7962

OWNER/DEVELOPER

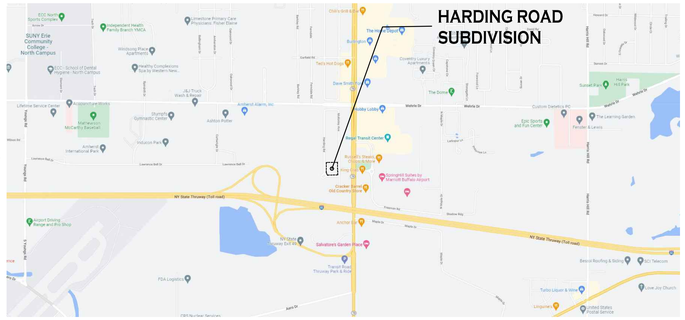
NAME:	Forbes Capretto Homes
ADDRESS:	470 Cayuga Road, Buffalo, NY Buffalo, NY 14225
TELEPHONE:	716-688-5597

ENGINEER

CARMINAWOOD DESIGN

487 Main Street, Suite 500
Buffalo, New York 14203
Phone: (716) 842-3165

111 Bain Street, Suite 332
Greensboro, North Carolina 27406
Phone: (336) 937-9009



LOCATION MAP
NOT TO SCALE

DWG NO.	DRAWING TITLE
–	COVER SHEET
–	BOUNDARY & TOPOGRAPHIC SURVEY
C–001	DEMOLITION & EROSION CONTROL PLAN
C–002	DEMOLITION & EROSION CONTROL DETAILS
C–100	PLAT PLAN
C–200	GRADING & DRAINAGE PLAN
C–300	UTILITY PLAN
C–301	WATER & SEWER PROFILES AND DETAILS
C–302	SEWER DETAILS
C–303	WATER & SEWER DETAILS & NOTES
C–304	WATER DETAILS
C–305	WATER DETAILS

July 2022

Rev. August 2022

Harding Road Subdivision
Harding Road & McKinley Avenue
Town of Amherst, New York 14221
SITE DEVELOPMENT DRAWINGS

Attachment: SUB-2022-01PP_drawings_092222 (26194 : Sub-2022-01PP)



LEGEND

OHE&T	OVERHEAD ELECTRIC & TELEPHONE
G	GAS
Ø P.P.	POWER POLE
O G.M.	GAS METER
UG	UNDERGROUND UTILITY
N.F.V.	NOT FIELD VERIFIED

NOTES

1) SBL – TOWN OF AMHERST TAX MAP NO. 82.09-6-20

2) FOR TOPOGRAPHICAL INFORMATION, SEE TOPOGRAPHIC MAP PREPARED BY McINTOSH & McINTOSH, P.C., DATED DECEMBER 15, 2021 AND IDENTIFIED AS JOB NO. 9927.

McINTOSH & McINTOSH, P.C.
CONSULTING ENGINEERS, LAND SURVEYORS, PLANNERS
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PHONE 433-2535 PHONE 625-8360

SURVEY OF PART OF LOT-83, TWP.-11, R.-7, HOLLAND PURCHASE

LOCATION: TOWN OF AMHERST, ERIE COUNTY, NEW YORK

JOB No.	SCALE	DATE
9927-A	1" = 20'	DECEMBER 15, 2021

DRAWN	MAS
CHKD.	RAL
CADFILE	9927A.DWG

REVISION	RESURVEY

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS SURVEY IS A VIOLATION OF SECTION 7209, SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

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NOTE: THIS SURVEY MAP IS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE AND IS SUBJECT TO ANY STATE OF FACTS THAT MAY BE REVEALED BY AN EXAMINATION OF SUCH.

Attachment: SUB-2022-01PP_drawings_092222 (26194 : Sub-2022-01PP)

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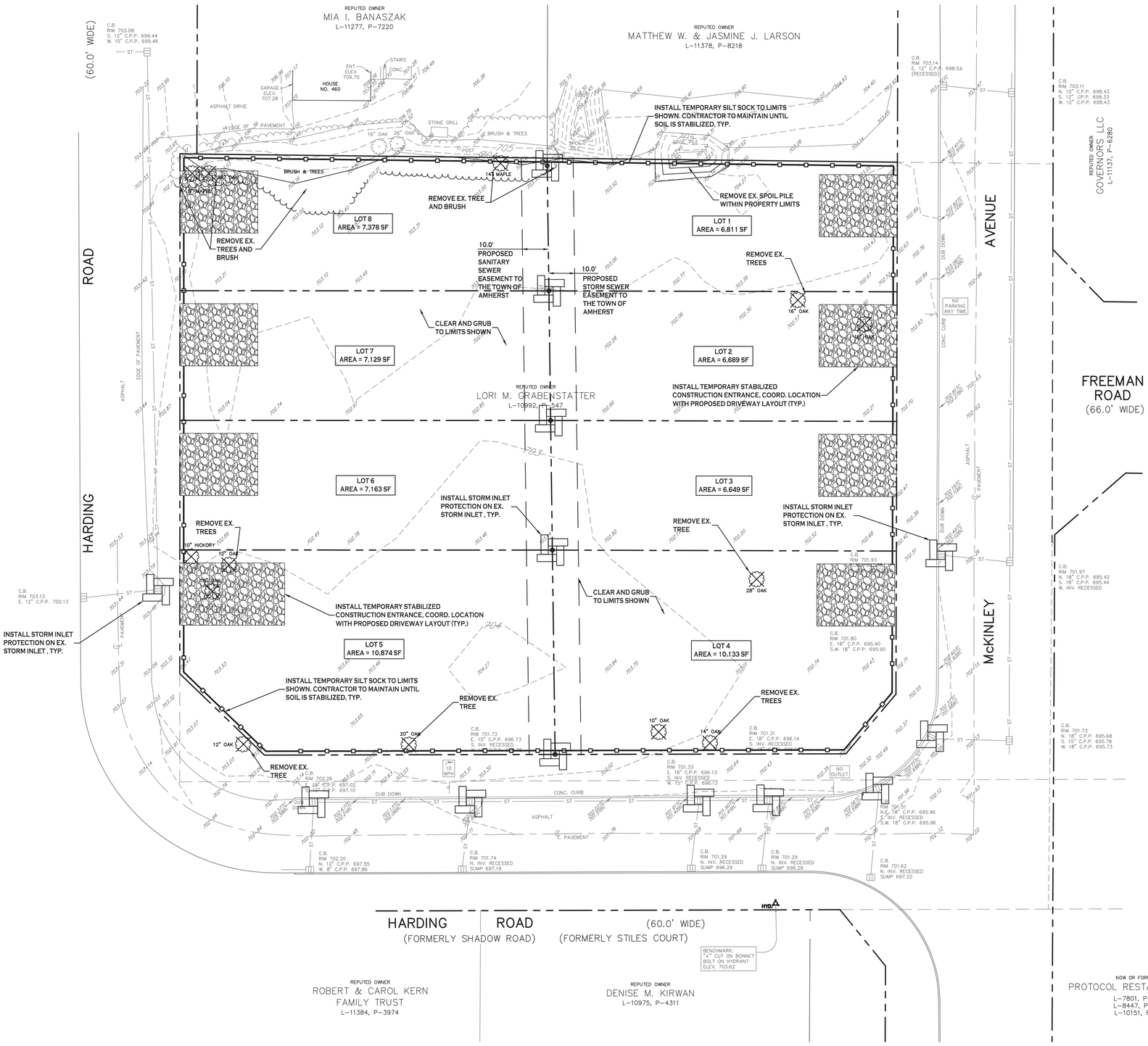

Demolition & Erosion Control Plan

SCALE: 1"=20'

EROSION CONTROL NOTES

THE FOLLOWING EROSION CONTROL PROCEDURES SHALL BE ADHERED TO BY THE CONTRACTOR:

1. INSTALL TEMPORARY SILT SOCK BARRIERS AS DIRECTED BY THE OWNER AND AT ALL EXISTING STORMWATER CATCH BASINS WITHIN THE WORK AREA TO PREVENT SEDIMENT MIGRATION. ALL SILT SOCK BARRIERS SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS SHOWN ON THE PLANS.
2. TOPSOIL SHALL BE STRIPPED AND STOCKPILED ON SITE FOR RE-USE AS DIRECTED BY THE OWNER. ALL LOCAL ORDINANCES REGARDING THE SALE OF TOPSOIL MUST BE FOLLOWED. TOPSOIL MAY NOT BE REMOVED WITHOUT A PERMIT.
3. ALL SILT SOCK BARRIERS SHALL BE REPLACED WHEREVER THEY BECOME CLOGGED OR INOPERABLE.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE AND REMOVAL OF TEMPORARY SEDIMENTATION CONTROLS.
5. THE CONTRACTOR MUST CONTROL DUST DURING CONSTRUCTION. DURING EARTHWORK OPERATIONS, WATER-SPREADING EQUIPMENT SHALL BE PROVIDED BY THE CONTRACTOR, AND SPREAD WATER AS NECESSARY AND AS DIRECTED BY THE OWNER IN ORDER TO CONTROL DUST.
6. DIRT OR DEBRIS LEFT ON LOCAL PUBLIC ROADS AS A RESULT OF THIS CONSTRUCTION PROJECT SHALL BE REMOVED AND ROAD SURFACES CLEANED BY THE CONTRACTOR ON A DAILY BASIS.
7. ALL DISTURBED AREAS (EXCEPT AREAS TO BE PAVED OR BUILT UPON) SHALL BE TOPSOILED TO A MINIMUM 4" DEPTH AND SEEDED IMMEDIATELY AFTER FINE GRADING TAKES PLACE AND AS SOON AS PHYSICALLY POSSIBLE.
8. THE CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE OF DOWNSTREAM STORM SEWERS, DITCHES, AND CULVERTS. SILT BUILDUP FOUND TO BE A RESULT OF THIS SITE CONSTRUCTION WORK SHALL BE REMOVED FROM DOWNSTREAM CULVERTS BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER OR THE TOWN/CITY.
9. ALL SOIL EROSION AND SEDIMENT CONTROL DEVICES AND MATERIALS SHALL BE IN PLACE PRIOR TO BEGINNING EARTHWORK OPERATIONS AND SHALL BE MAINTAINED UNTIL THE NEW SLOPES ARE STABILIZED WITH SEEDING AND/OR SLOPE PROTECTION, AS DIRECTED BY THE ENGINEER.
10. INSTALL TEMPORARY SILT SOCK AROUND THE BASE OF STOCKPILES.

DEMOLITION NOTES:

1. CONTRACTOR SHALL TAKE PRECAUTIONS TO PROTECT THOSE ITEMS TO REMAIN, SUCH AS TREES, PROPERTY CORNER PINS, UTILITY POLES, VALVES, HYDRANTS, CURBS, MANHOLES AND CATCH BASINS.
2. TEMPORARY SILT SOCK AND STRAW BALES TO BE INSTALLED AS DIRECTED BY THE OWNERS FIELD REPRESENTATIVE. MAINTAIN UNTIL VEGETATION IS ESTABLISHED AND PAVEMENT IS INSTALLED.
3. CONTRACTOR SHALL INSTALL STABILIZED CONSTRUCTION ENTRANCES WHERE ACCESSING THE SITE FROM PAVED ROADWAYS. STORM DRAINAGE INLETS THAT INTERFERE WITH CONSTRUCTION ENTRANCE TO BE PROTECTED WITH SILT SACK AND OTHER PROPER TEMPORARY INLET PROTECTION MEASURES.
4. CONTRACTOR SHALL INSTALL TEMPORARY TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH NYS M.U.T.C.D. STANDARDS PRIOR TO STARTING WORK.
5. COVERED DUMPSTERS SHALL BE PROVIDED ONSITE AS REQUIRED FOR CONSTRUCTION WASTE.
6. CONTRACTOR TO PROTECT ALL TREES/BRUSH NOT DISTURBED BY CONSTRUCTION ACTIVITY.

CONSTRUCTION SEQUENCE OF MAJOR ACTIVITIES:

1. CONSTRUCT TEMPORARY CONSTRUCTION EXIT, INSTALL PERIMETER SILT SOCK AND DRAINAGE INLET PROTECTION.
2. CLEAR AND GRUB SITE.
3. COMMENCE SITE GRADING.
4. INSTALL PROPOSED UTILITIES.
5. PREPARE PAVEMENT SUBGRADE.
6. INSTALL PAVEMENT.
7. CARRY OUT FINAL GRADING.
8. REMOVE SILT FENCE/SILT SOCK AND CONSTRUCTION ENTRANCES.
9. CLEAN SITE.

DEMOLITION & EROSION CONTROL LEGEND

PROPOSED SILT FENCE

EXISTING TREE TO BE REMOVED

PROPOSED STORM INLET PROTECTION

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

20' 20 0 20 40Ft.

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Harding Road Subdivision

Harding Road & McKinley Avenue
Town of Amherst, New York, 14221
SBL No. 82.09-6-20

Attachment: SUB-2022-01PP_drawings_092222 (26194 : Sub-2022-01PP)

REVISIONS:

No.	Description	Date
1	REV. PER (T) AMHERST	8/22/22

STATE OF NEW YORK R. CHRISTOPHER WOOD 073394 LICENSED PROFESSIONAL ENGINEER

DRAWING NAME:
Demolition & Erosion Control Plan

Date: 6/28
Drawn By: C. W
Scale: As No

DRAWING NO.
C-001

Project No: 22.010

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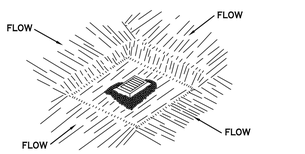


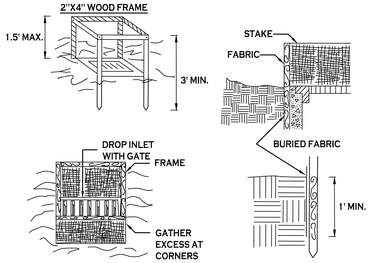
CONSTRUCTION SPECIFICATIONS

1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER EXCAVATION.
2. GRADE APPROACH TO THE INLET UNIFORMLY AROUND THE BASIN.
3. WEEP HOLES SHALL BE PROTECTED BY GRAVEL.
4. UPON STABILIZATION OF CONTRIBUTING DRAINAGE AREA, SEAL WEEP HOLES, FILL BASIN WITH STABLE SOIL TO FINAL GRADE, COMPACT IT PROPERLY AND STABILIZE WITH PERMANENT SEEDING.

MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 1

NOT TO SCALE



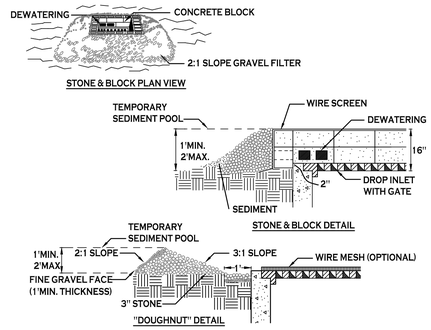
CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2" x 4" WOOD OR EQUIVALENT. METAL WITH A MINIMUM LENGTH OF 3 FEET.
4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2" x 4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.

MAXIMUN DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 2

NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

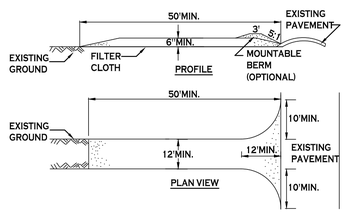
1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE FOR DEWATERING. FOUNDATION SHALL BE 2 INCHES MINIMUM BELOW REST OF INLET AND BLOCKS SHALL BE PLACED AGAINST INLET FOR SUPPORT.
2. HARDWARE CLOTH OR 1/2" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.
3. USE CLEAN STONE OR GRAVEL 1/2-3/4 INCH IN DIAMETER PLACED 2 INCHES BELOW TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER.
4. FOR STONE STRUCTURES ONLY, A 1 FOOT THICK LAYER OF THE FILTER STONE WILL BE PLACED AGAINST THE 3 INCH STONE AS SHOWN ON THE DRAWINGS.

MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 3

NOT TO SCALE

NOTE: INSTALL ONE OF THE INLET PROTECTION OPTIONS SHOWN PRIOR TO CONSTRUCTION

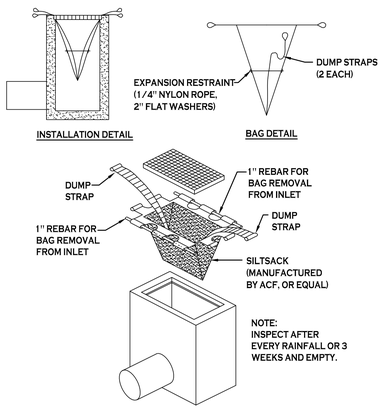


CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

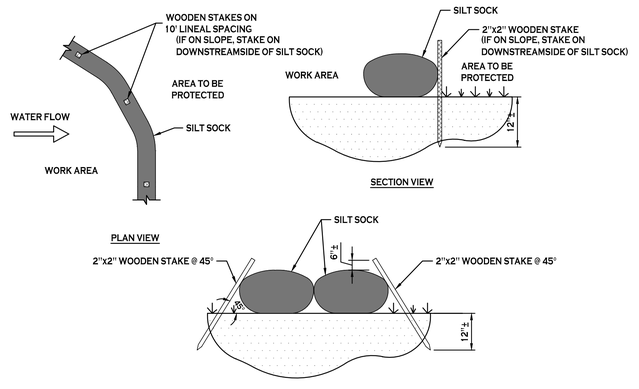
STABILIZED CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE



SILT SACK DETAIL

NOT TO SCALE



NOTES:

CONTRACTOR SHALL INSPECT AND MAINTAIN SILT SOCK AS NEEDED DURING THE DURATION OF CONSTRUCTION PROJECT.

CONTRACTOR SHALL REMOVE SEDIMENT COLLECTED AT THE BASE OF THE SILT SOCK WHEN IT HAS REACHED ½ OF THE EXPOSED HEIGHT OF THE SILT SOCK. ALTERNATIVELY, RATHER THAN CREATE A SOIL DISTURBING ACTIVITY, THE ENGINEER MAY CALL FOR ADDITIONAL SILT SOCK TO BE ADDED AT AREAS OF HIGH SEDIMENTATION, PLACED IMMEDIATELY ON TOP OF THE EXISTING SEDIMENT LADEN SILT SOCK.

SILT SOCK SHALL BE OVERLAPPED 12" AT JOINTS AND STAKED ON EACH SIDE OF THE SOCK AT A 45° ANGLE

SILT SOCK DETAIL

N.T.S.

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Harding Road Subdivision

Harding Road & McKinley Avenue
Town of Amherst, New York, 14221
SBL No. 82.09-6-20

REVISIONS:

No.	Description	Date

DRAWING NAME:

Demolition & Erosion Control Details

Date: 6/28
Drawn By: C. W.
Scale: As No

DRAWING NO.

C-002

Project No: 22.010

Attachment: SUB-2022-01PP_drawings_082222 (26194 : Sub-2022-01PP)

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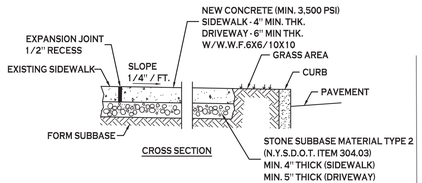
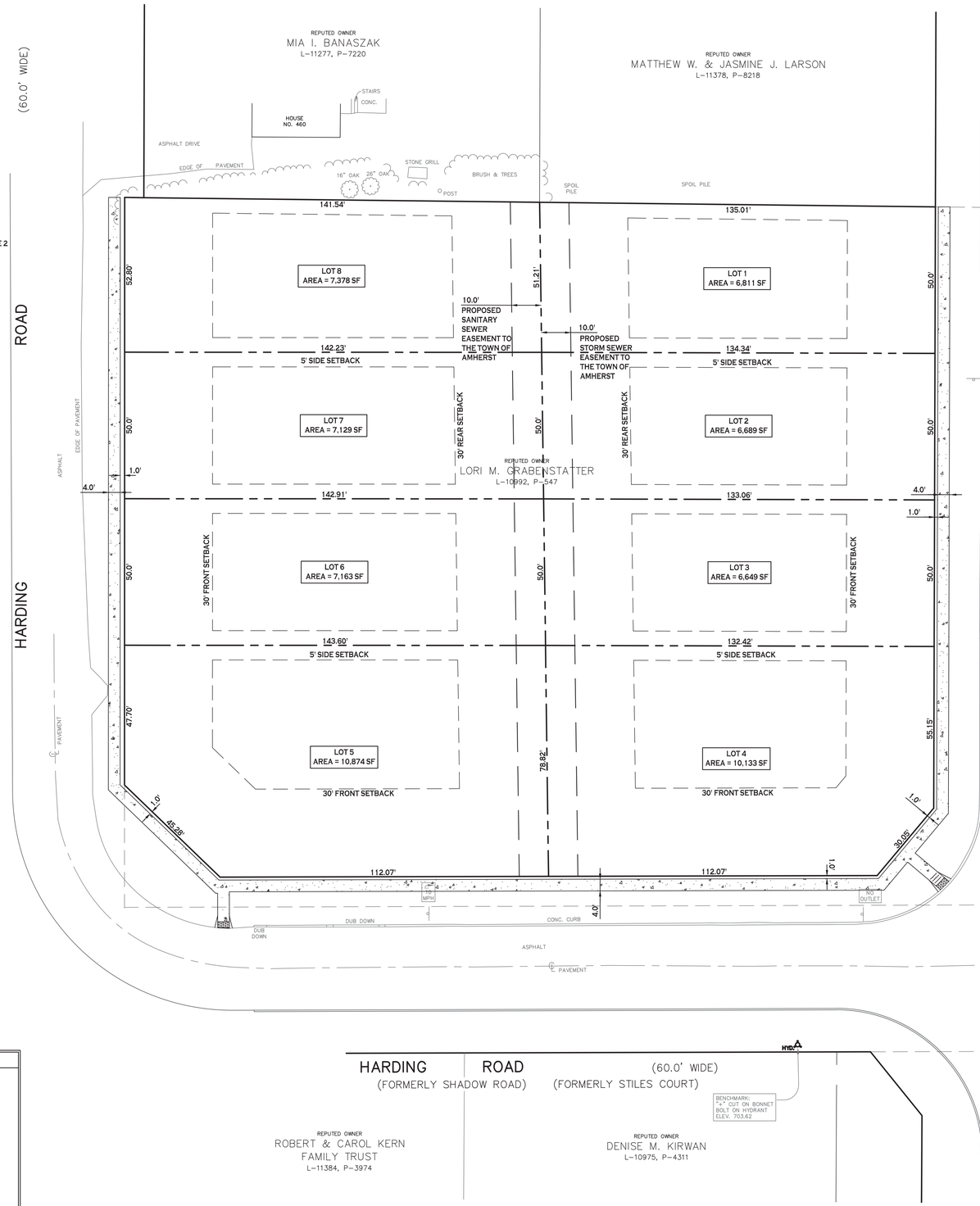


NOTES:

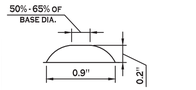
1. CONTROL JOINTS TO BE AT 5'-0" O.C., BOTH WAYS WHERE APPLICABLE. SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
2. CONCRETE SIDEWALK AND DRIVEWAY MATERIAL SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 501 AND CONSTRUCTION METHODS SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 608-3.
3. SUBBASE GRADE SHALL FOLLOW THE PROPOSED GRADE OF THE SIDEWALK AND SLOPE AWAY FROM BUILDING WHERE APPLICABLE, PROVIDE CONTINUOUS STONE PATH TO CURB UNDERDRAIN WHERE PROVIDED.
4. FULL DEPTH EXPANSION JOINTS SHALL BE INSTALLED EVERY 20' O.C., BOTHWAYS WHERE APPLICABLE. SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
5. SEE CURB DETAIL FOR DOWLING REQUIREMENTS WHERE ABUTTING CURB.
6. INSTALL 6" LONG #3 DOWELS @ 12" O.C. WHERE SIDEWALK ABUTS A BUILDING WALL AT AN ENTRANCE, THICKEN SIDEWALK TO 6" AT BUILDING WALL AND INSTALL DOWEL CENTERED IN THE 6" DEPTH. DOWELS AND THICKENING OF SIDEWALK SHALL EXTEND 18" EITHER SIDE OF ENTRANCE.
7. INSTALL 1/2" PREMOLDED EXPANSION JOINT WITH BACKER ROD & SEALANT WHERE SIDEWALK ABUTS BUILDING OR OTHER STRUCTURE.

CONCRETE SIDEWALK

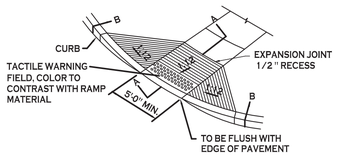


SITE DATA (TR-3 ZONING)
LOT SIZE = 1.44 AC (+/-)
MIN. LOT WIDTH = 50 FT MIN. LOT AREA (INTERIOR) = 5,625 SF MIN. LOT AREA (CORNER) = 7,250 SF
FRONT SETBACK = 30 FT * SIDE SETBACK = 5 FT REAR SETBACK = 30 FT
MINIMUM BUILDING SEPARATION = 10 FT MIN.
MAXIMUM LOT COVERAGE = 35% * MAXIMUM BUILDING HEIGHT = 35 FT
MINIMUM FLOOR AREA = 1,000 SF (1-STORY) MINIMUM FLOOR AREA = 1,200 SF TOTAL (2-STORY)

* PER REZONING CONDITION



NOTE: TACTILE WARNING DEVICES SHALL BE PER ICC/ANSI A117.1-1998, SECTION 705.3.1.2 OR CURRENT UPDATE



SIDEWALK CURB RAMP

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REVISIONS:

No.	Description	Date
1	REV. PER (T) AMHERST	8/22/22

Attachment: SUB-2022-01PP_drawings_092222 (26194 : Sub-2022-01PP)



DRAWING NAME:
Preliminary Plat Plan

Date: 6/28
Drawn By: C. W
Scale: As No

DRAWING NO.
C-100

Project No: 22.010

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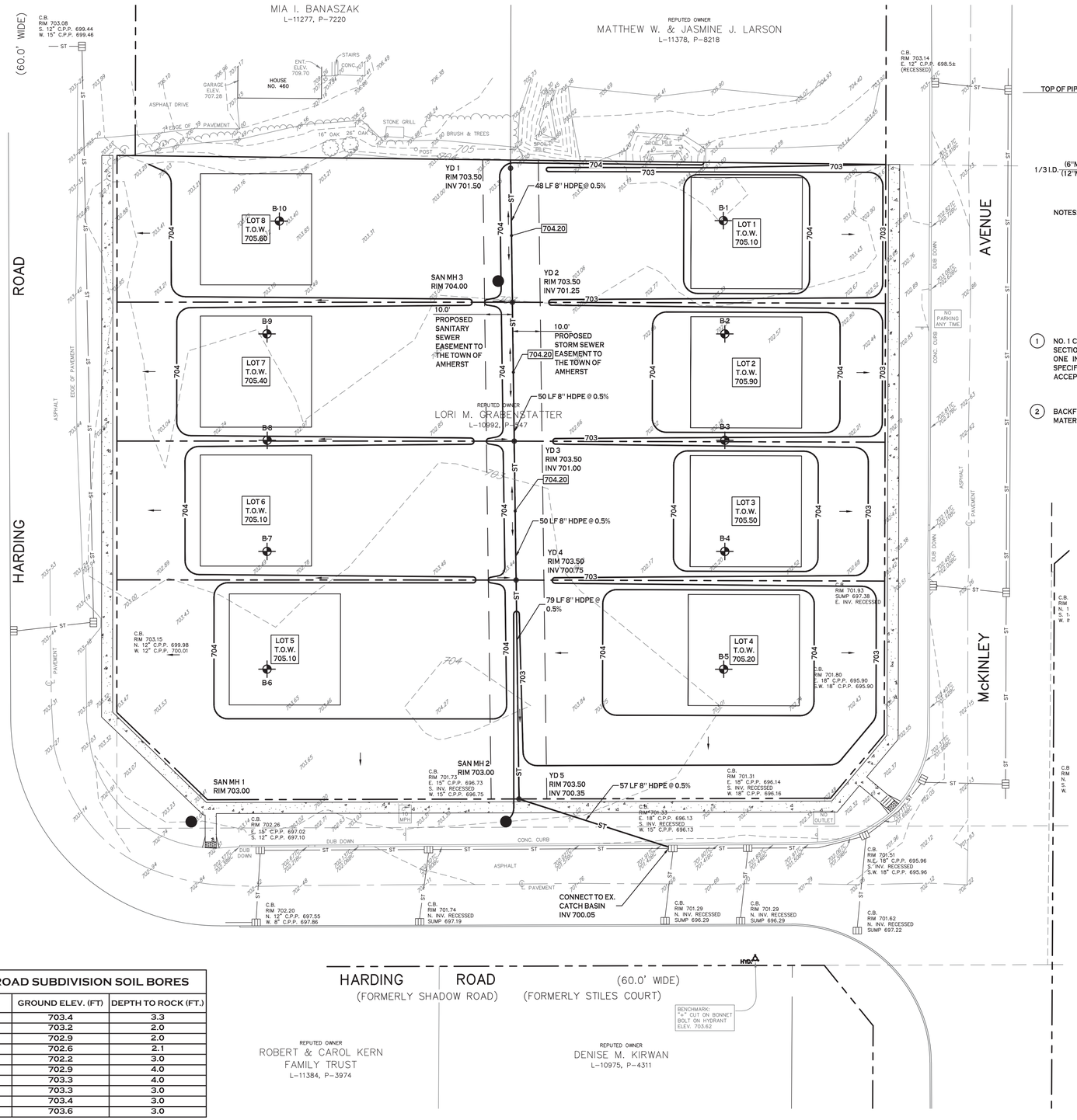
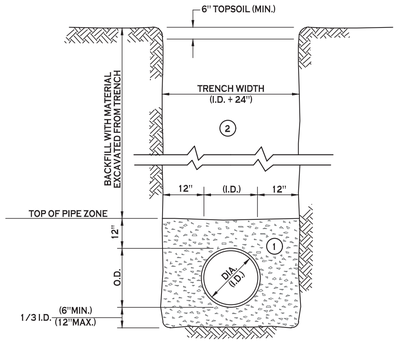


Grading & Storm Drainage Plan

SCALE: 1"=20'

HARDING ROAD SUBDIVISION SOIL BORES

BORING	GROUND ELEV. (FT)	DEPTH TO ROCK (FT.)
B-1	703.4	3.3
B-2	703.2	2.0
B-3	702.9	2.0
B-4	702.6	2.1
B-5	702.2	3.0
B-6	702.9	4.0
B-7	703.3	4.0
B-8	703.3	3.0
B-9	703.4	3.0
B-10	703.6	3.0



NOTES:

A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.

C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT 1985 EDITION)

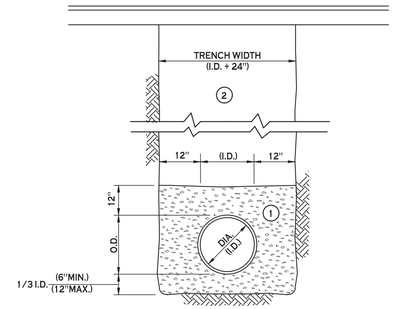
(1) NO. 1 CRUSHED STONE OR CRUSHED GRAVEL WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL (1)

(2) BACKFILL MATERIAL SHALL BE NATIVE SOIL CONTAINING NO UNSUITABLE MATERIAL COMPACTED IN 6" LIFTS.

STORM SEWER TRENCH SECTION IN UNPAVED AREAS

NOT TO SCALE



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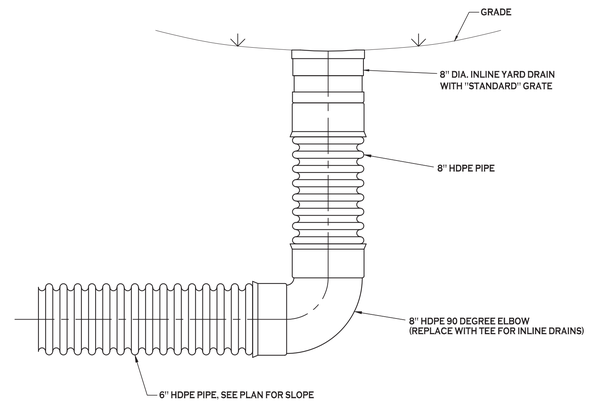
NO SLAG SHALL BE ALLOWED FOR MATERIAL (1)

(2) TYPE 2 CRUSHED STONE OR CRUSHED GRAVEL WITH A GRADATION CONFORMING WITH NYSDOT SECTION 304-2.02 TYPE 2. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN TWO INCHES AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL (2)

STORM SEWER TRENCH SECTION IN PAVED AREAS

NOT TO SCALE



NOTE:
SEE TYPICAL TRENCH SECTION FOR BEDDING REQUIREMENTS

TYPICAL YARD DRAIN DETAIL

NOT TO SCALE

PROPOSED GRADING/DRAINAGE LEGEND

PROPOSED CONTOUR	101
PROPOSED SPOT ELEVATION	100.80
PAVEMENT/GROUND SLOPE	→
PROPOSED YARD DRAIN	YD

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

20' 20 0 20 40Ft.

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Hardi

Harding Ro
Town of Am
SBL No. 82.

REVISIONS:

No.	Description	Date
1	REV. PER IT/ AMHERST	8/22/22

Attachment: SUB-2022-01PP_drawings_092222 (26194 : Sub-2022-01PP)

STATE OF NEW YORK — CHRISTOPHER WOOD — LICENSED — 076394 — PROFESSIONAL ENGINEER

DRAWING NAME:
Grading & Storm Drainage Plan

Date: 6/28
Drawn By: C. W
Scale: As No

DRAWING NO.
C-200

Project No: 22.010

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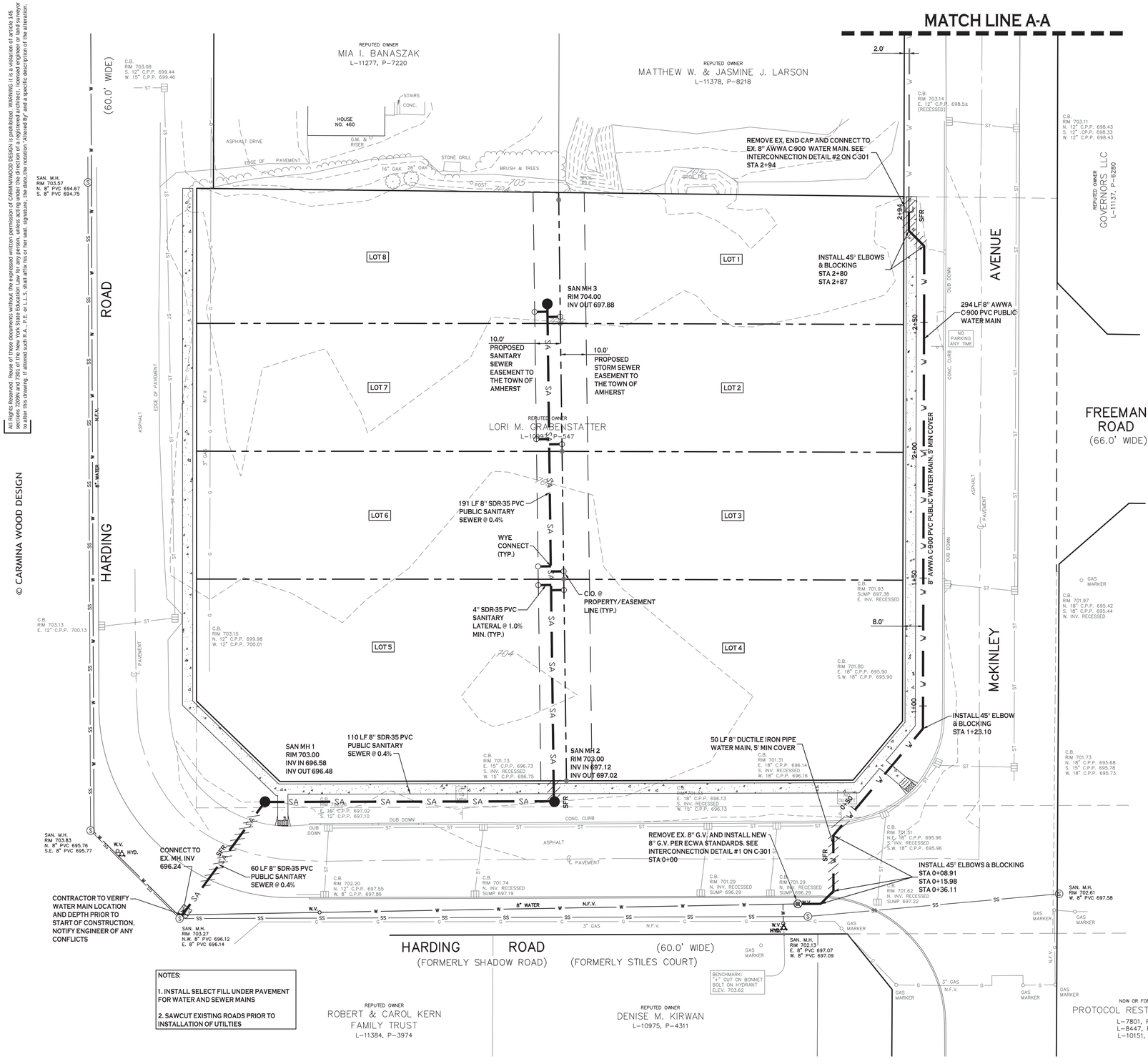
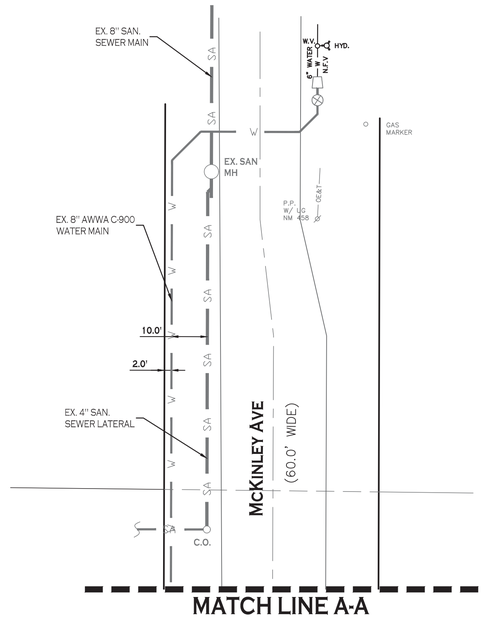


NOTES:

1. INSTALL SELECT FILL UNDER PAVEMENT FOR WATER AND SEWER MAINS
2. SAWCUT EXISTING ROADS PRIOR TO INSTALLATION OF UTILITIES



UTILITY NOTES

1. CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF AMHERST SPECIFICATIONS WHERE APPLICABLE AND/OR SUBJECT TO THE LATEST REVISIONS BY THE TOWN ENGINEER.
2. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATIONS AND/OR ELEVATIONS OF EXISTING UTILITIES AS SHOWN ON THESE PLANS ARE BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
3. ALL FILL WITHIN THE R.O.W. & UTILITY AREAS IS TO BE COMPACTED TO 95% MOD-PROCTOR, BENCHED IN 6" LIFTS, & TO BE COMPLETED PRIOR TO UTILITY & ROADWAY CONSTRUCTION AND MUST BE APPROVED BY THE SUPERVISING PROJECT ENGINEER.
4. THE PROFESSIONAL ENGINEER SUPERVISING CONSTRUCTION OF WATERLINE SHALL PROVIDE A WRITTEN CERTIFICATION OF CONSTRUCTION COMPLIANCE, INCLUDING THE RESULTS OF THE HYDROSTATIC PRESSURE & LEAKAGE TESTS, CHLORINE TEST, ETC. TO THE TOWN OF AMHERST AND TO THE ERIE COUNTY WATER AUTHORITY (ECWA) WITHIN THIRTY (30) DAYS AFTER CONSTRUCTION COMPLETION.
5. ALL WATERLINE SERVICE CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF AMHERST AND THE ECWA REQUIREMENTS.
6. FOR CONNECTIONS TO EXISTING MANHOLES, CORE DRILL EXISTING MANHOLE AND CONNECT NEW SERVICE TO EXISTING MANHOLE WITH ELASTOMERIC BOOT, MODIFY EXISTING CONCRETE FLOW BENCHING FOR NEW SEWER.
7. THE PROFESSIONAL ENGINEER SUPERVISING CONSTRUCTION OF SANITARY LINES SHALL PROVIDE A WRITTEN CERTIFICATION OF CONSTRUCTION COMPLIANCE, INCLUDING THE RESULTS OF HYDROSTATIC LEAKAGE TEST, LAMP TEST, DEFLECTION TEST, AIR TEST, ETC. TO THE TOWN OF AMHERST WITHIN THIRTY (30) DAYS AFTER CONSTRUCTION COMPLETION.
8. THE TOWN OF AMHERST, WHO OPERATES AND MAINTAINS THE EXISTING LINES, SHALL BE NOTIFIED 24-HOURS IN ADVANCE OF THE START OF CONSTRUCTION.
9. P.V.C. (POLYVINYL CHLORIDE) SANITARY SEWER SHALL CONFORM TO A.S.T.M. SDR-35 SPECIFICATIONS OR APPROVED EQUAL.
10. ALL WATERLINE CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF AMHERST AND ERIE COUNTY WATER AUTHORITY REQUIREMENTS.
11. P.V.C. (POLYVINYL CHLORIDE) WATERLINE PIPE SHALL CONFORM TO A.W.W.A. C-900 SPECIFICATIONS OR APPROVED EQUAL.
12. THE MAXIMUM DEGREE OF DEFLECTION AT WATERLINE JOINTS IS ONE HALF (1/2) OF THE PIPE MANUFACTURERS RECOMMENDED DEGREE OF DEFLECTION, WHICH SHALL MEET & SATISFY THE ECWA STANDARDS. ANY DEVIATION FROM THIS STANDARD PROCEDURE WILL REQUIRE THE INSTALLATION OF BENDS W/ RESTRAINED JOINTS.
13. FIELD CONDITIONS MAY REQUIRE MINOR ALIGNMENT & BEND LOCATION ADJUSTMENTS WHICH WILL BE PERMITTED AS LONG AS ALL MINIMUM OFFSETS FROM OTHER UTILITIES & MAXIMUM ALLOWABLE JOINT DEFLECTIONS ARE MAINTAINED.
14. CONTRACTOR SHALL FOLLOW AWWA C605 (FOR PVC) AND C600 (FOR DIP) FOR PRESSURE AND LEAKAGE TESTING; AND AWWA C651 EXCEPT THE TABLE METHOD WHEN DISINFECTING AND FLUSHING THE WATERLINE
15. NO AIR RELEASE VALVES ARE REQUIRED FOR THE PROPOSED WATER MAIN.
16. ALL WATERLINE CROSSINGS WITH SANITARY AND STORM SEWERS TO HAVE MIN. 1-1/2' MIN. OF SEPARATION. INSTALL BENDS, BLOCKING, & PIPE RESTRAINTS AS REQUIRED.
17. SANITARY SEWER SERVICE CONNECTION SHALL BE IN APPROXIMATELY THE 10 O'CLOCK / 2 O'CLOCK POSITION. CONTRACTOR SHALL MAKE SLIGHT ADJUSTMENTS AS NECESSARY TO AVOID CONFLICTS WITH OTHER UTILITIES WHILE MAINTAINING BOTH A MINIMUM OF 2% SLOPE & MINIMUM OF 4-FEET OF COVER, 1% SLOPE IS ALLOWED UNDER PRE-APPROVED CIRCUMSTANCES.
18. ALL UTILITY LOCATIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL VERIFY ALL LOCATIONS BEFORE BEGINNING WORK AS REQUIRED BY APPLICABLE LAWS AND REGULATIONS.
19. THE TOWN OF AMHERST SHALL BE NOTIFIED 24 HOURS IN ADVANCE TO PERFORM TAP ON SANITARY SEWER MAINLINE FOR THE PROPOSED SANITARY LATERAL ONCE THE FLOOR PLACEMENT AND ROOF INSTALLATION ARE COMPLETED.

UTILITY LEGEND

PROPOSED WATER LINE	W
PROPOSED SANITARY SEWER	SA
PROPOSED SANITARY MANHOLE	●
PROPOSED WATER VALVE	⊗
PROPOSED CLEANOUT	○
INSTALL SELECT FILL	SFR
CONCRETE ENCASEMENT	

Utility Plan

SCALE: 1"=20'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

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Harding Road Subdivision

Harding Road & McKinley Avenue
Town of Amherst, New York, 14221
SBL No. 82.09-6-20

REVISIONS:

No.	Description	Date

STATE OF NEW YORK — CHRISTOPHER WOOD — 076364 — LICENSED PROFESSIONAL ENGINEER

DRAWING NAME:
Utility Plan

Date: 6/28
Drawn By: C. W
Scale: As No

DRAWING NO.
C-300

Project No: 22.010

Attachment: SUB-2022-01PP_drawings_092222 (26194 : Sub-2022-01PP)

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NOTES

1. All elevations refer to USGS NAVD88 datum.
2. The CONTRACTOR shall obtain necessary permits and furnish copies to the ENGINEER prior to commencing work.
3. The CONTRACTOR work area shall be confined to the limits of the right-of-ways and easements. The CONTRACTOR shall obtain any additional easements or work releases should the CONTRACTOR require additional area to accommodate his operations.
4. The CONTRACTOR shall provide maintenance and protection of traffic in accordance with the Erie County Highway Department standards and the NYSDOT Manual of Uniform Traffic Control Devices.
5. The locations and depths of existing underground utilities as shown on the plans and profiles are approximate. Other underground utilities not shown may be encountered. The CONTRACTOR shall perform test pits to verify the location and elevation of utilities at interconnections and crossings as shown, directed or required. The CONTRACTOR shall excavate in advance of the pipe laying operation and expose all existing underground utilities to prevent damage during construction and to determine required changes in grade necessary to install watermain to avoid conflicts.
6. The CONTRACTOR shall install those measures required to limit erosion of areas disturbed by the work. Clearing shall be performed on an as needed basis, phased to reduce erosion and visual impact.
7. Blasting will not be permitted.
8. No more than one connection may be made to any existing watermain prior to testing, disinfection, and approval of the Waterline Installation Completed Works Approval Report(s) by the Erie County Water Authority and the Erie County Health Department.
9. The Erie County Water Authority only shall operate existing valves and fire hydrants, including newly installed valves and fire hydrants that have been placed into service. The CONTRACTOR is advised that watertight conditions may not exist when existing valves are closed.
10. The CONTRACTOR shall have all equipment, manpower, and materials required on site and ready for use prior to commencing any shut-down or removing any existing facilities from service. The CONTRACTOR shall notify all affected customers of any shut-down at least 48 hours in advance. The CONTRACTOR shall notify the appropriate fire stations 48 hours in advance prior to taking any fire hydrants out of service. Any fire hydrants not in service shall be bagged in burlap or plastic. Any shut-down shall be limited to 4 consecutive hours. It may be necessary to schedule shut-downs at night, weekends, or other off hours so as to not affect schools, businesses or other customers, as determined by the ENGINEER. Shut-down requests shall be submitted to the Erie County Water Authority a minimum of 5 business days in advance of the requested shut-down date.

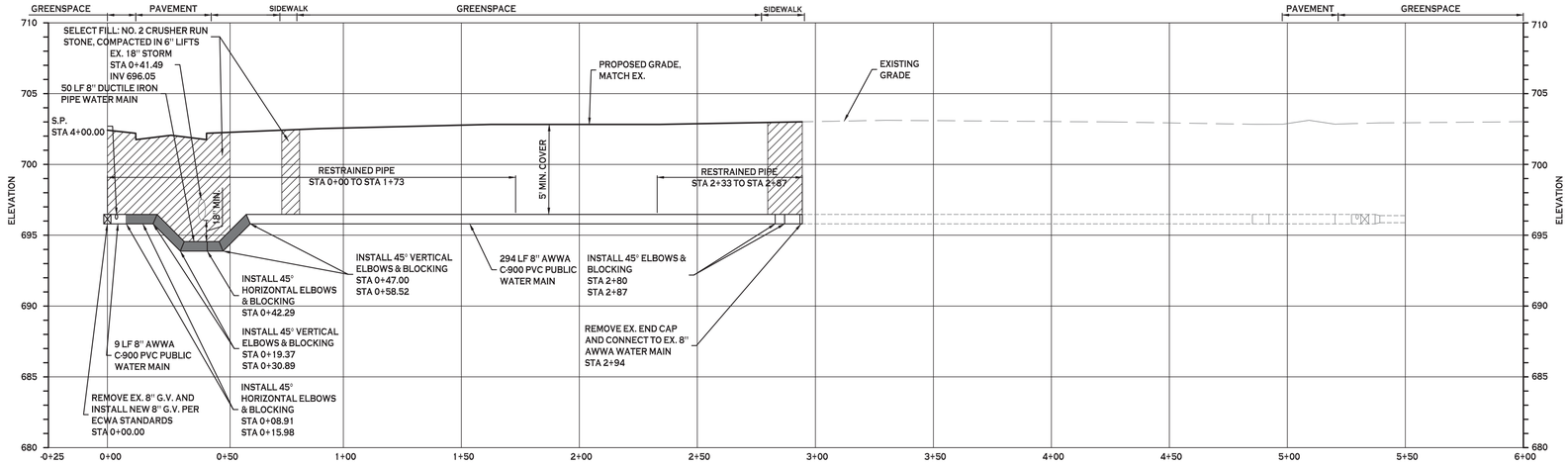
I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD29_GENERAL_NOTES

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GENERAL NOTES	SD29
		DATE 3/05
		REVISED 11/21

11. All watermain piping shall be installed with a minimum of 5'-0" of cover.
12. All watermain piping shall be installed with a minimum of 1'-6" of vertical clearance and 10'-0" of horizontal clearance from sanitary and storm piping, measured from the outside of the pipes at the point of crossing.
13. If the material at the design grade is unsuitable as determined by the ENGINEER, the CONTRACTOR, when ordered in writing, shall excavate additional material to the depth necessary and shall backfill to the proposed grade with the select granular material.
14. The installation of the 90 degree bends in the watermain is not allowed, unless approved by the Erie County Water Authority.
15. Thrust restraint for watermain piping through 12-inch diameter shall consist of thrust blocks and pipe joint restraint.
16. The CONTRACTOR shall notify the owner of any utility pole in advance of any excavation work that will take place within 5'-0" of the utility pole. The CONTRACTOR shall include the cost of temporary pole support in the appropriate bid item.Where utility poles are required to be supported during construction, the CONTRACTOR shall make all necessary arrangements with the utility company.
17. If materials are encountered during the construction that are suspected of being contaminated, the CONTRACTOR shall immediately notify the NYSDEC for direction regarding testing, separation, containment and disposal procedures.
18. Existing fire hydrants removed during construction and not reinstalled as part of the work shall be returned to the Erie County Water Authority Service Center, 3030 Union Road, Cheektowaga.
19. The CONTRACTOR shall place temporary pavement (consisting of hot mix asphalt or cold patch) in all trench excavations in traveled areas including roads, driveways, sidewalks, and parking areas.
20. The CONTRACTOR shall not restrict school bus access.
21. The use of existing fire hydrants for any reason is prohibited without prior approval of the Erie County Water Authority. This includes newly installed fire hydrants that have been placed into service.
22. The CONTRACTOR shall submit procedures for testing and disinfection of the watermain to the ENGINEER for approval.
23. The CONTRACTOR shall be present and assist in the Final Walk inspection. The CONTRACTOR shall provide sufficient personnel and equipment to demonstrate to the ENGINEER that all valves, fire hydrants and curb stops operate as required.

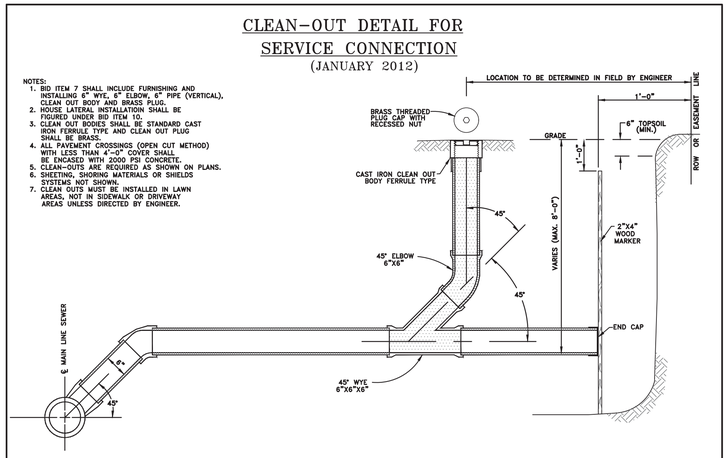
I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD30_GENERAL_NOTES

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GENERAL NOTES	DWG. NO. SD30
		DATE 3/05
		REVISED 10/21



PUBLIC 8" WATER MAIN PROFILE

SCALE: HORIZ. 1"=30'
VERT. 1"=5'

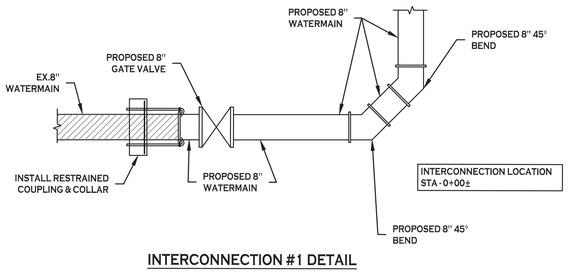


ERIE COUNTY
DEPT. OF ENVIRONMENT & PLANNING
DIVISION OF SEWERAGE MANAGEMENT

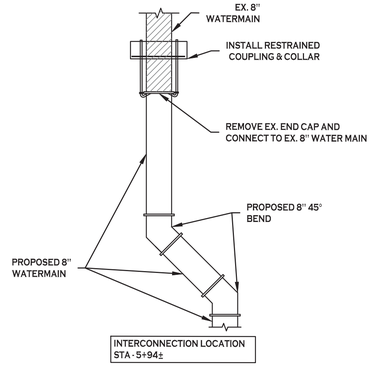
Rev. 1	5/93	4'-0" COVER, C.I. CAP "RECESSED NUT"
Rev. 2	2/94	CHANGED DIM LINE FOR MAX. DEPTH
Rev. 3	12/01	ADDED NOTE 7
Rev. 4	5/02	CHANGED C.I. CAP TO BRASS
Rev. 5	8/05	11' MIN. FROM EDGE OF WALK NOTE
Rev. 6	1/12	CHANGED C.I. TO BRASS NOTES 1 & 3

STD. DETAIL 28

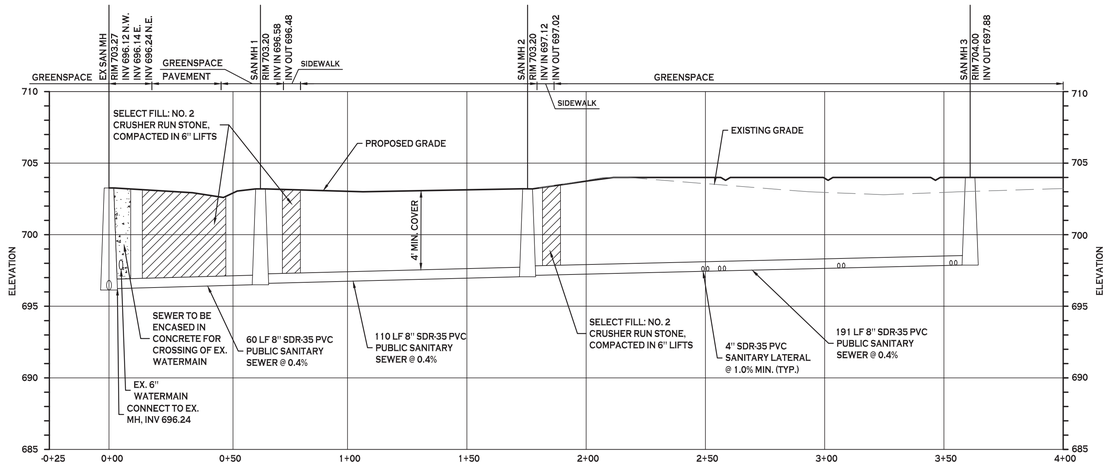
File: d-28 Date: 3/1/91



INTERCONNECTION #1 DETAIL



INTERCONNECTION #2 DETAIL



PUBLIC 8" SEWER SANITARY SEWER PROFILE

SCALE: HORIZ. 1"=30'
VERT. 1"=5'

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Harding Road & McKinley Avenue
Town of Amherst, New York, 14221
SBL No. 82.09-6-20

REVISIONS: No.	Description	Date

STATE OF NEW YORK · CHRISTOPHER WOOD · 076394 · LICENSED PROFESSIONAL ENGINEER

DRAWING NAME:
Water & Sewer Profiles & Details

Date: 6/28
Drawn By: C. W
Scale: As No

DRAWING NO.
C-301

Project No: 22.010

Attachment: SUB-2022-01PP_drawings_082222 (26194 : Sub-2022-01PP)

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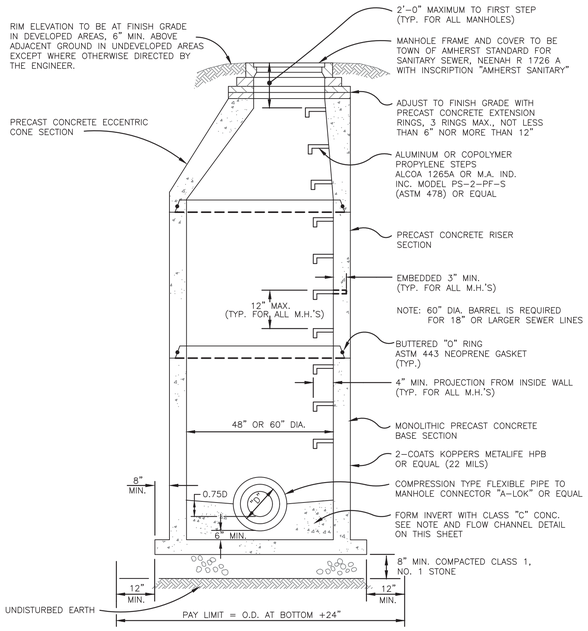
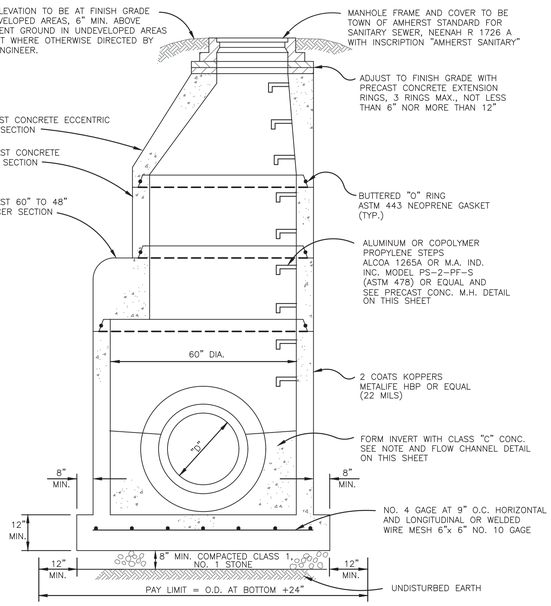


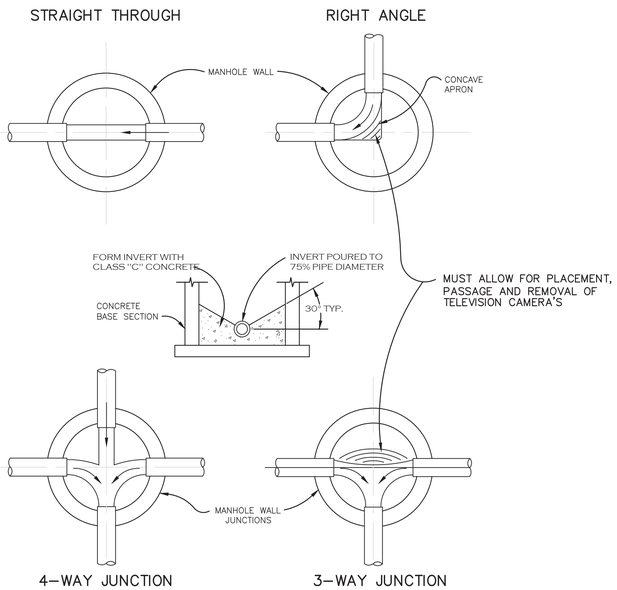
PRECAST CONCRETE MANHOLE

NOT TO SCALE



PRECAST CONCRETE MANHOLE OVER EXISTING SEWER (18"-30" DIA.)

NOT TO SCALE



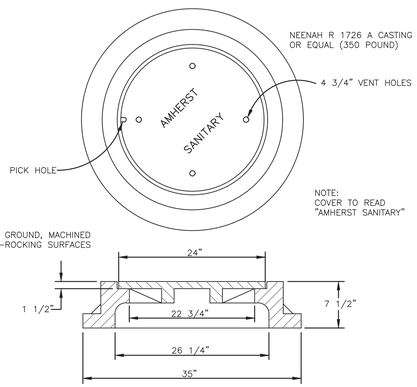
NOTE:
FLOW CHANNELS MUST ALLOW PLACEMENT, REMOVAL AND PASSAGE OF T.V. CAMERAS. THE CAMERA DIMENSIONS ARE APPROXIMATELY 26" LONG x 6 1/2" SQUARE. A BLOCK OF WOOD OF THESE DIMENSIONS MAY BE USED TO SIMULATE THE SIZE OF THE CAMERA. THIS WILL SIMPLIFY THE FORMATION OF FLOW CHANNELS AND INVERTS.

DEPTH OF ALL CHANNELS TO BE 75% OF PIPE DIAMETER.

FINISH ALL CHANNELS AT PROPER GRADE AS TO ALLOW SMOOTH & UN-OBSTRUCTED FLOW ALL INVERTS TO BE FLUSH WITH THE INSIDES.

FLOW CHANNEL DETAIL SANITARY SEWERS

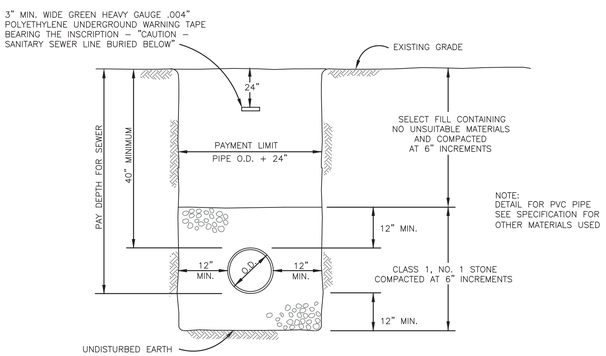
NOT TO SCALE



STANDARD MANHOLE FRAME AND COVER

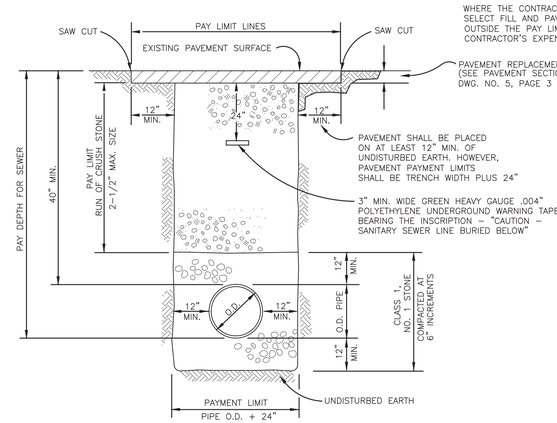
VENTED COVER

NOT TO SCALE



TYPICAL EARTH TRENCH DETAIL UNPAVED AND UNTRAVELED AREAS

NOT TO SCALE

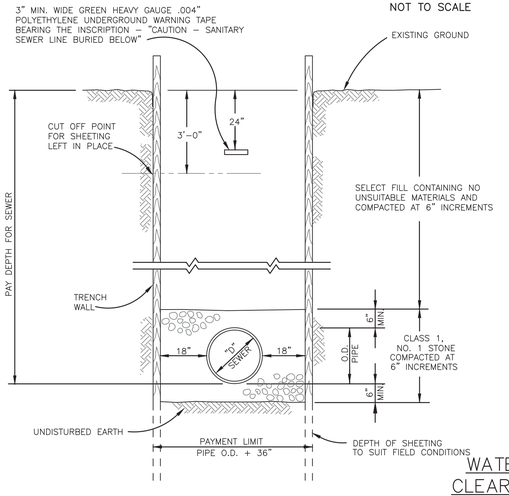


NOTE:
WHERE THE CONTRACTOR EXCAVATES BEYOND THE PAY LIMITS SHOWN; SELECT FILL AND PAVEMENT, SIDEWALK & DRIVEWAY REPLACEMENT OUTSIDE THE PAY LIMITS SHALL BE FURNISHED AND PLACED AT THE CONTRACTOR'S EXPENSE. (TYP.)

NOTE:
IF CONCRETE ENCASEMENT IS REQUIRED, IT SHALL BE INSTALLED IN PLACE OF (AND TO THE DIMENSIONS OF) THE PIPE BEDDING AND COVER TO 12" MIN. ABOVE AND BELOW THE PIPE (SEE WATER CROSSING DETAIL ON THIS SHEET)

TYPICAL TRENCH DETAIL - TOWN ROAD CROSSING FOR MAIN SEWERS & HOUSE AND BUILDING CONNECTIONS

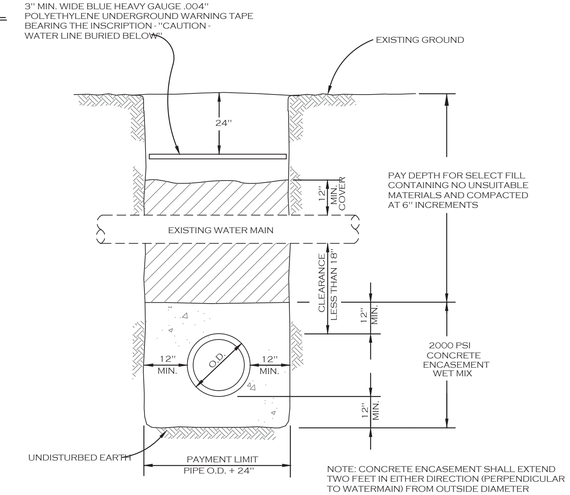
NOT TO SCALE



SHEETED TRENCH DETAIL

NOT TO SCALE

WATER CROSSING DETAIL CLEARANCE LESS THAN 18"



NOTE: CONCRETE ENCASEMENT SHALL EXTEND TWO FEET IN EITHER DIRECTION (PERPENDICULAR TO WATERMAIN) FROM OUTSIDE DIAMETER OF WATERMAIN.

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Town of Amherst, New York, 14221
SBL No. 82.09-6-20

REVISIONS:

No.	Description	Date



DRAWING NAME:

Sewer Details

Date: 6/28
Drawn By: C. W
Scale: As No

DRAWING NO.

C-302

Project No: 22.010

Attachment: SUB-2022-01PP_drawings_092222 (26194 : Sub-2022-01PP)

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SANITARY SEWER TESTING METHOD NOTES

(A) LEAKAGE TESTS

01. THE TEST PERIOD WHEREIN THE MEASUREMENTS ARE TAKEN SHALL NOT BE LESS THAN 24 HOURS, REGARDLESS OF THE TEST METHOD USED.

02. THE TOTAL LEAKAGE OF ANY SECTION TESTED BY ANY TEST METHOD SHALL NOT EXCEED THE RATE OF 200 GALLONS PER MILE OF PIPE PER 24 HOURS PER INCH OF NOMINAL PIPE DIAMETER.

03. MANHOLES SHALL BE CONSIDERED AS SECTIONS OF 48" DIAMETER PIPE AND THE EQUIVALENT LEAKAGE ALLOWANCE SHALL BE COMPUTED PER NOTE 02 USING THE SUBMERGED HEIGHT OF MANHOLE AS THE LENGTH.

04. WHEN MANHOLES ARE TESTED SEPARATELY, ALL PIPE OPENINGS SHALL BE PLUGGED AND THE TEST PROCEDURES AND CRITERIA SHALL BE APPLIED IN THE SAME MANNER AS FOR TESTS INVOLVING ONLY THE PIPE OR A COMBINATION OF PIPE AND MANHOLES.

(B) INFILTRATION TEST CRITERIA FOR USE

01. THIS TEST METHOD MAY ONLY BE USED WHEN GROUND WATER LEVELS ARE AT LEAST TWO (2) FEET ABOVE THE TOP OF THE PIPE FOR THE ENTIRE LENGTH OF THE SECTION TO BE TESTED DURING THE ENTIRE PERIOD OF THE TESTS.

02. GROUND WATER LEVELS MAY BE MEASURED IN AN OPEN TRENCH OR IN STANDPIPES PREVIOUSLY PLACED IN BACKFILLED TRENCHES DURING BACKFILLING.

03. THE NUMBER OF STANDPIPES REQUIRED AND LOCATION OF THE SAME ARE TO BE AS ORDERED BY THE ENGINEER. STANDPIPES MAY BE OF ANY PIPE MATERIAL BUT MUST BE OF SUCH DIAMETER (2–1/2" MINIMUM) AS TO PERMIT THE INSERTION OF A RULE OR LEVEL ROD. CRUSHED STONE SHALL BE PLACED AROUND THE LOWER OPEN ENDS OF THE STANDPIPES.

04. STANDPIPES ARE TO BE REMOVED AT THE SATISFACTORY COMPLETION OF THE TESTS.

05. IF IN LIEU OF STANDPIPES, THE TRENCH IS TO BE LEFT OPEN FOR GROUND WATER OBSERVATION, THE LENGTH OF UNBACKFILLED TRENCH AT ANY ONE TIME MAY HAVE TO BE LIMITED FOR REASONS OF SAFETY.

(C) EXFILTRATION TEST CRITERIA FOR USE

01. THIS TEST CONSISTS OF FILLING THE PIPE WITH WATER TO PROVIDE A HEAD OF AT LEAST TWO (2) FEET ABOVE THE TOP OF THE PIPE OR ABOVE GROUND WATER WHICHEVER IS HIGHER AT THE HIGHEST POINT OF THE PIPE LINE UNDER TEST, AND THEN MEASURING THE LOSS OF WATER TO MAINTAIN THE ORIGINAL LEVEL.

02. IN THIS TEST THE PIPE LINE MUST BE FILLED WITH WATER AND ALLOWED TO REMAIN SO FILLED FOR AT LEAST 24 HOURS PRIOR TO TAKING MEASUREMENTS.

03. REGARDING GROUND WATER MEASUREMENTS: SEE NOTES 02 THROUGH 05 ABOVE.

04. REGARDING THE TEST STANDPIPE: THERE MUST BE SOME POSITIVE METHOD OF RELEASING ENTRAPPED AIR IN THE SEWER PRIOR TO TAKING MEASUREMENTS.

(D) DEFLECTION TEST FOR PVC SEWER PIPE

01. DEFLECTION TESTS SHALL BE PERFORMED ON ALL FLEXIBLE GRAVITY SEWER PIPE. TESTS SHALL BE CONDUCTED AFTER THE FINAL BACKFILL HAS BEEN IN PLACE FOR AT LEAST 30 DAYS.

02. NO PIPE SHALL EXCEED DEFLECTION OF 5%. DEFLECTION GAGE MAY BE BORROWED FROM THE TOWN ENGINEER FOR 8" AND 10" PIPE. THE DEFLECTION TEST MUST BE EXECUTED AFTER 30 DAYS OF PLACEMENT OF FINAL BACKFILL. THE TEST WILL ALSO BE DONE WITHOUT MECHANICAL PULLING DEVICES.

MANHOLE PLACEMENT AND MAINTENANCE
DURING CONSTRUCTION AND DEVELOPMENT

CONTRACTOR AND/OR DEVELOPERS SHALL CONSTRUCT ALL MANHOLE STRUCTURES IN ACCORDANCE WITH THE TOWN OF AMHERST STANDARD SPECIFICATIONS OR THE SPECIFICATIONS OF THE DESIGN ENGINEER WHEN REQUIRED BY THE TOWN.

ALL MANHOLES ARE TO BE DESIGNED AND FURNISHED WITH RIM ELEVATIONS AT FINAL FINISHED GRADES. THE CONTRACTOR, DEVELOPER, OR HOME BUILDER SHALL BE RESPONSIBLE FOR ALL CORRECTIONS, ADJUSTMENTS, AND MODIFICATIONS NEEDED FOR RAISING, LOWERING, OR REPLACING ANY AND ALL MANHOLES AS PROPOSED FOR THE FACILITY.

ALL AS–BUILT STATIONING, LINE AND GRADE IMPROVEMENTS, INVERT AND RIM ELEVATIONS, "Y" LOCATIONS, INSPECTION REPORTS, ROADWAY OR STREET NAMES, RIGHT–OF–WAY WIDTHS, AND EASEMENT LINES SHALL BE FURNISHED TO THE TOWN ON A SET OF MYLAR DRAWINGS PRIOR TO TAP–IN APPROVAL, PIP ACCEPTANCE, AND/OR RELEASE OF FINAL PAYMENT.

ALL MANHOLE STRUCTURES SHALL BE MADE ACCESSIBLE TO THE TOWN OF AMHERST TELEVISION/MAINTENANCE CREWS. THE CONTRACTOR AND/OR DEVELOPER SHALL PROVIDE A DRY, WELL COMPACTED, STABLE SURFACE FREE FROM SHOW AND OBSTRUCTIONS FOR SAFE AND OPEN ACCESS WITH TOWN VEHICLES. SHOULD THE CONTRACTOR AND/OR DEVELOPER WISH TV INSPECTIONS DURING WET WEATHER/WET SOFT SOIL CONDITIONS, HE SHALL PROVIDE ALL NECESSARY GRANULAR BACKFILL, DISTRIBUTED AND COMPACTED TO SUPPLY ACCESS TO EACH MANHOLE. THE CONTRACTOR AND/OR DEVELOPER SHALL BEAR ALL COSTS OF TOWING, DOWN TIME, CREW TIME, AND DAMAGE ALONG WITH RESTORATION, SHOULD SUCH ACCESSWAYS FAIL.

SANITARY SEWER NOTES:

01. THE CONTRACTOR SHALL COMPLY WITH THE TOWN OF AMHERST STANDARD DRAWINGS AND SPECIFICATIONS.

02. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE PROJECT ENGINEER AND THE TOWN OF AMHERST ENG. DEPT. OF ANY HAZARDOUS SUBSTANCE ENCOUNTERED DURING THE CONSTRUCTION OF THE WORK. HE SHALL AT HIS EXPENSE, CONFORM TO ALL LAWS, RULES, REGULATIONS AND DIRECTIONS AS PROMULGATED BY THE UNITED STATES DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, THE NEW YORK STATE DEPARTMENT OF HEALTH AND ANY SUCH LOCAL RULES, ORDINANCES AND LAWS WHEN ENCOUNTERING OR WORKING WITH ANY SUCH HAZARDOUS SUBSTANCE.

03. THE CONTRACTOR SHALL COMPLY IN ALL RESPECTS TO THE INDUSTRIAL CODE PART (RULE NO.) 53 RELATING TO CONSTRUCTION, EXCAVATION AND DEMOLITION OPERATIONS AT OR NEAR UNDERGROUND FACILITIES, AS ISSUED BY THE STATE OF NEW YORK DEPARTMENT OF LABOR, BOARD OF STANDARD AND APPEALS.

04. SINCE THE ERIE COUNTY WATER AUTHORITY OPERATES AND MAINTAINS THE EXISTING WATER LINES, THEY ARE TO BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE OF THE START OF CONSTRUCTION. ALL EXISTING VALVES ARE TO BE OPERATED BY THE ERIE COUNTY WATER AUTHORITY PERSONNEL.

05. THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AHEAD OF THE PIPE LAYING OPERATION, SO THAT, IF MINOR ADJUSTMENTS MUST BE MADE IN ELEVATION AND/OR ALIGNMENT DUE TO INTERFERENCE FROM THESE UTILITIES, SAID CHANGES CAN BE MADE IN ADVANCE OF THE WORK.

06. WHERE SUCH FACILITIES ARE UNDER THE SUPERVISION OF A PROFESSIONAL ENGINEER, HE SHALL CERTIFY TO THE ENGINEERING DEPARTMENT OF THE TOWN OF AMHERST THAT SAID FACILITIES AS CONSTRUCTED WERE SUPERVISED BY HIMSELF (HERSELF) AND THAT THE WORKS HAVE BEEN FULLY COMPLETED IN ACCORDANCE WITH THE APPROVED ENGINEERING REPORTS, PLANS, SPECIFICATIONS, CONTRACT DOCUMENTS AND ANY AND ALL ADDENDA TO SAME.

07. THE CONSTRUCTION OF THE FACILITIES SHALL BE UNDER THE SUPERVISION OF A PERSON OR FIRM QUALIFIED TO PRACTICE PROFESSIONAL ENGINEERING IN NEW YORK STATE UNDER THE EDUCATION LAW OF THE STATE, WHENEVER ENGINEERING SERVICES ARE REQUIRED BY SUCH LAW FOR SUCH PURPOSES.

08. A WRITTEN CERTIFICATE OF CONSTRUCTION COMPLIANCE, INCLUDING THE RESULTS OF HYDROSTATIC LEAKAGE TESTS, MADE BY THE PROFESSIONAL ENGINEER SUPERVISING THE CONSTRUCTION, SHALL BE SUBMITTED TO THE ERIE COUNTY DEPART. OF ENVIRONMENT PLANNING AND NEW YORK DEPARTMENT OF ENVIRONMENTAL CONSERVATION WITHIN THIRTY (30) DAYS AFTER CONSTRUCTION COMPLETION.

09. UNSUITABLE MATERIALS SUCH AS FROZEN ORGANIC AND/OR VEGETABLE MATERIAL, DEBRIS, TREES, LUMBER, LARGE STONES OR CLODS (6.0" OR LARGER), MUCK, PEAT, ORGANIC SILT WILL NOT BE ACCEPTABLE FILL AND CERTAIN MAN–MADE DEPOSITS OF INDUSTRIAL WASTE, SLUDGE OR LANDFILL MAY ALSO BE DETERMINED AS UNSUITABLE HAZARDOUS MATERIAL.

10. THE COMPACTION OF ALL MATERIALS WILL OCCUR AT 6" INCREMENTS.

11. VERIFICATION OF ALL EXISTING EASEMENTS IS THE RESPONSIBILITY OF THE DESIGN ENGINEER AND THEY MUST BE SHOWN ALONG WITH ALL PROPOSED EASEMENTS ON PLAN DRAWINGS.

12. SHOULD A FLUID CONDITION BE ENCOUNTERED AT THE TRENCH BOTTOM, THE CONTRACTOR IS TO INSTALL ADDITIONAL STONE CRADLE AS ORDERED BY THE ENGINEER.

13. ALL PIPE CROSSING UNDER PAVED AREAS ARE TO BE BACKFILLED TO SUBGRADE WITH COMPACTED SELECT MATERIAL TO FIVE (5) FEET OUTSIDE THE PAVEMENT EDGES.

14. THE CONTRACTOR SHALL RETAIN THE SERVICES OF A QUALIFIED TREE EXPERT TO REMOVE, WHERE NECESSARY, BRANCHES WHICH INTERFERE WITH THE CONSTRUCTION OPERATION, OR REPAIR TREES HAVING SUFFERED DAMAGE BY CONSTRUCTION ACTIVITIES. THE COST INVOLVED IN THE ABOVE IS TO BE INCLUDED IN THE VARIOUS ITEMS OF THE CONTRACT.

15. SEWERS SHALL BE LAID AT LEAST TEN (10) FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATERMAIN. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE. IN CASES WHERE IT IS NOT PRACTICAL TO MAINTAIN A TEN FOOT SEPARATION, THE APPROPRIATE REVIEWING AGENCY MAY ALLOW DEVIATION ON A CASE–BY–CASE BASIS, IF SUPPORTED BY DATA FROM THE DESIGN ENGINEER. SUCH DEVIATION MAY ALLOW INSTALLATION OF THE SEWER CLOSER TO A WATERMAIN, PROVIDED THAT THE WATERMAIN IS IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF LOCATED ON ONE SIDE OF THE SEWER AND AT AN ELEVATION SO THE BOTTOM OF THE WATERMAIN IS AT LEAST 18" (46CM) ABOVE THE TOP OF THE SEWER.

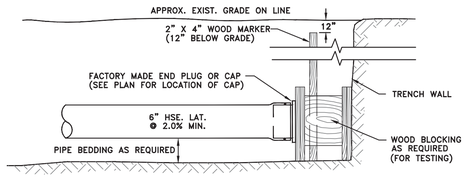
16. SEWERS CROSSING WATERMAINS SHALL BE LAID TO PROVIDE MINIMUM VERTICAL DISTANCE OF 18" (46CM) BETWEEN THE OUTSIDE OF A WATERMAIN AND THE OUTSIDE OF THE SEWER. THIS SHALL BE THE CASE WHERE THE WATERMAIN IS EITHER ABOVE OR BELOW THE SEWER. THE CROSSING SHALL BE ARRANGED SO THAT THE SEWER JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE WATERMAIN JOINTS. WHERE A WATERMAIN CROSSES UNDER A SEWER, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER, TO PREVENT DAMAGE TO THE WATERMAIN.

17. WHEN IT IS IMPOSSIBLE TO OBTAIN PROPER HORIZONTAL AND VERTICAL SEPARATION AS STIPULATED ABOVE, THE SEWER SHALL BE DESIGNED AND CONSTRUCTED EQUAL TO WATER PIPE AND SHALL BE PRESSURE TESTED AS TO ASSURE WATERTIGHTNESS PRIOR TO BACKFILLING.

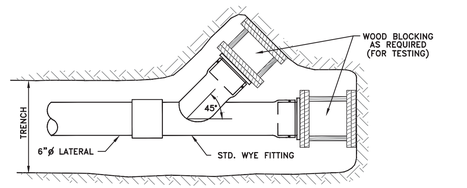
18. THE PIPE SHALL BE P.V.C. SEWER PIPE CONFORMING TO THE LATEST REVISIONS OF ASTM DESIGNATION D–3034, SDR–35, INSTALLED IN ACCORDANCE WITH ASTM.

19. THE MANHOLE COVERS ARE TO BEAR THE INSCRIPTION "AMHERST SANITARY".

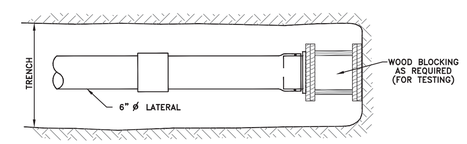
CAP & BLOCKING METHODS FOR AIR TESTING
(JANUARY 2012)



TYPICAL SECTION



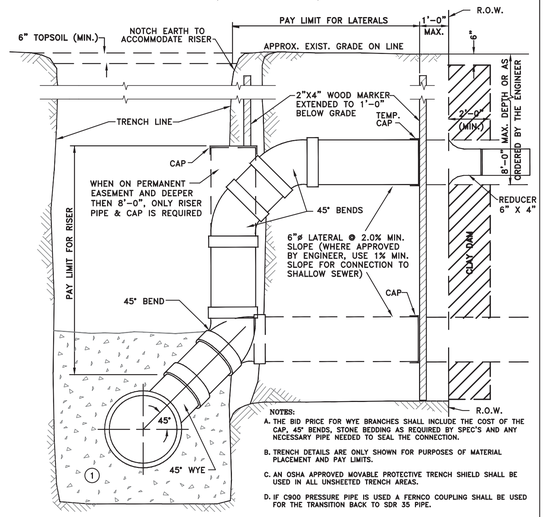
TYPE "2" SERVICE LATERAL FITTING



TYPE "1" SERVICE LATERAL FITTING

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 1		STD.DETAIL 26
	Rev. 2		
	File: d-26	Date: 3/1/91	

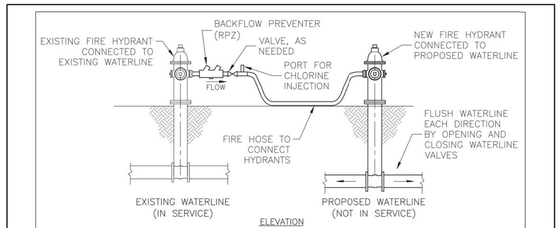
RISER DETAIL – SDR35
(MAIN LINE LATERAL CONNECTION)
(JANUARY 2012)



NOTES:
A. THE BID PRICE FOR WYE BRANCHES SHALL INCLUDE THE COST OF THE CAP, 45° BENDS, STONE BEDDING AS REQUIRED BY SPEC'S AND ANY NECESSARY PIPE NEEDED TO SEAL THE CONNECTION.
B. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND PAY LIMITS.
C. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.
D. IF C900 PRESSURE PIPE IS USED A FERNCO COUPLING SHALL BE USED FOR THE TRANSITION BACK TO SDR 35 PIPE.

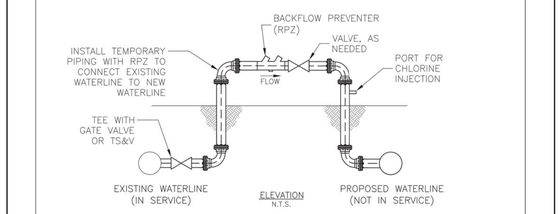
MATERIALS
PIPE BEDDING MATERIAL (NYSDOT LATEST EDITION)
(1) NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703–02. THE CRUSHED STONE SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER. NO SLAG WILL BE ALLOWED.

ERIE COUNTY DEPT. OF ENVIRONMENT & PLANNING DIVISION OF SEWERAGE MANAGEMENT	Rev. 2 1/97	ADDED 1/8 BELL & SPIGOT LONG SWEEP BEND	STD.DETAIL 27
	Rev. 3 12/01	MINOR NOTE & REGARDING LOCATION OF VENTS AND CLEAN OUTS	
	Rev. 4 5/02	CHANGED LONG SWEEP TO NORMAL 45° ADDED CAPS & CORRECTED PAY LIMITS	
	File: d-27	Date: 3/1/91	



ELEVATION
N.T.S.

METHOD 1 – CONNECT EXISTING HYDRANT TO PROPOSED HYDRANT



ELEVATION
N.T.S.

METHOD 2 – SERVICE TAP, TAPPING SLEEVE AND VALVE (TS&V), OR INTERCONNECTION

NOTES:
1. PURPOSE OF THIS DETAIL IS TO DEPICT ACCEPTABLE METHODS OF CONNECTING EXISTING WATERLINES TO PROPOSED WATERLINES FOR FILLING, FLUSHING, AND TESTING PROCEDURES IF 2–INCH COPPER OR POLYETHYLENE TUBING IS NOT USED TO BYPASS A VALVE. OTHER METHODS REQUIRE SUBMITTAL AND APPROVAL BY THE AUTHORITY PRIOR TO USE.
2. FIRE HOSES, TEMPORARY PIPING, AND BACKFLOW PREVENTERS SHALL NOT ENCROACH INTO ROADWAYS, DRIVEWAYS, OR SIDEWALK AREAS WITHOUT PROVIDING PROPER MAINTENANCE AND PROTECTION OF TRAFFIC MEASURES.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD44_SOURCE_WATER_CONNECTIONS

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL SOURCE WATER CONNECTIONS	DWG. NO. SD44	
		DATE 10/20	REVISED

CARMINAWOOD DESIGN
111 Bain Street, Suite 332
Greensboro, North Carolina 27406
Phone: (336) 937-9009
487 Main Street, Suite 500
Buffalo, New York 14203
Phone: (716) 842-3165

Harding Road Subdivision

Harding Road & McKinley Avenue
Town of Amherst, New York, 14221
SBL No. 82.09-6-20

REVISIONS:
No. Description Date

STATE OF NEW YORK R. CHRISTOPHER WOOD LICENSED 076394 PROFESSIONAL ENGINEER

DRAWING NAME:
Water & Sewer Details & Notes

Date: 6/28
Drawn By: C. W
Scale: As No

DRAWING NO.
C-303

Project No: 22.010

Attachment: SUB-2022-01PP. drawings. 082222 (26194 : Sub-2022-01PP)

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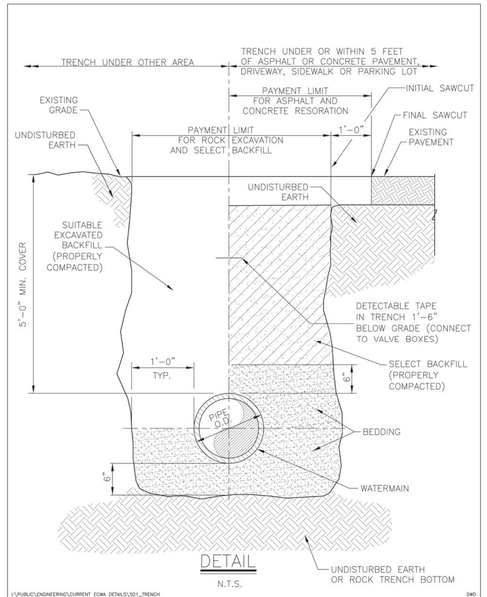
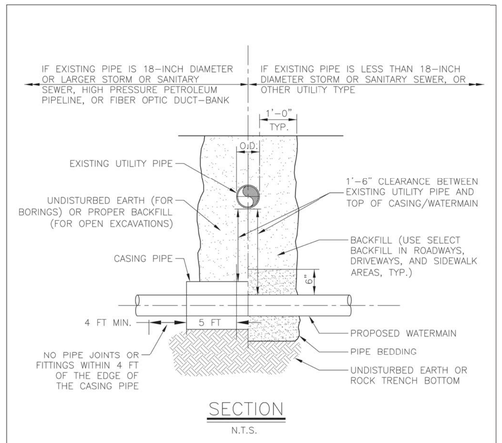


DETAIL
N.T.S.

\\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD1_TRENCH SWO

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TRENCH THROUGH 16–INCH DIAMETER WATERMAIN	DWG. NO. SD1
		DATE 4/28/92 · REVISED 1/22



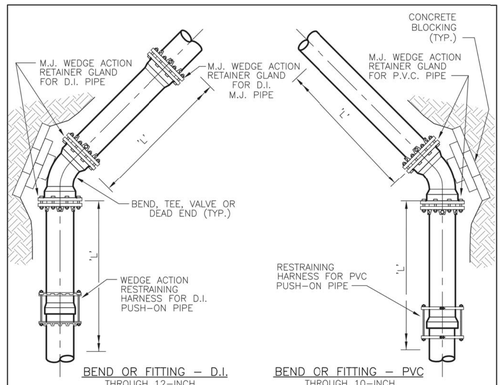
SECTION
N.T.S.

NOTES:

1. ALL EXISTING UTILITIES MUST BE SUPPORTED WITH APPROPRIATE CHAINS/STRAPS DURING CONSTRUCTION OF THE NEW WATERMAIN.
2. WHEN CROSSING A SEWERLINE WITH A NEW WATERMAIN (AND WITHOUT CASING PIPE), ONE FULL PIPE LENGTH (18. FT. MIN.) SHALL BE USED AT THE POINT OF CROSSING. THE WATERMAIN SHALL BE PLACED SO THAT BOTH JOINT ENDS ARE AS FAR AS POSSIBLE FROM THE EXISTING SEWERLINE.
3. IF CASING PIPE IS USED, IT SHALL EXTEND 5 FEET BEYOND THE EXISTING PIPE OUTER WALL EDGE IN EACH DIRECTION, AND NO WATERLINE JOINTS OR FITTINGS SHALL BE LOCATED WITHIN 4 FEET FROM THE CASING PIPE EDGE.

\\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD2_PIPE_CROSSING SWO

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL PIPE CROSSING	DWG. NO. SD2
		DATE 4/92 · REVISED 8/21



BEND OR FITTING – D.I. THROUGH 12–INCH

BEND OR FITTING – PVC THROUGH 10–INCH

RESTRAINED JOINT SCHEDULE					
PIPE SIZE	PIPE TYPE	11.25° ELBOW	22.5° ELBOW	45° ELBOW	TEE BRANCH, 90° BEND, VALVE OR DEAD END
		'L'	'L'	'L'	'L'
8"	PVC	15'	30'	50'	65'
8"	DIP	15'	30'	50'	65'

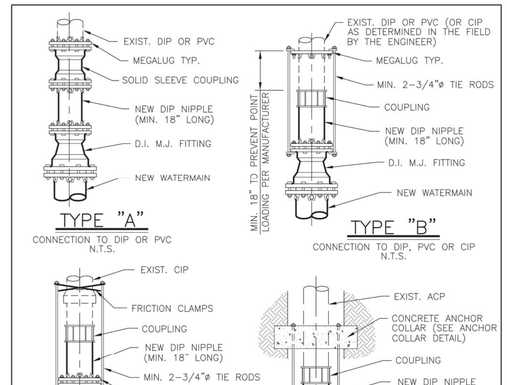
NOTES:

1. DIMENSION 'L' REPRESENTS THE LENGTH OF RESTRAINED PIPE REQUIRED IN FEET EACH SIDE OF THE PIPE FITTING.

PLAN
N.T.S.

\\PUBLIC\ENGINEERING\2005_DETAILS\SD4_REST_JOINT_SCHED

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL RESTRAINED JOINT SCHEDULE	DWG. NO. SD4
		DATE 4/28/92 · REVISED 10/05

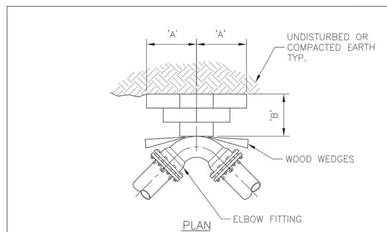


NOTES:

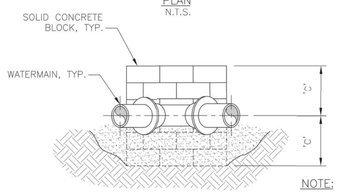
1. VALVES AND TEES MAY BE HARNESSED SIMILARLY.
2. HARNESSING IS FOR RESISTANCE TO INTERNAL PRESSURE–PIPE ITSELF MUST BE SUPPORTED ON FIRM BEDDING AND CAREFULLY BACKFILLED.
3. COAT ALL EXPOSED SURFACES OF HARNESS ASSEMBLY WITH BITUMINOUS COATING.
4. TIE RODS SHALL BE PLACED ON SIDES OF PIPE.

\\PUBLIC\ENGINEERING\2005_DETAILS\SD5_CONN_EXIST_MAIN

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TYPICAL CONNECTION TO EXISTING WATERMAIN THROUGH 12–INCH DIAMETER WATERMAIN	DWG. NO. SD5
		DATE 3/05 · REVISED 10/05



PLAN
N.T.S.



ELEVATION
N.T.S.

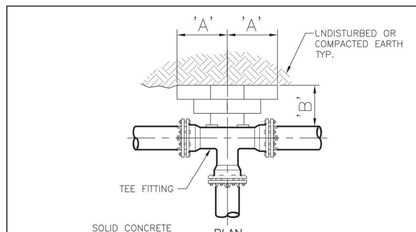
NOTE:

1. FITTING TO BE POLYTHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.

DIMENSION SCHEDULE												
PIPE SIZE	11.25° ELBOW			22.5° ELBOW			45° ELBOW			90° ELBOW		
	'A'	'B'	'C'	'A'	'B'	'C'	'A'	'B'	'C'	'A'	'B'	'C'
8"	1.5'	1.5'	2.5'	2.5'	1.5'	2.5'	3.0'	1.5'	3.5'	3.5'	1.5'	5.0'

\\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD6_THRUST_BLOCKS_ELBOW

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR ELBOW FITTING	DWG. NO. SD6
		DATE 4/28/92 · REVISED 11/20



PLAN
N.T.S.

ELEVATION
N.T.S.

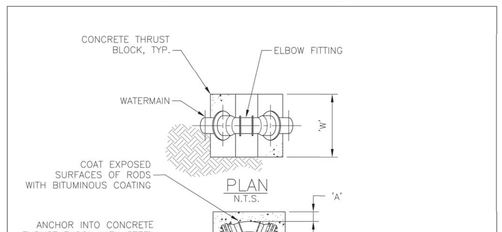
NOTES:

1. THRUST BLOCK REQUIRED FOR TEES, HYDRANT LATERAL TEES AND TAPPING SLEEVE INSTALLATIONS.
2. FITTING TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.

BRANCH TEE SIZE	DIMENSION SCHEDULE		
	'A'	'B'	'C'
8"	1'-6"	1'-6"	1'-6"

\\PUBLIC\ENGINEERING\2005_DETAILS\SD7_THRUST_BLOCKS_TEE

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR TEE OR "DEAD END" FITTING	DWG. NO. SD7
		DATE 4/28/92 · REVISED 10/05



ELEVATION
N.T.S.

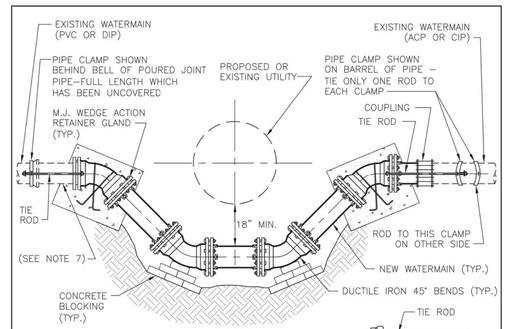
NOTE:

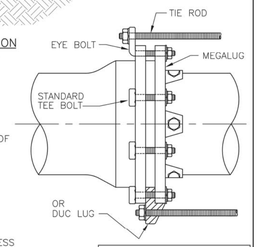
1. FITTING AND ALL RESTRAINTS TO BE POLYETHYLENE WRAPPED PRIOR TO CONCRETE PLACEMENT.

DIMENSION SCHEDULE												
PIPE SIZE	PIPE TYPE	11.25° ELBOW				22.5° ELBOW				45° ELBOW			
		'A'	'W'	'L'	ROD ø	'A'	'W'	'L'	ROD ø	'A'	'W'	'L'	ROD ø
8"	PVC	12"	3.5'	3.5'	1/2"	12"	3.5'	3.5'	1/2"	1'-6"	3.5'	3.5'	1/2"
8"	DIP	12"	3.5'	3.5'	1/2"	12"	3.5'	3.5'	1/2"	1'-6"	3.5'	3.5'	1/2"

\\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD8_THRUST_BLOCKS_VBEND

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR VERTICAL BEND	DWG. NO. SD8
		DATE 4/28/92 · REVISED 11/20





ELEVATION
N.T.S.

NOTES:

1. RESTRAINED MECHANICAL JOINTS SHOWN EXCEPT AS NOTED.
2. TIE TOP BENDS BACK TO FULL LENGTH OF PIPE IN UNEXCAVATED TRENCH.
3. VALVES, TEES AND HYDRANTS MAY BE HARNESSED SIMILARLY.
4. HARNESSING IS FOR RESISTANCE TO INTERNAL PRESSURES–PIPE ITSELF MUST BE SUPPORTED ON FIRM BEDDING AND CAREFULLY BACKFILLED.
5. COAT ALL EXPOSED SURFACES OF HARNESS ASSEMBLY WITH BITUMINOUS COATING.
6. TIE RODS SHALL BE PLACED ON SIDES OF PIPE.
7. IF EXISTING PIPE IS CIP OR PVC, CONNECT TO NEW FITTING ONLY WHEN ALLOWED BY ENGINEER.

TIE ROD SCHEDULE			
PIPE SIZE	PIPE TYPE	ROD ø	NUMBER OF RODS
8"	PVC	3/4"	2
8"	DIP	3/4"	2

\\PUBLIC\ENGINEERING\2005_DETAILS\SD10_HARN_OFFSET_EXIST_MAIN

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL HARNESSING DETAILS–INSTALL OFFSET IN EXISTING WATERMAIN	DWG. NO. SD10
		DATE 6/00 · REVISED 10/05

CARMINAWOOD DESIGN
111 Bain Street, Suite 332
Greensboro, North Carolina 27406
Phone: (336) 937-9009
487 Main Street, Suite 500
Buffalo, New York 14203
Phone: (716) 842-3165

Harding Road Subdivision

Harding Road & McKinley Avenue
Town of Amherst, New York, 14221
SBL No. 82.09-6-20

REVISIONS:

No.	Description	Date



DRAWING NAME:

Water Details

Date: 6/28
Drawn By: C. W
Scale: As No

DRAWING NO.

C-304

Project No: 22.010

Attachment: SUB-2022-01PP_drawings_082222 (26194 : Sub-2022-01PP)

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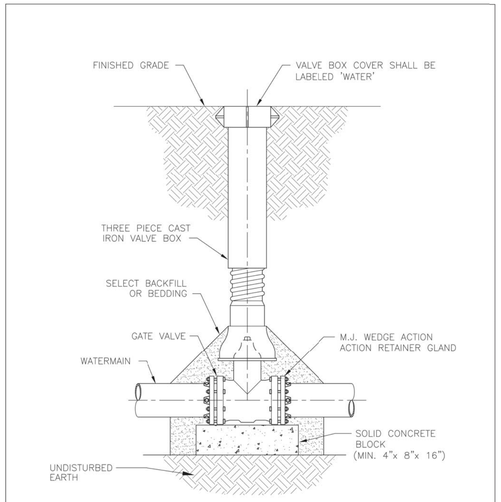
© CARMINA WOOD DESIGN

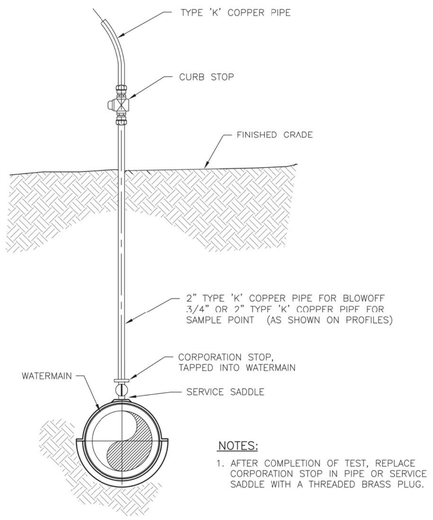


NOTES:
1. VALVE SHALL NOT SUPPORT VALVE BOX.
2. GATE VALVE SHALL BE INSTALLED LEVEL.
3. VALVE BOX SHALL BE PLUMB TO GRADE, WITH OPERATING NUT CENTERED IN BOX.

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD11_GATE_VALVE_SET

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GATE VALVE SETTING	DWG. NO. SD11	
		DATE 4/28/92	REVISED 02/17

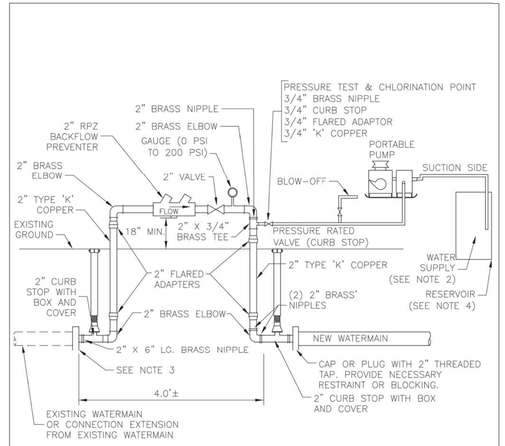


NOTES:
1. AFTER COMPLETION OF TEST, REPLACE CORPORATION STOP IN PIPE OR SERVICE SADDLE WITH A THREADED BRASS PLUG.

ELEVATION
N.T.S.

I:\PUBLIC\ENGINEERING\2005_DETAILS\SD17_TEMP_BO_SAMP_PT

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TEMPORARY BLOW-OFF/SAMPLING POINT	DWG. NO. SD17	
		DATE 4/28/92	REVISED 10/05



NOTES:
1. BACTERIOLOGICAL WATER SAMPLES SHALL BE TAKEN AT WATERMAIN BEGINNING AND END OF STATION AND AT MAXIMUM 1000 FT. SPACING.
2. FOR PRESSURE TESTING PROVIDE CLEAN WATER SUPPLY. FOR DISINFECTION PROVIDE CHLORINATED WATER SUPPLY.
3. CAP OR PLUG WITH 2-INCH THREADED TAP OR 2-INCH TAP INTO MAIN. PROVIDE NECESSARY RESTRAINT AND BLOCKING.
4. DIAMETER OF RESERVOIR SHALL BE 15" OR LESS. IF DIAMETER IS GREATER THAN 15", LEAKAGE TEST SHALL BE RUN A MINIMUM OF 4 HOURS.
5. PRESSURE TEST CANNOT EXCEED 2000 LINEAR FEET PER TEST STATION.

DETAIL
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD23_PRESS_TEST_SCHEM

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL PRESSURE TESTING AND DISINFECTION APPARATUS SCHEMATIC	DWG. NO. SD23	
		DATE 6/00	REVISED 7/16

PIPE DIAMETER (in)	PIPE MATERIAL		WORKING PRESSURE (psi)	TEST PRESSURE (psi)
	Type	Rating		
Insert	Insert DIP	Insert Class	Insert 150	Insert 170
Insert	Insert PVC	Insert DR	Insert 150	Insert 170
Insert	Insert PCCP		Insert 150	Insert 170

(Fill in project-specific values in table. Items shown are for example only.)

I:\PUBLIC\ENGINEERING\2005_DETAILS\SD31_PRESS_TEST_SCHED

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	PRESSURE TESTING SCHEDULE	DWG. NO. SD31	
		DATE 10/05	REVISED



STEP 1.
CUT A SECTION OF POLYETHYLENE TUBE APPROXIMATELY 2 FEET LONGER THAN THE PIPE SECTION. REMOVE ALL LUMPS OF CLAY, MUD, CINDERS, OR OTHER MATERIALS THAT MIGHT HAVE ACCUMULATED ON THE PIPE SURFACE DURING STORAGE. SLIP THE POLYETHYLENE TUBE ACCORDION-FASHION ON THE END OF THE PIPE. PULL BACK THE OVERHANGING END OF THE TUBE UNTIL IT CLEARS THE PIPE END.



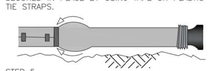
STEP 2.
DIG A SHALLOW BELL HOLE IN THE TRENCH BOTTOM AT THE JOINT LOCATION TO FACILITATE INSTALLATION OF THE POLYETHYLENE TUBE. LOWER THE PIPE INTO THE TRENCH AND MAKE UP THE PIPE JOINT WITH THE PROCEEDING SECTION OF PIPE.



STEP 3.
MOVE THE CABLE TO THE BELL END OF THE PIPE AND LIFT THE PIPE SLIGHTLY TO PROVIDE ENOUGH CLEARANCE TO EASILY SLIDE THE TUBE. SPREAD THE TUBE OVER THE ENTIRE BARREL OF THE PIPE. NOTE: MAKE SURE THAT NO DIRT OR OTHER BEDDING MATERIAL BECOMES TRAPPED BETWEEN THE WRAP AND THE PIPE.

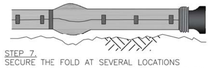


STEP 4.
MAKE THE OVERLAP OF POLYETHYLENE TUBE BY PULLING BACK THE BUNCHED POLYETHYLENE FROM THE PRECEDING LENGTH OF PIPE AND SECURING IT IN PLACE. NOTE: THE POLYETHYLENE MAY BE SECURED IN PLACE BY USING TAPE OR PLASTIC TIE STRAPS.

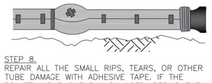


STEP 5.
OVERLAP THE SECURED TUBE END WITH THE END OF THE NEW PIPE SECTION, FOR A MINIMUM OF 12 INCHES. SECURE THE NEW TUBE END IN PLACE. PIPE JOINT SHOULD HAVE TWO LAYERS OF POLYWRAP, EACH SECURED IN PLACE.

STEP 6.
TAKE UP THE SLACK IN THE TUBE ALONG THE BARREL OF THE PIPE TO MAKE A SNUG, BUT NOT TIGHT, FIT. FOLD EXCESS POLYETHYLENE BACK OVER THE TOP OF THE PIPE.



STEP 7.
SECURE THE FOLD AT SEVERAL LOCATIONS ALONG THE PIPE BARREL (APPROXIMATELY EVERY 3 FEET, MAXIMUM OF 5 FEET).



STEP 8.
REPAIR ALL THE SMALL RIPS, TEARS, OR OTHER TUBE DAMAGE WITH ADHESIVE TAPE. IF THE POLYETHYLENE IS BADLY DAMAGED, REPAIR THE DAMAGED AREA WITH A SHEET OF POLYETHYLENE AND SEAL THE EDGES OF THE REPAIR WITH ADHESIVE TAPE.

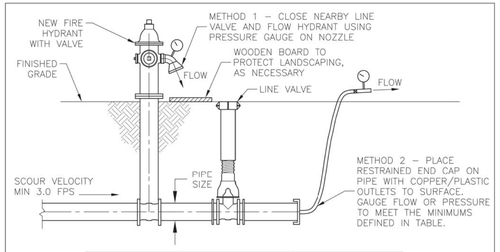


STEP 9.
CAREFULLY BACKFILL THE TRENCH ACCORDING TO THE PROCEDURES IN AWWA C600 STANDARD. TO PREVENT DAMAGE DURING BACKFILLING ALLOW ADEQUATE SLACK IN THE TUBE AT THE JOINT. BACKFILL SHOULD BE FREE OF CINDERS, ROCKS, BOULDERS, NAILS, STICKS, OR OTHER MATERIALS THAT MIGHT DAMAGE THE POLYETHYLENE. AVOID DAMAGING THE POLYETHYLENE WHEN USING TAMPING DEVICES.

NOTES:
1 - POLYETHYLENE WRAP (POLYWRAP) SHALL BE OF PROPER DIAMETER TO FIT OVER BELLS AND EXTERNAL WEDGE-ACTION RETAINER GLANDS.
2 - CAST AND DUCTILE IRON FITTINGS (BENDS, TEES, VALVES, ETC.) ARE TO BE WRAPPED IN POLYWRAP AND SECURED IN PLACE.
3 - DO NOT USE CHAINS, METAL WIRE, OR OTHER SUPPORTING SYSTEMS WHICH MAY DAMAGE THE POLYETHYLENE ENCASEMENT. REPLACE DAMAGED POLYWRAP ACCORDINGLY.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD32_POLY_WRAP

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYETHYLENE ENCASEMENT OF DUCTILE IRON PIPE	DWG. NO. SD32	
		DATE 06/16	REVISED 02/19



PIPE SIZE (IN)	REQUIRED FLOW (GPM)	METHOD 1 HYDRANT FLOW		METHOD 2 END CAP FLOW	
		2 1/2" NOZZLE PRESSURE (PSI)	4" NOZZLE PRESSURE (PSI)	2" I.D. PRESSURE (PSI)	3" I.D. PRESSURE (PSI)
6	275	7	1	7	2
8	500	9	2	22	5
10	750	20	4	50	10
12	1100	44	7	–	22
16	1900	–	20	–	62
20	3000	–	50	–	–

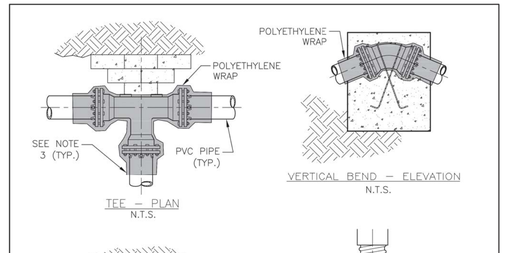
I.D. = INNER DIAMETER

NOTES:
1. TO OBTAIN SCOUR VELOCITY (3.0 FPS) IN THE WATERLINE, CONTRACTOR SHALL ACHIEVE FLOWRATE AT NOZZLE DEFINED IN TABLE. PRESSURE GAUGE USED SHALL SHOW A HIGHER PRESSURE THAN THE MINIMUMS DEFINED IN THE TABLE.
2. OUTLET PRESSURE MEASURED BY PITOT GAUGE.
3. ENGINEER SHALL PROVIDE CALCULATIONS IF CONNECTIONS ARE OTHER THAN THOSE SHOWN, IF MULTIPLE CONNECTIONS ARE USED, OR AS REQUESTED BY ECWA.
4. TO FLUSH THREE PIPE VOLUMES, MINIMUM FLUSHING TIME (IN SECONDS) EQUALS THE LENGTH OF PIPE BEING FLUSHED, IN FEET.

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD36_WATERLINE_FLUSHING

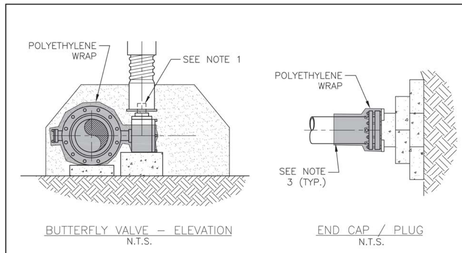
ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL WATERLINE FLUSHING	DWG. NO. SD36	
		DATE 6/16	REVISED 3/18



NOTES:
1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP IS NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PIPE (OR POLYWRAP IF DIP) WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD39A_POLYWRAPPING_FITTINGS

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING CAST/DUCTILE IRON FITTINGS	DWG. NO. SD39A	
		DATE 3/18	REVISED 12/18



NOTES:
1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP IS NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PIPE (OR POLYWRAP IF DIP) WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD39B_POLYWRAPPING_FITTINGS

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING CAST/DUCTILE IRON FITTINGS	DWG. NO. SD39B	
		DATE 12/18	REVISED

CARMINAWOOD DESIGN
111 Bain Street, Suite 332
Greensboro, North Carolina 27406
Phone: (336) 937-9009
487 Main Street, Suite 500
Buffalo, New York 14203
Phone: (716) 842-3165

Harding Road Subdivision

Harding Road & McKinley Avenue
Town of Amherst, New York, 14221
SBL No. 82.09-6-20

REVISIONS:

No.	Description	Date



DRAWING NAME:
Water Details

Date: 6/28
Drawn By: C. W
Scale: As No

DRAWING NO.
C-305

Project No: 22.010

Attachment: SUB-2022-01PP_drawings_092222 (26194 : Sub-2022-01PP)
Packet Pg. 3958
2.b

DRAFT
(9/22/22)

SEQR
Negative Declaration

NOTICE OF DETERMINATION OF NON-SIGNIFICANCE

Lead Agency: Town of Amherst Planning Board

Project: SUB-2022-01PP

Address: 5583 Main Street
Williamsville, NY 14221
(716) 631-7051

Date:

This notice is issued pursuant to Chapter 104 of the Town Code and Part 617, as amended, of the implementing regulations pertaining to Article 8 (State Environmental Quality Review) of the Environmental Conservation Law.

The Lead Agency has determined that the proposed action described below will not have a significant adverse effect on the environment.

Title of Action: Preliminary Plat Review

SEQR Status: Unlisted Action

Description of Action: Subdivision of 1.44± acres into 8 lots in order to allow construction of eight single-family residences. Proposed lots are along existing public streets (Harding Road and McKinley Avenue). Subdivision is comprised of 6 internal lots being a minimum of 50 feet in width by 132 feet in depth, and 2 corner lots being 78± feet in width and 132 feet in depth. Work will include the site improvements not specifically stated above, including, stormwater, water and sewer utilities, grading, lighting and sidewalks.

Location: 468 Harding Road, Amherst, Erie County

Petitioner: Harding Road, LLC

Attachment: SUB-2022-01PP_draft_neg dec_092222 (26194 : Sub-2022-01PP)

Reasons Supporting This Determination

Based on information submitted by the applicant including a Full Environmental Assessment Form (EAF) - Part I, (as amended) and a complete subdivision application, a preliminary staff analysis was undertaken. Compared to the criteria listed in Section 617.7, all indications are that this action will not have a significant impact on the environment, as follows:

1. The project is not expected to cause a substantial adverse change in existing air quality, ground or surface water quality or quantity, or noise levels; a substantial increase in solid waste production; or a substantial increase in the potential for erosion, flooding, leaching or drainage problems. The creation of eight single family lots is not anticipated to significantly increase potential noise impacts, as noise impact is dependent on occupant behavior and not on the number of homes. The net increase of eight single family dwellings will not significantly increase the potential impact from solid waste production town-wide where there are an estimated 50,842 households. The Engineering Department on July 19, 2022 reviewed the Grading, Drainage and Utility Plans, Engineer's Report and Erosion Control Plan submitted on August 22, 2022, and Geotechnical Report prepared by Ray M. Teeter, PE. The Stormwater Pollution Prevention Plan (SWPPP) submitted on July 13, 2022 was also reviewed. Based on its review of these documents, the Department has determined that the project has or will have met all applicable requirements. Due to the depth of bedrock, should blasting be necessary for the installation of building foundations the requirements of §78 of Town Code shall be adhered to.

2. The project will not result in the removal or destruction of large quantities of vegetation or fauna; or in significant adverse impacts to fish or wildlife species, habitats or other natural resources. This determination is based on review of the NYSDEC Environmental Resource Mapper, which shows the site does not contain any significant natural communities, or habitat for rare, threatened or endangered plants or animal species. This determination is also based on the lack of significant existing natural vegetation. Currently, the predominant vegetative cover on the site is landscaped lawn, with approximately 12 trees. The Planning Department reviewed a Preliminary Plat Plan submitted on August 22, 2022 and determined that it meets or exceeds Zoning Ordinance requirements for greenspace. The Preliminary Plat Plan has or will have met all Zoning Ordinance and Town requirements for lot coverage on a single family lot.

3. The project is not expected to create a material conflict with the Town Comprehensive Plan. The resulting infill development will be consistent in use and character with the surrounding single family residential neighborhood. The Building Department has reviewed the application documents, along with the Geotechnical Report submitted on July 13, 2022 and determined in their review of July 18, 2022 that the subject project has or will have met all Zoning Ordinance regulations.

4. The project is within an area identified by the State as having potential archaeological or historical significance. In 2005, a Stage 1 A/B/ Cultural Resource Investigation was conducted by Robert Dean, Heritage Preservation & Interpretation Inc. for subject property.

Attachment: SUB-2022-01PP_draft_neg dec_092222 (26194 : Sub-2022-01PP)

The report summary concludes that "*There were no cultural resources identified as a result of this investigation*.". The NYS Office of Parks, Recreation and Historic Preservation has reviewed the project and, as stated in their letter dated August 23, 2022 that: "*...no properties, including archaeological and/or historic resources, listed or eligible for the New York State and National Registers of Historic Places will be impacted by this project*".

5. The project will not impair the character or quality of important aesthetic resources or of existing community or neighborhood character because the proposed detached single family residences are consistent with the current TR-3 zoning, and because the infill development is limited to single family detached dwellings, consistent with the existing surrounding single family land use to the north, west and south. Therefore, the project is consistent with surrounding land use.

6. The proposed development includes eight single family dwellings, which will increase energy use over the current vacant condition. However, new home construction is required to meet the NYS Energy Code for new construction and therefore, is not anticipated to cause a significant adverse impact related to the quantity or type of energy.

7. The project will not create any hazard to human health. A search of NYSDEC data bases (Spill Incidents Database, Remedial Site Database, Bulk Storage Database) did not result in evidence of any known contamination concerns, and therefore, the proposed subdivision will not create any hazard to human health. The Fire Chief's Association on March 31, 2022, reviewed the project and has no objection to the approval of the subdivision, as all requirements of this agency have or will have been met.

8. The project will result in a change in use from its current vacant state. However, the preliminary plat will not cause a substantial change in the use, or intensity of use to agricultural, open space or recreational resources, or in its capacity to support those uses, as the current land use is not agricultural, or publically-owned open space, or publically-owned recreation resources. Based on inter-departmental reviews, the existing water, sewer, storm water and street infrastructure have sufficient capacity to serve the creation of eight single family residential lots, which will be consistent with the scale of surrounding land uses.

9. The function of the proposed eight-lot subdivision will not significantly increase the number of people using the site over the level of use over that anticipated in the Bicentennial Comprehensive Plan.

10. Review by the Town Traffic/Safety Board dated September 13, 2022, and NYSDOT dated April 29, 2022 indicates that significant negative traffic impacts are not expected to result from the proposed project.

11. A coordinated review of the project has been undertaken by Town Departments including, in addition to those mentioned above, Highway on August 10, 2022, Assessor on July 19, 2022, Plumbing Division on September 1, 2022, and Right-of-Way Agent on September 2, 2022. These reviews did not identify any potential significant adverse environmental issues and indicated that the proposal will not have a significant damaging impact on the environment.

Attachment: SUB-2022-01PP_draft_neg dec_092222 (26194 : Sub-2022-01PP)

12. Issues not specifically mentioned above and/or those not specifically reviewed were not raised by Town departments, outside agencies or the public and are not determined to cause significant negative environmental impacts.

Planning Board Approval
Moved by: ; Seconded by: Ayes; Noes Absent

_____ _____
signature & title of preparer Date

_____ _____
Robert J. Gilmour, Planning Board Chair Date

GP/ac
X:\CURRENT_PLANNING\FILES\SUBDIVISIONS\SUB-2022\SUB-2022-01_(468_HARDING_RD)_2022\SUB-2022-01PP_(468_HARDING_RD)_2022\SUB-2022-01PP_DRAFT_NEG DEC_092222.DOCdoc
cc: Commissioner of Building
Town Engineer
Highway Superintendent
Fire Chiefs Council
ECDEP
NYSDOT
Rami Herzellah, Camina Wood Design, 487 Main Street, Suite 500, Buffalo, NY 14203
Jeffrey D. Palumbo, Block, Longo LaMarca & Brzezinski, 9276 Main St., Ste. 3, Clarence, NY 14031

Attachment: SUB-2022-01PP_draft_neg dec_092222 (26194 : Sub-2022-01PP)

Amherst Planning Board
5583 Main Street
Williamsville, NY 14221

Meeting: 09/22/22 06:30 PM
Department: Planning
Category: Rezoning and Relief from Conditions of Rezoning
Prepared By: Amy Carrato
Initiator: Dan Howard
Sponsors:
DOC ID: 25580

ADOPTED

PLANNING BOARD ITEM (ID # 25580)

Request to Rezone 7.43± Acres from RD to CTR-8, Z-2022-02

Property located at 1400-1404 & 1408-1416 Sweet Home Road
North Forest Development LLC, Petitioner

June 16, 2022
No comments were heard on this proposal. Mr. Giuliani moved to adjourn the proposal. The motion was seconded by Mr. Chmiel and carried. Ayes 7, Noes 0.

May 19, 2022
No comments were heard on this proposal. Mr. Chmiel moved to adjourn the proposal. The motion was seconded by Ms. Penberthy and carried. Ayes 6, Noes 0, Absent 1 (Giuliani).

September 22, 2022
The purpose of this request is to allow for subsequent development of a mixed-use project consisting of 500± residential units and 10,000± square feet of commercial/retail space.

Sean Hopkins, Esq., Hopkins Sorgi & McCarthy PLLC, represented the petitioner, explained the proposal and was available to answer questions from the Board. Roy Jordan was also present.

In response to the Board's questions, Mr. Hopkins stated this development could be a mix of market rate apartments and student housing but will most likely be student housing.

No further comments were heard on this proposal. The hearing was closed.

Following discussion, Mr. Giuliani moved to approve the request based on the resolution. The motion was seconded by Mr. Chmiel and carried. Ayes 5, Noes 0, Absent 2 (Kahn, Raffaele).

HISTORY:

05/19/22	**Planning Board**	**ADJOURNED**	**Next: 06/16/22**
06/16/22	**Planning Board**	**ADJOURNED**	**Next: 09/22/22**

ATTACHMENTS:

- Z-2022-02_application_051922 (PDF)
- Z-2022-02_drawings_051922 (PDF)
- Z-2022-02_draft resolution_051922 (PDF)
- Z-2022-02_adjourned_051922 (PDF)
- Z-2022-02_application_061622 (PDF)
- Z-2022-02_drawings_061622 (PDF)
- Z-2022-02_adjournment letter_061622 (PDF)
- Z-2022-02_application_092222 (PDF)
- Z-2022-02_drawings_092222 (PDF)
- Z-2022-02_draft resolution_092222 (PDF)
- Z-2022-02 signed resolution 092222 (PDF)

RESULT:	**APPROVED [UNANIMOUS]**
MOVER:	Dal Giuliani, Board Member
SECONDER:	Michael Chmiel, Board Member
AYES:	Gilmour, Chmiel, Gill, Giuliani, Penberthy
ABSENT:	Joseph P. Raffaele Jr., Carrie H. Kahn

Rezoning Application & Supporting Documentation - Rezoning of 1400-1404 Sweet Home Road from RD to CTR-8 and 1408-1416 Sweet Home Road from RD to CTR-5
Applicant: North Forest Development LLC
Date: March 21, 2022

Prepared by: Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221
Tel: 716.510-4338
E-mail: shopkins@hsmlegal.com

TOWN OF AMHERST PLANNING DEPARTMENT

Application for Rezoning Review and, if required Comprehensive Plan Amendment

For Official Use

File #: _____ **Acreage** 7.43 **Fee $** _____

Address Verified by Assessor's Office _____ VERIFIED BY DATE

Materials Accepted by Town Clerk & Fee Paid _____ ACCEPTED BY DATE

Materials Checked by Building Dept. _____ RECEIVED BY DATE

Materials Received by Planning Dept. _____ RECEIVED BY DATE

		Fill in Applicable Fees
2 ACRES OR LESS	**$1,250**	_____
2 – 20 ACRES **$1,250 + $250/acres or fraction thereof over 2 acres**		$2750.00
20 – 30 ACRES **$5,700 + $150/acre or fraction thereof over 20 acres**		_____
OVER 30 ACRES **$6,900 +$75/acre or fraction thereof over 30 acres**		_____
Request for Relief of/Change to Conditions of Zoning Approval	**$ 1,200**	_____
AFFIDAVIT FEE FOR PUBLIC HEARING	**$ 15.00**	$15.00
	TOTAL FEE:	**$** 2.765.00

[Note: A completed Short Full Environmental Assessment Form dated April 19, 2021 along with Page 5[a] and attachments is attached as Exhibit "2".]

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

TO BE COMPLETED BY APPLICANT

1. **Petitioner:** Name: North Forest Development LLC

Address: c/o Sean Hopkins, Esq.
5500 Main Street, Suite 343
Williamsville, New York 14221
City State Zip Code

Phone: 510-4338 Fax:

E Mail shopkins@hsmlegal.com

2. **The undersigned hereby petitions the Honorable Town Board to rezone the following described property**

From: RD District

To: CTR-5 and CTR-8 District

3. **Street address of land to be rezoned:** (must be verified by Town Assessor's Office)

1400-1404 and 1408-1416 Sweet Home Road

SBL #: SBL No. 54.12-1-42 and 54.12-1-43.1

4. **Area of land to be rezoned** (in acres): 7.43

5. **Owner of Land:**

Name: North Forest Properties #1 LLC

Address: 2829 Wehrle Drive, Suite 1 - Williamsville, NY 14221

Telephone: 716.626-9764

6. **Representative** (Architect, Engineer, Landscape Architect, Surveyor or Attorney):

Other Representative:
Christopher Wood, P.E.
Carmina Wood Morris DPC
487 Main Street, Suite 600
Buffalo, New York 14202
Tel: 842-3165 [Ext. 103]
E-mail: cwood@cwm-ae.com

Name: Sean W. Hopkins, Esq.

Address: 5500 Main Street, Suite 343
Williamsville, New York 14221
Tel: 716.510-4338 - E-mail: shopkins@hsmlegal.com
City State Zip Code

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7. **Petitioner's interest in property** [Note: Authorization Letter of the Property Owner attached as Exhibit "1" of this Rezoning Application.]

_____Option to purchase

_____Owner

__X____Other (explain) The Project Site and Petitioner are related entities.

8. **The following are all others having an interest in this application and join herein with the petitioner named above:** (describe extent of interest; attach sheets as needed)

Not Applicable.

9. **Attach Survey and Legal description of land to be rezoned. The Survey must be prepared by a New York State Licensed Land Surveyor.** Legal description of property to be rezoned from RD to CTR-5 and CTR-8 is attached as Exhibit " and a reduced size copy of the Survey of the Project Site is attached as Exhibit "4". Full size copy the Survey is also attached.

10. **Said property has the following deed restrictions or Covenants:** (attach copy) Not Applicable.

Liber _____ Page _____

11. **Information on proposed project:**

A. Description of the character of the proposed development:

See Exhibit 5.

B. Rationale for rezoning request:

1. Why was this site chosen?

See Exhibit 5.

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2. Why cannot land be used with the existing zoning?

See Exhibit 5.

3. How will this rezoning impact surrounding properties?

See Exhibit 5.

4. How will this rezoning impact the school system?

See Exhibit 5.

12. Quantitative Data:

A. Total # of dwelling units: 500 units

B. Distribution of dwelling units by type: All dwelling units are apartments for lease

C. Gross Residential Density per acre: 67.29 units per acre.

D. Total amount of Open Space: 0

E. Proposed Non-Residential Floor Area: 20,000 sq. ft. first floor commercial space.

[Note: A reduced size copy of the Concept Site Plan [Drawing C-100] for the proposed mixed-use redevelopment project as prepared by Carmina Wood Morris is provided at Exhibit "7" and a full size copy is also attached.]

13. Development Schedule:

Start: To be Determined

Finish: To be Determined

Stages (# of): 1

14. If any portion of the proposed development is planned to be sold or leased, please describe:

The commercial space and residential units will be leased.

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15. Open Space ownership and maintenance provisions (if applicable):

Greenspace and landscaping will be privately owned and maintained.

16. Basis for Findings (Sec. 8-3-5 of the Town Zoning Code) (Attach sheets and supplemental materials as necessary.)

A. The proposed zoning and development plan must be generally consistent with the policies of the Comprehensive Plan and the Town Zoning Ordinance.

1. State in detail why the proposed zoning is consistent with the adopted Town of Amherst Bicentennial Comprehensive Plan. Cite specific sections, maps, and/or figures in the plan that support the proposed zoning at this location (The Comprehensive Plan document is available at the Planning Department, Town Clerk's Office, Amherst libraries, or at www.amherst.ny.us). Add sheets as needed.

See Exhibit 6.

2. Pursuant to NYS Town Law Section 272a(11), "all Town land use regulations must be in accordance with a comprehensive plan adopted pursuant to this Section." The Town Board adopted the Comprehensive Plan pursuant to NYS Town Law 272 on January 2, 2007. If the rezoning is approved, the Town Board may require the Plan to be amended, as applicable.

Cite all text, map, and / or figures that must be amended to support the proposed zoning at this location (attach pages as necessary) and provide detailed suggested amendments.

See Exhibit 6.

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3. State why the proposed zoning is consistent with intent and objectives (Sec. 1-2-2) of the Zoning Ordinance:

See Exhibit 6.

B. Adequate Services and Utilities are available or are proposed to be made available with the construction of the development:

1. Sanitary Sewer
   Yes.
2. Storm Sewer/Drainage
   Yes.
3. Water
   Yes.
4. Other Yes.

C. Compatibility with the present zoning and conforming uses of nearby property and with the character of the neighborhood:

See Exhibit 6.

D. Suitability of the subject property for uses permitted by the current versus the proposed district:

See Exhibit 6.

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

E. Whether the proposed change tends to improve the balance of uses, or meets a specific demand in the Town:

See Exhibit 6.

17. The petitioner encloses herewith the sum of $2,765.00 to pay the fee, and consents to the placement of a sign(s) at the described location identifying this request for a period of time to be determined by the Town Clerk.

18. The undersigned certifies that all information required to be disclosed pursuant to Section 809 of the General Municipal Law (see below) is as follows:

The undersigned swears or affirms that all statements made herein are true, that all drawings submitted correctly show the situation involved in this petition.

[Note: Authorization Letter of Property Owner signed attached as Exhibit "1".]

Counsel for Petitioner
Signature of Petitioner

Subscribed and sworn to before me this 21st day of March, 2022

Notary Public, Erie County, New York

MARIANNE BRAUTLACHT
Notary Public, State of New Yor
Qualified in Erie County
My Commission Expires 01/14/20

N.Y.S. General Municipal Law - Section 809 Disclosure in certain applications:

1. Every application, petition or request submitted for a variance, amendment, change of zoning, approval of a plat, exemption from a plat or official map, license or permit, pursuant to the provision of any ordinance, local law, rule or regulation constituting the zoning and planning regulations of a municipality shall state the name, residence and the nature and extent of the interest of any state office or any office or employee of such municipality or of a municipality of which such municipality is a part, in the person, partnership or association making such application, petition or request (hereinafter called the applicant) to the extent known to such applicant.

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2. For the purpose of this section an officer or employee shall be deemed to have an interest in the applicant when he, his spouse, or their brothers, sisters, parents, children, grandchildren, or the spouse of any of them

   (a) is the applicant, or
   (b) is an officer, director, partner or employee of the applicant, or
   (c) legally or beneficially owns or controls stock of a corporate applicant or is a member of a partnership or association applicant, or
   (d) is a party to an agreement with such an applicant, express or implied, whereby he may receive any payment or other benefit, whether or not for services rendered, dependent or contingent upon the favorable approval of such applicant, petition or request.

3. In the county of Nassau the provisions of subdivisions one and two of this section shall also apply to a party officer. "Party Officer" shall mean any person holding any position or office, whether by election, appointment or otherwise, in any party as defined by subdivision four or section two of the election law.

4. Ownership of less than five per cent of the stock of a corporation whose stock is listed on the New York or American Stock Exchanges shall not constitute an interest for the purposes of this section.

5. A person who knowingly and intentionally violates this section shall be guilty of a misdemeanor.

P/CurrPlan/Applications2007/Rezoning & Comp Plan Amend App.
10/08

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Exhibit 1 – Authorization Form Signed by Property Owner

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

AUTHORIZATION

North Forest Properties #1 LLC, as the record owner of 1400-1416 Sweet Home Road [SBL No. 54.12-1-42 and 54.12-1-43.1] in the Town of Amherst (collectively the "***Project Site***") hereby authorizes representatives including Carmina Wood Morris DPC and Hopkins Sorgi & McCarthy PLLC to seek the approvals and permits required from the Town of Amherst as well as involved and interested agencies for the development of the Project Site as a mixed-use project.

Date: March 15, 2022

NORTH FOREST PROPERTIES #1 LLC

By: _____

Print Name: Roy Jordan

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Exhibit 2 – Part 1 of the Full Environmental Assessment Form Prepared Pursuant to the State Environmental Quality Review Act ("SEQRA") with Attached Page 5[a]

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Part 1 of Full EAF - Rezoning of 1400-1404 and 1408-1416 Sweet Home Road from RD to CTR-5 & CTR-8
Applicant: North Forest Development LLC
Date: March 21, 2022

Full Environmental Assessment Form
Part 1 - Project and Setting

Prepared By: Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221
Tel: 716.510-4338
E-mail: shopkins@hsmlegal.com

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project: Proposed Mixed-Use Redevelopment Project		
Project Location (describe, and attach a general location map): 1400-1404 and 1408-1416 Sweet Home Road - Town of Amherst - Erie County [SBL No. 54.12-1-42 and 54.12-1-43.1]		
Brief Description of Proposed Action (include purpose or need): The proposed project consists of a proposed mixed-use redevelopment project consisting of an 8-story mixed-use building with 20,000 sq. ft. of 1st floor commercial space, 300 apartments and 120 parking spaces in basement], two 5-story building [60 parking spaces on 1st floor per building and upper story apartments] (total of 500 apartments with total of 566 parking spaces - 316 surface spaces) and related site improvements. The action includes an amendment of the zoning classification of 1400-1404 and 1408-1416 Sweet Home Road (collectively the "Project Site") from RD to CTR-5 and CTR-8. The proposed action has been defined broadly to include all required discretionary approvals required from the municipal boards of the Town of Amherst and involved agencies as well as the construction of the proposed mixed-use and multifamily buildings and all related site improvements including parking spaces, access onto Rensch Road, access aisles, landscaping, lighting, underground storm water management improvements, water and sanitary sewer lines as well as utility connections. The Project Site consists of an existing office park to be replaced by the proposed mixed-use project. Given that the proposed project ("action") will not result in any potentially significant adverse environmental impacts, the issuance of a negative declaration pursuant to SEQRA is appropriate. The action is a Type I action pursuant to SEQRA (6 NYCRR Part 617.4) since it involves more than 250 attached residential units.		
Name of Applicant/Sponsor: North Forest Development LLC c/o Sean Hopkins, Esq.	Telephone: 716.510-4338 E-Mail: shopkins@hsmlegal.com	
Address: 5500 Main Street, Suite 343		
City/PO: Williamsville	State: NY	Zip Code: 14221
Project Contact (if not same as sponsor; give name and title/role): Same as Above	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:
Property Owner (if not same as sponsor): North Forest Properties 1 LLC	Telephone: 716.626-9764 [Ext. 212] E-Mail: royj@nforest.com	
Address: 2829 Wehrle Drive, Suite 1		
City/PO: Williamsville	State: NY	Zip Code: 14221

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B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees ☑Yes ☐No	Town Board - Rezoning	March 21, 2022
b. City, Town or Village Planning Board or Commission ☑Yes ☐No	Planning Board - Site Plan Approval	To be Determined ("TBD")
c. City, Town or Village Zoning Board of Appeals ☑Yes ☐No	Zoning Board of Appeals - Possible Area Variances	TBD
d. Other local agencies ☑Yes ☐No	Building Dept. - Demolition & Building Permits; Highway Department - Curb Cut Permits	TBD
e. County agencies ☑Yes ☐No	ECWA - Water	TBD
f. Regional agencies ☐Yes ☑No		
g. State agencies ☑Yes ☐No	NYSDEC - SPDES and DSCA	TBD
h. Federal agencies ☐Yes ☑No		

i. Coastal Resources.
i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☑Yes ☐No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☑Yes ☐No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☑Yes ☐No

If Yes, identify the plan(s):
NYS Heritage Areas:West Erie Canal Corridor

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes ☑No

If Yes, identify the plan(s):

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C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
Research Development District ("RD")

b. Is the use permitted or allowed by a special or conditional use permit? ☐ Yes ☑ No

c. Is a zoning change requested as part of the proposed action? ☑ Yes ☐ No
If Yes,
i. What is the proposed new zoning for the site? CTR-8 for 1400-1404 Sweet Home Rd. and CTR-5 for 1408-1416 Sweet Home Rd.

C.4. Existing community services.

a. In what school district is the project site located? Sweet Home Central School District

b. What police or other public protection forces serve the project site?
Town of Amherst Police Department

c. Which fire protection and emergency medical services serve the project site?
Volunteer Fire Department for the fire district in which the Project Site is located

d. What parks serve the project site?
There are various parks that will be accessible to the future tenants of the mixed-use redevelopment project

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)? Mixed-use project consisting of approximately 20,000 sq. of 1st floor commercial space and apartments for lease [3 proposed building consistent with the Concept Site Plan [Drawing C-100].

b. a. Total acreage of the site of the proposed action? 7.43 acres
b. Total acreage to be physically disturbed? 7.43 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 7.43 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % _____ Units: _____

d. Is the proposed action a subdivision, or does it include a subdivision? ☐ Yes ☑ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
ii. Is a cluster/conservation layout proposed? ☐ Yes ☐ No
iii. Number of lots proposed? _____
iv. Minimum and maximum proposed lot sizes? Minimum _____ Maximum _____

e. Will the proposed action be constructed in multiple phases? ☐ Yes ☑ No
i. If No, anticipated period of construction: _____ months
ii. If Yes:
- Total number of phases anticipated _____
- Anticipated commencement date of phase 1 (including demolition) _____ month _____ year
- Anticipated completion date of final phase _____ month _____ year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases:

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f. Does the project include new residential uses? ☑ Yes ☐ No

If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase				500
At completion of all phases				

g. Does the proposed action include new non-residential construction (including expansions)? ☑ Yes ☐ No

If Yes,

i. Total number of structures 1 Mixed-Use Building

ii. Dimensions (in feet) of largest proposed structure: 105' height; 275' width; and 400' length

iii. Approximate extent of building space to be heated or cooled: 20,000 square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☑ Yes ☐ No

If Yes,

i. Purpose of the impoundment: Undeground stormwater detention.

ii. If a water impoundment, the principal source of the water: ☑ Ground water ☐ Surface water streams ☐ Other specify:

iii. If other than water, identify the type of impounded/contained liquids and their source.

iv. Approximate size of the proposed impoundment. Volume: _____ million gallons; surface area: N/A acres

v. Dimensions of the proposed dam or impounding structure: N/A height; N/A length

vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):
N/A

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐ Yes ☑ No

If Yes:

i .What is the purpose of the excavation or dredging?

ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?

- Volume (specify tons or cubic yards):
- Over what duration of time?

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.

iv. Will there be onsite dewatering or processing of excavated materials? ☐ Yes ☐ No

If yes, describe.

v. What is the total area to be dredged or excavated? _____ acres

vi. What is the maximum area to be worked at any one time? _____ acres

vii. What would be the maximum depth of excavation or dredging? _____ feet

viii. Will the excavation require blasting? ☐ Yes ☐ No

ix. Summarize site reclamation goals and plan:

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☐ Yes ☑ No

If Yes:

i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description):

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ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

iii. Will the proposed action cause or result in disturbance to bottom sediments? ☐Yes ☐No
If Yes, describe:

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☐No
If Yes:

- acres of aquatic vegetation proposed to be removed:
- expected acreage of aquatic vegetation remaining after project completion:
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access):
- proposed method of plant removal:
- if chemical/herbicide treatment will be used, specify product(s):

v. Describe any proposed reclamation/mitigation following disturbance:

c. Will the proposed action use, or create a new demand for water? ☑Yes ☐No
If Yes:

i. Total anticipated water usage/demand per day: 110,000 gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑Yes ☐No
If Yes:

- Name of district or service area: ECWA Consolidated Water District
- Does the existing public water supply have capacity to serve the proposal? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No
- Do existing lines serve the project site? ☑Yes ☐No

iii. Will line extension within an existing district be necessary to supply the project? ☐Yes ☑No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project:
- Source(s) of supply for the district:

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐Yes ☑No
If, Yes:

- Applicant/sponsor for new district:
- Date application submitted or anticipated:
- Proposed source(s) of supply for new district:

v. If a public water supply will not be used, describe plans to provide water supply for the project:

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑Yes ☐No
If Yes:

i. Total anticipated liquid waste generation per day: 110,000 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each):
Sanitary wastewater.

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑Yes ☐No
If Yes:

- Name of wastewater treatment plant to be used: Town of Amherst Wastewater Treatment Plant
- Name of district: Town of Amherst
- Does the existing wastewater treatment plant have capacity to serve the project? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No

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- Do existing sewer lines serve the project site? ☑Yes ☐No
- Will a line extension within an existing district be necessary to serve the project? ☐Yes ☑No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☑No

If Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

_____

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑Yes ☐No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or _____ acres (impervious surface)

_____ Square feet or _____ acres (parcel size)

ii. Describe types of new point sources. _____

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

- If to surface waters, identify receiving water bodies or wetlands: _____
- Will stormwater runoff flow to adjacent properties? ☐Yes ☑No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☐Yes ☑No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☑No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:

- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

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h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? [Note: Traffic Impact Study prepared by SRF Associates submittted with Rezoning Application and Supporting Documentation] ☐Yes ☑No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐Weekend
☐ Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): _____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☑Yes ☐No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: _____
To be determined for 1st floor commercial space and dependent on needs of commercial tenants.

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):
National Grid

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐Yes ☐No

l. Hours of operation. Answer all items which apply.

i. During Construction:
- Monday - Friday: 7:00 AM to 7:00 PM
- Saturday: 7:00 AM to 5:00 PM
- Sunday: As Needed
- Holidays: Not Applicable

ii. During Operations:
- Monday - Friday: To be Determined [Commercial]
- Saturday: TBD
- Sunday: TBD
- Holidays: TBD

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m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

There will be temporary and unavoidable short-term noise impacts resulting from the use of construction equipment during the construction of the proposed mixed-use redevelopment project.

ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☑ No

Describe: _____

n. Will the proposed action have outdoor lighting? ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

There will be outdoor lighting per the lighting standards contained in the Town of Amherst Zoning Code.

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☑ No

Describe: _____

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures: _____

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored _____

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally, describe the proposed storage facilities: _____

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☐ Yes ☑ No

If Yes:

i. Describe proposed treatment(s):

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☐ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☐ Yes ☐ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: _____ tons per _____ (unit of time)
- Operation : _____ tons per _____ (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: _____
- Operation: _____

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: _____
- Operation: _____

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s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☑ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)
☐ Forest ☐ Agriculture ☐ Aquatic ☑ Other (specify): UB North Campus and Center for Inquiry

ii. If mix of uses, generally describe:

There are a wide assortment of land uses on properties zoned GB, MFR-5, etc. in the vicinity of the Project Site.

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	6.5	6.74	.2
• Forested	0	0	0
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	0	0	0
• Agricultural (includes active orchards, field, greenhouse etc.)	0	0	0
• Surface water features (lakes, ponds, streams, rivers, etc.)	0	0	0
• Wetlands (freshwater or tidal)	0	0	0
• Non-vegetated (bare rock, earth or fill)	0	0	0
• Other Describe: Greenspace and Landscaping	1.2	1	(.2)

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c. Is the project site presently used by members of the community for public recreation? ☐ Yes ☑ No
i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☑ Yes ☐ No
If Yes,
i. Identify Facilities:
University of Buffalo North Campus and People Inc. Group Home

e. Does the project site contain an existing dam? ☐ Yes ☑ No
If Yes:
i. Dimensions of the dam and impoundment:
- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____
iii. Provide date and summarize results of last inspection:

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐ Yes ☑ No
If Yes:
i. Has the facility been formally closed? ☐ Yes ☐ No
- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:

iii. Describe any development constraints due to the prior solid waste activities: _____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐ Yes ☑ No
If Yes:
i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐ Yes ☑ No
If Yes:
i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐ Yes ☐ No
☐ Yes – Spills Incidents database — Provide DEC ID number(s): _____
☐ Yes – Environmental Site Remediation database — Provide DEC ID number(s): _____
☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures: _____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐ Yes ☑ No
If yes, provide DEC ID number(s): _____
iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):

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v. Is the project site subject to an institutional control limiting property uses? ☐ Yes ☑ No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐ Yes ☐ No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? >1 feet

b. Are there bedrock outcroppings on the project site? ☐ Yes ☑ No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____ %

c. Predominant soil type(s) present on project site: Churchville Silt Loam 100 %

d. What is the average depth to the water table on the project site? Average: >3 feet

e. Drainage status of project site soils:
☐ Well Drained: _____ % of site
☐ Moderately Well Drained: _____ % of site
☑ Poorly Drained 100 % of site

f. Approximate proportion of proposed action site with slopes:
☑ 0-10%: 100 % of site
☐ 10-15%: _____ % of site
☐ 15% or greater: _____ % of site

g. Are there any unique geologic features on the project site? ☐ Yes ☑ No
If Yes, describe: _____

h. Surface water features.
i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☐ Yes ☑ No
ii. Do any wetlands or other waterbodies adjoin the project site? ☑ Yes ☐ No
If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.
iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑ Yes ☐ No
iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name _____ Approximate Size _____
- Wetland No. (if regulated by DEC) _____

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐ Yes ☑ No
If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐ Yes ☑ No

j. Is the project site in the 100-year Floodplain? ☐ Yes ☑ No

k. Is the project site in the 500-year Floodplain? ☐ Yes ☑ No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐ Yes ☑ No
If Yes:
i. Name of aquifer: _____

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m. Identify the predominant wildlife species that occupy or use the project site:
Typical suburban species

n. Does the project site contain a designated significant natural community? ☐Yes ☑No
If Yes:
i. Describe the habitat/community (composition, function, and basis for designation):
ii. Source(s) of description or evaluation:
iii. Extent of community/habitat:
- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐Yes ☑No
If Yes:
i. Species and listing (endangered or threatened):

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☐Yes ☑No
If Yes:
i. Species and listing:

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐Yes ☑No
If yes, give a brief description of how the proposed action may affect that use:

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐Yes ☑No
If Yes, provide county plus district name/number:

b. Are agricultural lands consisting of highly productive soils present? ☐Yes ☑No
i. If Yes: acreage(s) on project site?
ii. Source(s) of soil rating(s):

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐Yes ☑No
If Yes:
i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature
ii. Provide brief description of landmark, including values behind designation and approximate size/extent:

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐Yes ☑No
If Yes:
i. CEA name:
ii. Basis for designation:
iii. Designating agency and date:

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e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? ☐ Yes ☑ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: _____

iii. Brief description of attributes on which listing is based:

_____

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☑ Yes ☐ No

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s): _____

ii. Basis for identification: _____

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☐ Yes ☑ No

If Yes:

i. Identify resource: _____

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.): _____

iii. Distance between project and resource: _____ miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation: _____

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name North Forest Development LLC Date March 21, 2022

Signature _____ Title Project Counsel

Sean Hopkins, Esq.

PRINT FORM

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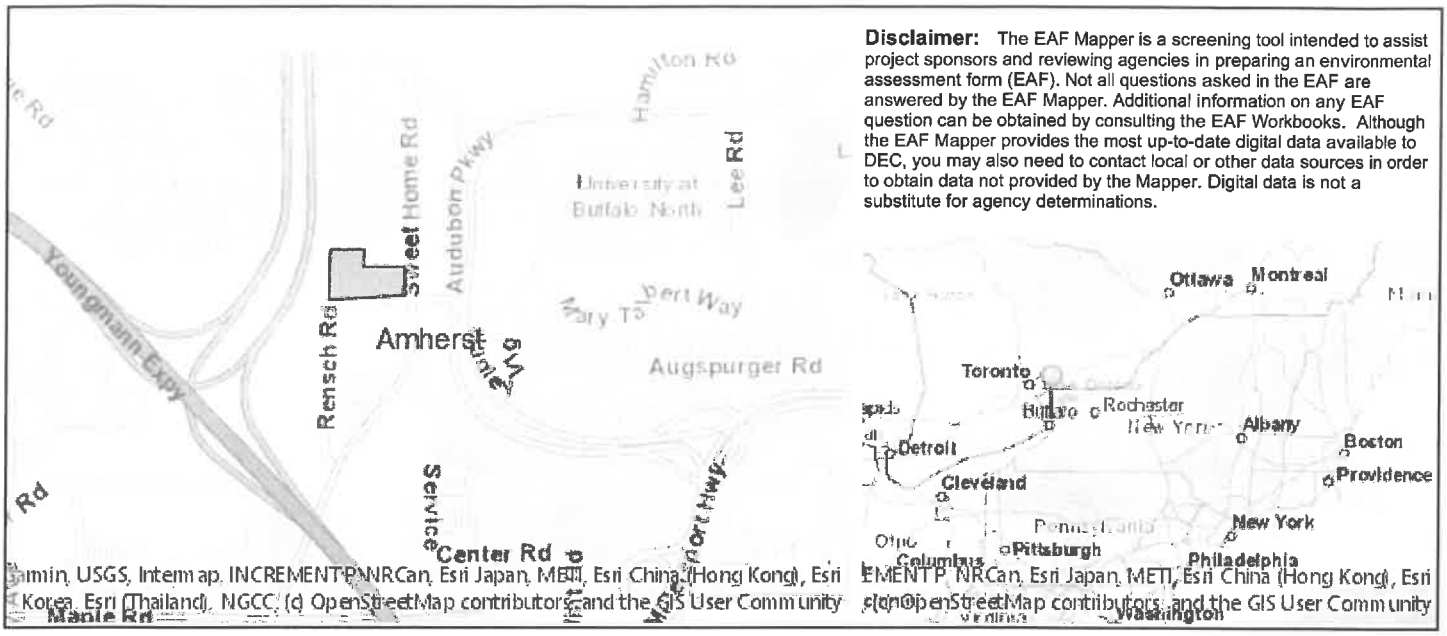
EAF Mapper Summary Report

Sunday, March 13, 2022 1:43 AM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.

B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Yes - Digital mapping data are not available for all Special Planning Districts. Refer to EAF Workbook.
C.2.b. [Special Planning District - Name]	NYS Heritage Areas:West Erie Canal Corridor
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	No
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	No
E.2.k. [500 Year Floodplain]	No
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	No
E.2.o. [Endangered or Threatened Species]	No

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E.2.p. [Rare Plants or Animals]	No
E.3.a. [Agricultural District]	No
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.3.f. [Archeological Sites]	Yes
E.3.i. [Designated River Corridor]	No

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Rezoning of 1400-14034 and 1408-1416 Sweet Home Road from from RD to CTR-5 and CTR-8

TOWN OF AMHERST ATTACHMENT
State Environmental Quality Review
ENVIRONMENTAL ASSESSMENT FORM

1. For each applicable category of proposed new structures, including additions to existing structures, provide the following information for all soil types on the project site (*according to Soil Survey of Erie County, NY; Table 11, Building Site Development, pp 294-305):*

Soil Name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Churchville Silt Loam	Severe	Severe	Severe	Severe	Moderate

2. If the Soil survey indicates either "severe" or "moderate" suitability for the proposed types of construction, a geotechnical and hydrological analysis based on one test per 3.5 acres of project area must be provided (per Town Board resolution, 3/17/03, amended 6/16/03).

   _x_ Geotechnical report attached _____ Not applicable

   [Note: Three copies of the Geotechnical Report prepared by Glynn Geotechnical Engineering dated February 11, 2004 have been submitted to the Planning Department].

3. Is your property located: On Youngs Road between Dodge and Klein Roads? ☐ Yes x No
   On Wehrle Dr. between Spindrift Dr. and Oakwood Rd? ☐ Yes x No

   If so, the property may be within an area of the Town that is affected by a moratorium on connections to the sanitary sewer system.

4. Are there alternative locations on the site for this project? ☐ Yes x No

5. Location and size of real property owned by petitioner within one (1) mile of subject proposal:

   Not Applicable.

6. Are you aware of current or future plans or intentions by others in the Town of Amherst to develop property within 1000± ft. of the present project request: ☐ Yes ☒ No
   Describe: Not Applicable.

   (Potential environmental impacts from adjacent or nearby projects undergoing the approval process will receive a coordinated environmental review to determine cumulative effects on common receivers (e.g. traffic and drainage corridors) and other relevant environmental concerns.)

7. Maximum number of vehicular trips to be generated per peak hour upon completion of project 269
   Source: Traffic Impact Study prepared by SRF Associates dated March 21, 2022.

8. Will blasting occur during construction? ☐ Yes ☒ No

9. Does the project propose to connect and be tributary to the public sanitary sewer system? ☒ Yes ☐ No

10. Proposed net additional gallons per day (gpd) of sanitary sewer discharge upon completion of project:
    110,000 gpd average flow 440,000 gpd peak flow.

    (Average flows of 2,500 gpd or greater will require an Engineer's Report that includes a detailed downstream sewer capacity analysis and the identification of and commitment to required I/I offset work during peak wastewater flow conditions.)

11. Based on the Town's *2011 Reconnaissance Level Survey of Historic Resources,* is your property 'blue-rated' for historic significance? ☐ Yes ☒ No

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Exhibit 3 – Legal Description of Property to be Rezoned from RD to CTR-5 and CTR-8

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EXHIBIT 3 OF REZONING APPLICATION

LEGAL DESCRIPTION OF PROPERTY TO BE REZONED FROM RESEARCH DEVELOPMENT DISTRICT ("RD") TO CTR CENTER EIGHT ("CTR-8") AND CTR CENTER FIVE ("CTR-5")

1400-1404 SWEET HOME ROAD [RD TO CTR-8]:

All that certain Piece or Parcel of Land, situate, lying and being in the Town of Amherst, County of Erie and State of New York, being Part of Lot 79, Township 12, Range 7 of the Holland Land Company's Survey, and being more particularly bounded and described as follows:

Commencing at a point in the east line of said Lot No. 79, 174.00 feet south of the northeast corner of said Lot No. 79, said point also being the southeast corner of Liber 2713 of Deeds at page 120, said east line also being the center line of Sweet Home Road (width varies, originally 66 feet wide); thence westerly along a line parallel to the north line of said Lot No. 79 and bearing S 89° 38' 35" W, 80.00 feet to a point in the west line of lands acquired by the New York State Department of Transportation for Sweet Home Road S.H. No. 9409, Map No. 72, Parcel No. 75 the point or place of beginning; thence southerly along the west line of said Parcel No. 75 and bearing of S 00° 00' 20" W, 297.93 feet to a point; thence southwesterly along the west line of said parcel No. 75 and bearing S 47° 59' 05" W, 33.65 feet to a point in the north line of Rensch Road (49.5 feet wide); thence westerly along the north line of said Rensch Road and bearing S 88° 14' 38" W, 401.68 feet to the west line of deed recorded in the Erie County Clerk's Office on March 3, 2017 in Liber 11310 of Deeds at page 1116; thence northerly along a line parallel to the east line of said Lot No. 79 and bearing N 00° 00' 20" E, 330.11 feet to a point; thence easterly along a line parallel to the north line of said Lot No. 79 and bearing N 89° 38' 35" E, 426.50 feet more or less to the point or place of beginning and containing 3.175 Acres, more or less.

Excepting therefrom, that portion of premises acquired by the People of the State of New York by Notice of Appropriation dated May 20, 2005, recorded September 26, 2005 in Liber 11101 of Deeds, page 8475.

1408, 1412 and 1416 SWEET HOME ROAD [RD TO CTR-5]:

All that certain Piece or Parcel of Land, situate, lying and being in the Town of Amherst, County of Erie and State of New York, being Part of Lot 79, Township 12, Range 7 of the Holland Land Company's Survey, and being more particularly bounded and described as follows:

Commencing at a point in the east line of said Lot 79, 174.00 feet south of the northeast corner of said Lot 79, said point also being the southeast corner of Liber 2713 of deeds at page 120, said east line also being the centerline of Sweet Home Road (width varies, originally 66 feet wide); Thence westerly along a line parallel to the north line of said Lot 79 and bearing S 89° 38' 35" W, 80.00 feet to a point in the west line of lands acquired by the New York State Department of Transportation for Sweet Home Road S.H. No. 9409, Map No. 72, Parcel No. 75; Thence southerly along the west line of said Parcel No. 75 and bearing S 00° 00' 20" W, 297.93 feet to a point; Thence southwesterly along the west line of said Parcel No. 75 and bearing S 47° 59' 05" W, 33.65

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

feet to a point in the north line of Rensch Road (49.50 feet wide); Thence westerly along the north line of said Rensch Road and bearing S 88° 14' 38" W, 401.68 feet to the principal point of beginning; Thence continuing westerly along the north line of said Rensch Road and bearing S 88° 14' 38" W, 370.64 feet to a point; Thence northerly along a line bearing N 00° 55' 05" E, 510.78 feet to a point in the north line of said Lot 79; Thence easterly along the north line of said Lot 79 and bearing N 89° 38' 35" E, 362.34 feet to a point; Thence southerly along a line parallel to the east line of said Lot 79 and bearing S 00° 00' 20" W, 501.61 feet to the point or place of beginning and containing 4.257 Acres, more or less.

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Exhibit 4 – Reduced Size Copy of Survey of Project Site

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

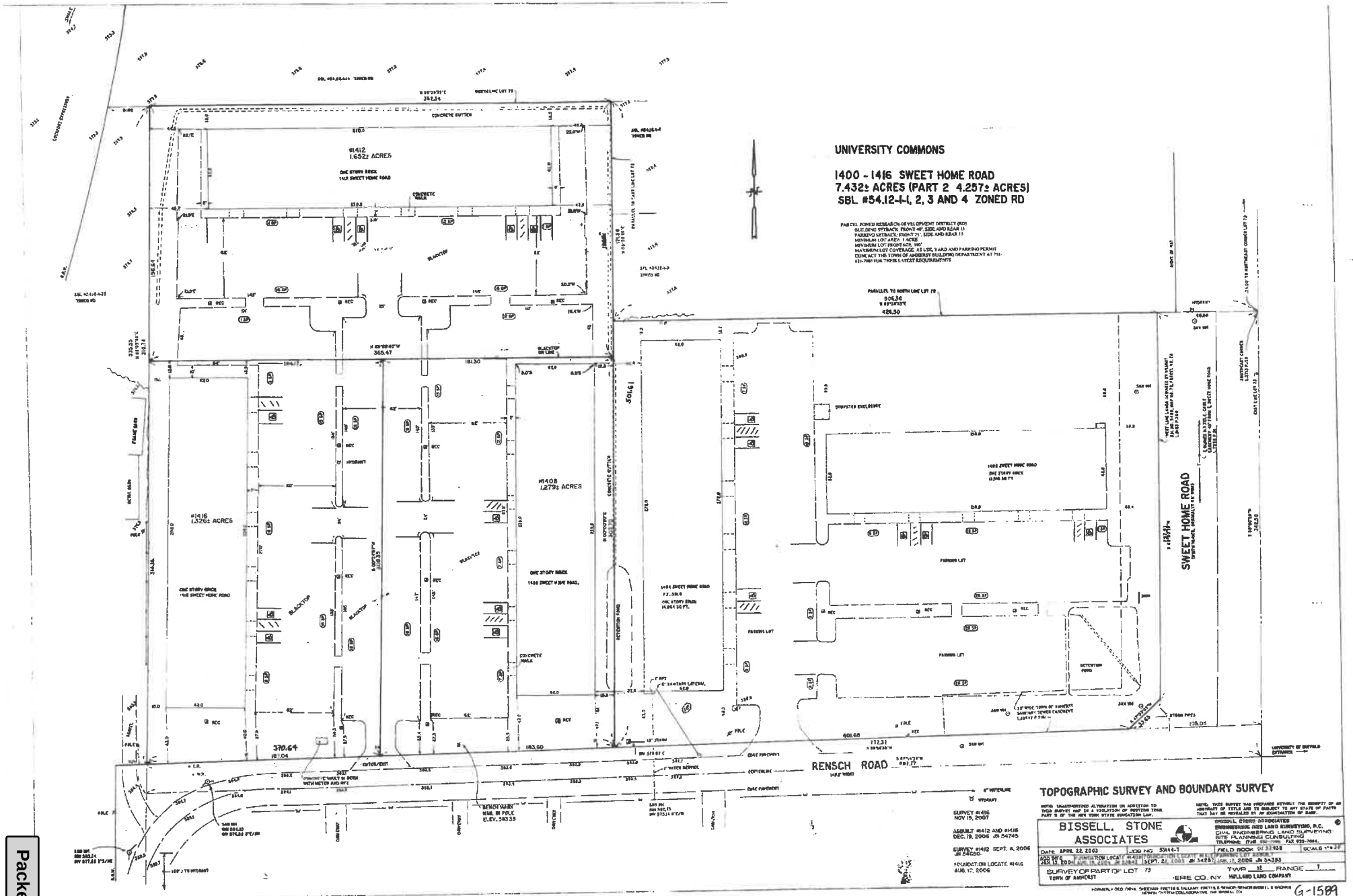
UNIVERSITY COMMONS
1400 - 1416 SWEET HOME ROAD
7.432± ACRES (PART 2 4.257± ACRES)
SBL #54.12-1-1, 2, 3 AND 4 ZONED RD
#1412
1.652± ACRES
#1416
1.326± ACRES
#1408
1.279± ACRES
SWEET HOME ROAD
RENSCH ROAD
TOPOGRAPHIC SURVEY AND BOUNDARY SURVEY
BISSELL, STONE ASSOCIATES
SURVEY OF PART OF LOT 75
TOWN OF AMHERST
ERIE CO., NY
HOLLAND LAND COMPANY
G-1589

Exhibit 5 – Responses to Questions 11A & 11B of the Rezoning Application

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

EXHIBIT 5

RESPONSES TO QUESTION 11 OF REZONING APPLICATION REZONING OF 1400-1404 AND 1408-1416 SWEET HOME ROAD FROM RD TO CTR-5 AND CTR-8

Question 11(A): **Description of the character of the proposed development:**

Response to Question 11(A): The proposed mixed-use project will be upscale in character and will feature an eight-story mixed use building along the Sweet Home Road frontage of the Project Site and two five-story buildings on the remainder of the Project Site. The existing office buildings located on the Project Site would be demolished in connection with the mixed-use redevelopment project. The proposed mixed-use redevelopment project requires the zoning classification of the Project Site to be amended from Research Development District ("RD") to CTR-8 Center 8 District ("CTR-8") and CTR-5 Center 5 District ("CTR-5").

The conceptual layout of the proposed mixed-use project is depicted on the full size Concept Site Plan [Drawing C-100] prepared by Carmina Wood Morris P.C. attached to this Rezoning Application. A reduced size copy of the Concept Site Plan is also provided at **Exhibit "7"**. It is important to mention that the layout of the proposed project as depicted on the Concept Site Plan provided is not meant to represent the final layout of the proposed mixed-use redevelopment project since modifications may be necessary based on the project review process and the preparation of fully engineered plans.

The proposed mixed-use redevelopment project will be consistent with the character of nearby parcels that have been rezoned by the Town during the past decade including the nearby student housing communities and mixed-use projects on properties on the west side of Sweet Home Road consisting of commercial space, apartments and hotels. Landscaping will be provided pursuant to a Landscaping Plan to be prepared by a licensed landscape architect during the site

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plan review stage of the project and the landscaping will feature numerous trees, bushes and shrubs.

Question 11(B)(1): Rationale for rezoning request: 1. What was this site chosen?

Response to Question 11(B)(1): The Project Site is an appropriate location for the proposed project given the character and scale of nearby land uses and the close proximity to the University of Buffalo North Campus. A primary reason the Project Site was selected for the proposed mixed-use project is that it is designated as "Suburban Corridor" per Figure 6-A of the Comprehensive Plan.

Question 11(B)(2): Why cannot land be used with the existing zoning?

Response to Question 11(B)(2): The Project Site is currently zoned Research and Development ("RD") and can continue to be utilized as an office park. The Applicant is requesting that the Project Site be rezoned to CTR-8 and CTR-5 to accommodate the proposed mixed-use project. Nearly all of the nearby parcels on both sides of Sweet Home Road and Rensch Road in close proximity to the Project Site were rezoned to RD by the Town of Amherst in 1976, at the time the Town adopted a new zoning code.

The planning objective at that time was to provide RD zoned land that would accommodate uses that would benefit from close proximity to the UB North Campus. The development of the Project Site and parcels in the surrounding vicinity for research and development purposes did not occur and as a result the zoning classification of most of the properties in the vicinity have been amended in the past approximately fifteen years to accommodate existing land uses such as a hotel being constructed on GB zoned property at 1265 Sweet Home Road, the mixed-use projects on Rensch Road and the Villas on Rensch student housing community, located on approximately

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twenty acres of property that was rezoned from RD to Multi Family Residential District Six ("MFR-6") by the Town Board in August of 2007.

The redevelopment of the Project Site for the higher intensity uses expressly permitted by the existing RD zoning classification would not be compatible with the existing character of the neighborhood. The existing RD zoning classification expressly allows large buildings to accommodate uses that involve high intensity commercial and industrial operations and that often involve 24/7 business hours as well high volume use of large tractor trailers. The expressly permitted uses of property zoned Research and Development ("RD") is set forth in Section 4-9-2A of the Zoning Code and includes intensive commercial facilities for the compounding, manufacturing and assembly of products such as automotive accessories, clothing and textiles, electronic equipment and appliances, furniture, medical and scientific equipment and supplies, pharmaceutical products as well as experimental research and testing facilities, warehouses and storage facilities and wholesale distribution facilities. A copy of Section 4-9 of the Zoning Code has been attached as **Exhibit "8"** of this Rezoning Application.

Question 11(B)(3): How will this rezoning impact surrounding properties?

Response to Question 11(B)(3): The proposed rezoning of the Project Site from Research and Development ("RD") to CTR-8 and CTR-5 will not result in any significant adverse impacts on surrounding properties. The proposed mixed-use project will be much more compatible with the existing land uses in the vicinity of the Project Site than the higher intensity uses expressly permitted by the existing long-standing RD zoning classification.

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Question 11(B)(4): How will this rezoning impact the school system?

Response to Question 11(B)(4): The proposed mixed use project will have a positive impact on the Sweet Home Central School District since the property taxes that will be generated on an annual basis will be significantly higher than the current property taxes. The proposed project will not result in any significant increased demand for educational services since the residential units are not likely to attract a substantial number of families with school age children.

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Exhibit 6 – Responses to Questions 16A, 16B, 16D & 16E of the Rezoning Application

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

EXHIBIT 6

RESPONSES TO QUESTION 16 OF REZONING APPLICATION REZONING OF 1400-1404 AND 1408-1416 SWEET HOME ROAD FROM RD TO CTR-5 AND CTR-8

Question 16(A)(1): **State in detail why the proposed zoning is consistent with the adopted Town of Amherst Bicentennial Comprehensive Plan. Cite specific sections, maps and/or figures in the plan that support the proposed zoning at this location.**

Response to Question 16(A)(1): The request to amend the zoning classification of 1400-1404 Sweet Home Road RD to CTR-8 and 1408-1416 Sweet Home Road from RD to CTR-5 (collectively the "***Project Site***") to accommodate the proposed mixed-use redevelopment project is consistent with the adopted Bicentennial Comprehensive Plan. The Town of Amherst adopted the Bicentennial Comprehensive Plan in January of 2007 after completing a lengthy planning process that included numerous public meetings and public hearings involving the Comprehensive Plan Advisory Committee, the Planning Board and the Town Board.[1] In December of 2020, the Town Board most recently adopted amendments to the Bicentennial Comprehensive Plan. The Comprehensive Plan is intended to guide future growth and redevelopment in the Town.

Figure 6 of the Bicentennial Comprehensive Plan is the Conceptual Land Use Plan and it depicts the Project Site as being as being appropriate for "Commercial/Mixed Use" uses. A copy of Figure 6 of the Comprehensive Plan is provided at **Exhibit "9"**. The Conceptual Land Use Plan is intended to communicate the overall direction and concept of future development in the Town

[1] A copy of the resolution adopted by the Town Board on January 2, 2007 for the purpose of adopting the Bicentennial Comprehensive Plan pursuant to Town Law Section 272-a is included at the beginning of the Comprehensive Plan. This resolution recites the lengthy planning history that incorporated numerous opportunities for public input as well as a coordinated environmental review pursuant to SEQRA that involved the preparation a Generic EIS and the issuance of a Findings Statement.

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of Amherst. Figure 6-A of the adopted Bicentennial Comprehensive Plan is the titled Commercial and Mixed-Use Designations and it depicts the Project Site as being designated as "Suburban Center". The Project Site is located within the University Place geographic location per Figure 6-A of the Comprehensive Plan. A copy of Figure 6 of the Comprehensive Plan is provided at **Exhibit "10"**.

Question 16(A)(2): **Cite all text, map, and/or figures that must be amended to support the proposed zoning at this location and provide detailed suggested amendments.**

Response to Question 16(A)(2): The proposed rezoning of the Project Site from RD to CTR-5 and CTR-8 to accommodate the proposed mixed-use redevelopment project does not require an amendment to the Bicentennial Comprehensive Plan.

Question 16(A)(3): **State why the proposed zoning is consistent with intent and objectives (Sec. 1-2-2) of the Zoning Ordinance:**

Response to Question 16(A)(3): Section 1-2-1 of the Zoning Code is titled "Purpose" and it states as follows:

> *"The purpose of this Zoning Ordinance and the intent of the legislative authority in its adoption is to promote the environment of the town and its public health, safety, convenience, comfort, prosperity and the general welfare by regulating the use of buildings, other structures and land for residences, open space, public facilities, business, services, industry or other purposes; by regulating and restricting the bulk, height, design, building coverage and location of structures; by regulating and limiting population density; and for the aforesaid purposes, to divide the land within the limits of the town into districts of such number and dimensions generally consistent with the policies of the Comprehensive Plan and to provide procedures for the administration and amendment of said Zoning Ordinance."*

The proposed rezoning of the Project Site RD to CTR-8 and CTR-5 to accommodate the proposed mixed-use redevelopment project is consistent with the "Purpose" of the Zoning Code.

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Section 1-2-2 of the Zoning Code sets forth the objectives of the Zoning Code. This section of the Zoning Code lists thirteen objectives that are discussed below as follows:

A. To protect the character and values of residential, institutional and public uses, business, commercial and manufacturing uses and to insure their orderly and beneficial development;

Response: The proposed rezoning of the Project Site from RD to CT5-5 and CTR-8 to accommodate the mixed-use redevelopment project will be consistent with the objective of protecting the character and value of existing land uses. The proposed rezoning will allow the Project Site to be utilized as a mixed-use project, which represents orderly and beneficial development.

B. To provide adequate open spaces for light, air and outdoor uses to include public, common and private open space areas;

Response: The proposed rezoning of the Project Site and the proposed mixed-use project will not be inconsistent with this objective.

C. To prevent overcrowding of land;

Response: The proposed mixed-use project will not result in the overcrowding of land. The project is consistent with the type of development designated as appropriate for the Project Site per Figure 6 and Figure 6-A of the adopted Comprehensive Plan.

D. To prevent excessive concentration of population and to prevent spare and uncoordinated development;

Response: The proposed rezoning of the Project Site will not result in excessive concentration of population and the mixed-use redevelopment project represents an example of coordinated development. The mixed-use redevelopment project will require Site Plan Approval from the Planning Board.

E. To regulate and control the location and spacing of buildings on the lot and in relation to the surrounding property generally consistent with the policies of the Comprehensive Plan.

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Response: The responses to the Questions in this **Exhibit "6"** of the Rezoning Application set forth the reasons the proposed rezoning is consistent with the policies of the Comprehensive Plan.

F. To protect persons and property from damage and injury due to fire or flood;

Response: The Site Plan Application review process will trigger the need for an Engineer's Report and SWPPP prepared by a licensed engineer to be prepared for review and approval by the Town's Engineering Department. The mixed-use redevelopment project to be located on the existing office park property will not increase the likelihood of damage and injury due to fire and flood. The proposed mixed-use redevelopment project will be constructed per the stringent requirements of the NYS Building Code including the fire safety standards contained therein.

G. To preserve and protect significant natural features and vegetation, thereby preventing ecological damage and visual blight which occur when those features or vegetation are eliminated or substantially altered to serve development purposes only.

Response: The proposed rezoning and the proposed mixed-use redevelopment project will not be inconsistent with this objective. There are not significant natural features located on the previously developed Project Site.

H. To assure that structure and land use arrangements are aesthetically harmonious with nearby areas and structures.

Response: The development of the Project Site in a manner consistent with the attached Concept Site Plan [Drawing C-100] will be aesthetically harmonious with nearby areas and structures. Conceptual color building renderings prepared by Brian Slevar, R.A. of Carmina Wood Morris DPC are attached as **Exhibit "11"**.

I. To regulate the location of buildings and intensity of uses in relation to streets according to plans so as to cause the least interference with and be damaged least by traffic movements and hence result in lessened street congestion and improved public safety.

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Response: The proposed mixed-use project will have two (2) driveway connections onto Rensch Road as depicted on the Concept Site Plan [Drawing C-100].

J. To establish zoning patterns that insure economical extensions for sewers, water supply waste disposal and other public utilities, as well as development of recreation, schools and other public facilities;

Response: The Project Site has access to sanitary sewer and water lines as well as necessary public utilities to service the proposed mixed-use redevelopment project.

K. To guide the future development of the town so as to being the gradual conformity of land, structures and uses generally consistent with the policies of the Comprehensive Plan.

Response: The proposed rezoning of the Project Site from RD to CTR-5 and CTR-8 is consistent with this objective since the infill mixed-use redevelopment project is consistent with the policies contained in the Comprehensive Plan.

L. To accomplish the specific intents and goals set forth in the introduction to the respective sections.

Response: The proposed rezoning of the Project Site will be consistent with this objective.

M. To protect the community from visual pollution resulting from the unregulated use of signs and other advertising devices.

Response: The proposed rezoning and the proposed mixed-use redevelopment project will not be inconsistent with this objective.

Question 16(C): Compatibility with the present zoning and conforming uses of nearby property and with the character of the neighborhood:

Response to Question 16(C): The proposed rezoning of the Project Site from RD to CTR-5 and CTR-8 is compatible with the present zoning and conforming uses of nearby properties and the character of the neighborhood. The Project Site is currently zoned RD which would allow the Project Site

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to be redeveloped for intensive uses permitted per Section 4-9 of the Zoning Code. A copy of Section 4-9 of the Zoning Code is provided at **Exhibit "8"**.

Question 16(D): **Suitability of the subject property for uses permitted by the current versus the proposed district:**

Response to Question 16(D): The Project Site is much more suitable for uses permitted by the proposed CTR-5 and CTR-8 zoning classifications than the existing RD zoning classification.

Question 16(E): **Whether the proposed change tends to improve the balance of uses, or meets a specific demand in the Town:**

Response to Question 16(D): The proposed change in the zoning classification of the Project Site from RD to CTR-5 and CTR-8 to accommodate the proposed mixed-use redevelopment project will have positive impacts on the balance of uses in the Town by providing 1st floor commercial space and apartments for lease at an infill location in a portion of the Town in close proximity to the UB North Campus that has been designated as appropriate for mixed-use infill redevelopment as depicted on the Concept Site Plan [Drawing C-100].

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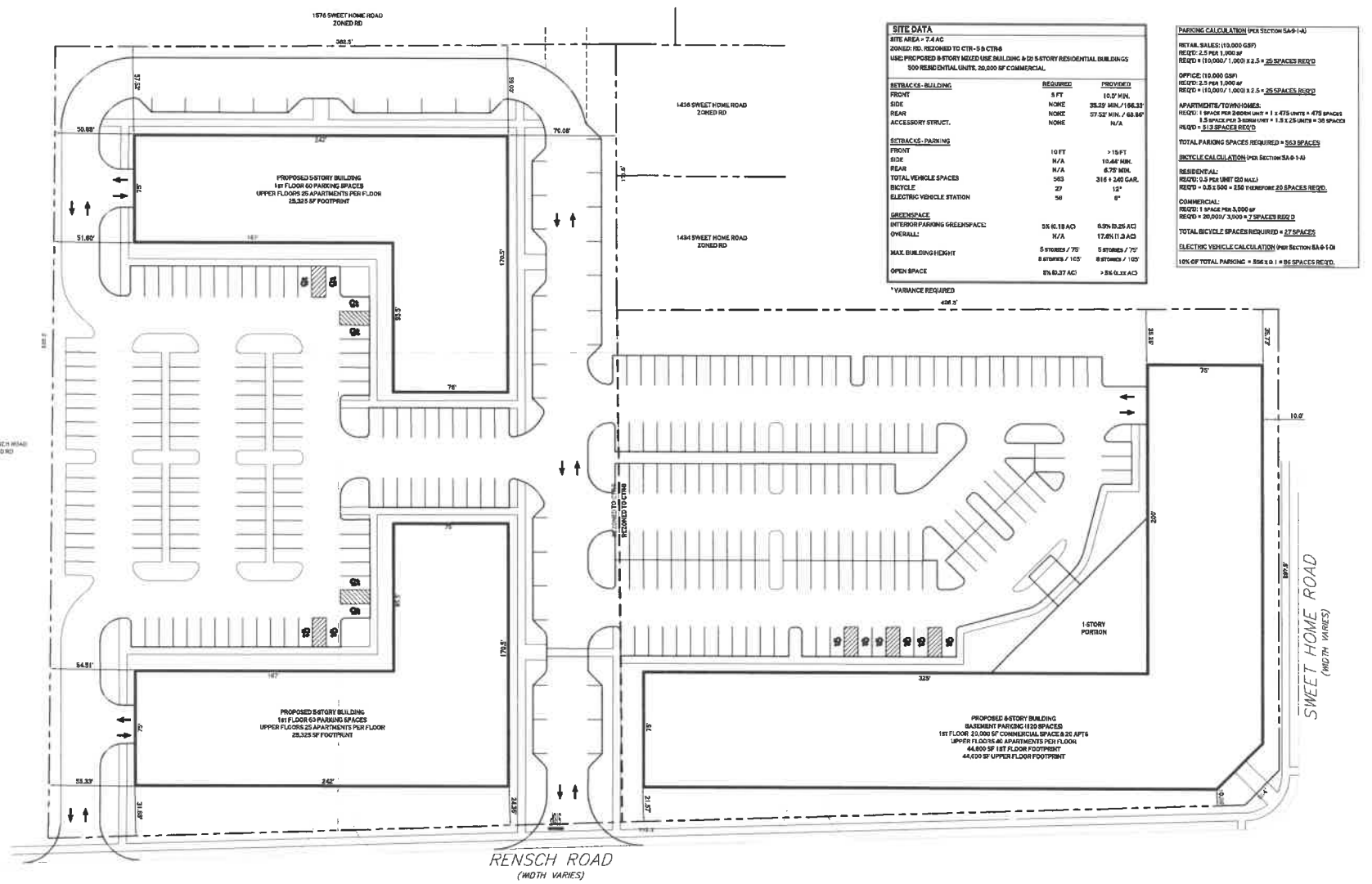
Exhibit 7 – Reduced Size Copy of the Concept Site Plan [Drawing C-100] as Prepared by Carmina Wood Morris DPC
[Note: Full Size Copy of the Concept Site Plan is also attached]

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)



N **SITE PLAN**
SCALE: 1"=30'

SITE DATA

SITE AREA = 7.4 AC
ZONED: RD, REZONED TO CTR-5 & CTR-6
USE: PROPOSED 6-STORY MIXED USE BUILDING & (2) 5-STORY RESIDENTIAL BUILDINGS
500 RESIDENTIAL UNITS, 20,000 SF COMMERCIAL

SETBACKS - BUILDING	REQUIRED	PROVIDED
FRONT	5 FT	10.5' MIN.
SIDE	NONE	35.29' MIN./166.33'
REAR	NONE	57.53' MIN. / 68.86'
ACCESSORY STRUCT.	NONE	N/A
SETBACKS - PARKING		
FRONT	10 FT	> 15 FT
SIDE	N/A	10.46' MIN.
REAR	N/A	6.75' MIN.
TOTAL VEHICLE SPACES	563	316 + 240 GAR.
BICYCLE	27	12*
ELECTRIC VEHICLE STATION	56	8*
GREENSPACE		
INTERIOR PARKING GREENSPACE:	5% (0.18 AC)	6.9% (0.25 AC)
OVERALL:	N/A	17.6% (1.3 AC)
MAX. BUILDING HEIGHT	5 STORIES / 75' 6 STORIES / 105'	5 STORIES / 75' 6 STORIES / 105'
OPEN SPACE	5% (0.37 AC)	> 5% (1.xx AC)

* VARIANCE REQUIRED

PARKING CALCULATION (PER SECTION 5A-9-1-A)

RETAIL SALES: (10,000 GSF)
REQ'D: 2.5 PER 1,000 sf
REQ'D = (10,000 / 1,000) X 2.5 = 25 SPACES REQ'D

OFFICE: (10,000 GSF)
REQ'D: 2.5 PER 1,000 sf
REQ'D = (10,000 / 1,000) X 2.5 = 25 SPACES REQ'D

APARTMENTS/TOWNHOMES:
REQ'D: 1 SPACE PER 2-BDRM UNIT = 1 x 475 UNITS = 475 SPACES
1.5 SPACE PER 3-BDRM UNIT = 1.5 x 25 UNITS = 38 SPACES
REQ'D = 513 SPACES REQ'D

TOTAL PARKING SPACES REQUIRED = 563 SPACES

BICYCLE CALCULATION (PER SECTION 5A-9-1-A)

RESIDENTIAL:
REQ'D: 0.5 PER UNIT (50 MAX.)
REQ'D = 0.5 x 500 = 250 THEREFORE 20 SPACES REQ'D.

COMMERCIAL:
REQ'D: 1 SPACE PER 3,000 sf
REQ'D = 20,000 / 3,000 = 7 SPACES REQ'D

TOTAL BICYCLE SPACES REQUIRED = 27 SPACES

ELECTRIC VEHICLE CALCULATION (PER SECTION 5A-9-1-D)

10% OF TOTAL PARKING = 556 x 0.1 = 56 SPACES REQ'D.

SITE LEGEND

- PROPERTY LINE
- PROPOSED CONCRETE CURB
- PROPOSED CONCRETE SIDEWALK
- PROPOSED SIGN
- PROPOSED PARKING NUMBER (27)
- PROPOSED LIGHT POLE & FIXTURE

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

30' 30 0 30 60FT.

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Carmina Wood Morris DPC
467 Main Street - Suite 600
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:
No. Description Date

PROJECT NAME:
New Construction
Prop. Mixed Use Development
1400 - 1416 Sweet Home Road
Amherst, New York

Date: 3/15/22
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Concept Site Plan

DRAWING NO.
C-100
Project no.: 21.008

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Exhibit 8: Copy of Section 4-9 of the Town of Amherst Zoning Code [Titled "Research & Development District (RD)

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§ 4-9. Research and Development District (RD)

4-9-1. **Purpose.** To provide areas within the Town for the location of research and development, related production activities, light manufacturing, offices, and related training schools on sufficient land to permit efficient development. Such districts shall be designed and located in such a way that they shall neither encroach upon surrounding uses nor shall surrounding uses interfere with the efficient development of these activities. The RD district is designed to encourage the development of a balanced employment mix within the Town and improve the Town's tax base while providing sufficient educational opportunities to contribute to the training of the workforce and thereby meet the employment needs of businesses locating in the Town.

4-9-2. **Principal and Special Uses.**

A. **Permitted Uses and Structures.**

RD	Permitted	Special Use	Standards
OPEN USES			
No open uses allowed			
RESIDENTIAL USES			
No residential uses allowed			
PUBLIC AND CIVIC USES			
Day-care center	✓		§ 6-3-2
Minor utilities	✓		
Place of worship	✓		§ 6-3-3
Public utility service structure or facility		✓	§ 6-3-4
Public works construction yard **[Added 12-7-2009 by L.L. No. 19-2009]**	✓		§ 6-3-5
Telecommunication facility		✓	§ 6-7
COMMERCIAL			

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RD	Permitted	Special Use	Standards
Ambulance Service **[Added 2-24-2014 by L.L. No. 3-2014]**	✓		
Bank	✓		
Dog day care facility **[Added 10-17-2011 by L.L. No. 25-2011]**	✓		§ 6-4-13 **[Amended 11-5-2012 by L.L. No. 17-2012]**
Medical laboratory testing service	✓		
Office	✓		
Training school such as technical, trade, vocational or business	✓		
Truck service, wash, and repair **[Added 8-9-2021 by L.L. No. 11-2021]**	✓		§ 6-4-14
INDUSTRIAL			
Compounding, manufacturing and assembly of: Automobile and boating accessories from previously prepared materials Clothing or other textile products Electrical and electronic equipment and appliances Food and beverage products Household items, furniture Musical, scientific, medical, dental or photographic instruments, equipment or supplies Office equipment Panels, sheets, tubes or rods	✓		

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RD	Permitted	Special Use	Standards
Pharmaceutical products, cosmetics or toiletries Printing, publishing and engraving Recreation equipment or toys			
Experimental, research and testing facility	✓		
Ground-mounted solar energy systems, Tier III **[Added 12-11-2017 by L.L. No. 24-2017]**		✓	§ 6-10
Ground-mounted solar energy systems, Tier II **[Added 12-11-2017 by L.L. No. 24-2017]**	✓		§ 6-10
Research development facility	✓		
Tier I experimental pilot plant operation **[Amended 12-11-2017 by L.L. No. 24-2017]**	✓		
Warehousing and storage service	✓		
Wholesale distribution facility	✓		

B. **Dimensional Standards.**

For parcels 30 acres in size or more as of (effective date), the Planned Unit Development Process is required. See § 6-9. **[Added 5-20-2013 by L.L. No. 8-2013; amended 11-3-2014 by L.L. No. 39-2014]**

RD Principal & Accessory Use/ Structure Dimensional Standards		**Vehicle Use Area**
Min. district area	10 ac	
Min. lot area	1 ac	
Min. lot width	35 ft	
Min. front yard		

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RD Principal & Accessory Use/ Structure Dimensional Standards		Vehicle Use Area
Height of structure for first 35 ft.	20 ft	25 ft*
Height of structure for any portion of building above 35 ft.	30 ft	25 ft*
Min. rear yard (abutting residential**/nonresidential)		
Height of structure up to 30 ft	See § 2-5-4B(3)/15 ft	25 ft* / 10 ft*
Height of structure 30 ft or more	See § 2-5-4B(3)/25 ft	25 ft* / 10 ft*
Min. side yard (abutting residential**/nonresidential)		
Height of structure up to 30 ft	See § 2-5-4B(3)/ 15 ft	25 ft* / 10 ft*
Height of structure 30 ft or more	See § 2-5-4B(3)/ 25 ft	25 ft* / 10 ft*
Max. height	65 ft	
Max. building coverage	None	
Min. interior building separation	30 ft	

*	The entire area must be landscaped.
**	R-R, S-A, R-1, R-2, R-3, CR-3A, TR-3, R-4, MFR-4A, MFR-5, MFR-6, MFR-7, PRD, PDD, PRD, NCD[1]

4-9-3. **Accessory Uses and Structures.**

A. **Permitted Accessory Uses and Structures.** The following accessory uses and structures incidental to any permitted principal use are allowed subject to the requirements of § 6-8, Accessory Uses or Part 7, General Development Standards.

RD Permitted Accessory Uses and Structures	Standards
Convenience Retail Service **[Added 12-14-2020 by L.L. No. 20-2020]**	§ 6-8-4
Day-care center	
Landscaping	§ 7-2

1. **Editor's Note: The diagram which immediately followed this table was repealed 2-8-2016 by L.L. No. 2-2016.**

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RD Permitted Accessory Uses and Structures	Standards
Off-street parking, loading, and stacking	§ 7-1
Production operation accessory to a research or testing operation	
Restaurant without drive-through **[Added 12-14-2020 by L.L. No. 20-2020]**	§ 6-8-10
Retail sale of products assembled or stored on-site	§ 6-8-11
Solar energy systems **[Added 12-11-2017 by L.L. No. 24-2017]**	§ 6-10
Signs	§ 7-8
Small wind energy system **[Added 8-17-2009 by L.L. No. 12-2009]**	§ 6-8-14
Other uses and structures customarily incidental to the principal use	

B. **Dimensional Standards.** The dimensional standards for an accessory use or structure shall be the same as those for the principal use in § 4-9-2B.

4-9-4. **General Development Standards.**

A. Interior side or rear yards separating parking, loading and stacking area from lot lines are not required for unified developments.

B. Development in the RD district shall also comply with the requirements referenced in the table below.

RD General Development Standards	
Off-Street Parking, Loading and Stacking	§ 7-1
Landscaping, Buffers and Screening	§ 7-2
Site Lighting	§ 7-3
Outdoor Storage and Display	§ 7-4
Fences and Walls	§ 7-5
Access and Circulation	§ 7-6
Provisions for Flood Hazard Reduction	§ 7-7
Sign Regulations	§ 7-8
Performance Standards	§ 7-9
Bulk Storage of Combustible or Flammable Liquids	§ 7-10

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Exhibit 9 – Color Copy of Figure 6 of the Bicentennial Comprehensive Plan

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Town of Amherst Bicentennial Comprehensive Plan

The Conceptual Land Use Plan is intended to communicate the overall direction and concept of future development. While it is not a zoning map and does not show the existing or proposed use of individual parcels, it is intended to show land use relationships, provide a generalized guide for future development, and establish a context for detailed area planning and design.

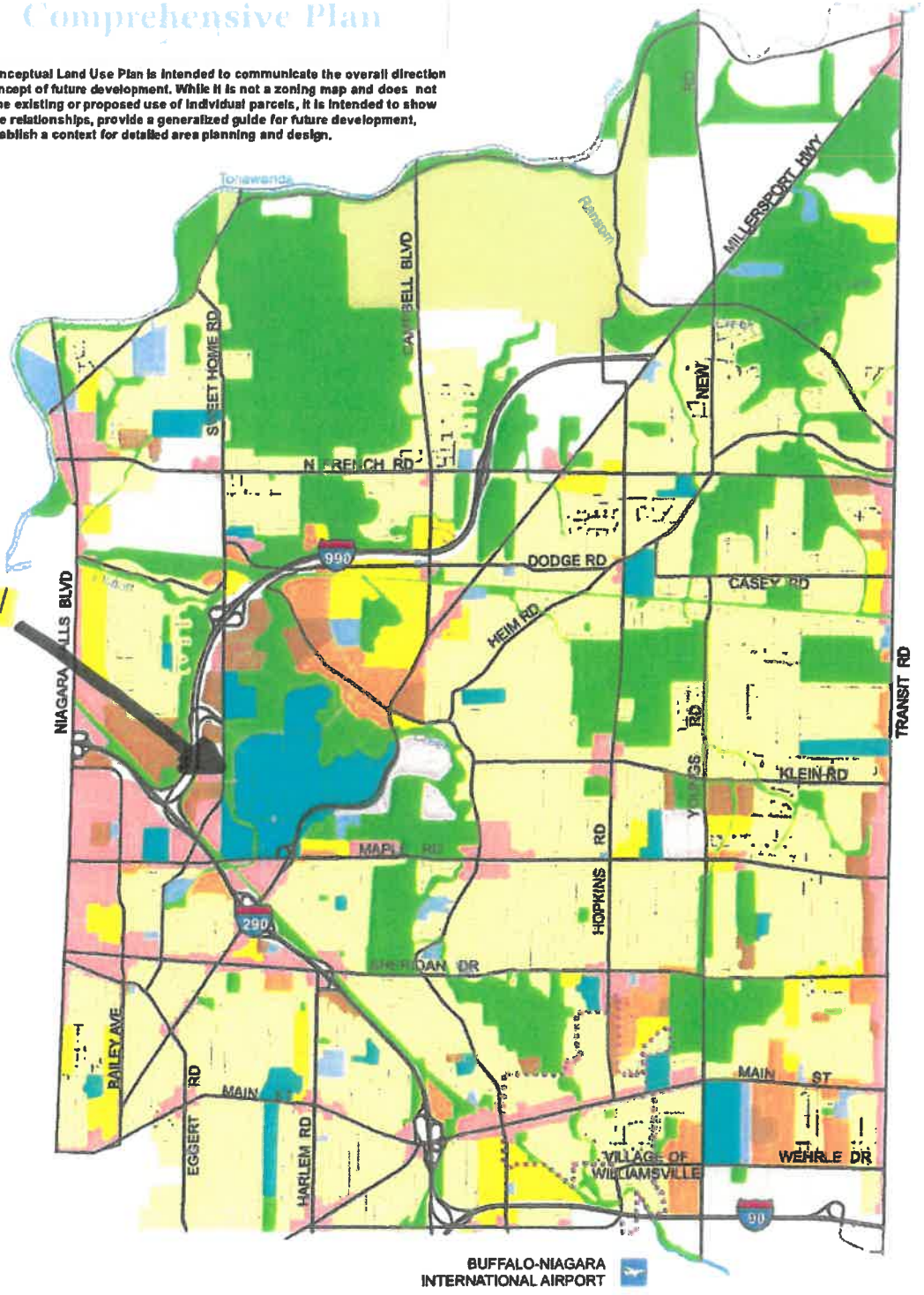

FIGURE 6

Conceptual Land Use Plan

- Rural Residential
- Single Family Residential
- Mixed Residential
- Medium Residential
- Commercial / Mixed Use*
- Special Use Center
- Commercial - Office
- Industrial - Office
- Community Facilities
- Educational Campus
- Recreation, Open Space & Greenways
- Agriculture
- Transportation
- Surface Water
- Village of Williamsville Boundary

* See Map Figure 5-A for Additional Designations

SOURCE NOTES:

Original Source Data Provided by the Town of Amherst Information Technology Department, URS Corporation and Wallace Roberts & Todd, LLC

Map Compiled by the Town of Amherst Planning Department

Date: December 2020

N

0 0.25 0.5 0.75 1 1.25

Miles

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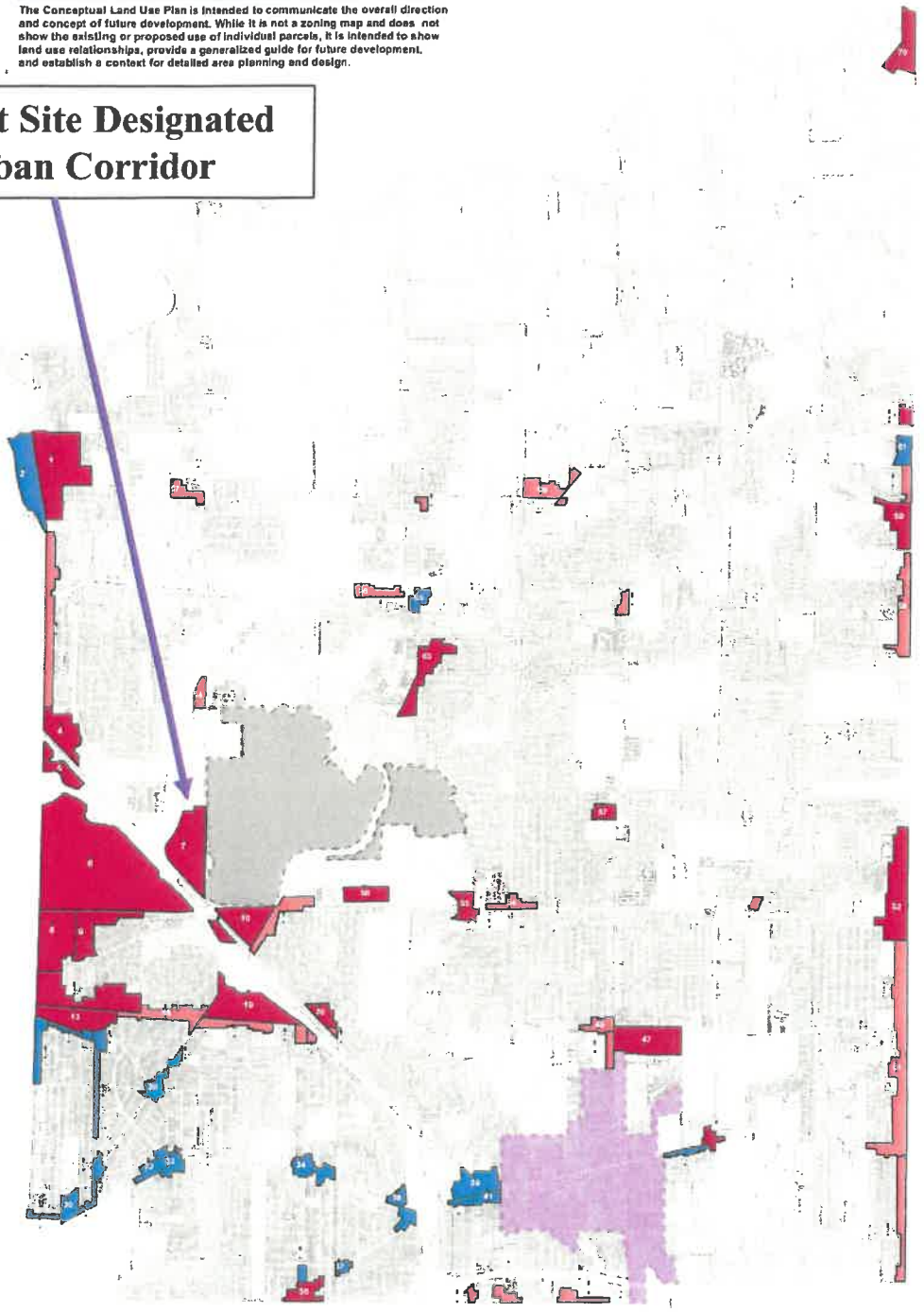
Exhibit 10 – Figure 6-A of the Comprehensive Plan

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Town of Amherst
Bicentennial
Comprehensive Plan

The Conceptual Land Use Plan is intended to communicate the overall direction and concept of future development. While it is not a zoning map and does not show the existing or proposed use of individual parcels, it is intended to show land use relationships, provide a generalized guide for future development, and establish a context for detailed area planning and design.

Project Site Designated Suburban Corridor



Wegmans (NFB)
Walgreens (NFB)
NFB / Ellicott Creek Strip
Home Depot (NFB)
Inkeepers Lane
Consumer Square / Ridge Lea
University Place
Boulevard Mall
Wegmans (Alberta)
Golden Triangle
Maple / Amherst Manor
Walmart (Sheridan)
Northtown Plaza
NFB Strip
Eggert Strip
Eggert / Bailey
Bailey Strip
Sheridan / Millersport Strip
Northtown Auto (Sheridan)
Sheridan / Sunrise - North Side
Sheridan / Sunrise - South Side
Sheridan / Harlem - West Side
Sheridan / Harlem - East Side
Sheridan / Getzville Strip
Millersport / Arcade
Six Corners
Bailey / Grover Cleveland
Bailey Live-Work
Main / Bailey
University Plaza
Kenmore Avenue
Eggertsville (Main / Eggert - West Side)
Eggertsville (Main / Eggert - East Side)
Snyder (Main / Harlem)
Harlem Strip
Harlem / Kensington
Kensington / Saratoga
Main / Kensington
West of Village - North of Main
West of Village - South of Main (West Side)
West of Village - South of Main (East Side)
Wehrle / South Forest
Wehrle / South Union
Wehrle / Cayuga
Sheridan / Hopkins
Evans Strip
Williamsville Place
Main Strip
Main / Youngs
Transit / Wehrle
Transit from Main to Maple
Transit / Maple
Maple / Ayer
Maple Strip
Maple / North Forest
Gun Club
Clearfield Plaza
Transit / Casey
Transit / North French
Transit / Dodge
Swormville
Hopkins / Dodge
Getzville Plaza
Sweet Home / Skinnersville
Campbell / Dodge
Dodge Strip
Sweet Home / North French
Campbell / North French
Crosspointe
Transit / Millersport
Transit Strip

FIGURE 6-A

Commercial and Mixed-Use Designations

- Suburban Center
- Suburban Corridor
- Traditional Areas
- Village of Williamsville
- University at Buffalo

SOURCE NOTES:

Original Source Data Provided by the Town of Amherst Information Technology Department, URS Corporation and Wallace Roberts & Todd, LLC

Map Compiled by the Town of Amherst Planning Department

Date: December 2020

0 0.2 0.4 0.6 0.8 1
Miles

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Exhibit 11: Color Conceptual Building Renderings Prepared by Brian Slevar, R.A. of Carmina Wood Morris DPC

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)





March 21, 2022

Scott A. Marshall, Principal Planner
Town of Amherst Planning Department
5583 Main Street
Williamsville, New York 14221

Re: Application to Amend the Zoning Classification of 1400-1404 Sweet Home Road from RD to CTR-8 and 1408-1416 Sweet Home Road from RD to CTR-5 & Supporting Documentation – Town of Amherst
Applicant/Project Sponsor: North Forest Development LLC c/o Roy Jordan
File No. 10208.1

Dear Scott:

This letter and the enclosed documentation is being submitted on behalf of North Forest Development LLC ("Project Sponsor") in connection with its request to amend the zoning classifications of 1400-1404 Sweet Home Road from RD to CTR-8 and 1408-1416 Sweet Home Road from RD to CTR-5 to accommodate a mixed-use redevelopment project (collectively the "Project Site"). Enclosed please find the following:

1. Original and thirteen (13) copies of the Rezoning Application and supporting documentation consisting of Exhibits "1" to "11". The Exhibits to the Rezoning Application consist of the following:

   - **Exhibit 1:** Authorization Letter signed by Roy Jordan dated March 15, 2022;
   - **Exhibit 2:** Part 1 of the Full Environmental Assessment Form prepared pursuant to the State Environmental Quality Review Act ("SEQRA");
   - **Exhibit 3**: Legal description of property to be rezoned from RD to CTR-5 and CTR-8;
   - **Exhibit 4:** Reduced size copy of the Survey of Project Site [Note: Full size copy of the Survey is also attached];
   - **Exhibit 5:** Responses to Questions 11A & 11B of the Rezoning Application;
   - **Exhibit 6:** Responses to Questions 16A, 16B, 16D & 16E of the Rezoning Application;
   - **Exhibit 7:** Reduced size copy of the Concept Site Plan [Drawing C-100] as prepared by Carmina Wood Morris DPC [Note: Full size copy of the Concept Plan is also attached];
   - **Exhibit 8:** Copy of Section 4-9 of the Zoning Code [titled "Research and Development District (RD)"];

HOPKINS SORGI & MCCARTHY PLLC
Attorneys at Law
5500 Main Street, Suite 343 • Williamsville, New York 14221
Direct: 716-510-4338 • E-mail: shopkins@hsr-legal.com • www.hsr-legal.com

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

- **Exhibit 9:** Color copy of Figure 6 of the Bicentennial Comprehensive Plan;
- **Exhibit 10:** Color copy of Figure 6-A of the Bicentennial Comprehensive Plan; and
- **Exhibit 11:** Color Conceptual Building Renderings as prepared by Brian Slevar, AIA of Carmina Wood Morris DPC;

2. Three (3) copies of the Geotechnical Engineering Report prepared by Glynn Geotechnical Engineering;

3. Four (4) copies of the Traffic Impact Study prepared by SRF Associates;

4. One (1) copy of the Draft Local Law

I have also enclosed a check for the filing fee. The Project Sponsor is requesting that the Planning Board hold a public hearing regarding the requested rezoning of the Project Site from RD to CTR-5 and CTR-8 during its meeting to be on **Thursday, May 19th at 6:30 p.m.**

It would be appreciated if the Planning Department would provide a copy the enclosed Application and supporting documentation for the proposed mixed-use redevelopment project to the Erie County Division of Environment and Planning ("ECDEP") for the purpose of complying with the referral requirement pursuant to NYS General Municipal Law §239-m since Sweet Home Road is a NYS Highway.

The proposed mixed-use redevelopment project is a Type I action pursuant to SEQRA since it consists of more than 250 residential units and as such it requires the Town to conduct a coordinated environmental review.

Please provide a copy of the lead agency solicitation notice to be issued pursuant to SEQRA along with copies of all correspondence, departmental reviews, etc. received by the Planning Department to my office as well as the following individuals involved in the proposed mixed-use redevelopment project:

1. Roy Jordan
   North Forest Development LLC
   2829 Wehrle Drive, Suite 1
   Williamsville, NY 14221

2. Christopher Wood, P.E.
   Carmina Wood Morris DPC
   487 Main Street, Suite 500
   Buffalo, NY 14203

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

3. Brian J. Slevar, AIA, NCARB
Carmina Wood Morris DPC
487 Main Street, Suite 500
Buffalo, NY 14203

If you have any questions regarding the enclosed Rezoning Application and supporting documentation or the proposed mixed-use redevelopment project, please feel free to contact me at 510-4338 or via e-mail at shopkins@hsmlegal.com.

Thank you for your anticipated cooperation.

Sincerely,

HOPKINS SORGI & MCCARTHY PLLC

Sean W. Hopkins, Esq.

Enc.
cc: Roy Jordan, North Forest Development LLC [Via e-mail and mail]
Christopher Wood, P.E., Carmina Wood Morris DPC [Via e-mail]
Brian J. Slevar, AIA, NCARB, Carmina Wood Morris DPC [Via e-mail]

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

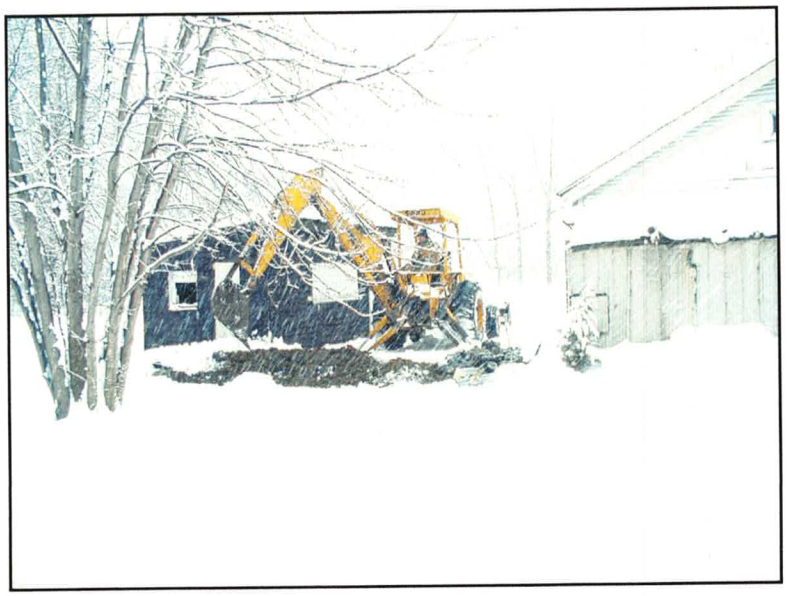
4180/4200 Rensch Rd
Amherst, New York

Geotechnical Engineering Report

GGE 04-5002

Prepared for:
North Forest Development, LLC
8201 Main Street, Suite 12
Williamsville, New York 14221

Prepared by:
Glynn Geotechnical Engineering
415 South Transit Street
Lockport, New York 14094





February 11, 2004

Civil • Structural • Geotechnical • Materials Testing • Consulting

GGE
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Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

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Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

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I. INTRODUCTION

This report provides subsurface investigation data and foundation recommendations for the proposed building at 4180/4200 Rensch Road in the Town of Amherst, New York. Specifically, Glynn Geotechnical Engineering (GGE) has provided the following scope of services:

1. Observed the excavation of three test pits by North Forest Development.
2. Performed cone penetrometer testing at the proposed foundation subgrade to estimate an allowable bearing capacity.
3. Retrieved and classified soil samples in accordance with the Unified Soils Classification System (USCS) and prepared subsurface logs.
4. Provided laboratory testing on select samples to establish specific engineering properties and verify classifications.
5. Prepared a geotechnical report based on our findings.

This geotechnical study has been performed in accordance with a written January 13, 2004 GGE proposal and subsequent January 20, 2004 acceptance by North Forest Development. GGE was provided with a site plan from North Forest Development to aid in our efforts.

Project efforts by GGE included test pits, penetrometer testing, laboratory testing, USCS classification, site class definition and the preparation of this report. The scope of this report specifically excludes any review of former site use, in particular, environmental or pollution related concerns.

II. PROJECT BACKGROUND

The project site is located on Rensch Road in the Town of Amherst, New York, specifically at addresses 4180 and 4200. The site is relatively flat and currently occupied by two houses on the southern portion of the property and dense forest on the northern portion of the property. The existing houses will be demolished prior to construction of the proposed development. As seen on the Floodplain and Wetland Location Plan located in Appendix E, the site is not located within a floodplain or within a state wetland.

The development is to consist of three office buildings with associated parking areas. To accommodate for the low site elevation and to provide the necessary grades for sanitary and storm sewers, North Forest Development plans to raise the existing site elevation by 2 to 3 feet.

III. SITE GEOLOGY

The underlying geological conditions at the site are the result of the last glacial advance of the Pleistocene Epoch, known as the Wisconsinan Glacial Stage. As the glaciers transgressed across the Western New York terrain, they carved and crushed the underlying existing soil and rock to form glacial till.

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The surficial geology of the Rensch Road site is characterized by a thin stratum of clayey lake sediment overlying glacial till and shallow bedrock. The bedrock consists of shale, dolostone and gypsum of the Late Silurian Salina Group.

The Erie County Soil Survey identifies the site soils as belonging to the Churchville silt loam (CoA). This soil is deep and somewhat poorly drained, consisting of a thin mantle of clayey lake sediment underlain by glacial till. The soil is characterized by a slow permeability and a perched seasonal water table in the upper subsoil from December through May, which may lead to ponding in some areas. A Soil Survey Plan has been included in Appendix D for reference.

IV. FIELD INVESTIGATION AND SUBSURFACE CONDITIONS

Site investigation efforts consisted of three test pits performed by North Forest Development on January 27, 2004 and observed by GGE. One test pit was performed at each building location to provide the subsurface information necessary for the construction of all three buildings as well as satisfy the Town of Amherst preliminary geotechnical requirements of one soil boring per every 3.5 acres of site. A Site Plan indicating test pit locations can be found in Appendix C. GGE is confidant the extent of the investigation was sufficient to accurately characterize the subsurface conditions and provide the information necessary to prepare this report.

The subsurface soils were classified by GGE and assigned Unified Soil Classification System (USCS) classifications in accordance with ASTM D 2488 "Description and Identification of Soils (Visual – Manual Procedure)".

Subsurface conditions are generally characterized as follows:

0.0' – 1.0'	Dark brown topsoil.
1.0' – 3.0'	Moist, brown and tan, slightly mottled, stiff, silt (ML).
3.0' – 6.0'	Moist, light tan and gray, slightly mottled, stiff, sandy, silty clay with gravel (CL-ML) and bedrock fragments.
	Shale bedrock was encountered at a depth of 6.0 feet in all test pits with the exception of TP-2, where gypsum was encountered.

Clay fill was encountered in test pit TP-1. The original topsoil layer existed at a depth of 1.0 to 2.0 feet below the existing ground elevation. The removal of this material is imperative below any structural areas, including foundations, slabs on grade and parking facilities.

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Free groundwater was not encountered upon completion of the test pit excavations. The groundwater table is believed to be below the elevation of the bedrock. However, the slow permeability of the fine-grained soils will likely produce a perched water table at or near the ground surface during and after storm events and throughout winter and spring months. See section I.10 of this report.

Specific subsurface conditions can be found in Appendix A, Soil Investigation Logs. Laboratory testing data for select samples can be found in Appendix F.

V. GEOTECHNICAL EVALUATION AND FOUNDATION RECOMMENDATIONS

A. Bearing Capacity and Foundation Recommendations

The site subsurface conditions will permit the construction of a shallow foundation system consisting of conventional strip and spread footings. Due to the importation of fill to raise the site elevation, the footings will bear at an elevation of approximately 1.0 foot below existing grade on the compact silt directly beneath the surficial topsoil. All surficial topsoil must be removed from beneath structurally loaded areas. Based on a settlement criterion of 1.0 inch, the allowable bearing capacity for this material has been estimated by GGE to be 4000 psf. The bearing capacity was tested in the field using an ELE cone penetrometer.

The contractor must remove all buried topsoil located in the vicinity of TP-1 prior to constructing foundations.

B. Pavement and Slabs on Grade

GGE recommends that all slabs be designed using a recognized standard procedure. The text "Designing Floor Slabs on Grade" by Ringo and Anderson (ASBM 0-924659-34-3) identifies several methods of floor slab design. Slabs on grade and pavement will be constructed on imported fill due to the proposed elevation of the site finished grades.

Design and construction of floor slabs should be based on the following minimum recommendations:

1. Remove all topsoil and organic subsoil including buried topsoil encountered in the vicinity of TP-1.
2. Proof roll subgrade and replace yielding or "boiling" soils. Do not place any fill over saturated ground.

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3. Compact imported fill soil to 95% of the modified proctor maximum density (ASTM D-1557), at a moisture content within 2% of optimum.
4. Place one 6" lift of select structural fill (NYSDOT Item 304.2.02, Type 4). Compact all fill as specified in item 3 above.
5. Install structural concrete floor slab. Provide sufficient joints and flexibility at perimeter walls.

Design and construction of pavement should proceed in accordance with generally accepted criteria as follows:

1. Remove all topsoil, organic subsoil and debris including buried topsoil encountered in the vicinity of TP-1.
2. Proof roll subgrade to reveal soft and yielding soil. Use a fully loaded 10-wheel dump truck weighing at least 30 tons or a smooth drum roller having an effective force of at least 600 pounds per linear inch of roller width. Any area exhibiting deflections in excess of 0.5 inches or rutting should be classified as unsuitable. These areas should be reworked and compacted to produce an acceptable response or over excavated and replaced with suitable fill. The depth of the undercut and type of soil fill will depend on the soil material encountered, weather conditions and the bearing conditions at the base of the undercut. The site geotechnical engineer must consider each factor if the above conditions are encountered.
3. Install ditches, lateral drains, weeps and storm drainage piping. Backfill over the pipe bedding stone with native soils.
4. Place common fill as necessary to achieve design subgrade. Common fill can be any soil or processed material except Silt soil – USCS designation ML. The top 12 inches must be structural fill. Compact all fill to a minimum 95% of the maximum modified proctor density (ASTM D-1557-78), within a moisture range of 2% $\pm$ of the optimum moisture content. The top surface of the subgrade must be "sealed" with a smooth drum roller and pitched to drain such that the embankment soils cannot become saturated.
5. Once the subgrade has been established, the surface should be covered by a suitable geotextile selected for drainage and reinforcement properties. The geotextile shall have minimum (MARV) strength properties meeting the requirements of an AASHTO M 288-96 Class 2 geotextile. The material shall also have a minimum permittivity of 0.05 sec^{-1} and an AOS of less than 0.6 mm. Installation shall conform to the manufacturers recommendation for overlap.
6. Construct flexible pavement system as follows: (or equivalent structural system)

   a) Minimum 12 inch thick layer of 2" crushed stone meeting requirements of NYSDOT item 304-2.02, type 4 and the well graded qualifications of ASTM D-2487. Compact

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with a minimum of 5 passes of a smooth drum vibratory roller having an effective load of 600 pounds per linear inch. The finished surface should be uniform and dense. Avoid handling procedures that cause segregation.

b) Minimum 3 inch asphalt concrete binder, NYSDOT item 403.13, type 3.

c) Minimum 1-1/2 inch asphalt concrete top, NYSDOT item 403.18 or 403.19.

In the event the binder layer is used as a working surface for access to buildings under construction the surface must be power washed, not just swept, and a tack coat should be applied prior to installation of the top course. In addition, any yielding area of pavement binder should be removed and replaced prior to application of the top course.

All site contractors should be notified that roadways and parking areas will not support repeated travel by construction loads. Pavement and subgrade failure can be anticipated in areas that receive a high volume of heavy construction traffic. To preclude the overstressing of the pavement system it is recommended that haul roads be located in non-critical areas. As an option, the base course of stone can be overbuilt to a total thickness of twenty (20) inches to serve as a haul route. The additional thickness of stone and all areas of soil material that has contaminated the stone base should be removed prior to paving. Failure to remove fine grained soils from the stone base may cause pavement distress in the form of heaving resulting from freeze thaw effects.

Note that post construction heaving and cracking of pavement is often the result of poor compaction around catch basins and behind curbs. Loose material around these areas allows surface water to migrate beneath the pavement, providing increased potential for heaving due to ice build up during winter months and deterioration of the parking base during warmer months. The contractor should make sure to properly compact these areas. Also, weep holes should be installed into the bottom of catch basins to permit the drainage of any water that does manage to migrate beneath the pavement.

C. Excavation and Backfill

Excavation will basically consist of the removal of topsoil in most locations and the removal of buried topsoil in the vicinity of TP-1. The buried topsoil is typically covered by approximately 1.0 foot of soft clay. Excavation efforts are anticipated to be easy.

If deeper excavations are to be performed, the contractor should be sure to comply with OSHA standards. The soil encountered at this site should be classified by an OSHA competent person in accordance with 29 CFR, Part 1926, OSHA Subpart P, "Excavations and Trenches" prior to and during excavation.

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From the testing and investigation program, GGE estimates the site soils can be classified as Type B under the OSHA classification guidelines. This classification may change depending on other site criteria and moisture conditions at the time of construction. An OSHA competent person should judge the potential need for excavation bracing and excavation geometry in the field.

Native soils may be used for general fill against the foundation walls once the concrete has properly cured. All fill soil should be placed in lifts and compacted, with care taken not to damage the foundation walls. The fill at grade elevation should be sloped to drain away from the foundation walls to eliminate the potential for standing water to accumulate along the foundation. Note that drying of the native soils may be required to achieve optimum compaction.

C. Mitigation of Expansive Soils

Subsurface soils at this site are predominantly silt (ML) and silty clay with gravel (CL-ML). Some clay soils undergo volumetric change (shrinkage and swelling) with changes in moisture and degree of saturation, particularly soils classified as fat clay (CH). Fat clay is classified as a soil with a liquid limit of 50 or greater. The liquid limit is the water content, in percent, of a soil that defines the boundary between the plastic and viscous fluid states. The subsurface soils encountered at this site do exhibit characteristics of soils with a high shrink/swell potential.

D. Mitigation of the effects of Liquefaction

Liquefaction is the process where saturated cohesionless (granular) soils, specifically, fine sands and silts, transform from a solid into a liquid as a result of an increase in the pore water pressure caused by repeated disturbance such as experienced during seismic events. Liquefaction results in an immediate loss of shear strength, and thus, bearing capacity, causing total and differential settling due to a quick consolidation of the soils.

The soils located at the footing subgrade and below at this site are silts and silty clays and do not pose a concern for liquefaction. Soils with a silt and clay content in excess of 35% typically do not have the potential to liquefy. As seen in Appendix F, the subgrade material falls outside of the specification window for liquefaction potential as identified on the grain size analysis.

E. Expected Total and Differential Settlement.

Load induced total settlement for foundations bearing on undisturbed native soil is estimated to be primarily long-term (primary consolidation) settlement. The total settlement is estimated to be less than 1.0 inch for shallow foundations constructed in accordance with GGE's recommendations.

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Subsurface soils across the site are very consistent and exist in layers of uniform depths. The potential for differential settlement due to varying soil conditions over the building footprint is minimal under uniform bearing pressures.

F. Varying Soil Strength

Upon excavation of the footings, if soil types or moisture contents are found to be different than those encountered during the test pit excavation and represented within this report, the bearing capacity of the variable soil will need to be reevaluated by a qualified Geotechnical Engineer. Likewise, the footing design will then require adjustment to accommodate the bearing pressure on soils of varying bearing capacities.

G. Site Class Definition

In accordance with Section 1615 (Earthquake Loads – Site Ground Motion) of the NYS Building Code, the site is classified as Site Class C. The site classification is based upon subsurface conditions in the upper 100 feet, which consist of 6 feet of dense soil overlying 94 feet of rock.

The maximum considered earthquake ground motion for this site is interpolated as .320g for short period spectral response acceleration and .064g for a one second spectral response acceleration in accordance with New York State Code figures 1615(1) and 1615(2). Based on Site Class C, the maximum considered earthquake spectral response acceleration for this site is calculated as .380g for short period spectral response acceleration (S_{MS}) and .108g for a one second spectral response acceleration (S_{M1}) in accordance with New York State Code section 1615.1.2.

The design spectral response accelerations, based on the maximum considered earthquake spectral response accelerations, are .253g for short period design spectral response acceleration (S_{DS}) and .072g for one second design spectral response acceleration (S_{D1}). In accordance with tables 1616.3(1) and 1616.3(2), the site is classified as Seismic Design Category B.

H. General Recommendations

The following comments are relative to all foundation work unless specifically noted otherwise:

1. No fill material or concrete should be placed in water, over saturated subgrade or over frozen subgrade.
2. Upon completion of excavation for footings, bearing grades should be compacted to densify soil loosened by the backhoe bucket. Proper construction practice will assure the development of the anticipated bearing strength and reduce settlement potential.

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3. Excavations must not unnecessarily extend below the design subgrade elevation.
4. If additional undercut is necessary, the excavation bottom should be graded to a uniform elevation. Undercut "pockets" should be avoided.
5. Backfill all foundations prior to applying loads.
6. Extreme care must be exercised and conformance to OSHA standards is mandatory during excavation and trench work.
7. All topsoil and organic soils should be removed from any load bearing areas, including buried topsoil from previous fill efforts.
8. The use of a "mud" mat should be considered to protect bearing grades during any extended period or when construction proceeds during inclement weather.
9. Foundation bearing grades should not be allowed to freeze either prior to or after placement of concrete. Insulating blankets should be used to cover bearing grades plus 1 foot perimeter outside forms or completed footings until backfill is placed.
10. The site contractor should maintain proper grades for runoff control and seal roll all exposed areas. All excavations should be sloped to drain with sumps to permit dewatering during construction. The fine grained foundation subgrade will lose considerable strength if exposed to standing water for long periods of time. Any saturated subgrade should be dried and recompacted or removed to an acceptable bearing level prior to placement of subsequent layers of fill or concrete.

VI. SUMMARY

The site subsurface conditions are well suited for the proposed development and will provide a suitable subgrade for the proposed construction pending strict conformance with the recommendations provided within this report. The recommendations and engineering evaluations provided in this report are based on the encountered subsurface conditions at 4180/4200 Rensch Rd and pertinent data supplied by North Forest Development. Alteration of the plans, including relocation of the house or any abnormal foundation loading may serve to invalidate this report. Do not utilize this evaluation for any other type of structure. Please contact our office if major project changes are made or if encountered soils vary from conditions noted in this report.

Respectfully submitted,

G. Edward Lover
Senior Geologist

STATE OF NEW YORK
MARK W. GLYNN
LICENSE NO. 057491
LICENSED PROFESSIONAL ENGINEER

Mark W. Glynn, P.E.
Consulting Engineer, Principal

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DOCFILE

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Appendix A

Soil Investigation Logs

4180/4200 Rensch Rd
Amherst, New York

Geotechnical Engineering Report

GGE 04-5002

February 11, 2004

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

SOIL INVESTIGATION LOG

PROJECT NO.:	04-5002	REPORT NO.:	NA	PAGE:	1 OF 1
PROJECT:	4180/4200 Rensch Road	DAY:	Tuesday	DATE:	01.27.04
CLIENT:	North Forest Development			EL:	Unknown
WEATHER:	Snow, 25° F	SUBJECT:	Geotechnical Investigation	HOLE NO.:	TP - 1
LOCATION:	Building 1				

DEPTH (feet)	BLOW COUNT	N VALUE	SAMPLE NO.	SOIL DESCRIPTION
0.0				
1.0	N/A	N/A	1	Brown, moist, stiff, lean clay (CL) fill.
2.0	N/A	N/A	2	Dark brown, moist, silty topsoil (ML).
3.0	N/A	N/A	3	Light tan and gray, moist, stiff, sandy, silty clay with gravel (CL-ML) with shale fragments.
4.0				
5.0				
6.0				Shale bedrock encountered at 5.0 feet.
				No water present at excavation completion.
7.0				
8.0				
9.0				
10.0				

Soil investigation was performed with a rubber tire backhoe.

REPORTED BY: EDWARD LOVER

REVIEWED BY: MARK W. GLYNN, P.E.

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GGE a member of the GLYNN GROUP

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

SOIL INVESTIGATION LOG

PROJECT NO.:	04-5002	REPORT NO.:	NA	PAGE:	1 OF 1
PROJECT:	4180/4200 Rensch Road	DAY:	Tuesday	DATE:	01.27.04
CLIENT:	North Forest Development			EL:	Unknown
WEATHER:	Snow, 25° F	SUBJECT:	Geotechnical Investigation	HOLE NO.:	TP - 2
LOCATION:	Building 2				

DEPTH (feet)	BLOW COUNT	N VALUE	SAMPLE NO.	SOIL DESCRIPTION
0.0	N/A	N/A	1	Dark brown, moist, silty topsoil.
1.0	N/A	N/A	2	Brown and tan, moist, slightly mottled, stiff, silt (ML).
2.0				
3.0				
4.0	N/A	N/A	3	Light tan and gray, moist, stiff, sandy, silty clay with gravel (CL-ML).
5.0				
6.0				
				Gypsum bedrock encountered at 6.0 feet.
7.0				No water present at excavation completion.
8.0				
9.0				
10.0				

Soil investigation was performed with a rubber tire backhoe.

REPORTED BY: EDWARD LOVER

REVIEWED BY: MARK W. GLYNN, P.E.

Civil • Structural • Geotechnical • Materials Testing • Consulting

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

SOIL INVESTIGATION LOG

PROJECT NO.:	04-5002	REPORT NO.:	NA	PAGE:	1 OF 1
PROJECT:	4180/4200 Rensch Road	DAY:	Tuesday	DATE:	01.27.04
CLIENT:	North Forest Development			EL:	Unknown
WEATHER:	Snow, 25° F	SUBJECT:	Geotechnical Investigation	HOLE NO.:	TP - 3
LOCATION:	Building 3				

DEPTH (feet)	BLOW COUNT	N VALUE	SAMPLE NO.	SOIL DESCRIPTION
0.0	N/A	N/A	1	Dark brown, moist, silty topsoil.
1.0				
2.0	N/A	N/A	2	Brown and tan, moist, slightly mottled, stiff, silt (ML).
3.0				
4.0	N/A	N/A	3	Light tan and gray, moist, stiff, sandy, silty clay with gravel (CL-ML) and shale fragments.
5.0				
6.0				Shale bedrock encountered at 6.0 feet.
7.0				No water present at excavation completion.
8.0				
9.0				
10.0				

Soil investigation was performed with a rubber tire backhoe.

REPORTED BY: EDWARD LOVER

REVIEWED BY: MARK W. GLYNN, P.E.

Civil • Structural • Geotechnical • Materials Testing • Consulting

GGE a member of the GLYNN GROUP

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

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Appendix B

Project Location Plan

4180/4200 Rensch Rd
Amherst, New York

Geotechnical Engineering Report

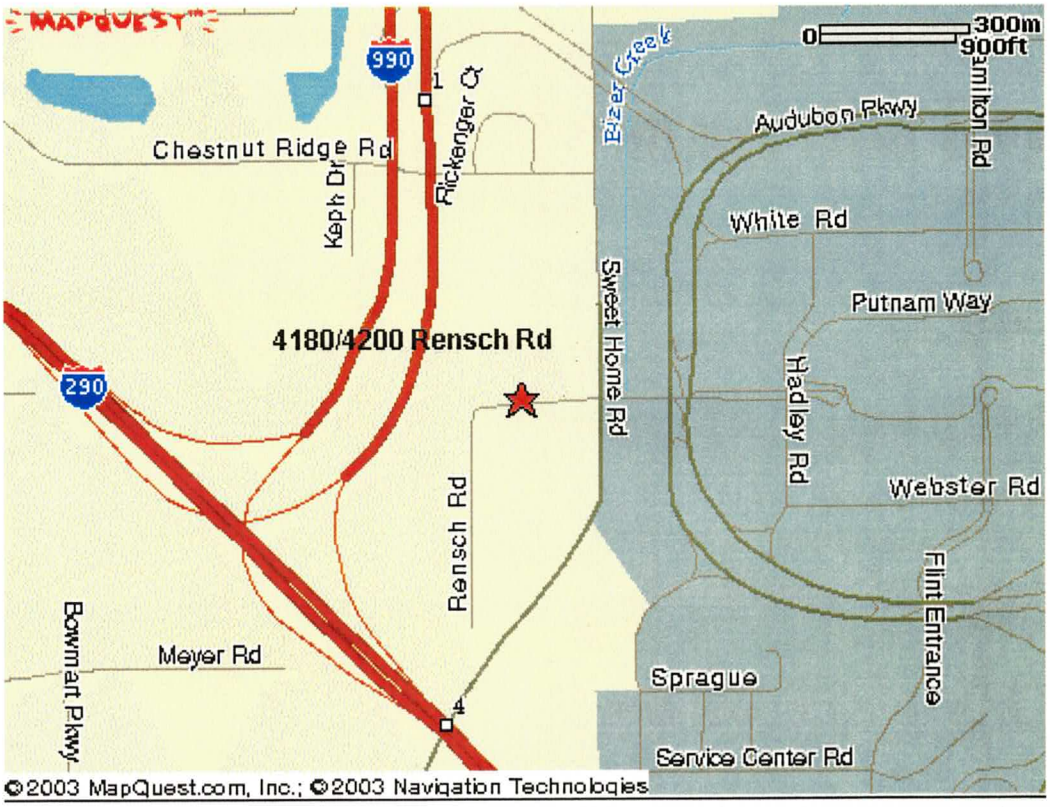
GGE 04-5002

February 11, 2004

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

PROJECT LOCATION PLAN

PROJECT: 4180/4200 Rensch Road, Amherst, NY
PROJECT NO.: 04-5002
SUBJECT: Geotechnical Engineering Report
SHEET 1 OF 1
PREPARED BY: G. Edward Lover
DATE: February 11,2004



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Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

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Appendix C

Soil Boring Location Plan

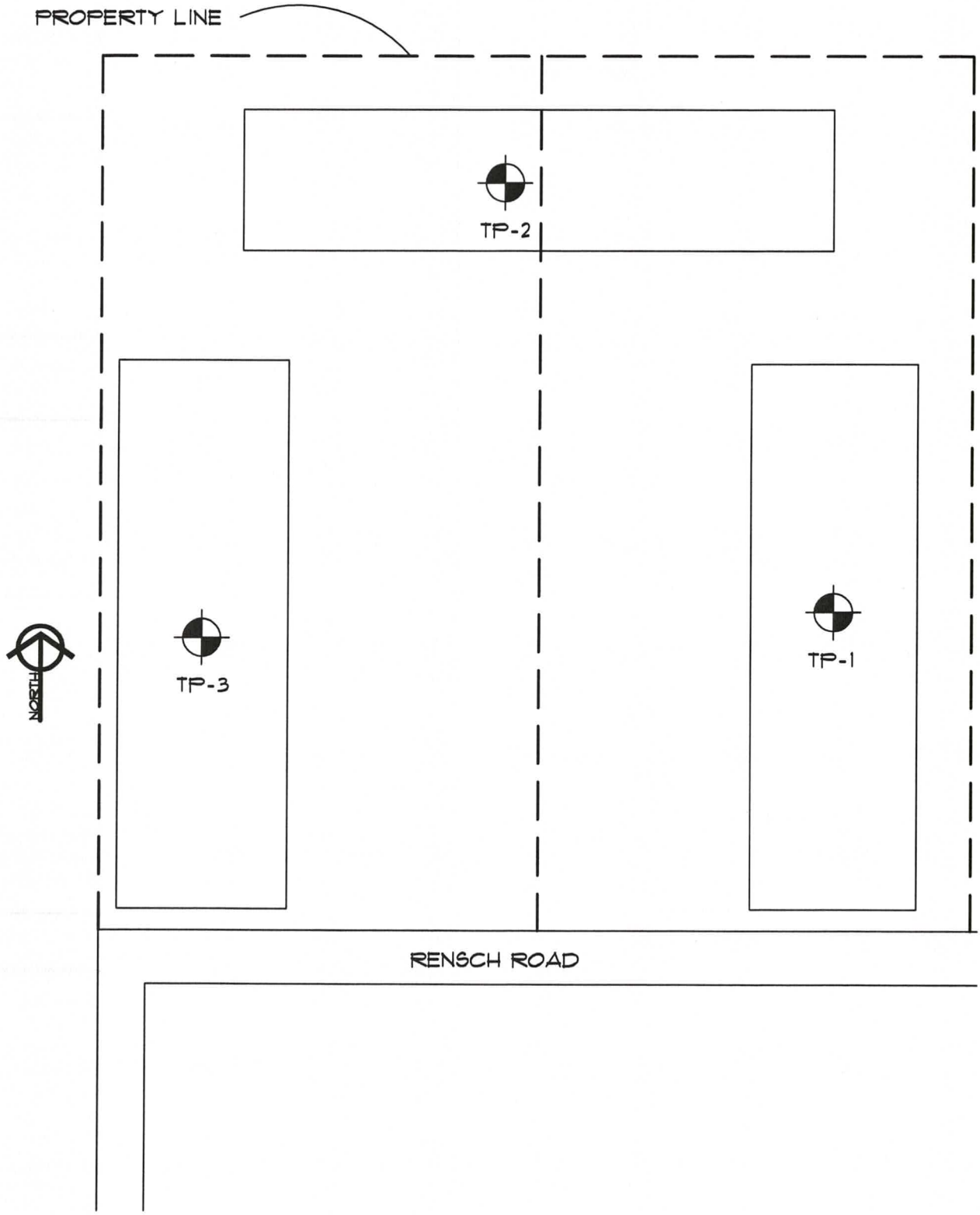
4180/4200 Rensch Rd
Amherst, New York

Geotechnical Engineering Report

GGE 04-5002

February 11, 2004

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)



GGE
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GLYNN GEOTECHNICAL ENGINEERING
415 S. TRANSIT STREET
LOCKPORT, NEW YORK 14094
VOICE (716) 625 - 6933 / FAX (716) 625-6983
www.glynngroup.com

PROJECT: 4180/4200 RENSCH ROAD			APPENDIX: C
SUBJECT: TEST PIT LOCATION PLAN			
CLIENT: NORTH FOREST DEVELOPMENT			
PROJ. NO.: 04-5002	SCALE: NOT TO SCALE	DATE: 02.02.04	BY: GEL

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

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Appendix D

Soil Survey Plan

4180/4200 Rensch Rd
Amherst, New York

Geotechnical Engineering Report

GGE 04-5002

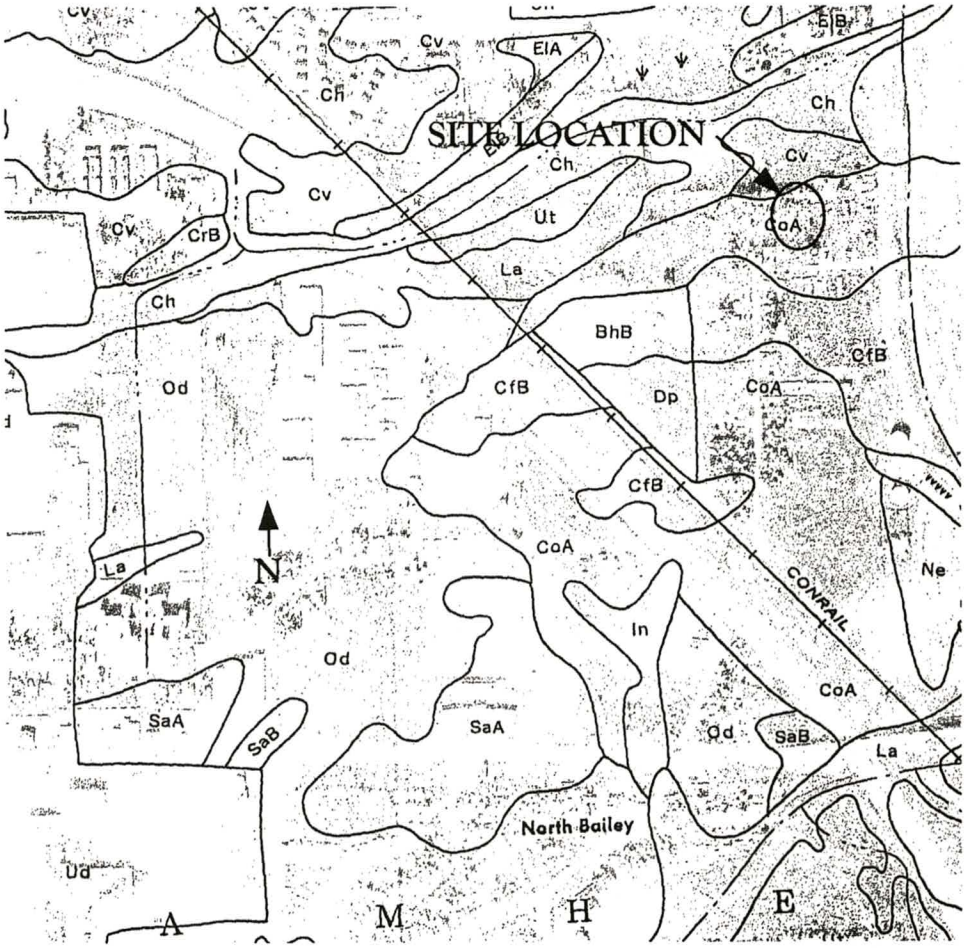
February 11, 2004

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

GGE
a member of the GLYNN GROUP

SOIL SURVEY PLAN

PROJECT: 4180/4200 Rensch Road, Amherst, NY
PROJECT NO.: 04-5002
SUBJECT: Geotechnical Engineering Report
SHEET 1 OF 1
PREPARED BY: G. Edward Lover
DATE: February 11, 2004



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Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Appendix E

Floodplain and State Wetland Plan

4180/4200 Rensch Rd
Amherst, New York

Geotechnical Engineering Report

GGE 04-5002

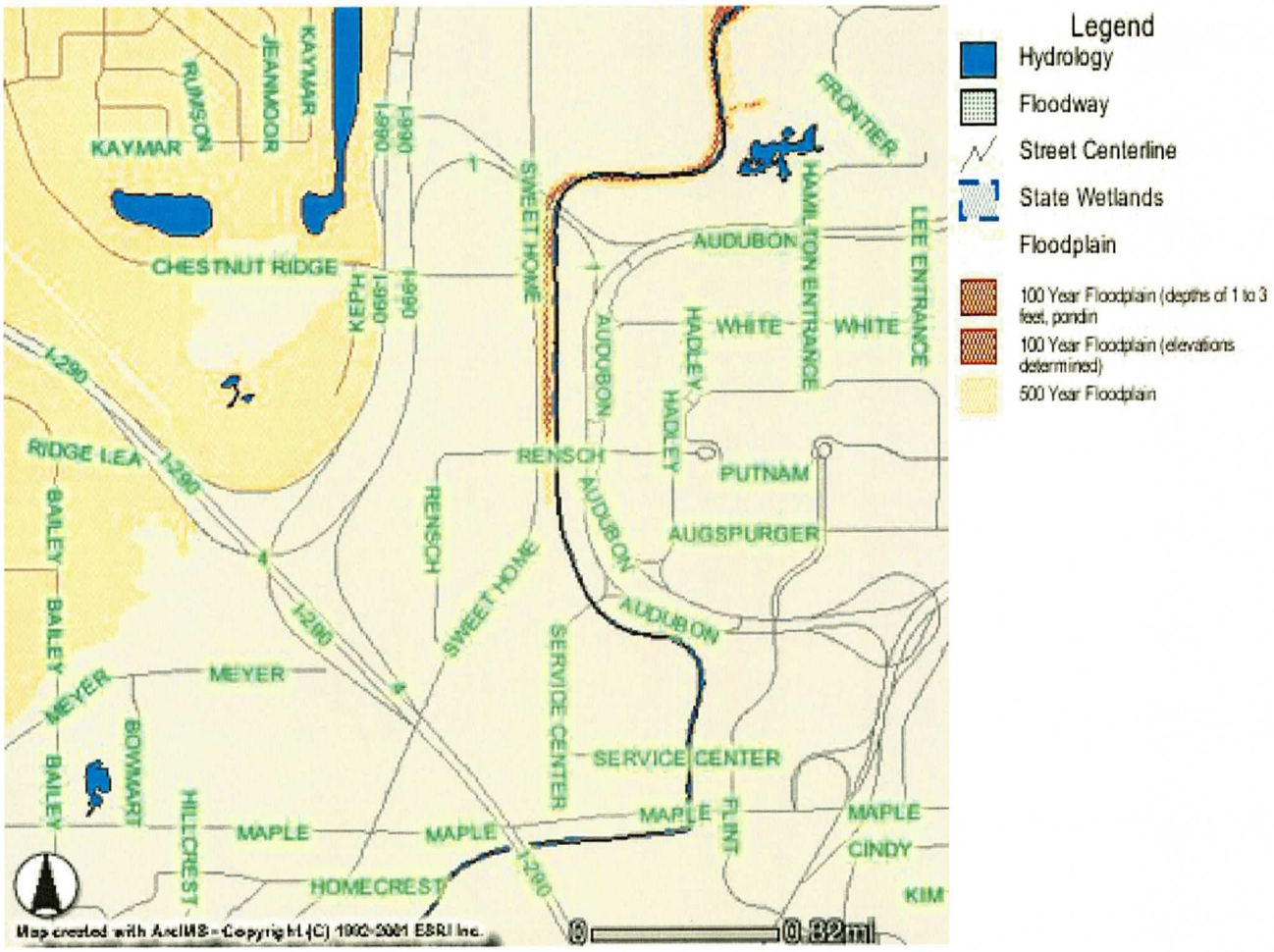
February 11, 2004

Civil • Structural • Geotechnical • Materials Testing • Consulting

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

FLOODPLAIN AND STATE WETLAND PLAN

PROJECT: 4180/4200 Rensch Road, Amherst, NY
PROJECT NO.: 04-5002
SUBJECT: Geotechnical Engineering Report
SHEET 1 OF 1
PREPARED BY: Edward Lover
DATE: February 11, 2204



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Appendix F

Laboratory Data

4180/4200 Rensch Rd
Amherst, New York

Geotechnical Engineering Report

GGE 04-5002

February 11, 2004

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

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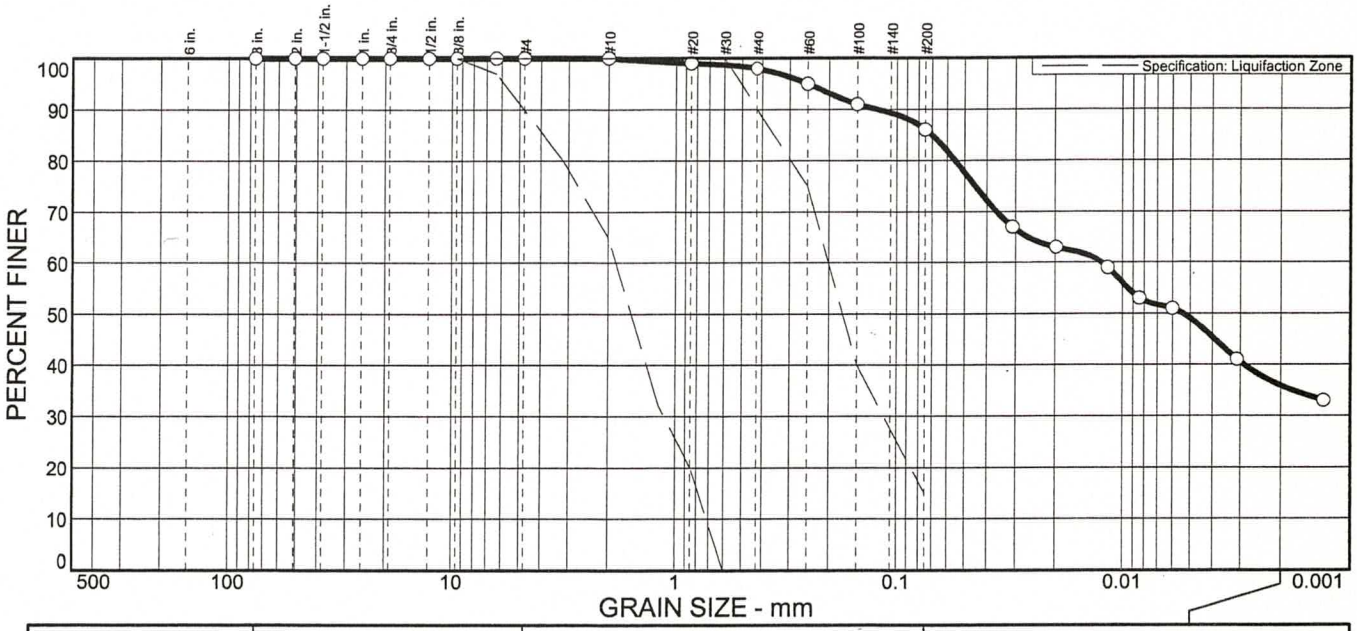
GRAIN SIZE ANALYSIS
ASTM D-422

Project: 4180/4200 Rensch Road **Project No.:** 04-5002

Client: North Forest Development

Sample No: 04-01 **Source of Sample:** soil boring **Date:** 02.03.04

Location: Footing Subgrade **Elev./Depth:** 1.0-3.5 ft.



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0	0	0	0	2	12	50	36

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3 in.	100		
2 in.	100		
1.5 in.	100		
1 in.	100		
3/4 in.	100		
1/2 in.	100		
3/8 in.	100	100 - 100	
1/4 in.	100	97 - 100	
#4	100		
#10	100	65 - 100	
#20	99	20 - 100	
#40	98		
#60	95	0 - 75	X
#100	91	0 - 40	X
#200	86	0 - 15	X

* Liquifaction Zone

Soil Description

Silt

Atterberg Limits

PL= 26 LL= 28 PI= 2

Coefficients

D_{85}= 0.0705 D_{60}= 0.0125 D_{50}= 0.0054

D_{30}= D_{15}= D_{10}=

C_u= C_c=

Classification

USCS= ML AASHTO=

Remarks

Natural Moisture Content 23.7%

Shrinkage Limit 12

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Reported/Reviewed By

Civil • Structural • Geotechnical • Materials Testing • Consulting

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Traffic Impact Study

for the proposed

Mixed-Use Development
1400-1416 Sweet Home Road

Town of Amherst
Erie County, New York

March 21, 2022

Project No. 42019

Prepared For:

North Forest Development

2829 Wehrle Drive, Suite 1
Williamsville, New York 14221
Attn: Mr. Roy Jordan

Prepared By:

SRF ASSOCIATES
www.srfa.net
Transportation Planning / Engineering / Design

3495 Winton Place
Building E, Suite 110
Rochester, New York 14623

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

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A6. LEVEL OF SERVICE CALCULATIONS – FULL DEVELOPMENT CONDITIONS

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

LIST OF REFERENCES

1. Highway Capacity Manual 6th Edition. Transportation Research Board (TRB). The National Academies, Washington, DC. 2016.
2. Trip Generation, 11th Edition. Institute of Transportation Engineers (ITE). Washington, DC. 2021.
3. Shared Parking Model (3rd Edition). Urban Land Institute (ULI). 2020.
4. New York State Department of Transportation (NYSDOT) Traffic Data Viewer. 2022. Retrieved from https://www.dot.ny.gov/tdv.
5. OnTheMap. U.S. Census Bureau. 2022.
6. Chapter 203 Zoning – Section 5A. Mixed Use Districts. Town of Amherst. 2019.
7. NCHRP Report 684: Enhance Internal Trip Capture Estimation for Mixed-Use Developments. TRB. 2016.

LIST OF COMMONLY USED ACRONYMS

ADT: Average Daily Traffic

AADT: Annual Average Daily Traffic

ECDPW: Erie County Department of Public Works

FHWA: Federal Highway Administration

HCM: Highway Capacity Manual

ITE: Institute of Transportation Engineers

LOS: Level of Service

LUC: Land Use Code

MPH: Miles per Hour

NCHRP: National Cooperative Highway Research Program

NYSDOT: New York State Department of Transportation

SF: Square Feet

ULI: Urban Land Institute

VPD: Vehicles per Day

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

EXECUTIVE SUMMARY

OVERVIEW

The purpose of this report is to evaluate the potential traffic impacts related to the proposed mixed-use development at 1400-1416 Sweet Home Road in the Town of Amherst, NY. Within this report, the operating characteristics of the proposed access points and impacts to the adjacent roadway network are identified and mitigating measures (if needed) are provided to minimize operational concerns.

To define traffic impact, this analysis establishes existing baseline traffic conditions, projects background traffic flow including area growth, and determines the traffic operations that would result from the proposed project.

The proposed mixed-use project will be at 1400-1416 Sweet Home Road in the Town of Amherst, Erie County, New York. Currently, there are office buildings occupying the site. These buildings will be replaced by the proposed project and new uses. The project site is bounded by portions of undeveloped lands to the north; Sweet Home Road to the east; Rensch Road to the south; and I-990 to the west. Land uses in the vicinity of the proposed project include residential, education, office, and service.

To ensure a comprehensive analysis of potential traffic impacts, a geographically broad study area was determined consisting of the following intersections:

- Rensch Road/Villas on Rensch (W)/Office Lots (unsignalized)
- Rensch Road/Villas on Rensch (E)/Office Lots (unsignalized)
- Sweet Home Road/Rensch Road (signalized)
- Sweet Home Road/The Station (unsignalized)
- Sweet Home Road/Maple Road (signalized)

The proposed project consists of constructing:

- ±10,000 square feet (SF) of office space
- ±10,000 SF of retail space
- 500 residential units to be marketed as student housing (1,025 bedrooms)

Access to the proposed mixed- project will be provided via two full access driveways along Rensch Road. **Figure 5** illustrates the proposed Concept Site Plan as prepared by Carmina Wood Morris.

Construction of the proposed project is anticipated to reach full build-out within approximately five years depending on market conditions. Town of Amherst personnel were contacted to discuss any other specific projects that are currently approved or under construction that would generate additional traffic in the study area. Two projects were identified:

- 1265 Sweet Home Road
- Completion of The Station

The Station is currently partially occupied. SRF Associates reached out to the property management to determine actual occupancy but did not receive any information. SRF Associates produced the traffic study for this project and reviewed the projected trip generation estimates. The difference between the full development trip generation estimates in the study

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and the actual trips entering and entering the site during the peak hours were added to the study area intersections.

To account for normal increases in background traffic growth, including any unforeseen developments in the project study area, aside from the two projects mentioned, a growth rate of 0.25% was applied to the existing traffic volumes in the study area based upon a review of historical traffic information obtained from the New York State Department of Transportation.

CONCLUSIONS & RECOMMENDATIONS

This Traffic Impact Study identified and evaluated the potential traffic impacts that can be expected from the proposed mixed-use development at 1400-1416 Sweet Home Road in the Town of Amherst, New York. The results of this study determined that the existing transportation network can adequately accommodate the projected traffic volumes and resulting minor impacts to study area intersections with the following mitigation in place. The following sets forth the conclusions and recommendations based upon the results of the analyses:

1. Using ITE Trip Generation Manual data, the proposed project is expected to generate approximately 66 entering/76 exiting vehicle trips during the AM peak hour and 145 entering/156 exiting vehicle trips during the PM peak hour.

2. However, not all driveway volumes are new, but instead a portion of the proposed volume is reduced considering internal capture adjustments. Thus, the proposed project is expected to generate approximately 62 entering/72 exiting vehicle trips during the AM peak hour and 129 entering/140 exiting vehicle trips during the PM peak hour.

3. A crash analysis was conducted from 2017-2019 at the study intersections. Most of the crash types occurring at each study intersection were rear end events, a characteristic of signalized intersections along moderately to heavily trafficked arterials. However, an in-depth review of the crashes determined no deficiencies exist which can be corrected by geometric improvements. Consideration may be given to upgrading the signal at Sweet Home Road/Maple Road to change the green signals to flashing yellow arrows for permissive left turns to address the frequency of left turn crashes.

4. Minor signal timing adjustments are recommended at the intersection of Sweet Home Road/Rensch Road during the AM peak hour. These adjustments should be made under background conditions.

5. When considering Town of Amherst Zoning Code parking requirements and shared parking demands, the project site has a parking deficit of 10 or fewer spaces. It is noted that the proposed apartments are to be marketed as student housing given the proximity of the project site to the UB North Campus. When considering the requirements per Town Code and demands using the ULI Model, these sources assume that the residential demands are typical multifamily uses and not student uses. Students are highly likely to own fewer vehicles per unit than typical multifamily developments, especially given the proximity of the proposed project to the UB North Campus. Parking reduction strategies are being provided, such as bicycle parking spaces. Given these considerations, no significant adverse parking impacts are projected.

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6. The projected traffic impacts resulting from full development of the proposed mixed-use project during both peak hours can be accommodated by the existing transportation network and study area intersections. No capacity improvements are required.

7. The proposed mixed-use project will not result in any potentially significant adverse traffic impacts to the study area intersections. This Traffic Impact Study provides the Town of Amherst and involved agencies with a detailed analysis for the purpose of evaluating the potential traffic impacts associated with the proposed project.

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

I. INTRODUCTION

The purpose of this report is to evaluate the potential traffic impacts related to the proposed mixed-use development at 1400-1416 Sweet Home Road in the Town of Amherst, NY. Within this report, the operating characteristics of the proposed access points and impacts to the adjacent roadway network are identified and mitigating measures (if needed) are provided to minimize operational concerns.

To define traffic impact, this analysis establishes existing baseline traffic conditions, projects background traffic flow including area growth, and determines the traffic operations that would result from the proposed project.

II. LOCATION

The proposed project will be at 1400-1416 Sweet Home Road in the Town of Amherst, Erie County, New York. Currently, there are office buildings occupying the site. These buildings will be replaced by the proposed mixed-use project. The project site is bounded by portions of undeveloped lands to the north; Sweet Home Road to the east; Rensch Road to the south; and I-990 to the west. Land uses in the vicinity of the proposed project include residential, education, office, and service.

To ensure a comprehensive analysis of potential traffic impacts, a geographically broad study area was determined consisting of the following intersections:

- Rensch Road/Villas on Rensch (W)/Office Lots (unsignalized)
- Rensch Road/Villas on Rensch (E)/Office Lots (unsignalized)
- Sweet Home Road/Rensch Road (signalized)
- Sweet Home Road/The Station (unsignalized)
- Sweet Home Road/Maple Road (signalized)

The project site location and study area are illustrated in **Figure 1** (all figures are included at the end of this report).

III. EXISTING HIGHWAY SYSTEM

A. Vehicular Network Description

The following information outlined in **Table I** provides a description of the existing roadway network within the project study area. **Figure 2** illustrates the lane geometry at each of the study intersections and the Annual Average Daily Traffic (AADT) volumes on the study roadways. The AADTs reflect the most recently collected data obtained from the New York State Department of Transportation (NYSDOT). Where data is not available or up to date, Average Daily Traffic (ADT) volumes are based upon an extrapolation of turning movement counts performed by SRF Associates.

Functional classification of highways within the study area is determined by the NYSDOT and the Federal Highway Administration (FHWA). Definitions of the functional classifications shown in **Table I** are provided after the table.

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TABLE I: EXISTING HIGHWAY SYSTEM

ROADWAY	CLASS[1]	AGENCY[2]	SPEED LIMIT[3]	TRAVEL LANES[4]	TRAVEL PATTERN/ DIRECTION	EST. AADT & SOURCE[5]
Sweet Home Road (952T)	16	NYSDOT	45	4	Two-way/ North-South	17,040 NYSDOT (2018)
Maple Road (W) (CR-192)	14	ECDPW	45	4	Two-way/ East-West	24,564 NYSDOT (2019)
Maple Road (E) (CR-192)	14	ECDPW	45	4	Two-way/ East-West	23,377 NYSDOT (2018)
Rensch Road	19	Town	30	2	Two-way/ East-West	2,950 SRF (2022)

Notes:
1. State Functional Classification of Roadway.
2. Jurisdictional Agency of Roadway.
3. Posted or Statewide Limit in Miles per Hour (mph).
4. Number of travel lanes. Excludes turning/auxiliary lanes developed at intersections.
5. Estimated AADT in Vehicles per Day (vpd). AADT Source (Year).

Urban Principal Arterial – Other (Class 14)

An urban principal arterial serves major activity centers, can interconnect and augment higher level arterials, serve trips of moderate length, and serve demand for intra-area travel between the central business district and outlying residential areas. Unlike access-controlled arterials, abutting land uses can be served directly.

Urban Minor Arterial (Class 16)

An urban minor arterial provide service for trips of moderate length, serve geographic areas that are smaller than higher arterial roadways, and offer connectivity to higher arterial systems. These roadways distribute traffic to smaller geographic areas, provide more land access without disrupting neighborhood access, and provide urban connections for rural collectors.

Urban Local (Class 19)

Locally classified roads account for the largest percentage of all roadway mileage and includes all facilities not in one of the higher systems. Local roadways do not typically serve as bus routes, are often designed to discourage through traffic, and have the lowest degree of mobility.

B. Multi-Modal Network Description

This evaluation reviewed the study area's pedestrian, bicycle, and transit network via field and aerial reconnaissance. A description of the multi-modal infrastructure is described hereafter.

Pedestrian & Bicycle Facilities

Sidewalks are located within the study area. The signalized intersections of Sweet Home Road/Rensch Road and Sweet Home Road/Maple Road feature pedestrian countdown signals and crosswalk striping.

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Dedicated bicycle lanes are in place along Sweet Home Road. Where there are no dedicated facility, cyclists are permitted to share the road with motorists.

Transit Facilities

The Niagara Frontier Transportation Authority (NFTA) provides regional bus and metro rail service. The nearest bus stops are at the intersections of Sweet Home Road/Rensch Road and is serviced via Route 35 (Sheridan).

IV. EXISTING TRAFFIC CONDITIONS

A. Peak Intervals for Analysis

Given the functional characteristics of the study corridors, adjacent land uses, and the proposed land uses for the project site (residential and commercial), the peak hours selected for analysis are the weekday commuter AM and PM peak periods. The combination of site traffic and adjacent through traffic produces the greatest demand during these time periods.

B. Existing Traffic Volume Data

Turning movement traffic counts were collected by SRF at the study intersections described in Section II on Thursday, March 3, 2022. Traffic counts were conducted from 7:00-9:00 AM and 4:00-6:00 PM. All traffic counts were conducted while local schools and the University at Buffalo were in session. The traffic volumes were reviewed to confirm the accuracy and relative balance of the collective traffic counts. For the purposes of this analysis, the data are utilized with the actual peak hours at each individual intersection. Using the actual peaks at each intersection provides a worst-case scenario when adding project related traffic. The unadjusted weekday AM and PM peak hour volumes are reflected in **Figure 3A**.

It is noted, however, that traffic volumes may be impacted by the COVID-19 pandemic. The NYSDOT released a study in February 2021 that described the effect the COVID-19 pandemic had on traffic in New York State in 2020. The NYSDOT study illustrated the percent difference 2020 weekday ADTs to average weekday ADTs prior to 2020. Additionally, traffic volumes were compared to traffic data obtained in 2018 traffic data at the intersections of Sweet Home Road/Rensch Road and Sweet Home Road/Maple Road before the COVID-19 pandemic by SRF Associates.

The historic counts in the study area were used to adjust the collected data to reflect 2022 representative traffic conditions by increasing the collected traffic volumes for specific movements, such as traffic entering and exiting the University at Buffalo. This is consistent with NYSDOT and ITE methodology for adjustments related to collected traffic volumes affected by the COVID-19 pandemic. The adjustments are reflected in the Appendices.

Figure 3B illustrates the representative 2022 weekday AM and PM peak hour base volumes used for analysis purposes in this study.

C. Field Observations

The study intersections were observed during both peak intervals to assess current traffic operations. Signal timing and phasing information was obtained by the NYSDOT to determine peak hour phasing plans and phase durations during each interval. This information was used to support and/or calibrate capacity analysis models described in detail later in this report.

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D. Existing Crash Investigation

The purpose of this crash analysis is to identify inherent safety issues by studying and quantifying historical crashes at the study intersections and identifying potential crash patterns and clusters.

A crash cluster is defined as an abnormal occurrence of similar crash types occurring at approximately the same location or involving the same geometric features. The severity of the crashes should also be considered. A history of crashes is an indication that further analysis is required to determine the cause(s) of the crash(es) and to identify what actions, if any, could be taken to mitigate the crashes.

A crash investigation within the study area was conducted to assess the safety history from January 1, 2017, through December 31, 2019. The data was provided by the New York State Department of Motor Vehicles through a Freedom of Information (FOIL) request. Given that the COVID-19 pandemic influenced daily travel in 2020 and 2021, any reported crashes were dismissed from the study.

Reportable (non-injury, injury, and fatal injury) type crashes are defined as damage to one person's property in the amount of $1,001 or more. The Non-Reportable type crashes result in property damage of $1,000 or less. Crash rates were computed for the study intersection and compared with NYSDOT average crash rates for similar intersections, as summarized in **Table II**. Intersection rates are listed as crashes per million entering vehicle (CR/MEV). Pertinent crash data is provided in the Appendices.

TABLE II: EXISTING CRASH RATES

INTERSECTION	TOTAL CRASHES	NUMBER OF ENTERING VEHICLES	ACTUAL CRASH RATE	STATEWIDE AVERAGE CRASH RATE
Sweet Home Road/Rensch Road	32	28,589	1.02	0.26
Sweet Home Road/The Station	1	22,705	0.04	0.07
Sweet Home Road/Maple Road	64	38,863	1.50	0.26

Notable crash clusters are approaches with three or greater identifiable consistent crash types.

Sweet Home Road/Rensch Road

As shown in **Table II**, the study intersection has a crash rate that is approximately 3.9 times higher than the statewide average crash rate for similar intersections. The following crashes occurred: rear end (17), fixed object (4), left turn (4), overtaking (2), right turn (2), right angle (1), sideswipe (1), bicycle (1). The bicycle crash resulted in an injury as the cyclist was crossing the road with traffic.

The following patterns were reported:

- Rear end
  - Northbound (nine crashes)
  - Southbound (seven crashes)
- Left turn
  - Eastbound (three crashes)

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- Fixed object
    - Northbound (three crashes)

The reported rear end crashes (53%) are characteristic of moderate to heavily trafficked signalized intersections. The causes of the rear end crashes were generally due to driver error, unsafe speeds, or following too closely. There are no correctable deficiencies at the intersection that could be improved to significantly improve safety.

Sweet Home Road/The Station

As shown in **Table II**, the study intersection has a crash rate that is lower than the statewide average crash rate for similar intersections. No discernible crash patterns exist; thus, no geometric improvements are recommended.

Sweet Home Road/Maple Road

As shown in **Table II**, the study intersection has a crash rate that is approximately 5.7 times higher than the statewide average crash rate for similar intersections. The following crashes occurred: rear end (24), left turn (15), right angle (10), overtaking (7), right turn (3), head on (2), fixed object (2), pedestrian (1). The pedestrian crash resulted in an injury as the pedestrian was crossing the road with traffic.

The following patterns were reported:

- Rear end
    - Northbound (three rashes)
    - Southbound (nine crashes)
    - Eastbound (four crashes)
    - Westbound (eight crashes)
- Left turn
    - Northbound (six crashes)
    - Southbound (seven crashes)
- Right angle
    - Northbound (four crashes)
    - Eastbound (three crashes)
- Overtaking
    - Westbound (four crashes)

The intersection is large consisting of numerous lanes in each direction and is frequently traveled during the peak hours. Rear end (37%) and left turn (23%) crashes are the most prominent. Most of the left turn crashes occurred due to drivers failing to yield the right of way due to the permissive movement during the thru movement on green. These drivers are likely to turn with smaller than desirable gaps in traffic and potentially creating an unsafe condition.

To correct this condition, protected left turn phases would reduce these crashes; however, this would also reduce the overall capacity of the intersection. One such improvement may be to upgrade the signals to change the green signal to flashing yellow arrow for permissive left turns. No geometric improvements are recommended.

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V. FUTURE AREA DEVELOPMENT AND LOCAL GROWTH

Construction of the proposed project is anticipated to reach full build-out within approximately five years depending on market conditions. Town of Amherst personnel were contacted to discuss any other specific projects that are currently approved or under construction that would generate additional traffic in the study area. Two projects were identified:

- 1265 Sweet Home Road
- Completion of The Station

The Station is currently partially occupied. SRF Associates reached out to the property management to determine actual occupancy but did not receive any information. SRF Associates produced the traffic study for this project and review the projected trip generation estimates. The difference between the full development trip generation estimates in the study and the actual trips entering and entering the site during the peak hours were added to the study area intersections.

To account for normal increases in background traffic growth, including any unforeseen developments in the project study area, aside from the two projects mentioned, a growth rate of 0.25% was applied to the existing traffic volumes in the study area based upon a review of historical traffic information obtained from the NYSDOT. All ambient growth calculations are included in the Appendices. The background traffic volumes are depicted in **Figure 4**.

VI. PROPOSED DEVELOPMENT

A. Project Description

The proposed project consists of constructing:

- ±10,000 square feet (SF) of office space
- ±10,000 SF of retail space
- 500 residential units marketed as student housing (1,025 bedrooms)

Access to the proposed project will be provided via two full access driveways along Rensch Road. **Figure 5** illustrates the proposed site plan as prepared by Carmina Wood Morris.

B. Site Generated Traffic

The volume of traffic generated by a site is dependent on the intended land use and size of the development. Trip generation is an estimate of the number of trips generated by a specific building or land use. These trips represent the volume of traffic entering and exiting the development. Trip Generation Manual (11th Edition) published by the Institute of Transportation Engineers (ITE) is used as a reference for this information. The trip rate for the peak hour of the generator may or may not coincide in time or volume with the trip rate for the peak hour of adjacent street traffic. Volumes generated during the peak hour of the adjacent street traffic and proposed land use, in this case, the weekday commuter AM and PM peaks, represent a more critical volume when analyzing the capacity of the system; those intervals will provide the basis of this analysis.

The proposed mixed-use project consists of three different land uses (residential, office, and retail) and is considered mixed-use (multi-use). According to the Institute of Transportation Engineers Trip Generation Handbook, (3rd Edition), "…a multi-use development is typically a single real-estate project that consists of two or more ITE land use classifications between

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which trips can be made without using the off-site road system. Because of the nature of these land uses, the trip-making characteristics are interrelated, and some trips are made among the on-site uses. This capture of trips internal to the site has the net effect of reducing vehicle trip generation between the overall development site and the external street system (compared to the total number of trips generated by comparable, standalone sites)." "In some multi-use developments, these internal trips can be made by walking or by vehicles entirely on internal pathways or internal roadways without using streets external to the site."

The Handbook indicates internal capture rates for trips within a multi-use development to vary between residential, office, retail, restaurant, hotel, entertainment and recreational uses during the AM and PM peak hours. Given the proposed land use components and interconnection between these components, multi-use total volume trips will likely occur.

Methodology contained in National Cooperative Highway Research Program (NCHRP) Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Development was consulted to perform the mixed-use adjustment. The interactive spreadsheet considers baseline mode shares and vehicle occupancy factors for the proposed land uses, as described in the Handbook, as well as average land use interchange distances (feet walking distance) to determine the internal capture percentage. This completed spreadsheet model is included in the Appendices. The NCHRP 684 model reported an internal baseline capture percentage of 5% during the AM peak hour and 10% during the PM peak hour.

These multi-use trip projection adjustments were applied to the respective site generated trips and subtracted from the traffic entering and exiting the site during the peak periods.

Table III shows the total site generated trips, internal trips, and resulting primary trips that are added to the existing highway system for full development of the project. All trip generation information has been included in the Appendices.

TABLE III: SITE GENERATED TRIPS

DESCRIPTION	ITE LUC	SIZE	AM PEAK HOUR		PM PEAK HOUR	
			ENTER	EXIT	ENTER	EXIT
Residential	225	1,025 bedrooms	39	64	110	111
Office	710	±10,000 SF	13	2	2	12
Retail	822	±10,000 SF	14	10	33	33
Total Site Generated Trips			**66**	**76**	**145**	**156**
Internal Trips			*-4*	*-4*	*-16*	*-16*
Total Primary Trips			**62**	**72**	**129**	**140**

Note:
1. ITE LUC = ITE Land Use Code

Using ITE Trip Generation Manual data, the proposed project is expected to generate approximately 66 entering/76 exiting vehicle trips during the AM peak hour and 145 entering/156 exiting vehicle trips during the PM peak hour.

However, not all driveway volumes are new, but instead a portion of the proposed volume is reduced considering internal capture adjustments. Thus, the proposed project is expected to generate approximately 62 entering/72 exiting vehicle trips during the AM peak hour and 129 entering/140 exiting vehicle trips during the PM peak hour.

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C. *Site Traffic Distribution*

The cumulative effect of site-generated traffic on the transportation network is dependent on the origins and destinations of that traffic and the location of the access drives serving the site. The proposed arrival/departure distribution of traffic generated by the proposed project is considered a function of several parameters, including:

- Proximity and access to the University at Buffalo
- Employment centers using Census Data
- Population centers using Census Data
- Commercial centers
- Proposed access locations
- Existing traffic patterns
- Existing traffic conditions and controls

Figure 6A shows the anticipated trip distribution pattern percentages for the traffic from the residential program and **Figure 6B** shows the anticipated trip distribution pattern percentages for the traffic from the commercial program. **Figure 7** illustrates the peak hour project site-generated traffic based on those percentages.

VII. FULL DEVELOPMENT VOLUMES

Proposed design hour traffic volumes are developed for the AM and PM peak hours by combining the background traffic conditions (**Figure 4**) and the new site generated traffic volumes (**Figure 7**) to yield the traffic volumes under full development conditions. The resulting design hour volumes for the proposed project are illustrated in **Figure 8** under full build-out conditions.

As stated, the existing site is currently occupied by office space. These tenants will be relocated upon full build-out of the proposed project. Traffic adjustments related to this condition is shown in the Appendices.

VIII. CAPACITY ANALYSIS

A. *Description of Capacity Analysis*

Capacity analysis is a technique used for determining a measure of effectiveness for a section of roadway and/or intersection based on the number of vehicles during a specific time period. The measure of effectiveness used for the capacity analysis is referred to as a Level of Service (LOS). Levels of Service are calculated to provide an indication of the amount of delay that a motorist experiences while traveling along a roadway or through an intersection. Since the most amount of delay to motorists usually occurs at intersections, capacity analysis focuses on intersections, as opposed to highway segments.

Six Levels of Service are defined for analysis purposes. They are assigned letter designations, from "A" to "F", with LOS "A" representing the conditions with little to no delay, and LOS "F" conditions with very long delays. Suggested ranges of service capacity and an explanation of Levels of Service are included in the Appendices. LOS “C” or better is generally desirable, but LOS “D” for signalized locations and LOS “E” for unsignalized are generally acceptable during peak periods so long as the volume to capacity ratio (v/c) is below 1.0.

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The standard procedure for capacity analysis of signalized and unsignalized intersections is outlined in the Highway Capacity Manual (HCM 2016) published by the Transportation Research Board. Traffic analysis software, Synchro 11, which is based on procedures and methodologies contained in the HCM, was used to analyze operating conditions at the study area intersections. The procedure yields a Level of Service based on the HCM 2016 as an indicator of how well intersections operate. This study used HCM 2000 methodology for determining operations at the unsignalized intersections in accordance with local NYSDOT Region 5 guidelines.

Given that the intersection of Sweet Home Road/Maple Road exceeds capacity (v/c ratio greater than 1.0) during the PM peak hour, traffic simulation modeling was also used using an extension of the Synchro software called SimTraffic. During simulation modeling, vehicles are individually tracked, and statistics are recorded on a second-by-second basis to determine the delays each vehicle experiences. Since SimTraffic simulation modeling is microscopic and stochastic, meaning car movement parameters vary randomly within a set distribution based on an initial seed number, the same traffic volume may result in slightly different results depending on the random seed used. Therefore, simulation results are reported based on an average value of multiple simulation runs to reduce the variability in results.

Synchro and SimTraffic results are contained in the Appendices.

B. Capacity Analysis Results

Existing and background operating conditions during the peak study periods are evaluated to determine a basis for comparison with the projected future conditions. The future traffic conditions generated by the proposed project were analyzed to assess the operation of the study area intersections. Capacity results for existing, background and full development conditions are listed in **Table IV**. The discussion following the table summarizes capacity conditions.

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TABLE IV: CAPACITY ANALYSIS RESULTS

INTERSECTION	2022 EXISTING CONDITIONS				2027 BACKGROUND CONDITIONS				2027 FULL BUILD CONDITIONS			
	AM		PM		AM		PM		AM		PM	
1. Rensch Road/Proposed Westerly Driveway (U)												
EB - Rensch Road	NA		NA		NA		NA		A	0.0	A	0.0
SB - Proposed Westerly Driveway									A	9.3	A	10.0
2. Rensch Road/Office Lot/Villas on Rensch (W) (U)												
EB - Rensch Road	A	0.0	A	0.1	A	0.0	A	0.1	NA		NA	
WB - Rensch Road	A	0.1	A	2.1	A	0.1	A	2.1	A	0.0	A	0.1
NB - Villas on Rensch (W)	A	9.4	A	9.4	A	9.4	A	9.5	A	9.4	A	0.0
SB - Office Lots	B	10.4	B	12.1	B	10.4	B	12.1	NA		NA	
3. Rensch Road/Proposed Easterly Driveway (U)												
EB - Rensch Road	NA		NA		NA		NA		A	0.1	A	0.1
SB - Proposed Easterly Driveway									A	10.0	B	12.1
4. Rensch Road/Office Lot/Villas on Rensch (E) (U)												
EB - Rensch Road	A	0.0	A	0.0	A	0.0	A	0.0	NA		NA	
WB - Rensch Road	A	0.0	A	0.2	A	0.0	A	0.2	A	0.2	A	1.4
NB - Villas on Rensch (E)	A	9.5	A	0.0	A	9.5	A	0.0	A	9.9	B	10.1
SB - Office Lots	A	9.7	A	9.7	A	9.7	A	9.7	NA		NA	

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TABLE IV: CAPACITY ANALYSIS RESULTS

INTERSECTION	2022 EXISTING CONDITIONS				2027 BACKGROUND CONDITIONS				2027 FULL BUILD CONDITIONS			
	AM		PM		AM		PM		AM		PM	
5. Sweet Home Road/Rensch Road (S)												
EB left - Rensch Road	D	36.1	D	46.6	D	38.4	D	46.9	D	37.0	D	46.8
EB thru/right - Rensch Road	D	38.2	D	53.0	D	40.7	D	53.8	D	43.6	E	59.5
WB left - Rensch Road	D	42.2	E	59.3	D	45.1	E	61.8	D	46.7	E	67.7
WB left/thru - Rensch Road	D	41.5	E	58.8	D	44.3	E	62.7	D	46.2	E	68.4
WB right - Rensch Road	A	6.6	A	9.5	A	2.3	A	9.4	A	2.5	A	9.3
NB left - Sweet Home Road	D	42.1	E	55.5	D	44.9	E	56.0	D	45.6	E	59.1
NB thru - Sweet Home Road	C	29.5	D	43.0	C	32.4	D	43.6	C	34.8	D	45.3
NB right - Sweet Home Road	A	6.5	A	7.7	A	7.2	A	7.9	A	7.7	A	8.0
SB left - Sweet Home Road	E	61.6	E	68.7	D	51.0	E	72.4	E	57.9	E	78.0
SB thru/right - Sweet Home Road	C	21.2	C	26.3	C	21.4	C	26.7	C	20.6	C	32.1
Overall LOS	**C**	**29.4**	**D**	**38.0**	**C**	**27.9**	**D**	**39.2**	**C**	**29.7**	**D**	**43.3**
Volume-to-Capacity (v/c) Ratio	**0.89**		**0.83**		**0.82**		**0.85**		**0.86**		**0.88**	
6. Sweet Home Road/The Station (U)												
WB left - The Station	B	14.5	C	22.6	C	16.3	C	24.6	C	16.2	D	25.1
WB right - The Station	B	10.7	B	12.4	B	11.4	B	12.7	B	11.3	B	12.8
SB left - Sweet Home Road	A	9.0	B	10.6	A	9.3	B	10.8	A	9.3	B	10.9
7. Sweet Home Road/Maple Road (S)												
EB left - Maple Road	C	31.6	E	61.9	C	34.1	E	78.1	C	33.6	E	71.1
EB thru - Maple Road	C	32.6	E	73.9	C	32.7	F	129.5	C	32.6	F	104.8
EB thru - Maple Road		NA	D	38.3		NA	D	43.8		NA	D	44.5
EB right - Maple Road	A	0.3	A	9.0	A	0.3	A	7.6	A	0.3	A	8.9
WB left - Maple Road	C	21.7	D	35.9	C	21.9	D	43.2	C	21.8	D	39.9
WB thru - Maple Road	D	40.2	E	72.8	D	40.7	F	87.4	D	40.5	F	85.2
WB thru - Maple Road		NA	D	48.1		NA	E	67.3		NA	E	65.4
WB right - Maple Road	A	3.9	A	7.6	A	4.2	A	9.6	A	4.0	B	10.2
NB left - Sweet Home Road	B	18.7	C	29.8	B	19.0	C	31.1	B	19.0	C	31.7
NB thru - Sweet Home Road	D	40.4	D	43.6	D	41.9	D	49.5	D	41.3	D	44.2
NB right - Sweet Home Road	A	2.9	A	5.8	A	3.0	A	6.9	A	3.0	A	7.5
SB left - Sweet Home Road	C	22.0	C	30.6	C	23.1	C	33.8	C	23.0	C	34.6
SB thru - Sweet Home Road	C	31.9	D	35.7	C	32.8	D	35.3	C	33.1	D	37.7
SB right - Sweet Home Road	A	3.1	B	12.4	A	3.7	B	11.9	A	4.1	B	13.7
Overall LOS	**C**	**27.5**	**D**	**40.8**	**C**	**28.1**	**D**	**54.5**	**C**	**27.9**	**D**	**52.7**
Volume-to-Capacity (v/c) Ratio	**0.68**		**1.13**		**0.72**		**1.18**		**0.71**		**1.22**	

Notes:

1. A (0.0) = Level of Service (Delay in seconds per vehicle)
2. EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound
3. (S) = Signalized; (U) = Unsignalized
4. N/A = Approach does not exist and/or was not analyzed during this condition
5. Green shaded cells indicate low delays, yellow shaded cells indicate moderate delays, red shaded cells indicate long delays.
6. The v/c ratio, also referred to as degree of saturation, represents the sufficiency of an intersection to accommodate the vehicular demand. A v/c ratio less than 0.85 generally indicates that adequate capacity is available and vehicles are not expected to experience significant queues and delays. A v/c ratio between 0.85 and 0.95 generally indicates an intersection is nearing capacity. Intersections with a v/c ratio of 1.0 or greater generally indicate conditions at or above capacity.
7. Due to v/c being greater than 1.0 at Sweet Home Road/Maple Road during the PM peak hour, the condition was analyzed using SimTraffic Simulations.

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1. Rensch Road/Proposed Westerly Driveway

All movements are projected to operate at LOS "A" under future build conditions during both peak hours studied. No capacity improvements are warranted nor recommended.

2. Rensch Road/Office Lots/Villas on Rensch (W)

All movements operate at LOS "B" or better under existing, projected background, and future build conditions during both peak hours studied. The intersection can accommodate the projected new traffic volumes resulting from the project; thus, no capacity improvements are warranted nor recommended.

3. Rensch Road/Proposed Easterly Driveway

All movements are projected to operate at LOS "B" or better under future build conditions during both peak hours studied. No capacity improvements are warranted nor recommended.

4. Rensch Road/Office Lots/Villas on Rensch (E)

All movements operate at LOS "A" under existing, projected background, and future build conditions during both peak hours studied. The intersection can accommodate the projected new traffic volumes resulting from the project; thus, no capacity improvements are warranted nor recommended.

5. Sweet Home Road/Rensch Road

All movements generally operate at LOS "E" or better under existing, projected background, and future build conditions during both peak hours studied. Signal timing improvements are recommended under background conditions during the AM peak hour to maintain optimization. This consists of reducing the northbound left green time to 20 seconds (from 25 seconds) and increasing the southbound left green time to 28 seconds (from 25 seconds).

Upon full build conditions, the southbound left movement during the AM peak hour is projected to change from LOS "D" to "E"; a borderline condition, as the threshold is at 55.0 seconds of delay per vehicle. During the PM peak hour, the eastbound thru/right movement changes from LOS "D" to "E"; a borderline condition.

The intersection can accommodate the projected new traffic volumes resulting from the project; thus, no capacity improvements are warranted nor recommended.

6. Sweet Home Road/The Station

All movements operate at LOS "D" or better under existing, projected background, and future build conditions during both peak hours studied. Between background and full build conditions, the westbound left movement changes from LOS "C" to "D" during the PM peak hour; a borderline condition as the threshold occurs at 25.0 seconds of delay per vehicle. The intersection can accommodate the projected new traffic volumes resulting from the project; thus, no capacity improvements are warranted nor recommended.

7. Sweet Home Road/Maple Road

All movements generally operate at LOS "D" or better under existing, projected background, and future build conditions during the AM peak hour. However, operational deficiencies exist during the PM peak hour under all conditions based upon traffic simulations. The overall intersection operates with a v/c ratio greater than 1.0 with an overall LOS of "D".

The eastbound left movement and existing traffic volumes are accommodated by a single lane. An additional left turn would be more appropriate based on the general rule of thumb of

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providing an additional left turn lane when peak hour left turn traffic volumes exceed 300 vehicles. Additionally, the southbound right turn movement is accommodated by a single lane. Additional lanes to accommodate these turning movements would improve overall capacity. However, the construction of these improvements would require significant widening, relocation of utilities, and widening past the intersection.

The proposed project will contribute approximately 1.7% of total intersection traffic during the AM peak hour and 2.3% of total intersection traffic during the PM peak hour.

When considering the projected traffic increases resulting from the proposed project, no project related capacity improvements are recommended.

IX. ALTERNATIVE PARKING PLAN

A. Town Parking Requirements

A Parking Demand Assessment was prepared consisting of an Alternate Parking Study per Section 7-1-7-A of the Zoning Code. When evaluating the parking supply needs for the proposed mixed-use project, our firm projected the parking demand considering shared parking (mixed-use) principles using nationally accepted methodology developed by the Urban Land Institute (ULI), ITE, International Council of Shopping Centers (ICSC), and National Parking Association (NPA). and a comparison to Town requirements, as set forth within Section 5A-9-1-A of the Town of Amherst's Updated Zoning Code Adopted on September 3, 2019 for Mixed-Use Districts.

Section 5A-9-1-A of the Zoning Code sets forth the off-street parking requirements for different categories of land uses. **Table V** depicts the required parking spaces for the project site.

TABLE V: TOWN CODE PARKING REQUIREMENTS

UNIT/USE TYPE	REQUIRED PARKING RATIO	SIZE	TOTAL REQUIRED PARKING SPACES
Two-bedroom unit	1.0 space per dwelling unit	475 units	475
Three or more bedroom unit	1.5 spaces per dwelling unit	25 units	38
Retail Sales	2.5 spaces per 1,000 SF	10,000 SF	25
Office	2.5 spaces per 1,000 SF	10,000 SF	25
Total Required Parking Spaces			**563**

Strict application of the unshared off-street parking standards in the Zoning Code results in a parking requirement of 563 spaces. The number of parking spaces to be provided is 316 surface spaces and 240 structured spaces for a total of 556 spaces. Thus, there is a deficit of seven parking spaces per strict application of Section 5A-9-1-A of the Zoning Code.

B. Shared Parking Demand

Shared parking studies are conducted to establish the total number of spaces necessary by mixed-use developments to effectively serve expected parking demands. The shared parking concept builds upon the premise that land uses in a mixed-use development often do not share the same peak demand period, so spaces can be shared between the different land uses

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during different peak periods. Each land use typically has a peak demand period where it would occupy the maximum number of spaces that the use requires and an off-peak period where a lesser percentage of the maximum spaces would be occupied; be it by time of day, day of week, or even month of the year. This allows for the project to provide fewer spaces than would be required if the land uses on a project site were to be treated separately with individual parking demands. The concept of shared parking is well recognized within the real estate and regulatory community and is proven to work.

To estimate the number of parking spaces required for the proposed mixed-use project, this assessment used the ULI methodology for shared parking. This methodology is utilized by transportation engineers and planners when evaluating the parking demand for a mixed-use project. The ULI Shared Parking 3rd Edition includes state-of-the-art practice methodologies for determining parking demand in these types of projects.

Accompanying the publication is an interactive Shared Parking Calculation Model (Model) that is used to estimate the shared parking demand. The Model requires a user to input the number of units associated with each proposed land use. Within the Model, 32 land uses are identified – some of which are subdivided into more refined categories – with 44 different recommended base parking ratios based on suburban locations with little or no transit. Data contained within the Model is from a combination of ULI surveys and the ITE Parking Generation Manual. Outputs consist of a summary table describing the base parking demand and shared parking reduction; a monthly demand comparison; weekday and weekend demand by month; and weekday and weekend demand by hour.

The peak hour demand, respective of weekday, weekend, and seasonal demands, is projected to occur at 7:00 PM on a December weekend. The projected peak hour demand for the mixed-use project (i.e., the busiest hour of the busiest weekday or weekend of the year) is ±566 spaces. Parking demand accumulations for the peak weekday and weekend are presented in **Table VI**.

TABLE VI: SHARED PARKING DEMAND PROJECTIONS

LAND USE	SIZE	WEEKDAY		WEEKEND	
		UNADJUSTED DEMAND	**SHARED DEMAND**	UNADJUSTED DEMAND	**SHARED DEMAND**
Residential	500 units	519	**519**	544	**544**
Retail	±10,000 SF	36	**29**	40	**23**
Office	±10,000 SF	38	**4**	5	**0**
Total Parking Spaces		593	**552**	589	**566**
Shared Parking Reduction		**7%**		**4%**	

Notes:
1. Weekday shared demand occurs in December at 7:00 PM
2. Weekend shared demand occurs in December at 7:00 PM

When considering the site's 556 total parking spaces, the projected peak shared demand is deficient by 10 spaces.

It is noted that the proposed residential use is marketed as student housing. When considering the requirements per Town Code and demands using the ULI Model, these sources assume that the residential demands are typical multifamily uses and not student uses. Students are

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highly likely to own fewer vehicles per than typical multifamily developments, especially given the proximity of the proposed project to the UB North Campus.

Parking reduction strategies are being provided, such as bicycle parking spaces. Given these considerations, no significant adverse parking impacts are projected.

X. CONCLUSIONS & RECOMMENDATIONS

This Traffic Impact Study identified and evaluated the potential traffic impacts that can be expected from the proposed mixed-use development at 1400-1416 Sweet Home Road in the Town of Amherst, New York. The results of this study determined that the existing transportation network can adequately accommodate the projected traffic volumes and resulting minor impacts to study area intersections with the following mitigation in place. The following sets forth the conclusions and recommendations based upon the results of the analyses:

1. Using ITE Trip Generation Manual data, the proposed project is expected to generate approximately 66 entering/76 exiting vehicle trips during the AM peak hour and 145 entering/156 exiting vehicle trips during the PM peak hour.

2. However, not all driveway volumes are new, but instead a portion of the proposed volume is reduced considering internal capture adjustments. Thus, the proposed project is expected to generate approximately 62 entering/72 exiting vehicle trips during the AM peak hour and 129 entering/140 exiting vehicle trips during the PM peak hour.

3. A crash analysis was conducted from 2017-2019 at the study intersections. Most of the crash types occurring at each study intersection were rear end events, a characteristic of signalized intersections along moderately to heavily trafficked arterials. However, an in-depth review of the crashes determined no deficiencies exist which can be corrected by geometric improvements. Consideration may be given to upgrading the signal at Sweet Home Road/Maple Road to change the green signals to flashing yellow arrows for permissive left turns to address the frequency of left turn crashes.

4. Minor signal timing adjustments are recommended at the intersection of Sweet Home Road/Rensch Road during the AM peak hour. These adjustments should be made under background conditions.

5. When considering Town of Amherst Zoning Code parking requirements and shared parking demands, the project site has a parking deficit of 10 or fewer spaces. It is noted that the proposed apartments are to be marketed as student housing given the proximity of the project site to the UB North Campus. When considering the requirements per Town Code and demands using the ULI Model, these sources assume that the residential demands are typical multifamily uses and not student uses. Students are highly likely to own fewer vehicles per unit than typical multifamily developments, especially given the proximity of the proposed project to the UB North Campus. Parking reduction strategies are being provided, such as bicycle parking spaces. Given these considerations, no significant adverse parking impacts are projected.

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6. The projected traffic impacts resulting from full development of the proposed mixed-use project during both peak hours can be accommodated by the existing transportation network and study area intersections. No capacity improvements are required.

7. The proposed mixed-use project will not result in any potentially significant adverse traffic impacts to the study area intersections. This Traffic Impact Study provides the Town of Amherst and involved agencies with a detailed analysis for the purpose of evaluating the potential traffic impacts associated with the proposed project.

XI. FIGURES

Figures 1 through 8 are included on the following pages.

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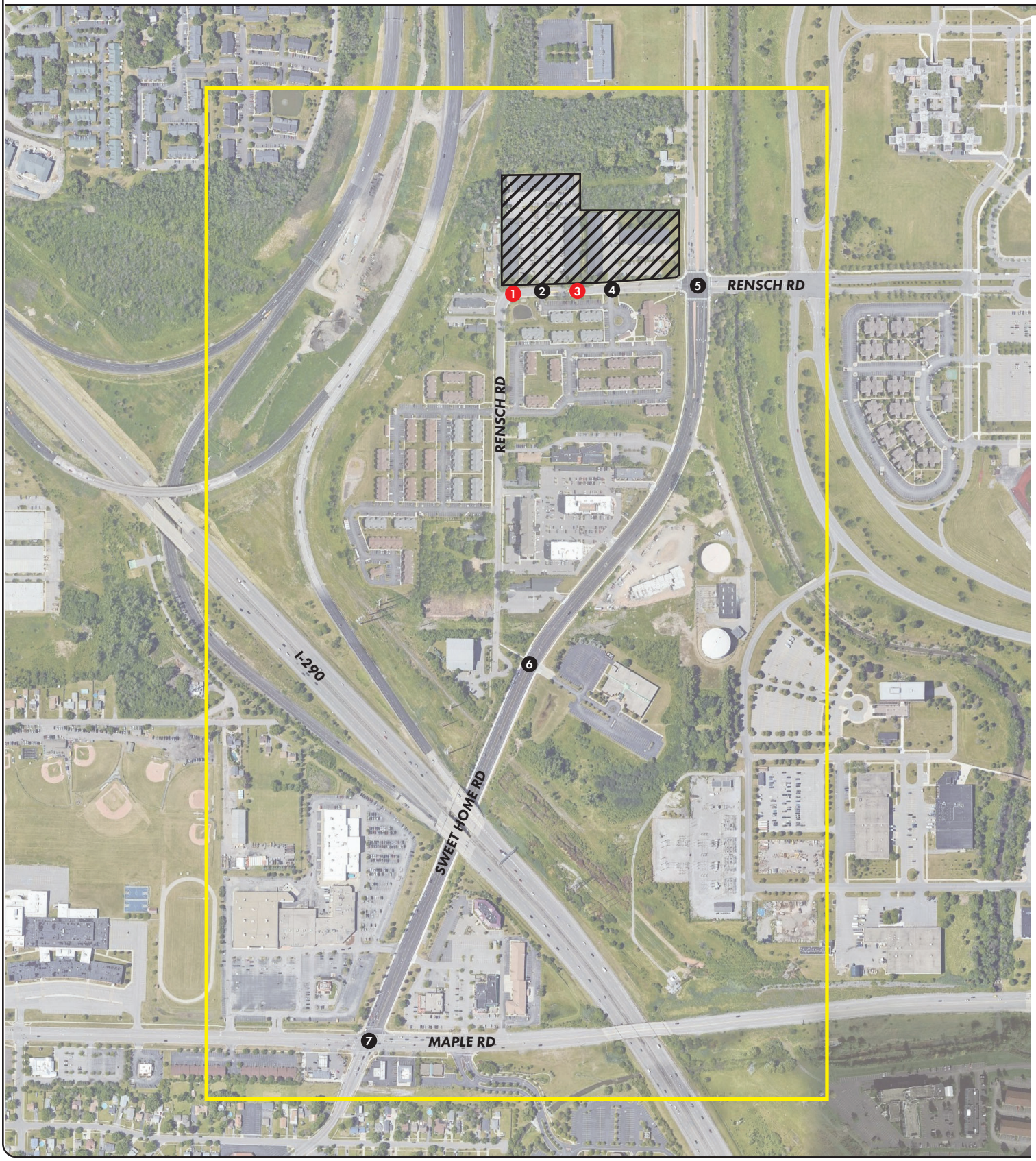
FIGURE 1: SITE LOCATION AND STUDY AREA



Key

- 1 Study Intersection
- 1 Proposed Intersection
- Study Area
- Site Location

PROPOSED MIXED-USE DEVELOPMENT
1400-1416 SWEET HOME ROAD

TOWN OF AMHERST, ERIE COUNTY, NEW YORK

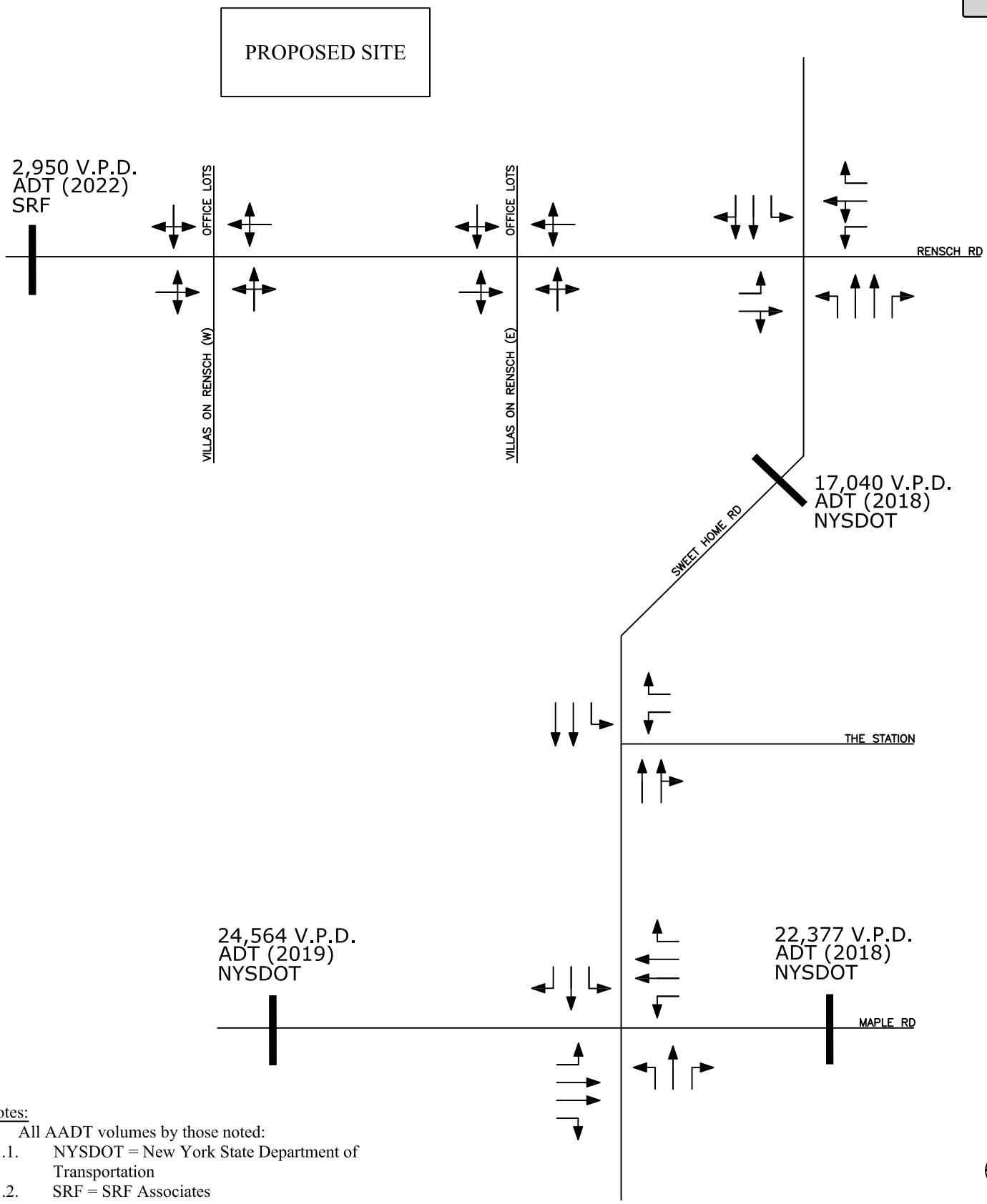
N

0 700 1400 2100

Feet

SRF ASSOCIATE
Transportation Planning / Engineering / Design

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)



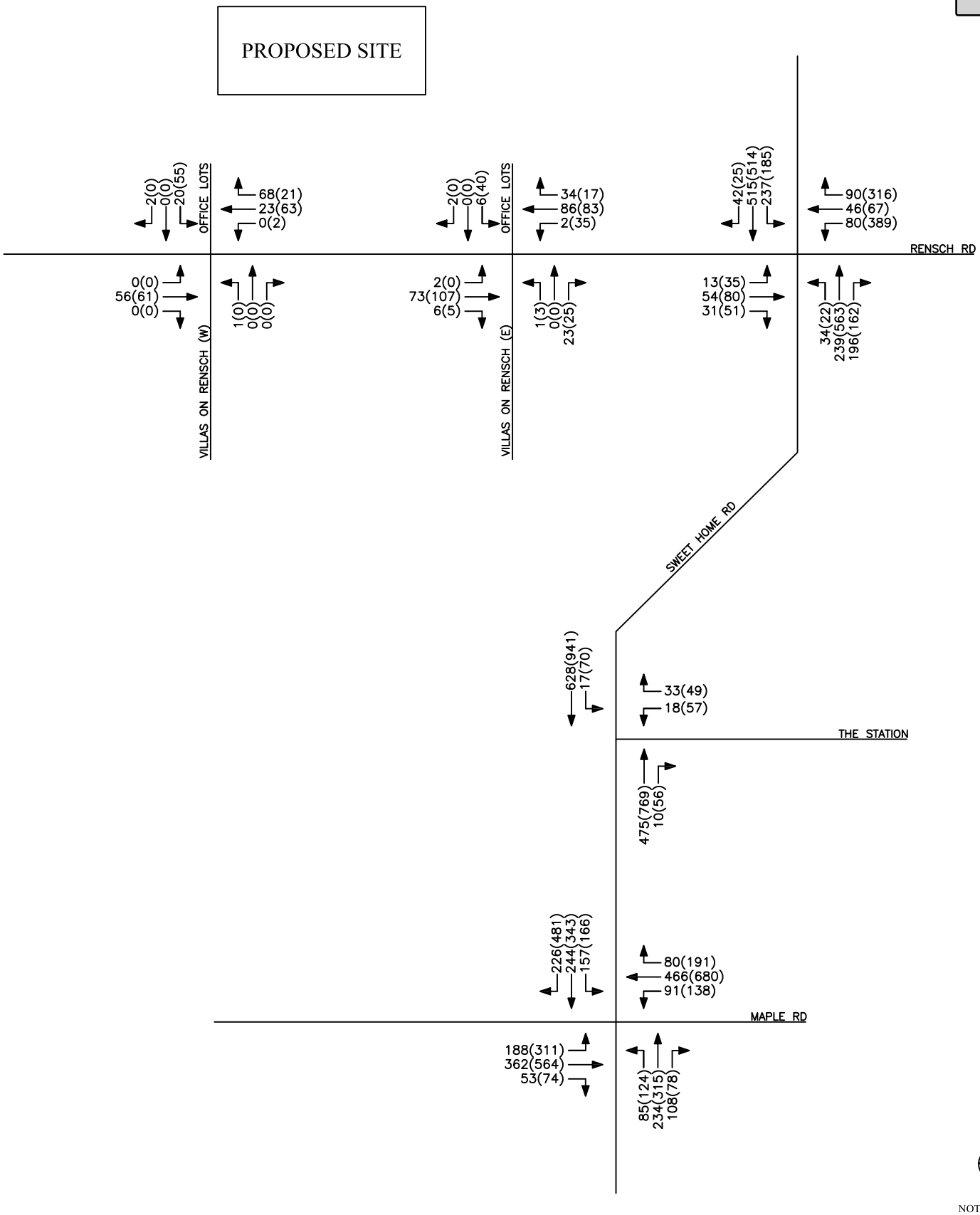
Notes:

1. All AADT volumes by those noted:
   - 1.1. NYSDOT = New York State Department of Transportation
   - 1.2. SRF = SRF Associates
2. V.P.D. = Vehicles per Day

N
NOT TO SCAI

KEY	FIGURE 2	SRF ASSOCIATES
	LANE GEOMETRY & AVERAGE DAILY TRAFFIC	Transportation Planning / Engineering / Design
PROJECT NO: 42019	PROPOSED MIXED-USE DEVELOPMENT TOWN OF AMHERST, NY	www.srfa.net / (58

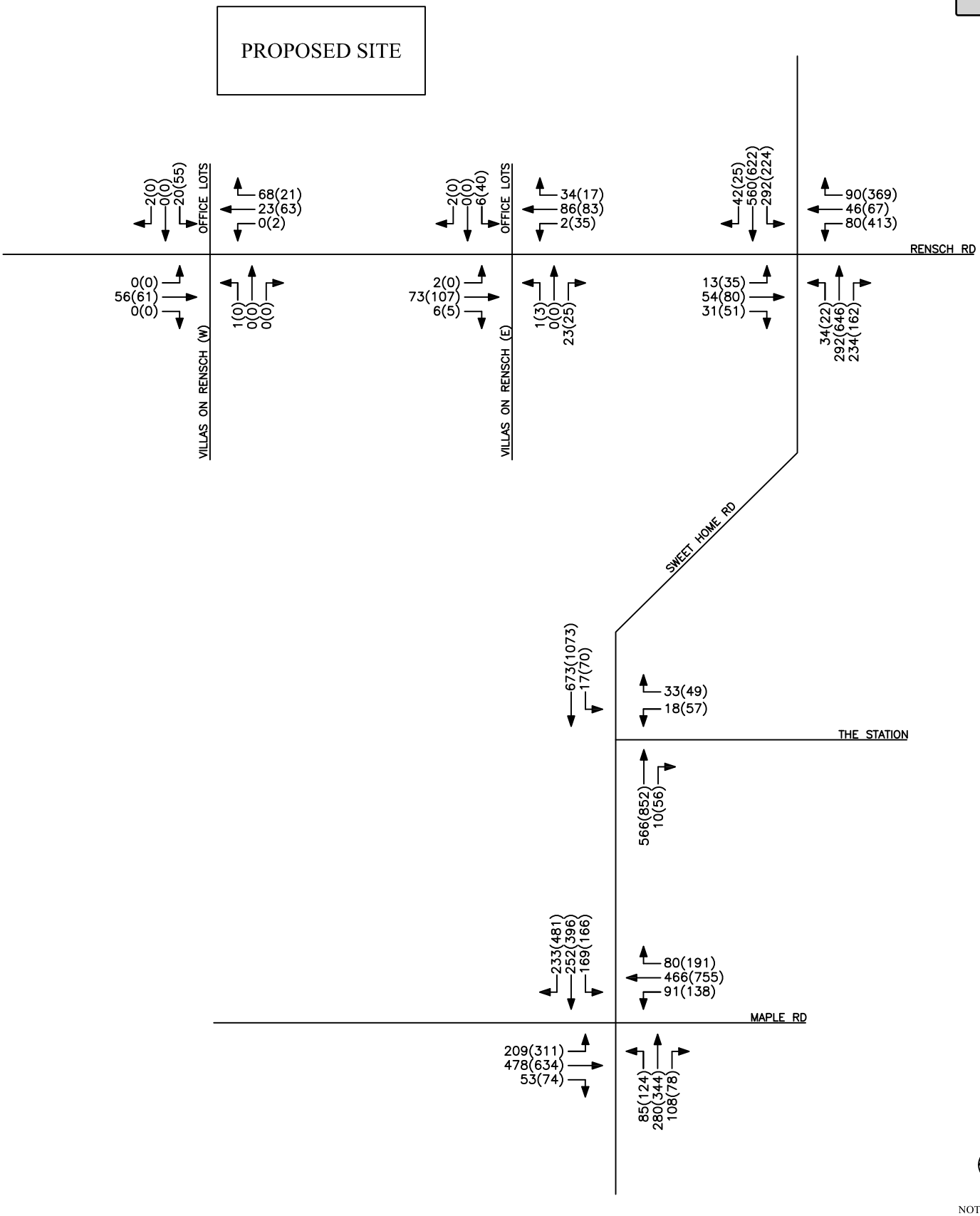
Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)



KEY	FIGURE 3A
00(00) = AM(PM)	PEAK HOUR VOLUMES 2022 UNADJUSTED CONDITIONS
PROJECT NO: 42019	PROPOSED MIXED-USE DEVELOPMENT TOWN OF AMHERST, NY

SRF ASSOCIATES
Transportation Planning / Engineering / Design
www.srfa.net / (58

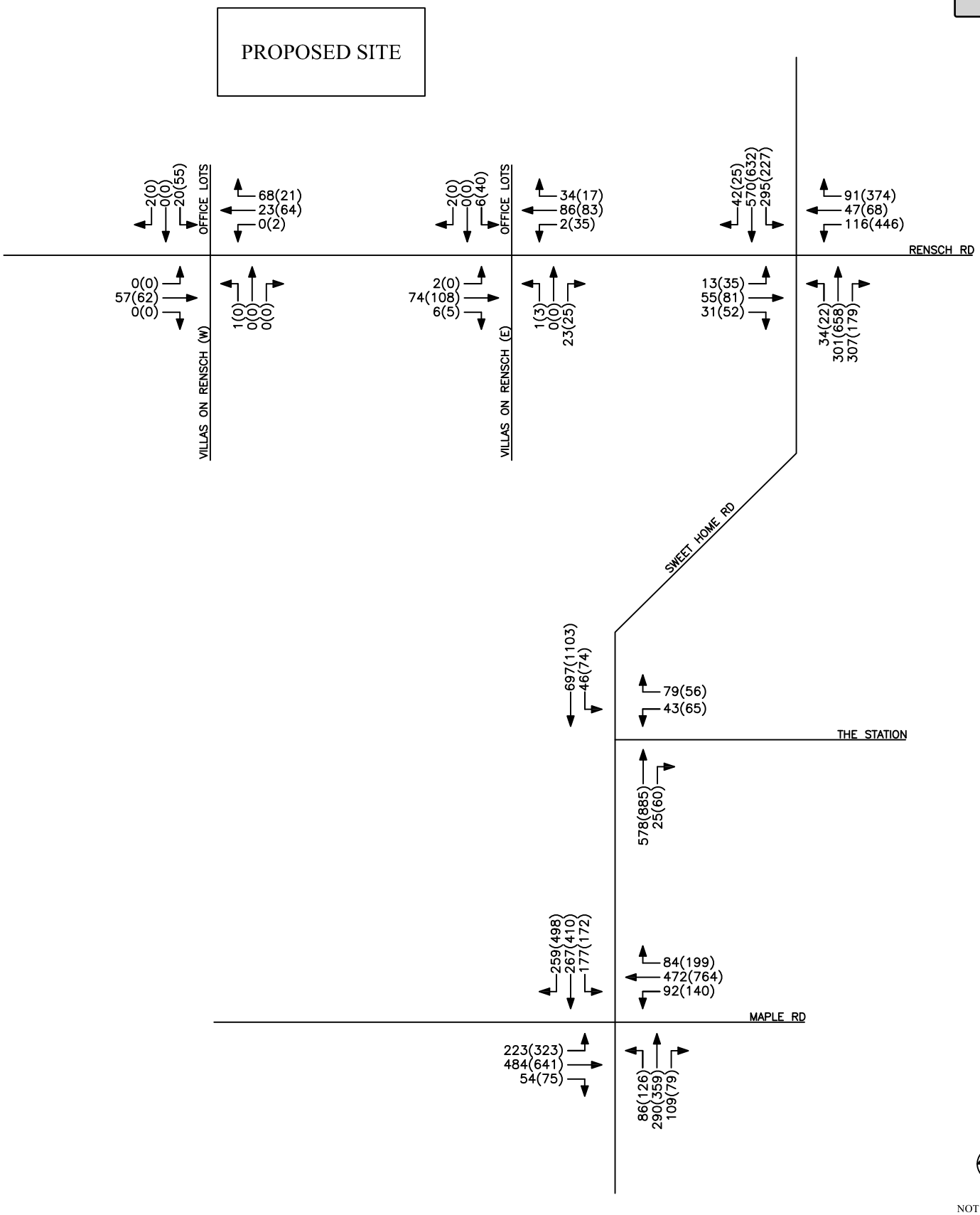
Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)



KEY	FIGURE 3B
00(00) = AM(PM)	PEAK HOUR VOLUMES 2022 EXISTING BASE CONDITIONS
PROJECT NO: 42019	PROPOSED MIXED-USE DEVELOPMENT TOWN OF AMHERST, NY

SRF ASSOCIATES
Transportation Planning / Engineering / Design
www.srfa.net / (58

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)



KEY	FIGURE 4
00(00) = AM(PM)	PEAK HOUR VOLUMES 2027 BACKGROUND CONDITIONS
PROJECT NO: 42019	PROPOSED MIXED-USE DEVELOPMENT TOWN OF AMHERST, NY

SRF ASSOCIATES
Transportation Planning / Engineering / Design
www.srfa.net / (58

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Attachment: Z-2022-02_application_051922 (2558O : Z-2022-02)

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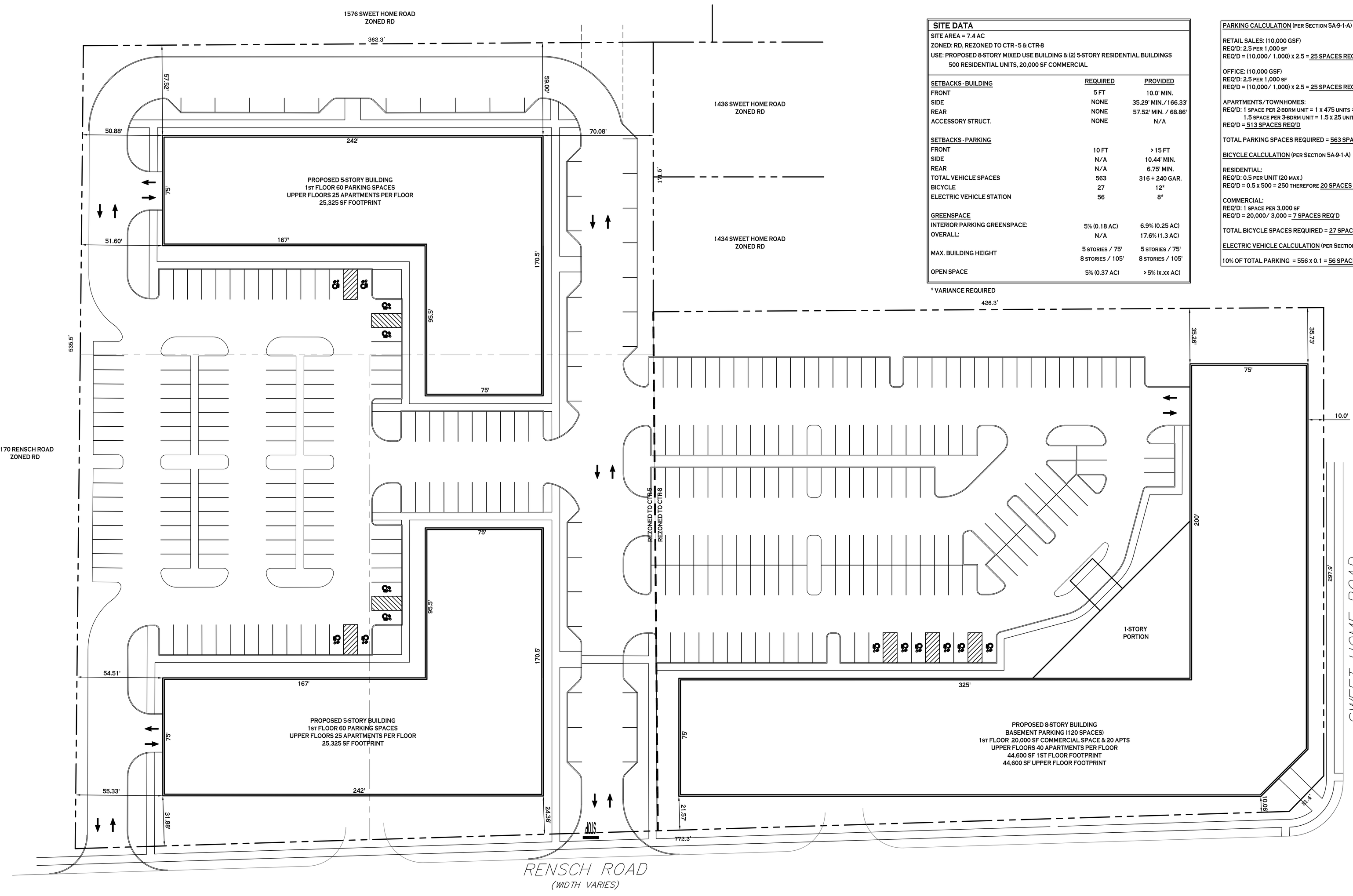


N

SITE PLAN

SCALE: 1"=30'

SITE DATA

SITE AREA = 7.4 AC
ZONED: RD, REZONED TO CTR - 5 & CTR-8
USE: PROPOSED 8-STORY MIXED USE BUILDING & (2) 5-STORY RESIDENTIAL BUILDINGS
500 RESIDENTIAL UNITS, 20,000 SF COMMERCIAL

SETBACKS - BUILDING	REQUIRED	PROVIDED
FRONT	5 FT	10.0' MIN.
SIDE	NONE	35.29' MIN. / 166.33'
REAR	NONE	57.52' MIN. / 68.86'
ACCESSORY STRUCT.	NONE	N/A
SETBACKS - PARKING		
FRONT	10 FT	> 15 FT
SIDE	N/A	10.44' MIN.
REAR	N/A	6.75' MIN.
TOTAL VEHICLE SPACES	563	316 + 240 GAR.
BICYCLE	27	12*
ELECTRIC VEHICLE STATION	56	8*
GREENSPACE		
INTERIOR PARKING GREENSPACE:	5% (0.18 AC)	6.9% (0.25 AC)
OVERALL:	N/A	17.6% (1.3 AC)
MAX. BUILDING HEIGHT	5 STORIES / 75' 8 STORIES / 105'	5 STORIES / 75' 8 STORIES / 105'
OPEN SPACE	5% (0.37 AC)	> 5% (x.xx AC)

* VARIANCE REQUIRED

PARKING CALCULATION (PER SECTION 5A-9-1-A)

RETAIL SALES: (10,000 GSF)
REQ'D: 2.5 PER 1,000 SF
REQ'D = (10,000 / 1,000) x 2.5 = 25 SPACES REQ'D

OFFICE: (10,000 GSF)
REQ'D: 2.5 PER 1,000 SF
REQ'D = (10,000 / 1,000) x 2.5 = 25 SPACES REQ'D

APARTMENTS/TOWNHOMES:
REQ'D: 1 SPACE PER 2-BDRM UNIT = 1 X 475 UNITS = 475 SPACES
1.5 SPACE PER 3-BDRM UNIT = 1.5 X 25 UNITS = 38 SPACES
REQ'D = 513 SPACES REQ'D

TOTAL PARKING SPACES REQUIRED = 563 SPACES

BICYCLE CALCULATION (PER SECTION 5A-9-1-A)

RESIDENTIAL:
REQ'D: 0.5 PER UNIT (20 MAX.)
REQ'D = 0.5 X 500 = 250 THEREFORE 20 SPACES REQ'D.

COMMERCIAL:
REQ'D: 1 SPACE PER 3,000 SF
REQ'D = 20,000 / 3,000 = 7 SPACES REQ'D

TOTAL BICYCLE SPACES REQUIRED = 27 SPACES

ELECTRIC VEHICLE CALCULATION (PER SECTION 5A-9-1-D)

10% OF TOTAL PARKING = 556 X 0.1 = 56 SPACES REQ'D.

SITE LEGEND

- PROPERTY LINE
- PROPOSED CONCRETE CURB
- PROPOSED CONCRETE SIDEWALK
- PROPOSED SIGN
- PROPOSED PARKING NUMBER (27)
- PROPOSED LIGHT POLE & FIXTURE

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

30' 30 0 30 60Ft.

FIGURE 5 - CONCEPT SITE PLAN

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

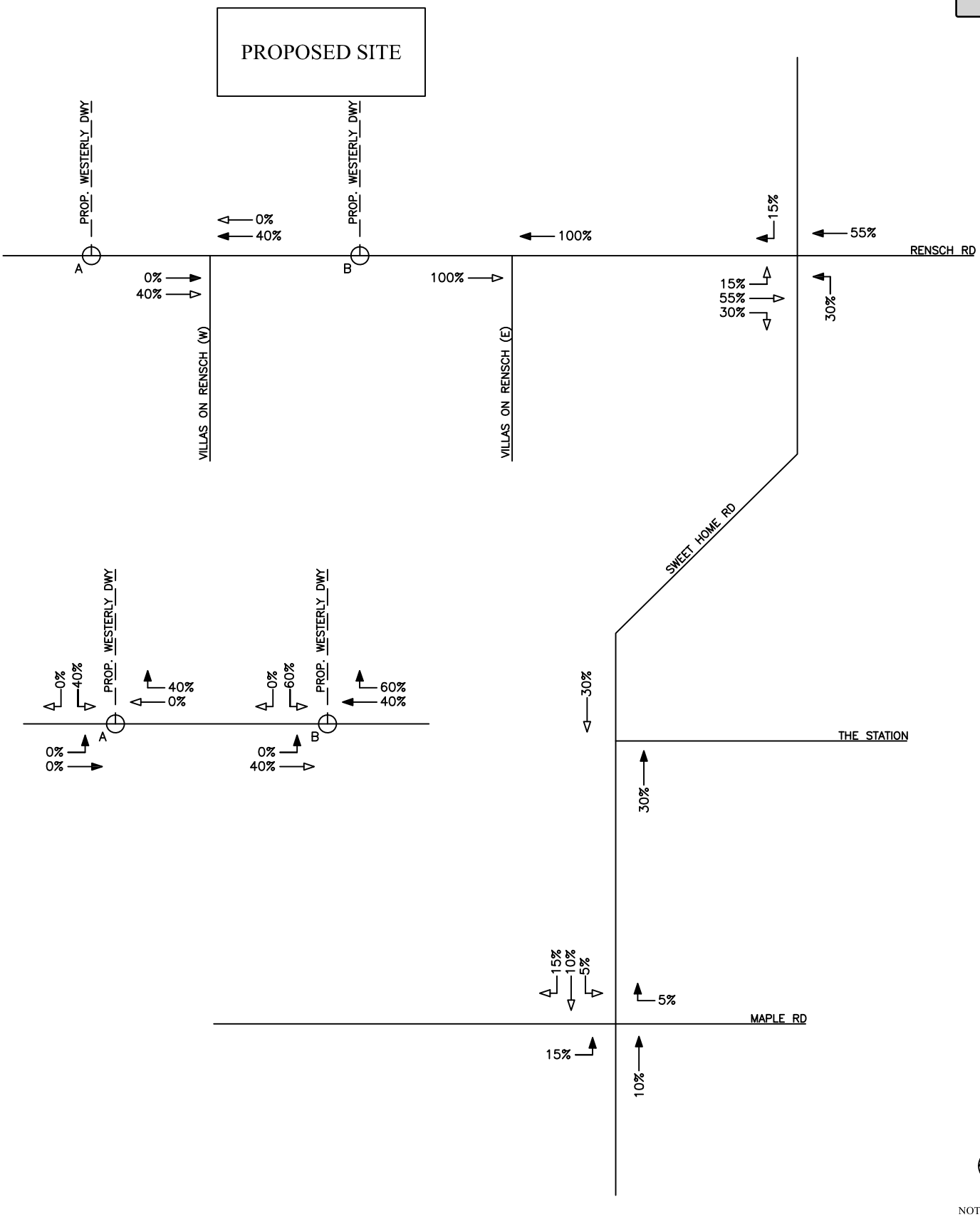
REVISIONS:
No. Description Date

PROJECT NAME:
New Construction
Prop. Mixed Use Development
1400 - 1416 Sweet Home Road
Amherst, New York

Date: 3/15/22
Drawn by: C. Wood
Scale: As Noted

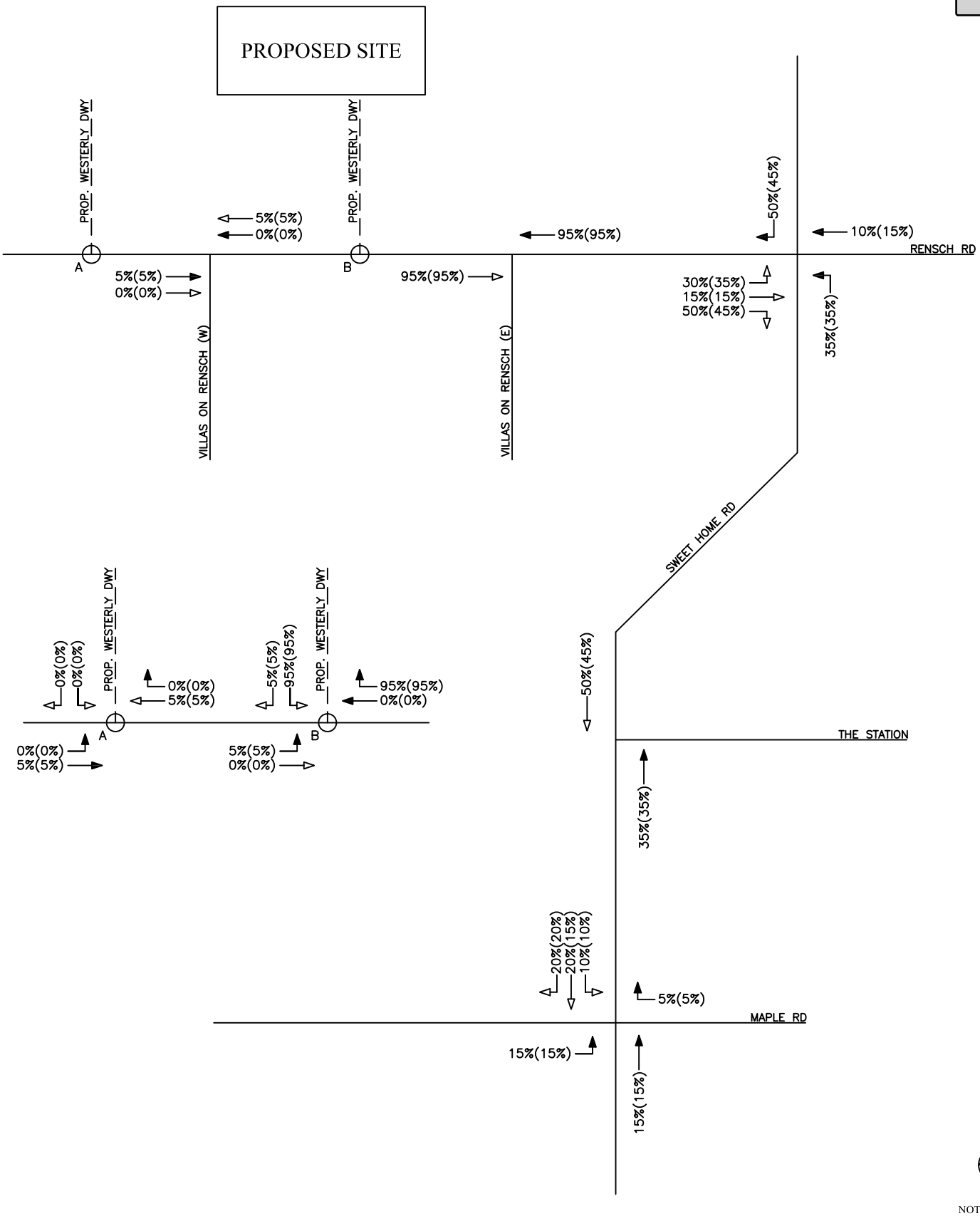
DRAWING NAME:
Concept Site Plan

DRAWING NO.
C-100
Project no.: 21.008



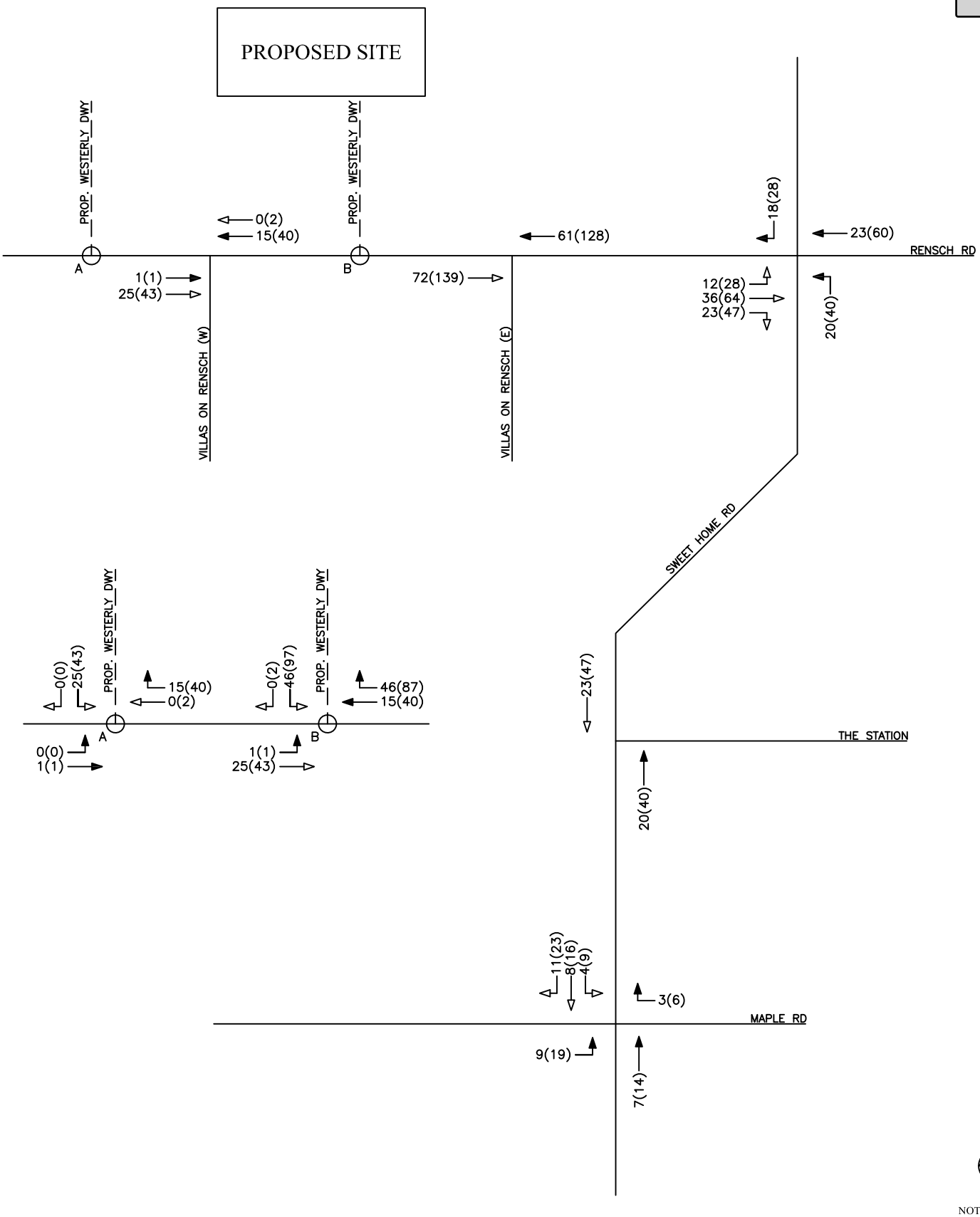
KEY	FIGURE 6A	
00(00) = AM(PM) ENTERING TRIPS → EXITING TRIPS →	TRIP DISTRIBUTION RESIDENTIAL	SRF ASSOCIATES Transportation Planning / Engineering / Design www.srfa.net / (58
PROJECT NO: 42019	PROPOSED MIXED-USE DEVELOPMENT TOWN OF AMHERST, NY	

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)



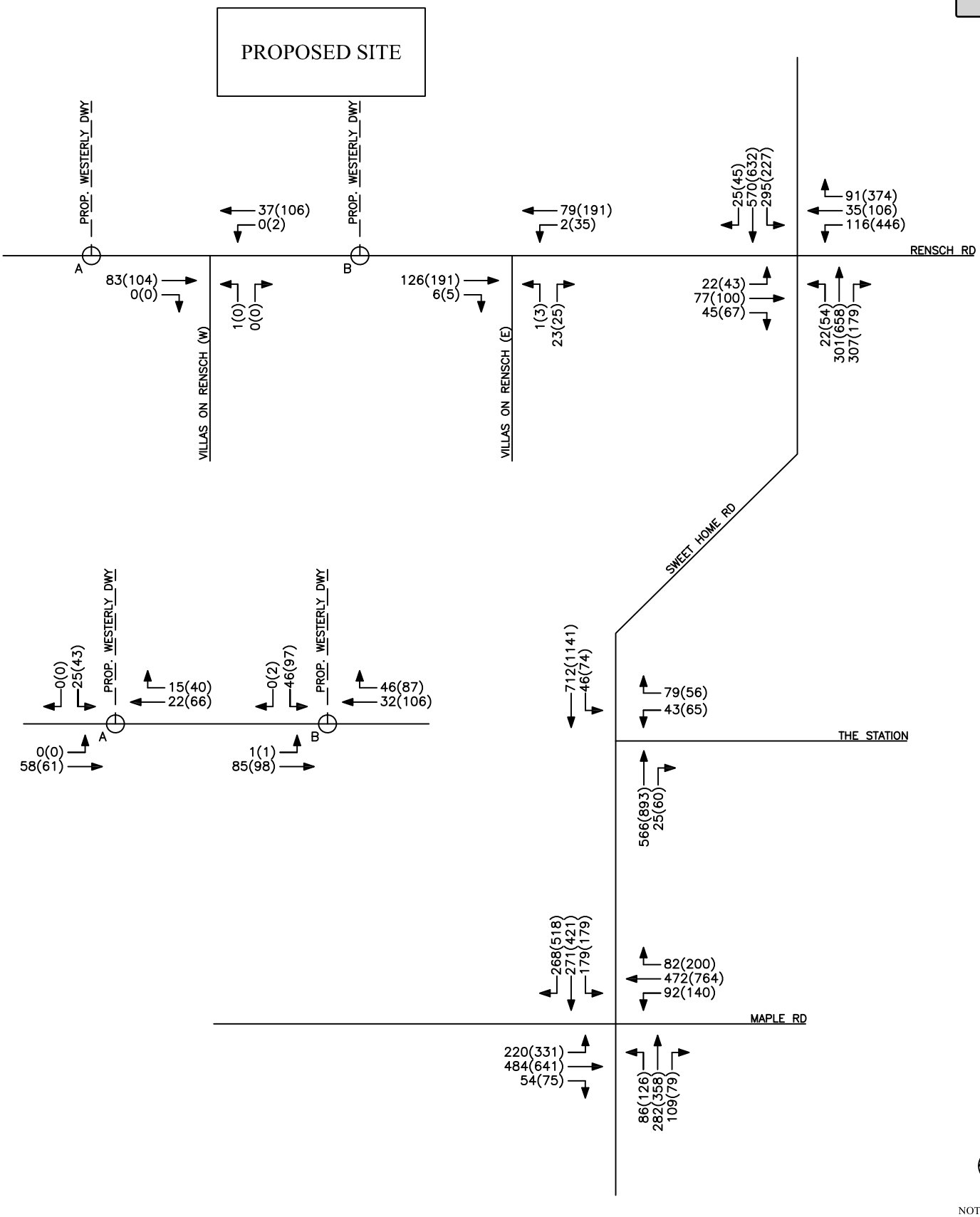
KEY	FIGURE 6B	SRF ASSOCIATES
00(00) = AM(PM) ENTERING TRIPS → EXITING TRIPS →	TRIP DISTRIBUTION COMMERCIAL	Transportation Planning / Engineering / Design www.srfa.net / (58
PROJECT NO: 42019	PROPOSED MIXED-USE DEVELOPMENT TOWN OF AMHERST, NY	

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)



KEY	FIGURE 7	
00(00) = AM(PM) ENTERING TRIPS → EXITING TRIPS →	SITE GENERATED TRIPS	SRF ASSOCIATES Transportation Planning / Engineering / Design www.srfa.net / (58
PROJECT NO: 42019	PROPOSED MIXED-USE DEVELOPMENT TOWN OF AMHERST, NY	

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)



KEY	FIGURE 8	
00(00) = AM(PM)	PEAK HOUR VOLUMES FULL DEVELOPMENT CONDITIONS	SRF ASSOCIATES Transportation Planning / Engineering / Design www.srfa.net / (58
PROJECT NO: 42019	PROPOSED MIXED-USE DEVELOPMENT TOWN OF AMHERST, NY	

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

APPENDICES

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

A1

Collected Traffic Volume Data

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/Rensch Rd
Site Code:
Start Date: 03/03/2022

Turning Movement Data

Start Time	Sweet Home Rd Southbound						Rensch Rd Westbound						Sweet Home Rd Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:00 AM	2	72	19	0	0	93	30	6	3	0	0	39	18	66	3	0	0	87	3	3	3	0	0	9	228
7:15 AM	5	125	34	0	0	164	40	4	7	0	0	51	20	86	2	0	0	108	5	7	1	0	0	13	336
7:30 AM	4	151	77	0	1	232	24	6	10	0	0	40	31	74	5	0	0	110	8	6	4	0	0	18	400
7:45 AM	9	121	72	0	0	202	21	13	20	0	0	54	43	79	13	0	0	135	5	15	3	0	0	23	414
Hourly Total	20	469	202	0	1	691	115	29	40	0	0	184	112	305	23	0	0	440	21	31	11	0	0	63	1378
8:00 AM	13	112	49	0	0	174	19	8	24	0	0	51	39	56	6	0	0	101	5	8	3	0	0	16	342
8:15 AM	9	121	52	0	0	182	14	10	15	0	0	39	44	63	10	0	0	117	8	8	1	0	0	17	355
8:30 AM	9	132	64	0	4	205	27	13	16	0	0	56	57	68	6	0	0	131	9	12	4	0	0	25	417
8:45 AM	11	150	72	0	2	233	30	15	25	0	0	70	56	52	12	0	0	120	9	26	5	0	1	40	463
Hourly Total	42	515	237	0	6	794	90	46	80	0	0	216	196	239	34	0	0	469	31	54	13	0	1	98	1577
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	7	131	25	0	3	163	65	8	82	0	4	155	25	154	7	0	0	186	13	16	14	0	1	43	547
4:15 PM	7	118	27	0	3	152	57	13	57	0	2	127	39	131	10	0	0	180	12	9	15	0	1	36	495
4:30 PM	9	120	52	1	3	182	70	10	67	0	0	147	49	141	6	0	0	196	17	14	7	0	0	38	563
4:45 PM	9	144	54	0	3	207	75	16	117	0	4	208	56	94	4	0	1	154	13	28	4	0	1	45	614
Hourly Total	32	513	158	1	12	704	267	47	323	0	10	637	169	520	27	0	1	716	55	67	40	0	3	162	2219
5:00 PM	4	125	39	0	0	168	106	25	117	0	1	248	24	153	8	0	0	185	16	22	15	0	1	53	654
5:15 PM	3	125	40	0	1	168	65	16	88	0	0	169	33	175	4	0	1	212	5	16	9	0	1	30	579
5:30 PM	4	115	34	2	1	155	62	11	73	1	2	147	34	133	6	0	0	173	6	15	8	0	1	29	504
5:45 PM	5	119	35	1	1	160	59	8	62	0	1	129	47	146	8	0	1	201	13	8	5	0	0	26	516
Hourly Total	16	484	148	3	3	651	292	60	340	1	4	693	138	607	26	0	2	771	40	61	37	0	3	138	2253
Grand Total	110	1981	745	4	22	2840	764	182	783	1	14	1730	615	1671	110	0	3	2396	147	213	101	0	7	461	7427
Approach %	3.9	69.8	26.2	0.1	-	-	44.2	10.5	45.3	0.1	-	-	25.7	69.7	4.6	0.0	-	-	31.9	46.2	21.9	0.0	-	-	-
Total %	1.5	26.7	10.0	0.1	-	38.2	10.3	2.5	10.5	0.0	-	23.3	8.3	22.5	1.5	0.0	-	32.3	2.0	2.9	1.4	0.0	-	6.2	-
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	1	1	0	0	-	2	0	0	0	0	-	0	2
% Motorcycles	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.2	0.1	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	90	1929	707	4	-	2730	710	180	766	1	-	1657	601	1621	108	0	-	2330	146	190	96	0	-	432	7149
% Cars & Light Goods	81.8	97.4	94.9	100.0	-	96.1	92.9	98.9	97.8	100.0	-	95.8	97.7	97.0	98.2	-	-	97.2	99.3	89.2	95.0	-	-	93.7	96.3
Other Vehicles	20	52	38	0	-	110	54	2	17	0	-	73	13	49	2	0	-	64	1	23	5	0	-	29	276
% Other Vehicles	18.2	2.6	5.1	0.0	-	3.9	7.1	1.1	2.2	0.0	-	4.2	2.1	2.9	1.8	-	-	2.7	0.7	10.8	5.0	-	-	6.3	3.7
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	4.5	-	-	-	-	-	7.1	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	21	-	-	-	-	-	13	-	-	-	-	-	3	-	-	-	-	-	7	-	-

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

% Pedestrians	-	-	-	-	95.5	-	-	-	-	-	92.9	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Tri-State Traffic Data: New York Division
184 Baker Rd

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Count Name: Sweet Home Rd/Rensch Rd
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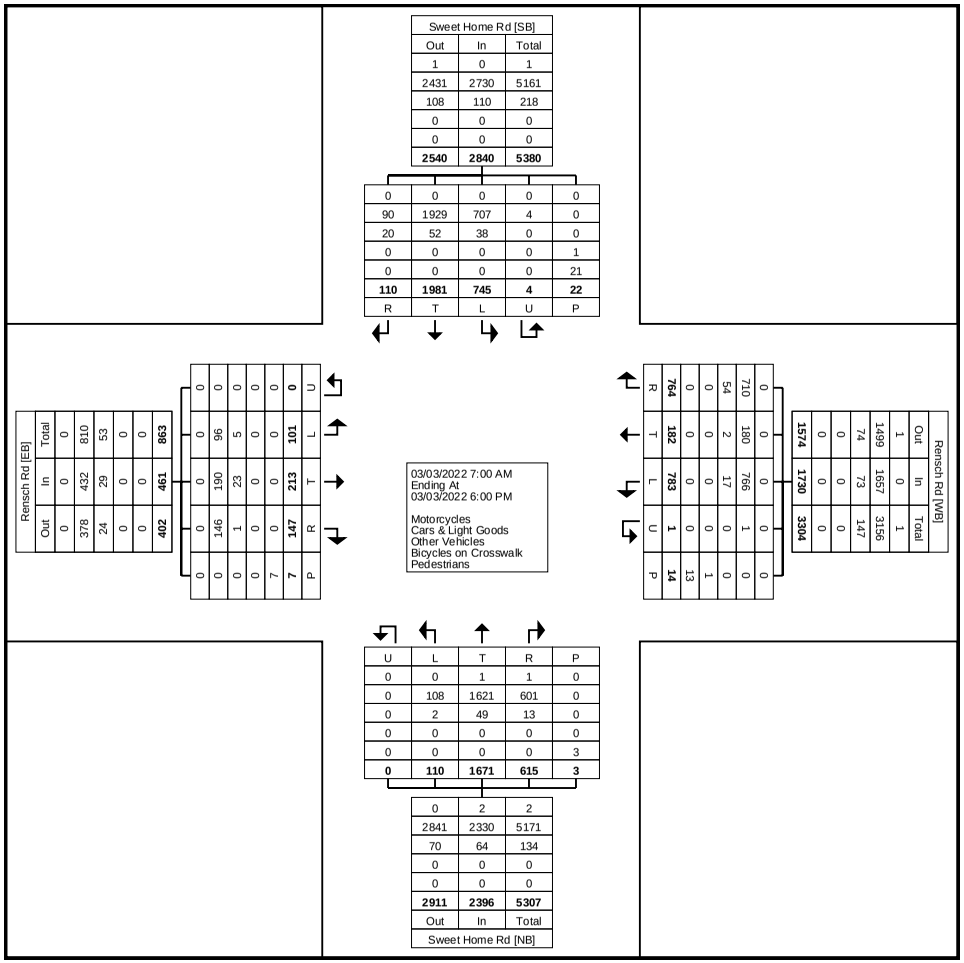
Start Date: 03/03/2022



Turning Movement Data Plot

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/Rensch Rd
Site Code:
Start Date: 03/03/2022

Turning Movement Peak Hour Data (8:00 AM)

Start Time	Sweet Home Rd Southbound						Rensch Rd Westbound						Sweet Home Rd Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
8:00 AM	13	112	49	0	0	174	19	8	24	0	0	51	39	56	6	0	0	101	5	8	3	0	0	16	342
8:15 AM	9	121	52	0	0	182	14	10	15	0	0	39	44	63	10	0	0	117	8	8	1	0	0	17	355
8:30 AM	9	132	64	0	4	205	27	13	16	0	0	56	57	68	6	0	0	131	9	12	4	0	0	25	417
8:45 AM	11	150	72	0	2	233	30	15	25	0	0	70	56	52	12	0	0	120	9	26	5	0	1	40	463
Total	42	515	237	0	6	794	90	46	80	0	0	216	196	239	34	0	0	469	31	54	13	0	1	98	1577
Approach %	5.3	64.9	29.8	0.0	-	-	41.7	21.3	37.0	0.0	-	-	41.8	51.0	7.2	0.0	-	-	31.6	55.1	13.3	0.0	-	-	-
Total %	2.7	32.7	15.0	0.0	-	50.3	5.7	2.9	5.1	0.0	-	13.7	12.4	15.2	2.2	0.0	-	29.7	2.0	3.4	0.8	0.0	-	6.2	-
PHF	0.808	0.858	0.823	0.000	-	0.852	0.750	0.767	0.800	0.000	-	0.771	0.860	0.879	0.708	0.000	-	0.895	0.861	0.519	0.650	0.000	-	0.613	0.852
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	34	494	228	0	-	756	70	46	76	0	-	192	193	219	32	0	-	444	30	47	10	0	-	87	1479
% Cars & Light Goods	81.0	95.9	96.2	-	-	95.2	77.8	100.0	95.0	-	-	88.9	98.5	91.6	94.1	-	-	94.7	96.8	87.0	76.9	-	-	88.8	93.8
Other Vehicles	8	21	9	0	-	38	20	0	4	0	-	24	3	20	2	0	-	25	1	7	3	0	-	11	98
% Other Vehicles	19.0	4.1	3.8	-	-	4.8	22.2	0.0	5.0	-	-	11.1	1.5	8.4	5.9	-	-	5.3	3.2	13.0	23.1	-	-	11.2	6.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
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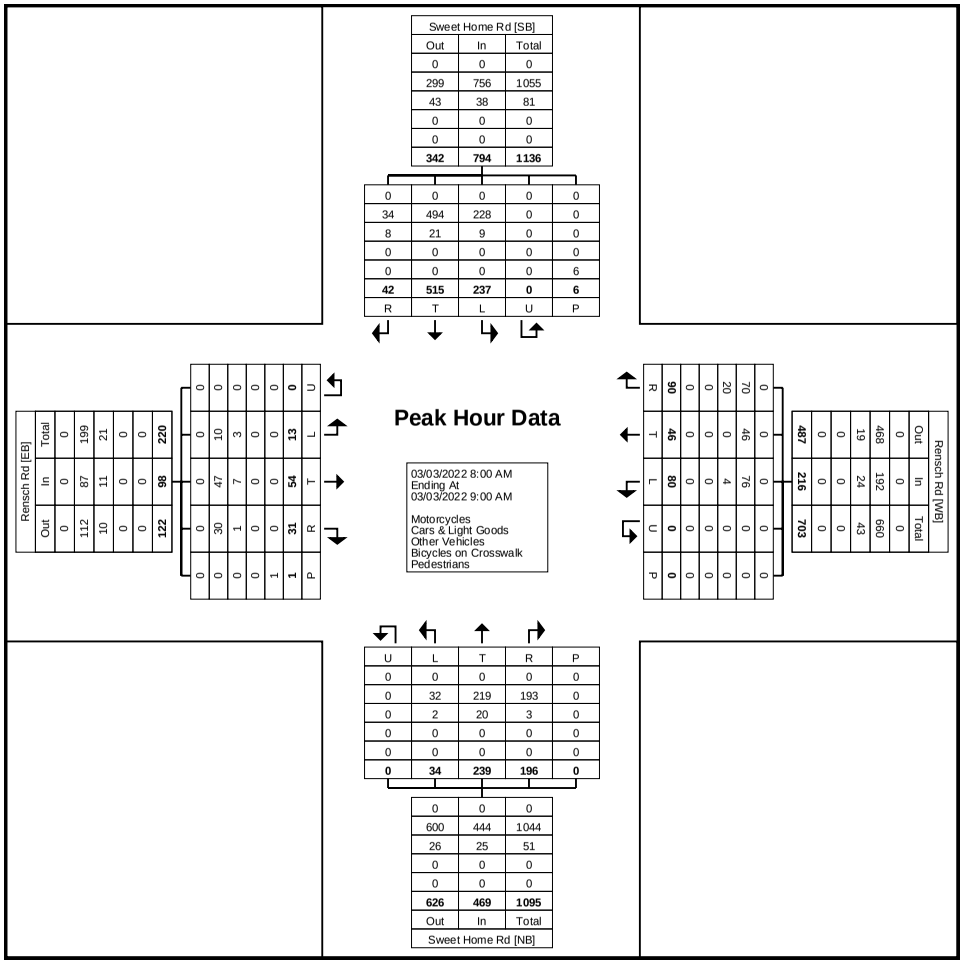


Turning Movement Peak Hour Data Plot (8:00 AM)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/Rensch Rd
Site Code:
Start Date: 03/03/2022

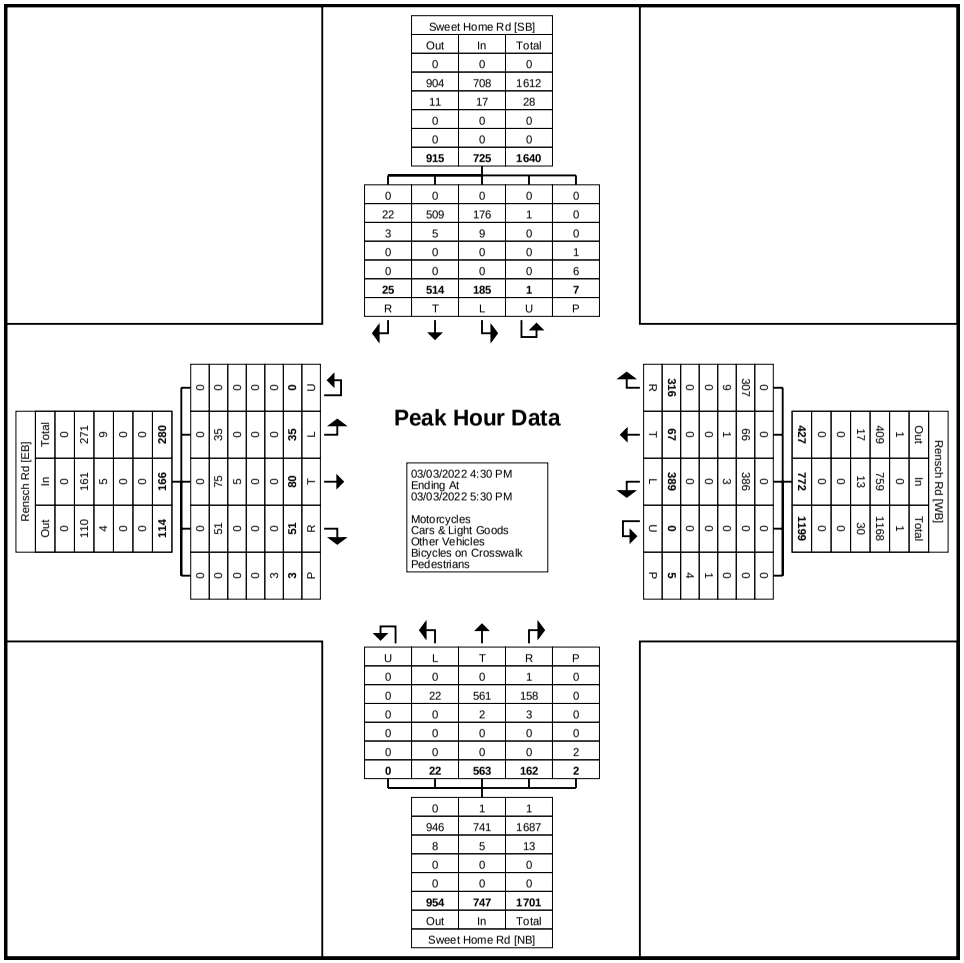
Turning Movement Peak Hour Data (4:30 PM)

Start Time	Sweet Home Rd Southbound						Rensch Rd Westbound						Sweet Home Rd Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:30 PM	9	120	52	1	3	182	70	10	67	0	0	147	49	141	6	0	0	196	17	14	7	0	0	38	563
4:45 PM	9	144	54	0	3	207	75	16	117	0	4	208	56	94	4	0	1	154	13	28	4	0	1	45	614
5:00 PM	4	125	39	0	0	168	106	25	117	0	1	248	24	153	8	0	0	185	16	22	15	0	1	53	654
5:15 PM	3	125	40	0	1	168	65	16	88	0	0	169	33	175	4	0	1	212	5	16	9	0	1	30	579
Total	25	514	185	1	7	725	316	67	389	0	5	772	162	563	22	0	2	747	51	80	35	0	3	166	2410
Approach %	3.4	70.9	25.5	0.1	-	-	40.9	8.7	50.4	0.0	-	-	21.7	75.4	2.9	0.0	-	-	30.7	48.2	21.1	0.0	-	-	-
Total %	1.0	21.3	7.7	0.0	-	30.1	13.1	2.8	16.1	0.0	-	32.0	6.7	23.4	0.9	0.0	-	31.0	2.1	3.3	1.5	0.0	-	6.9	-
PHF	0.694	0.892	0.856	0.250	-	0.876	0.745	0.670	0.831	0.000	-	0.778	0.723	0.804	0.688	0.000	-	0.881	0.750	0.714	0.583	0.000	-	0.783	0.921
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	-	0	1
% Motorcycles	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.6	0.0	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	22	509	176	1	-	708	307	66	386	0	-	759	158	561	22	0	-	741	51	75	35	0	-	161	2369
% Cars & Light Goods	88.0	99.0	95.1	100.0	-	97.7	97.2	98.5	99.2	-	-	98.3	97.5	99.6	100.0	-	-	99.2	100.0	93.8	100.0	-	-	97.0	98.3
Other Vehicles	3	5	9	0	-	17	9	1	3	0	-	13	3	2	0	0	-	5	0	5	0	0	-	5	40
% Other Vehicles	12.0	1.0	4.9	0.0	-	2.3	2.8	1.5	0.8	-	-	1.7	1.9	0.4	0.0	-	-	0.7	0.0	6.3	0.0	-	-	3.0	1.7
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	14.3	-	-	-	-	-	20.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	4	-	-	-	-	-	2	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	85.7	-	-	-	-	-	80.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/Rensch Rd
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (4:30 PM)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/The Station Driveway
Site Code:
Start Date: 03/03/2022

Turning Movement Data

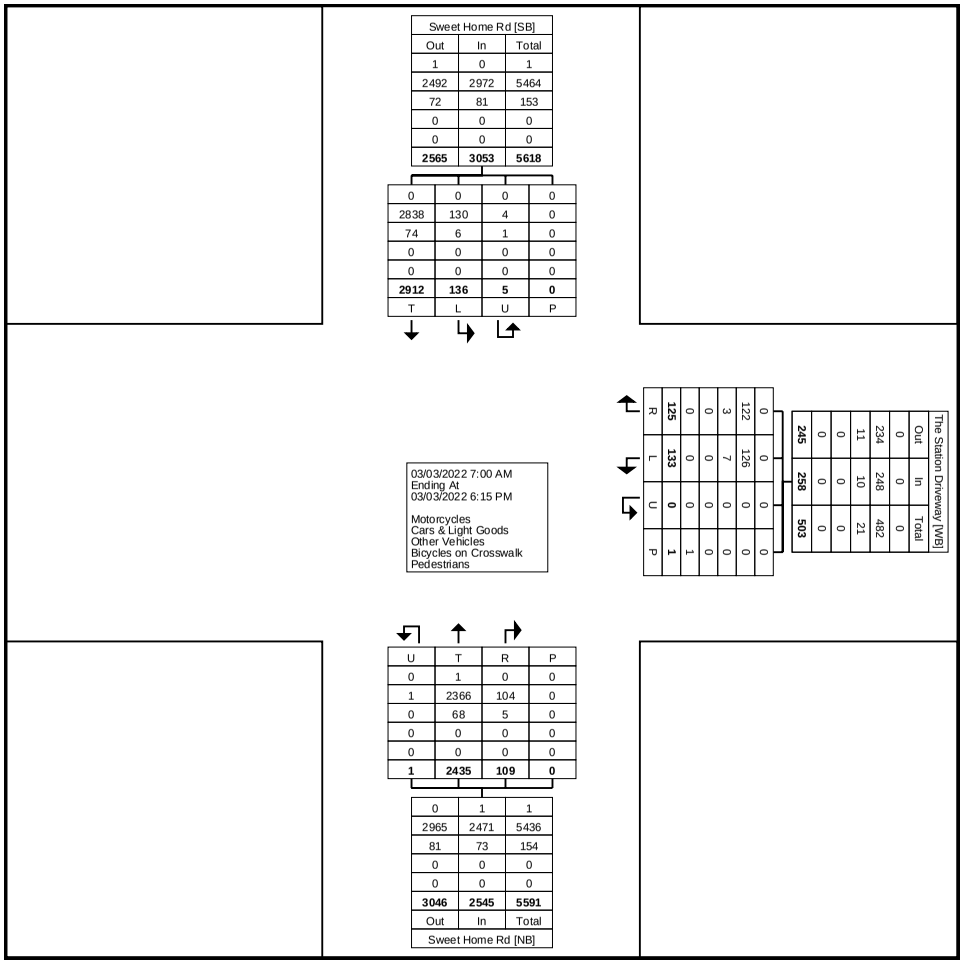
Start Time	Sweet Home Rd Southbound					The Station Driveway Westbound					Sweet Home Rd Northbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
7:00 AM	86	1	0	0	87	1	4	0	0	5	1	87	0	0	88	180
7:15 AM	137	0	0	0	137	3	5	0	0	8	2	110	0	0	112	257
7:30 AM	169	1	0	0	170	3	9	0	0	12	3	112	0	0	115	297
7:45 AM	165	2	0	0	167	11	6	0	0	17	3	120	0	0	123	307
Hourly Total	557	4	0	0	561	18	24	0	0	42	9	429	0	0	438	1041
8:00 AM	151	4	1	0	156	10	1	0	0	11	1	106	0	0	107	274
8:15 AM	126	3	0	0	129	3	4	0	0	7	3	118	0	0	121	257
8:30 AM	169	2	0	0	171	9	3	0	0	12	2	133	0	0	135	318
8:45 AM	182	8	0	0	190	11	10	0	0	21	4	118	0	0	122	333
Hourly Total	628	17	1	0	646	33	18	0	0	51	10	475	0	0	485	1182
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	195	19	1	0	215	3	11	0	0	14	7	188	0	0	195	424
4:15 PM	176	9	2	0	187	5	5	0	0	10	7	182	0	0	189	386
4:30 PM	208	9	0	0	217	8	7	0	0	15	7	201	0	0	208	440
4:45 PM	258	18	0	0	276	18	15	0	0	33	13	154	0	0	167	476
Hourly Total	837	55	3	0	895	34	38	0	0	72	34	725	0	0	759	1726
5:00 PM	251	22	0	0	273	11	15	0	0	26	14	197	0	0	211	510
5:15 PM	231	17	0	0	248	6	14	0	0	20	17	227	1	0	245	513
5:30 PM	201	13	1	0	215	14	13	0	0	27	12	191	0	0	203	445
5:45 PM	207	8	0	0	215	9	11	0	1	20	13	191	0	0	204	439
Hourly Total	890	60	1	0	951	40	53	0	1	93	56	806	1	0	863	1907
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	2912	136	5	0	3053	125	133	0	1	258	109	2435	1	0	2545	5856
Approach %	95.4	4.5	0.2	-	-	48.4	51.6	0.0	-	-	4.3	95.7	0.0	-	-	-
Total %	49.7	2.3	0.1	-	52.1	2.1	2.3	0.0	-	4.4	1.9	41.6	0.0	-	43.5	-
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	1
% Motorcycles	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Cars & Light Goods	2838	130	4	-	2972	122	126	0	-	248	104	2366	1	-	2471	5691
% Cars & Light Goods	97.5	95.6	80.0	-	97.3	97.6	94.7	-	-	96.1	95.4	97.2	100.0	-	97.1	97.2
Other Vehicles	74	6	1	-	81	3	7	0	-	10	5	68	0	-	73	164
% Other Vehicles	2.5	4.4	20.0	-	2.7	2.4	5.3	-	-	3.9	4.6	2.8	0.0	-	2.9	2.8
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/The Station Driveway
Site Code:
Start Date: 03/03/2022



Turning Movement Data Plot

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/The Station Driveway
Site Code:
Start Date: 03/03/2022

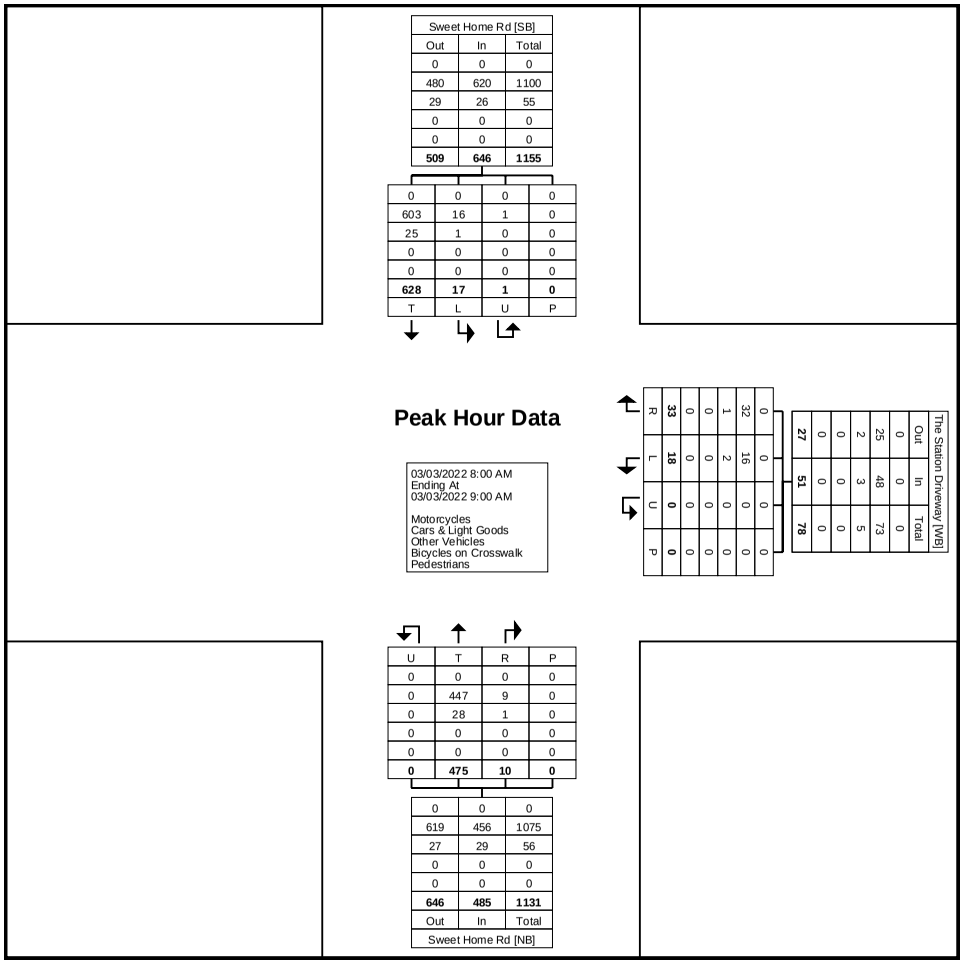
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Sweet Home Rd Southbound					The Station Driveway Westbound					Sweet Home Rd Northbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
8:00 AM	151	4	1	0	156	10	1	0	0	11	1	106	0	0	107	274
8:15 AM	126	3	0	0	129	3	4	0	0	7	3	118	0	0	121	257
8:30 AM	169	2	0	0	171	9	3	0	0	12	2	133	0	0	135	318
8:45 AM	182	8	0	0	190	11	10	0	0	21	4	118	0	0	122	333
Total	628	17	1	0	646	33	18	0	0	51	10	475	0	0	485	1182
Approach %	97.2	2.6	0.2	-	-	64.7	35.3	0.0	-	-	2.1	97.9	0.0	-	-	-
Total %	53.1	1.4	0.1	-	54.7	2.8	1.5	0.0	-	4.3	0.8	40.2	0.0	-	41.0	-
PHF	0.863	0.531	0.250	-	0.850	0.750	0.450	0.000	-	0.607	0.625	0.893	0.000	-	0.898	0.887
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	603	16	1	-	620	32	16	0	-	48	9	447	0	-	456	1124
% Cars & Light Goods	96.0	94.1	100.0	-	96.0	97.0	88.9	-	-	94.1	90.0	94.1	-	-	94.0	95.1
Other Vehicles	25	1	0	-	26	1	2	0	-	3	1	28	0	-	29	58
% Other Vehicles	4.0	5.9	0.0	-	4.0	3.0	11.1	-	-	5.9	10.0	5.9	-	-	6.0	4.9
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/The Station Driveway
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (8:00 AM)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/The Station Driveway
Site Code:
Start Date: 03/03/2022

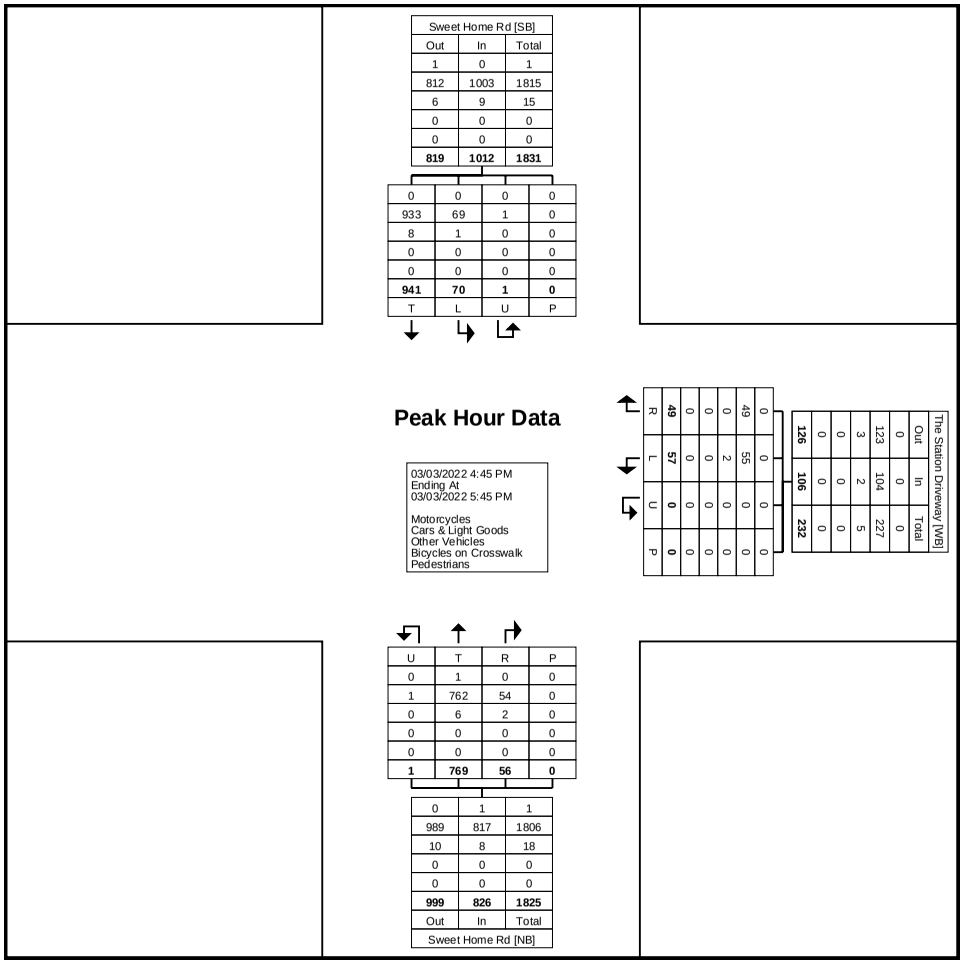
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Sweet Home Rd Southbound					The Station Driveway Westbound					Sweet Home Rd Northbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
4:45 PM	258	18	0	0	276	18	15	0	0	33	13	154	0	0	167	476
5:00 PM	251	22	0	0	273	11	15	0	0	26	14	197	0	0	211	510
5:15 PM	231	17	0	0	248	6	14	0	0	20	17	227	1	0	245	513
5:30 PM	201	13	1	0	215	14	13	0	0	27	12	191	0	0	203	445
Total	941	70	1	0	1012	49	57	0	0	106	56	769	1	0	826	1944
Approach %	93.0	6.9	0.1	-	-	46.2	53.8	0.0	-	-	6.8	93.1	0.1	-	-	-
Total %	48.4	3.6	0.1	-	52.1	2.5	2.9	0.0	-	5.5	2.9	39.6	0.1	-	42.5	-
PHF	0.912	0.795	0.250	-	0.917	0.681	0.950	0.000	-	0.803	0.824	0.847	0.250	-	0.843	0.947
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	1
% Motorcycles	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	-	0.1	0.1
Cars & Light Goods	933	69	1	-	1003	49	55	0	-	104	54	762	1	-	817	1924
% Cars & Light Goods	99.1	98.6	100.0	-	99.1	100.0	96.5	-	-	98.1	96.4	99.1	100.0	-	98.9	99.0
Other Vehicles	8	1	0	-	9	0	2	0	-	2	2	6	0	-	8	19
% Other Vehicles	0.9	1.4	0.0	-	0.9	0.0	3.5	-	-	1.9	3.6	0.8	0.0	-	1.0	1.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/The Station Driveway
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (4:45 PM)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Maple Rd/Sweet Home Rd
Site Code:
Start Date: 03/03/2022

Turning Movement Data

Start Time	Sweet Home Rd Southbound							Maple Rd Westbound							Sweet Home Rd Northbound							Maple Rd Eastbound							Int. Total
	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	
7:00 AM	15	9	34	27	0	0	85	16	3	51	10	0	0	80	5	13	39	7	0	0	64	1	3	63	27	0	0	94	323
7:15 AM	34	11	57	45	0	0	147	9	5	79	18	0	0	111	4	13	67	8	0	0	92	2	3	83	34	0	0	122	472
7:30 AM	24	27	80	49	0	0	180	11	7	78	21	0	0	117	8	6	57	5	0	0	76	6	3	110	36	0	0	155	528
7:45 AM	39	14	60	58	0	0	171	17	10	111	21	0	0	159	7	7	54	6	0	0	74	8	3	109	49	0	0	169	573
Hourly Total	112	61	231	179	0	0	583	53	25	319	70	0	0	467	24	39	217	26	0	0	306	17	12	365	146	0	0	540	1896
8:00 AM	20	18	48	42	0	0	128	13	10	100	18	0	0	141	8	18	50	15	0	0	91	0	7	95	42	0	0	144	504
8:15 AM	29	20	59	41	0	0	149	15	4	91	30	0	0	140	16	22	71	19	0	0	128	7	16	93	35	0	0	151	568
8:30 AM	27	20	76	41	0	0	164	12	7	124	24	0	0	167	10	13	52	18	0	0	93	8	2	96	59	0	0	165	589
8:45 AM	68	24	61	33	0	0	186	16	3	151	19	0	0	189	7	14	61	33	0	0	115	9	4	78	52	0	1	143	633
Hourly Total	144	82	244	157	0	0	627	56	24	466	91	0	0	637	41	67	234	85	0	0	427	24	29	362	188	0	1	603	2294
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	59	50	69	38	0	0	216	19	11	175	26	0	0	231	8	10	79	21	0	0	118	12	12	151	77	0	0	252	817
4:15 PM	54	40	86	36	0	0	216	30	20	161	35	0	0	246	13	11	73	21	0	0	118	6	8	120	77	0	0	211	791
4:30 PM	55	45	79	44	0	0	223	24	21	158	32	0	0	235	12	4	75	32	0	0	123	12	8	137	82	0	0	239	820
4:45 PM	63	63	88	38	0	0	252	16	28	154	32	0	0	230	10	5	76	29	0	0	120	12	6	134	65	0	0	217	819
Hourly Total	231	198	322	156	0	0	907	89	80	648	125	0	0	942	43	30	303	103	0	0	479	42	34	542	301	0	0	919	3247
5:00 PM	91	43	94	43	1	0	272	30	24	187	41	0	0	282	16	10	71	27	0	0	124	7	8	158	80	0	1	253	931
5:15 PM	84	37	82	41	0	0	244	32	16	181	33	0	0	262	7	14	93	36	0	0	150	6	15	135	84	0	0	240	896
5:30 PM	75	21	78	34	0	0	208	19	20	176	16	0	0	231	3	15	94	13	0	0	125	7	18	117	78	0	0	220	784
5:45 PM	65	43	72	40	0	1	220	20	18	137	29	0	0	204	8	4	68	36	0	0	116	7	12	132	97	0	0	248	788
Hourly Total	315	144	326	158	1	1	944	101	78	681	119	0	0	979	34	43	326	112	0	0	515	27	53	542	339	0	1	961	3399
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	802	485	1123	650	1	1	3061	299	207	2114	405	0	0	3025	142	179	1080	326	0	0	1727	110	128	1811	974	0	2	3023	10836
Approach %	26.2	15.8	36.7	21.2	0.0	-	-	9.9	6.8	69.9	13.4	0.0	-	-	8.2	10.4	62.5	18.9	0.0	-	-	3.6	4.2	59.9	32.2	0.0	-	-	-
Total %	7.4	4.5	10.4	6.0	0.0	-	28.2	2.8	1.9	19.5	3.7	0.0	-	27.9	1.3	1.7	10.0	3.0	0.0	-	15.9	1.0	1.2	16.7	9.0	0.0	-	27.9	-
Motorcycles	0	1	0	0	0	-	1	0	0	0	0	0	-	0	0	0	1	0	0	-	1	0	0	0	0	0	-	0	2
% Motorcycles	0.0	0.2	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.1	0.0	-	-	0.1	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	783	474	1095	635	1	-	2988	284	202	2083	399	0	-	2968	138	176	1049	323	0	-	1686	106	127	1778	954	0	-	2965	10607
% Cars & Light Goods	97.6	97.7	97.5	97.7	100.0	-	97.6	95.0	97.6	98.5	98.5	-	-	98.1	97.2	98.3	97.1	99.1	-	-	97.6	96.4	99.2	98.2	97.9	-	-	98.1	97.9
Other Vehicles	19	10	28	15	0	-	72	15	5	31	6	0	-	57	4	3	30	3	0	-	40	4	1	33	20	0	-	58	227
% Other Vehicles	2.4	2.1	2.5	2.3	0.0	-	2.4	5.0	2.4	1.5	1.5	-	-	1.9	2.8	1.7	2.8	0.9	-	-	2.3	3.6	0.8	1.8	2.1	-	-	1.9	2.1

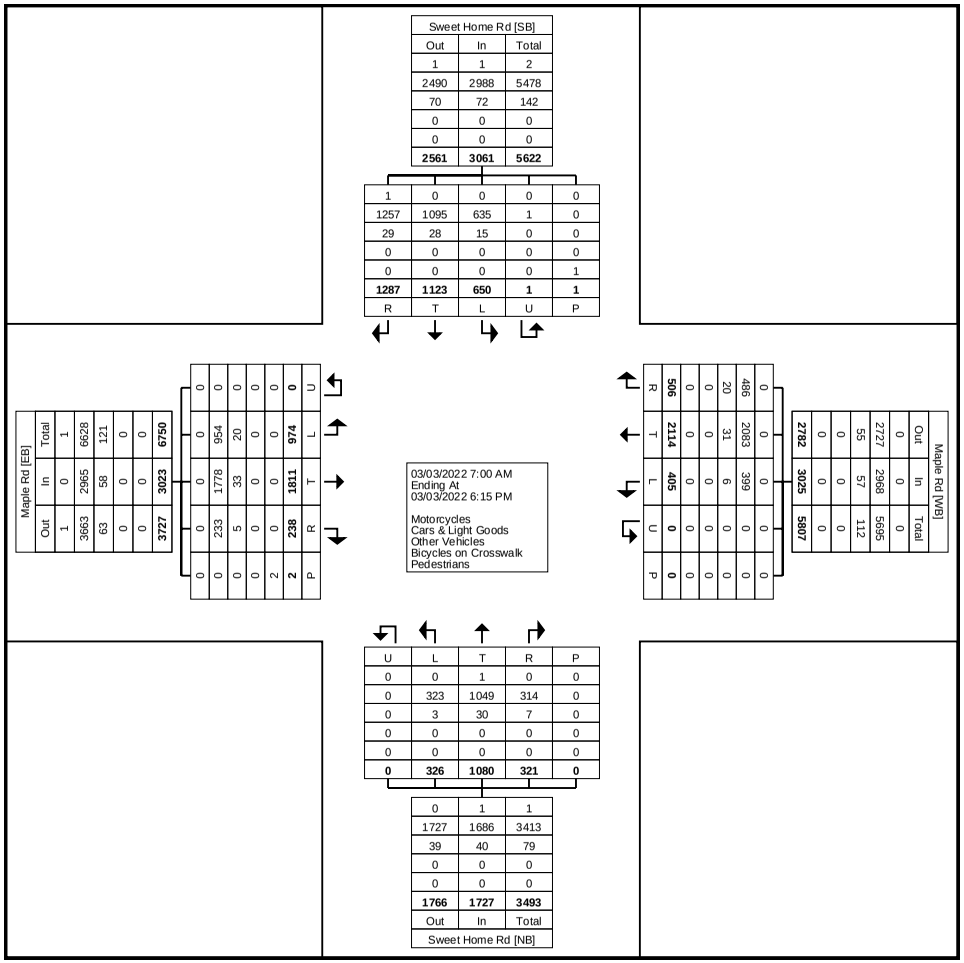
Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	2	-	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Maple Rd/Sweet Home Rd
Site Code:
Start Date: 03/03/2022



Turning Movement Data Plot

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Maple Rd/Sweet Home Rd
Site Code:
Start Date: 03/03/2022

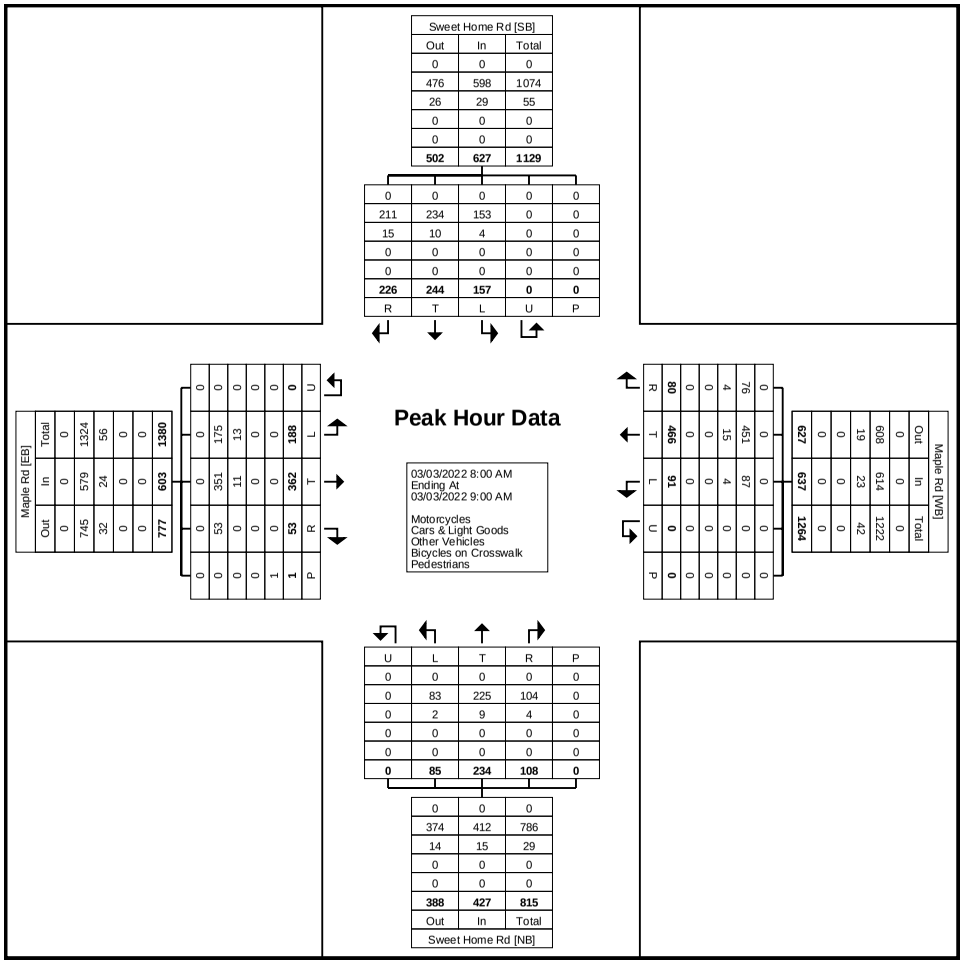
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Sweet Home Rd Southbound							Maple Rd Westbound							Sweet Home Rd Northbound							Maple Rd Eastbound							Int. Total
	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	
8:00 AM	20	18	48	42	0	0	128	13	10	100	18	0	0	141	8	18	50	15	0	0	91	0	7	95	42	0	0	144	504
8:15 AM	29	20	59	41	0	0	149	15	4	91	30	0	0	140	16	22	71	19	0	0	128	7	16	93	35	0	0	151	568
8:30 AM	27	20	76	41	0	0	164	12	7	124	24	0	0	167	10	13	52	18	0	0	93	8	2	96	59	0	0	165	589
8:45 AM	68	24	61	33	0	0	186	16	3	151	19	0	0	189	7	14	61	33	0	0	115	9	4	78	52	0	1	143	633
Total	144	82	244	157	0	0	627	56	24	466	91	0	0	637	41	67	234	85	0	0	427	24	29	362	188	0	1	603	2294
Approach %	23.0	13.1	38.9	25.0	0.0	-	-	8.8	3.8	73.2	14.3	0.0	-	-	9.6	15.7	54.8	19.9	0.0	-	-	4.0	4.8	60.0	31.2	0.0	-	-	-
Total %	6.3	3.6	10.6	6.8	0.0	-	27.3	2.4	1.0	20.3	4.0	0.0	-	27.8	1.8	2.9	10.2	3.7	0.0	-	18.6	1.0	1.3	15.8	8.2	0.0	-	26.3	-
PHF	0.529	0.854	0.803	0.935	0.000	-	0.843	0.875	0.600	0.772	0.758	0.000	-	0.843	0.641	0.761	0.824	0.644	0.000	-	0.834	0.667	0.453	0.943	0.797	0.000	-	0.914	0.906
Motorcycles	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	133	78	234	153	0	-	598	53	23	451	87	0	-	614	38	66	225	83	0	-	412	24	29	351	175	0	-	579	2203
% Cars & Light Goods	92.4	95.1	95.9	97.5	-	-	95.4	94.6	95.8	96.8	95.6	-	-	96.4	92.7	98.5	96.2	97.6	-	-	96.5	100.0	100.0	97.0	93.1	-	-	96.0	96.0
Other Vehicles	11	4	10	4	0	-	29	3	1	15	4	0	-	23	3	1	9	2	0	-	15	0	0	11	13	0	-	24	91
% Other Vehicles	7.6	4.9	4.1	2.5	-	-	4.6	5.4	4.2	3.2	4.4	-	-	3.6	7.3	1.5	3.8	2.4	-	-	3.5	0.0	0.0	3.0	6.9	-	-	4.0	4.0
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Maple Rd/Sweet Home Rd
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (8:00 AM)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Maple Rd/Sweet Home Rd
Site Code:
Start Date: 03/03/2022

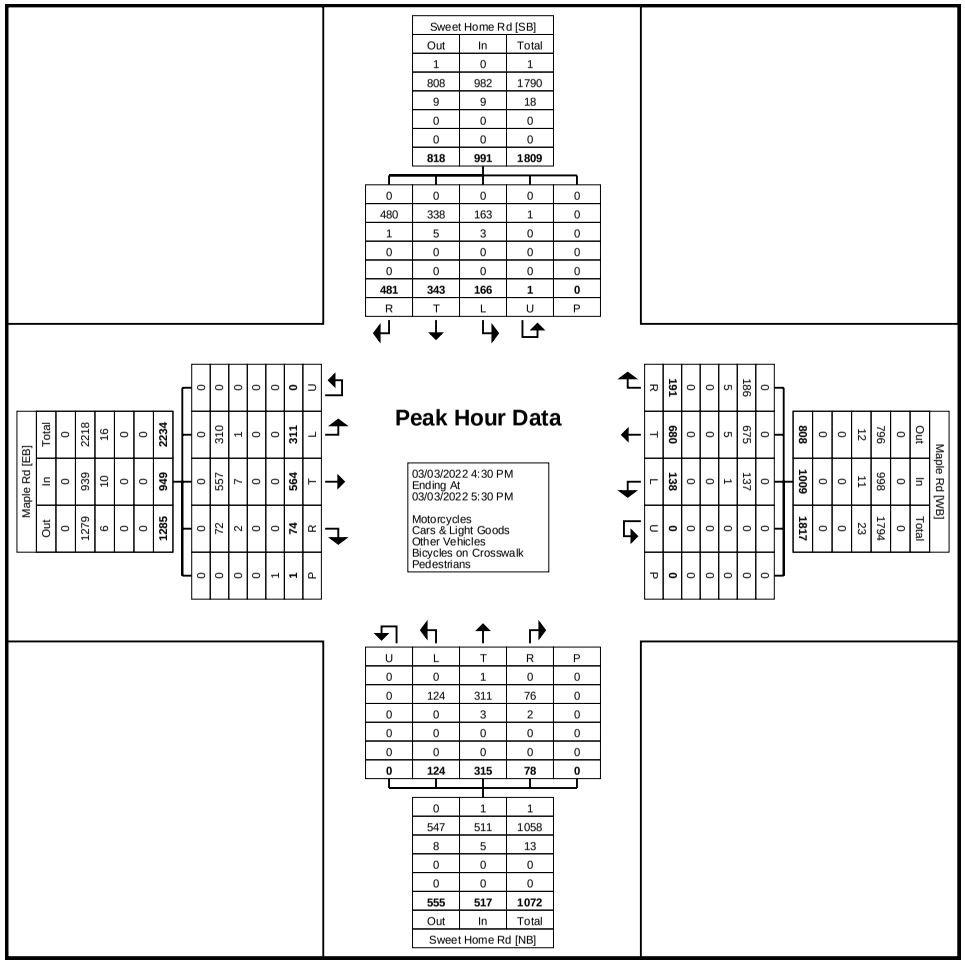
Turning Movement Peak Hour Data (4:30 PM)

Start Time	Sweet Home Rd Southbound							Maple Rd Westbound							Sweet Home Rd Northbound							Maple Rd Eastbound							Int. Total
	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	
4:30 PM	55	45	79	44	0	0	223	24	21	158	32	0	0	235	12	4	75	32	0	0	123	12	8	137	82	0	0	239	820
4:45 PM	63	63	88	38	0	0	252	16	28	154	32	0	0	230	10	5	76	29	0	0	120	12	6	134	65	0	0	217	819
5:00 PM	91	43	94	43	1	0	272	30	24	187	41	0	0	282	16	10	71	27	0	0	124	7	8	158	80	0	1	253	931
5:15 PM	84	37	82	41	0	0	244	32	16	181	33	0	0	262	7	14	93	36	0	0	150	6	15	135	84	0	0	240	896
Total	293	188	343	166	1	0	991	102	89	680	138	0	0	1009	45	33	315	124	0	0	517	37	37	564	311	0	1	949	3466
Approach %	29.6	19.0	34.6	16.8	0.1	-	-	10.1	8.8	67.4	13.7	0.0	-	-	8.7	6.4	60.9	24.0	0.0	-	-	3.9	3.9	59.4	32.8	0.0	-	-	-
Total %	8.5	5.4	9.9	4.8	0.0	-	28.6	2.9	2.6	19.6	4.0	0.0	-	29.1	1.3	1.0	9.1	3.6	0.0	-	14.9	1.1	1.1	16.3	9.0	0.0	-	27.4	-
PHF	0.805	0.746	0.912	0.943	0.250	-	0.911	0.797	0.795	0.909	0.841	0.000	-	0.895	0.703	0.589	0.847	0.861	0.000	-	0.862	0.771	0.617	0.892	0.926	0.000	-	0.938	0.931
Motorcycles	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	1	0	0	-	1	0	0	0	0	0	-	0	1
% Motorcycles	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.3	0.0	-	-	0.2	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	293	187	338	163	1	-	982	98	88	675	137	0	-	998	44	32	311	124	0	-	511	36	36	557	310	0	-	939	3430
% Cars & Light Goods	100.0	99.5	98.5	98.2	100.0	-	99.1	96.1	98.9	99.3	99.3	-	-	98.9	97.8	97.0	98.7	100.0	-	-	98.8	97.3	97.3	98.8	99.7	-	-	98.9	99.0
Other Vehicles	0	1	5	3	0	-	9	4	1	5	1	0	-	11	1	1	3	0	0	-	5	1	1	7	1	0	-	10	35
% Other Vehicles	0.0	0.5	1.5	1.8	0.0	-	0.9	3.9	1.1	0.7	0.7	-	-	1.1	2.2	3.0	1.0	0.0	-	-	1.0	2.7	2.7	1.2	0.3	-	-	1.1	1.0
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Maple Rd/Sweet Home Rd
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (4:30 PM)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (east driveway)
Site Code:
Start Date: 03/03/2022

Turning Movement Data

Start Time	Office Parking lots Southbound						Rensch Rd Westbound						Villas Dr E Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:00 AM	0	0	0	0	0	0	0	12	0	0	0	12	2	0	0	0	0	2	1	7	0	0	0	8	22
7:15 AM	0	0	0	0	0	0	5	6	0	0	0	11	3	0	0	0	0	3	2	10	0	0	0	12	26
7:30 AM	0	0	1	0	1	1	3	13	0	0	0	16	6	0	0	0	0	6	1	11	0	0	0	12	35
7:45 AM	0	0	1	0	0	1	11	21	1	2	0	35	6	0	0	0	0	6	2	15	0	0	0	17	59
Hourly Total	0	0	2	0	1	2	19	52	1	2	0	74	17	0	0	0	0	17	6	43	0	0	0	49	142
8:00 AM	0	0	0	0	0	0	6	20	1	0	0	27	3	0	0	0	0	3	2	13	0	0	0	15	45
8:15 AM	0	0	1	0	1	1	7	22	0	0	0	29	3	0	0	0	0	3	1	13	0	0	1	14	47
8:30 AM	0	0	2	0	2	2	5	19	1	0	0	25	7	0	1	0	1	8	1	21	0	0	1	22	57
8:45 AM	2	0	3	0	1	5	16	25	0	0	0	41	10	0	0	0	0	10	2	26	0	0	0	28	84
Hourly Total	2	0	6	0	4	8	34	86	2	0	0	122	23	0	1	0	1	24	6	73	0	0	2	79	233
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	8	0	0	8	2	18	3	0	2	23	3	0	0	0	0	3	0	33	0	0	0	33	67
4:15 PM	0	0	7	0	0	7	3	20	8	0	1	31	2	0	0	0	1	2	2	27	0	0	0	29	69
4:30 PM	0	0	9	0	0	9	5	17	4	0	2	26	6	0	0	0	0	6	2	23	1	0	0	26	67
4:45 PM	0	0	14	0	1	14	5	25	8	0	1	38	6	0	2	0	2	8	1	27	1	0	0	29	89
Hourly Total	0	0	38	0	1	38	15	80	23	0	6	118	17	0	2	0	3	19	5	110	2	0	0	117	292
5:00 PM	0	0	10	0	2	10	4	21	15	0	3	40	11	0	1	0	1	12	0	30	0	0	1	30	92
5:15 PM	0	0	8	0	3	8	0	19	5	0	1	24	8	0	1	0	0	9	1	15	0	0	1	16	57
5:30 PM	1	0	6	0	0	7	3	13	4	0	1	20	5	0	0	0	1	5	1	19	0	0	0	20	52
5:45 PM	0	0	5	0	0	5	2	16	4	0	1	22	9	0	1	0	1	10	2	16	0	0	0	18	55
Hourly Total	1	0	29	0	5	30	9	69	28	0	6	106	33	0	3	0	3	36	4	80	0	0	2	84	256
Grand Total	3	0	75	0	11	78	77	287	54	2	12	420	90	0	6	0	7	96	21	306	2	0	4	329	923
Approach %	3.8	0.0	96.2	0.0	-	-	18.3	68.3	12.9	0.5	-	-	93.8	0.0	6.3	0.0	-	-	6.4	93.0	0.6	0.0	-	-	-
Total %	0.3	0.0	8.1	0.0	-	8.5	8.3	31.1	5.9	0.2	-	45.5	9.8	0.0	0.7	0.0	-	10.4	2.3	33.2	0.2	0.0	-	35.6	-
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	3	0	73	0	-	76	77	265	54	2	-	398	71	0	5	0	-	76	3	299	1	0	-	303	853
% Cars & Light Goods	100.0	-	97.3	-	-	97.4	100.0	92.3	100.0	100.0	-	94.8	78.9	-	83.3	-	-	79.2	14.3	97.7	50.0	-	-	92.1	92.4
Other Vehicles	0	0	2	0	-	2	0	22	0	0	-	22	19	0	1	0	-	20	18	7	1	0	-	26	70
% Other Vehicles	0.0	-	2.7	-	-	2.6	0.0	7.7	0.0	0.0	-	5.2	21.1	-	16.7	-	-	20.8	85.7	2.3	50.0	-	-	7.9	7.6
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-

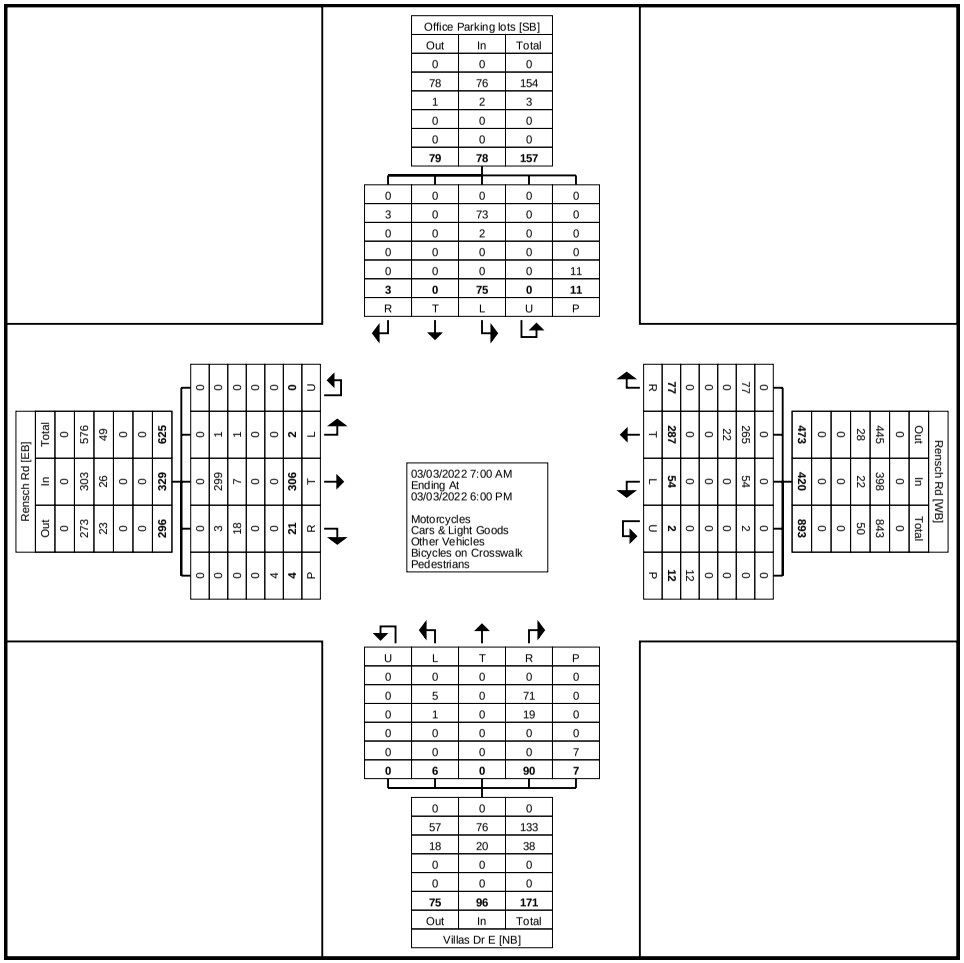
Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	11	-	-	-	-	-	12	-	-	-	-	-	7	-	-	-	-	-	4	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (east driveway)
Site Code:
Start Date: 03/03/2022



Turning Movement Data Plot

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (east driveway)
Site Code:
Start Date: 03/03/2022

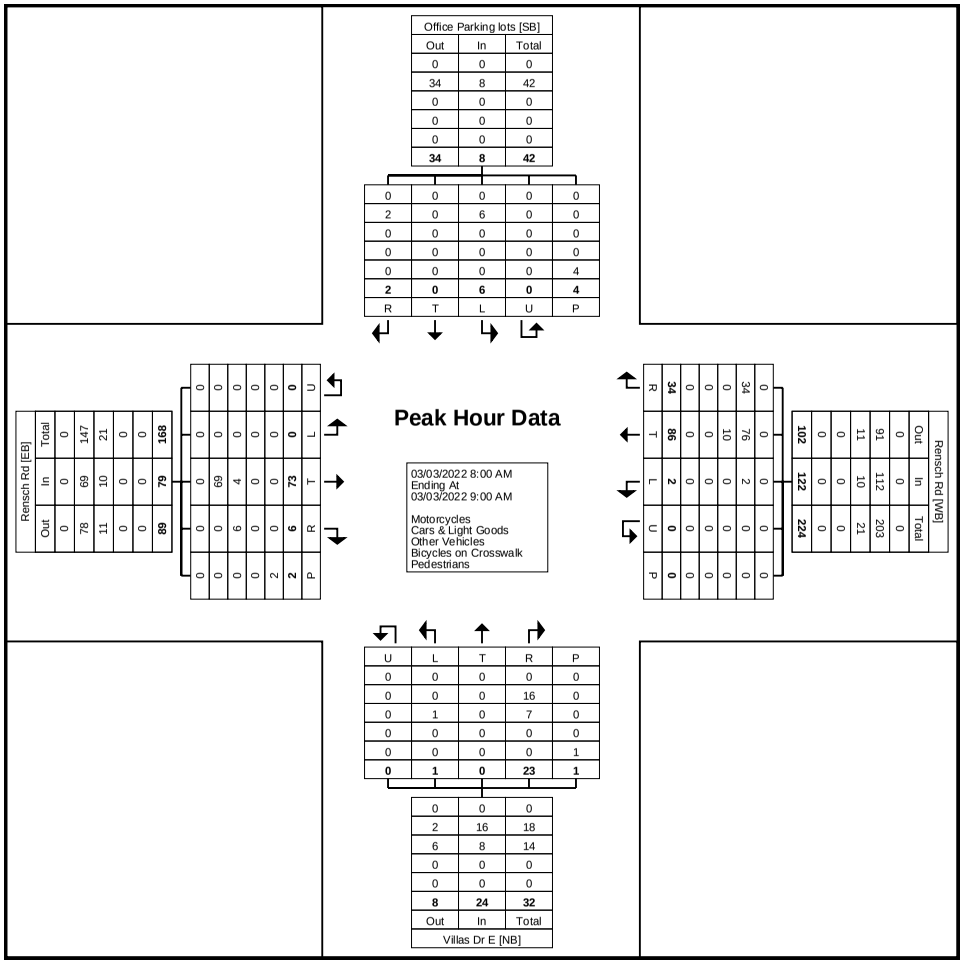
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Office Parking lots Southbound						Rensch Rd Westbound						Villas Dr E Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
8:00 AM	0	0	0	0	0	0	6	20	1	0	0	27	3	0	0	0	0	3	2	13	0	0	0	15	45
8:15 AM	0	0	1	0	1	1	7	22	0	0	0	29	3	0	0	0	0	3	1	13	0	0	1	14	47
8:30 AM	0	0	2	0	2	2	5	19	1	0	0	25	7	0	1	0	1	8	1	21	0	0	1	22	57
8:45 AM	2	0	3	0	1	5	16	25	0	0	0	41	10	0	0	0	0	10	2	26	0	0	0	28	84
Total	2	0	6	0	4	8	34	86	2	0	0	122	23	0	1	0	1	24	6	73	0	0	2	79	233
Approach %	25.0	0.0	75.0	0.0	-	-	27.9	70.5	1.6	0.0	-	-	95.8	0.0	4.2	0.0	-	-	7.6	92.4	0.0	0.0	-	-	-
Total %	0.9	0.0	2.6	0.0	-	3.4	14.6	36.9	0.9	0.0	-	52.4	9.9	0.0	0.4	0.0	-	10.3	2.6	31.3	0.0	0.0	-	33.9	-
PHF	0.250	0.000	0.500	0.000	-	0.400	0.531	0.860	0.500	0.000	-	0.744	0.575	0.000	0.250	0.000	-	0.600	0.750	0.702	0.000	0.000	-	0.705	0.693
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0
Cars & Light Goods	2	0	6	0	-	8	34	76	2	0	-	112	16	0	0	0	-	16	0	69	0	0	-	69	205
% Cars & Light Goods	100.0	-	100.0	-	-	100.0	100.0	88.4	100.0	-	-	91.8	69.6	-	0.0	-	-	66.7	0.0	94.5	-	-	-	87.3	88.0
Other Vehicles	0	0	0	0	-	0	0	10	0	0	-	10	7	0	1	0	-	8	6	4	0	0	-	10	28
% Other Vehicles	0.0	-	0.0	-	-	0.0	0.0	11.6	0.0	-	-	8.2	30.4	-	100.0	-	-	33.3	100.0	5.5	-	-	-	12.7	12.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (east driveway)
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (8:00 AM)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (east driveway)
Site Code:
Start Date: 03/03/2022

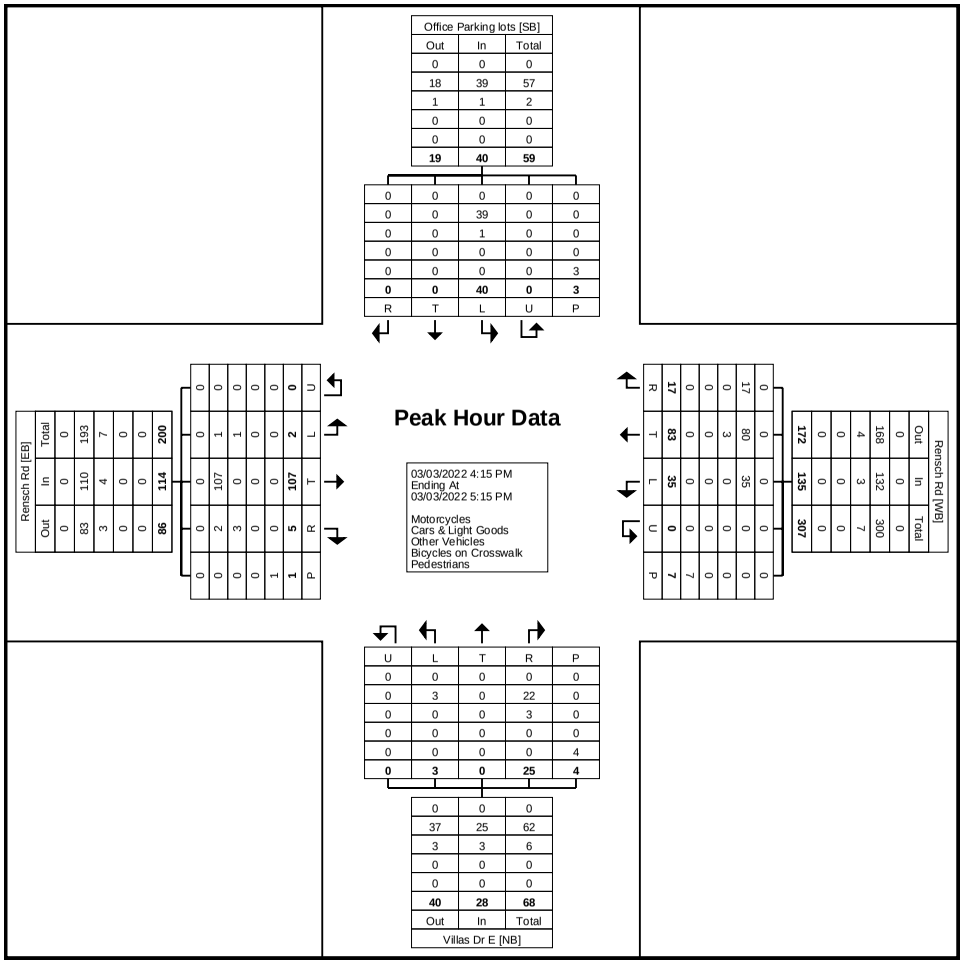
Turning Movement Peak Hour Data (4:15 PM)

Start Time	Office Parking lots Southbound						Rensch Rd Westbound						Villas Dr E Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:15 PM	0	0	7	0	0	7	3	20	8	0	1	31	2	0	0	0	1	2	2	27	0	0	0	29	69
4:30 PM	0	0	9	0	0	9	5	17	4	0	2	26	6	0	0	0	0	6	2	23	1	0	0	26	67
4:45 PM	0	0	14	0	1	14	5	25	8	0	1	38	6	0	2	0	2	8	1	27	1	0	0	29	89
5:00 PM	0	0	10	0	2	10	4	21	15	0	3	40	11	0	1	0	1	12	0	30	0	0	1	30	92
Total	0	0	40	0	3	40	17	83	35	0	7	135	25	0	3	0	4	28	5	107	2	0	1	114	317
Approach %	0.0	0.0	100.0	0.0	-	-	12.6	61.5	25.9	0.0	-	-	89.3	0.0	10.7	0.0	-	-	4.4	93.9	1.8	0.0	-	-	-
Total %	0.0	0.0	12.6	0.0	-	12.6	5.4	26.2	11.0	0.0	-	42.6	7.9	0.0	0.9	0.0	-	8.8	1.6	33.8	0.6	0.0	-	36.0	-
PHF	0.000	0.000	0.714	0.000	-	0.714	0.850	0.830	0.583	0.000	-	0.844	0.568	0.000	0.375	0.000	-	0.583	0.625	0.892	0.500	0.000	-	0.950	0.861
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	-	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	0	0	39	0	-	39	17	80	35	0	-	132	22	0	3	0	-	25	2	107	1	0	-	110	306
% Cars & Light Goods	-	-	97.5	-	-	97.5	100.0	96.4	100.0	-	-	97.8	88.0	-	100.0	-	-	89.3	40.0	100.0	50.0	-	-	96.5	96.5
Other Vehicles	0	0	1	0	-	1	0	3	0	0	-	3	3	0	0	0	-	3	3	0	1	0	-	4	11
% Other Vehicles	-	-	2.5	-	-	2.5	0.0	3.6	0.0	-	-	2.2	12.0	-	0.0	-	-	10.7	60.0	0.0	50.0	-	-	3.5	3.5
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	7	-	-	-	-	-	4	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (east driveway)
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (4:15 PM)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (west Driveway)
Site Code:
Start Date: 03/03/2022

Turning Movement Data

Start Time	Office Parking lots Southbound						Rensch Rd Westbound						Villas Dr E Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:00 AM	0	0	2	0	0	2	9	3	0	0	0	12	0	0	0	1	0	1	0	5	0	0	0	5	20
7:15 AM	0	0	3	0	0	3	5	3	0	0	0	8	0	0	0	0	0	0	0	9	0	0	0	9	20
7:30 AM	0	0	5	0	1	5	8	4	0	0	0	12	0	0	0	0	0	0	0	7	0	0	0	7	24
7:45 AM	0	0	5	0	0	5	15	3	0	0	0	18	0	0	0	0	0	0	0	13	0	0	0	13	36
Hourly Total	0	0	15	0	1	15	37	13	0	0	0	50	0	0	0	1	0	1	0	34	0	0	0	34	100
8:00 AM	1	0	4	0	0	5	15	7	0	0	0	22	0	0	0	0	0	0	0	9	0	0	0	9	36
8:15 AM	0	0	3	0	0	3	18	1	0	0	0	19	0	0	0	0	0	0	0	10	0	0	0	10	32
8:30 AM	0	0	8	0	0	8	13	7	0	0	0	20	0	0	0	0	3	0	0	16	0	0	0	16	44
8:45 AM	1	0	5	0	1	6	22	8	0	0	0	30	0	0	1	0	0	1	0	21	0	0	0	21	58
Hourly Total	2	0	20	0	1	22	68	23	0	0	0	91	0	0	1	0	3	1	0	56	0	0	0	56	170
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	20	0	0	20	4	15	0	0	0	19	0	0	0	0	0	0	0	11	0	0	0	11	50
4:15 PM	0	0	12	0	0	12	7	13	1	0	0	21	0	0	0	0	0	0	0	17	0	0	0	17	50
4:30 PM	0	0	17	0	0	17	5	11	0	0	0	16	0	0	0	0	0	0	0	12	0	0	0	12	45
4:45 PM	0	0	12	0	0	12	7	17	1	0	0	25	0	0	0	0	1	0	0	16	0	0	0	16	53
Hourly Total	0	0	61	0	0	61	23	56	2	0	0	81	0	0	0	0	1	0	0	56	0	0	0	56	198
5:00 PM	0	0	14	0	1	14	2	22	0	0	0	24	0	0	0	0	1	0	0	16	0	0	0	16	54
5:15 PM	0	0	9	0	0	9	2	18	0	0	0	20	0	0	0	0	2	0	0	11	0	0	0	11	40
5:30 PM	0	0	3	0	0	3	3	11	1	0	0	15	2	0	0	0	2	2	0	14	0	0	0	14	34
5:45 PM	0	0	2	0	0	2	3	14	0	0	0	17	0	0	0	0	2	0	0	13	0	0	0	13	32
Hourly Total	0	0	28	0	1	28	10	65	1	0	0	76	2	0	0	0	7	2	0	54	0	0	0	54	160
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	2	0	124	0	3	126	138	157	3	0	0	298	2	0	1	1	11	4	0	200	0	0	0	200	628
Approach %	1.6	0.0	98.4	0.0	-	-	46.3	52.7	1.0	0.0	-	-	50.0	0.0	25.0	25.0	-	-	0.0	100.0	0.0	0.0	-	-	-
Total %	0.3	0.0	19.7	0.0	-	20.1	22.0	25.0	0.5	0.0	-	47.5	0.3	0.0	0.2	0.2	-	0.6	0.0	31.8	0.0	0.0	-	31.8	-
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	0.0	-	0.0	-	0.0	-	-	-	0.0	0.0
Cars & Light Goods	0	0	123	0	-	123	135	136	3	0	-	274	2	0	1	0	-	3	0	176	0	0	-	176	576
% Cars & Light Goods	0.0	-	99.2	-	-	97.6	97.8	86.6	100.0	-	-	91.9	100.0	-	100.0	0.0	-	75.0	-	88.0	-	-	-	88.0	91.7
Other Vehicles	2	0	1	0	-	3	3	21	0	0	-	24	0	0	0	1	-	1	0	24	0	0	-	24	52
% Other Vehicles	100.0	-	0.8	-	-	2.4	2.2	13.4	0.0	-	-	8.1	0.0	-	0.0	100.0	-	25.0	-	12.0	-	-	-	12.0	8.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-

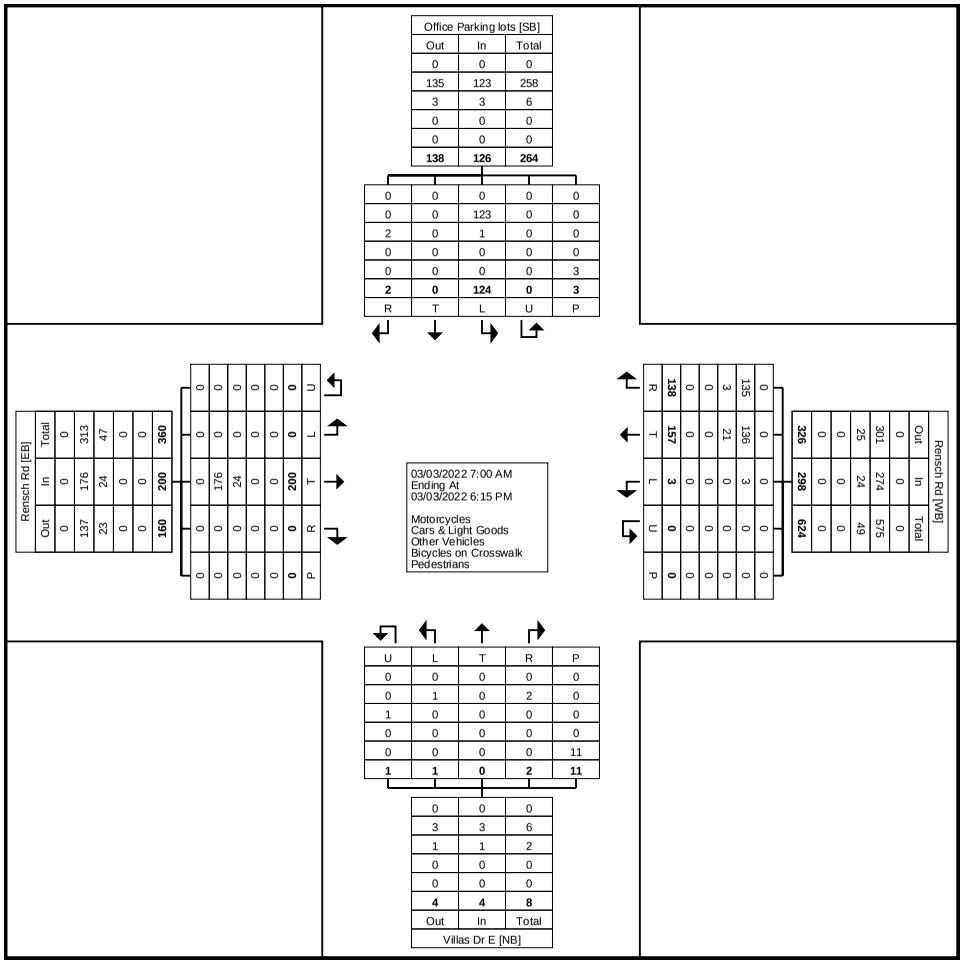
Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	11	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (west Driveway)
Site Code:
Start Date: 03/03/2022



Turning Movement Data Plot

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (west Driveway)
Site Code:
Start Date: 03/03/2022

Turning Movement Peak Hour Data (8:00 AM)

Start Time	Office Parking lots Southbound						Rensch Rd Westbound						Villas Dr E Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
8:00 AM	1	0	4	0	0	5	15	7	0	0	0	22	0	0	0	0	0	0	0	9	0	0	0	9	36
8:15 AM	0	0	3	0	0	3	18	1	0	0	0	19	0	0	0	0	0	0	0	10	0	0	0	10	32
8:30 AM	0	0	8	0	0	8	13	7	0	0	0	20	0	0	0	0	3	0	0	16	0	0	0	16	44
8:45 AM	1	0	5	0	1	6	22	8	0	0	0	30	0	0	1	0	0	1	0	21	0	0	0	21	58
Total	2	0	20	0	1	22	68	23	0	0	0	91	0	0	1	0	3	1	0	56	0	0	0	56	170
Approach %	9.1	0.0	90.9	0.0	-	-	74.7	25.3	0.0	0.0	-	-	0.0	0.0	100.0	0.0	-	-	0.0	100.0	0.0	0.0	-	-	-
Total %	1.2	0.0	11.8	0.0	-	12.9	40.0	13.5	0.0	0.0	-	53.5	0.0	0.0	0.6	0.0	-	0.6	0.0	32.9	0.0	0.0	-	32.9	-
PHF	0.500	0.000	0.625	0.000	-	0.688	0.773	0.719	0.000	0.000	-	0.758	0.000	0.000	0.250	0.000	-	0.250	0.000	0.667	0.000	0.000	-	0.667	0.733
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	-	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	-	-	0.0	-	-	0.0	-	0.0	-	-	-	0.0	0.0
Cars & Light Goods	0	0	19	0	-	19	65	15	0	0	-	80	0	0	1	0	-	1	0	48	0	0	-	48	148
% Cars & Light Goods	0.0	-	95.0	-	-	86.4	95.6	65.2	-	-	-	87.9	-	-	100.0	-	-	100.0	-	85.7	-	-	-	85.7	87.1
Other Vehicles	2	0	1	0	-	3	3	8	0	0	-	11	0	0	0	0	-	0	0	8	0	0	-	8	22
% Other Vehicles	100.0	-	5.0	-	-	13.6	4.4	34.8	-	-	-	12.1	-	-	0.0	-	-	0.0	-	14.3	-	-	-	14.3	12.9
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

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184 Baker Rd

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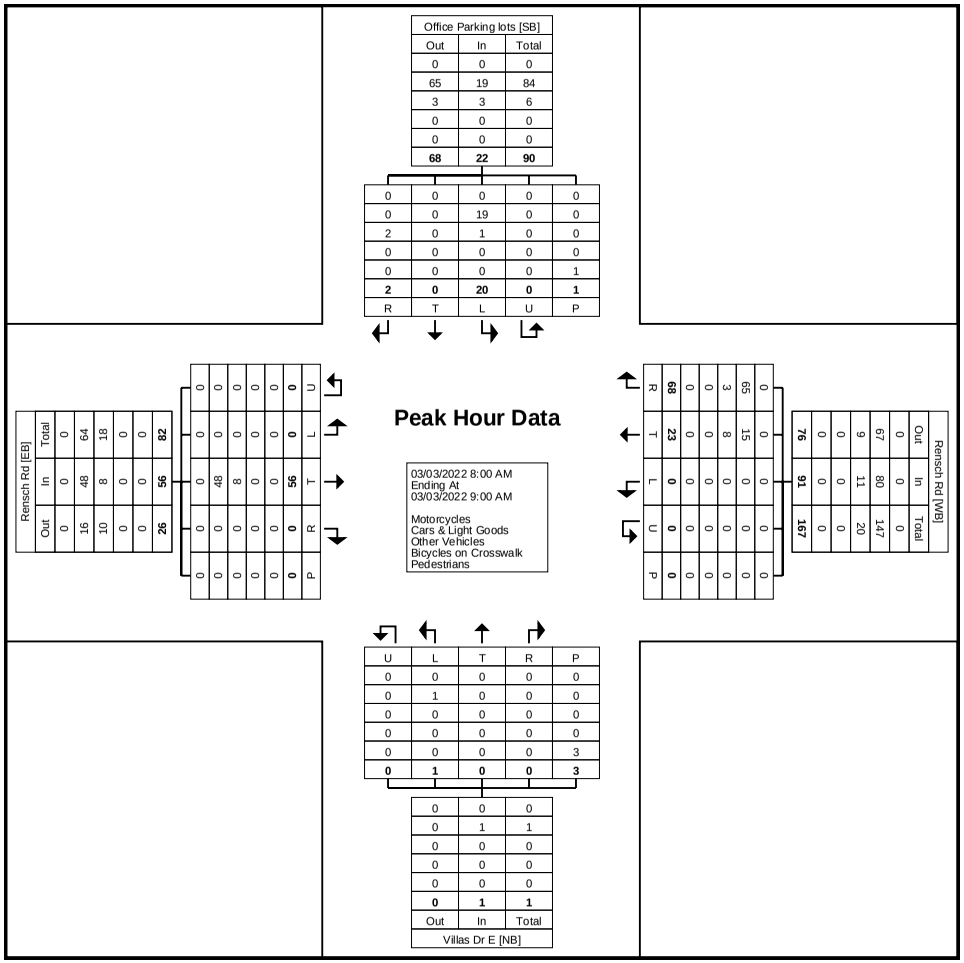
Count Name: Rensch Rd/Villas Dr E (west Driveway)
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (8:00 AM)

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610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (west Driveway)
Site Code:
Start Date: 03/03/2022

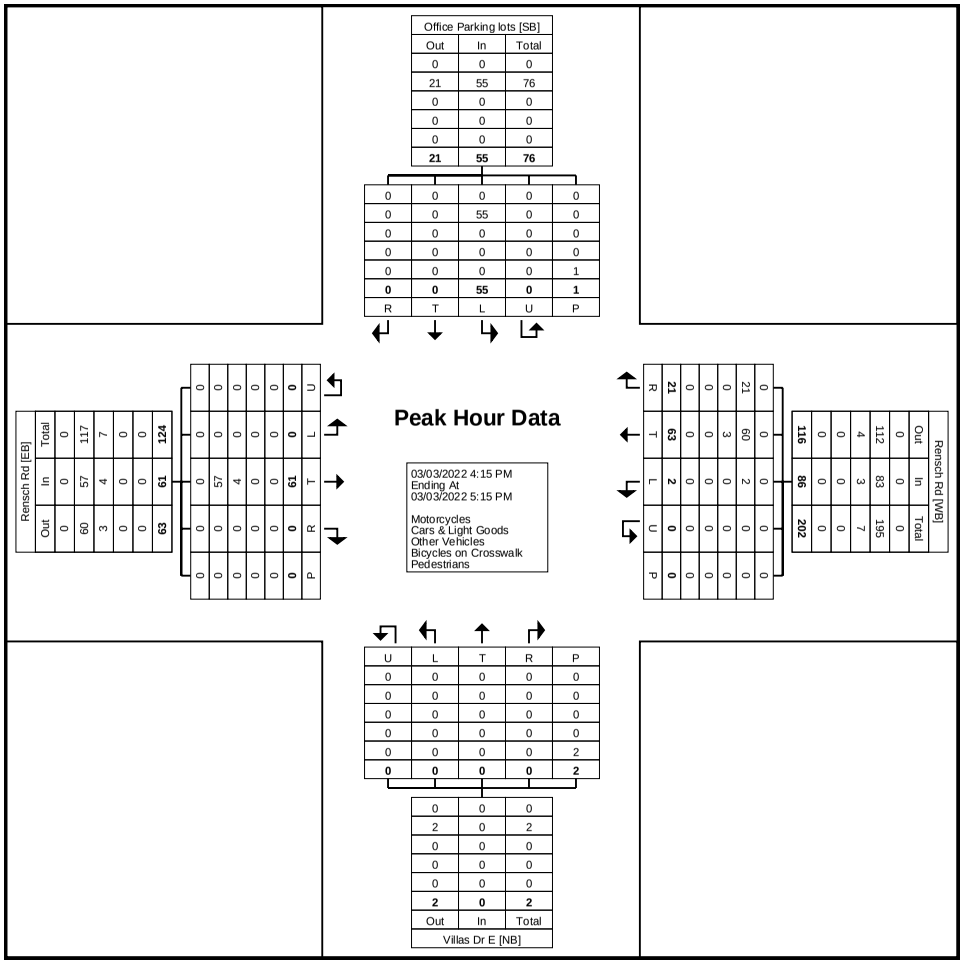
Turning Movement Peak Hour Data (4:15 PM)

Start Time	Office Parking lots Southbound						Rensch Rd Westbound						Villas Dr E Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:15 PM	0	0	12	0	0	12	7	13	1	0	0	21	0	0	0	0	0	0	0	17	0	0	0	17	50
4:30 PM	0	0	17	0	0	17	5	11	0	0	0	16	0	0	0	0	0	0	0	12	0	0	0	12	45
4:45 PM	0	0	12	0	0	12	7	17	1	0	0	25	0	0	0	0	1	0	0	16	0	0	0	16	53
5:00 PM	0	0	14	0	1	14	2	22	0	0	0	24	0	0	0	0	1	0	0	16	0	0	0	16	54
Total	0	0	55	0	1	55	21	63	2	0	0	86	0	0	0	0	2	0	0	61	0	0	0	61	202
Approach %	0.0	0.0	100.0	0.0	-	-	24.4	73.3	2.3	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	100.0	0.0	0.0	-	-	-
Total %	0.0	0.0	27.2	0.0	-	27.2	10.4	31.2	1.0	0.0	-	42.6	0.0	0.0	0.0	0.0	-	0.0	0.0	30.2	0.0	0.0	-	30.2	-
PHF	0.000	0.000	0.809	0.000	-	0.809	0.750	0.716	0.500	0.000	-	0.860	0.000	0.000	0.000	0.000	-	0.000	0.000	0.897	0.000	0.000	-	0.897	0.935
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	-	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	-	-	-	-	-	-	-	0.0	-	-	-	0.0	0.0
Cars & Light Goods	0	0	55	0	-	55	21	60	2	0	-	83	0	0	0	0	-	0	0	57	0	0	-	57	195
% Cars & Light Goods	-	-	100.0	-	-	100.0	100.0	95.2	100.0	-	-	96.5	-	-	-	-	-	-	-	93.4	-	-	-	93.4	96.5
Other Vehicles	0	0	0	0	-	0	0	3	0	0	-	3	0	0	0	0	-	0	0	4	0	0	-	4	7
% Other Vehicles	-	-	0.0	-	-	0.0	0.0	4.8	0.0	-	-	3.5	-	-	-	-	-	-	-	6.6	-	-	-	6.6	3.5
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (west Driveway)
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (4:15 PM)

A2

Miscellaneous Traffic Data and Calculations

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

SRF ASSOCIATES
Transportation Planning / Engineering / Design

Proposed Mixed-Use Development, 1400-1416 Sweet Home Road, Town of Amherst, Erie County, NY

Documentation of Ambient Traffic Volume Growth

Roadway	Segment starts at	Segment end at	2013	2015	2018	2020	Annual Growth (2013-2018)
Sweet Home Road	Maple Road	Rensch Road	18,430	18,345	17,040	8,154	-1.56%

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Background Project Trip Estimates

	ITE LUC	Units	Enter	Exit	Enter	Exit
1265 Sweet Home	220	154	15	47	49	30
The Station Existing			27	51	126	106
The Station Proposed			71	121	132	119
			44	70	6	13

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Int #	Sweet Home Road/Rensch Road															
1	Left turn	Rear-end	Overtaking	Right Angle	Right Turn	Head On	Side-swipe	Fixed Object	Backing	Other	Animal	Bike/Ped	**Total**	Injury	Non Injury	Non-Repo	**Sum**
	4	17	2	1	2		1	4				1	**32**	8	18	6	**32**
TOTALS	**4**	**17**	**2**	**1**	**2**	**0**	**1**	**4**	**0**	**0**	**0**	**1**		**8**	**18**	**6**	

	Northbound	Southbound	Eastbound	Westbound	Unknown	**Totals**
Left turn	1		3			**4**
Rear-end	9	7		1		**17**
Overtaking			1		1	**2**
Right Angle	1					**1**
Right Turn	2					**2**
Head On						**0**
Side-swipe	1					**1**
Fixed Object	3		1			**4**
Backing						**0**
Other						**0**
Bike/Ped		1				**1**
Animal						**0**
Totals	**17**	**8**	**5**	**1**	**1**	**32**

ADT = Peak hour entering volume / k factor

ADT = 2716 VPH / 0.10 = 28589.4737 VPD

Rate = 32 Acc. x 1,000,000 / (28589.4737 VPD x 365 Days x 3.000 Yrs.) = 1.02 Crash / MEV

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Int #																
2	**Sweet Home Road/The Station**															
	Left turn	Rear-end	Overtaking	Right Angle	Right Turn	Head On	Side-swipe	Fixed Object	Backing	Other	Animal	Bike/Ped	**Total**	Injury	Non Injury	Non-Repo	**Sum**
	1												**1**	1			**1**
TOTALS	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**		**1**	**0**	**0**	

	Northbound	Southbound	Eastbound	Westbound	Unknown	**Totals**
Left turn				1		**1**
Rear-end						**0**
Overtaking						**0**
Right Angle						**0**
Right Turn						**0**
Head On						**0**
Side-swipe						**0**
Fixed Object						**0**
Backing						**0**
Other						**0**
Bike/Ped						**0**
Animal						**0**
Totals	**0**	**0**	**0**	**1**	**0**	**1**

ADT = Peak hour entering volume / k factor

ADT = 2157 VPH / 0.10 = 22705.2632 VPD

Rate = $\frac{1 \text{ Acc.} \times 1{,}000{,}000}{22705.2632 \text{ VPD} \times 365 \text{ Days} \times 3.000 \text{ Yrs.}}$ = 0.04 Crash / MEV

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Int #	Sweet Home Road/Maple Road															
3	Left turn	Rear-end	Overtaking	Right Angle	Right Turn	Head On	Side-swipe	Fixed Object	Backing	Other	Animal	Bike/Ped	**Total**	Injury	Non Injury	Non-Repo	**Sum**
	15	24	7	10	3	2		2				1	**64**	17	37	10	**64**
TOTALS	**15**	**24**	**7**	**10**	**3**	**2**	**0**	**2**	**0**	**0**	**0**	**1**		**17**	**37**	**10**	

	Northbound	Southbound	Eastbound	Westbound	Unknown	**Totals**
Left turn	6	7	2			**15**
Rear-end	3	9	4	8		**24**
Overtaking	1	1	1	4		**7**
Right Angle	4	1	3	2		**10**
Right Turn	1	1	1			**3**
Head On			1	1		**2**
Side-swipe						**0**
Fixed Object				1	1	**2**
Backing						**0**
Other						**0**
Bike/Ped		1				**1**
Animal						**0**
Totals	**15**	**20**	**12**	**16**	**1**	**64**

ADT = Peak hour entering volume / k factor

ADT = 3692 VPH / 0.10 = 38863.1579 VPD

Rate = $\frac{64 \text{ Acc.} \times 1{,}000{,}000}{38863.1579 \text{ VPD} \times 365 \text{ Days} \times 3.000 \text{ Yrs.}}$ = 1.50 Crash / MEV

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

INTERSECTION TYPE URBAN FUNCTION CLASS	ALL TYPES ACC/MEV	WET ROAD ACC/MEV	LEFT TURN ACC/MEV	REAR END CC/ME	OVER-TAKING ACC/MEV	RIGHT ANGLE ACC/MEV	RIGHT TURN ACC/MEV	HEAD ON ACC/MEV	SIDE-SWIPE ACC/MEV
3 LEGGED INTERSECTIONS									
SIGNAL 1-4 LANES	0.32	0.06	0.03	0.13	0.04	0.04	0.01	0	0.01
SIGNAL W/ LEFT TURN 5 & :	0.17	0.03	0.01	0.07	0.03	0.02	0	0	0
SIGNAL W/0 LEFT TURN 5 & :	0.13	0.02	0.01	0.05	0.02	0.01	0.01	0	0
SIGN 1-3 LANES	0.19	0.03	0.01	0.06	0.01	0.03	0.01	0	0
SIGN 4 LANES	0.13	0.02	0.01	0.04	0.02	0.02	0	0	0
SIGN 5 & > LANES	0.07	0.01	0	0.03	0.01	0.01	0	0	0
NO CONTROL ALL LANI	0.06	0.01	0	0.02	0.01	0.01	0	0	0
4 LEGGED &> INTERSECTIONS									
SIGNAL 1-4 LANES	0.56	0.1	0.05	0.21	0.08	0.09	0.02	0.01	0.01
SIGNAL W/ LEFT T	0.26	0.04	0.02	0.11	0.05	0.03	0.01	0	0
SIGNAL W/0 LEFT	0.24	0.04	0.02	0.07	0.04	0.05	0.01	0	0
SIGN 1-3 LANES	0.31	0.06	0.02	0.08	0.02	0.08	0.01	0	0.01
SIGN 4 & > LANES	0.15	0.03	0.01	0.05	0.02	0.03	0	0	0
NO CONTROL ALL	0.12	0.03	0.01	0.04	0.02	0.02	0	0	0
ON RAMP (ALL CONTROL)									
MERGE W/ 1 LANE	0.04	0	0	0.01	0.01	0	0	0	0
MERGE W/ 2 LANES	0.02	0	0	0.01	0.01	0	0	0	0
MERGE W/ 3&> LANES	0.02	0	0	0.01	0	0	0	0	0
OFF RAMP (ALL CONTROL)									
MERGE W/ 1 LANE	0.05	0.01	0	0.02	0.01	0.01	0	0	0
MERGE W/ 2 LANES	0.03	0.01	0	0.01	0.01	0	0	0	0
MERGE W/ 3&> LANES	0.02	0	0	0.01	0.01	0	0	0	0

Project: **Mixed-Use Development**
Location: **1400-1416 Sweet Home Road**

Description	ITE LUC	SIZE/ UNITS	AM PEAK HOUR		PM PEAK HOUR	
			Enter	Exit	Enter	Exit
Apartments	225	1,025 bedrooms	39	64	110	111
Office	710	10,000 SF	13	2	2	12
Retail	822	10,000 SF	14	10	33	33
Sub-Total Site Generated Trips			**66**	**76**	**145**	**156**
Apartments	225	1,025 bedrooms	38	63	101	107
Office	710	10,000 SF	12	1	1	9
Retail	822	14,600 SF	12	8	27	24
Total Net Site Generated Trips			**62**	**72**	**129**	**140**
Internal Trips			*4*	*4*	*16*	*16*

Base Internal Capture Percentages

AM PEAK HOUR		PM PEAK HOUR	
Enter	Exit	Enter	Exit
2%	1%	8%	4%
7%	50%	50%	23%
13%	17%	18%	26%
Adjusted Internal Capture Percentages			
2%	1%	8%	4%
7%	50%	50%	23%
13%	17%	18%	26%

ENTER	EXIT	ENTER	EXIT	
5%	5%	11%	10%	**Base %**
5%	5%	11%	10%	**Adjusted %**
0%	0%	0%	0%	**% change**

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Mixed-Use Development	**Organization:**	SRF Associates, D.P.C.
Project Location:	1400-1416 Sweet Home Road, Amherst, NY	**Performed By:**	David Kruse, AICP, PTP
Scenario Description:		**Date:**	March 16, 2022
Analysis Year:		**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	10,000	SF	15	13	2
Retail	822	10,000	SF	24	14	10
Restaurant				0		
Cinema/Entertainment				0		
Residential	225	1,025	bedrooms	103	39	64
Hotel				0		
All Other Land Uses[2]				0		
Total				142	66	76

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.06	0%	1%	1.06	0%	0%
Retail	1.17	0%	0%	1.16	0%	0%
Restaurant	1.41	0%	1%	1.39	0%	2%
Cinema/Entertainment						
Residential	1.13	0%	3%	1.09	0%	2%
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	1		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	158	74	84
Internal Capture Percentage	5%	5%	5%
External Vehicle-Trips[3]	133	61	72
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	2	1	1

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	7%	50%
Retail	13%	17%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	1%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Project Name:	Mixed-Use Development
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.06	13	14	1.06	2	2
Retail	1.17	14	16	1.16	10	12
Restaurant	1.41	0	0	1.39	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.13	39	44	1.09	64	70
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	1	0	0	0
Retail	3		2	0	2	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	1	14	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		5	0	0	0	0
Retail	1		0	0	1	0
Restaurant	2	1		0	2	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	3	0	0		0
Hotel	0	1	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	1	13	14	12	0	0
Retail	2	14	16	12	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	43	44	37	0	1
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	1	1	2	1	0	0
Retail	2	10	12	9	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	69	70	62	0	1
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Mixed-Use Development	**Organization:**	SRF Associates, D.P.C.
Project Location:	1400-1416 Sweet Home Road, Amherst, NY	**Performed By:**	David Kruse, AICP, PTP
Scenario Description:		**Date:**	March 16, 2022
Analysis Year:		**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	10,000	SF	14	2	12
Retail	822	10,000	SF	66	33	33
Restaurant				0		
Cinema/Entertainment				0		
Residential	225	1,025	bedrooms	221	110	111
Hotel				0		
All Other Land Uses[2]				0		
Total				301	145	156

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.11	0%	0%	1.07	0%	0%
Retail	1.21	0%	0%	1.18	0%	0%
Restaurant	1.41	0%	1%	1.39	0%	2%
Cinema/Entertainment						
Residential	1.15	0%	3%	1.21	0%	4%
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		300	300		500	
Retail					500	
Restaurant					500	
Cinema/Entertainment						
Residential		500	500			
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	0	0	0	0
Retail	0		0	0	10	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	4	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	355	169	186
Internal Capture Percentage	10%	11%	10%
External Vehicle-Trips[3]	262	126	136
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	9	4	5

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	50%	23%
Retail	18%	26%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	8%	4%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Project Name:	Mixed-Use Development
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.11	2	2	1.07	12	13
Retail	1.21	33	40	1.18	33	39
Restaurant	1.41	0	0	1.39	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.15	110	127	1.21	111	134
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	1	0	0	0
Retail	1		11	2	10	2
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	5	51	26	0		4
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	0	0	5	0
Retail	1		0	0	58	0
Restaurant	1	20		0	20	0
Cinema/Entertainment	0	2	0		5	0
Residential	1	4	0	0		0
Hotel	0	1	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	1	1	2	1	0	0
Retail	7	33	40	27	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	10	117	127	98	0	4
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	3	10	13	9	0	0
Retail	10	29	39	25	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	5	129	134	102	0	5
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Table 7.1a Adjusted Internal Trip Capture Rates for Trip Origins within a Multi-Use Development			
Land Use Pairs		Weekday	
		AM Peak Hour	PM Peak Hour
From OFFICE	To Office	0.0%	0.0%
	To Retail	28.0%	19.4%
	To Restaurant	63.0%	3.9%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	1.0%	2.0%
	To Hotel	0.0%	0.0%
From RETAIL	To Office	29.0%	2.0%
	To Retail	0.0%	0.0%
	To Restaurant	13.0%	29.0%
	To Cinema/Entertainment	0.0%	4.0%
	To Residential	14.0%	26.0%
	To Hotel	0.0%	5.0%
From RESTAURANT	To Office	31.0%	3.0%
	To Retail	14.0%	41.0%
	To Restaurant	0.0%	0.0%
	To Cinema/Entertainment	0.0%	8.0%
	To Residential	4.0%	18.0%
	To Hotel	3.0%	7.0%
From CINEMA/ENTERTAINMENT	To Office	0.0%	2.0%
	To Retail	0.0%	21.0%
	To Restaurant	0.0%	31.0%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	0.0%	8.0%
	To Hotel	0.0%	2.0%
From RESIDENTIAL	To Office	2.0%	4.0%
	To Retail	1.0%	38.2%
	To Restaurant	20.0%	19.1%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	0.0%	0.0%
	To Hotel	0.0%	3.0%
From HOTEL	To Office	75.0%	0.0%
	To Retail	14.0%	16.0%
	To Restaurant	9.0%	68.0%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	0.0%	2.0%
	To Hotel	0.0%	0.0%

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Table 7.2a Adjusted Internal Trip Capture Rates for Trip Destinations within a Multi-Use Development			
Land Use Pairs		Weekday	
		AM Peak Hour	PM Peak Hour
To OFFICE	From Office	0.0%	0.0%
	From Retail	4.0%	31.0%
	From Restaurant	14.0%	30.0%
	From Cinema/Entertainment	0.0%	6.0%
	From Residential	3.0%	57.0%
	From Hotel	3.0%	0.0%
To RETAIL	From Office	32.0%	7.8%
	From Retail	0.0%	0.0%
	From Restaurant	8.0%	50.0%
	From Cinema/Entertainment	0.0%	4.0%
	From Residential	17.0%	9.1%
	From Hotel	4.0%	2.0%
To RESTAURANT	From Office	23.0%	1.9%
	From Retail	50.0%	29.0%
	From Restaurant	0.0%	0.0%
	From Cinema/Entertainment	0.0%	3.0%
	From Residential	20.0%	12.7%
	From Hotel	6.0%	5.0%
To CINEMA/ENTERTAINMENT	From Office	0.0%	1.0%
	From Retail	0.0%	26.0%
	From Restaurant	0.0%	32.0%
	From Cinema/Entertainment	0.0%	0.0%
	From Residential	0.0%	0.0%
	From Hotel	0.0%	0.0%
To RESIDENTIAL	From Office	0.0%	4.0%
	From Retail	2.0%	46.0%
	From Restaurant	5.0%	16.0%
	From Cinema/Entertainment	0.0%	4.0%
	From Residential	0.0%	0.0%
	From Hotel	0.0%	0.0%
To HOTEL	From Office	0.0%	0.0%
	From Retail	0.0%	17.0%
	From Restaurant	4.0%	71.0%
	From Cinema/Entertainment	0.0%	1.0%
	From Residential	0.0%	12.0%
	From Hotel	0.0%	0.0%

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

PROJECT: Proposed Mixed-Use Development
LOCATION: 1400-1416 Sweet Home Road, Town of Amherst, NY
PEAK HOUR: AM Peak

Figure Number: 3A 3B 4 6a 6b 7 8

Num of yrs: 5

LOCATION NUMBER	INTERSECTION DESCRIPTION	2022 Collected Volumes	Pre-Covid Data	2022 Adjusted Volumes	Bkgd Volume 0.25%	The Station Enter Dist. %	The Station Exit Dist. %	The Station Trips IN 44	The Station Trips OUT 70	1265 Sweet Home Enter Dist. %	1265 Sweet Home Exit Dist. %	1265 Sweet Home Trips IN 15	1265 Sweet Home Trips OUT 47	Total Bkgd Volumes	Existing Bldg Adjust	2027 Vol. w/out Bldgs	Proposed Residential Enter Dist. %	Proposed Residential Exit Dist. %	Proposed Residential Trips IN 38	Proposed Residential Trips OUT 63	Proposed Commercial Enter Dist. %	Proposed Commercial Exit Dist. %	Proposed Commercial Trips IN 24	Proposed Commercial Trips OUT 9	Total Site Trips	Full Build Volumes
1	Rensch Road Proposed Westerly Driveway																									
	SR																	40%		25					25	25
	ST																									
	SL																40%		15			5%		0	15	15
	WR																								0	22
	WT	26		26	26									26	-4	22										
	WL																									
	NR																									
	NT																									
	NL																									
	ER																									
	ET	56		56	57									57		57					5%		1		1	58
	EL																									
2	Rensch Road Office Lot/Villas on Rensch (W)																									
	SR	2		2	2									2	-2											
	ST																									
	SL	20		20	20									20	-20											
	WR	68		68	68									68	-68											
	WT	23		23	23									23	-2	21	40%		15			5%		0	16	37
	WL																									
	NR																									
	NT																									
	NL	1		1	1									1		1										1
	ER																									
	ET	56		56	57									57		57		40%		25	5%		1		26	83
	EL																									
3	Rensch Road Proposed Easterly Driveway																									
	SR																					5%		0	0	0
	ST																									
	SL																	60%		38		95%		9	46	46
	WR																60%		23		95%		23		46	46
	WT	87		87	87									87	-70	17	40%		15						15	32
	WL																									
	NR																									
	NT																									
	NL																									
	ER																									
	ET	79		79	80									80	-20	60		40%		25					25	85
	EL																				5%		1		1	1
4	Rensch Road Office Lot/Villas on Rensch (E)																									
	SR	2		2	2									2	-2											
	ST																									
	SL	6		6	6									6	-6											
	WR	34		34	34									34	-34											
	WT	86		86	86									86	-68	18	100%		38		95%		23		61	79
	WL	2		2	2									2		2										2
	NR	23		23	23									23		23										23
	NT																									
	NL	1		1	1									1		1										1
	ER	6		6	6									6		6										6
	ET	73		73	74									74	-20	54		100%		63		95%		9	72	126
	EL																									
5	Rensch Road Sweet Home Road		2018																							
	SR	42	59	42	42									42	-35	7	15%		6		50%		12		18	25
	ST	515	605	560	567	5%		2		5%		1		570		570										570
	SL	237	346	292	295									295		295										295
	WR	90	100	90	91									91		91										91
	WT	46	54	46	47									47	-35	12	55%		21		10%		2		23	35
	WL	80	73	80	81	60%		26		60%		9		116		116										116
	NR	196	272	234	237		60%		42		60%		28	307		307										307
	NT	239	344	292	295		5%		4		5%		2	301		301										301
	NL	34	38	34	34									34	-32	2	30%		11		35%		8		20	22
	ER	31	25	31	31									31	-9	22		30%		19		50%		5	23	45
	ET	54	47	54	55									55	-14	41		55%		35		15%		1	36	77
	EL	13	13	13	13									13	-3	10		15%		9		30%		3	12	22
6	Sweet Home Road The Station																									
	SR																									
	ST	628		673	681						35%		16	697	-9	688		30%		19		50%		5	23	712
	SL	17		17	17	65%		29						46		46										46
	WR	33		33	33		65%		46					79		79										79
	WT																									
	WL	18		18	18		35%		25					43		43										43
	NR	10		10	10	35%		15						25		25										25
	NT	475		566	573					35%		5		578	-32	546	30%		11		35%		8		20	566
	NL																									
	ER																									
	ET																									
	EL																									
7	Sweet Home Road Maple Road		2018																							
	SR	226	240	233	236		20%		14		20%		9	259	-3	256		15%		9		20%		2	11	268
	ST	244	259	252	255		10%		7		10%		5	267	-4	263		10%		6		20%		2	8	271
	SL	157	180	169	171		5%		4		5%		2	177	-2	175		5%		3		10%		1	4	179
	WR	80	90	80	81	5%		2		5%		1		84	-5	79	5%		2		5%		1		3	82
	WT	466	498	466	472									472		472										472
	WL	91	94	91	92									92		92										92
	NR	108	157	108	109									109		109										109
	NT	234	326	280	284	10%		4		10%		2		290	-15	275	10%		4		15%		4		7	282
	NL	85	79	85	86									86		86										86
	ER	53	50	53	54									54		54										54
	ET	362	594	478	484									484		484										484
	EL	188	229	209	211	20%		9		20%		3		223	-12	211	15%		6		15%		4		9	220

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

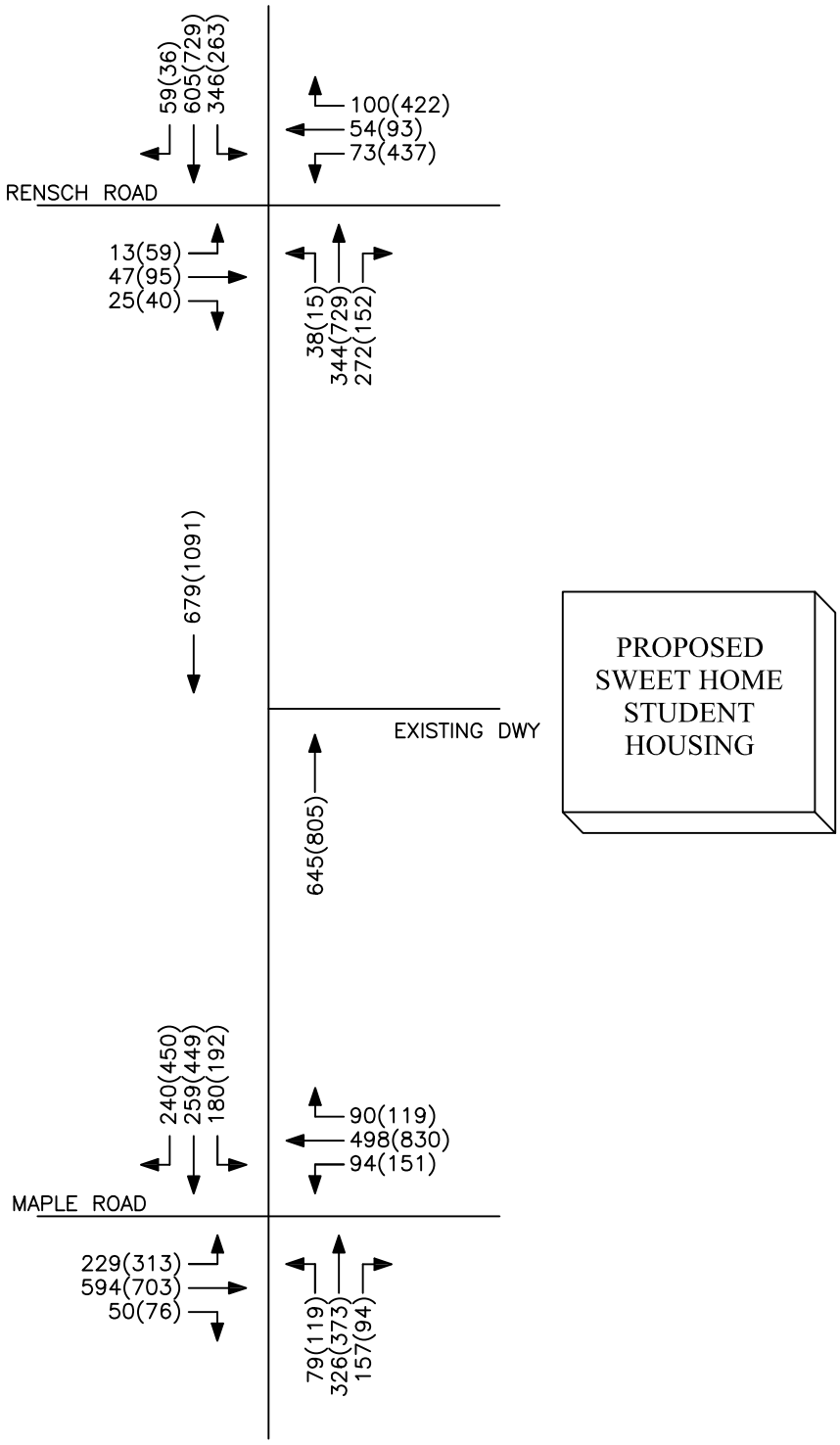
PROJECT: Proposed Mixed-Use Development
LOCATION: 1400-1416 Sweet Home Road, Town of Amherst, NY
PEAK HOUR: PM Peak

Figure Number: 3A 3B 4 6a 6b 7 8

Num of yrs: 5

LOCATION NUMBER	INTERSECTION DESCRIPTION	2022 Collected Volumes	Pre-Covid Data	2022 Adjusted Volumes	Bkgd Volume 0.25%	The Station Enter Dist. %	The Station Exit Dist. %	The Station Trips IN 6	The Station Trips OUT 13	1265 Sweet Home Enter Dist. %	1265 Sweet Home Exit Dist. %	1265 Sweet Home Trips IN 49	1265 Sweet Home Trips OUT 30	Total Bkgd Volumes	Existing Bldg Adjust	2027 Vol. w/out Bldgs	Proposed Residential Enter Dist. %	Proposed Residential Exit Dist. %	Proposed Residential Trips IN 101	Proposed Residential Trips OUT 107	Proposed Commercial Enter Dist. %	Proposed Commercial Exit Dist. %	Proposed Commercial Trips IN 28	Proposed Commercial Trips OUT 34	Total Site Trips	Full Build Volumes
1	Rensch Road Proposed Westerly Driveway																									
	SR																									
	ST																									
	SL																	40%		43					43	43
	WR																40%		40						40	40
	WT	63		63	64									64		64						5%		2	2	66
	WL																									
	NR																									
	NT																									
	NL																									
	ER																									
	ET	61		61	62									62	-2	60					5%		1		1	61
	EL																									
2	Rensch Road Office Lot/Villas on Rensch (W)																									
	SR																									
	ST																									
	SL	55		55	55									55	-55											
	WR	21		21	21									21	-21											
	WT	63		63	64									64		64	40%		40			5%		2	42	106
	WL	2		2	2									2		2										2
	NR																									
	NT																									
	NL																									
	ER																									
	ET	61		61	62									62	-2	60		40%		43	5%		1		44	104
	EL																									
3	Rensch Road Proposed Easterly Driveway																									
	SR																					5%		2	2	2
	ST																									
	SL																	60%		64		95%		32	97	97
	WR																60%		61		95%		27		87	87
	WT	86		86	87									87	-21	66	40%		40						40	106
	WL																									
	NR																									
	NT																									
	NL																									
	ER																									
	ET	112		112	113									113	-58	55		40%		43					43	98
	EL																				5%		1		1	1
4	Rensch Road Office Lot/Villas on Rensch (E)																									
	SR																									
	ST																									
	SL	40		40	40									40	-40											
	WR	17		17	17									17	-17											
	WT	83		83	84									84	-21	63	100%		101		95%		27		128	191
	WL	35		35	35									35		35										35
	NR	25		25	25									25		25										25
	NT																									
	NL	3		3	3									3		3										3
	ER	5		5	5									5		5										5
	ET	107		107	108									108	-56	52		100%		107		95%		32	139	191
	EL	2		2	2									2	-2											
5	Rensch Road Sweet Home Road		2018																							
	SR	25	36	25	25									25	-8	17	15%		15		45%		13		28	45
	ST	514	729	622	629	5%		0		5%		2		632		632										632
	SL	185	263	224	227									227		227										227
	WR	316	422	369	374									374		374										374
	WT	67	93	67	68									68	-22	46	55%		56		15%		4		60	106
	WL	389	437	413	418	50%		3		50%		25		446		446										446
	NR	162	152	162	164		35%		5		35%		11	179		179										179
	NT	563	729	646	654		10%		1		10%		3	658		658										658
	NL	22	15	22	22									22	-8	14	30%		30		35%		10		40	54
	ER	51	40	51	52									52	-32	20		30%		32		45%		15	47	67
	ET	80	95	80	81									81	-45	36		55%		59		15%		5	64	100
	EL	35	59	35	35									35	-20	15		15%		16		35%		12	28	43
6	Sweet Home Road The Station																									
	SR																									
	ST	941		1073	1086						55%		17	1103	-9	1094		30%		32		45%		15	47	1141
	SL	70		70	71	55%		3						74		74										74
	WR	49		49	50		45%		6					56		56										56
	WT																									
	WL	57		57	58		55%		7					65		65										65
	NR	56		56	57	45%		3						60		60										60
	NT	769		852	863					45%		22		885	-32	853	30%		30		35%		10		40	893
	NL																									
	ER																									
	ET																									
	EL																									
7	Sweet Home Road Maple Road		2018																							
	SR	481	450	481	487		25%		3		25%		8	498	-3	495		15%		16		20%		7	23	518
	ST	343	449	396	401		20%		3		20%		6	410	-4	406		10%		11		15%		5	16	421
	SL	166	192	166	168		10%		1		10%		3	172	-2	170		5%		5		10%		3	9	179
	WR	191	119	191	193	10%		1		10%		5		199	-5	194	5%		5		5%		1		6	200
	WT	680	830	755	764									764		764										764
	WL	138	151	138	140									140		140										140
	NR	78	94	78	79									79		79										79
	NT	315	373	344	348	20%		1		20%		10		359	-15	344	10%		10		15%		4		14	358
	NL	124	119	124	126									126		126										126
	ER	74	76	74	75									75		75										75
	ET	564	703	634	641									641		641										641
	EL	311	313	311	315	15%		1		15%		7		323	-12	311	15%		15		15%		4		19	331

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)



PROJECT NO: 38032

KEY
00(00) = AM(PM)

N
NOT TO SCALE

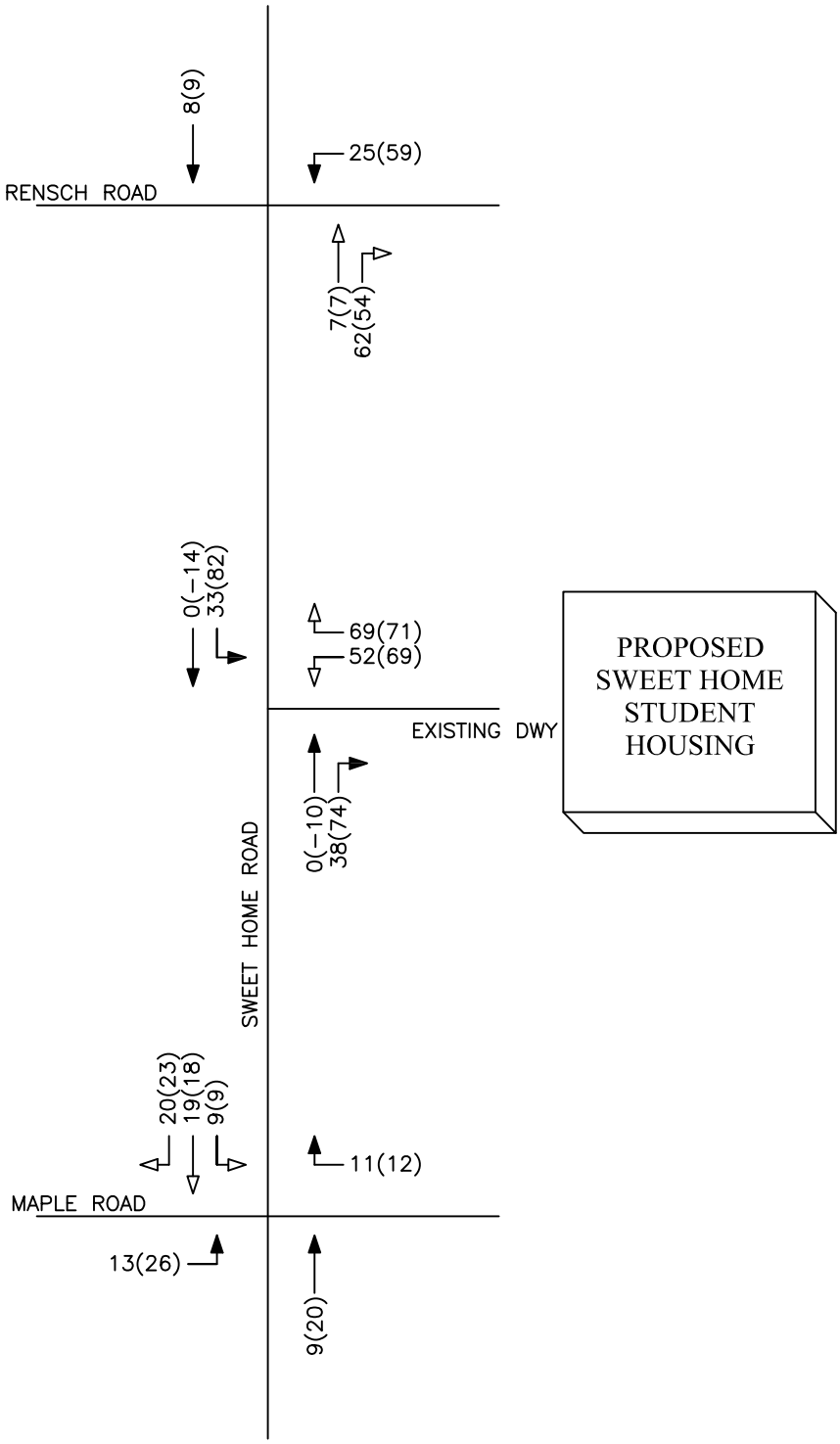
FIGURE 3

PEAK HOUR VOLUMES
2018 EXISTING BASE CONDITIONS

PROPOSED SWEET HOME
STUDENT HOUSING,
TOWN OF AMHERST, NY

SRF ASSOCIATES
WWW.SRFA.NET
Transportation Engineering & Planning Consultants

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)



PROJECT NO: 38032

KEY

NOT TO SCALE

00(00) = AM(PM)

N

→ = ENTERING TRIPS

→ = EXITING TRIPS

FIGURE 7

SITE GENERATED TRIPS

PROPOSED SWEET HOME
STUDENT HOUSING,
TOWN OF AMHERST, NY

SRF ASSOCIATES

WWW.SRFA.NET

Transportation Engineering & Planning Consultants

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

§ 5A-9 GENERAL DEVELOPMENT STANDARD

5A-9-1. Parking, Loading and Stacking

All parking, loading and stacking must meet the requirements of 7-1, except as required below.

A. Minimum Parking in Mixed Use Districts

(1) Off-Street Vehicle Parking

Off-street parking facilities must be provided in quantities not less than set forth in the following schedule.

SCHEDULE OF PARKING REQUIREMENTS

RESIDENTIAL USES	
Single-family detached	1.0 space per dwelling unit
Attached dwelling	1.0 space per dwelling unit
Multi-family dwelling, upper-story dwelling, assisted group living, senior citizen housing	.75 space per efficiency unit 1.0 space per one or two-bedroom unit 1.5 space per three or more bedroom unit
PUBLIC AND CIVIC USES	
Ambulance service	2.5 spaces per 1,000 SF
Business college, commercial school	3.5 spaces per 1,000 SF
College, university	3.5 spaces per 1,000 SF
Day care	3.5 spaces per 1,000 SF
Place of worship	3.5 spaces per 1,000 SF
Public utility service structure or facility	2.5 spaces per 1,000 SF
School, elementary/secondary (private)	3.5 spaces per 1,000 SF
Telecommunication facility, minor utility	1 space per facility
COMMERCIAL USES	
Animal grooming, cat boarding facility, animal hospital or veterinarian	2 spaces per 1,000 SF
Lodging	.75 spaces per room
Medical	3.5 spaces per 1,000 SF
Office	2.5 spaces per 1,000 SF
Personal service	2.5 spaces per 1,000 SF
Recreation, indoor	2.5 spaces per 1,000 SF
Restaurant	4.0 spaces per 1,000 SF
Retail sales and service	2.5 spaces per 1,000 SF

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Project: 1400-1416 Sweet Home Road
Description:

Shared Parking Demand Summary																		
Peak Month: DECEMBER -- Peak Period: 7 PM, WEEKEND																		
Land Use	Project Data		Weekday					Weekend					Weekday			Weekend		
	Quantity	Unit	Base Ratio	Driving Adj	Non-Captive Ratio	Project Ratio	Unit For Ratio	Base Ratio	Driving Adj	Non-Captive Ratio	Project Ratio	Unit For Ratio	Peak Hr Adj 7 PM	Peak Mo Adj December	Estimated Parking Demand	Peak Hr Adj 7 PM	Peak Mo Adj December	Estimated Parking Demand
Retail																		
Retail (<400 ksf)	10,000	sf GLA	2.90	100%	93%	2.69	ksf GLA	3.20	100%	91%	2.93	ksf GLA	90%	100%	24	60%	100%	18
Employee			0.70	100%	77%	0.54		0.80	100%	71%	0.57		100%	100%	5	80%	100%	5
Food and Beverage																		
Entertainment and Institutions																		
Hotel and Residential																		
Residential, Suburban																0%		
Studio Efficiency		units	0.00	100%	100%	0.00	unit	0.00	100%	100%	0.00	unit	70%	100%	-	80%	100%	-
1 Bedroom	475	units	0.00	100%	100%	0.00	unit	0.00	100%	100%	0.00	unit	70%	100%	-	80%	100%	-
2 Bedrooms	25	units	0.00	100%	100%	0.00	unit	0.00	100%	100%	0.00	unit	70%	100%	-	80%	100%	-
3+ Bedrooms		units	0.00	100%	100%	0.00	unit	0.00	100%	100%	0.00	unit	70%	100%	-	80%	100%	-
Reserved	100%	res spaces	0.94	100%	100%	0.94	unit	0.94	100%	100%	0.94	unit	100%	100%	469	100%	100%	469
Visitor	500	units	0.10	100%	100%	0.10	unit	0.15	100%	100%	0.15	unit	100%	100%	50	100%	100%	75
Office																		
Office <25 ksf	10,000	sf GFA	0.30	100%	100%	0.30	ksf GFA	0.03	100%	100%	0.03	ksf GFA	2%	100%	-	0%	100%	-
Reserved		empl	0.00	100%	100%	0.00		0.00	100%	100%	0.00		100%	100%	-	100%	100%	-
Employee			3.50	100%	72%	2.51		0.35	100%	72%	0.25		15%	100%	4	0%	100%	-
Additional Land Uses																		
													Customer/Visitor		74	Customer		93
													Employee/Resident		9	Employee/Resident		5
													Reserved		469	Reserved		469
													Total		552	Total		566
													Shared Parking Reduction		7%			4%

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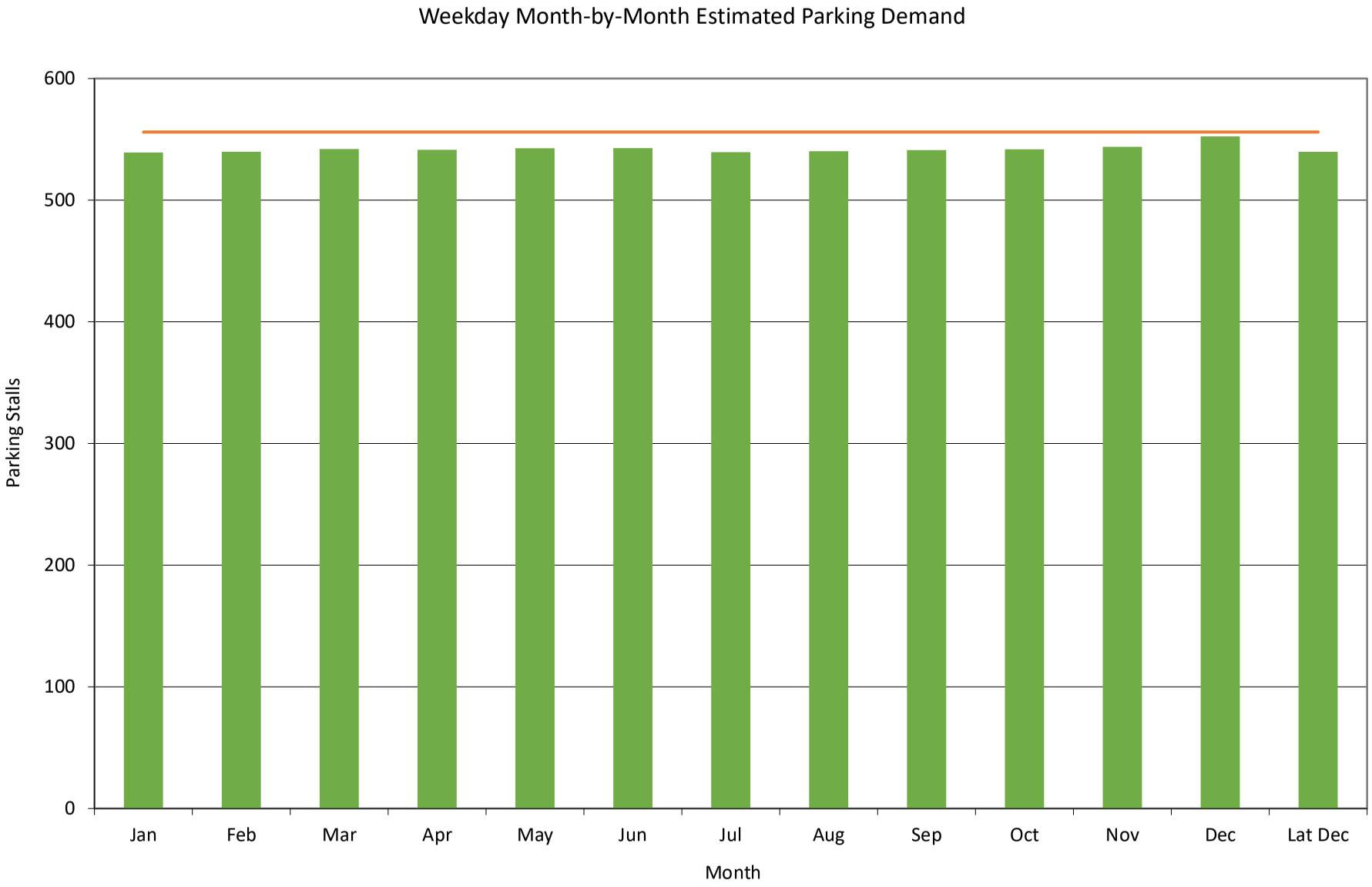
Project: 1400-1416 Sweet Home Road
Description:

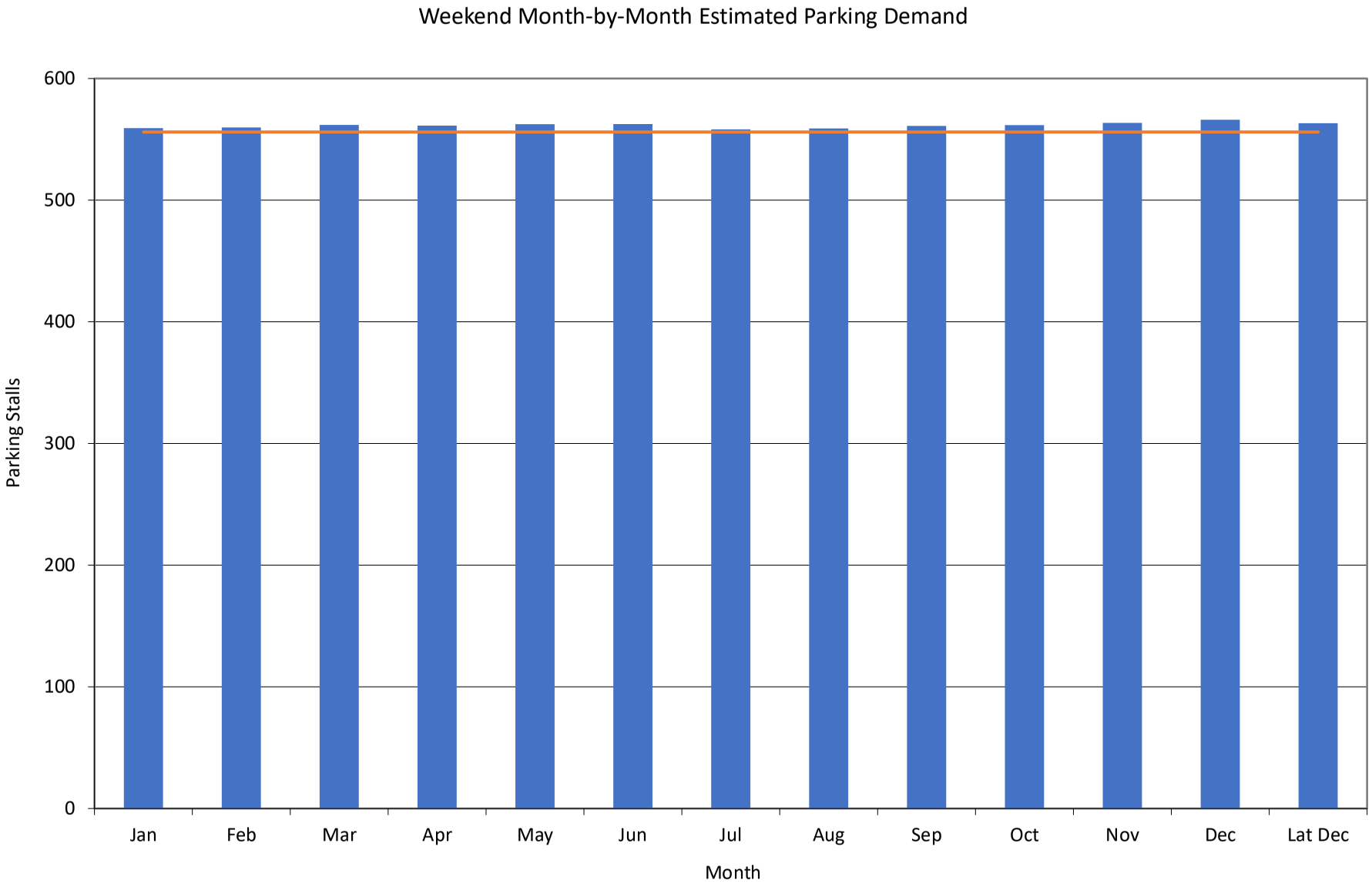
Monthly Comparison Summary								
Month	Weekday							
	Overall Pk		AM Peak Hr		PM Peak Hr		Eve Peak Hr	
	Time	Demand	Time	Demand	Time	Demand	Time	Demand
January	7 PM	539	11 AM	522	2 PM	525	7 PM	539
February	7 PM	540	11 AM	522	2 PM	526	7 PM	540
March	7 PM	542	11 AM	525	2 PM	529	7 PM	542
April	7 PM	541	11 AM	524	2 PM	528	7 PM	541
May	7 PM	543	11 AM	525	2 PM	530	7 PM	543
June	7 PM	543	11 AM	525	2 PM	530	7 PM	543
July	7 PM	539	11 AM	523	2 PM	527	7 PM	539
August	7 PM	540	11 AM	524	2 PM	524	7 PM	540
September	7 PM	541	11 AM	524	2 PM	528	7 PM	541
October	7 PM	542	11 AM	524	2 PM	529	7 PM	542
November	7 PM	544	11 AM	526	2 PM	531	7 PM	544
December	7 PM	552	11 AM	532	2 PM	540	7 PM	552
Late December	7 PM	540	11 AM	521	2 PM	530	7 PM	540

Monthly Comparison Summary								
Month	Weekend							
	Overall Pk		AM Peak Hr		PM Peak Hr		Eve Peak Hr	
	Time	Demand	Time	Demand	Time	Demand	Time	Demand
January	7 PM	559	11 AM	508	5 PM	517	7 PM	559
February	7 PM	560	11 AM	509	5 PM	517	7 PM	560
March	7 PM	562	11 AM	512	5 PM	520	7 PM	562
April	7 PM	561	11 AM	511	5 PM	519	7 PM	561
May	7 PM	562	11 AM	513	5 PM	521	7 PM	562
June	7 PM	563	11 AM	513	5 PM	521	7 PM	563
July	7 PM	558	11 AM	511	5 PM	519	7 PM	558
August	7 PM	559	11 AM	512	5 PM	519	7 PM	559
September	7 PM	561	11 AM	511	5 PM	519	7 PM	561
October	7 PM	562	11 AM	512	5 PM	520	7 PM	562
November	7 PM	563	11 AM	514	5 PM	522	7 PM	563
December	7 PM	566	11 AM	520	5 PM	528	7 PM	566
Late December	7 PM	563	11 AM	508	5 PM	526	7 PM	563

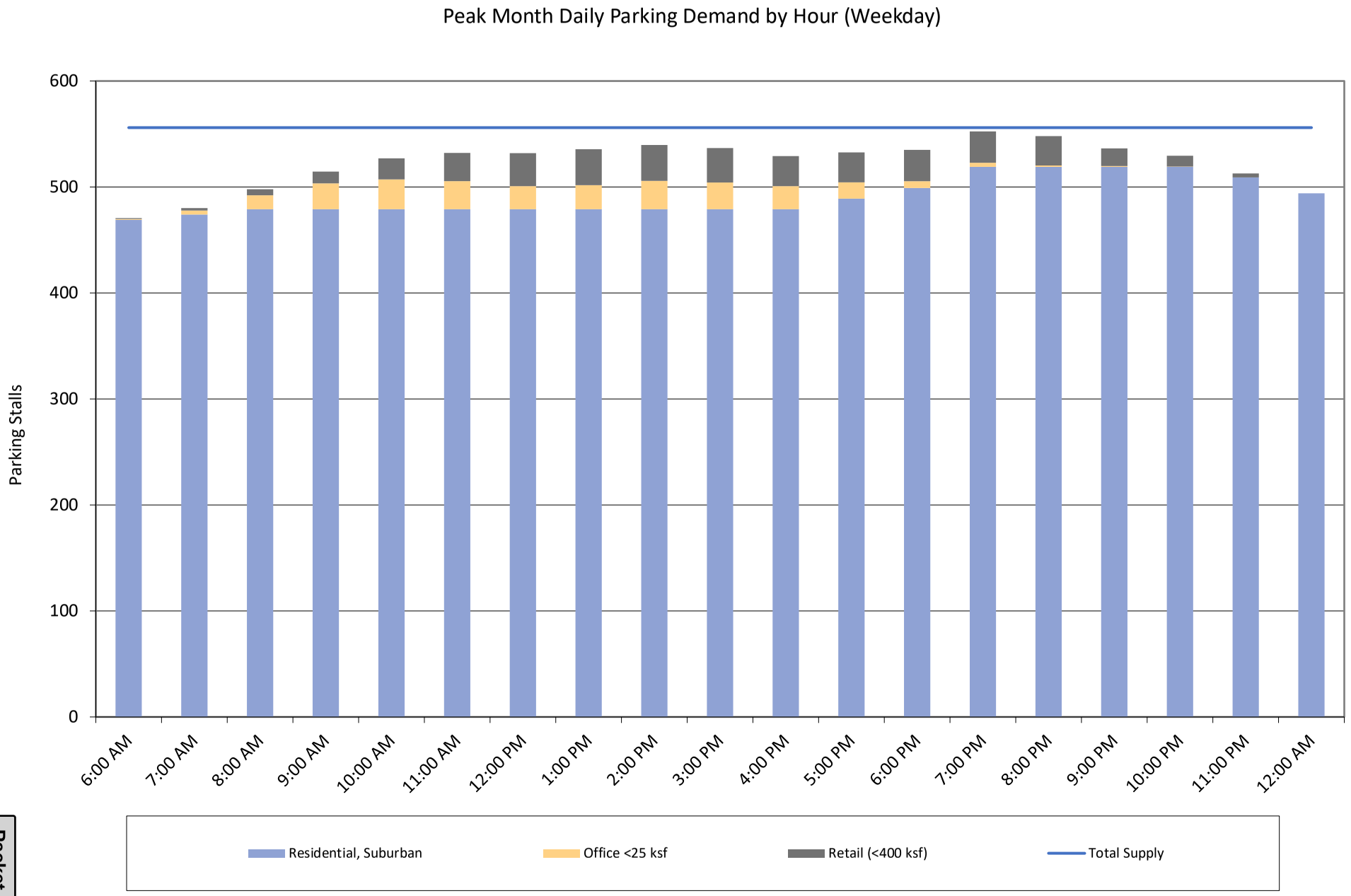
Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

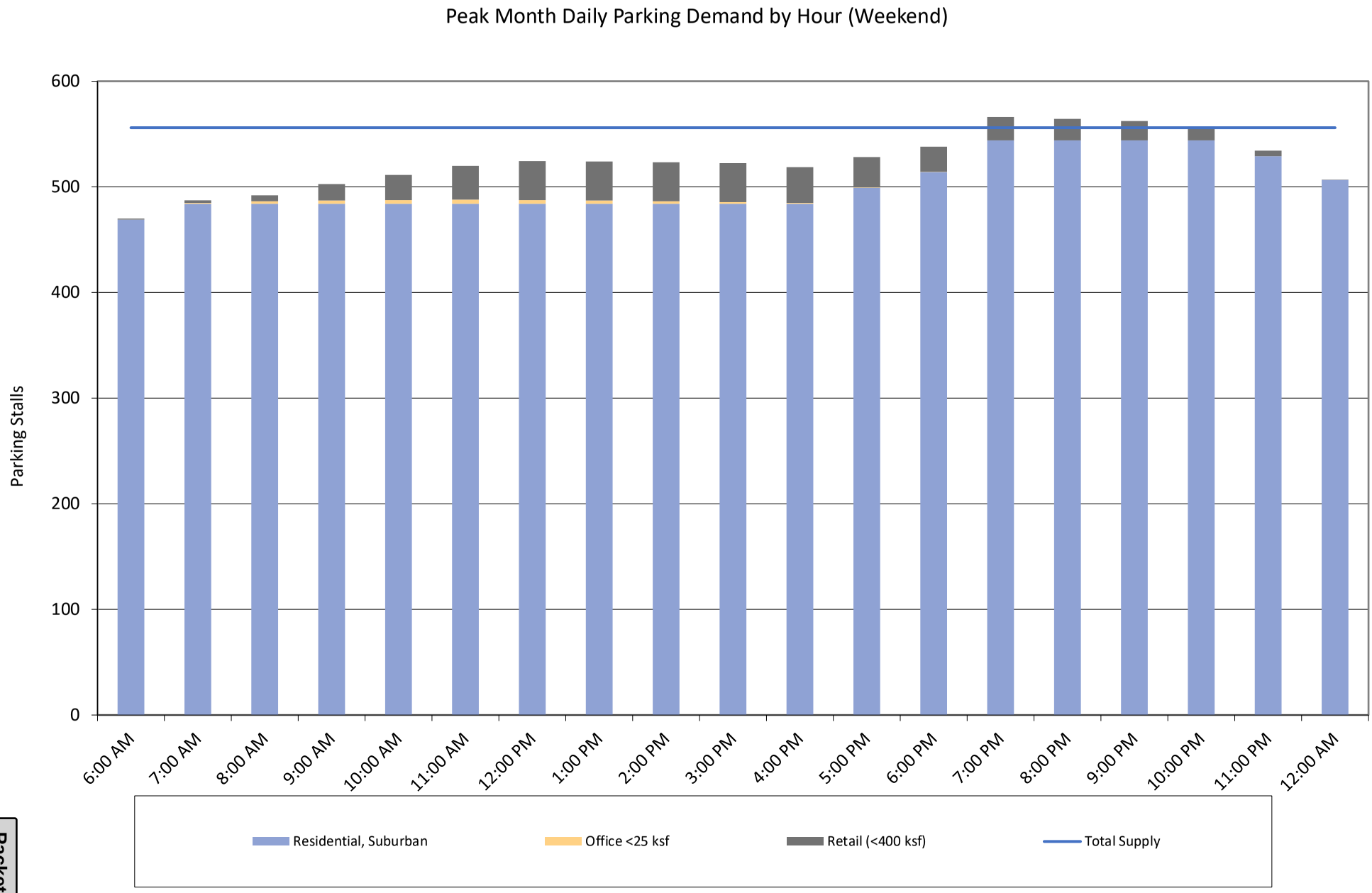


Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)



Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)


Peak Month Daily Parking Demand by Hour (Weekday)
Parking Stalls
600
500
400
300
200
100
0
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
12:00 AM
Residential, Suburban
Office <25 ksf
Retail (<400 ksf)
Total Supply



Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

A3

Level of Service: Criteria and Definitions

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Level of Service Criteria

Highway Capacity Manual 2016

SIGNALIZED INTERSECTIONS

Level of Service is a qualitative measure describing operational conditions within a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. Level of Service for signalized intersections is defined in terms of delay specifically, average total delay per vehicle for a 15-minute analysis period. The ranges are as follows:

Level of Service	Control Delay per vehicle (seconds)
A	< 10
B	10 – 20
C	20 – 35
D	35 – 55
E	55 – 80
F	>80

UNSIGNALIZED INTERSECTIONS

Level of Service for unsignalized intersections is also defined in terms of delay. However, the delay criteria are different from a signalized intersection. The primary reason for this is driver expectation that a signalized intersection is designed to carry higher volumes than an unsignalized intersection. The total delay threshold for any given Level of Service is less for an unsignalized intersection than for a signalized intersection. The ranges are as follows:

Level of Service	Control Delay per vehicle (seconds)
A	< 10
B	10 – 15
C	15 – 25
D	25 – 35
E	35 - 50
F	>50

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

A4

Level of Service Calculations: Existing Conditions

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	73	6	2	86	34	1	0	23	6	0	2
Future Volume (vph)	0	73	6	2	86	34	1	0	23	6	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.989			0.963			0.869			0.966	
Flt Protected					0.999			0.999			0.964	
Satd. Flow (prot)	0	1658	0	0	1685	0	0	1249	0	0	1769	0
Flt Permitted					0.999			0.999			0.964	
Satd. Flow (perm)	0	1658	0	0	1685	0	0	1249	0	0	1769	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		308			373			220			232	
Travel Time (s)		7.0			8.5			5.0			5.3	
Confl. Peds. (#/hr)	4		1	1		4	2					2
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Heavy Vehicles (%)	0%	6%	100%	0%	12%	0%	100%	0%	30%	0%	0%	0%
Adj. Flow (vph)	0	106	9	3	125	49	1	0	33	9	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	115	0	0	177	0	0	34	0	0	12	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	19.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	73	6	2	86	34	1	0	23	6	0	2
Future Volume (Veh/h)	0	73	6	2	86	34	1	0	23	6	0	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	0	106	9	3	125	49	1	0	33	9	0	3
Pedestrians		2						1			4	
Lane Width (ft)		12.0						12.0			12.0	
Walking Speed (ft/s)		4.0						4.0			4.0	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					373							
pX, platoon unblocked												
vC, conflicting volume	178			116			272	296	112	303	276	156
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	178			116			272	296	112	303	276	156
tC, single (s)	4.1			4.1			8.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			4.4	4.0	3.6	3.5	4.0	3.3
p0 queue free %	100			100			100	100	96	99	100	100
cM capacity (veh/h)	1405			1484			516	615	870	623	631	891

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	115	177	34	12
Volume Left	0	3	1	9
Volume Right	9	49	33	3
cSH	1405	1484	853	674
Volume to Capacity	0.00	0.00	0.04	0.02
Queue Length 95th (ft)	0	0	3	1
Control Delay (s)	0.0	0.1	9.4	10.4
Lane LOS		A	A	B
Approach Delay (s)	0.0	0.1	9.4	10.4
Approach LOS			A	B

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	19.7%	ICU Level of Service		A
Analysis Period (min)	15			

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	56	0	0	23	68	1	0	0	20	0	2
Future Volume (vph)	0	56	0	0	23	68	1	0	0	20	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.900						0.986	
Flt Protected								0.950			0.957	
Satd. Flow (prot)	0	1667	0	0	1528	0	0	1805	0	0	1566	0
Flt Permitted								0.950			0.957	
Satd. Flow (perm)	0	1667	0	0	1528	0	0	1805	0	0	1566	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		219			308			216			216	
Travel Time (s)		5.0			7.0			4.9			4.9	
Confl. Peds. (#/hr)	1		3	3		1						
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	0%	14%	0%	0%	35%	4%	0%	0%	0%	5%	0%	100%
Adj. Flow (vph)	0	77	0	0	32	93	1	0	0	27	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	77	0	0	125	0	0	1	0	0	30	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	15.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	56	0	0	23	68	1	0	0	20	0	2
Future Volume (Veh/h)	0	56	0	0	23	68	1	0	0	20	0	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	0	77	0	0	32	93	1	0	0	27	0	3
Pedestrians								3			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					681							
pX, platoon unblocked												
vC, conflicting volume	126			80			162	206	80	156	160	80
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	126			80			162	206	80	156	160	80
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	4.2
p0 queue free %	100			100			100	100	100	97	100	100
cM capacity (veh/h)	1472			1527			801	692	983	800	734	765

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	77	125	1	30
Volume Left	0	0	1	27
Volume Right	0	93	0	3
cSH	1472	1527	801	797
Volume to Capacity	0.00	0.00	0.00	0.04
Queue Length 95th (ft)	0	0	0	3
Control Delay (s)	0.0	0.0	9.5	9.7
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	9.5	9.7
Approach LOS			A	A

Intersection Summary				
Average Delay		1.3		
Intersection Capacity Utilization		15.7%	ICU Level of Service	A
Analysis Period (min)		15		

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	54	31	80	46	90	34	292	234	292	560	42
Future Volume (vph)	13	54	31	80	46	90	34	292	234	292	560	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	170		0	200		185	320		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	60			60			125			185		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99					0.98	1.00				1.00	
Frt		0.946				0.850			0.850		0.990	
Flt Protected	0.950			0.950	0.986		0.950			0.950		
Satd. Flow (prot)	1467	1643	0	1633	1754	1324	1703	3343	1583	1736	3397	0
Flt Permitted	0.950			0.950	0.986		0.950			0.950		
Satd. Flow (perm)	1459	1643	0	1633	1754	1299	1702	3343	1583	1736	3397	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19				147			275		6	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		373			436			1900			810	
Travel Time (s)		8.5			9.9			28.8			12.3	
Confl. Peds. (#/hr)	6					6	1					1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	23%	13%	3%	5%	0%	22%	6%	8%	2%	4%	4%	19%
Adj. Flow (vph)	15	64	36	94	54	106	40	344	275	344	659	49
Shared Lane Traffic (%)				23%								
Lane Group Flow (vph)	15	100	0	72	76	106	40	344	275	344	708	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2	2	2	2	
Detector Template												
Leading Detector (ft)	49	49		49	49	49	49	49	49	49	49	
Trailing Detector (ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Position(ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	29	29		29	29	29	29	29	29	29	29	
Detector 2 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

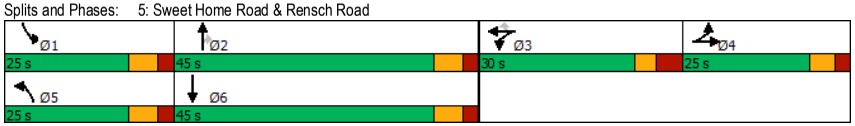
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Detector Phase	4	4		3	3	3	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	20.0	20.0	6.0	20.0	
Minimum Split (s)	40.2	40.2		41.0	41.0	41.0	12.8	37.8	37.8	12.8	37.8	
Total Split (s)	25.0	25.0		30.0	30.0	30.0	25.0	45.0	45.0	25.0	45.0	
Total Split (%)	20.0%	20.0%		24.0%	24.0%	24.0%	20.0%	36.0%	36.0%	20.0%	36.0%	
Maximum Green (s)	18.8	18.8		23.0	23.0	23.0	18.2	38.2	38.2	18.2	38.2	
Yellow Time (s)	3.8	3.8		3.2	3.2	3.2	4.3	4.3	4.3	4.3	4.3	
All-Red Time (s)	2.4	2.4		3.8	3.8	3.8	2.5	2.5	2.5	2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2		7.0	7.0	7.0	6.8	6.8	6.8	6.8	6.8	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	3.5	3.0	3.0	3.0	3.5	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0	27.0		24.0	24.0		24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)	9.8	9.8		9.8	9.8	9.8	7.8	21.1	21.1	18.5	37.8	
Actuated g/C Ratio	0.12	0.12		0.12	0.12	0.12	0.09	0.25	0.25	0.22	0.45	
v/c Ratio	0.09	0.48		0.38	0.37	0.38	0.25	0.41	0.45	0.89	0.46	
Control Delay	36.1	38.2		42.2	41.5	6.6	42.1	29.5	6.5	61.6	21.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	36.1	38.2		42.2	41.5	6.6	42.1	29.5	6.5	61.6	21.2	
LOS	D	D		D	D	A	D	C	A	E	C	
Approach Delay		37.9			27.1			20.7			34.4	
Approach LOS		D			C			C			C	
Queue Length 50th (ft)	7	41		37	40	0	20	81	0	179	153	
Queue Length 95th (ft)	25	89		83	86	17	53	129	50	#380	240	
Internal Link Dist (ft)		293			356			1820			730	
Turn Bay Length (ft)	100			170			200		185	320		
Base Capacity (vph)	336	391		458	492	470	378	1557	884	385	1713	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.04	0.26		0.16	0.15	0.23	0.11	0.22	0.31	0.89	0.41	

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 83.5			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 29.4		Intersection LOS: C	
Intersection Capacity Utilization 63.4%		ICU Level of Service B	

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Sweet Home Road & Rensch Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	18	33	566	10	17	673
Future Volume (vph)	18	33	566	10	17	673
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.997			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1568	3393	0	1703	3471
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1626	1568	3393	0	1703	3471
Link Speed (mph)	30		45			45
Link Distance (ft)	552		1491			1900
Travel Time (s)	12.5		22.6			28.8
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	11%	3%	6%	10%	6%	4%
Adj. Flow (vph)	20	37	636	11	19	756
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	37	647	0	19	756
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 28.6%		ICU Level of Service A	
Analysis Period (min) 15			

Packet Pg. 4151
3.a
Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	18	33	566	10	17	673
Future Volume (Veh/h)	18	33	566	10	17	673
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	20	37	636	11	19	756
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1058	324			647	
vC1, stage 1 conf vol	642					
vC2, stage 2 conf vol	416					
vCu, unblocked vol	1058	324			647	
tC, single (s)	7.0	7.0			4.2	
tC, 2 stage (s)	6.0					
tF (s)	3.6	3.3			2.3	
p0 queue free %	95	94			98	
cM capacity (veh/h)	398	669			908	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	20	37	424	223	19	378	378
Volume Left	20	0	0	0	19	0	0
Volume Right	0	37	0	11	0	0	0
cSH	398	669	1700	1700	908	1700	1700
Volume to Capacity	0.05	0.06	0.25	0.13	0.02	0.22	0.22
Queue Length 95th (ft)	4	4	0	0	2	0	0
Control Delay (s)	14.5	10.7	0.0	0.0	9.0	0.0	0.0
Lane LOS	B	B			A		
Approach Delay (s)	12.0		0.0		0.2		
Approach LOS	B						

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	28.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	209	478	53	91	466	80	85	280	108	169	252	233
Future Volume (vph)	209	478	53	91	466	80	85	280	108	169	252	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		175	105		0	100		130	190		0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			85			75			60		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor							1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3505	1615	1736	3505	1538	1770	1827	1553	1752	1827	1509
Flt Permitted	0.256			0.447			0.563			0.339		
Satd. Flow (perm)	455	3505	1615	817	3505	1538	1048	1827	1553	625	1827	1490
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			163			99			161			256
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		613			472			833			357	
Travel Time (s)		9.3			7.2			16.2			5.4	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	7%	3%	0%	4%	3%	5%	2%	4%	4%	3%	4%	7%
Adj. Flow (vph)	230	525	58	100	512	88	93	308	119	186	277	256
Shared Lane Traffic (%)												
Lane Group Flow (vph)	230	525	58	100	512	88	93	308	119	186	277	256
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2	2	2	2	2	2	2	2
Detector Template												
Leading Detector (ft)	49	49	49	49	49	49	49	49	49	49	49	49
Trailing Detector (ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Position(ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	29	29	29	29	29	29	29	29	29	29	29	29
Detector 2 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

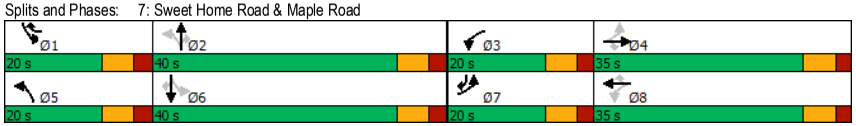
Packet Pg. 4152
3.a
Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	1	5	2	2	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	10.0	3.0	10.0	3.0	3.0	20.0	20.0	3.0	20.0	3.0
Minimum Split (s)	10.6	41.6	41.6	10.6	41.6	20.0	10.8	38.8	38.8	20.0	38.8	10.6
Total Split (s)	20.0	35.0	35.0	20.0	35.0	20.0	20.0	40.0	40.0	20.0	40.0	20.0
Total Split (%)	17.4%	30.4%	30.4%	17.4%	30.4%	17.4%	17.4%	34.8%	34.8%	17.4%	34.8%	17.4%
Maximum Green (s)	13.4	28.4	28.4	13.4	28.4	13.2	13.2	33.2	33.2	13.2	33.2	13.4
Yellow Time (s)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.8	6.8	6.8	6.8	6.8	6.8	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	2.0	2.0	4.0	4.0	2.0	4.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			25.0	25.0		25.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effct Green (s)	37.5	27.5	27.5	28.3	20.3	37.6	31.9	24.3	24.3	39.1	30.2	42.8
Actuated g/C Ratio	0.40	0.29	0.29	0.30	0.21	0.40	0.34	0.26	0.26	0.41	0.32	0.45
v/c Ratio	0.68	0.52	0.10	0.31	0.68	0.13	0.23	0.66	0.23	0.49	0.48	0.31
Control Delay	31.6	32.6	0.3	21.7	40.2	3.9	18.7	40.4	2.9	22.0	31.9	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.6	32.6	0.3	21.7	40.2	3.9	18.7	40.4	2.9	22.0	31.9	3.1
LOS	C	C	A	C	D	A	B	D	A	C	C	A
Approach Delay		30.0			33.0			28.0			19.1	
Approach LOS		C			C			C			B	
Queue Length 50th (ft)	87	139	0	35	147	0	32	168	0	68	140	0
Queue Length 95th (ft)	#177	235	0	81	234	26	70	290	19	130	250	42
Internal Link Dist (ft)		533			392			753			277	
Turn Bay Length (ft)	150		175	105			100		130	190		
Base Capacity (vph)	359	1095	616	424	1070	713	519	652	657	426	662	831
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.48	0.09	0.24	0.48	0.12	0.18	0.47	0.18	0.44	0.42	0.31

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 94.9			
Natural Cycle: 115			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 27.5		Intersection LOS: C	
Intersection Capacity Utilization 72.8%		ICU Level of Service C	

Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Sweet Home Road & Maple Road



Packet Pg. 4153
3.a
Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	107	5	35	83	17	3	0	25	40	0	0
Future Volume (vph)	2	107	5	35	83	17	3	0	25	40	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.994			0.983			0.878				
Flt Protected		0.999			0.987			0.995			0.950	
Satd. Flow (prot)	0	1823	0	0	1799	0	0	1497	0	0	1752	0
Flt Permitted		0.999			0.987			0.995			0.950	
Satd. Flow (perm)	0	1823	0	0	1799	0	0	1497	0	0	1752	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		308			373			220			232	
Travel Time (s)		7.0			8.5			5.0			5.3	
Confl. Peds. (#/hr)	3		4	4		3	1		7	7		1
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	50%	0%	60%	0%	4%	0%	0%	0%	12%	3%	0%	0%
Adj. Flow (vph)	2	124	6	41	97	20	3	0	29	47	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	132	0	0	158	0	0	32	0	0	47	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.7%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	107	5	35	83	17	3	0	25	40	0	0
Future Volume (Veh/h)	2	107	5	35	83	17	3	0	25	40	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	2	124	6	41	97	20	3	0	29	47	0	0
Pedestrians		1			7			4			3	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			1			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					373							
pX, platoon unblocked												
vC, conflicting volume	120			134			325	337	138	359	330	111
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	120			134			325	337	138	359	330	111
tC, single (s)	4.6			4.1			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.7			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			97			100	100	97	92	100	100
cM capacity (veh/h)	1215			1458			612	566	876	555	572	945

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	132	158	32	47
Volume Left	2	41	3	47
Volume Right	6	20	29	0
cSH	1215	1458	842	555
Volume to Capacity	0.00	0.03	0.04	0.08
Queue Length 95th (ft)	0	2	3	7
Control Delay (s)	0.1	2.1	9.4	12.1
Lane LOS	A	A	A	B
Approach Delay (s)	0.1	2.1	9.4	12.1
Approach LOS			A	B

Intersection Summary				
Average Delay		3.3		
Intersection Capacity Utilization		29.7%	ICU Level of Service	A
Analysis Period (min)		15		

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	61	0	2	63	21	0	0	0	55	0	0
Future Volume (vph)	0	61	0	2	63	21	0	0	0	55	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.967							
Flt Protected					0.999						0.950	
Satd. Flow (prot)	0	1776	0	0	1770	0	0	1900	0	0	1805	0
Flt Permitted					0.999						0.950	
Satd. Flow (perm)	0	1776	0	0	1770	0	0	1900	0	0	1805	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		219			308			216			216	
Travel Time (s)		5.0			7.0			4.9			4.9	
Confl. Peds. (#/hr)	1		2	2		1						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	7%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	65	0	2	67	22	0	0	0	59	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	65	0	0	91	0	0	0	0	0	59	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	16.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	61	0	2	63	21	0	0	0	55	0	0
Future Volume (Veh/h)	0	61	0	2	63	21	0	0	0	55	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	65	0	2	67	22	0	0	0	59	0	0
Pedestrians								2			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					681							
pX, platoon unblocked												
vC, conflicting volume	90			67			149	161	67	148	150	79
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	90			67			149	161	67	148	150	79
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	93	100	100
cM capacity (veh/h)	1517			1545			820	732	1001	822	742	986

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	65	91	0	59
Volume Left	0	2	0	59
Volume Right	0	22	0	0
cSH	1517	1545	1700	822
Volume to Capacity	0.00	0.00	0.00	0.07
Queue Length 95th (ft)	0	0	0	6
Control Delay (s)	0.0	0.2	0.0	9.7
Lane LOS		A	A	A
Approach Delay (s)	0.0	0.2	0.0	9.7
Approach LOS			A	A

Intersection Summary				
Average Delay		2.7		
Intersection Capacity Utilization		16.5%	ICU Level of Service	A
Analysis Period (min)		15		

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	80	51	413	67	369	22	646	162	224	622	25
Future Volume (vph)	35	80	51	413	67	369	22	646	162	224	622	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	170		0	200		185	320		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	60			60			125			185		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99		1.00	1.00	0.98	1.00		0.98	1.00	1.00	
Frt		0.942				0.850			0.850		0.994	
Flt Protected	0.950			0.950	0.965		0.950			0.950		
Satd. Flow (prot)	1805	1717	0	1698	1720	1568	1805	3574	1583	1719	3534	0
Flt Permitted	0.950			0.950	0.965		0.950			0.950		
Satd. Flow (perm)	1795	1717	0	1695	1718	1537	1801	3574	1555	1715	3534	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21				401			166		3	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		373			436			1900			810	
Travel Time (s)		8.5			9.9			28.8			12.3	
Confl. Peds. (#/hr)	7		2	2		7	3		5	5		3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	6%	0%	1%	2%	3%	0%	1%	2%	5%	1%	12%
Adj. Flow (vph)	38	87	55	449	73	401	24	702	176	243	676	27
Shared Lane Traffic (%)				42%								
Lane Group Flow (vph)	38	142	0	260	262	401	24	702	176	243	703	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2	2	2	2	
Detector Template												
Leading Detector (ft)	49	49		49	49	49	49	49	49	49	49	
Trailing Detector (ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Position(ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	29	29		29	29	29	29	29	29	29	29	
Detector 2 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Detector Phase	4	4		3	3	3	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	20.0	20.0	6.0	20.0	
Minimum Split (s)	40.2	40.2		41.0	41.0	41.0	12.8	37.8	37.8	12.8	37.8	
Total Split (s)	25.0	25.0		30.0	30.0	30.0	25.0	45.0	45.0	25.0	45.0	
Total Split (%)	20.0%	20.0%		24.0%	24.0%	24.0%	20.0%	36.0%	36.0%	20.0%	36.0%	
Maximum Green (s)	18.8	18.8		23.0	23.0	23.0	18.2	38.2	38.2	18.2	38.2	
Yellow Time (s)	3.8	3.8		3.2	3.2	3.2	4.3	4.3	4.3	4.3	4.3	
All-Red Time (s)	2.4	2.4		3.8	3.8	3.8	2.5	2.5	2.5	2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2		7.0	7.0	7.0	6.8	6.8	6.8	6.8	6.8	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	3.5	3.0	3.0	3.0	3.5	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0	27.0		24.0	24.0		24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)	12.9	12.9		21.3	21.3	21.3	7.3	27.8	27.8	18.5	44.9	
Actuated g/C Ratio	0.12	0.12		0.20	0.20	0.20	0.07	0.26	0.26	0.17	0.42	
v/c Ratio	0.18	0.64		0.78	0.77	0.64	0.20	0.76	0.34	0.83	0.48	
Control Delay	46.6	53.0		59.3	58.8	9.5	55.5	43.0	7.7	68.7	26.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	46.6	53.0		59.3	58.8	9.5	55.5	43.0	7.7	68.7	26.3	
LOS	D	D		E	E	A	E	D	A	E	C	
Approach Delay		51.7			37.5			36.5			37.2	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	24	81		177	178	0	16	239	5	165	203	
Queue Length 95th (ft)	60	159		#364	#364	94	47	325	59	#365	290	
Internal Link Dist (ft)		293			356			1820			730	
Turn Bay Length (ft)	100			170			200		185	320		
Base Capacity (vph)	319	321		368	372	647	309	1287	666	294	1476	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.12	0.44		0.71	0.70	0.62	0.08	0.55	0.26	0.83	0.48	

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 107.6			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 38.0		Intersection LOS: D	
Intersection Capacity Utilization 78.9%		ICU Level of Service D	

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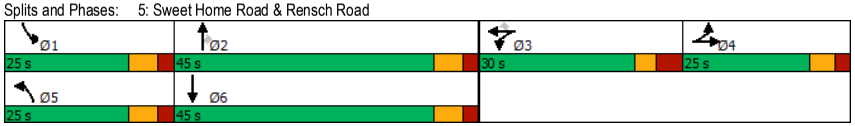
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Sweet Home Road & Rensch Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	57	49	852	56	70	1073
Future Volume (vph)	57	49	852	56	70	1073
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.991			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1736	1615	3536	0	1787	3574
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1736	1615	3536	0	1787	3574
Link Speed (mph)	30		45			45
Link Distance (ft)	552		1491			1900
Travel Time (s)	12.5		22.6			28.8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	0%	1%	4%	1%	1%
Adj. Flow (vph)	60	52	897	59	74	1129
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	52	956	0	74	1129
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min) 15			

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3.a
Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	57	49	852	56	70	1073
Future Volume (Veh/h)	57	49	852	56	70	1073
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	60	52	897	59	74	1129
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1639	478			956	
vC1, stage 1 conf vol	926					
vC2, stage 2 conf vol	712					
vCu, unblocked vol	1639	478			956	
tC, single (s)	6.9	6.9			4.1	
tC, 2 stage (s)	5.9					
tF (s)	3.5	3.3			2.2	
p0 queue free %	77	90			90	
cM capacity (veh/h)	264	539			721	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	60	52	598	358	74	564	564
Volume Left	60	0	0	0	74	0	0
Volume Right	0	52	0	59	0	0	0
cSH	264	539	1700	1700	721	1700	1700
Volume to Capacity	0.23	0.10	0.35	0.21	0.10	0.33	0.33
Queue Length 95th (ft)	21	8	0	0	9	0	0
Control Delay (s)	22.6	12.4	0.0	0.0	10.6	0.0	0.0
Lane LOS	C	B			B		
Approach Delay (s)	17.9		0.0		0.6		
Approach LOS	C						

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	311	634	74	138	755	191	124	344	78	166	396	481
Future Volume (vph)	311	634	74	138	755	191	124	344	78	166	396	481
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		175	105		0	100		130	190		0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			85			75			60		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					0.99	1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1583	1787	3574	1583	1805	1881	1568	1770	1863	1599
Flt Permitted	0.128			0.271			0.223			0.262		
Satd. Flow (perm)	241	3574	1583	510	3574	1563	424	1881	1568	488	1863	1578
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			163			161			161			143
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		613			472			833			357	
Travel Time (s)		9.3			7.2			16.2			5.4	
Confl. Peds. (#/hr)	1					1	1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	1%	1%	2%	1%	1%	2%	0%	1%	3%	2%	2%	1%
Adj. Flow (vph)	334	682	80	148	812	205	133	370	84	178	426	517
Shared Lane Traffic (%)												
Lane Group Flow (vph)	334	682	80	148	812	205	133	370	84	178	426	517
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2	2	2	2	2	2	2	2
Detector Template												
Leading Detector (ft)	49	49	49	49	49	49	49	49	49	49	49	49
Trailing Detector (ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Position(ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	29	29	29	29	29	29	29	29	29	29	29	29
Detector 2 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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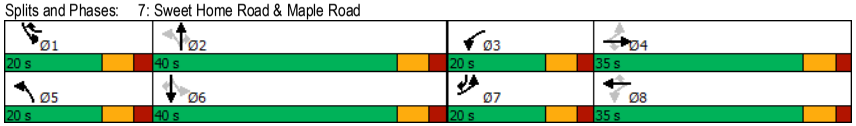
Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	1	5	2	2	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	10.0	3.0	10.0	3.0	3.0	20.0	20.0	3.0	20.0	3.0
Minimum Split (s)	10.6	41.6	41.6	10.6	41.6	20.0	10.8	38.8	38.8	20.0	38.8	10.6
Total Split (s)	20.0	35.0	35.0	20.0	35.0	20.0	20.0	40.0	40.0	20.0	40.0	20.0
Total Split (%)	17.4%	30.4%	30.4%	17.4%	30.4%	17.4%	17.4%	34.8%	34.8%	17.4%	34.8%	17.4%
Maximum Green (s)	13.4	28.4	28.4	13.4	28.4	13.2	13.2	33.2	33.2	13.2	33.2	13.4
Yellow Time (s)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.8	6.8	6.8	6.8	6.8	6.8	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	2.0	2.0	4.0	4.0	2.0	4.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			25.0	25.0		25.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effct Green (s)	44.6	31.2	31.2	37.4	27.6	38.3	37.1	27.7	27.7	40.1	29.2	42.9
Actuated g/C Ratio	0.42	0.29	0.29	0.35	0.26	0.36	0.35	0.26	0.26	0.38	0.27	0.40
v/c Ratio	1.13	0.65	0.14	0.50	0.88	0.31	0.49	0.76	0.16	0.57	0.84	0.72
Control Delay	121.5	38.2	0.5	25.9	50.9	6.9	25.7	47.6	0.7	26.9	52.3	22.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	121.5	38.2	0.5	25.9	50.9	6.9	25.7	47.6	0.7	26.9	52.3	22.1
LOS	F	D	A	C	D	A	C	D	A	C	D	C
Approach Delay		60.8			40.0			35.9			34.3	
Approach LOS		E			D			D			C	
Queue Length 50th (ft)	~226	221	0	62	288	18	56	237	0	77	277	191
Queue Length 95th (ft)	#448	318	0	113	#426	66	95	351	0	124	#436	321
Internal Link Dist (ft)		533			392			753			277	
Turn Bay Length (ft)	150		175	105			100		130	190		
Base Capacity (vph)	296	1045	578	358	957	697	334	589	601	354	589	722
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.13	0.65	0.14	0.41	0.85	0.29	0.40	0.63	0.14	0.50	0.72	0.72

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 106.7			
Natural Cycle: 125			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.13			
Intersection Signal Delay: 43.6		Intersection LOS: D	
Intersection Capacity Utilization 88.6%		ICU Level of Service E	

Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Sweet Home Road & Maple Road



Packet Pg. 4159
3.a
Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

SimTraffic Performance Report
2022 Existing PM

03/17/2022

7: Sweet Home Road & Maple Road Performance by lane

Lane	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Movements Served	L	T	T	R	L	T	T	R	L	T	R	L
Denied Delay (hr)												
Denied Del/Veh (s)												
Total Delay (hr)	5.4	6.6	3.5	0.2	1.4	8.1	4.8	0.4	1.0	4.2	0.1	1.4
Total Del/Veh (s)	61.9	73.9	38.3	9.0	35.9	72.8	48.1	7.6	29.8	43.6	5.8	30.6
Stop Delay (hr)	5.2	5.1	2.6	0.2	1.3	6.6	3.9	0.3	0.9	3.2	0.1	1.3
Stop Del/Veh (s)	59.3	57.2	28.0	8.5	33.3	59.2	39.1	6.2	27.7	33.4	5.8	27.9

7: Sweet Home Road & Maple Road Performance by lane

Lane	SB	SB	All
Movements Served	T	R	
Denied Delay (hr)			1.4
Denied Del/Veh (s)			1.4
Total Delay (hr)	4.3	1.9	43.4
Total Del/Veh (s)	35.7	12.4	40.8
Stop Delay (hr)	3.4	1.7	35.8
Stop Del/Veh (s)	28.3	11.0	33.7

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Queuing and Blocking Report
2022 Existing PM

03/17/2022

Intersection: 7: Sweet Home Road & Maple Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	210	571	510	172	190	423	400	293	175	438	175	246
Average Queue (ft)	185	323	260	39	131	313	251	61	82	210	51	110
95th Queue (ft)	251	598	506	129	244	441	387	176	167	369	158	232
Link Distance (ft)		564	564			397	397	397		764		
Upstream Blk Time (%)		8	0			6	2	0				0
Queuing Penalty (veh)		0	0			0	0	0				0
Storage Bay Dist (ft)	150			175	105				100		130	190
Storage Blk Time (%)	45	12	10		5	60			2	31	0	0
Queuing Penalty (veh)	144	36	7		17	83			8	63	0	1

Intersection: 7: Sweet Home Road & Maple Road

Movement	SB	SB	B17
Directions Served	T	R	T
Maximum Queue (ft)	309	246	148
Average Queue (ft)	196	122	9
95th Queue (ft)	315	219	62
Link Distance (ft)	246	246	1422
Upstream Blk Time (%)	5	0	
Queuing Penalty (veh)	29	2	
Storage Bay Dist (ft)			
Storage Blk Time (%)	12		
Queuing Penalty (veh)	20		

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

A5

Level of Service Calculations: Background Conditions

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	74	6	2	86	34	1	0	23	6	0	2
Future Volume (vph)	0	74	6	2	86	34	1	0	23	6	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.990			0.963			0.869			0.966	
Flt Protected					0.999			0.999			0.964	
Satd. Flow (prot)	0	1660	0	0	1685	0	0	1249	0	0	1769	0
Flt Permitted					0.999			0.999			0.964	
Satd. Flow (perm)	0	1660	0	0	1685	0	0	1249	0	0	1769	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		308			373			220			232	
Travel Time (s)		7.0			8.5			5.0			5.3	
Confl. Peds. (#/hr)	4		1	1		4	2					2
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Heavy Vehicles (%)	0%	6%	100%	0%	12%	0%	100%	0%	30%	0%	0%	0%
Adj. Flow (vph)	0	107	9	3	125	49	1	0	33	9	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	116	0	0	177	0	0	34	0	0	12	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	19.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	74	6	2	86	34	1	0	23	6	0	2
Future Volume (Veh/h)	0	74	6	2	86	34	1	0	23	6	0	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	0	107	9	3	125	49	1	0	33	9	0	3
Pedestrians		2						1			4	
Lane Width (ft)		12.0						12.0			12.0	
Walking Speed (ft/s)		4.0						4.0			4.0	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					373							
pX, platoon unblocked												
vC, conflicting volume	178			117			273	296	112	304	276	156
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	178			117			273	296	112	304	276	156
tC, single (s)	4.1			4.1			8.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			4.4	4.0	3.6	3.5	4.0	3.3
p0 queue free %	100			100			100	100	96	99	100	100
cM capacity (veh/h)	1405			1483			515	615	869	622	631	891

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	116	177	34	12
Volume Left	0	3	1	9
Volume Right	9	49	33	3
cSH	1405	1483	852	673
Volume to Capacity	0.00	0.00	0.04	0.02
Queue Length 95th (ft)	0	0	3	1
Control Delay (s)	0.0	0.1	9.4	10.4
Lane LOS		A	A	B
Approach Delay (s)	0.0	0.1	9.4	10.4
Approach LOS			A	B

Intersection Summary				
Average Delay		1.4		
Intersection Capacity Utilization		19.7%	ICU Level of Service	A
Analysis Period (min)		15		

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	57	0	0	23	68	1	0	0	20	0	2
Future Volume (vph)	0	57	0	0	23	68	1	0	0	20	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.900						0.986	
Flt Protected								0.950			0.957	
Satd. Flow (prot)	0	1667	0	0	1528	0	0	1805	0	0	1566	0
Flt Permitted								0.950			0.957	
Satd. Flow (perm)	0	1667	0	0	1528	0	0	1805	0	0	1566	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		219			308			216			216	
Travel Time (s)		5.0			7.0			4.9			4.9	
Confl. Peds. (#/hr)	1		3	3		1						
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	0%	14%	0%	0%	35%	4%	0%	0%	0%	5%	0%	100%
Adj. Flow (vph)	0	78	0	0	32	93	1	0	0	27	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	78	0	0	125	0	0	1	0	0	30	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	15.7%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	57	0	0	23	68	1	0	0	20	0	2
Future Volume (Veh/h)	0	57	0	0	23	68	1	0	0	20	0	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	0	78	0	0	32	93	1	0	0	27	0	3
Pedestrians								3			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					681							
pX, platoon unblocked												
vC, conflicting volume	126			81			162	207	81	158	160	80
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	126			81			162	207	81	158	160	80
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	4.2
p0 queue free %	100			100			100	100	100	97	100	100
cM capacity (veh/h)	1472			1526			800	691	982	799	733	765

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	78	125	1	30
Volume Left	0	0	1	27
Volume Right	0	93	0	3
cSH	1472	1526	800	796
Volume to Capacity	0.00	0.00	0.00	0.04
Queue Length 95th (ft)	0	0	0	3
Control Delay (s)	0.0	0.0	9.5	9.7
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	9.5	9.7
Approach LOS			A	A

Intersection Summary				
Average Delay	1.3			
Intersection Capacity Utilization	15.7%	ICU Level of Service		A
Analysis Period (min)	15			

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	55	31	116	47	91	34	301	307	295	570	42
Future Volume (vph)	13	55	31	116	47	91	34	301	307	295	570	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	170		0	200		185	320		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	60			60			125			185		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99					0.98	1.00				1.00	
Frt		0.947				0.850			0.850		0.990	
Flt Protected	0.950			0.950	0.979		0.950			0.950		
Satd. Flow (prot)	1467	1644	0	1633	1730	1324	1703	3343	1583	1736	3398	0
Flt Permitted	0.950			0.950	0.979		0.950			0.950		
Satd. Flow (perm)	1459	1644	0	1633	1730	1299	1702	3343	1583	1736	3398	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19				206			361		7	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		373			436			1900			810	
Travel Time (s)		8.5			9.9			28.8			12.3	
Confl. Peds. (#/hr)	6					6	1					1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	23%	13%	3%	5%	0%	22%	6%	8%	2%	4%	4%	19%
Adj. Flow (vph)	15	65	36	136	55	107	40	354	361	347	671	49
Shared Lane Traffic (%)				31%								
Lane Group Flow (vph)	15	101	0	94	97	107	40	354	361	347	720	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2	2	2	2	
Detector Template												
Leading Detector (ft)	49	49		49	49	49	49	49	49	49	49	
Trailing Detector (ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Position(ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	29	29		29	29	29	29	29	29	29	29	
Detector 2 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

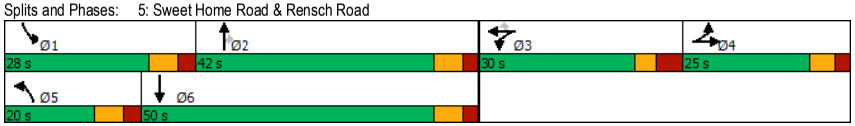
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Detector Phase	4	4		3	3	3	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	20.0	20.0	6.0	20.0	
Minimum Split (s)	40.2	40.2		41.0	41.0	41.0	12.8	37.8	37.8	12.8	37.8	
Total Split (s)	25.0	25.0		30.0	30.0	30.0	20.0	42.0	42.0	28.0	50.0	
Total Split (%)	20.0%	20.0%		24.0%	24.0%	24.0%	16.0%	33.6%	33.6%	22.4%	40.0%	
Maximum Green (s)	18.8	18.8		23.0	23.0	23.0	13.2	35.2	35.2	21.2	43.2	
Yellow Time (s)	3.8	3.8		3.2	3.2	3.2	4.3	4.3	4.3	4.3	4.3	
All-Red Time (s)	2.4	2.4		3.8	3.8	3.8	2.5	2.5	2.5	2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2		7.0	7.0	7.0	6.8	6.8	6.8	6.8	6.8	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	3.5	3.0	3.0	3.0	3.5	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0	27.0		24.0	24.0		24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)	10.0	10.0		11.1	11.1	11.1	7.9	21.0	21.0	21.6	40.8	
Actuated g/C Ratio	0.11	0.11		0.13	0.13	0.13	0.09	0.24	0.24	0.25	0.46	
v/c Ratio	0.09	0.50		0.45	0.44	0.31	0.26	0.44	0.55	0.82	0.46	
Control Delay	38.4	40.7		45.1	44.3	2.3	44.9	32.4	7.2	51.0	21.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	38.4	40.7		45.1	44.3	2.3	44.9	32.4	7.2	51.0	21.4	
LOS	D	D		D	D	A	D	C	A	D	C	
Approach Delay		40.4			29.5			21.0			31.0	
Approach LOS		D			C			C			C	
Queue Length 50th (ft)	8	44		52	53	0	21	91	0	185	162	
Queue Length 95th (ft)	27	94		105	107	0	55	142	56	#375	253	
Internal Link Dist (ft)		293			356			1820			730	
Turn Bay Length (ft)	100			170			200		185	320		
Base Capacity (vph)	319	372		434	460	497	260	1362	859	425	1788	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.05	0.27		0.22	0.21	0.22	0.15	0.26	0.42	0.82	0.40	

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 87.9			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 27.9		Intersection LOS: C	
Intersection Capacity Utilization 64.4%		ICU Level of Service C	

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Sweet Home Road & Rensch Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	43	79	578	25	46	697
Future Volume (vph)	43	79	578	25	46	697
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.994			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1568	3380	0	1703	3471
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1626	1568	3380	0	1703	3471
Link Speed (mph)	30		45			45
Link Distance (ft)	552		1491			1900
Travel Time (s)	12.5		22.6			28.8
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	11%	3%	6%	10%	6%	4%
Adj. Flow (vph)	48	89	649	28	52	783
Shared Lane Traffic (%)						
Lane Group Flow (vph)	48	89	677	0	52	783
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.4%		ICU Level of Service A	
Analysis Period (min) 15			

Packet Pg. 4166
3.a
Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	43	79	578	25	46	697
Future Volume (Veh/h)	43	79	578	25	46	697
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	48	89	649	28	52	783
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1158	338			677	
vC1, stage 1 conf vol	663					
vC2, stage 2 conf vol	496					
vCu, unblocked vol	1158	338			677	
tC, single (s)	7.0	7.0			4.2	
tC, 2 stage (s)	6.0					
tF (s)	3.6	3.3			2.3	
p0 queue free %	87	86			94	
cM capacity (veh/h)	367	654			884	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	48	89	433	244	52	392	392
Volume Left	48	0	0	0	52	0	0
Volume Right	0	89	0	28	0	0	0
cSH	367	654	1700	1700	884	1700	1700
Volume to Capacity	0.13	0.14	0.25	0.14	0.06	0.23	0.23
Queue Length 95th (ft)	11	12	0	0	5	0	0
Control Delay (s)	16.3	11.4	0.0	0.0	9.3	0.0	0.0
Lane LOS	C	B			A		
Approach Delay (s)	13.1		0.0		0.6		
Approach LOS	B						

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	33.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	223	484	54	92	472	84	86	290	109	177	267	259
Future Volume (vph)	223	484	54	92	472	84	86	290	109	177	267	259
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		175	105		0	100		130	190		0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			85			75			60		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor							1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3505	1615	1736	3505	1538	1770	1827	1553	1752	1827	1509
Flt Permitted	0.246			0.448			0.534			0.321		
Satd. Flow (perm)	437	3505	1615	818	3505	1538	994	1827	1553	592	1827	1490
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			163			99			161			268
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		613			472			833			357	
Travel Time (s)		9.3			7.2			16.2			5.4	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	7%	3%	0%	4%	3%	5%	2%	4%	4%	3%	4%	7%
Adj. Flow (vph)	245	532	59	101	519	92	95	319	120	195	293	285
Shared Lane Traffic (%)												
Lane Group Flow (vph)	245	532	59	101	519	92	95	319	120	195	293	285
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2	2	2	2	2	2	2	2
Detector Template												
Leading Detector (ft)	49	49	49	49	49	49	49	49	49	49	49	49
Trailing Detector (ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Position(ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	29	29	29	29	29	29	29	29	29	29	29	29
Detector 2 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

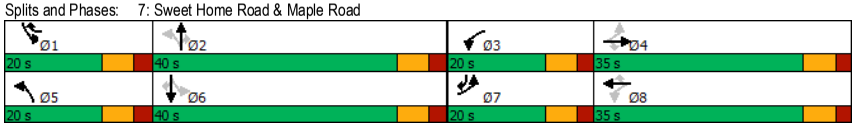
Packet Pg. 4167
3.a
Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	1	5	2	2	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	10.0	3.0	10.0	3.0	3.0	20.0	20.0	3.0	20.0	3.0
Minimum Split (s)	10.6	41.6	41.6	10.6	41.6	20.0	10.8	38.8	38.8	20.0	38.8	10.6
Total Split (s)	20.0	35.0	35.0	20.0	35.0	20.0	20.0	40.0	40.0	20.0	40.0	20.0
Total Split (%)	17.4%	30.4%	30.4%	17.4%	30.4%	17.4%	17.4%	34.8%	34.8%	17.4%	34.8%	17.4%
Maximum Green (s)	13.4	28.4	28.4	13.4	28.4	13.2	13.2	33.2	33.2	13.2	33.2	13.4
Yellow Time (s)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.8	6.8	6.8	6.8	6.8	6.8	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	2.0	2.0	4.0	4.0	2.0	4.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			25.0	25.0		25.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effct Green (s)	38.8	28.5	28.5	29.0	20.8	38.4	32.4	24.7	24.7	39.8	30.7	43.8
Actuated g/C Ratio	0.40	0.30	0.30	0.30	0.22	0.40	0.34	0.26	0.26	0.41	0.32	0.45
v/c Ratio	0.72	0.51	0.10	0.31	0.69	0.14	0.24	0.68	0.23	0.52	0.50	0.35
Control Delay	34.1	32.7	0.3	21.9	40.7	4.2	19.0	41.9	3.0	23.1	32.8	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.1	32.7	0.3	21.9	40.7	4.2	19.0	41.9	3.0	23.1	32.8	3.7
LOS	C	C	A	C	D	A	B	D	A	C	C	A
Approach Delay		30.9			33.3			29.1			19.7	
Approach LOS		C			C			C			B	
Queue Length 50th (ft)	97	145	0	36	153	0	34	180	0	74	154	5
Queue Length 95th (ft)	#210	239	0	81	237	28	72	300	21	136	266	52
Internal Link Dist (ft)		533			392			753			277	
Turn Bay Length (ft)	150		175	105			100		130	190		
Base Capacity (vph)	352	1086	613	422	1050	710	500	640	648	412	651	835
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.49	0.10	0.24	0.49	0.13	0.19	0.50	0.19	0.47	0.45	0.34

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 96.5			
Natural Cycle: 115			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 28.1		Intersection LOS: C	
Intersection Capacity Utilization 74.2%		ICU Level of Service D	

Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Sweet Home Road & Maple Road



Packet Pg. 4168
3.a
Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	108	5	35	84	17	3	0	25	40	0	0
Future Volume (vph)	2	108	5	35	84	17	3	0	25	40	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.994			0.983			0.878				
Flt Protected		0.999			0.987			0.995			0.950	
Satd. Flow (prot)	0	1824	0	0	1799	0	0	1497	0	0	1752	0
Flt Permitted		0.999			0.987			0.995			0.950	
Satd. Flow (perm)	0	1824	0	0	1799	0	0	1497	0	0	1752	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		308			373			220			232	
Travel Time (s)		7.0			8.5			5.0			5.3	
Confl. Peds. (#/hr)	3		4	4		3	1		7	7		1
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	50%	0%	60%	0%	4%	0%	0%	0%	12%	3%	0%	0%
Adj. Flow (vph)	2	126	6	41	98	20	3	0	29	47	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	134	0	0	159	0	0	32	0	0	47	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	29.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	108	5	35	84	17	3	0	25	40	0	0
Future Volume (Veh/h)	2	108	5	35	84	17	3	0	25	40	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	2	126	6	41	98	20	3	0	29	47	0	0
Pedestrians		1			7			4			3	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			1			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					373							
pX, platoon unblocked												
vC, conflicting volume	121			136			328	340	140	362	333	112
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	121			136			328	340	140	362	333	112
tC, single (s)	4.6			4.1			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.7			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			97			100	100	97	91	100	100
cM capacity (veh/h)	1213			1456			610	564	874	552	569	943

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	134	159	32	47
Volume Left	2	41	3	47
Volume Right	6	20	29	0
cSH	1213	1456	840	552
Volume to Capacity	0.00	0.03	0.04	0.09
Queue Length 95th (ft)	0	2	3	7
Control Delay (s)	0.1	2.1	9.5	12.1
Lane LOS	A	A	A	B
Approach Delay (s)	0.1	2.1	9.5	12.1
Approach LOS			A	B

Intersection Summary					
Average Delay		3.3			
Intersection Capacity Utilization	29.8%	ICU Level of Service		A	
Analysis Period (min)	15				

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	61	0	2	64	21	0	0	0	55	0	0
Future Volume (vph)	0	61	0	2	64	21	0	0	0	55	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.968							
Flt Protected					0.999						0.950	
Satd. Flow (prot)	0	1776	0	0	1772	0	0	1900	0	0	1805	0
Flt Permitted					0.999						0.950	
Satd. Flow (perm)	0	1776	0	0	1772	0	0	1900	0	0	1805	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		219			308			216			216	
Travel Time (s)		5.0			7.0			4.9			4.9	
Confl. Peds. (#/hr)	1		2	2		1						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	7%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	65	0	2	68	22	0	0	0	59	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	65	0	0	92	0	0	0	0	0	59	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	16.6%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	61	0	2	64	21	0	0	0	55	0	0
Future Volume (Veh/h)	0	61	0	2	64	21	0	0	0	55	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	65	0	2	68	22	0	0	0	59	0	0
Pedestrians								2			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					681							
pX, platoon unblocked												
vC, conflicting volume	91			67			150	162	67	149	151	80
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	91			67			150	162	67	149	151	80
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	93	100	100
cM capacity (veh/h)	1515			1545			819	731	1001	820	741	985

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	65	92	0	59
Volume Left	0	2	0	59
Volume Right	0	22	0	0
cSH	1515	1545	1700	820
Volume to Capacity	0.00	0.00	0.00	0.07
Queue Length 95th (ft)	0	0	0	6
Control Delay (s)	0.0	0.2	0.0	9.7
Lane LOS		A	A	A
Approach Delay (s)	0.0	0.2	0.0	9.7
Approach LOS			A	A

Intersection Summary				
Average Delay		2.7		
Intersection Capacity Utilization		16.6%	ICU Level of Service	A
Analysis Period (min)		15		

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	81	52	446	68	374	22	658	179	227	632	25
Future Volume (vph)	35	81	52	446	68	374	22	658	179	227	632	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	170		0	200		185	320		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	60			60			125			185		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99		1.00	1.00	0.98	1.00		0.98	1.00	1.00	
Frt		0.941				0.850			0.850		0.994	
Flt Protected	0.950			0.950	0.964		0.950			0.950		
Satd. Flow (prot)	1805	1715	0	1698	1718	1568	1805	3574	1583	1719	3535	0
Flt Permitted	0.950			0.950	0.964		0.950			0.950		
Satd. Flow (perm)	1796	1715	0	1695	1716	1537	1801	3574	1555	1715	3535	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22				407			181		3	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		373			436			1900			810	
Travel Time (s)		8.5			9.9			28.8			12.3	
Confl. Peds. (#/hr)	7		2	2		7	3		5	5		3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	6%	0%	1%	2%	3%	0%	1%	2%	5%	1%	12%
Adj. Flow (vph)	38	88	57	485	74	407	24	715	195	247	687	27
Shared Lane Traffic (%)				43%								
Lane Group Flow (vph)	38	145	0	276	283	407	24	715	195	247	714	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2	2	2	2	
Detector Template												
Leading Detector (ft)	49	49		49	49	49	49	49	49	49	49	
Trailing Detector (ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Position(ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	29	29		29	29	29	29	29	29	29	29	
Detector 2 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Detector Phase	4	4		3	3	3	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	20.0	20.0	6.0	20.0	
Minimum Split (s)	40.2	40.2		41.0	41.0	41.0	12.8	37.8	37.8	12.8	37.8	
Total Split (s)	25.0	25.0		30.0	30.0	30.0	25.0	45.0	45.0	25.0	45.0	
Total Split (%)	20.0%	20.0%		24.0%	24.0%	24.0%	20.0%	36.0%	36.0%	20.0%	36.0%	
Maximum Green (s)	18.8	18.8		23.0	23.0	23.0	18.2	38.2	38.2	18.2	38.2	
Yellow Time (s)	3.8	3.8		3.2	3.2	3.2	4.3	4.3	4.3	4.3	4.3	
All-Red Time (s)	2.4	2.4		3.8	3.8	3.8	2.5	2.5	2.5	2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2		7.0	7.0	7.0	6.8	6.8	6.8	6.8	6.8	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	3.5	3.0	3.0	3.0	3.5	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0	27.0		24.0	24.0		24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)	13.0	13.0		22.0	22.0	22.0	7.3	28.4	28.4	18.4	45.3	
Actuated g/C Ratio	0.12	0.12		0.20	0.20	0.20	0.07	0.26	0.26	0.17	0.42	
v/c Ratio	0.18	0.65		0.80	0.82	0.64	0.20	0.77	0.36	0.85	0.49	
Control Delay	46.9	53.8		61.8	62.7	9.4	56.0	43.6	7.9	72.4	26.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	46.9	53.8		61.8	62.7	9.4	56.0	43.6	7.9	72.4	26.7	
LOS	D	D		E	E	A	E	D	A	E	C	
Approach Delay		52.4			40.0			36.5			38.4	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	25	84		194	201	0	16	246	7	172	208	
Queue Length 95th (ft)	61	163		#397	#408	96	47	332	63	#373	296	
Internal Link Dist (ft)		293			356			1820			730	
Turn Bay Length (ft)	100			170			200		185	320		
Base Capacity (vph)	315	317		362	367	648	305	1268	668	290	1472	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.12	0.46		0.76	0.77	0.63	0.08	0.56	0.29	0.85	0.49	

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 109			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 39.2		Intersection LOS: D	
Intersection Capacity Utilization 80.2%		ICU Level of Service D	

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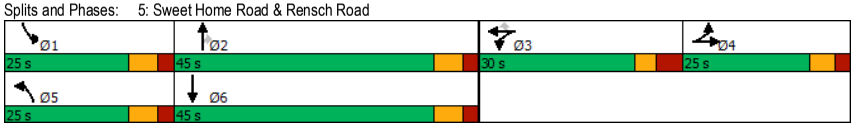
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Sweet Home Road & Rensch Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	65	56	885	60	74	1103
Future Volume (vph)	65	56	885	60	74	1103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.991			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1736	1615	3535	0	1787	3574
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1736	1615	3535	0	1787	3574
Link Speed (mph)	30		45			45
Link Distance (ft)	552		1491			1900
Travel Time (s)	12.5		22.6			28.8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	0%	1%	4%	1%	1%
Adj. Flow (vph)	68	59	932	63	78	1161
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	59	995	0	78	1161
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min) 15			

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3.a
Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	65	56	885	60	74	1103
Future Volume (Veh/h)	65	56	885	60	74	1103
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	68	59	932	63	78	1161
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1700	498			995	
vC1, stage 1 conf vol	964					
vC2, stage 2 conf vol	736					
vCu, unblocked vol	1700	498			995	
tC, single (s)	6.9	6.9			4.1	
tC, 2 stage (s)	5.9					
tF (s)	3.5	3.3			2.2	
p0 queue free %	73	89			89	
cM capacity (veh/h)	251	524			697	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	68	59	621	374	78	580	580
Volume Left	68	0	0	0	78	0	0
Volume Right	0	59	0	63	0	0	0
cSH	251	524	1700	1700	697	1700	1700
Volume to Capacity	0.27	0.11	0.37	0.22	0.11	0.34	0.34
Queue Length 95th (ft)	27	9	0	0	9	0	0
Control Delay (s)	24.6	12.7	0.0	0.0	10.8	0.0	0.0
Lane LOS	C	B			B		
Approach Delay (s)	19.1		0.0		0.7		
Approach LOS	C						

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	323	641	75	140	764	199	126	359	79	172	410	498
Future Volume (vph)	323	641	75	140	764	199	126	359	79	172	410	498
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		175	105		0	100		130	190		0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			85			75			60		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					0.99	1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1583	1787	3574	1583	1805	1881	1568	1770	1863	1599
Flt Permitted	0.128			0.261			0.208			0.242		
Satd. Flow (perm)	241	3574	1583	491	3574	1563	395	1881	1568	451	1863	1578
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			163			149			161			138
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		613			472			833			357	
Travel Time (s)		9.3			7.2			16.2			5.4	
Confl. Peds. (#/hr)	1					1	1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	1%	1%	2%	1%	1%	2%	0%	1%	3%	2%	2%	1%
Adj. Flow (vph)	347	689	81	151	822	214	135	386	85	185	441	535
Shared Lane Traffic (%)												
Lane Group Flow (vph)	347	689	81	151	822	214	135	386	85	185	441	535
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2	2	2	2	2	2	2	2
Detector Template												
Leading Detector (ft)	49	49	49	49	49	49	49	49	49	49	49	49
Trailing Detector (ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Position(ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	29	29	29	29	29	29	29	29	29	29	29	29
Detector 2 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

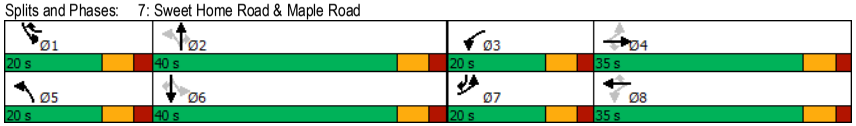
Packet Pg. 4173
3.a
Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	1	5	2	2	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	10.0	3.0	10.0	3.0	3.0	20.0	20.0	3.0	20.0	3.0
Minimum Split (s)	10.6	41.6	41.6	10.6	41.6	20.0	10.8	38.8	38.8	20.0	38.8	10.6
Total Split (s)	20.0	35.0	35.0	20.0	35.0	20.0	20.0	40.0	40.0	20.0	40.0	20.0
Total Split (%)	17.4%	30.4%	30.4%	17.4%	30.4%	17.4%	17.4%	34.8%	34.8%	17.4%	34.8%	17.4%
Maximum Green (s)	13.4	28.4	28.4	13.4	28.4	13.2	13.2	33.2	33.2	13.2	33.2	13.4
Yellow Time (s)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.8	6.8	6.8	6.8	6.8	6.8	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	2.0	2.0	4.0	4.0	2.0	4.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			25.0	25.0		25.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effct Green (s)	44.6	31.2	31.2	37.7	27.7	38.6	37.9	28.4	28.4	41.1	30.0	43.7
Actuated g/C Ratio	0.41	0.29	0.29	0.35	0.26	0.36	0.35	0.26	0.26	0.38	0.28	0.41
v/c Ratio	1.18	0.67	0.14	0.52	0.89	0.33	0.51	0.78	0.16	0.60	0.85	0.74
Control Delay	141.4	39.1	0.5	26.8	52.8	8.6	26.2	48.7	0.6	28.1	53.4	23.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	141.4	39.1	0.5	26.8	52.8	8.6	26.2	48.7	0.6	28.1	53.4	23.5
LOS	F	D	A	C	D	A	C	D	A	C	D	C
Approach Delay		68.1			41.5			37.0			35.6	
Approach LOS		E			D			D			D	
Queue Length 50th (ft)	~253	228	0	65	298	27	56	251	0	80	290	207
Queue Length 95th (ft)	#470	322	0	116	#434	79	96	369	0	128	#462	345
Internal Link Dist (ft)		533			392			753			277	
Turn Bay Length (ft)	150		175	105			100		130	190		
Base Capacity (vph)	293	1035	574	349	948	687	326	583	597	343	586	725
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.18	0.67	0.14	0.43	0.87	0.31	0.41	0.66	0.14	0.54	0.75	0.74

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 107.7			
Natural Cycle: 125			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 46.4		Intersection LOS: D	
Intersection Capacity Utilization 90.3%		ICU Level of Service E	

Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Sweet Home Road & Maple Road



Packet Pg. 4174
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Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

SimTraffic Performance Report
2027 Background PM
03/17/2022

7: Sweet Home Road & Maple Road Performance by lane

Lane	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Movements Served	L	T	T	R	L	T	T	R	L	T	R	L
Denied Delay (hr)												
Denied Del/Veh (s)												
Total Delay (hr)	7.1	10.2	4.6	0.1	1.6	9.4	6.8	0.6	1.1	5.2	0.2	1.6
Total Del/Veh (s)	78.1	129.5	43.8	7.6	43.2	87.4	67.3	9.6	31.1	49.5	6.9	33.8
Stop Delay (hr)	6.9	8.9	3.3	0.1	1.5	7.9	5.8	0.4	1.0	4.0	0.2	1.5
Stop Del/Veh (s)	75.7	112.7	31.2	7.1	40.5	73.7	57.3	7.7	29.0	38.0	6.9	31.2

7: Sweet Home Road & Maple Road Performance by lane

Lane	SB	SB	All
Movements Served	T	R	
Denied Delay (hr)			6.9
Denied Del/Veh (s)			6.5
Total Delay (hr)	4.1	1.8	54.5
Total Del/Veh (s)	35.3	11.9	50.3
Stop Delay (hr)	3.3	1.6	46.5
Stop Del/Veh (s)	28.0	10.5	42.9

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Queuing and Blocking Report
2027 Background PM

03/17/2022

Intersection: 7: Sweet Home Road & Maple Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	210	587	570	157	190	426	421	410	175	487	175	246
Average Queue (ft)	201	455	381	44	136	328	280	109	96	258	61	112
95th Queue (ft)	248	704	629	152	242	470	434	325	190	447	175	232
Link Distance (ft)		564	564			397	397	397		764		
Upstream Blk Time (%)		30	0			15	8	3				0
Queuing Penalty (veh)		0	0			0	0	0				0
Storage Bay Dist (ft)	150			175	105				100		130	190
Storage Blk Time (%)	70	9	15		7	64			4	37	0	0
Queuing Penalty (veh)	224	28	11		26	90			16	76	0	1

Intersection: 7: Sweet Home Road & Maple Road

Movement	SB	SB	B17	B17
Directions Served	T	R	T	T
Maximum Queue (ft)	320	242	116	26
Average Queue (ft)	201	114	10	1
95th Queue (ft)	331	218	64	19
Link Distance (ft)	246	246	1422	1422
Upstream Blk Time (%)	6	0		
Queuing Penalty (veh)	33	2		
Storage Bay Dist (ft)				
Storage Blk Time (%)	12			
Queuing Penalty (veh)	20			

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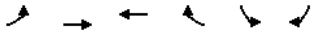
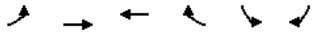
Level of Service Calculations: Full Development Conditions

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	58	22	15	25	0
Future Volume (vph)	0	58	22	15	25	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.945			
Flt Protected					0.950	
Satd. Flow (prot)	0	1900	1694	0	1805	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1900	1694	0	1805	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		308	153		412	
Travel Time (s)		7.0	3.5		9.4	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	10%	0%	10%	0%	0%	0%
Adj. Flow (vph)	0	83	31	21	36	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	83	52	0	36	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	58	22	15	25	0
Future Volume (Veh/h)	0	58	22	15	25	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	0	83	31	21	36	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			834			
pX, platoon unblocked						
vC, conflicting volume	52				124	42
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	52				124	42
tC, single (s)	4.2				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	100				96	100
cM capacity (veh/h)	1504				875	1035

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	83	52	36
Volume Left	0	0	36
Volume Right	0	21	0
cSH	1504	1700	875
Volume to Capacity	0.00	0.03	0.04
Queue Length 95th (ft)	0	0	3
Control Delay (s)	0.0	0.0	9.3
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.3
Approach LOS			A

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	83	0	0	37	1	0
Future Volume (vph)	83	0	0	37	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	1667	0	0	1407	1805	0
Flt Permitted					0.950	
Satd. Flow (perm)	1667	0	0	1407	1805	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	153			167	277	
Travel Time (s)	3.5			3.8	6.3	
Confl. Peds. (#/hr)		3	3			
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	14%	0%	0%	35%	0%	0%
Adj. Flow (vph)	114	0	0	51	1	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	114	0	0	51	1	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	83	0	0	37	1	0
Future Volume (Veh/h)	83	0	0	37	1	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	114	0	0	51	1	0
Pedestrians					3	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	153			681		
pX, platoon unblocked						
vC, conflicting volume			117		168	117
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			117		168	117
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1480		825	938

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	114	51	1
Volume Left	0	0	1
Volume Right	0	0	0
cSH	1700	1480	825
Volume to Capacity	0.07	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	9.4
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.4
Approach LOS			A

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	85	32	46	46	0
Future Volume (vph)	1	85	32	46	46	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.920			
Flt Protected					0.950	
Satd. Flow (prot)	0	1729	1679	0	1805	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1729	1679	0	1805	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		167	141		403	
Travel Time (s)		3.8	3.2		9.2	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	10%	10%	0%	0%	0%
Adj. Flow (vph)	1	121	46	66	66	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	122	112	0	66	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	15.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	85	32	46	46	0
Future Volume (Veh/h)	1	85	32	46	46	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	1	121	46	66	66	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			514			
pX, platoon unblocked						
vC, conflicting volume	112				202	79
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	112				202	79
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				92	100
cM capacity (veh/h)	1490				791	987

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	122	112	66
Volume Left	1	0	66
Volume Right	0	66	0
cSH	1490	1700	791
Volume to Capacity	0.00	0.07	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.1	0.0	10.0
Lane LOS	A		A
Approach Delay (s)	0.1	0.0	10.0
Approach LOS			A

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	15.3%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	126	6	2	79	1	23
Future Volume (vph)	126	6	2	79	1	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.994				0.869	
Flt Protected				0.999	0.999	
Satd. Flow (prot)	1711	0	0	1699	1249	0
Flt Permitted				0.999	0.999	
Satd. Flow (perm)	1711	0	0	1699	1249	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	141			373	292	
Travel Time (s)	3.2			8.5	6.6	
Confl. Peds. (#/hr)		1	1		2	
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69
Heavy Vehicles (%)	6%	100%	0%	12%	100%	30%
Adj. Flow (vph)	183	9	3	114	1	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	192	0	0	117	34	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	17.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	126	6	2	79	1	23
Future Volume (Veh/h)	126	6	2	79	1	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	183	9	3	114	1	33
Pedestrians	2				1	
Lane Width (ft)	12.0				12.0	
Walking Speed (ft/s)	4.0				4.0	
Percent Blockage	0				0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				373		
pX, platoon unblocked						
vC, conflicting volume			193		310	188
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			193		310	188
tC, single (s)			4.1		7.4	6.5
tC, 2 stage (s)						
tF (s)			2.2		4.4	3.6
p0 queue free %			100		100	96
cM capacity (veh/h)			1391		517	786

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	192	117	34
Volume Left	0	3	1
Volume Right	9	0	33
cSH	1700	1391	774
Volume to Capacity	0.11	0.00	0.04
Queue Length 95th (ft)	0	0	3
Control Delay (s)	0.0	0.2	9.9
Lane LOS		A	A
Approach Delay (s)	0.0	0.2	9.9
Approach LOS			A

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	17.2%	ICU Level of Service	A
Analysis Period (min)	15		

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	77	45	116	35	91	22	301	307	295	570	30
Future Volume (vph)	22	77	45	116	35	91	22	301	307	295	570	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	170		0	200		185	320		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	60			60			125			185		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99					0.98	1.00				1.00	
Frt		0.945				0.850			0.850		0.993	
Flt Protected	0.950			0.950	0.973		0.950			0.950		
Satd. Flow (prot)	1467	1642	0	1633	1710	1324	1703	3343	1583	1736	3419	0
Flt Permitted	0.950			0.950	0.973		0.950			0.950		
Satd. Flow (perm)	1459	1642	0	1633	1710	1299	1702	3343	1583	1736	3419	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20				206			361		5	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		373			436			1900			810	
Travel Time (s)		8.5			9.9			28.8			12.3	
Confl. Peds. (#/hr)	6					6	1					1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	23%	13%	3%	5%	0%	22%	6%	8%	2%	4%	4%	19%
Adj. Flow (vph)	26	91	53	136	41	107	26	354	361	347	671	35
Shared Lane Traffic (%)				36%								
Lane Group Flow (vph)	26	144	0	87	90	107	26	354	361	347	706	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2	2	2	2	
Detector Template												
Leading Detector (ft)	49	49		49	49	49	49	49	49	49	49	
Trailing Detector (ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Position(ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	29	29		29	29	29	29	29	29	29	29	
Detector 2 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Detector Phase	4	4		3	3	3	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	20.0	20.0	6.0	20.0	
Minimum Split (s)	40.2	40.2		41.0	41.0	41.0	12.8	37.8	37.8	12.8	37.8	
Total Split (s)	25.0	25.0		30.0	30.0	30.0	20.0	42.0	42.0	28.0	50.0	
Total Split (%)	20.0%	20.0%		24.0%	24.0%	24.0%	16.0%	33.6%	33.6%	22.4%	40.0%	
Maximum Green (s)	18.8	18.8		23.0	23.0	23.0	13.2	35.2	35.2	21.2	43.2	
Yellow Time (s)	3.8	3.8		3.2	3.2	3.2	4.3	4.3	4.3	4.3	4.3	
All-Red Time (s)	2.4	2.4		3.8	3.8	3.8	2.5	2.5	2.5	2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2		7.0	7.0	7.0	6.8	6.8	6.8	6.8	6.8	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	3.5	3.0	3.0	3.0	3.5	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0	27.0		24.0	24.0		24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)	12.4	12.4		10.8	10.8	10.8	7.2	20.5	20.5	21.3	43.0	
Actuated g/C Ratio	0.13	0.13		0.12	0.12	0.12	0.08	0.22	0.22	0.23	0.47	
v/c Ratio	0.13	0.60		0.45	0.45	0.32	0.20	0.48	0.57	0.86	0.44	
Control Delay	37.0	43.6		46.7	46.2	2.5	45.6	34.8	7.7	57.9	20.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	37.0	43.6		46.7	46.2	2.5	45.6	34.8	7.7	57.9	20.6	
LOS	D	D		D	D	A	D	C	A	E	C	
Approach Delay		42.6			29.9			22.0			32.9	
Approach LOS		D			C			C			C	
Queue Length 50th (ft)	13	68		49	51	0	14	94	0	192	119	
Queue Length 95th (ft)	37	128		100	103	0	41	147	58	#379	251	
Internal Link Dist (ft)		293			356			1820			730	
Turn Bay Length (ft)	100			170			200		185	320		
Base Capacity (vph)	301	353		410	430	480	245	1286	831	402	1730	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.09	0.41		0.21	0.21	0.22	0.11	0.28	0.43	0.86	0.41	

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 92.1			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 29.7		Intersection LOS: C	
Intersection Capacity Utilization 71.4%		ICU Level of Service C	

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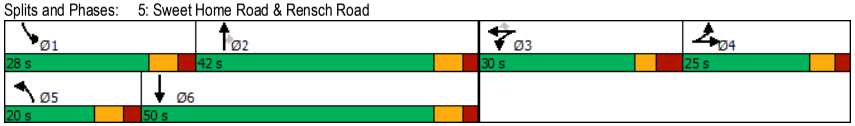
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Sweet Home Road & Rensch Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	43	79	566	25	46	712
Future Volume (vph)	43	79	566	25	46	712
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.994			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1568	3380	0	1703	3471
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1626	1568	3380	0	1703	3471
Link Speed (mph)	30		45			45
Link Distance (ft)	552		1491			1900
Travel Time (s)	12.5		22.6			28.8
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	11%	3%	6%	10%	6%	4%
Adj. Flow (vph)	48	89	636	28	52	800
Shared Lane Traffic (%)						
Lane Group Flow (vph)	48	89	664	0	52	800
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.1%		ICU Level of Service A	
Analysis Period (min) 15			

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Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	43	79	566	25	46	712
Future Volume (Veh/h)	43	79	566	25	46	712
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	48	89	636	28	52	800
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1154	332			664	
vC1, stage 1 conf vol	650					
vC2, stage 2 conf vol	504					
vCu, unblocked vol	1154	332			664	
tC, single (s)	7.0	7.0			4.2	
tC, 2 stage (s)	6.0					
tF (s)	3.6	3.3			2.3	
p0 queue free %	87	87			94	
cM capacity (veh/h)	369	661			894	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	48	89	424	240	52	400	400
Volume Left	48	0	0	0	52	0	0
Volume Right	0	89	0	28	0	0	0
cSH	369	661	1700	1700	894	1700	1700
Volume to Capacity	0.13	0.13	0.25	0.14	0.06	0.24	0.24
Queue Length 95th (ft)	11	12	0	0	5	0	0
Control Delay (s)	16.2	11.3	0.0	0.0	9.3	0.0	0.0
Lane LOS	C	B			A		
Approach Delay (s)	13.0		0.0		0.6		
Approach LOS	B						

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	220	484	54	92	472	82	86	282	109	179	271	268
Future Volume (vph)	220	484	54	92	472	82	86	282	109	179	271	268
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		175	105		0	100		130	190		0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			85			75			60		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor							1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3505	1615	1736	3505	1538	1770	1827	1553	1752	1827	1509
Flt Permitted	0.247			0.446			0.528			0.331		
Satd. Flow (perm)	439	3505	1615	815	3505	1538	983	1827	1553	611	1827	1490
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			163			99			161			268
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		613			472			833			357	
Travel Time (s)		9.3			7.2			16.2			5.4	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	7%	3%	0%	4%	3%	5%	2%	4%	4%	3%	4%	7%
Adj. Flow (vph)	242	532	59	101	519	90	95	310	120	197	298	295
Shared Lane Traffic (%)												
Lane Group Flow (vph)	242	532	59	101	519	90	95	310	120	197	298	295
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2	2	2	2	2	2	2	2
Detector Template												
Leading Detector (ft)	49	49	49	49	49	49	49	49	49	49	49	49
Trailing Detector (ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Position(ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	29	29	29	29	29	29	29	29	29	29	29	29
Detector 2 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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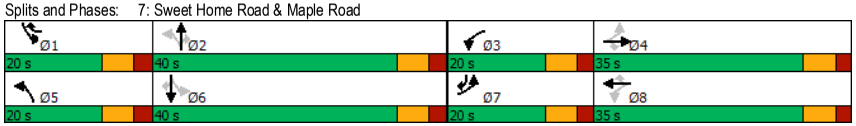
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	1	5	2	2	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	10.0	3.0	10.0	3.0	3.0	20.0	20.0	3.0	20.0	3.0
Minimum Split (s)	10.6	41.6	41.6	10.6	41.6	20.0	10.8	38.8	38.8	20.0	38.8	10.6
Total Split (s)	20.0	35.0	35.0	20.0	35.0	20.0	20.0	40.0	40.0	20.0	40.0	20.0
Total Split (%)	17.4%	30.4%	30.4%	17.4%	30.4%	17.4%	17.4%	34.8%	34.8%	17.4%	34.8%	17.4%
Maximum Green (s)	13.4	28.4	28.4	13.4	28.4	13.2	13.2	33.2	33.2	13.2	33.2	13.4
Yellow Time (s)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.8	6.8	6.8	6.8	6.8	6.8	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	2.0	2.0	4.0	4.0	2.0	4.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			25.0	25.0		25.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effct Green (s)	38.5	28.3	28.3	28.9	20.7	38.3	32.1	24.4	24.4	39.6	30.5	43.5
Actuated g/C Ratio	0.40	0.29	0.29	0.30	0.22	0.40	0.33	0.25	0.25	0.41	0.32	0.45
v/c Ratio	0.71	0.52	0.10	0.31	0.69	0.13	0.24	0.67	0.23	0.52	0.51	0.36
Control Delay	33.6	32.6	0.3	21.8	40.5	4.0	19.0	41.3	3.0	23.0	33.1	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	32.6	0.3	21.8	40.5	4.0	19.0	41.3	3.0	23.0	33.1	4.1
LOS	C	C	A	C	D	A	B	D	A	C	C	A
Approach Delay		30.6			33.2			28.5			19.7	
Approach LOS		C			C			C			B	
Queue Length 50th (ft)	95	144	0	36	152	0	34	174	0	75	156	8
Queue Length 95th (ft)	#204	239	0	81	237	26	72	291	21	136	270	57
Internal Link Dist (ft)		533			392			753			277	
Turn Bay Length (ft)	150		175	105			100		130	190		
Base Capacity (vph)	353	1088	613	422	1054	711	497	642	650	418	654	834
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.49	0.10	0.24	0.49	0.13	0.19	0.48	0.18	0.47	0.46	0.35

Intersection Summary

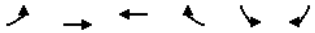
Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 96.1
Natural Cycle: 115
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 27.9 Intersection LOS: C
Intersection Capacity Utilization 74.2% ICU Level of Service D

Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Sweet Home Road & Maple Road

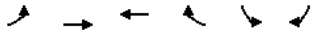


Packet Pg. 4185
3.a
Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	61	66	40	43	0
Future Volume (vph)	0	61	66	40	43	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.949			
Flt Protected					0.950	
Satd. Flow (prot)	0	1810	1749	0	1805	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1810	1749	0	1805	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		308	153		412	
Travel Time (s)		7.0	3.5		9.4	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	5%	5%	0%	0%	0%
Adj. Flow (vph)	0	87	94	57	61	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	87	151	0	61	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60			60	60	60
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	15.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	61	66	40	43	0
Future Volume (Veh/h)	0	61	66	40	43	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	0	87	94	57	61	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			834			
pX, platoon unblocked						
vC, conflicting volume	151				210	122
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	151				210	122
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				92	100
cM capacity (veh/h)	1442				783	934

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	87	151	61
Volume Left	0	0	61
Volume Right	0	57	0
cSH	1442	1700	783
Volume to Capacity	0.00	0.09	0.08
Queue Length 95th (ft)	0	0	6
Control Delay (s)	0.0	0.0	10.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	10.0
Approach LOS			A

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	15.9%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	104	0	2	106	0	0
Future Volume (vph)	104	0	2	106	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected				0.999		
Satd. Flow (prot)	1776	0	0	1809	1900	0
Flt Permitted				0.999		
Satd. Flow (perm)	1776	0	0	1809	1900	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	153			167	277	
Travel Time (s)	3.5			3.8	6.3	
Confl. Peds. (#/hr)		2	2			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	7%	0%	0%	5%	0%	0%
Adj. Flow (vph)	111	0	2	113	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	111	0	0	115	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	10.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	104	0	2	106	0	0
Future Volume (Veh/h)	104	0	2	106	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	111	0	2	113	0	0
Pedestrians					2	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				681		
pX, platoon unblocked						
vC, conflicting volume			113		230	113
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			113		230	113
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1487		760	944

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	111	115	0
Volume Left	0	2	0
Volume Right	0	0	0
cSH	1700	1487	1700
Volume to Capacity	0.07	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.1	0.0
Lane LOS		A	A
Approach Delay (s)	0.0	0.1	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	10.5%	ICU Level of Service	A
Analysis Period (min)	15		

Packet Pg. 4187
3.a
Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	98	106	87	97	2
Future Volume (vph)	1	98	106	87	97	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.939		0.997	
Flt Protected					0.953	
Satd. Flow (prot)	0	1810	1736	0	1805	0
Flt Permitted					0.953	
Satd. Flow (perm)	0	1810	1736	0	1805	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		167	141		403	
Travel Time (s)		3.8	3.2		9.2	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	5%	5%	0%	0%	0%
Adj. Flow (vph)	1	140	151	124	139	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	141	275	0	142	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60			60	60	60
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	23.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	98	106	87	97	2
Future Volume (Veh/h)	1	98	106	87	97	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	1	140	151	124	139	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			514			
pX, platoon unblocked						
vC, conflicting volume	275				355	213
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	275				355	213
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				79	100
cM capacity (veh/h)	1300				647	832

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	141	275	142
Volume Left	1	0	139
Volume Right	0	124	3
cSH	1300	1700	650
Volume to Capacity	0.00	0.16	0.22
Queue Length 95th (ft)	0	0	21
Control Delay (s)	0.1	0.0	12.1
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	12.1
Approach LOS			B

Intersection Summary				
Average Delay		3.1		
Intersection Capacity Utilization		23.1%	ICU Level of Service	A
Analysis Period (min)		15		

Packet Pg. 4188
3.a
Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	191	5	35	191	3	25
Future Volume (vph)	191	5	35	191	3	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.996				0.878	
Flt Protected				0.992	0.995	
Satd. Flow (prot)	1863	0	0	1823	1497	0
Flt Permitted				0.992	0.995	
Satd. Flow (perm)	1863	0	0	1823	1497	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	141			373	292	
Travel Time (s)	3.2			8.5	6.6	
Confl. Peds. (#/hr)		4	4		1	7
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	60%	0%	4%	0%	12%
Adj. Flow (vph)	222	6	41	222	3	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	228	0	0	263	32	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	191	5	35	191	3	25
Future Volume (Veh/h)	191	5	35	191	3	25
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	222	6	41	222	3	29
Pedestrians	1			7	4	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			1	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				373		
pX, platoon unblocked						
vC, conflicting volume			232		534	236
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			232		534	236
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			97		99	96
cM capacity (veh/h)			1343		493	772

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	228	263	32
Volume Left	0	41	3
Volume Right	6	0	29
cSH	1700	1343	733
Volume to Capacity	0.13	0.03	0.04
Queue Length 95th (ft)	0	2	3
Control Delay (s)	0.0	1.4	10.1
Lane LOS		A	B
Approach Delay (s)	0.0	1.4	10.1
Approach LOS			B

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	100	67	446	106	374	54	658	179	227	632	45
Future Volume (vph)	43	100	67	446	106	374	54	658	179	227	632	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	170		0	200		185	320		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	60			60			125			185		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99		1.00	1.00	0.98	1.00		0.98	1.00	1.00	
Frt		0.940				0.850			0.850		0.990	
Flt Protected	0.950			0.950	0.970		0.950			0.950		
Satd. Flow (prot)	1805	1714	0	1698	1727	1568	1805	3574	1583	1719	3507	0
Flt Permitted	0.950			0.950	0.970		0.950			0.950		
Satd. Flow (perm)	1796	1714	0	1695	1725	1537	1801	3574	1555	1715	3507	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23				407			181		6	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		373			436			1900			810	
Travel Time (s)		8.5			9.9			28.8			12.3	
Confl. Peds. (#/hr)	7		2	2		7	3		5	5		3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	6%	0%	1%	2%	3%	0%	1%	2%	5%	1%	12%
Adj. Flow (vph)	47	109	73	485	115	407	59	715	195	247	687	49
Shared Lane Traffic (%)				39%								
Lane Group Flow (vph)	47	182	0	296	304	407	59	715	195	247	736	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2	2	2	2	
Detector Template												
Leading Detector (ft)	49	49		49	49	49	49	49	49	49	49	
Trailing Detector (ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Position(ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	29	29		29	29	29	29	29	29	29	29	
Detector 2 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

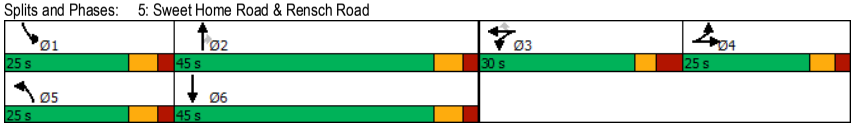
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Detector Phase	4	4		3	3	3	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	20.0	20.0	6.0	20.0	
Minimum Split (s)	40.2	40.2		41.0	41.0	41.0	12.8	37.8	37.8	12.8	37.8	
Total Split (s)	25.0	25.0		30.0	30.0	30.0	25.0	45.0	45.0	25.0	45.0	
Total Split (%)	20.0%	20.0%		24.0%	24.0%	24.0%	20.0%	36.0%	36.0%	20.0%	36.0%	
Maximum Green (s)	18.8	18.8		23.0	23.0	23.0	18.2	38.2	38.2	18.2	38.2	
Yellow Time (s)	3.8	3.8		3.2	3.2	3.2	4.3	4.3	4.3	4.3	4.3	
All-Red Time (s)	2.4	2.4		3.8	3.8	3.8	2.5	2.5	2.5	2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2		7.0	7.0	7.0	6.8	6.8	6.8	6.8	6.8	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	3.5	3.0	3.0	3.0	3.5	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0	27.0		24.0	24.0		24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)	14.9	14.9		22.9	22.9	22.9	9.2	28.8	28.8	18.4	40.9	
Actuated g/C Ratio	0.13	0.13		0.20	0.20	0.20	0.08	0.26	0.26	0.16	0.37	
v/c Ratio	0.20	0.73		0.85	0.86	0.64	0.40	0.78	0.37	0.88	0.57	
Control Delay	46.8	59.5		67.7	68.4	9.3	59.1	45.3	8.0	78.0	32.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	46.8	59.5		67.7	68.4	9.3	59.1	45.3	8.0	78.0	32.1	
LOS	D	E		E	E	A	E	D	A	E	C	
Approach Delay		56.9			44.3			38.6			43.6	
Approach LOS		E			D			D			D	
Queue Length 50th (ft)	31	112		221	227	0	42	254	8	179	232	
Queue Length 95th (ft)	71	204		#436	#448	96	90	332	63	#373	321	
Internal Link Dist (ft)		293			356			1820			730	
Turn Bay Length (ft)	100			170			200		185	320		
Base Capacity (vph)	305	309		351	357	641	295	1230	653	281	1302	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.15	0.59		0.84	0.85	0.63	0.20	0.58	0.30	0.88	0.57	

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 112			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 43.3		Intersection LOS: D	
Intersection Capacity Utilization 82.8%		ICU Level of Service E	

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Sweet Home Road & Rensch Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	65	56	893	60	74	1141
Future Volume (vph)	65	56	893	60	74	1141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.991			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1736	1615	3535	0	1787	3574
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1736	1615	3535	0	1787	3574
Link Speed (mph)	30		45			45
Link Distance (ft)	552		1491			1900
Travel Time (s)	12.5		22.6			28.8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	0%	1%	4%	1%	1%
Adj. Flow (vph)	68	59	940	63	78	1201
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	59	1003	0	78	1201
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.3%		ICU Level of Service A	
Analysis Period (min) 15			

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3.a
Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	65	56	893	60	74	1141
Future Volume (Veh/h)	65	56	893	60	74	1141
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	68	59	940	63	78	1201
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1728	502			1003	
vC1, stage 1 conf vol	972					
vC2, stage 2 conf vol	756					
vCu, unblocked vol	1728	502			1003	
tC, single (s)	6.9	6.9			4.1	
tC, 2 stage (s)	5.9					
tF (s)	3.5	3.3			2.2	
p0 queue free %	72	89			89	
cM capacity (veh/h)	247	520			692	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	68	59	627	376	78	600	600
Volume Left	68	0	0	0	78	0	0
Volume Right	0	59	0	63	0	0	0
cSH	247	520	1700	1700	692	1700	1700
Volume to Capacity	0.28	0.11	0.37	0.22	0.11	0.35	0.35
Queue Length 95th (ft)	27	10	0	0	9	0	0
Control Delay (s)	25.1	12.8	0.0	0.0	10.9	0.0	0.0
Lane LOS	D	B			B		
Approach Delay (s)	19.4		0.0		0.7		
Approach LOS	C						

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	331	641	75	140	764	200	126	358	79	179	421	518
Future Volume (vph)	331	641	75	140	764	200	126	358	79	179	421	518
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		175	105		0	100		130	190		0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			85			75			60		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					0.99	1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1583	1787	3574	1583	1805	1881	1568	1770	1863	1599
Flt Permitted	0.128			0.259			0.197			0.244		
Satd. Flow (perm)	241	3574	1583	487	3574	1563	374	1881	1568	455	1863	1578
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			163			148			161			135
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		613			472			833			357	
Travel Time (s)		9.3			7.2			16.2			5.4	
Confl. Peds. (#/hr)	1					1	1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	1%	1%	2%	1%	1%	2%	0%	1%	3%	2%	2%	1%
Adj. Flow (vph)	356	689	81	151	822	215	135	385	85	192	453	557
Shared Lane Traffic (%)												
Lane Group Flow (vph)	356	689	81	151	822	215	135	385	85	192	453	557
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2	2	2	2	2	2	2	2
Detector Template												
Leading Detector (ft)	49	49	49	49	49	49	49	49	49	49	49	49
Trailing Detector (ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Position(ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	29	29	29	29	29	29	29	29	29	29	29	29
Detector 2 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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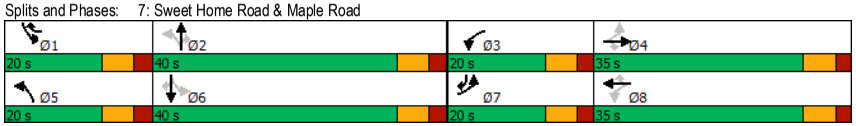
3.a
Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	1	5	2	2	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	10.0	3.0	10.0	3.0	3.0	20.0	20.0	3.0	20.0	3.0
Minimum Split (s)	10.6	41.6	41.6	10.6	41.6	20.0	10.8	38.8	38.8	20.0	38.8	10.6
Total Split (s)	20.0	35.0	35.0	20.0	35.0	20.0	20.0	40.0	40.0	20.0	40.0	20.0
Total Split (%)	17.4%	30.4%	30.4%	17.4%	30.4%	17.4%	17.4%	34.8%	34.8%	17.4%	34.8%	17.4%
Maximum Green (s)	13.4	28.4	28.4	13.4	28.4	13.2	13.2	33.2	33.2	13.2	33.2	13.4
Yellow Time (s)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.8	6.8	6.8	6.8	6.8	6.8	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	2.0	2.0	4.0	4.0	2.0	4.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			25.0	25.0		25.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effct Green (s)	44.6	31.2	31.2	37.8	27.8	38.8	38.4	28.8	28.8	41.9	30.6	44.3
Actuated g/C Ratio	0.41	0.29	0.29	0.35	0.26	0.36	0.35	0.27	0.27	0.39	0.28	0.41
v/c Ratio	1.22	0.67	0.14	0.52	0.90	0.33	0.52	0.77	0.16	0.62	0.86	0.77
Control Delay	155.8	39.4	0.5	27.1	53.5	8.8	26.6	48.1	0.6	28.5	54.5	25.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	155.8	39.4	0.5	27.1	53.5	8.8	26.6	48.1	0.6	28.5	54.5	25.3
LOS	F	D	A	C	D	A	C	D	A	C	D	C
Approach Delay		73.4			42.0			36.7			36.8	
Approach LOS		E			D			D			D	
Queue Length 50th (ft)	~270	231	0	66	301	28	56	251	0	84	301	226
Queue Length 95th (ft)	#487	322	0	116	#434	80	96	367	0	133	#482	373
Internal Link Dist (ft)		533			392			753			277	
Turn Bay Length (ft)	150		175	105			100		130	190		
Base Capacity (vph)	291	1029	571	347	942	683	320	579	594	345	582	727
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.22	0.67	0.14	0.44	0.87	0.31	0.42	0.66	0.14	0.56	0.78	0.77

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 108.3			
Natural Cycle: 125			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.22			
Intersection Signal Delay: 48.3		Intersection LOS: D	
Intersection Capacity Utilization 91.3%		ICU Level of Service F	

Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Sweet Home Road & Maple Road



Packet Pg. 4193
3.a
Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

SimTraffic Performance Report
2027 Full PM
03/18/2022

7: Sweet Home Road & Maple Road Performance by lane

Lane	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Movements Served	L	T	T	R	L	T	T	R	L	T	R	L
Denied Delay (hr)												
Denied Del/Veh (s)												
Total Delay (hr)	6.3	9.1	4.4	0.2	1.6	9.3	6.9	0.6	1.0	4.3	0.2	1.7
Total Del/Veh (s)	71.1	104.8	44.5	8.9	39.9	85.2	65.4	10.2	31.7	44.2	7.5	34.6
Stop Delay (hr)	6.1	7.8	3.2	0.2	1.5	7.8	5.9	0.5	1.0	3.3	0.2	1.5
Stop Del/Veh (s)	68.6	89.3	32.0	8.3	37.1	71.5	55.5	8.3	29.6	33.8	7.6	31.9

7: Sweet Home Road & Maple Road Performance by lane

Lane	SB	SB	All
Movements Served	T	R	
Denied Delay (hr)			10.0
Denied Del/Veh (s)			9.1
Total Delay (hr)	4.7	2.3	52.7
Total Del/Veh (s)	37.7	13.7	47.9
Stop Delay (hr)	3.8	2.0	44.7
Stop Del/Veh (s)	30.0	12.0	40.6

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Queuing and Blocking Report
2027 Full PM

03/18/2022

Intersection: 7: Sweet Home Road & Maple Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	210	584	522	201	190	421	416	296	174	436	174	246
Average Queue (ft)	195	400	325	48	154	334	286	109	81	210	46	120
95th Queue (ft)	247	685	591	160	248	471	442	331	167	363	145	249
Link Distance (ft)		564	564			397	397	397		764		
Upstream Blk Time (%)		25	0			17	13	6				0
Queuing Penalty (veh)		0	0			0	0	0				0
Storage Bay Dist (ft)	150			175	105				100		130	190
Storage Blk Time (%)	58	11	15		6	62			3	34		0
Queuing Penalty (veh)	185	35	11		22	87			12	70		2

Intersection: 7: Sweet Home Road & Maple Road

Movement	SB	SB	B17	B17
Directions Served	T	R	T	T
Maximum Queue (ft)	322	288	159	33
Average Queue (ft)	211	133	16	2
95th Queue (ft)	338	247	91	17
Link Distance (ft)	246	246	1422	1422
Upstream Blk Time (%)	8	2		
Queuing Penalty (veh)	46	13		
Storage Bay Dist (ft)				
Storage Blk Time (%)	15			
Queuing Penalty (veh)	28			

Attachment: Z-2022-02_application_051922 (25580 : Z-2022-02)

Attachment: Z-2022-02_drawings_051922 (25580 : Z-2022-02)

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1576 SWEET HOME ROAD
ZONED RD

1436 SWEET HOME ROAD
ZONED RD

1434 SWEET HOME ROAD
ZONED RD

4170 RENSCH ROAD
ZONED RD

362.3'

57.52'

59.00'

50.88'

242'

70.08'

174.5'

PROPOSED 5-STORY BUILDING
1ST FLOOR 60 PARKING SPACES
UPPER FLOORS 25 APARTMENTS PER FLOOR
25,325 SF FOOTPRINT

75'

51.60'

167'

170.5'

95.5'

75'

535.5'

426.3'

35.26'

35.73'

75'

10.0'

200'

REZONED TO CTR-5
REZONED TO CTR-8

75'

95.5'

170.5'

1-STORY
PORTION

397.9'

SWEET HOME ROAD
(WIDTH VARIES)

54.51'

167'

325'

PROPOSED 5-STORY BUILDING
1ST FLOOR 60 PARKING SPACES
UPPER FLOORS 25 APARTMENTS PER FLOOR
25,325 SF FOOTPRINT

75'

PROPOSED 8-STORY BUILDING
BASEMENT PARKING (120 SPACES)
1ST FLOOR 20,000 SF COMMERCIAL SPACE & 20 APTS
UPPER FLOORS 40 APARTMENTS PER FLOOR
44,600 SF 1ST FLOOR FOOTPRINT
44,600 SF UPPER FLOOR FOOTPRINT

75'

55.33'

242'

31.88'

24.36'

SIDE

21.57'

772.3'

90.01'

31.4'

RENSCH ROAD
(WIDTH VARIES)

SITE DATA

SITE AREA = 7.4 AC
ZONED: RD, REZONED TO CTR - 5 & CTR-8
USE: PROPOSED 8-STORY MIXED USE BUILDING & (2) 5-STORY RESIDENTIAL BUILDINGS
500 RESIDENTIAL UNITS, 20,000 SF COMMERCIAL

SETBACKS - BUILDING	REQUIRED	PROVIDED
FRONT	5 FT	10.0' MIN.
SIDE	NONE	35.29' MIN. / 166.33'
REAR	NONE	57.52' MIN. / 68.86'
ACCESSORY STRUCT.	NONE	N/A
SETBACKS - PARKING		
FRONT	10 FT	> 15 FT
SIDE	N/A	10.44' MIN.
REAR	N/A	6.75' MIN.
TOTAL VEHICLE SPACES	563	316 + 240 GAR.
BICYCLE	27	12*
ELECTRIC VEHICLE STATION	56	8*
GREENSPACE		
INTERIOR PARKING GREENSPACE:	5% (0.18 AC)	6.9% (0.25 AC)
OVERALL:	N/A	17.6% (1.3 AC)
MAX. BUILDING HEIGHT	5 STORIES / 75' 8 STORIES / 105'	5 STORIES / 75' 8 STORIES / 105'
OPEN SPACE	5% (0.37 AC)	> 5% (x.xx AC)

* VARIANCE REQUIRED

PARKING CALCULATION (PER SECTION 5A-9-1-A)

RETAIL SALES: (10,000 GSF)
REQ'D: 2.5 PER 1,000 SF
REQ'D = (10,000 / 1,000) x 2.5 = 25 SPACES REQ'D

OFFICE: (10,000 GSF)
REQ'D: 2.5 PER 1,000 SF
REQ'D = (10,000 / 1,000) x 2.5 = 25 SPACES REQ'D

APARTMENTS/TOWNHOMES:
REQ'D: 1 SPACE PER 2-BDRM UNIT = 1 X 475 UNITS = 475 SPACES
1.5 SPACE PER 3-BDRM UNIT = 1.5 X 25 UNITS = 38 SPACES
REQ'D = 513 SPACES REQ'D

TOTAL PARKING SPACES REQUIRED = 563 SPACES

BICYCLE CALCULATION (PER SECTION 5A-9-1-A)

RESIDENTIAL:
REQ'D: 0.5 PER UNIT (20 MAX.)
REQ'D = 0.5 X 500 = 250 THEREFORE 20 SPACES REQ'D.

COMMERCIAL:
REQ'D: 1 SPACE PER 3,000 SF
REQ'D = 20,000 / 3,000 = 7 SPACES REQ'D

TOTAL BICYCLE SPACES REQUIRED = 27 SPACES

ELECTRIC VEHICLE CALCULATION (PER SECTION 5A-9-1-D)

10% OF TOTAL PARKING = 556 x 0.1 = 56 SPACES REQ'D.

N **SITE PLAN**
SCALE: 1"=30'

SITE LEGEND

- PROPERTY LINE
- PROPOSED CONCRETE CURB
- PROPOSED CONCRETE SIDEWALK
- PROPOSED SIGN
- PROPOSED PARKING NUMBER (27)
- PROPOSED LIGHT POLE & FIXTURE

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

30' 30 0 30 60Ft.

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:
No. Description Date

PROJECT NAME:
New Construction
Prop. Mixed Use Development
1400 - 1416 Sweet Home Road
Amherst, New York

Date: 3/15/22
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Concept Site Plan

DRAWING NO.

C-100

Project no.: 21.008

UNIVERSITY COMMONS

1400 - 1416 SWEET HOME ROAD
7.432± ACRES (PART 2 4.257± ACRES)
SBL #54.12-1-1, 2, 3 AND 4 ZONED RD

PARCEL ZONED RESEARCH-DEVELOPMENT DISTRICT (RD)
BUILDING SETBACK: FRONT 40', SIDE AND REAR 15'
PARKING SETBACK: FRONT 25', SIDE AND REAR 10'
MINIMUM LOT AREA: 1 ACRE
MINIMUM LOT FRONTAGE: 100'
MAXIMUM LOT COVERAGE: AS USE, YARD AND PARKING PERMIT
CONCACT THE TOWN OF AMHERST BUILDING DEPARTMENT AT 716-631-7080 FOR THEIR LATEST REQUIREMENTS

#1412
1.652± ACRES
ONE STORY BRICK
1412 SWEET HOME ROAD

#1416
1.326± ACRES
ONE STORY BRICK
1416 SWEET HOME ROAD

#1408
1.279± ACRES
ONE STORY BRICK
1408 SWEET HOME ROAD.

1404 SWEET HOME ROAD
F.F. 581.0
ONE STORY BRICK
16,864 SQ FT.

1400 SWEET HOME ROAD
ONE STORY BRICK
13,316 SQ FT

SBL #54.02-1-14 ZONED RD
SBL #54.12-1-39 ZONED RD
SBL #54.12-1-6 ZONED RD
SBL #54.12-1-5 ZONED RD

N 89°38'35"E 362.34 — NORTH LINE LOT 79
CONCRETE GUTTER
CONCRETE WALK
BLACKTOP
N 89°59'40"W 365.47 — BLACKTOP ON LINE
PARALLEL TO EAST LINE LOT 79
N 00°00'20"E 171.30
PARALLEL TO NORTH LINE LOT 79
506.50
N 89°38'35"E
426.50
RIGHT OF WAY
174.00' TO NORTHEAST CORNER LOT 79
SOUTHEAST CORNER L.2213 P.120
EAST LINE LOT 79
S 01°01'25"E 535.55
N 89°33'00"E 310.78
N 00°00'20"E 362.70
S 00°00'20"W 342.50
S 00°24'07"W 308.35
S 01°01'25"E 196.64
S 88°14'38"W 772.32
S 88°14'38"W 887.77
S 47°59'00"W 33.63
S 88°14'38"W 401.68
S 01°01'25"E 370.64
187.04
184.17
181.30
183.60
105.05
SWEET HOME ROAD (WIDTH VARIES, APPROX. 66' WIDE)
RENSCH ROAD (49.5' WIDE)
UNIVERSITY OF BUFFALO ENTRANCE

HYDRANT
R0.00
SAN MH
SAN MH RIM 585.34 INV 577.99 8"S/NE
SAN MH RIM 584.35 INV 576.29 8"E/SW
SAN MH RIM 582.73 INV 573.14 8"E/W
SAN MH
SAN MH
SAN MH
POLE
GUY
C.O.
W.V.
FRAME BARN
METAL BARN
DUMPSTER ENCLOSURE
PARKING LOT
DETENTION POND
RETENTION POND
CONCRETE GUTTER
CONCRETE WALK
ENTER/EXIT
CONCRETE VAULT IN BERM WITH METER AND RPZ
1" WATER SERVICE
1" RPZ
6" SANITARY LATERAL
13" STORM
INV 578.07 E
STORM PIPES
8" WATERLINE
HYDRANT
EDGE PAVEMENT
CENTERLINE
DRIVEWAY
BENCH MARK NAIL IN POLE ELEV. 583.59
100' ± TO HYDRANT
A.D.W.
LOCKPORT EXPRESSWAY
R.O.W.
SIGN
REC
(16 SP)
(12 SP)
(11 SP)
(6 SP)
(7 SP)
(5 SP)
(26 SP)
(20 SP)
(3 SP)
(2 SP)
(1 SP)

30' WIDE TOWN OF AMHERST SANITARY SEWER EASEMENT L.10947 P.2181

8' SURED W.T.TELE. CABLE EASEMENT 43' FROM E. SWEET HOME ROAD L.2368 P.43

WEST LINE LANDS ACQUIRED BY NYSDOT S.H. NO. 9409, MAP NO. 72, PARCEL NO. 73 L.2368 P.453

TOPOGRAPHIC SURVEY AND BOUNDARY SURVEY

SURVEY #1416
NOV 15, 2007

ASBUILT #1412 AND #1416
DEC. 19, 2006 JN 54745

SURVEY #1412 SEPT. 8, 2006
JN 54650

FOUNDATION LOCATE #1416
AUG. 17, 2006

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS SURVEY MAP IS A VIOLATION OF SECTION 7209, PART 2 OF THE NEW YORK STATE EDUCATION LAW.

NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE AND IS SUBJECT TO ANY STATE OF FACTS THAT MAY BE REVEALED BY AN EXAMINATION OF SAME.

BISSELL, STONE ASSOCIATES

BISSELL, STONE ASSOCIATES
ENGINEERING AND LAND SURVEYING, P.C.
CIVIL ENGINEERING LAND SURVEYING
SITE PLANNING CONSULTING
TELEPHONE: (716) 832-7000, FAX 832-7004

DATE APRIL 22, 2003	JOB NO 53144-T	FIELD BOOK DC 32038	SCALE 1" = 30'
ADD INFO JAN. 15, 2004	FOUNDATION LOCATE #1408 JAN. 19, 2004 JN 53842	FOUNDATION LOCATE #1412 SEPT. 22, 2005 JN 54282	PARKING LOT ASBUILT JAN. 12, 2006 JN 54393

SURVEY OF PART OF LOT 79 TOWN OF AMHERST — TWP 12 RANGE 7 — ERIE CO., NY — HOLLAND LAND COMPANY

FORMERLY GEO. DIEHL SHEEHAN FRETTS & TALLAMY, FRETTS & SENIOR SENIOR BISSELL & BRONKIE DESIGN SYSTEM COLLABORATIVE THE BISSELL CO

G-1589

Attachment: Z-2022-02_drawings 051922 (25580 : Z-2022-02)

DRAFT (5/19/22)
TOWN OF AMHERST
PLANNING BOARD
ZONING RESOLUTION
Z-2022-02

PETITIONER

North Forest Development LLC
c/o Sean Hopkins
5500 Main Street, Suite 343
Williamsville, NY 14221

PROPERTY LOCATION

1400-1404 & 1408-1416 Sweet Home Rd.

WHEREAS the Town of Amherst Planning Board on Thursday, , 2022 held a public hearing on the proposed rezoning of land from _____to_____, and

WHEREAS the Planning Board has reviewed plans and other materials regarding the rezoning proposal, and

WHEREAS the materials and plans have been referred to the Town's various review agencies, and

WHEREAS in accordance with Section 8-3-5 of the Zoning Ordinance the Planning Board finds that:

A. The proposed zoning and development plan **is** generally consistent with the policies of the Comprehensive Plan and the Zoning Ordinance.

The proposal **is** consistent with the Conceptual Land Use Plan which shows _____ use in this area of the Town.

The proposal **is** consistent with Section 3.3.4, "Community Facilities" *(state reason)* _____.

B. There **are / are not** adequate services and utilities available or proposed to be made available in the construction of the development.

C. The proposal **is / is not** compatible with the present zoning and conforming uses of nearby property and with the character of the neighborhood.

D. The subject property **is / is not** suitable for uses permitted by the current versus the proposed district.

E. The proposed change **does / does not** tend to improve the balance of uses, or **meets / does not meet** a specific demand in the Town.

F. **PICK ONE:**

Attachment: Z-2022-02_draft resolution_051922 (25580 : Z-2022-02)

DRAFT (5/19/22)
TOWN OF AMHERST
PLANNING BOARD
ZONING RESOLUTION
Z-2022-02

PETITIONER	PROPERTY LOCATION
North Forest Development LLC	1400-1404 & 1408-1416 Sweet Home Rd.

a. Under Section 404 of the Clean Water Act, the US Army Corps of Engineers has determined that it has no jurisdiction.

b. Review by the US Army Corps of Engineers under Section 404 of the Clean Water Act may be waived because the parcel is developed.

c. Review by the US Army Corps of Engineers under Section 404 of the Clean Water Act may be waived since hydric/potentially hydric soils have not been identified on the parcel.

d. Review by the US Army Corps of Engineers under Section 404 of the Clean Water Act is required since hydric/potentially hydric soils have been identified on the parcel.

WHEREAS pursuant to Local Law #3-82, as amended, the Planning Board recommends that the Town Board determine that the requirements of SEQR are complete and that the subject proposal is not expected to have a significant adverse effect on the environment.

NOW THEREFORE BE IT RESOLVED that the Planning Board recommends to the Town Board in accordance with Section 8-3-4 of the Zoning Ordinance, that the rezoning request be **approved/denied** subject to the following conditions:

1.

The foregoing resolution was adopted by the Town of Amherst Planning Board, _____; moved by - _____; seconded by - _____; ayes _, noes _; absent - ____.

_____ _____
Robert J. Gilmour, Chair Date

TV/bf
X:\Current_Planning\Files\Rezonings\2022\Z-2022-02_(1400-1404_&_1408-1416_Sweet_Home_Rd)_2022\Z-2022-02_draft resolution_051922.doc
cc: Town Clerk
Commissioner of Building
Highway Superintendent
Town Engineer
Traffic/Safety Coordinator
Sean Hopkins, Hopkins Sorgi & McCarthy, 5500 Main Street, Suite 343, Williamsville, NY 14221
Chris Wood, Carmina Wood Morris, 487 Main Street, Suite 500, Buffalo, NY 14203

Attachment: Z-2022-02_draft resolution_051922 (25580 : Z-2022-02)

Amherst

Town of Amherst Planning Department *Erie County, New York*

Brian J. Kulpa
Supervisor
Daniel C. Howard, AICP
Planning Director
Daniel J. Ulatowski, AICP
Assistant Planning Director

May 26, 2022

North Forest Development LLC
c/o Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy
5500 Main Street, Suite 343
Williamsville, NY 14221

SUBJECT: REQUEST TO REZONE 7.43± ACRES OF LAND FROM **RD** TO **CTR-8** & **RD** TO **CTR-5**, **Z-2022-02**; PROPERTY LOCATED AT **1400-1404 & 1408-1416 SWEET HOME ROAD**.

Dear Sir/Madam:

At its meeting of May 19, 2022 the Planning Board considered your request to rezone the subject property from **RD** to **CTR-8 & CTR-5** and voted to adjourn the request.

This request will be placed on the Planning Board agenda for the June 16, 2022 meeting.

Should you have any questions regarding the Planning Board's decision, please do not hesitate to call us.

Very truly yours,

D. Ulatowski

per Daniel C. Howard, AICP
Planning Director

DH/ac
X:\Current_Planning\Files\Rezonings\2022\Z-2022-02_(1400-1404_&_1408-1416_Sweet_Home_Rd)_2022\Z-2022-02_Adjourned Letter_051922.docS:\Current Planning Files\Rezonings
cc: Chris Wood, Carmina Wood Design, 487 Main Street, Suite 500, Buffalo, NY 14203

Attachment: Z-2022-02_adjourned_051922 (25580 : Z-2022-02)

Rezoning Application & Supporting Documentation - Rezoning of 1400-1404 Sweet Home Road from RD to CTR-8 and 1408-1416 Sweet Home Road from RD to CTR-5
Applicant: North Forest Development LLC
Date: March 21, 2022

Prepared by: Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221
Tel: 716.510-4338
E-mail: shopkins@hsmlegal.com

TOWN OF AMHERST PLANNING DEPARTMENT

Application for Rezoning Review and, if required Comprehensive Plan Amendment

For Official Use

File #: _____ **Acreage** 7.43 **Fee $** _____

Address Verified by Assessor's Office _____ VERIFIED BY DATE

Materials Accepted by Town Clerk & Fee Paid _____ ACCEPTED BY DATE

Materials Checked by Building Dept. _____ RECEIVED BY DATE

Materials Received by Planning Dept. _____ RECEIVED BY DATE

		Fill in Applicable Fees
2 ACRES OR LESS	**$1,250**	_____
2 – 20 ACRES **$1,250 + $250/acres or fraction thereof over 2 acres**		$2750.00
20 – 30 ACRES **$5,700 + $150/acre or fraction thereof over 20 acres**		_____
OVER 30 ACRES **$6,900 +$75/acre or fraction thereof over 30 acres**		_____
Request for Relief of/Change to Conditions of Zoning Approval	**$ 1,200**	_____
AFFIDAVIT FEE FOR PUBLIC HEARING	**$ 15.00**	$15.00
	TOTAL FEE:	$ 2,765.00

[Note: A completed Short Full Environmental Assessment Form dated April 19, 2021 along with Page 5[a] and attachments is attached as Exhibit "2".]

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

TO BE COMPLETED BY APPLICANT

1. **Petitioner:** Name: North Forest Development LLC

Address: c/o Sean Hopkins, Esq.
5500 Main Street, Suite 343
Williamsville, New York 14221
City State Zip Code

Phone: 510-4338 Fax:

E Mail shopkins@hsmlegal.com

2. **The undersigned hereby petitions the Honorable Town Board to rezone the following described property**

From: RD District

To: CTR-5 and CTR-8 District

3. **Street address of land to be rezoned:** (must be verified by Town Assessor's Office)

1400-1404 and 1408-1416 Sweet Home Road

SBL #: SBL No. 54.12-1-42 and 54.12-1-43.1

4. **Area of land to be rezoned** (in acres): 7.43

5. **Owner of Land:**

Name: North Forest Properties #1 LLC

Address: 2829 Wehrle Drive, Suite 1 - Williamsville, NY 14221

Telephone: 716.626-9764

6. **Representative** (Architect, Engineer, Landscape Architect, Surveyor or Attorney):

Other Representative:
Christopher Wood, P.E.
Carmina Wood Morris DPC
487 Main Street, Suite 600
Buffalo, New York 14202
Tel: 842-3165 [Ext. 103]
E-mail: cwood@cwm-ae.com

Name: Sean W. Hopkins, Esq.

Address: 5500 Main Street, Suite 343
Williamsville, New York 14221
Tel: 716.510-4338 - E-mail: shopkins@hsmlegal.com
City State Zip Code

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

7. **Petitioner's interest in property** [Note: Authorization Letter of the Property Owner attached as Exhibit "1" of this Rezoning Application.]

_____Option to purchase

_____Owner

__X____Other (explain) The Project Site and Petitioner are related entities.

8. **The following are all others having an interest in this application and join herein with the petitioner named above:** (describe extent of interest; attach sheets as needed)

Not Applicable.

9. **Attach Survey and Legal description of land to be rezoned. The Survey must be prepared by a New York State Licensed Land Surveyor.** Legal description of property to be rezoned from RD to CTR-5 and CTR-8 is attached as Exhibit " and a reduced size copy of the Survey of the Project Site is attached as Exhibit "4". Full size copy the Survey is also attached.

10. **Said property has the following deed restrictions or Covenants:** (attach copy) Not Applicable.

Liber _____ Page _____

11. **Information on proposed project:**

A. Description of the character of the proposed development:

See Exhibit 5.

B. Rationale for rezoning request:

1. Why was this site chosen?

See Exhibit 5.

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

2. Why cannot land be used with the existing zoning?

See Exhibit 5.

3. How will this rezoning impact surrounding properties?

See Exhibit 5.

4. How will this rezoning impact the school system?

See Exhibit 5.

12. Quantitative Data:

A. Total # of dwelling units: 500 units

B. Distribution of dwelling units by type: All dwelling units are apartments for lease

C. Gross Residential Density per acre: 67.29 units per acre.

D. Total amount of Open Space: 0

E. Proposed Non-Residential Floor Area: 20,000 sq. ft. first floor commercial space.

[Note: A reduced size copy of the Concept Site Plan [Drawing C-100] for the proposed mixed-use redevelopment project as prepared by Carmina Wood Morris is provided at Exhibit "7" and a full size copy is also attached.]

13. Development Schedule:

Start: To be Determined

Finish: To be Determined

Stages (# of): 1

14. If any portion of the proposed development is planned to be sold or leased, please describe:

The commercial space and residential units will be leased.

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

15. Open Space ownership and maintenance provisions (if applicable):

Greenspace and landscaping will be privately owned and maintained.

16. Basis for Findings (Sec. 8-3-5 of the Town Zoning Code) (Attach sheets and supplemental materials as necessary.)

A. The proposed zoning and development plan must be generally consistent with the policies of the Comprehensive Plan and the Town Zoning Ordinance.

1. State in detail why the proposed zoning is consistent with the adopted Town of Amherst Bicentennial Comprehensive Plan. Cite specific sections, maps, and/or figures in the plan that support the proposed zoning at this location (The Comprehensive Plan document is available at the Planning Department, Town Clerk's Office, Amherst libraries, or at www.amherst.ny.us). Add sheets as needed.

See Exhibit 6.

2. Pursuant to NYS Town Law Section 272a(11), "all Town land use regulations must be in accordance with a comprehensive plan adopted pursuant to this Section." The Town Board adopted the Comprehensive Plan pursuant to NYS Town Law 272 on January 2, 2007. If the rezoning is approved, the Town Board may require the Plan to be amended, as applicable.

Cite all text, map, and / or figures that must be amended to support the proposed zoning at this location (attach pages as necessary) and provide detailed suggested amendments.

See Exhibit 6.

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

3. State why the proposed zoning is consistent with intent and objectives (Sec. 1-2-2) of the Zoning Ordinance:

See Exhibit 6.

B. Adequate Services and Utilities are available or are proposed to be made available with the construction of the development:

1. Sanitary Sewer
   Yes.
2. Storm Sewer/Drainage
   Yes.
3. Water
   Yes.
4. Other Yes.

C. Compatibility with the present zoning and conforming uses of nearby property and with the character of the neighborhood:

See Exhibit 6.

D. Suitability of the subject property for uses permitted by the current versus the proposed district:

See Exhibit 6.

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

E. Whether the proposed change tends to improve the balance of uses, or meets a specific demand in the Town:

See Exhibit 6.

17. The petitioner encloses herewith the sum of $2,765.00 to pay the fee, and consents to the placement of a sign(s) at the described location identifying this request for a period of time to be determined by the Town Clerk.

18. The undersigned certifies that all information required to be disclosed pursuant to Section 809 of the General Municipal Law (see below) is as follows:

The undersigned swears or affirms that all statements made herein are true, that all drawings submitted correctly show the situation involved in this petition.

[Note: Authorization Letter of Property Owner signed attached as Exhibit "1".]

Counsel for Petitioner
Signature of Petitioner

Subscribed and sworn to before me this 21st day of March, 2022

Notary Public, Erie County, New York

MARIANNE BRAUTLACHT
Notary Public, State of New Yor
Qualified in Erie County
My Commission Expires 01/14/20

N.Y.S. General Municipal Law - Section 809 Disclosure in certain applications:

1. Every application, petition or request submitted for a variance, amendment, change of zoning, approval of a plat, exemption from a plat or official map, license or permit, pursuant to the provision of any ordinance, local law, rule or regulation constituting the zoning and planning regulations of a municipality shall state the name, residence and the nature and extent of the interest of any state office or any office or employee of such municipality or of a municipality of which such municipality is a part, in the person, partnership or association making such application, petition or request (hereinafter called the applicant) to the extent known to such applicant.

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

2. For the purpose of this section an officer or employee shall be deemed to have an interest in the applicant when he, his spouse, or their brothers, sisters, parents, children, grandchildren, or the spouse of any of them

   (a) is the applicant, or
   (b) is an officer, director, partner or employee of the applicant, or
   (c) legally or beneficially owns or controls stock of a corporate applicant or is a member of a partnership or association applicant, or
   (d) is a party to an agreement with such an applicant, express or implied, whereby he may receive any payment or other benefit, whether or not for services rendered, dependent or contingent upon the favorable approval of such applicant, petition or request.

3. In the county of Nassau the provisions of subdivisions one and two of this section shall also apply to a party officer. "Party Officer" shall mean any person holding any position or office, whether by election, appointment or otherwise, in any party as defined by subdivision four or section two of the election law.

4. Ownership of less than five per cent of the stock of a corporation whose stock is listed on the New York or American Stock Exchanges shall not constitute an interest for the purposes of this section.

5. A person who knowingly and intentionally violates this section shall be guilty of a misdemeanor.

P/CurrPlan/Applications2007/Rezoning & Comp Plan Amend App.
10/08

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Exhibit 1 – Authorization Form Signed by Property Owner

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

AUTHORIZATION

North Forest Properties #1 LLC, as the record owner of 1400-1416 Sweet Home Road [SBL No. 54.12-1-42 and 54.12-1-43.1] in the Town of Amherst (collectively the "***Project Site***") hereby authorizes representatives including Carmina Wood Morris DPC and Hopkins Sorgi & McCarthy PLLC to seek the approvals and permits required from the Town of Amherst as well as involved and interested agencies for the development of the Project Site as a mixed-use project.

Date: March 15, 2022

NORTH FOREST PROPERTIES #1 LLC

By: _____

Print Name: Roy Jordan

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Exhibit 2 – Part 1 of the Full Environmental Assessment Form Prepared Pursuant to the State Environmental Quality Review Act ("SEQRA") with Attached Page 5[a]

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Part 1 of Full EAF - Rezoning of 1400-1404 and 1408-1416 Sweet Home Road from RD to CTR-5 & CTR-8
Applicant: North Forest Development LLC
Date: March 21, 2022

Full Environmental Assessment Form
Part 1 - Project and Setting

Prepared By: Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221
Tel: 716.510-4338
E-mail: shopkins@hsmlegal.com

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project: Proposed Mixed-Use Redevelopment Project		
Project Location (describe, and attach a general location map): 1400-1404 and 1408-1416 Sweet Home Road - Town of Amherst - Erie County [SBL No. 54.12-1-42 and 54.12-1-43.1]		
Brief Description of Proposed Action (include purpose or need): The proposed project consists of a proposed mixed-use redevelopment project consisting of an 8-story mixed-use building with 20,000 sq. ft. of 1st floor commercial space, 300 apartments and 120 parking spaces in basement], two 5-story building [60 parking spaces on 1st floor per building and upper story apartments] (total of 500 apartments with total of 566 parking spaces - 316 surface spaces) and related site improvements. The action includes an amendment of the zoning classification of 1400-1404 and 1408-1416 Sweet Home Road (collectively the "Project Site") from RD to CTR-5 and CTR-8. The proposed action has been defined broadly to include all required discretionary approvals required from the municipal boards of the Town of Amherst and involved agencies as well as the construction of the proposed mixed-use and multifamily buildings and all related site improvements including parking spaces, access onto Rensch Road, access aisles, landscaping, lighting, underground storm water management improvements, water and sanitary sewer lines as well as utility connections. The Project Site consists of an existing office park to be replaced by the proposed mixed-use project. Given that the proposed project ("action") will not result in any potentially significant adverse environmental impacts, the issuance of a negative declaration pursuant to SEQRA is appropriate. The action is a Type I action pursuant to SEQRA (6 NYCRR Part 617.4) since it involves more than 250 attached residential units.		
Name of Applicant/Sponsor: North Forest Development LLC c/o Sean Hopkins, Esq.	Telephone: 716.510-4338 E-Mail: shopkins@hsmlegal.com	
Address: 5500 Main Street, Suite 343		
City/PO: Williamsville	State: NY	Zip Code: 14221
Project Contact (if not same as sponsor; give name and title/role): Same as Above	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:
Property Owner (if not same as sponsor): North Forest Properties 1 LLC	Telephone: 716.626-9764 [Ext. 212] E-Mail: royj@nforest.com	
Address: 2829 Wehrle Drive, Suite 1		
City/PO: Williamsville	State: NY	Zip Code: 14221

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees ☑Yes ☐No	Town Board - Rezoning	March 21, 2022
b. City, Town or Village Planning Board or Commission ☑Yes ☐No	Planning Board - Site Plan Approval	To be Determined ("TBD")
c. City, Town or Village Zoning Board of Appeals ☑Yes ☐No	Zoning Board of Appeals - Possible Area Variances	TBD
d. Other local agencies ☑Yes ☐No	Building Dept. - Demolition & Building Permits; Highway Department - Curb Cut Permits	TBD
e. County agencies ☑Yes ☐No	ECWA - Water	TBD
f. Regional agencies ☐Yes ☑No		
g. State agencies ☑Yes ☐No	NYSDEC - SPDES and DSCA	TBD
h. Federal agencies ☐Yes ☑No		

i. Coastal Resources.
i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☑Yes ☐No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☑Yes ☐No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☑Yes ☐No

If Yes, identify the plan(s):
NYS Heritage Areas:West Erie Canal Corridor

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes ☑No

If Yes, identify the plan(s):

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C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
Research Development District ("RD")

b. Is the use permitted or allowed by a special or conditional use permit? ☐ Yes ☑ No

c. Is a zoning change requested as part of the proposed action? ☑ Yes ☐ No
If Yes,
i. What is the proposed new zoning for the site? CTR-8 for 1400-1404 Sweet Home Rd. and CTR-5 for 1408-1416 Sweet Home Rd.

C.4. Existing community services.

a. In what school district is the project site located? Sweet Home Central School District

b. What police or other public protection forces serve the project site?
Town of Amherst Police Department

c. Which fire protection and emergency medical services serve the project site?
Volunteer Fire Department for the fire district in which the Project Site is located

d. What parks serve the project site?
There are various parks that will be accessible to the future tenants of the mixed-use redevelopment project

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)? Mixed-use project consisting of approximately 20,000 sq. of 1st floor commercial space and apartments for lease [3 proposed building consistent with the Concept Site Plan [Drawing C-100].

b. a. Total acreage of the site of the proposed action? 7.43 acres
b. Total acreage to be physically disturbed? 7.43 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 7.43 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % _____ Units: _____

d. Is the proposed action a subdivision, or does it include a subdivision? ☐ Yes ☑ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
ii. Is a cluster/conservation layout proposed? ☐ Yes ☐ No
iii. Number of lots proposed? _____
iv. Minimum and maximum proposed lot sizes? Minimum _____ Maximum _____

e. Will the proposed action be constructed in multiple phases? ☐ Yes ☑ No
i. If No, anticipated period of construction: _____ months
ii. If Yes:
- Total number of phases anticipated _____
- Anticipated commencement date of phase 1 (including demolition) _____ month _____ year
- Anticipated completion date of final phase _____ month _____ year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases: _____

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f. Does the project include new residential uses? ☑ Yes ☐ No

If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase				500
At completion of all phases				

g. Does the proposed action include new non-residential construction (including expansions)? ☑ Yes ☐ No

If Yes,

i. Total number of structures 1 Mixed-Use Building

ii. Dimensions (in feet) of largest proposed structure: 105' height; 275' width; and 400' length

iii. Approximate extent of building space to be heated or cooled: 20,000 square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☑ Yes ☐ No

If Yes,

i. Purpose of the impoundment: Undeground stormwater detention.

ii. If a water impoundment, the principal source of the water: ☑ Ground water ☐ Surface water streams ☐ Other specify:

iii. If other than water, identify the type of impounded/contained liquids and their source.

iv. Approximate size of the proposed impoundment. Volume: _____ million gallons; surface area: N/A acres

v. Dimensions of the proposed dam or impounding structure: N/A height; N/A length

vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):
N/A

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐ Yes ☑ No

If Yes:

i .What is the purpose of the excavation or dredging?

ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?

- Volume (specify tons or cubic yards):
- Over what duration of time?

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.

iv. Will there be onsite dewatering or processing of excavated materials? ☐ Yes ☐ No

If yes, describe.

v. What is the total area to be dredged or excavated? _____ acres

vi. What is the maximum area to be worked at any one time? _____ acres

vii. What would be the maximum depth of excavation or dredging? _____ feet

viii. Will the excavation require blasting? ☐ Yes ☐ No

ix. Summarize site reclamation goals and plan:

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☐ Yes ☑ No

If Yes:

i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description):

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ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

iii. Will the proposed action cause or result in disturbance to bottom sediments? ☐Yes ☐No
If Yes, describe:

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☐No
If Yes:

- acres of aquatic vegetation proposed to be removed:
- expected acreage of aquatic vegetation remaining after project completion:
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access):
- proposed method of plant removal:
- if chemical/herbicide treatment will be used, specify product(s):

v. Describe any proposed reclamation/mitigation following disturbance:

c. Will the proposed action use, or create a new demand for water? ☑Yes ☐No
If Yes:

i. Total anticipated water usage/demand per day: 110,000 gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑Yes ☐No
If Yes:

- Name of district or service area: ECWA Consolidated Water District
- Does the existing public water supply have capacity to serve the proposal? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No
- Do existing lines serve the project site? ☑Yes ☐No

iii. Will line extension within an existing district be necessary to supply the project? ☐Yes ☑No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project:
- Source(s) of supply for the district:

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐Yes ☑No
If, Yes:

- Applicant/sponsor for new district:
- Date application submitted or anticipated:
- Proposed source(s) of supply for new district:

v. If a public water supply will not be used, describe plans to provide water supply for the project:

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑Yes ☐No
If Yes:

i. Total anticipated liquid waste generation per day: 110,000 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each):
Sanitary wastewater.

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑Yes ☐No
If Yes:

- Name of wastewater treatment plant to be used: Town of Amherst Wastewater Treatment Plant
- Name of district: Town of Amherst
- Does the existing wastewater treatment plant have capacity to serve the project? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No

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- Do existing sewer lines serve the project site? ☑Yes ☐No
- Will a line extension within an existing district be necessary to serve the project? ☐Yes ☑No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☑No

If Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

_____

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑Yes ☐No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or _____ acres (impervious surface)

_____ Square feet or _____ acres (parcel size)

ii. Describe types of new point sources. _____

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

_____

- If to surface waters, identify receiving water bodies or wetlands: _____
- Will stormwater runoff flow to adjacent properties? ☐Yes ☑No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☐Yes ☑No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☑No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

_____

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

_____

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

_____

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:

- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

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h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? [Note: Traffic Impact Study prepared by SRF Associates submittted with Rezoning Application and Supporting Documentation] ☐Yes ☑No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐Weekend
☐ Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): _____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☑Yes ☐No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: _____
To be determined for 1st floor commercial space and dependent on needs of commercial tenants.

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):
National Grid

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐Yes ☐No

l. Hours of operation. Answer all items which apply.

i. During Construction:
- Monday - Friday: 7:00 AM to 7:00 PM
- Saturday: 7:00 AM to 5:00 PM
- Sunday: As Needed
- Holidays: Not Applicable

ii. During Operations:
- Monday - Friday: To be Determined [Commercial]
- Saturday: TBD
- Sunday: TBD
- Holidays: TBD

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m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

There will be temporary and unavoidable short-term noise impacts resulting from the use of construction equipment during the construction of the proposed mixed-use redevelopment project.

ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☑ No

Describe: _____

n. Will the proposed action have outdoor lighting? ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

There will be outdoor lighting per the lighting standards contained in the Town of Amherst Zoning Code.

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☑ No

Describe: _____

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures: _____

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored _____

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally, describe the proposed storage facilities: _____

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☐ Yes ☑ No

If Yes:

i. Describe proposed treatment(s):

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☐ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☐ Yes ☐ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: _____ tons per _____ (unit of time)
- Operation : _____ tons per _____ (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: _____
- Operation: _____

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: _____
- Operation: _____

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s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☑ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)
☐ Forest ☐ Agriculture ☐ Aquatic ☑ Other (specify): UB North Campus and Center for Inquiry

ii. If mix of uses, generally describe:

There are a wide assortment of land uses on properties zoned GB, MFR-5, etc. in the vicinity of the Project Site.

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	6.5	6.74	.2
• Forested	0	0	0
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	0	0	0
• Agricultural (includes active orchards, field, greenhouse etc.)	0	0	0
• Surface water features (lakes, ponds, streams, rivers, etc.)	0	0	0
• Wetlands (freshwater or tidal)	0	0	0
• Non-vegetated (bare rock, earth or fill)	0	0	0
• Other Describe: Greenspace and Landscaping	1.2	1	(.2)

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c. Is the project site presently used by members of the community for public recreation? ☐ Yes ☑ No
i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☑ Yes ☐ No
If Yes,
i. Identify Facilities:
University of Buffalo North Campus and People Inc. Group Home

e. Does the project site contain an existing dam? ☐ Yes ☑ No
If Yes:
i. Dimensions of the dam and impoundment:
- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____
iii. Provide date and summarize results of last inspection:

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐ Yes ☑ No
If Yes:
i. Has the facility been formally closed? ☐ Yes ☐ No
- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:

iii. Describe any development constraints due to the prior solid waste activities: _____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐ Yes ☑ No
If Yes:
i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐ Yes ☑ No
If Yes:
i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐ Yes ☐ No
☐ Yes – Spills Incidents database — Provide DEC ID number(s): _____
☐ Yes – Environmental Site Remediation database — Provide DEC ID number(s): _____
☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures: _____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐ Yes ☑ No
If yes, provide DEC ID number(s): _____
iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):

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v. Is the project site subject to an institutional control limiting property uses? ☐ Yes ☑ No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐ Yes ☐ No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? >1 feet

b. Are there bedrock outcroppings on the project site? ☐ Yes ☑ No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____ %

c. Predominant soil type(s) present on project site:

Churchville Silt Loam	100 %
	%
	%

d. What is the average depth to the water table on the project site? Average: >3 feet

e. Drainage status of project site soils:

☐ Well Drained:	% of site
☐ Moderately Well Drained:	% of site
☑ Poorly Drained	100 % of site

f. Approximate proportion of proposed action site with slopes:

☑ 0-10%:	100 % of site
☐ 10-15%:	% of site
☐ 15% or greater:	% of site

g. Are there any unique geologic features on the project site? ☐ Yes ☑ No
If Yes, describe: _____

h. Surface water features.

i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☐ Yes ☑ No

ii. Do any wetlands or other waterbodies adjoin the project site? ☑ Yes ☐ No

If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.

iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑ Yes ☐ No

iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name _____ Approximate Size _____
- Wetland No. (if regulated by DEC) _____

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐ Yes ☑ No

If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐ Yes ☑ No

j. Is the project site in the 100-year Floodplain? ☐ Yes ☑ No

k. Is the project site in the 500-year Floodplain? ☐ Yes ☑ No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐ Yes ☑ No
If Yes:

i. Name of aquifer: _____

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m. Identify the predominant wildlife species that occupy or use the project site:
Typical suburban species

n. Does the project site contain a designated significant natural community? ☐Yes ☑No
If Yes:
i. Describe the habitat/community (composition, function, and basis for designation):
ii. Source(s) of description or evaluation:
iii. Extent of community/habitat:
- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐Yes ☑No
If Yes:
i. Species and listing (endangered or threatened):

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☐Yes ☑No
If Yes:
i. Species and listing:

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐Yes ☑No
If yes, give a brief description of how the proposed action may affect that use:

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐Yes ☑No
If Yes, provide county plus district name/number:

b. Are agricultural lands consisting of highly productive soils present? ☐Yes ☑No
i. If Yes: acreage(s) on project site?
ii. Source(s) of soil rating(s):

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐Yes ☑No
If Yes:
i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature
ii. Provide brief description of landmark, including values behind designation and approximate size/extent:

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐Yes ☑No
If Yes:
i. CEA name:
ii. Basis for designation:
iii. Designating agency and date:

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e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? ☐ Yes ☑ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: _____

iii. Brief description of attributes on which listing is based:

_____

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☑ Yes ☐ No

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s): _____

ii. Basis for identification: _____

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☐ Yes ☑ No

If Yes:

i. Identify resource: _____

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.): _____

iii. Distance between project and resource: _____ miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation: _____

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name North Forest Development LLC Date March 21, 2022

Signature _____ Title Project Counsel

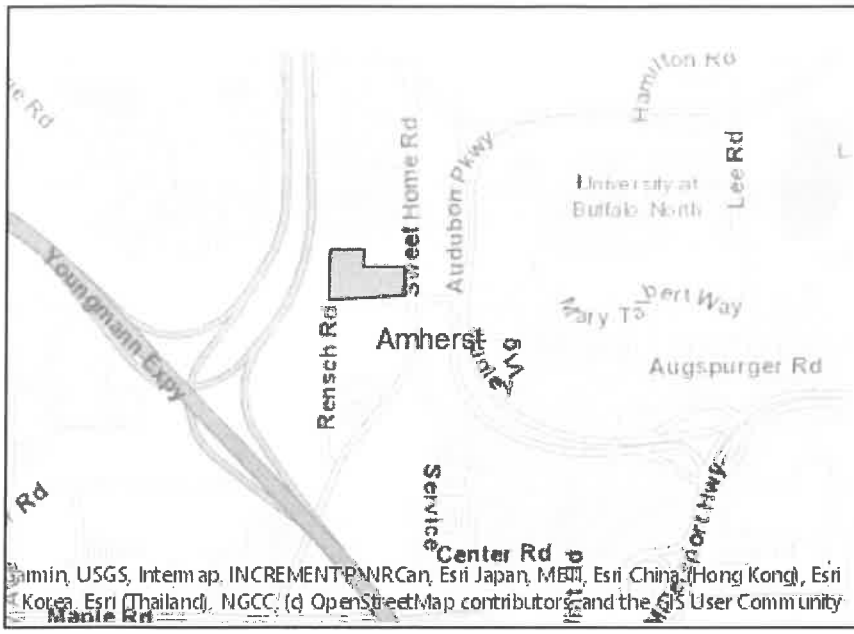
Sean Hopkins, Esq.

PRINT FORM

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

EAF Mapper Summary Report

Sunday, March 13, 2022 1:43 AM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.

B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Yes - Digital mapping data are not available for all Special Planning Districts. Refer to EAF Workbook.
C.2.b. [Special Planning District - Name]	NYS Heritage Areas:West Erie Canal Corridor
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	No
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	No
E.2.k. [500 Year Floodplain]	No
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	No
E.2.o. [Endangered or Threatened Species]	No

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E.2.p. [Rare Plants or Animals]	No
E.3.a. [Agricultural District]	No
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.3.f. [Archeological Sites]	Yes
E.3.i. [Designated River Corridor]	No

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Rezoning of 1400-14034 and 1408-1416 Sweet Home Road from from RD to CTR-5 and CTR-8

TOWN OF AMHERST ATTACHMENT
State Environmental Quality Review
ENVIRONMENTAL ASSESSMENT FORM

1. For each applicable category of proposed new structures, including additions to existing structures, provide the following information for all soil types on the project site (*according to Soil Survey of Erie County, NY; Table 11, Building Site Development, pp 294-305):*

Soil Name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Churchville Silt Loam	Severe	Severe	Severe	Severe	Moderate

2. If the Soil survey indicates either "severe" or "moderate" suitability for the proposed types of construction, a geotechnical and hydrological analysis based on one test per 3.5 acres of project area must be provided (per Town Board resolution, 3/17/03, amended 6/16/03).

   x Geotechnical report attached _____ Not applicable

   [Note: Three copies of the Geotechnical Report prepared by Glynn Geotechnical Engineering dated February 11, 2004 have been submitted to the Planning Department].

3. Is your property located: On Youngs Road between Dodge and Klein Roads? ☐ Yes x No
   On Wehrle Dr. between Spindrift Dr. and Oakwood Rd? ☐ Yes x No

   If so, the property may be within an area of the Town that is affected by a moratorium on connections to the sanitary sewer system.

4. Are there alternative locations on the site for this project? ☐ Yes x No

5. Location and size of real property owned by petitioner within one (1) mile of subject proposal:

   Not Applicable.

6. Are you aware of current or future plans or intentions by others in the Town of Amherst to develop property within 1000± ft. of the present project request: ☐ Yes ☒ No
   Describe: Not Applicable.

   (Potential environmental impacts from adjacent or nearby projects undergoing the approval process will receive a coordinated environmental review to determine cumulative effects on common receivers (e.g. traffic and drainage corridors) and other relevant environmental concerns.)

7. Maximum number of vehicular trips to be generated per peak hour upon completion of project 269
   Source: Traffic Impact Study prepared by SRF Associates dated March 21, 2022.

8. Will blasting occur during construction? ☐ Yes ☒ No

9. Does the project propose to connect and be tributary to the public sanitary sewer system? ☒ Yes ☐ No

10. Proposed net additional gallons per day (gpd) of sanitary sewer discharge upon completion of project:
    110,000 gpd average flow 440,000 gpd peak flow.

    (Average flows of 2,500 gpd or greater will require an Engineer's Report that includes a detailed downstream sewer capacity analysis and the identification of and commitment to required I/I offset work during peak wastewater flow conditions.)

11. Based on the Town's *2011 Reconnaissance Level Survey of Historic Resources,* is your property 'blue-rated' for historic significance? ☐ Yes ☒ No

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Exhibit 3 – Legal Description of Property to be Rezoned from RD to CTR-5 and CTR-8

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

EXHIBIT 3 OF REZONING APPLICATION

LEGAL DESCRIPTION OF PROPERTY TO BE REZONED FROM RESEARCH DEVELOPMENT DISTRICT ("RD") TO CTR CENTER EIGHT ("CTR-8") AND CTR CENTER FIVE ("CTR-5")

1400-1404 SWEET HOME ROAD [RD TO CTR-8]:

All that certain Piece or Parcel of Land, situate, lying and being in the Town of Amherst, County of Erie and State of New York, being Part of Lot 79, Township 12, Range 7 of the Holland Land Company's Survey, and being more particularly bounded and described as follows:

Commencing at a point in the east line of said Lot No. 79, 174.00 feet south of the northeast corner of said Lot No. 79, said point also being the southeast corner of Liber 2713 of Deeds at page 120, said east line also being the center line of Sweet Home Road (width varies, originally 66 feet wide); thence westerly along a line parallel to the north line of said Lot No. 79 and bearing S 89° 38' 35" W, 80.00 feet to a point in the west line of lands acquired by the New York State Department of Transportation for Sweet Home Road S.H. No. 9409, Map No. 72, Parcel No. 75 the point or place of beginning; thence southerly along the west line of said Parcel No. 75 and bearing of S 00° 00' 20" W, 297.93 feet to a point; thence southwesterly along the west line of said parcel No. 75 and bearing S 47° 59' 05" W, 33.65 feet to a point in the north line of Rensch Road (49.5 feet wide); thence westerly along the north line of said Rensch Road and bearing S 88° 14' 38" W, 401.68 feet to the west line of deed recorded in the Erie County Clerk's Office on March 3, 2017 in Liber 11310 of Deeds at page 1116; thence northerly along a line parallel to the east line of said Lot No. 79 and bearing N 00° 00' 20" E, 330.11 feet to a point; thence easterly along a line parallel to the north line of said Lot No. 79 and bearing N 89° 38' 35" E, 426.50 feet more or less to the point or place of beginning and containing 3.175 Acres, more or less.

Excepting therefrom, that portion of premises acquired by the People of the State of New York by Notice of Appropriation dated May 20, 2005, recorded September 26, 2005 in Liber 11101 of Deeds, page 8475.

1408, 1412 and 1416 SWEET HOME ROAD [RD TO CTR-5]:

All that certain Piece or Parcel of Land, situate, lying and being in the Town of Amherst, County of Erie and State of New York, being Part of Lot 79, Township 12, Range 7 of the Holland Land Company's Survey, and being more particularly bounded and described as follows:

Commencing at a point in the east line of said Lot 79, 174.00 feet south of the northeast corner of said Lot 79, said point also being the southeast corner of Liber 2713 of deeds at page 120, said east line also being the centerline of Sweet Home Road (width varies, originally 66 feet wide); Thence westerly along a line parallel to the north line of said Lot 79 and bearing S 89° 38' 35" W, 80.00 feet to a point in the west line of lands acquired by the New York State Department of Transportation for Sweet Home Road S.H. No. 9409, Map No. 72, Parcel No. 75; Thence southerly along the west line of said Parcel No. 75 and bearing S 00° 00' 20" W, 297.93 feet to a point; Thence southwesterly along the west line of said Parcel No. 75 and bearing S 47° 59' 05" W, 33.65

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feet to a point in the north line of Rensch Road (49.50 feet wide); Thence westerly along the north line of said Rensch Road and bearing S 88° 14' 38" W, 401.68 feet to the principal point of beginning; Thence continuing westerly along the north line of said Rensch Road and bearing S 88° 14' 38" W, 370.64 feet to a point; Thence northerly along a line bearing N 00° 55' 05" E, 510.78 feet to a point in the north line of said Lot 79; Thence easterly along the north line of said Lot 79 and bearing N 89° 38' 35" E, 362.34 feet to a point; Thence southerly along a line parallel to the east line of said Lot 79 and bearing S 00° 00' 20" W, 501.61 feet to the point or place of beginning and containing 4.257 Acres, more or less.

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Exhibit 4 – Reduced Size Copy of Survey of Project Site

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

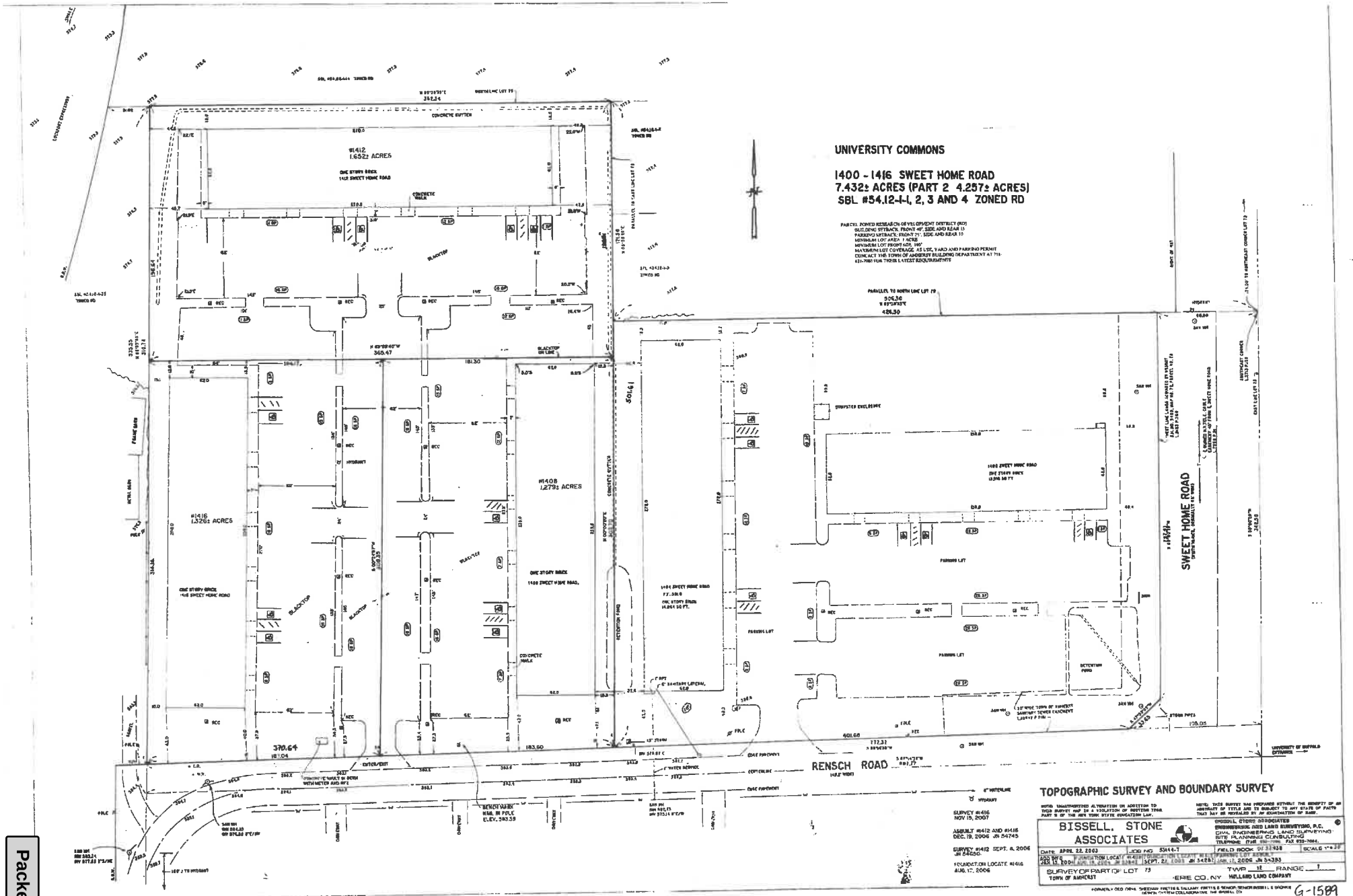
UNIVERSITY COMMONS
1400 - 1416 SWEET HOME ROAD
7.432± ACRES (PART 2 4.257± ACRES)
SBL #54.12-1-1, 2, 3 AND 4 ZONED RD
#1412
1.652± ACRES
#1416
1.326± ACRES
#1408
1.279± ACRES
SWEET HOME ROAD
RENSCH ROAD
TOPOGRAPHIC SURVEY AND BOUNDARY SURVEY
BISSELL, STONE ASSOCIATES
SURVEY OF PART OF LOT 75
TOWN OF AMHERST
ERIE CO., NY
HOLLAND LAND COMPANY
G-1589

Exhibit 5 – Responses to Questions 11A & 11B of the Rezoning Application

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

EXHIBIT 5

RESPONSES TO QUESTION 11 OF REZONING APPLICATION REZONING OF 1400-1404 AND 1408-1416 SWEET HOME ROAD FROM RD TO CTR-5 AND CTR-8

Question 11(A): **Description of the character of the proposed development:**

Response to Question 11(A): The proposed mixed-use project will be upscale in character and will feature an eight-story mixed use building along the Sweet Home Road frontage of the Project Site and two five-story buildings on the remainder of the Project Site. The existing office buildings located on the Project Site would be demolished in connection with the mixed-use redevelopment project. The proposed mixed-use redevelopment project requires the zoning classification of the Project Site to be amended from Research Development District ("RD") to CTR-8 Center 8 District ("CTR-8") and CTR-5 Center 5 District ("CTR-5").

The conceptual layout of the proposed mixed-use project is depicted on the full size Concept Site Plan [Drawing C-100] prepared by Carmina Wood Morris P.C. attached to this Rezoning Application. A reduced size copy of the Concept Site Plan is also provided at **Exhibit "7"**. It is important to mention that the layout of the proposed project as depicted on the Concept Site Plan provided is not meant to represent the final layout of the proposed mixed-use redevelopment project since modifications may be necessary based on the project review process and the preparation of fully engineered plans.

The proposed mixed-use redevelopment project will be consistent with the character of nearby parcels that have been rezoned by the Town during the past decade including the nearby student housing communities and mixed-use projects on properties on the west side of Sweet Home Road consisting of commercial space, apartments and hotels. Landscaping will be provided pursuant to a Landscaping Plan to be prepared by a licensed landscape architect during the site

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plan review stage of the project and the landscaping will feature numerous trees, bushes and shrubs.

Question 11(B)(1): Rationale for rezoning request: 1. What was this site chosen?

Response to Question 11(B)(1): The Project Site is an appropriate location for the proposed project given the character and scale of nearby land uses and the close proximity to the University of Buffalo North Campus. A primary reason the Project Site was selected for the proposed mixed-use project is that it is designated as "Suburban Corridor" per Figure 6-A of the Comprehensive Plan.

Question 11(B)(2): Why cannot land be used with the existing zoning?

Response to Question 11(B)(2): The Project Site is currently zoned Research and Development ("RD") and can continue to be utilized as an office park. The Applicant is requesting that the Project Site be rezoned to CTR-8 and CTR-5 to accommodate the proposed mixed-use project. Nearly all of the nearby parcels on both sides of Sweet Home Road and Rensch Road in close proximity to the Project Site were rezoned to RD by the Town of Amherst in 1976, at the time the Town adopted a new zoning code.

The planning objective at that time was to provide RD zoned land that would accommodate uses that would benefit from close proximity to the UB North Campus. The development of the Project Site and parcels in the surrounding vicinity for research and development purposes did not occur and as a result the zoning classification of most of the properties in the vicinity have been amended in the past approximately fifteen years to accommodate existing land uses such as a hotel being constructed on GB zoned property at 1265 Sweet Home Road, the mixed-use projects on Rensch Road and the Villas on Rensch student housing community, located on approximately

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twenty acres of property that was rezoned from RD to Multi Family Residential District Six ("MFR-6") by the Town Board in August of 2007.

The redevelopment of the Project Site for the higher intensity uses expressly permitted by the existing RD zoning classification would not be compatible with the existing character of the neighborhood. The existing RD zoning classification expressly allows large buildings to accommodate uses that involve high intensity commercial and industrial operations and that often involve 24/7 business hours as well high volume use of large tractor trailers. The expressly permitted uses of property zoned Research and Development ("RD") is set forth in Section 4-9-2A of the Zoning Code and includes intensive commercial facilities for the compounding, manufacturing and assembly of products such as automotive accessories, clothing and textiles, electronic equipment and appliances, furniture, medical and scientific equipment and supplies, pharmaceutical products as well as experimental research and testing facilities, warehouses and storage facilities and wholesale distribution facilities. A copy of Section 4-9 of the Zoning Code has been attached as **Exhibit "8"** of this Rezoning Application.

Question 11(B)(3): How will this rezoning impact surrounding properties?

Response to Question 11(B)(3): The proposed rezoning of the Project Site from Research and Development ("RD") to CTR-8 and CTR-5 will not result in any significant adverse impacts on surrounding properties. The proposed mixed-use project will be much more compatible with the existing land uses in the vicinity of the Project Site than the higher intensity uses expressly permitted by the existing long-standing RD zoning classification.

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Question 11(B)(4): How will this rezoning impact the school system?

Response to Question 11(B)(4): The proposed mixed use project will have a positive impact on the Sweet Home Central School District since the property taxes that will be generated on an annual basis will be significantly higher than the current property taxes. The proposed project will not result in any significant increased demand for educational services since the residential units are not likely to attract a substantial number of families with school age children.

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Exhibit 6 – Responses to Questions 16A, 16B, 16D & 16E of the Rezoning Application

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

EXHIBIT 6

RESPONSES TO QUESTION 16 OF REZONING APPLICATION REZONING OF 1400-1404 AND 1408-1416 SWEET HOME ROAD FROM RD TO CTR-5 AND CTR-8

Question 16(A)(1): **State in detail why the proposed zoning is consistent with the adopted Town of Amherst Bicentennial Comprehensive Plan. Cite specific sections, maps and/or figures in the plan that support the proposed zoning at this location.**

Response to Question 16(A)(1): The request to amend the zoning classification of 1400-1404 Sweet Home Road RD to CTR-8 and 1408-1416 Sweet Home Road from RD to CTR-5 (collectively the "***Project Site***") to accommodate the proposed mixed-use redevelopment project is consistent with the adopted Bicentennial Comprehensive Plan. The Town of Amherst adopted the Bicentennial Comprehensive Plan in January of 2007 after completing a lengthy planning process that included numerous public meetings and public hearings involving the Comprehensive Plan Advisory Committee, the Planning Board and the Town Board.[1] In December of 2020, the Town Board most recently adopted amendments to the Bicentennial Comprehensive Plan. The Comprehensive Plan is intended to guide future growth and redevelopment in the Town.

Figure 6 of the Bicentennial Comprehensive Plan is the Conceptual Land Use Plan and it depicts the Project Site as being as being appropriate for "Commercial/Mixed Use" uses. A copy of Figure 6 of the Comprehensive Plan is provided at **Exhibit "9"**. The Conceptual Land Use Plan is intended to communicate the overall direction and concept of future development in the Town

[1] A copy of the resolution adopted by the Town Board on January 2, 2007 for the purpose of adopting the Bicentennial Comprehensive Plan pursuant to Town Law Section 272-a is included at the beginning of the Comprehensive Plan. This resolution recites the lengthy planning history that incorporated numerous opportunities for public input as well as a coordinated environmental review pursuant to SEQRA that involved the preparation a Generic EIS and the issuance of a Findings Statement.

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of Amherst. Figure 6-A of the adopted Bicentennial Comprehensive Plan is the titled Commercial and Mixed-Use Designations and it depicts the Project Site as being designated as "Suburban Center". The Project Site is located within the University Place geographic location per Figure 6-A of the Comprehensive Plan. A copy of Figure 6 of the Comprehensive Plan is provided at **Exhibit "10"**.

Question 16(A)(2): **Cite all text, map, and/or figures that must be amended to support the proposed zoning at this location and provide detailed suggested amendments.**

Response to Question 16(A)(2): The proposed rezoning of the Project Site from RD to CTR-5 and CTR-8 to accommodate the proposed mixed-use redevelopment project does not require an amendment to the Bicentennial Comprehensive Plan.

Question 16(A)(3): **State why the proposed zoning is consistent with intent and objectives (Sec. 1-2-2) of the Zoning Ordinance:**

Response to Question 16(A)(3): Section 1-2-1 of the Zoning Code is titled "Purpose" and it states as follows:

> *"The purpose of this Zoning Ordinance and the intent of the legislative authority in its adoption is to promote the environment of the town and its public health, safety, convenience, comfort, prosperity and the general welfare by regulating the use of buildings, other structures and land for residences, open space, public facilities, business, services, industry or other purposes; by regulating and restricting the bulk, height, design, building coverage and location of structures; by regulating and limiting population density; and for the aforesaid purposes, to divide the land within the limits of the town into districts of such number and dimensions generally consistent with the policies of the Comprehensive Plan and to provide procedures for the administration and amendment of said Zoning Ordinance."*

The proposed rezoning of the Project Site RD to CTR-8 and CTR-5 to accommodate the proposed mixed-use redevelopment project is consistent with the "Purpose" of the Zoning Code.

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Section 1-2-2 of the Zoning Code sets forth the objectives of the Zoning Code. This section of the Zoning Code lists thirteen objectives that are discussed below as follows:

A. To protect the character and values of residential, institutional and public uses, business, commercial and manufacturing uses and to insure their orderly and beneficial development;

Response: The proposed rezoning of the Project Site from RD to CT5-5 and CTR-8 to accommodate the mixed-use redevelopment project will be consistent with the objective of protecting the character and value of existing land uses. The proposed rezoning will allow the Project Site to be utilized as a mixed-use project, which represents orderly and beneficial development.

B. To provide adequate open spaces for light, air and outdoor uses to include public, common and private open space areas;

Response: The proposed rezoning of the Project Site and the proposed mixed-use project will not be inconsistent with this objective.

C. To prevent overcrowding of land;

Response: The proposed mixed-use project will not result in the overcrowding of land. The project is consistent with the type of development designated as appropriate for the Project Site per Figure 6 and Figure 6-A of the adopted Comprehensive Plan.

D. To prevent excessive concentration of population and to prevent spare and uncoordinated development;

Response: The proposed rezoning of the Project Site will not result in excessive concentration of population and the mixed-use redevelopment project represents an example of coordinated development. The mixed-use redevelopment project will require Site Plan Approval from the Planning Board.

E. To regulate and control the location and spacing of buildings on the lot and in relation to the surrounding property generally consistent with the policies of the Comprehensive Plan.

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Response: The responses to the Questions in this **Exhibit "6"** of the Rezoning Application set forth the reasons the proposed rezoning is consistent with the policies of the Comprehensive Plan.

F. To protect persons and property from damage and injury due to fire or flood;

Response: The Site Plan Application review process will trigger the need for an Engineer's Report and SWPPP prepared by a licensed engineer to be prepared for review and approval by the Town's Engineering Department. The mixed-use redevelopment project to be located on the existing office park property will not increase the likelihood of damage and injury due to fire and flood. The proposed mixed-use redevelopment project will be constructed per the stringent requirements of the NYS Building Code including the fire safety standards contained therein.

G. To preserve and protect significant natural features and vegetation, thereby preventing ecological damage and visual blight which occur when those features or vegetation are eliminated or substantially altered to serve development purposes only.

Response: The proposed rezoning and the proposed mixed-use redevelopment project will not be inconsistent with this objective. There are not significant natural features located on the previously developed Project Site.

H. To assure that structure and land use arrangements are aesthetically harmonious with nearby areas and structures.

Response: The development of the Project Site in a manner consistent with the attached Concept Site Plan [Drawing C-100] will be aesthetically harmonious with nearby areas and structures. Conceptual color building renderings prepared by Brian Slevar, R.A. of Carmina Wood Morris DPC are attached as **Exhibit "11"**.

I. To regulate the location of buildings and intensity of uses in relation to streets according to plans so as to cause the least interference with and be damaged least by traffic movements and hence result in lessened street congestion and improved public safety.

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Response: The proposed mixed-use project will have two (2) driveway connections onto Rensch Road as depicted on the Concept Site Plan [Drawing C-100].

J. To establish zoning patterns that insure economical extensions for sewers, water supply waste disposal and other public utilities, as well as development of recreation, schools and other public facilities;

Response: The Project Site has access to sanitary sewer and water lines as well as necessary public utilities to service the proposed mixed-use redevelopment project.

K. To guide the future development of the town so as to being the gradual conformity of land, structures and uses generally consistent with the policies of the Comprehensive Plan.

Response: The proposed rezoning of the Project Site from RD to CTR-5 and CTR-8 is consistent with this objective since the infill mixed-use redevelopment project is consistent with the policies contained in the Comprehensive Plan.

L. To accomplish the specific intents and goals set forth in the introduction to the respective sections.

Response: The proposed rezoning of the Project Site will be consistent with this objective.

M. To protect the community from visual pollution resulting from the unregulated use of signs and other advertising devices.

Response: The proposed rezoning and the proposed mixed-use redevelopment project will not be inconsistent with this objective.

Question 16(C): Compatibility with the present zoning and conforming uses of nearby property and with the character of the neighborhood:

Response to Question 16(C): The proposed rezoning of the Project Site from RD to CTR-5 and CTR-8 is compatible with the present zoning and conforming uses of nearby properties and the character of the neighborhood. The Project Site is currently zoned RD which would allow the Project Site

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to be redeveloped for intensive uses permitted per Section 4-9 of the Zoning Code. A copy of Section 4-9 of the Zoning Code is provided at **Exhibit "8"**.

Question 16(D): **Suitability of the subject property for uses permitted by the current versus the proposed district:**

Response to Question 16(D): The Project Site is much more suitable for uses permitted by the proposed CTR-5 and CTR-8 zoning classifications than the existing RD zoning classification.

Question 16(E): **Whether the proposed change tends to improve the balance of uses, or meets a specific demand in the Town:**

Response to Question 16(D): The proposed change in the zoning classification of the Project Site from RD to CTR-5 and CTR-8 to accommodate the proposed mixed-use redevelopment project will have positive impacts on the balance of uses in the Town by providing 1st floor commercial space and apartments for lease at an infill location in a portion of the Town in close proximity to the UB North Campus that has been designated as appropriate for mixed-use infill redevelopment as depicted on the Concept Site Plan [Drawing C-100].

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Exhibit 7 – Reduced Size Copy of the Concept Site Plan [Drawing C-100] as Prepared by Carmina Wood Morris DPC
[Note: Full Size Copy of the Concept Site Plan is also attached]

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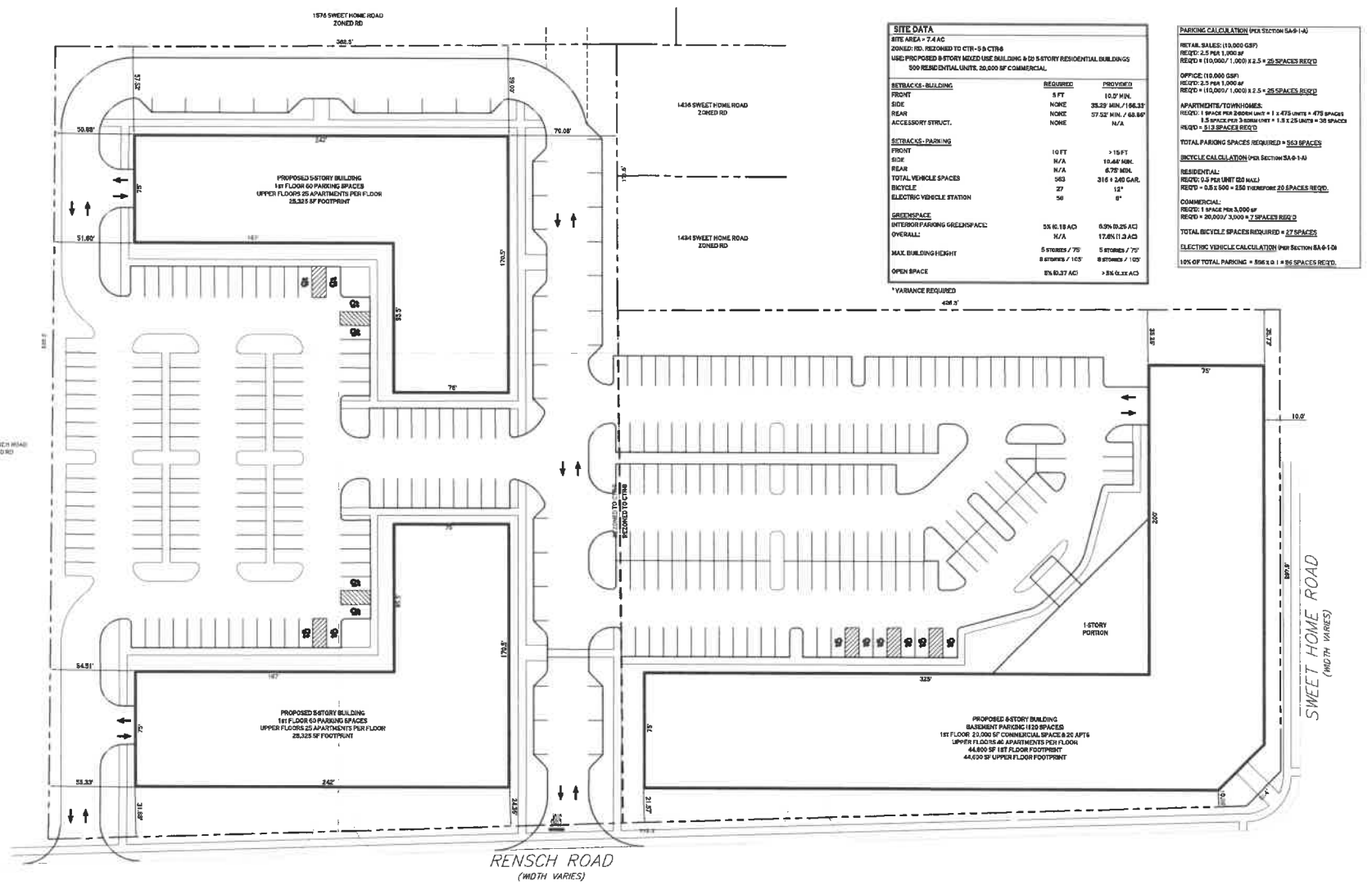

SITE PLAN
SCALE: 1"=30'

SITE DATA

SITE AREA = 7.4 AC
ZONED: RD, REZONED TO CTR-5 & CTR-6
USE: PROPOSED 6-STORY MIXED USE BUILDING & (2) 5-STORY RESIDENTIAL BUILDINGS
500 RESIDENTIAL UNITS, 20,000 SF COMMERCIAL

SETBACKS - BUILDING	REQUIRED	PROVIDED
FRONT	5 FT	10.5' MIN.
SIDE	NONE	35.29' MIN./166.33'
REAR	NONE	57.53' MIN. / 68.86'
ACCESSORY STRUCT.	NONE	N/A
SETBACKS - PARKING		
FRONT	10 FT	> 15 FT
SIDE	N/A	10.46' MIN.
REAR	N/A	6.75' MIN.
TOTAL VEHICLE SPACES	563	316 + 240 GAR.
BICYCLE	27	12*
ELECTRIC VEHICLE STATION	56	8*
GREENSPACE		
INTERIOR PARKING GREENSPACE:	5% (0.18 AC)	6.9% (0.25 AC)
OVERALL:	N/A	17.6% (1.3 AC)
MAX. BUILDING HEIGHT	5 STORIES / 75' 6 STORIES / 105'	5 STORIES / 75' 6 STORIES / 105'
OPEN SPACE	5% (0.37 AC)	> 5% (1.xx AC)

* VARIANCE REQUIRED

PARKING CALCULATION (PER SECTION 5A-9-1-A)

RETAIL SALES: (10,000 GSF)
REQ'D: 2.5 PER 1,000 sf
REQ'D = (10,000 / 1,000) X 2.5 = 25 SPACES REQ'D

OFFICE: (10,000 GSF)
REQ'D: 2.5 PER 1,000 sf
REQ'D = (10,000 / 1,000) X 2.5 = 25 SPACES REQ'D

APARTMENTS/TOWNHOMES:
REQ'D: 1 SPACE PER 2-BDRM UNIT = 1 x 475 UNITS = 475 SPACES
1.5 SPACE PER 3-BDRM UNIT = 1.5 x 25 UNITS = 38 SPACES
REQ'D = 513 SPACES REQ'D

TOTAL PARKING SPACES REQUIRED = 563 SPACES

BICYCLE CALCULATION (PER SECTION 5A-9-1-A)

RESIDENTIAL:
REQ'D: 0.5 PER UNIT (25 MAX.)
REQ'D = 0.5 x 500 = 250 THEREFORE 25 SPACES REQ'D.

COMMERCIAL:
REQ'D: 1 SPACE PER 3,000 sf
REQ'D = 20,000 / 3,000 = 7 SPACES REQ'D

TOTAL BICYCLE SPACES REQUIRED = 27 SPACES

ELECTRIC VEHICLE CALCULATION (PER SECTION 5A-9-1-D)

10% OF TOTAL PARKING = 556 x 0.1 = 56 SPACES REQ'D.

SITE LEGEND

- PROPERTY LINE
- PROPOSED CONCRETE CURB
- PROPOSED CONCRETE SIDEWALK
- PROPOSED SIGN
- PROPOSED PARKING NUMBER (27)
- PROPOSED LIGHT POLE & FIXTURE

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

30' 30 0 30 60Ft.

Carmina Wood Morris DPC
467 Main Street - Suite 600
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:
No. Description Date

PROJECT NAME:
New Construction
Prop. Mixed Use Development
1400 - 1416 Sweet Home Road
Amherst, New York

Date: 3/15/22
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Concept Site Plan

DRAWING NO.
C-100
Project no.: 21.008

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Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Exhibit 8: Copy of Section 4-9 of the Town of Amherst Zoning Code [Titled "Research & Development District (RD)

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

§ 4-9. Research and Development District (RD)

4-9-1. **Purpose.** To provide areas within the Town for the location of research and development, related production activities, light manufacturing, offices, and related training schools on sufficient land to permit efficient development. Such districts shall be designed and located in such a way that they shall neither encroach upon surrounding uses nor shall surrounding uses interfere with the efficient development of these activities. The RD district is designed to encourage the development of a balanced employment mix within the Town and improve the Town's tax base while providing sufficient educational opportunities to contribute to the training of the workforce and thereby meet the employment needs of businesses locating in the Town.

4-9-2. **Principal and Special Uses.**

A. **Permitted Uses and Structures.**

RD	Permitted	Special Use	Standards
OPEN USES			
No open uses allowed			
RESIDENTIAL USES			
No residential uses allowed			
PUBLIC AND CIVIC USES			
Day-care center	✓		§ 6-3-2
Minor utilities	✓		
Place of worship	✓		§ 6-3-3
Public utility service structure or facility		✓	§ 6-3-4
Public works construction yard **[Added 12-7-2009 by L.L. No. 19-2009]**	✓		§ 6-3-5
Telecommunication facility		✓	§ 6-7
COMMERCIAL			

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

RD	Permitted	Special Use	Standards
Ambulance Service **[Added 2-24-2014 by L.L. No. 3-2014]**	✓		
Bank	✓		
Dog day care facility **[Added 10-17-2011 by L.L. No. 25-2011]**	✓		§ 6-4-13 **[Amended 11-5-2012 by L.L. No. 17-2012]**
Medical laboratory testing service	✓		
Office	✓		
Training school such as technical, trade, vocational or business	✓		
Truck service, wash, and repair **[Added 8-9-2021 by L.L. No. 11-2021]**	✓		§ 6-4-14
INDUSTRIAL			
Compounding, manufacturing and assembly of: Automobile and boating accessories from previously prepared materials Clothing or other textile products Electrical and electronic equipment and appliances Food and beverage products Household items, furniture Musical, scientific, medical, dental or photographic instruments, equipment or supplies Office equipment Panels, sheets, tubes or rods	✓		

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

RD	Permitted	Special Use	Standards
Pharmaceutical products, cosmetics or toiletries Printing, publishing and engraving Recreation equipment or toys			
Experimental, research and testing facility	✓		
Ground-mounted solar energy systems, Tier III **[Added 12-11-2017 by L.L. No. 24-2017]**		✓	§ 6-10
Ground-mounted solar energy systems, Tier II **[Added 12-11-2017 by L.L. No. 24-2017]**	✓		§ 6-10
Research development facility	✓		
Tier I experimental pilot plant operation **[Amended 12-11-2017 by L.L. No. 24-2017]**	✓		
Warehousing and storage service	✓		
Wholesale distribution facility	✓		

B. **Dimensional Standards.**

For parcels 30 acres in size or more as of (effective date), the Planned Unit Development Process is required. See § 6-9. **[Added 5-20-2013 by L.L. No. 8-2013; amended 11-3-2014 by L.L. No. 39-2014]**

RD Principal & Accessory Use/ Structure Dimensional Standards		**Vehicle Use Area**
Min. district area	10 ac	
Min. lot area	1 ac	
Min. lot width	35 ft	
Min. front yard		

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

RD Principal & Accessory Use/ Structure Dimensional Standards		Vehicle Use Area
Height of structure for first 35 ft.	20 ft	25 ft*
Height of structure for any portion of building above 35 ft.	30 ft	25 ft*
Min. rear yard (abutting residential**/nonresidential)		
Height of structure up to 30 ft	See § 2-5-4B(3)/15 ft	25 ft* / 10 ft*
Height of structure 30 ft or more	See § 2-5-4B(3)/25 ft	25 ft* / 10 ft*
Min. side yard (abutting residential**/nonresidential)		
Height of structure up to 30 ft	See § 2-5-4B(3)/ 15 ft	25 ft* / 10 ft*
Height of structure 30 ft or more	See § 2-5-4B(3)/ 25 ft	25 ft* / 10 ft*
Max. height	65 ft	
Max. building coverage	None	
Min. interior building separation	30 ft	

*	The entire area must be landscaped.
**	R-R, S-A, R-1, R-2, R-3, CR-3A, TR-3, R-4, MFR-4A, MFR-5, MFR-6, MFR-7, PRD, PDD, PRD, NCD[1]

4-9-3. **Accessory Uses and Structures.**

A. **Permitted Accessory Uses and Structures.** The following accessory uses and structures incidental to any permitted principal use are allowed subject to the requirements of § 6-8, Accessory Uses or Part 7, General Development Standards.

RD Permitted Accessory Uses and Structures	Standards
Convenience Retail Service **[Added 12-14-2020 by L.L. No. 20-2020]**	§ 6-8-4
Day-care center	
Landscaping	§ 7-2

1. **Editor's Note: The diagram which immediately followed this table was repealed 2-8-2016 by L.L. No. 2-2016.**

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

RD Permitted Accessory Uses and Structures	Standards
Off-street parking, loading, and stacking	§ 7-1
Production operation accessory to a research or testing operation	
Restaurant without drive-through **[Added 12-14-2020 by L.L. No. 20-2020]**	§ 6-8-10
Retail sale of products assembled or stored on-site	§ 6-8-11
Solar energy systems **[Added 12-11-2017 by L.L. No. 24-2017]**	§ 6-10
Signs	§ 7-8
Small wind energy system **[Added 8-17-2009 by L.L. No. 12-2009]**	§ 6-8-14
Other uses and structures customarily incidental to the principal use	

B. **Dimensional Standards.** The dimensional standards for an accessory use or structure shall be the same as those for the principal use in § 4-9-2B.

4-9-4. **General Development Standards.**

A. Interior side or rear yards separating parking, loading and stacking area from lot lines are not required for unified developments.

B. Development in the RD district shall also comply with the requirements referenced in the table below.

RD General Development Standards	
Off-Street Parking, Loading and Stacking	§ 7-1
Landscaping, Buffers and Screening	§ 7-2
Site Lighting	§ 7-3
Outdoor Storage and Display	§ 7-4
Fences and Walls	§ 7-5
Access and Circulation	§ 7-6
Provisions for Flood Hazard Reduction	§ 7-7
Sign Regulations	§ 7-8
Performance Standards	§ 7-9
Bulk Storage of Combustible or Flammable Liquids	§ 7-10

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Exhibit 9 – Color Copy of Figure 6 of the Bicentennial Comprehensive Plan

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Town of Amherst
Bicentennial
Comprehensive Plan

The Conceptual Land Use Plan is intended to communicate the overall direction and concept of future development. While it is not a zoning map and does not show the existing or proposed use of individual parcels, it is intended to show land use relationships, provide a generalized guide for future development, and establish a context for detailed area planning and design.

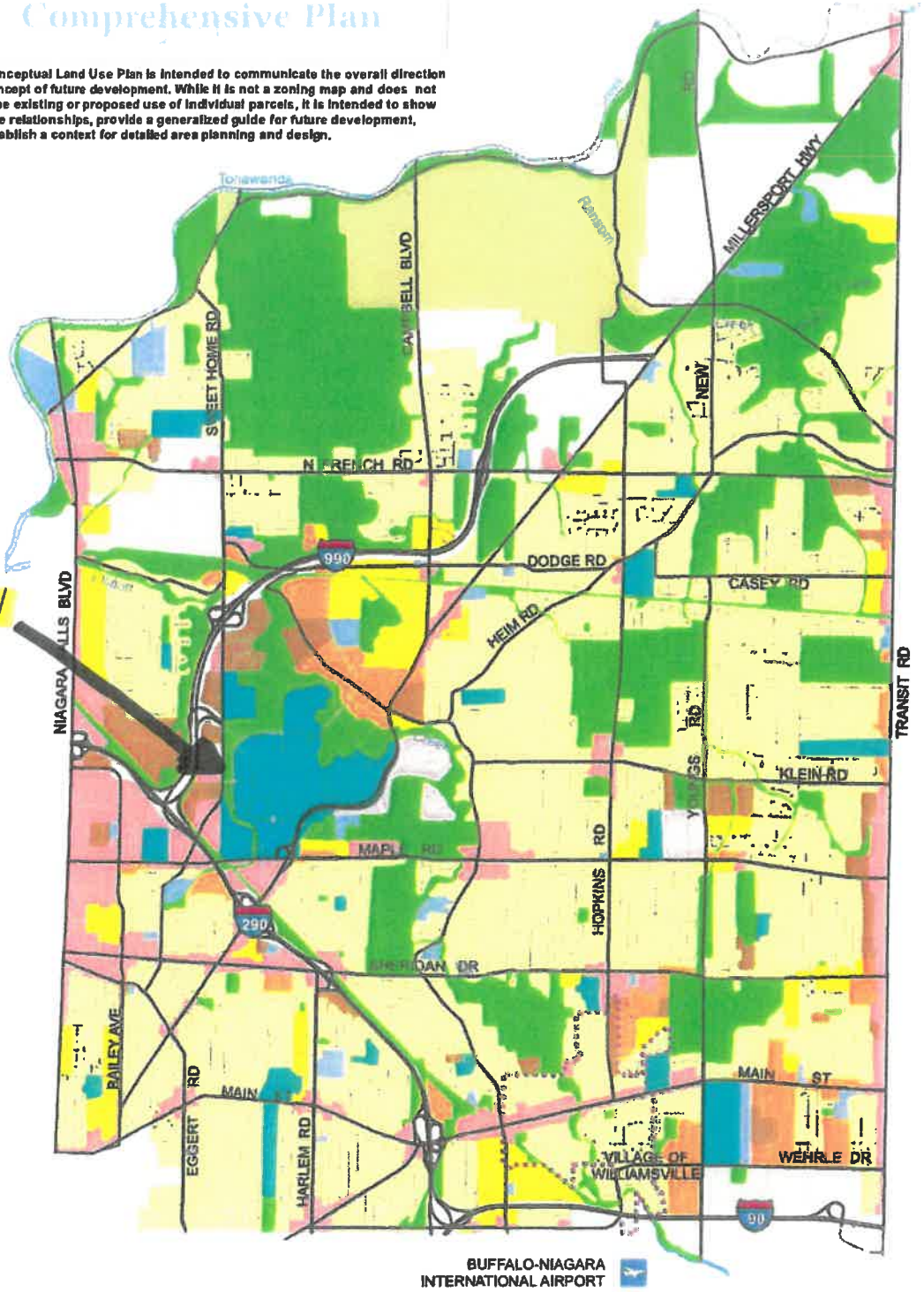


FIGURE 6

Conceptual Land Use Plan

Rural Residential
Single Family Residential
Mixed Residential
Medium Residential
Commercial / Mixed Use*
Special Use Center
Commercial - Office
Industrial - Office
Community Facilities
Educational Campus
Recreation, Open Space & Greenways
Agriculture
Transportation
Surface Water
Village of Williamsville Boundary

* See Map Figure 5-A for Additional Designations

SOURCE NOTES:

Original Source Data Provided by the Town of Amherst Information Technology Department, URS Corporation and Wallace Roberts & Todd, LLC

Map Compiled by the Town of Amherst Planning Department

Date: December 2020

N

0 0.25 0.5 0.75 1 1.25
Miles

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

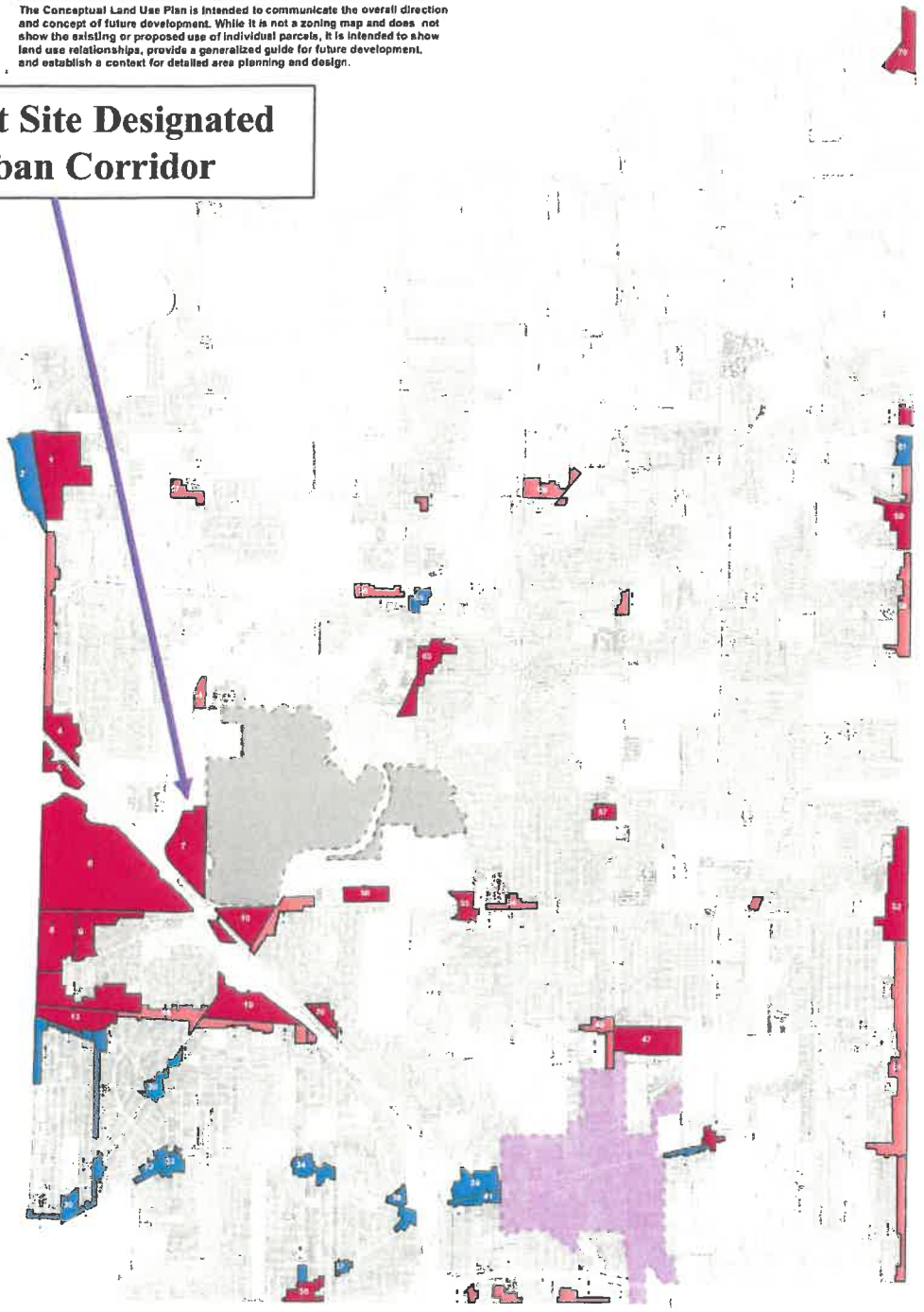
Exhibit 10 – Figure 6-A of the Comprehensive Plan

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Town of Amherst
Bicentennial
Comprehensive Plan

The Conceptual Land Use Plan is intended to communicate the overall direction and concept of future development. While it is not a zoning map and does not show the existing or proposed use of individual parcels, it is intended to show land use relationships, provide a generalized guide for future development, and establish a context for detailed area planning and design.

Project Site Designated Suburban Corridor



Wegmans (NFB)
Walgreens (NFB)
NFB / Ellicott Creek Strip
Home Depot (NFB)
Inkeepers Lane
Consumer Square / Ridge Lea
University Place
Boulevard Mall
Wegmans (Alberta)
Golden Triangle
Maple / Amherst Manor
Walmart (Sheridan)
Northtown Plaza
NFB Strip
Eggert Strip
Eggert / Bailey
Bailey Strip
Sheridan / Millersport Strip
Northtown Auto (Sheridan)
Sheridan / Sunrise - North Side
Sheridan / Sunrise - South Side
Sheridan / Harlem - West Side
Sheridan / Harlem - East Side
Sheridan / Getzville Strip
Millersport / Arcade
Six Corners
Bailey / Grover Cleveland
Bailey Live-Work
Main / Bailey
University Plaza
Kenmore Avenue
Eggertsville (Main / Eggert - West Side)
Eggertsville (Main / Eggert - East Side)
Snyder (Main / Harlem)
Harlem Strip
Harlem / Kensington
Kensington / Saratoga
Main / Kensington
West of Village - North of Main
West of Village - South of Main (West Side)
West of Village - South of Main (East Side)
Wehrle / South Forest
Wehrle / South Union
Wehrle / Cayuga
Sheridan / Hopkins
Evans Strip
Williamsville Place
Main Strip
Main / Youngs
Transit / Wehrle
Transit from Main to Maple
Transit / Maple
Maple / Ayer
Maple Strip
Maple / North Forest
Gun Club
Clearfield Plaza
Transit / Casey
Transit / North French
Transit / Dodge
Swormville
Hopkins / Dodge
Getzville Plaza
Sweet Home / Skinnersville
Campbell / Dodge
Dodge Strip
Sweet Home / North French
Campbell / North French
Crosspointe
Transit / Millersport
Transit Strip

FIGURE 6-A

Commercial and Mixed-Use Designations

- Suburban Center
- Suburban Corridor
- Traditional Areas
- Village of Williamsville
- University at Buffalo

SOURCE NOTES:

Original Source Data Provided by the Town of Amherst Information Technology Department, URS Corporation and Wallace Roberts & Todd, LLC

Map Compiled by the Town of Amherst Planning Department

Date: December 2020

0 0.2 0.4 0.6 0.8 1
Miles

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Exhibit 11: Color Conceptual Building Renderings Prepared by Brian Slevar, R.A. of Carmina Wood Morris DPC

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)





March 21, 2022

Scott A. Marshall, Principal Planner
Town of Amherst Planning Department
5583 Main Street
Williamsville, New York 14221

Re: Application to Amend the Zoning Classification of 1400-1404 Sweet Home Road from RD to CTR-8 and 1408-1416 Sweet Home Road from RD to CTR-5 & Supporting Documentation – Town of Amherst
Applicant/Project Sponsor: North Forest Development LLC c/o Roy Jordan
File No. 10208.1

Dear Scott:

This letter and the enclosed documentation is being submitted on behalf of North Forest Development LLC ("Project Sponsor") in connection with its request to amend the zoning classifications of 1400-1404 Sweet Home Road from RD to CTR-8 and 1408-1416 Sweet Home Road from RD to CTR-5 to accommodate a mixed-use redevelopment project (collectively the "Project Site"). Enclosed please find the following:

1. Original and thirteen (13) copies of the Rezoning Application and supporting documentation consisting of Exhibits "1" to "11". The Exhibits to the Rezoning Application consist of the following:

   - **Exhibit 1:** Authorization Letter signed by Roy Jordan dated March 15, 2022;
   - **Exhibit 2:** Part 1 of the Full Environmental Assessment Form prepared pursuant to the State Environmental Quality Review Act ("SEQRA");
   - **Exhibit 3**: Legal description of property to be rezoned from RD to CTR-5 and CTR-8;
   - **Exhibit 4:** Reduced size copy of the Survey of Project Site [Note: Full size copy of the Survey is also attached];
   - **Exhibit 5:** Responses to Questions 11A & 11B of the Rezoning Application;
   - **Exhibit 6:** Responses to Questions 16A, 16B, 16D & 16E of the Rezoning Application;
   - **Exhibit 7:** Reduced size copy of the Concept Site Plan [Drawing C-100] as prepared by Carmina Wood Morris DPC [Note: Full size copy of the Concept Plan is also attached];
   - **Exhibit 8:** Copy of Section 4-9 of the Zoning Code [titled "Research and Development District (RD)"];

HOPKINS SORGI & MCCARTHY PLLC
Attorneys at Law
5500 Main Street, Suite 343 • Williamsville, New York 14221
Direct: 716-510-4338 • E-mail: shopkins@hsr-legal.com • www.hsr-legal.com

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

- **Exhibit 9:** Color copy of Figure 6 of the Bicentennial Comprehensive Plan;
- **Exhibit 10:** Color copy of Figure 6-A of the Bicentennial Comprehensive Plan; and
- **Exhibit 11:** Color Conceptual Building Renderings as prepared by Brian Slevar, AIA of Carmina Wood Morris DPC;

2. Three (3) copies of the Geotechnical Engineering Report prepared by Glynn Geotechnical Engineering;

3. Four (4) copies of the Traffic Impact Study prepared by SRF Associates;

4. One (1) copy of the Draft Local Law

I have also enclosed a check for the filing fee. The Project Sponsor is requesting that the Planning Board hold a public hearing regarding the requested rezoning of the Project Site from RD to CTR-5 and CTR-8 during its meeting to be on **Thursday, May 19th at 6:30 p.m.**

It would be appreciated if the Planning Department would provide a copy the enclosed Application and supporting documentation for the proposed mixed-use redevelopment project to the Erie County Division of Environment and Planning ("ECDEP") for the purpose of complying with the referral requirement pursuant to NYS General Municipal Law §239-m since Sweet Home Road is a NYS Highway.

The proposed mixed-use redevelopment project is a Type I action pursuant to SEQRA since it consists of more than 250 residential units and as such it requires the Town to conduct a coordinated environmental review.

Please provide a copy of the lead agency solicitation notice to be issued pursuant to SEQRA along with copies of all correspondence, departmental reviews, etc. received by the Planning Department to my office as well as the following individuals involved in the proposed mixed-use redevelopment project:

1. Roy Jordan
   North Forest Development LLC
   2829 Wehrle Drive, Suite 1
   Williamsville, NY 14221

2. Christopher Wood, P.E.
   Carmina Wood Morris DPC
   487 Main Street, Suite 500
   Buffalo, NY 14203

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

3. Brian J. Slevar, AIA, NCARB
Carmina Wood Morris DPC
487 Main Street, Suite 500
Buffalo, NY 14203

If you have any questions regarding the enclosed Rezoning Application and supporting documentation or the proposed mixed-use redevelopment project, please feel free to contact me at 510-4338 or via e-mail at shopkins@hsmlegal.com.

Thank you for your anticipated cooperation.

Sincerely,

HOPKINS SORGI & MCCARTHY PLLC

Sean W. Hopkins, Esq.

Enc.
cc: Roy Jordan, North Forest Development LLC [Via e-mail and mail]
Christopher Wood, P.E., Carmina Wood Morris DPC [Via e-mail]
Brian J. Slevar, AIA, NCARB, Carmina Wood Morris DPC [Via e-mail]

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

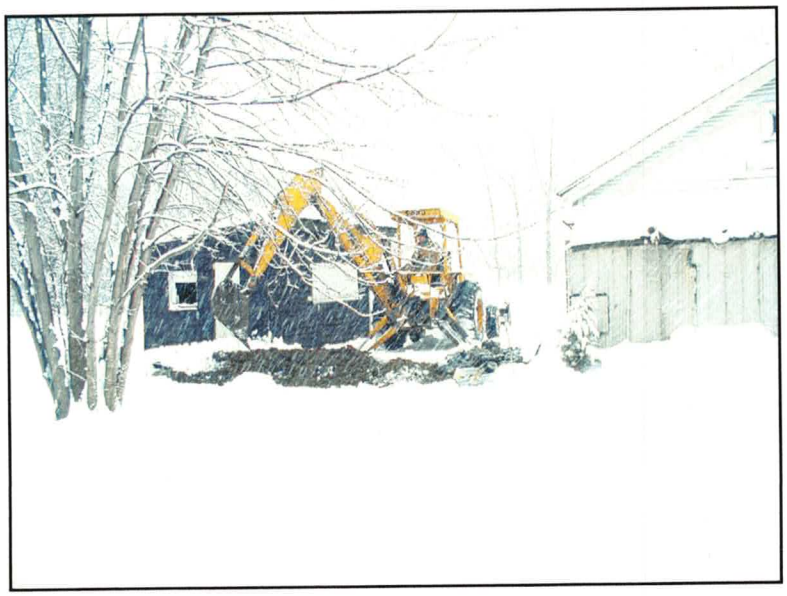
4180/4200 Rensch Rd
Amherst, New York

Geotechnical Engineering Report

GGE 04-5002

Prepared for:
North Forest Development, LLC
8201 Main Street, Suite 12
Williamsville, New York 14221

Prepared by:
Glynn Geotechnical Engineering
415 South Transit Street
Lockport, New York 14094





February 11, 2004

Civil • Structural • Geotechnical • Materials Testing • Consulting

GGE
a member of the GLYNN GROUP

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

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- B. Pavement and Slabs on Grade
- C. Excavation and Backfill
- D. Mitigation of Expansive Soils
- E. Mitigation of the Effects of Liquefaction
- F. Expected Differential and Total Settlement
- G. Varying Soil Strength
- H. Site Class Definition
- I. General Recommendations

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- A Soil Investigation Logs
- B Project Location Plan
- C Test Pit Location Plan
- D Soil Survey Plan
- E Floodplain and Wetland Plan
- F Laboratory Data

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Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

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I. INTRODUCTION

This report provides subsurface investigation data and foundation recommendations for the proposed building at 4180/4200 Rensch Road in the Town of Amherst, New York. Specifically, Glynn Geotechnical Engineering (GGE) has provided the following scope of services:

1. Observed the excavation of three test pits by North Forest Development.
2. Performed cone penetrometer testing at the proposed foundation subgrade to estimate an allowable bearing capacity.
3. Retrieved and classified soil samples in accordance with the Unified Soils Classification System (USCS) and prepared subsurface logs.
4. Provided laboratory testing on select samples to establish specific engineering properties and verify classifications.
5. Prepared a geotechnical report based on our findings.

This geotechnical study has been performed in accordance with a written January 13, 2004 GGE proposal and subsequent January 20, 2004 acceptance by North Forest Development. GGE was provided with a site plan from North Forest Development to aid in our efforts.

Project efforts by GGE included test pits, penetrometer testing, laboratory testing, USCS classification, site class definition and the preparation of this report. The scope of this report specifically excludes any review of former site use, in particular, environmental or pollution related concerns.

II. PROJECT BACKGROUND

The project site is located on Rensch Road in the Town of Amherst, New York, specifically at addresses 4180 and 4200. The site is relatively flat and currently occupied by two houses on the southern portion of the property and dense forest on the northern portion of the property. The existing houses will be demolished prior to construction of the proposed development. As seen on the Floodplain and Wetland Location Plan located in Appendix E, the site is not located within a floodplain or within a state wetland.

The development is to consist of three office buildings with associated parking areas. To accommodate for the low site elevation and to provide the necessary grades for sanitary and storm sewers, North Forest Development plans to raise the existing site elevation by 2 to 3 feet.

III. SITE GEOLOGY

The underlying geological conditions at the site are the result of the last glacial advance of the Pleistocene Epoch, known as the Wisconsinan Glacial Stage. As the glaciers transgressed across the Western New York terrain, they carved and crushed the underlying existing soil and rock to form glacial till.

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

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The surficial geology of the Rensch Road site is characterized by a thin stratum of clayey lake sediment overlying glacial till and shallow bedrock. The bedrock consists of shale, dolostone and gypsum of the Late Silurian Salina Group.

The Erie County Soil Survey identifies the site soils as belonging to the Churchville silt loam (CoA). This soil is deep and somewhat poorly drained, consisting of a thin mantle of clayey lake sediment underlain by glacial till. The soil is characterized by a slow permeability and a perched seasonal water table in the upper subsoil from December through May, which may lead to ponding in some areas. A Soil Survey Plan has been included in Appendix D for reference.

IV. FIELD INVESTIGATION AND SUBSURFACE CONDITIONS

Site investigation efforts consisted of three test pits performed by North Forest Development on January 27, 2004 and observed by GGE. One test pit was performed at each building location to provide the subsurface information necessary for the construction of all three buildings as well as satisfy the Town of Amherst preliminary geotechnical requirements of one soil boring per every 3.5 acres of site. A Site Plan indicating test pit locations can be found in Appendix C. GGE is confidant the extent of the investigation was sufficient to accurately characterize the subsurface conditions and provide the information necessary to prepare this report.

The subsurface soils were classified by GGE and assigned Unified Soil Classification System (USCS) classifications in accordance with ASTM D 2488 "Description and Identification of Soils (Visual – Manual Procedure)".

Subsurface conditions are generally characterized as follows:

0.0' – 1.0'	Dark brown topsoil.
1.0' – 3.0'	Moist, brown and tan, slightly mottled, stiff, silt (ML).
3.0' – 6.0'	Moist, light tan and gray, slightly mottled, stiff, sandy, silty clay with gravel (CL-ML) and bedrock fragments.
	Shale bedrock was encountered at a depth of 6.0 feet in all test pits with the exception of TP-2, where gypsum was encountered.

Clay fill was encountered in test pit TP-1. The original topsoil layer existed at a depth of 1.0 to 2.0 feet below the existing ground elevation. The removal of this material is imperative below any structural areas, including foundations, slabs on grade and parking facilities.

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Free groundwater was not encountered upon completion of the test pit excavations. The groundwater table is believed to be below the elevation of the bedrock. However, the slow permeability of the fine-grained soils will likely produce a perched water table at or near the ground surface during and after storm events and throughout winter and spring months. See section I.10 of this report.

Specific subsurface conditions can be found in Appendix A, Soil Investigation Logs. Laboratory testing data for select samples can be found in Appendix F.

V. GEOTECHNICAL EVALUATION AND FOUNDATION RECOMMENDATIONS

A. Bearing Capacity and Foundation Recommendations

The site subsurface conditions will permit the construction of a shallow foundation system consisting of conventional strip and spread footings. Due to the importation of fill to raise the site elevation, the footings will bear at an elevation of approximately 1.0 foot below existing grade on the compact silt directly beneath the surficial topsoil. All surficial topsoil must be removed from beneath structurally loaded areas. Based on a settlement criterion of 1.0 inch, the allowable bearing capacity for this material has been estimated by GGE to be 4000 psf. The bearing capacity was tested in the field using an ELE cone penetrometer.

The contractor must remove all buried topsoil located in the vicinity of TP-1 prior to constructing foundations.

B. Pavement and Slabs on Grade

GGE recommends that all slabs be designed using a recognized standard procedure. The text "Designing Floor Slabs on Grade" by Ringo and Anderson (ASBM 0-924659-34-3) identifies several methods of floor slab design. Slabs on grade and pavement will be constructed on imported fill due to the proposed elevation of the site finished grades.

Design and construction of floor slabs should be based on the following minimum recommendations:

1. Remove all topsoil and organic subsoil including buried topsoil encountered in the vicinity of TP-1.
2. Proof roll subgrade and replace yielding or "boiling" soils. Do not place any fill over saturated ground.

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Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

3. Compact imported fill soil to 95% of the modified proctor maximum density (ASTM D-1557), at a moisture content within 2% of optimum.
4. Place one 6" lift of select structural fill (NYSDOT Item 304.2.02, Type 4). Compact all fill as specified in item 3 above.
5. Install structural concrete floor slab. Provide sufficient joints and flexibility at perimeter walls.

Design and construction of pavement should proceed in accordance with generally accepted criteria as follows:

1. Remove all topsoil, organic subsoil and debris including buried topsoil encountered in the vicinity of TP-1.
2. Proof roll subgrade to reveal soft and yielding soil. Use a fully loaded 10-wheel dump truck weighing at least 30 tons or a smooth drum roller having an effective force of at least 600 pounds per linear inch of roller width. Any area exhibiting deflections in excess of 0.5 inches or rutting should be classified as unsuitable. These areas should be reworked and compacted to produce an acceptable response or over excavated and replaced with suitable fill. The depth of the undercut and type of soil fill will depend on the soil material encountered, weather conditions and the bearing conditions at the base of the undercut. The site geotechnical engineer must consider each factor if the above conditions are encountered.
3. Install ditches, lateral drains, weeps and storm drainage piping. Backfill over the pipe bedding stone with native soils.
4. Place common fill as necessary to achieve design subgrade. Common fill can be any soil or processed material except Silt soil – USCS designation ML. The top 12 inches must be structural fill. Compact all fill to a minimum 95% of the maximum modified proctor density (ASTM D-1557-78), within a moisture range of 2% $\pm$ of the optimum moisture content. The top surface of the subgrade must be "sealed" with a smooth drum roller and pitched to drain such that the embankment soils cannot become saturated.
5. Once the subgrade has been established, the surface should be covered by a suitable geotextile selected for drainage and reinforcement properties. The geotextile shall have minimum (MARV) strength properties meeting the requirements of an AASHTO M 288-96 Class 2 geotextile. The material shall also have a minimum permittivity of 0.05 sec^{-1} and an AOS of less than 0.6 mm. Installation shall conform to the manufacturers recommendation for overlap.
6. Construct flexible pavement system as follows: (or equivalent structural system)

   a) Minimum 12 inch thick layer of 2" crushed stone meeting requirements of NYSDOT item 304-2.02, type 4 and the well graded qualifications of ASTM D-2487. Compact

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with a minimum of 5 passes of a smooth drum vibratory roller having an effective load of 600 pounds per linear inch. The finished surface should be uniform and dense. Avoid handling procedures that cause segregation.

b) Minimum 3 inch asphalt concrete binder, NYSDOT item 403.13, type 3.

c) Minimum 1-1/2 inch asphalt concrete top, NYSDOT item 403.18 or 403.19.

In the event the binder layer is used as a working surface for access to buildings under construction the surface must be power washed, not just swept, and a tack coat should be applied prior to installation of the top course. In addition, any yielding area of pavement binder should be removed and replaced prior to application of the top course.

All site contractors should be notified that roadways and parking areas will not support repeated travel by construction loads. Pavement and subgrade failure can be anticipated in areas that receive a high volume of heavy construction traffic. To preclude the overstressing of the pavement system it is recommended that haul roads be located in non-critical areas. As an option, the base course of stone can be overbuilt to a total thickness of twenty (20) inches to serve as a haul route. The additional thickness of stone and all areas of soil material that has contaminated the stone base should be removed prior to paving. Failure to remove fine grained soils from the stone base may cause pavement distress in the form of heaving resulting from freeze thaw effects.

Note that post construction heaving and cracking of pavement is often the result of poor compaction around catch basins and behind curbs. Loose material around these areas allows surface water to migrate beneath the pavement, providing increased potential for heaving due to ice build up during winter months and deterioration of the parking base during warmer months. The contractor should make sure to properly compact these areas. Also, weep holes should be installed into the bottom of catch basins to permit the drainage of any water that does manage to migrate beneath the pavement.

C. Excavation and Backfill

Excavation will basically consist of the removal of topsoil in most locations and the removal of buried topsoil in the vicinity of TP-1. The buried topsoil is typically covered by approximately 1.0 foot of soft clay. Excavation efforts are anticipated to be easy.

If deeper excavations are to be performed, the contractor should be sure to comply with OSHA standards. The soil encountered at this site should be classified by an OSHA competent person in accordance with 29 CFR, Part 1926, OSHA Subpart P, "Excavations and Trenches" prior to and during excavation.

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From the testing and investigation program, GGE estimates the site soils can be classified as Type B under the OSHA classification guidelines. This classification may change depending on other site criteria and moisture conditions at the time of construction. An OSHA competent person should judge the potential need for excavation bracing and excavation geometry in the field.

Native soils may be used for general fill against the foundation walls once the concrete has properly cured. All fill soil should be placed in lifts and compacted, with care taken not to damage the foundation walls. The fill at grade elevation should be sloped to drain away from the foundation walls to eliminate the potential for standing water to accumulate along the foundation. Note that drying of the native soils may be required to achieve optimum compaction.

C. Mitigation of Expansive Soils

Subsurface soils at this site are predominantly silt (ML) and silty clay with gravel (CL-ML). Some clay soils undergo volumetric change (shrinkage and swelling) with changes in moisture and degree of saturation, particularly soils classified as fat clay (CH). Fat clay is classified as a soil with a liquid limit of 50 or greater. The liquid limit is the water content, in percent, of a soil that defines the boundary between the plastic and viscous fluid states. The subsurface soils encountered at this site do exhibit characteristics of soils with a high shrink/swell potential.

D. Mitigation of the effects of Liquefaction

Liquefaction is the process where saturated cohesionless (granular) soils, specifically, fine sands and silts, transform from a solid into a liquid as a result of an increase in the pore water pressure caused by repeated disturbance such as experienced during seismic events. Liquefaction results in an immediate loss of shear strength, and thus, bearing capacity, causing total and differential settling due to a quick consolidation of the soils.

The soils located at the footing subgrade and below at this site are silts and silty clays and do not pose a concern for liquefaction. Soils with a silt and clay content in excess of 35% typically do not have the potential to liquefy. As seen in Appendix F, the subgrade material falls outside of the specification window for liquefaction potential as identified on the grain size analysis.

E. Expected Total and Differential Settlement.

Load induced total settlement for foundations bearing on undisturbed native soil is estimated to be primarily long-term (primary consolidation) settlement. The total settlement is estimated to be less than 1.0 inch for shallow foundations constructed in accordance with GGE's recommendations.

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Subsurface soils across the site are very consistent and exist in layers of uniform depths. The potential for differential settlement due to varying soil conditions over the building footprint is minimal under uniform bearing pressures.

F. Varying Soil Strength

Upon excavation of the footings, if soil types or moisture contents are found to be different than those encountered during the test pit excavation and represented within this report, the bearing capacity of the variable soil will need to be reevaluated by a qualified Geotechnical Engineer. Likewise, the footing design will then require adjustment to accommodate the bearing pressure on soils of varying bearing capacities.

G. Site Class Definition

In accordance with Section 1615 (Earthquake Loads – Site Ground Motion) of the NYS Building Code, the site is classified as Site Class C. The site classification is based upon subsurface conditions in the upper 100 feet, which consist of 6 feet of dense soil overlying 94 feet of rock.

The maximum considered earthquake ground motion for this site is interpolated as .320g for short period spectral response acceleration and .064g for a one second spectral response acceleration in accordance with New York State Code figures 1615(1) and 1615(2). Based on Site Class C, the maximum considered earthquake spectral response acceleration for this site is calculated as .380g for short period spectral response acceleration (S_{MS}) and .108g for a one second spectral response acceleration (S_{M1}) in accordance with New York State Code section 1615.1.2.

The design spectral response accelerations, based on the maximum considered earthquake spectral response accelerations, are .253g for short period design spectral response acceleration (S_{DS}) and .072g for one second design spectral response acceleration (S_{D1}). In accordance with tables 1616.3(1) and 1616.3(2), the site is classified as Seismic Design Category B.

H. General Recommendations

The following comments are relative to all foundation work unless specifically noted otherwise:

1. No fill material or concrete should be placed in water, over saturated subgrade or over frozen subgrade.
2. Upon completion of excavation for footings, bearing grades should be compacted to densify soil loosened by the backhoe bucket. Proper construction practice will assure the development of the anticipated bearing strength and reduce settlement potential.

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3. Excavations must not unnecessarily extend below the design subgrade elevation.

4. If additional undercut is necessary, the excavation bottom should be graded to a uniform elevation. Undercut "pockets" should be avoided.

5. Backfill all foundations prior to applying loads.

6. Extreme care must be exercised and conformance to OSHA standards is mandatory during excavation and trench work.

7. All topsoil and organic soils should be removed from any load bearing areas, including buried topsoil from previous fill efforts.

8. The use of a "mud" mat should be considered to protect bearing grades during any extended period or when construction proceeds during inclement weather.

9. Foundation bearing grades should not be allowed to freeze either prior to or after placement of concrete. Insulating blankets should be used to cover bearing grades plus 1 foot perimeter outside forms or completed footings until backfill is placed.

10. The site contractor should maintain proper grades for runoff control and seal roll all exposed areas. All excavations should be sloped to drain with sumps to permit dewatering during construction. The fine grained foundation subgrade will lose considerable strength if exposed to standing water for long periods of time. Any saturated subgrade should be dried and recompacted or removed to an acceptable bearing level prior to placement of subsequent layers of fill or concrete.

VI. SUMMARY

The site subsurface conditions are well suited for the proposed development and will provide a suitable subgrade for the proposed construction pending strict conformance with the recommendations provided within this report. The recommendations and engineering evaluations provided in this report are based on the encountered subsurface conditions at 4180/4200 Rensch Rd and pertinent data supplied by North Forest Development. Alteration of the plans, including relocation of the house or any abnormal foundation loading may serve to invalidate this report. Do not utilize this evaluation for any other type of structure. Please contact our office if major project changes are made or if encountered soils vary from conditions noted in this report.

Respectfully submitted,

G. Edward Lover
Senior Geologist

STATE OF NEW YORK
MARK W. GLYNN
LICENSE NO. 057491
LICENSED PROFESSIONAL ENGINEER

Mark W. Glynn, P.E.
Consulting Engineer, Principal

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

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Appendix A

Soil Investigation Logs

4180/4200 Rensch Rd
Amherst, New York

Geotechnical Engineering Report

GGE 04-5002

February 11, 2004

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

SOIL INVESTIGATION LOG

PROJECT NO.:	04-5002	REPORT NO.:	NA	PAGE:	1 OF 1
PROJECT:	4180/4200 Rensch Road	DAY:	Tuesday	DATE:	01.27.04
CLIENT:	North Forest Development			EL:	Unknown
WEATHER:	Snow, 25° F	SUBJECT:	Geotechnical Investigation	HOLE NO.:	TP - 1
LOCATION:	Building 1				

DEPTH (feet)	BLOW COUNT	N VALUE	SAMPLE NO.	SOIL DESCRIPTION
0.0				
1.0	N/A	N/A	1	Brown, moist, stiff, lean clay (CL) fill.
2.0	N/A	N/A	2	Dark brown, moist, silty topsoil (ML).
3.0	N/A	N/A	3	Light tan and gray, moist, stiff, sandy, silty clay with gravel (CL-ML) with shale fragments.
4.0				
5.0				
6.0				Shale bedrock encountered at 5.0 feet.
				No water present at excavation completion.
7.0				
8.0				
9.0				
10.0				

Soil investigation was performed with a rubber tire backhoe.

REPORTED BY: EDWARD LOVER

REVIEWED BY: MARK W. GLYNN, P.E.

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GGE a member of the GLYNN GROUP

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

SOIL INVESTIGATION LOG

PROJECT NO.:	04-5002	REPORT NO.:	NA	PAGE:	1 OF 1
PROJECT:	4180/4200 Rensch Road	DAY:	Tuesday	DATE:	01.27.04
CLIENT:	North Forest Development			EL:	Unknown
WEATHER:	Snow, 25° F	SUBJECT:	Geotechnical Investigation	HOLE NO.:	TP - 2
LOCATION:	Building 2				

DEPTH (feet)	BLOW COUNT	N VALUE	SAMPLE NO.	SOIL DESCRIPTION
0.0	N/A	N/A	1	Dark brown, moist, silty topsoil.
1.0	N/A	N/A	2	Brown and tan, moist, slightly mottled, stiff, silt (ML).
2.0				
3.0				
4.0	N/A	N/A	3	Light tan and gray, moist, stiff, sandy, silty clay with gravel (CL-ML).
5.0				
6.0				
				Gypsum bedrock encountered at 6.0 feet.
7.0				No water present at excavation completion.
8.0				
9.0				
10.0				

Soil investigation was performed with a rubber tire backhoe.

REPORTED BY: EDWARD LOVER

REVIEWED BY: MARK W. GLYNN, P.E.

Civil • Structural • Geotechnical • Materials Testing • Consulting

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

SOIL INVESTIGATION LOG

PROJECT NO.:	04-5002	REPORT NO.:	NA	PAGE:	1 OF 1
PROJECT:	4180/4200 Rensch Road	DAY:	Tuesday	DATE:	01.27.04
CLIENT:	North Forest Development			EL:	Unknown
WEATHER:	Snow, 25° F	SUBJECT:	Geotechnical Investigation	HOLE NO.:	TP - 3
LOCATION:	Building 3				

DEPTH (feet)	BLOW COUNT	N VALUE	SAMPLE NO.	SOIL DESCRIPTION
0.0	N/A	N/A	1	Dark brown, moist, silty topsoil.
1.0				
2.0	N/A	N/A	2	Brown and tan, moist, slightly mottled, stiff, silt (ML).
3.0				
4.0	N/A	N/A	3	Light tan and gray, moist, stiff, sandy, silty clay with gravel (CL-ML) and shale fragments.
5.0				
6.0				Shale bedrock encountered at 6.0 feet.
7.0				No water present at excavation completion.
8.0				
9.0				
10.0				

Soil investigation was performed with a rubber tire backhoe.

REPORTED BY: EDWARD LOVER

REVIEWED BY: MARK W. GLYNN, P.E.

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Appendix B

Project Location Plan

4180/4200 Rensch Rd
Amherst, New York

Geotechnical Engineering Report

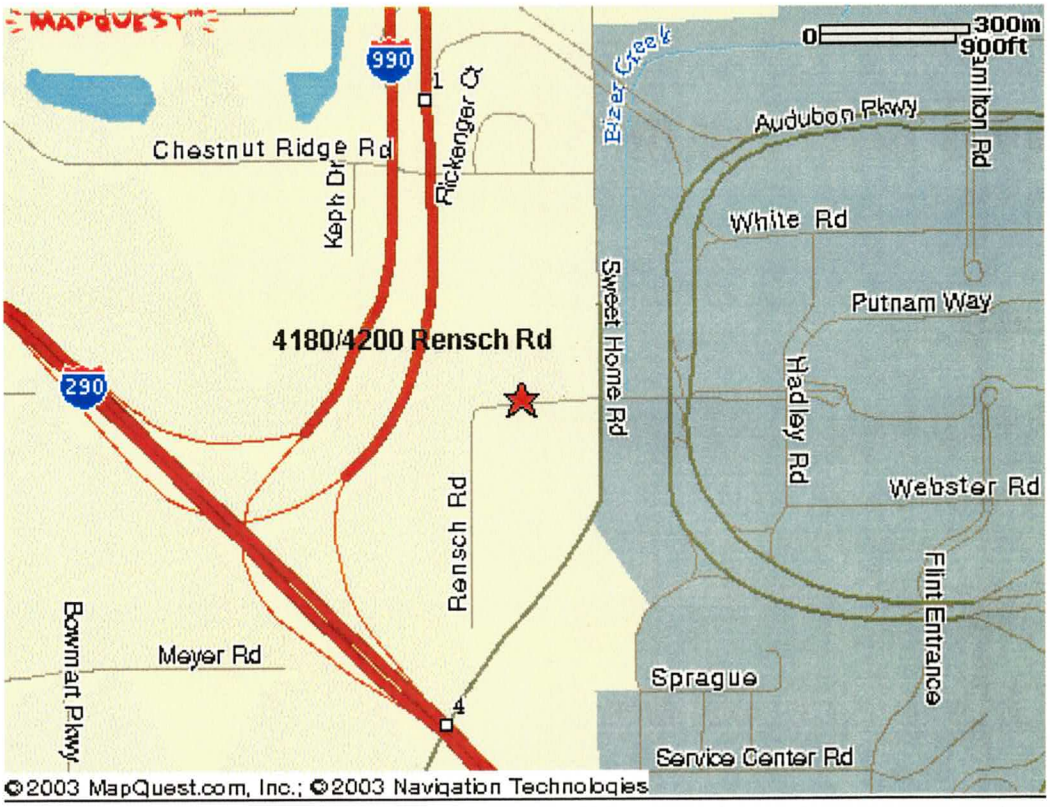
GGE 04-5002

February 11, 2004

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

PROJECT LOCATION PLAN

PROJECT: 4180/4200 Rensch Road, Amherst, NY
PROJECT NO.: 04-5002
SUBJECT: Geotechnical Engineering Report
SHEET 1 OF 1
PREPARED BY: G. Edward Lover
DATE: February 11,2004



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Appendix C

Soil Boring Location Plan

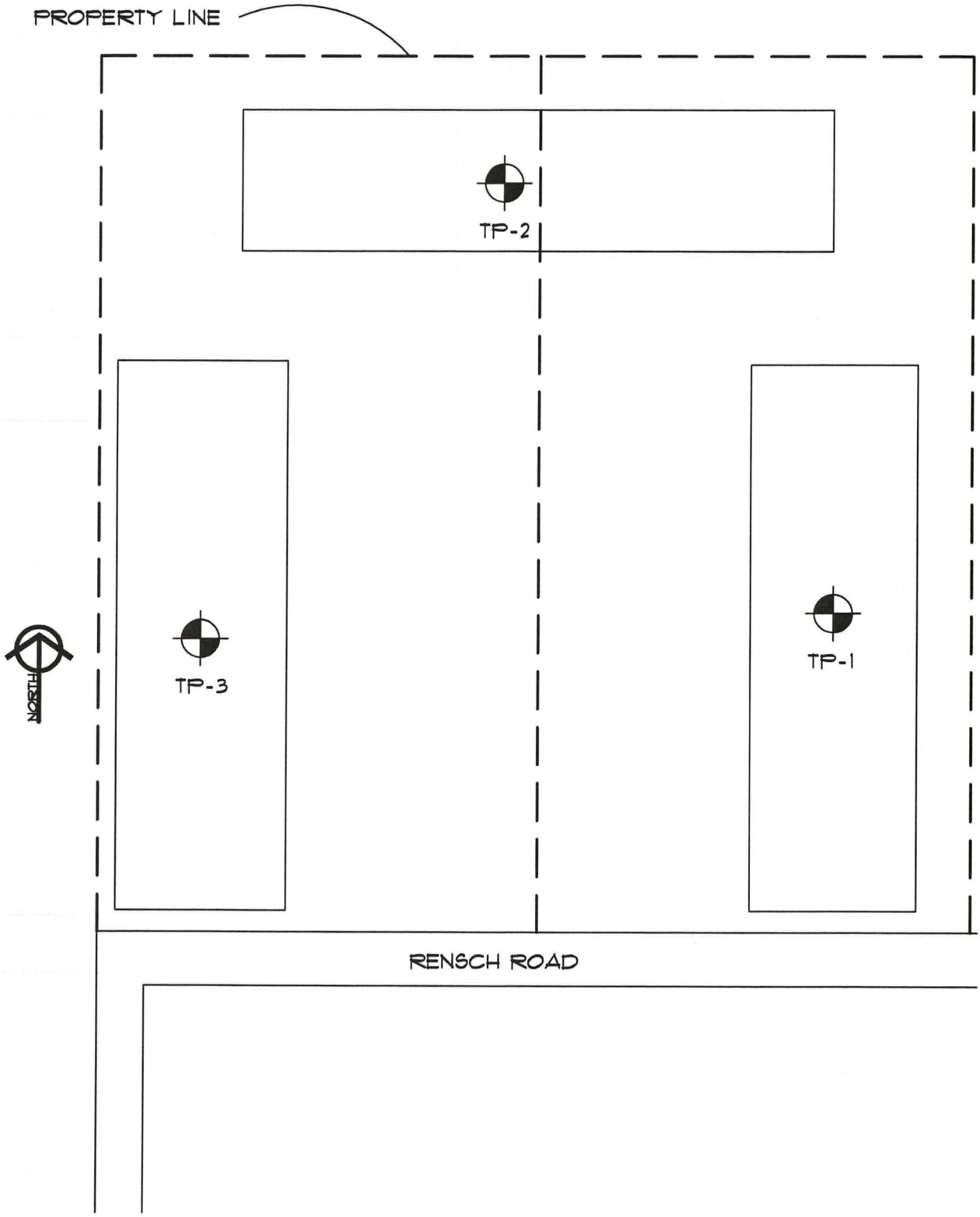
4180/4200 Rensch Rd
Amherst, New York

Geotechnical Engineering Report

GGE 04-5002

February 11, 2004

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)



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GLYNN GEOTECHNICAL ENGINEERING
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LOCKPORT, NEW YORK 14094
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www.glynngroup.com

PROJECT: 4180/4200 RENSCH ROAD			APPENDIX: C
SUBJECT: TEST PIT LOCATION PLAN			
CLIENT: NORTH FOREST DEVELOPMENT			
PROJ. NO.: 04-5002	SCALE: NOT TO SCALE	DATE: 02.02.04	BY: GEL

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

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Appendix D

Soil Survey Plan

4180/4200 Rensch Rd
Amherst, New York

Geotechnical Engineering Report

GGE 04-5002

February 11, 2004

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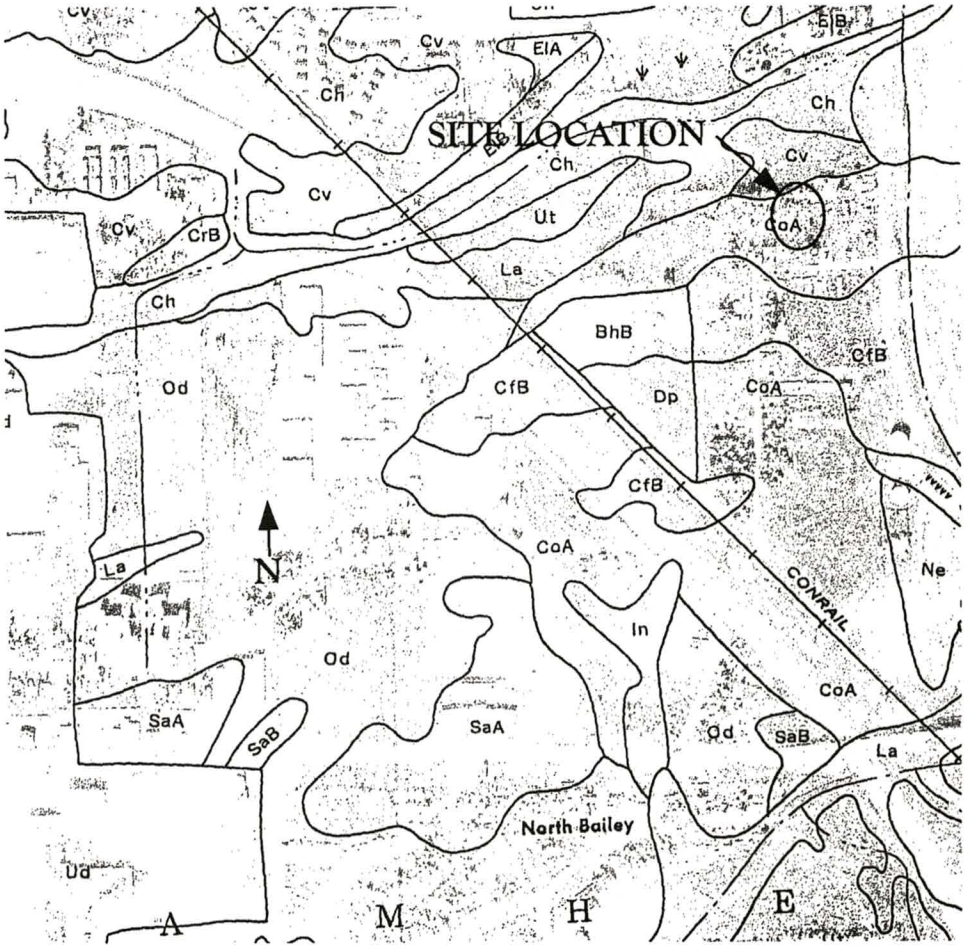
SOIL SURVEY PLAN

PROJECT: 4180/4200 Rensch Road, Amherst, NY
PROJECT NO.: 04-5002
SUBJECT: Geotechnical Engineering Report
SHEET 1 OF 1
PREPARED BY: G. Edward Lover
DATE: February 11, 2004



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Appendix E

Floodplain and State Wetland Plan

4180/4200 Rensch Rd
Amherst, New York

Geotechnical Engineering Report

GGE 04-5002

February 11, 2004

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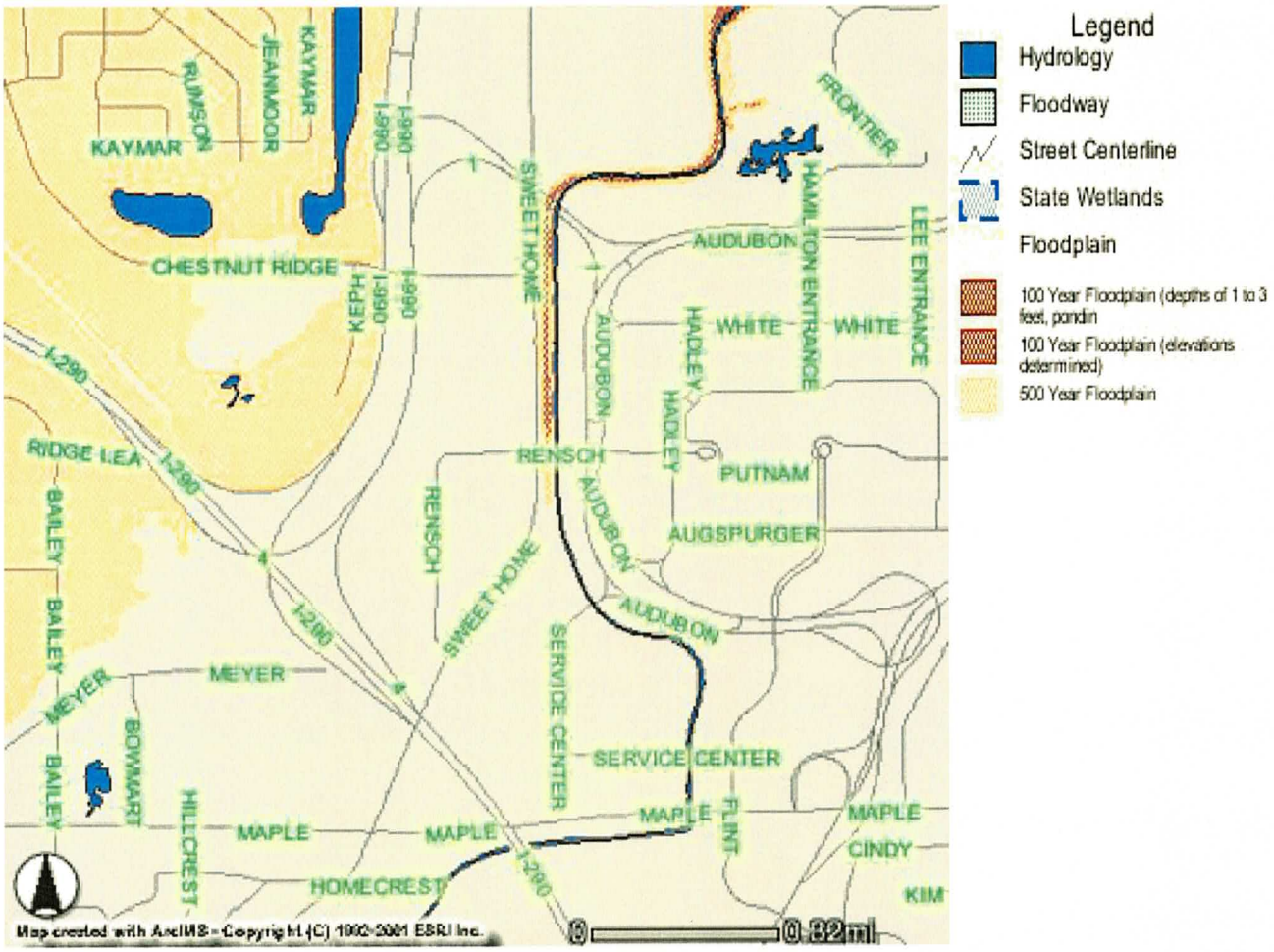
FLOODPLAIN AND STATE WETLAND PLAN

PROJECT: 4180/4200 Rensch Road, Amherst, NY
PROJECT NO.: 04-5002
SUBJECT: Geotechnical Engineering Report
SHEET 1 OF 1
PREPARED BY: Edward Lover
DATE: February 11, 2204



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Appendix F

Laboratory Data

4180/4200 Rensch Rd
Amherst, New York

Geotechnical Engineering Report

GGE 04-5002

February 11, 2004

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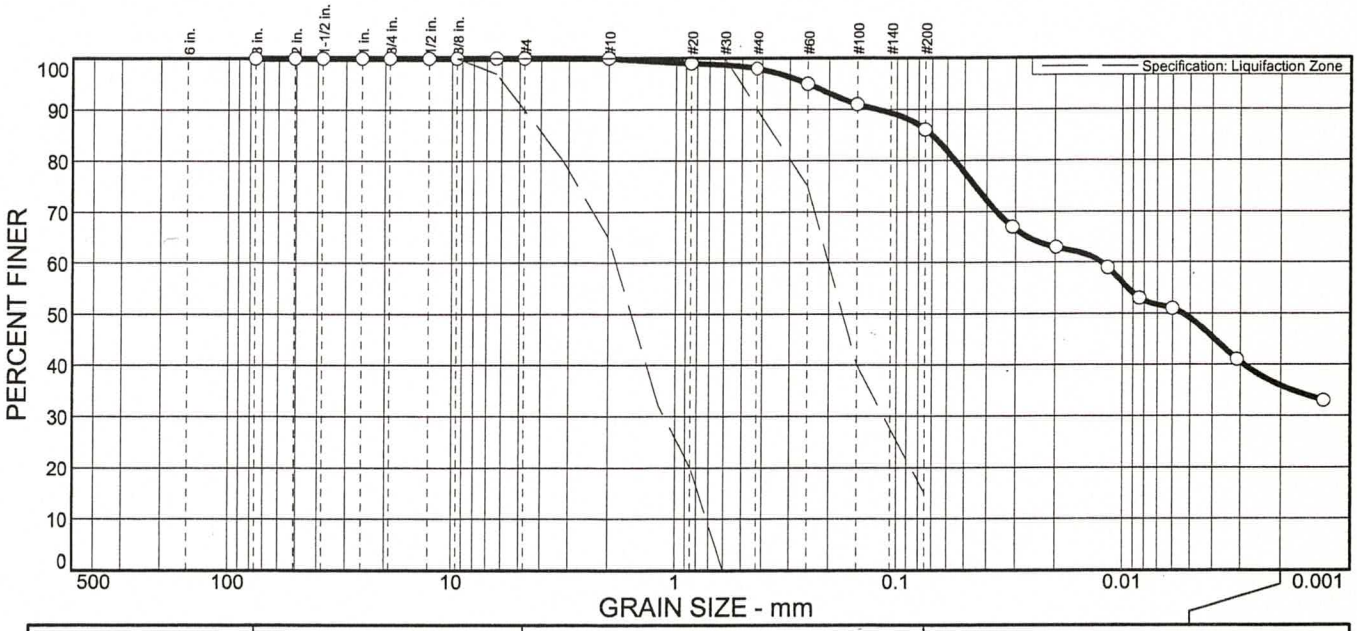
GRAIN SIZE ANALYSIS
ASTM D-422

Project: 4180/4200 Rensch Road **Project No.:** 04-5002

Client: North Forest Development

Sample No: 04-01 **Source of Sample:** soil boring **Date:** 02.03.04

Location: Footing Subgrade **Elev./Depth:** 1.0-3.5 ft.



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0	0	0	0	2	12	50	36

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3 in.	100		
2 in.	100		
1.5 in.	100		
1 in.	100		
3/4 in.	100		
1/2 in.	100		
3/8 in.	100	100 - 100	
1/4 in.	100	97 - 100	
#4	100		
#10	100	65 - 100	
#20	99	20 - 100	
#40	98		
#60	95	0 - 75	X
#100	91	0 - 40	X
#200	86	0 - 15	X

* Liquifaction Zone

Soil Description

Silt

Atterberg Limits

PL= 26 LL= 28 PI= 2

Coefficients

D_{85}= 0.0705 D_{60}= 0.0125 D_{50}= 0.0054

D_{30}= D_{15}= D_{10}=

C_u= C_c=

Classification

USCS= ML AASHTO=

Remarks

Natural Moisture Content 23.7%

Shrinkage Limit 12

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Reported/Reviewed by

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Traffic Impact Study

for the proposed

Mixed-Use Development
1400-1416 Sweet Home Road

Town of Amherst
Erie County, New York

March 21, 2022

Project No. 42019

Prepared For:

North Forest Development

2829 Wehrle Drive, Suite 1
Williamsville, New York 14221
Attn: Mr. Roy Jordan

Prepared By:

SRF ASSOCIATES
www.srfa.net
Transportation Planning / Engineering / Design

3495 Winton Place
Building E, Suite 110
Rochester, New York 14623

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

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2. Trip Generation, 11th Edition. Institute of Transportation Engineers (ITE). Washington, DC. 2021.
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4. New York State Department of Transportation (NYSDOT) Traffic Data Viewer. 2022. Retrieved from https://www.dot.ny.gov/tdv.
5. OnTheMap. U.S. Census Bureau. 2022.
6. Chapter 203 Zoning – Section 5A. Mixed Use Districts. Town of Amherst. 2019.
7. NCHRP Report 684: Enhance Internal Trip Capture Estimation for Mixed-Use Developments. TRB. 2016.

LIST OF COMMONLY USED ACRONYMS

ADT: Average Daily Traffic

AADT: Annual Average Daily Traffic

ECDPW: Erie County Department of Public Works

FHWA: Federal Highway Administration

HCM: Highway Capacity Manual

ITE: Institute of Transportation Engineers

LOS: Level of Service

LUC: Land Use Code

MPH: Miles per Hour

NCHRP: National Cooperative Highway Research Program

NYSDOT: New York State Department of Transportation

SF: Square Feet

ULI: Urban Land Institute

VPD: Vehicles per Day

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

EXECUTIVE SUMMARY

OVERVIEW

The purpose of this report is to evaluate the potential traffic impacts related to the proposed mixed-use development at 1400-1416 Sweet Home Road in the Town of Amherst, NY. Within this report, the operating characteristics of the proposed access points and impacts to the adjacent roadway network are identified and mitigating measures (if needed) are provided to minimize operational concerns.

To define traffic impact, this analysis establishes existing baseline traffic conditions, projects background traffic flow including area growth, and determines the traffic operations that would result from the proposed project.

The proposed mixed-use project will be at 1400-1416 Sweet Home Road in the Town of Amherst, Erie County, New York. Currently, there are office buildings occupying the site. These buildings will be replaced by the proposed project and new uses. The project site is bounded by portions of undeveloped lands to the north; Sweet Home Road to the east; Rensch Road to the south; and I-990 to the west. Land uses in the vicinity of the proposed project include residential, education, office, and service.

To ensure a comprehensive analysis of potential traffic impacts, a geographically broad study area was determined consisting of the following intersections:

- Rensch Road/Villas on Rensch (W)/Office Lots (unsignalized)
- Rensch Road/Villas on Rensch (E)/Office Lots (unsignalized)
- Sweet Home Road/Rensch Road (signalized)
- Sweet Home Road/The Station (unsignalized)
- Sweet Home Road/Maple Road (signalized)

The proposed project consists of constructing:

- ±10,000 square feet (SF) of office space
- ±10,000 SF of retail space
- 500 residential units to be marketed as student housing (1,025 bedrooms)

Access to the proposed mixed- project will be provided via two full access driveways along Rensch Road. **Figure 5** illustrates the proposed Concept Site Plan as prepared by Carmina Wood Morris.

Construction of the proposed project is anticipated to reach full build-out within approximately five years depending on market conditions. Town of Amherst personnel were contacted to discuss any other specific projects that are currently approved or under construction that would generate additional traffic in the study area. Two projects were identified:

- 1265 Sweet Home Road
- Completion of The Station

The Station is currently partially occupied. SRF Associates reached out to the property management to determine actual occupancy but did not receive any information. SRF Associates produced the traffic study for this project and reviewed the projected trip generation estimates. The difference between the full development trip generation estimates in the study

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and the actual trips entering and entering the site during the peak hours were added to the study area intersections.

To account for normal increases in background traffic growth, including any unforeseen developments in the project study area, aside from the two projects mentioned, a growth rate of 0.25% was applied to the existing traffic volumes in the study area based upon a review of historical traffic information obtained from the New York State Department of Transportation.

CONCLUSIONS & RECOMMENDATIONS

This Traffic Impact Study identified and evaluated the potential traffic impacts that can be expected from the proposed mixed-use development at 1400-1416 Sweet Home Road in the Town of Amherst, New York. The results of this study determined that the existing transportation network can adequately accommodate the projected traffic volumes and resulting minor impacts to study area intersections with the following mitigation in place. The following sets forth the conclusions and recommendations based upon the results of the analyses:

1. Using ITE Trip Generation Manual data, the proposed project is expected to generate approximately 66 entering/76 exiting vehicle trips during the AM peak hour and 145 entering/156 exiting vehicle trips during the PM peak hour.

2. However, not all driveway volumes are new, but instead a portion of the proposed volume is reduced considering internal capture adjustments. Thus, the proposed project is expected to generate approximately 62 entering/72 exiting vehicle trips during the AM peak hour and 129 entering/140 exiting vehicle trips during the PM peak hour.

3. A crash analysis was conducted from 2017-2019 at the study intersections. Most of the crash types occurring at each study intersection were rear end events, a characteristic of signalized intersections along moderately to heavily trafficked arterials. However, an in-depth review of the crashes determined no deficiencies exist which can be corrected by geometric improvements. Consideration may be given to upgrading the signal at Sweet Home Road/Maple Road to change the green signals to flashing yellow arrows for permissive left turns to address the frequency of left turn crashes.

4. Minor signal timing adjustments are recommended at the intersection of Sweet Home Road/Rensch Road during the AM peak hour. These adjustments should be made under background conditions.

5. When considering Town of Amherst Zoning Code parking requirements and shared parking demands, the project site has a parking deficit of 10 or fewer spaces. It is noted that the proposed apartments are to be marketed as student housing given the proximity of the project site to the UB North Campus. When considering the requirements per Town Code and demands using the ULI Model, these sources assume that the residential demands are typical multifamily uses and not student uses. Students are highly likely to own fewer vehicles per unit than typical multifamily developments, especially given the proximity of the proposed project to the UB North Campus. Parking reduction strategies are being provided, such as bicycle parking spaces. Given these considerations, no significant adverse parking impacts are projected.

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6. The projected traffic impacts resulting from full development of the proposed mixed-use project during both peak hours can be accommodated by the existing transportation network and study area intersections. No capacity improvements are required.

7. The proposed mixed-use project will not result in any potentially significant adverse traffic impacts to the study area intersections. This Traffic Impact Study provides the Town of Amherst and involved agencies with a detailed analysis for the purpose of evaluating the potential traffic impacts associated with the proposed project.

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I. INTRODUCTION

The purpose of this report is to evaluate the potential traffic impacts related to the proposed mixed-use development at 1400-1416 Sweet Home Road in the Town of Amherst, NY. Within this report, the operating characteristics of the proposed access points and impacts to the adjacent roadway network are identified and mitigating measures (if needed) are provided to minimize operational concerns.

To define traffic impact, this analysis establishes existing baseline traffic conditions, projects background traffic flow including area growth, and determines the traffic operations that would result from the proposed project.

II. LOCATION

The proposed project will be at 1400-1416 Sweet Home Road in the Town of Amherst, Erie County, New York. Currently, there are office buildings occupying the site. These buildings will be replaced by the proposed mixed-use project. The project site is bounded by portions of undeveloped lands to the north; Sweet Home Road to the east; Rensch Road to the south; and I-990 to the west. Land uses in the vicinity of the proposed project include residential, education, office, and service.

To ensure a comprehensive analysis of potential traffic impacts, a geographically broad study area was determined consisting of the following intersections:

- Rensch Road/Villas on Rensch (W)/Office Lots (unsignalized)
- Rensch Road/Villas on Rensch (E)/Office Lots (unsignalized)
- Sweet Home Road/Rensch Road (signalized)
- Sweet Home Road/The Station (unsignalized)
- Sweet Home Road/Maple Road (signalized)

The project site location and study area are illustrated in **Figure 1** (all figures are included at the end of this report).

III. EXISTING HIGHWAY SYSTEM

A. Vehicular Network Description

The following information outlined in **Table I** provides a description of the existing roadway network within the project study area. **Figure 2** illustrates the lane geometry at each of the study intersections and the Annual Average Daily Traffic (AADT) volumes on the study roadways. The AADTs reflect the most recently collected data obtained from the New York State Department of Transportation (NYSDOT). Where data is not available or up to date, Average Daily Traffic (ADT) volumes are based upon an extrapolation of turning movement counts performed by SRF Associates.

Functional classification of highways within the study area is determined by the NYSDOT and the Federal Highway Administration (FHWA). Definitions of the functional classifications shown in **Table I** are provided after the table.

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TABLE I: EXISTING HIGHWAY SYSTEM

ROADWAY	CLASS[1]	AGENCY[2]	SPEED LIMIT[3]	TRAVEL LANES[4]	TRAVEL PATTERN/ DIRECTION	EST. AADT & SOURCE[5]
Sweet Home Road (952T)	16	NYSDOT	45	4	Two-way/ North-South	17,040 NYSDOT (2018)
Maple Road (W) (CR-192)	14	ECDPW	45	4	Two-way/ East-West	24,564 NYSDOT (2019)
Maple Road (E) (CR-192)	14	ECDPW	45	4	Two-way/ East-West	23,377 NYSDOT (2018)
Rensch Road	19	Town	30	2	Two-way/ East-West	2,950 SRF (2022)

Notes:
1. State Functional Classification of Roadway.
2. Jurisdictional Agency of Roadway.
3. Posted or Statewide Limit in Miles per Hour (mph).
4. Number of travel lanes. Excludes turning/auxiliary lanes developed at intersections.
5. Estimated AADT in Vehicles per Day (vpd). AADT Source (Year).

Urban Principal Arterial – Other (Class 14)

An urban principal arterial serves major activity centers, can interconnect and augment higher level arterials, serve trips of moderate length, and serve demand for intra-area travel between the central business district and outlying residential areas. Unlike access-controlled arterials, abutting land uses can be served directly.

Urban Minor Arterial (Class 16)

An urban minor arterial provide service for trips of moderate length, serve geographic areas that are smaller than higher arterial roadways, and offer connectivity to higher arterial systems. These roadways distribute traffic to smaller geographic areas, provide more land access without disrupting neighborhood access, and provide urban connections for rural collectors.

Urban Local (Class 19)

Locally classified roads account for the largest percentage of all roadway mileage and includes all facilities not in one of the higher systems. Local roadways do not typically serve as bus routes, are often designed to discourage through traffic, and have the lowest degree of mobility.

B. Multi-Modal Network Description

This evaluation reviewed the study area's pedestrian, bicycle, and transit network via field and aerial reconnaissance. A description of the multi-modal infrastructure is described hereafter.

Pedestrian & Bicycle Facilities

Sidewalks are located within the study area. The signalized intersections of Sweet Home Road/Rensch Road and Sweet Home Road/Maple Road feature pedestrian countdown signals and crosswalk striping.

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Dedicated bicycle lanes are in place along Sweet Home Road. Where there are no dedicated facility, cyclists are permitted to share the road with motorists.

Transit Facilities

The Niagara Frontier Transportation Authority (NFTA) provides regional bus and metro rail service. The nearest bus stops are at the intersections of Sweet Home Road/Rensch Road and is serviced via Route 35 (Sheridan).

IV. EXISTING TRAFFIC CONDITIONS

A. Peak Intervals for Analysis

Given the functional characteristics of the study corridors, adjacent land uses, and the proposed land uses for the project site (residential and commercial), the peak hours selected for analysis are the weekday commuter AM and PM peak periods. The combination of site traffic and adjacent through traffic produces the greatest demand during these time periods.

B. Existing Traffic Volume Data

Turning movement traffic counts were collected by SRF at the study intersections described in Section II on Thursday, March 3, 2022. Traffic counts were conducted from 7:00-9:00 AM and 4:00-6:00 PM. All traffic counts were conducted while local schools and the University at Buffalo were in session. The traffic volumes were reviewed to confirm the accuracy and relative balance of the collective traffic counts. For the purposes of this analysis, the data are utilized with the actual peak hours at each individual intersection. Using the actual peaks at each intersection provides a worst-case scenario when adding project related traffic. The unadjusted weekday AM and PM peak hour volumes are reflected in **Figure 3A**.

It is noted, however, that traffic volumes may be impacted by the COVID-19 pandemic. The NYSDOT released a study in February 2021 that described the effect the COVID-19 pandemic had on traffic in New York State in 2020. The NYSDOT study illustrated the percent difference 2020 weekday ADTs to average weekday ADTs prior to 2020. Additionally, traffic volumes were compared to traffic data obtained in 2018 traffic data at the intersections of Sweet Home Road/Rensch Road and Sweet Home Road/Maple Road before the COVID-19 pandemic by SRF Associates.

The historic counts in the study area were used to adjust the collected data to reflect 2022 representative traffic conditions by increasing the collected traffic volumes for specific movements, such as traffic entering and exiting the University at Buffalo. This is consistent with NYSDOT and ITE methodology for adjustments related to collected traffic volumes affected by the COVID-19 pandemic. The adjustments are reflected in the Appendices.

Figure 3B illustrates the representative 2022 weekday AM and PM peak hour base volumes used for analysis purposes in this study.

C. Field Observations

The study intersections were observed during both peak intervals to assess current traffic operations. Signal timing and phasing information was obtained by the NYSDOT to determine peak hour phasing plans and phase durations during each interval. This information was used to support and/or calibrate capacity analysis models described in detail later in this report.

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D. Existing Crash Investigation

The purpose of this crash analysis is to identify inherent safety issues by studying and quantifying historical crashes at the study intersections and identifying potential crash patterns and clusters.

A crash cluster is defined as an abnormal occurrence of similar crash types occurring at approximately the same location or involving the same geometric features. The severity of the crashes should also be considered. A history of crashes is an indication that further analysis is required to determine the cause(s) of the crash(es) and to identify what actions, if any, could be taken to mitigate the crashes.

A crash investigation within the study area was conducted to assess the safety history from January 1, 2017, through December 31, 2019. The data was provided by the New York State Department of Motor Vehicles through a Freedom of Information (FOIL) request. Given that the COVID-19 pandemic influenced daily travel in 2020 and 2021, any reported crashes were dismissed from the study.

Reportable (non-injury, injury, and fatal injury) type crashes are defined as damage to one person's property in the amount of $1,001 or more. The Non-Reportable type crashes result in property damage of $1,000 or less. Crash rates were computed for the study intersection and compared with NYSDOT average crash rates for similar intersections, as summarized in **Table II**. Intersection rates are listed as crashes per million entering vehicle (CR/MEV). Pertinent crash data is provided in the Appendices.

TABLE II: EXISTING CRASH RATES

INTERSECTION	TOTAL CRASHES	NUMBER OF ENTERING VEHICLES	ACTUAL CRASH RATE	STATEWIDE AVERAGE CRASH RATE
Sweet Home Road/Rensch Road	32	28,589	1.02	0.26
Sweet Home Road/The Station	1	22,705	0.04	0.07
Sweet Home Road/Maple Road	64	38,863	1.50	0.26

Notable crash clusters are approaches with three or greater identifiable consistent crash types.

Sweet Home Road/Rensch Road

As shown in **Table II**, the study intersection has a crash rate that is approximately 3.9 times higher than the statewide average crash rate for similar intersections. The following crashes occurred: rear end (17), fixed object (4), left turn (4), overtaking (2), right turn (2), right angle (1), sideswipe (1), bicycle (1). The bicycle crash resulted in an injury as the cyclist was crossing the road with traffic.

The following patterns were reported:

- Rear end
  - Northbound (nine crashes)
  - Southbound (seven crashes)
- Left turn
  - Eastbound (three crashes)

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- Fixed object
    - Northbound (three crashes)

The reported rear end crashes (53%) are characteristic of moderate to heavily trafficked signalized intersections. The causes of the rear end crashes were generally due to driver error, unsafe speeds, or following too closely. There are no correctable deficiencies at the intersection that could be improved to significantly improve safety.

Sweet Home Road/The Station

As shown in **Table II**, the study intersection has a crash rate that is lower than the statewide average crash rate for similar intersections. No discernible crash patterns exist; thus, no geometric improvements are recommended.

Sweet Home Road/Maple Road

As shown in **Table II**, the study intersection has a crash rate that is approximately 5.7 times higher than the statewide average crash rate for similar intersections. The following crashes occurred: rear end (24), left turn (15), right angle (10), overtaking (7), right turn (3), head on (2), fixed object (2), pedestrian (1). The pedestrian crash resulted in an injury as the pedestrian was crossing the road with traffic.

The following patterns were reported:

- Rear end
    - Northbound (three rashes)
    - Southbound (nine crashes)
    - Eastbound (four crashes)
    - Westbound (eight crashes)
- Left turn
    - Northbound (six crashes)
    - Southbound (seven crashes)
- Right angle
    - Northbound (four crashes)
    - Eastbound (three crashes)
- Overtaking
    - Westbound (four crashes)

The intersection is large consisting of numerous lanes in each direction and is frequently traveled during the peak hours. Rear end (37%) and left turn (23%) crashes are the most prominent. Most of the left turn crashes occurred due to drivers failing to yield the right of way due to the permissive movement during the thru movement on green. These drivers are likely to turn with smaller than desirable gaps in traffic and potentially creating an unsafe condition.

To correct this condition, protected left turn phases would reduce these crashes; however, this would also reduce the overall capacity of the intersection. One such improvement may be to upgrade the signals to change the green signal to flashing yellow arrow for permissive left turns. No geometric improvements are recommended.

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V. FUTURE AREA DEVELOPMENT AND LOCAL GROWTH

Construction of the proposed project is anticipated to reach full build-out within approximately five years depending on market conditions. Town of Amherst personnel were contacted to discuss any other specific projects that are currently approved or under construction that would generate additional traffic in the study area. Two projects were identified:

- 1265 Sweet Home Road
- Completion of The Station

The Station is currently partially occupied. SRF Associates reached out to the property management to determine actual occupancy but did not receive any information. SRF Associates produced the traffic study for this project and review the projected trip generation estimates. The difference between the full development trip generation estimates in the study and the actual trips entering and entering the site during the peak hours were added to the study area intersections.

To account for normal increases in background traffic growth, including any unforeseen developments in the project study area, aside from the two projects mentioned, a growth rate of 0.25% was applied to the existing traffic volumes in the study area based upon a review of historical traffic information obtained from the NYSDOT. All ambient growth calculations are included in the Appendices. The background traffic volumes are depicted in **Figure 4**.

VI. PROPOSED DEVELOPMENT

A. Project Description

The proposed project consists of constructing:

- ±10,000 square feet (SF) of office space
- ±10,000 SF of retail space
- 500 residential units marketed as student housing (1,025 bedrooms)

Access to the proposed project will be provided via two full access driveways along Rensch Road. **Figure 5** illustrates the proposed site plan as prepared by Carmina Wood Morris.

B. Site Generated Traffic

The volume of traffic generated by a site is dependent on the intended land use and size of the development. Trip generation is an estimate of the number of trips generated by a specific building or land use. These trips represent the volume of traffic entering and exiting the development. Trip Generation Manual (11th Edition) published by the Institute of Transportation Engineers (ITE) is used as a reference for this information. The trip rate for the peak hour of the generator may or may not coincide in time or volume with the trip rate for the peak hour of adjacent street traffic. Volumes generated during the peak hour of the adjacent street traffic and proposed land use, in this case, the weekday commuter AM and PM peaks, represent a more critical volume when analyzing the capacity of the system; those intervals will provide the basis of this analysis.

The proposed mixed-use project consists of three different land uses (residential, office, and retail) and is considered mixed-use (multi-use). According to the Institute of Transportation Engineers Trip Generation Handbook, (3rd Edition), "…a multi-use development is typically a single real-estate project that consists of two or more ITE land use classifications between

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which trips can be made without using the off-site road system. Because of the nature of these land uses, the trip-making characteristics are interrelated, and some trips are made among the on-site uses. This capture of trips internal to the site has the net effect of reducing vehicle trip generation between the overall development site and the external street system (compared to the total number of trips generated by comparable, standalone sites)." "In some multi-use developments, these internal trips can be made by walking or by vehicles entirely on internal pathways or internal roadways without using streets external to the site."

The Handbook indicates internal capture rates for trips within a multi-use development to vary between residential, office, retail, restaurant, hotel, entertainment and recreational uses during the AM and PM peak hours. Given the proposed land use components and interconnection between these components, multi-use total volume trips will likely occur.

Methodology contained in National Cooperative Highway Research Program (NCHRP) Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Development was consulted to perform the mixed-use adjustment. The interactive spreadsheet considers baseline mode shares and vehicle occupancy factors for the proposed land uses, as described in the Handbook, as well as average land use interchange distances (feet walking distance) to determine the internal capture percentage. This completed spreadsheet model is included in the Appendices. The NCHRP 684 model reported an internal baseline capture percentage of 5% during the AM peak hour and 10% during the PM peak hour.

These multi-use trip projection adjustments were applied to the respective site generated trips and subtracted from the traffic entering and exiting the site during the peak periods.

Table III shows the total site generated trips, internal trips, and resulting primary trips that are added to the existing highway system for full development of the project. All trip generation information has been included in the Appendices.

TABLE III: SITE GENERATED TRIPS

DESCRIPTION	ITE LUC	SIZE	AM PEAK HOUR		PM PEAK HOUR	
			ENTER	EXIT	ENTER	EXIT
Residential	225	1,025 bedrooms	39	64	110	111
Office	710	±10,000 SF	13	2	2	12
Retail	822	±10,000 SF	14	10	33	33
Total Site Generated Trips			**66**	**76**	**145**	**156**
Internal Trips			*-4*	*-4*	*-16*	*-16*
Total Primary Trips			**62**	**72**	**129**	**140**

Note:
1. ITE LUC = ITE Land Use Code

Using ITE Trip Generation Manual data, the proposed project is expected to generate approximately 66 entering/76 exiting vehicle trips during the AM peak hour and 145 entering/156 exiting vehicle trips during the PM peak hour.

However, not all driveway volumes are new, but instead a portion of the proposed volume is reduced considering internal capture adjustments. Thus, the proposed project is expected to generate approximately 62 entering/72 exiting vehicle trips during the AM peak hour and 129 entering/140 exiting vehicle trips during the PM peak hour.

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C. *Site Traffic Distribution*

The cumulative effect of site-generated traffic on the transportation network is dependent on the origins and destinations of that traffic and the location of the access drives serving the site. The proposed arrival/departure distribution of traffic generated by the proposed project is considered a function of several parameters, including:

- Proximity and access to the University at Buffalo
- Employment centers using Census Data
- Population centers using Census Data
- Commercial centers
- Proposed access locations
- Existing traffic patterns
- Existing traffic conditions and controls

Figure 6A shows the anticipated trip distribution pattern percentages for the traffic from the residential program and **Figure 6B** shows the anticipated trip distribution pattern percentages for the traffic from the commercial program. **Figure 7** illustrates the peak hour project site-generated traffic based on those percentages.

VII. FULL DEVELOPMENT VOLUMES

Proposed design hour traffic volumes are developed for the AM and PM peak hours by combining the background traffic conditions (**Figure 4**) and the new site generated traffic volumes (**Figure 7**) to yield the traffic volumes under full development conditions. The resulting design hour volumes for the proposed project are illustrated in **Figure 8** under full build-out conditions.

As stated, the existing site is currently occupied by office space. These tenants will be relocated upon full build-out of the proposed project. Traffic adjustments related to this condition is shown in the Appendices.

VIII. CAPACITY ANALYSIS

A. *Description of Capacity Analysis*

Capacity analysis is a technique used for determining a measure of effectiveness for a section of roadway and/or intersection based on the number of vehicles during a specific time period. The measure of effectiveness used for the capacity analysis is referred to as a Level of Service (LOS). Levels of Service are calculated to provide an indication of the amount of delay that a motorist experiences while traveling along a roadway or through an intersection. Since the most amount of delay to motorists usually occurs at intersections, capacity analysis focuses on intersections, as opposed to highway segments.

Six Levels of Service are defined for analysis purposes. They are assigned letter designations, from "A" to "F", with LOS "A" representing the conditions with little to no delay, and LOS "F" conditions with very long delays. Suggested ranges of service capacity and an explanation of Levels of Service are included in the Appendices. LOS “C” or better is generally desirable, but LOS “D” for signalized locations and LOS “E” for unsignalized are generally acceptable during peak periods so long as the volume to capacity ratio (v/c) is below 1.0.

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The standard procedure for capacity analysis of signalized and unsignalized intersections is outlined in the Highway Capacity Manual (HCM 2016) published by the Transportation Research Board. Traffic analysis software, Synchro 11, which is based on procedures and methodologies contained in the HCM, was used to analyze operating conditions at the study area intersections. The procedure yields a Level of Service based on the HCM 2016 as an indicator of how well intersections operate. This study used HCM 2000 methodology for determining operations at the unsignalized intersections in accordance with local NYSDOT Region 5 guidelines.

Given that the intersection of Sweet Home Road/Maple Road exceeds capacity (v/c ratio greater than 1.0) during the PM peak hour, traffic simulation modeling was also used using an extension of the Synchro software called SimTraffic. During simulation modeling, vehicles are individually tracked, and statistics are recorded on a second-by-second basis to determine the delays each vehicle experiences. Since SimTraffic simulation modeling is microscopic and stochastic, meaning car movement parameters vary randomly within a set distribution based on an initial seed number, the same traffic volume may result in slightly different results depending on the random seed used. Therefore, simulation results are reported based on an average value of multiple simulation runs to reduce the variability in results.

Synchro and SimTraffic results are contained in the Appendices.

B. Capacity Analysis Results

Existing and background operating conditions during the peak study periods are evaluated to determine a basis for comparison with the projected future conditions. The future traffic conditions generated by the proposed project were analyzed to assess the operation of the study area intersections. Capacity results for existing, background and full development conditions are listed in **Table IV**. The discussion following the table summarizes capacity conditions.

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TABLE IV: CAPACITY ANALYSIS RESULTS

INTERSECTION	2022 EXISTING CONDITIONS				2027 BACKGROUND CONDITIONS				2027 FULL BUILD CONDITIONS			
	AM		PM		AM		PM		AM		PM	
1. Rensch Road/Proposed Westerly Driveway (U)												
EB - Rensch Road	NA		NA		NA		NA		A	0.0	A	0.0
SB - Proposed Westerly Driveway									A	9.3	A	10.0
2. Rensch Road/Office Lot/Villas on Rensch (W) (U)												
EB - Rensch Road	A	0.0	A	0.1	A	0.0	A	0.1	NA		NA	
WB - Rensch Road	A	0.1	A	2.1	A	0.1	A	2.1	A	0.0	A	0.1
NB - Villas on Rensch (W)	A	9.4	A	9.4	A	9.4	A	9.5	A	9.4	A	0.0
SB - Office Lots	B	10.4	B	12.1	B	10.4	B	12.1	NA		NA	
3. Rensch Road/Proposed Easterly Driveway (U)												
EB - Rensch Road	NA		NA		NA		NA		A	0.1	A	0.1
SB - Proposed Easterly Driveway									A	10.0	B	12.1
4. Rensch Road/Office Lot/Villas on Rensch (E) (U)												
EB - Rensch Road	A	0.0	A	0.0	A	0.0	A	0.0	NA		NA	
WB - Rensch Road	A	0.0	A	0.2	A	0.0	A	0.2	A	0.2	A	1.4
NB - Villas on Rensch (E)	A	9.5	A	0.0	A	9.5	A	0.0	A	9.9	B	10.1
SB - Office Lots	A	9.7	A	9.7	A	9.7	A	9.7	NA		NA	

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TABLE IV: CAPACITY ANALYSIS RESULTS

INTERSECTION	2022 EXISTING CONDITIONS				2027 BACKGROUND CONDITIONS				2027 FULL BUILD CONDITIONS			
	AM		PM		AM		PM		AM		PM	
5. Sweet Home Road/Rensch Road (S)												
EB left - Rensch Road	D	36.1	D	46.6	D	38.4	D	46.9	D	37.0	D	46.8
EB thru/right - Rensch Road	D	38.2	D	53.0	D	40.7	D	53.8	D	43.6	E	59.5
WB left - Rensch Road	D	42.2	E	59.3	D	45.1	E	61.8	D	46.7	E	67.7
WB left/thru - Rensch Road	D	41.5	E	58.8	D	44.3	E	62.7	D	46.2	E	68.4
WB right - Rensch Road	A	6.6	A	9.5	A	2.3	A	9.4	A	2.5	A	9.3
NB left - Sweet Home Road	D	42.1	E	55.5	D	44.9	E	56.0	D	45.6	E	59.1
NB thru - Sweet Home Road	C	29.5	D	43.0	C	32.4	D	43.6	C	34.8	D	45.3
NB right - Sweet Home Road	A	6.5	A	7.7	A	7.2	A	7.9	A	7.7	A	8.0
SB left - Sweet Home Road	E	61.6	E	68.7	D	51.0	E	72.4	E	57.9	E	78.0
SB thru/right - Sweet Home Road	C	21.2	C	26.3	C	21.4	C	26.7	C	20.6	C	32.1
Overall LOS	**C**	**29.4**	**D**	**38.0**	**C**	**27.9**	**D**	**39.2**	**C**	**29.7**	**D**	**43.3**
Volume-to-Capacity (v/c) Ratio	**0.89**		**0.83**		**0.82**		**0.85**		**0.86**		**0.88**	
6. Sweet Home Road/The Station (U)												
WB left - The Station	B	14.5	C	22.6	C	16.3	C	24.6	C	16.2	D	25.1
WB right - The Station	B	10.7	B	12.4	B	11.4	B	12.7	B	11.3	B	12.8
SB left - Sweet Home Road	A	9.0	B	10.6	A	9.3	B	10.8	A	9.3	B	10.9
7. Sweet Home Road/Maple Road (S)												
EB left - Maple Road	C	31.6	E	61.9	C	34.1	E	78.1	C	33.6	E	71.1
EB thru - Maple Road	C	32.6	E	73.9	C	32.7	F	129.5	C	32.6	F	104.8
EB thru - Maple Road		NA	D	38.3		NA	D	43.8		NA	D	44.5
EB right - Maple Road	A	0.3	A	9.0	A	0.3	A	7.6	A	0.3	A	8.9
WB left - Maple Road	C	21.7	D	35.9	C	21.9	D	43.2	C	21.8	D	39.9
WB thru - Maple Road	D	40.2	E	72.8	D	40.7	F	87.4	D	40.5	F	85.2
WB thru - Maple Road		NA	D	48.1		NA	E	67.3		NA	E	65.4
WB right - Maple Road	A	3.9	A	7.6	A	4.2	A	9.6	A	4.0	B	10.2
NB left - Sweet Home Road	B	18.7	C	29.8	B	19.0	C	31.1	B	19.0	C	31.7
NB thru - Sweet Home Road	D	40.4	D	43.6	D	41.9	D	49.5	D	41.3	D	44.2
NB right - Sweet Home Road	A	2.9	A	5.8	A	3.0	A	6.9	A	3.0	A	7.5
SB left - Sweet Home Road	C	22.0	C	30.6	C	23.1	C	33.8	C	23.0	C	34.6
SB thru - Sweet Home Road	C	31.9	D	35.7	C	32.8	D	35.3	C	33.1	D	37.7
SB right - Sweet Home Road	A	3.1	B	12.4	A	3.7	B	11.9	A	4.1	B	13.7
Overall LOS	**C**	**27.5**	**D**	**40.8**	**C**	**28.1**	**D**	**54.5**	**C**	**27.9**	**D**	**52.7**
Volume-to-Capacity (v/c) Ratio	**0.68**		**1.13**		**0.72**		**1.18**		**0.71**		**1.22**	

Notes:

1. A (0.0) = Level of Service (Delay in seconds per vehicle)
2. EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound
3. (S) = Signalized; (U) = Unsignalized
4. N/A = Approach does not exist and/or was not analyzed during this condition
5. Green shaded cells indicate low delays, yellow shaded cells indicate moderate delays, red shaded cells indicate long delays.
6. The v/c ratio, also referred to as degree of saturation, represents the sufficiency of an intersection to accommodate the vehicular demand. A v/c ratio less than 0.85 generally indicates that adequate capacity is available and vehicles are not expected to experience significant queues and delays. A v/c ratio between 0.85 and 0.95 generally indicates an intersection is nearing capacity. Intersections with a v/c ratio of 1.0 or greater generally indicate conditions at or above capacity.
7. Due to v/c being greater than 1.0 at Sweet Home Road/Maple Road during the PM peak hour, the condition was analyzed using SimTraffic Simulations.

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1. Rensch Road/Proposed Westerly Driveway

All movements are projected to operate at LOS "A" under future build conditions during both peak hours studied. No capacity improvements are warranted nor recommended.

2. Rensch Road/Office Lots/Villas on Rensch (W)

All movements operate at LOS "B" or better under existing, projected background, and future build conditions during both peak hours studied. The intersection can accommodate the projected new traffic volumes resulting from the project; thus, no capacity improvements are warranted nor recommended.

3. Rensch Road/Proposed Easterly Driveway

All movements are projected to operate at LOS "B" or better under future build conditions during both peak hours studied. No capacity improvements are warranted nor recommended.

4. Rensch Road/Office Lots/Villas on Rensch (E)

All movements operate at LOS "A" under existing, projected background, and future build conditions during both peak hours studied. The intersection can accommodate the projected new traffic volumes resulting from the project; thus, no capacity improvements are warranted nor recommended.

5. Sweet Home Road/Rensch Road

All movements generally operate at LOS "E" or better under existing, projected background, and future build conditions during both peak hours studied. Signal timing improvements are recommended under background conditions during the AM peak hour to maintain optimization. This consists of reducing the northbound left green time to 20 seconds (from 25 seconds) and increasing the southbound left green time to 28 seconds (from 25 seconds).

Upon full build conditions, the southbound left movement during the AM peak hour is projected to change from LOS "D" to "E"; a borderline condition, as the threshold is at 55.0 seconds of delay per vehicle. During the PM peak hour, the eastbound thru/right movement changes from LOS "D" to "E"; a borderline condition.

The intersection can accommodate the projected new traffic volumes resulting from the project; thus, no capacity improvements are warranted nor recommended.

6. Sweet Home Road/The Station

All movements operate at LOS "D" or better under existing, projected background, and future build conditions during both peak hours studied. Between background and full build conditions, the westbound left movement changes from LOS "C" to "D" during the PM peak hour; a borderline condition as the threshold occurs at 25.0 seconds of delay per vehicle. The intersection can accommodate the projected new traffic volumes resulting from the project; thus, no capacity improvements are warranted nor recommended.

7. Sweet Home Road/Maple Road

All movements generally operate at LOS "D" or better under existing, projected background, and future build conditions during the AM peak hour. However, operational deficiencies exist during the PM peak hour under all conditions based upon traffic simulations. The overall intersection operates with a v/c ratio greater than 1.0 with an overall LOS of "D".

The eastbound left movement and existing traffic volumes are accommodated by a single lane. An additional left turn would be more appropriate based on the general rule of thumb of

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

providing an additional left turn lane when peak hour left turn traffic volumes exceed 300 vehicles. Additionally, the southbound right turn movement is accommodated by a single lane. Additional lanes to accommodate these turning movements would improve overall capacity. However, the construction of these improvements would require significant widening, relocation of utilities, and widening past the intersection.

The proposed project will contribute approximately 1.7% of total intersection traffic during the AM peak hour and 2.3% of total intersection traffic during the PM peak hour.

When considering the projected traffic increases resulting from the proposed project, no project related capacity improvements are recommended.

IX. ALTERNATIVE PARKING PLAN

A. Town Parking Requirements

A Parking Demand Assessment was prepared consisting of an Alternate Parking Study per Section 7-1-7-A of the Zoning Code. When evaluating the parking supply needs for the proposed mixed-use project, our firm projected the parking demand considering shared parking (mixed-use) principles using nationally accepted methodology developed by the Urban Land Institute (ULI), ITE, International Council of Shopping Centers (ICSC), and National Parking Association (NPA). and a comparison to Town requirements, as set forth within Section 5A-9-1-A of the Town of Amherst's Updated Zoning Code Adopted on September 3, 2019 for Mixed-Use Districts.

Section 5A-9-1-A of the Zoning Code sets forth the off-street parking requirements for different categories of land uses. **Table V** depicts the required parking spaces for the project site.

TABLE V: TOWN CODE PARKING REQUIREMENTS

UNIT/USE TYPE	REQUIRED PARKING RATIO	SIZE	TOTAL REQUIRED PARKING SPACES
Two-bedroom unit	1.0 space per dwelling unit	475 units	475
Three or more bedroom unit	1.5 spaces per dwelling unit	25 units	38
Retail Sales	2.5 spaces per 1,000 SF	10,000 SF	25
Office	2.5 spaces per 1,000 SF	10,000 SF	25
Total Required Parking Spaces			**563**

Strict application of the unshared off-street parking standards in the Zoning Code results in a parking requirement of 563 spaces. The number of parking spaces to be provided is 316 surface spaces and 240 structured spaces for a total of 556 spaces. Thus, there is a deficit of seven parking spaces per strict application of Section 5A-9-1-A of the Zoning Code.

B. Shared Parking Demand

Shared parking studies are conducted to establish the total number of spaces necessary by mixed-use developments to effectively serve expected parking demands. The shared parking concept builds upon the premise that land uses in a mixed-use development often do not share the same peak demand period, so spaces can be shared between the different land uses

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during different peak periods. Each land use typically has a peak demand period where it would occupy the maximum number of spaces that the use requires and an off-peak period where a lesser percentage of the maximum spaces would be occupied; be it by time of day, day of week, or even month of the year. This allows for the project to provide fewer spaces than would be required if the land uses on a project site were to be treated separately with individual parking demands. The concept of shared parking is well recognized within the real estate and regulatory community and is proven to work.

To estimate the number of parking spaces required for the proposed mixed-use project, this assessment used the ULI methodology for shared parking. This methodology is utilized by transportation engineers and planners when evaluating the parking demand for a mixed-use project. The ULI Shared Parking 3rd Edition includes state-of-the-art practice methodologies for determining parking demand in these types of projects.

Accompanying the publication is an interactive Shared Parking Calculation Model (Model) that is used to estimate the shared parking demand. The Model requires a user to input the number of units associated with each proposed land use. Within the Model, 32 land uses are identified – some of which are subdivided into more refined categories – with 44 different recommended base parking ratios based on suburban locations with little or no transit. Data contained within the Model is from a combination of ULI surveys and the ITE Parking Generation Manual. Outputs consist of a summary table describing the base parking demand and shared parking reduction; a monthly demand comparison; weekday and weekend demand by month; and weekday and weekend demand by hour.

The peak hour demand, respective of weekday, weekend, and seasonal demands, is projected to occur at 7:00 PM on a December weekend. The projected peak hour demand for the mixed-use project (i.e., the busiest hour of the busiest weekday or weekend of the year) is ±566 spaces. Parking demand accumulations for the peak weekday and weekend are presented in **Table VI**.

TABLE VI: SHARED PARKING DEMAND PROJECTIONS

LAND USE	SIZE	WEEKDAY		WEEKEND	
		UNADJUSTED DEMAND	**SHARED DEMAND**	UNADJUSTED DEMAND	**SHARED DEMAND**
Residential	500 units	519	**519**	544	**544**
Retail	±10,000 SF	36	**29**	40	**23**
Office	±10,000 SF	38	**4**	5	**0**
Total Parking Spaces		593	**552**	589	**566**
Shared Parking Reduction		**7%**		**4%**	

Notes:
1. Weekday shared demand occurs in December at 7:00 PM
2. Weekend shared demand occurs in December at 7:00 PM

When considering the site's 556 total parking spaces, the projected peak shared demand is deficient by 10 spaces.

It is noted that the proposed residential use is marketed as student housing. When considering the requirements per Town Code and demands using the ULI Model, these sources assume that the residential demands are typical multifamily uses and not student uses. Students are

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highly likely to own fewer vehicles per than typical multifamily developments, especially given the proximity of the proposed project to the UB North Campus.

Parking reduction strategies are being provided, such as bicycle parking spaces. Given these considerations, no significant adverse parking impacts are projected.

X. CONCLUSIONS & RECOMMENDATIONS

This Traffic Impact Study identified and evaluated the potential traffic impacts that can be expected from the proposed mixed-use development at 1400-1416 Sweet Home Road in the Town of Amherst, New York. The results of this study determined that the existing transportation network can adequately accommodate the projected traffic volumes and resulting minor impacts to study area intersections with the following mitigation in place. The following sets forth the conclusions and recommendations based upon the results of the analyses:

1. Using ITE Trip Generation Manual data, the proposed project is expected to generate approximately 66 entering/76 exiting vehicle trips during the AM peak hour and 145 entering/156 exiting vehicle trips during the PM peak hour.

2. However, not all driveway volumes are new, but instead a portion of the proposed volume is reduced considering internal capture adjustments. Thus, the proposed project is expected to generate approximately 62 entering/72 exiting vehicle trips during the AM peak hour and 129 entering/140 exiting vehicle trips during the PM peak hour.

3. A crash analysis was conducted from 2017-2019 at the study intersections. Most of the crash types occurring at each study intersection were rear end events, a characteristic of signalized intersections along moderately to heavily trafficked arterials. However, an in-depth review of the crashes determined no deficiencies exist which can be corrected by geometric improvements. Consideration may be given to upgrading the signal at Sweet Home Road/Maple Road to change the green signals to flashing yellow arrows for permissive left turns to address the frequency of left turn crashes.

4. Minor signal timing adjustments are recommended at the intersection of Sweet Home Road/Rensch Road during the AM peak hour. These adjustments should be made under background conditions.

5. When considering Town of Amherst Zoning Code parking requirements and shared parking demands, the project site has a parking deficit of 10 or fewer spaces. It is noted that the proposed apartments are to be marketed as student housing given the proximity of the project site to the UB North Campus. When considering the requirements per Town Code and demands using the ULI Model, these sources assume that the residential demands are typical multifamily uses and not student uses. Students are highly likely to own fewer vehicles per unit than typical multifamily developments, especially given the proximity of the proposed project to the UB North Campus. Parking reduction strategies are being provided, such as bicycle parking spaces. Given these considerations, no significant adverse parking impacts are projected.

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6. The projected traffic impacts resulting from full development of the proposed mixed-use project during both peak hours can be accommodated by the existing transportation network and study area intersections. No capacity improvements are required.

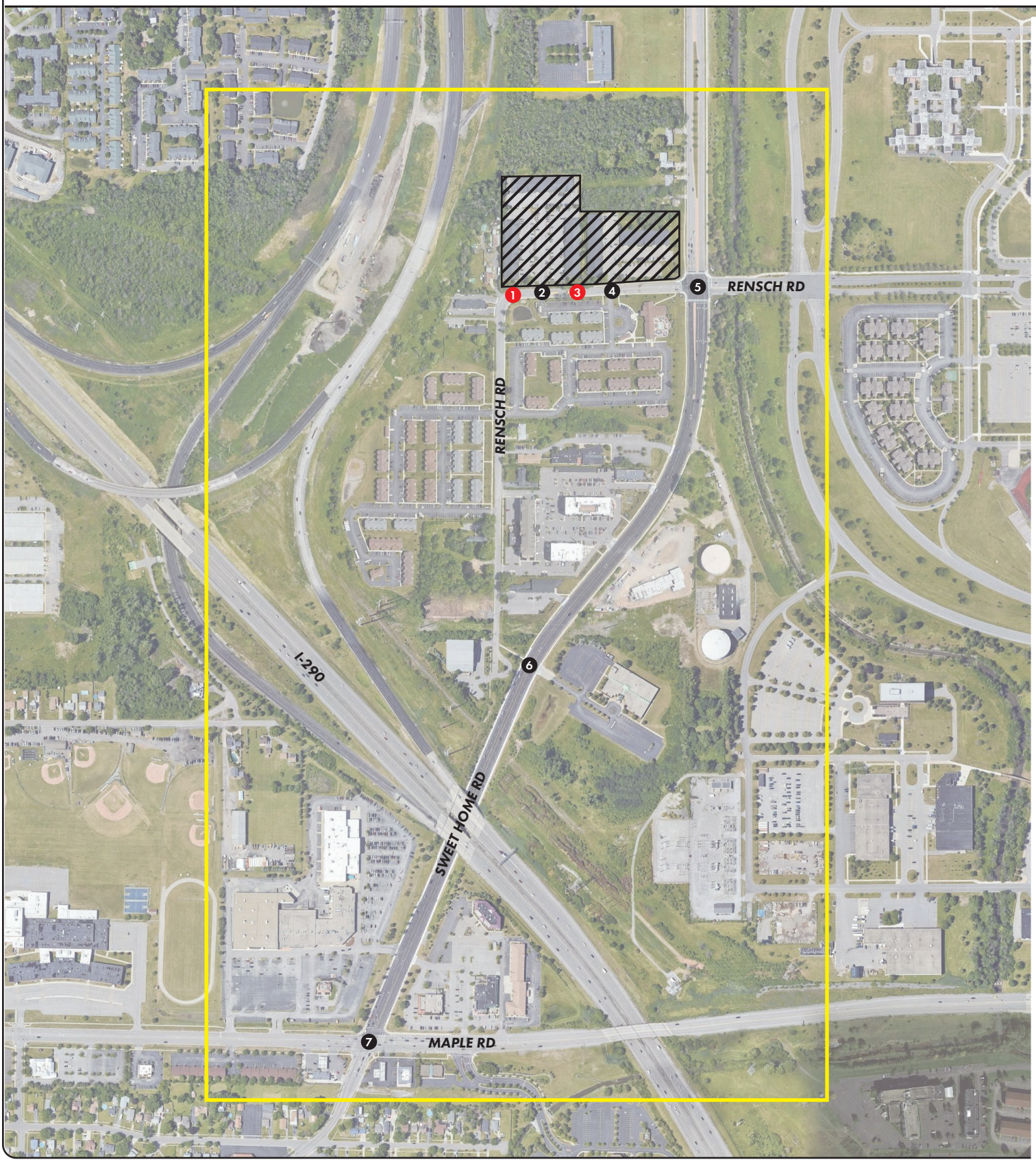
7. The proposed mixed-use project will not result in any potentially significant adverse traffic impacts to the study area intersections. This Traffic Impact Study provides the Town of Amherst and involved agencies with a detailed analysis for the purpose of evaluating the potential traffic impacts associated with the proposed project.

XI. FIGURES

Figures 1 through 8 are included on the following pages.

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

FIGURE 1: SITE LOCATION AND STUDY AREA



Key

- 1 Study Intersection
- 1 Proposed Intersection
- Study Area
- Site Location

PROPOSED MIXED-USE DEVELOPMENT
1400-1416 SWEET HOME ROAD

TOWN OF AMHERST, ERIE COUNTY, NEW YORK

N

0 700 1400 2100

Feet

SRF ASSOCIATE
Transportation Planning / Engineering / Design

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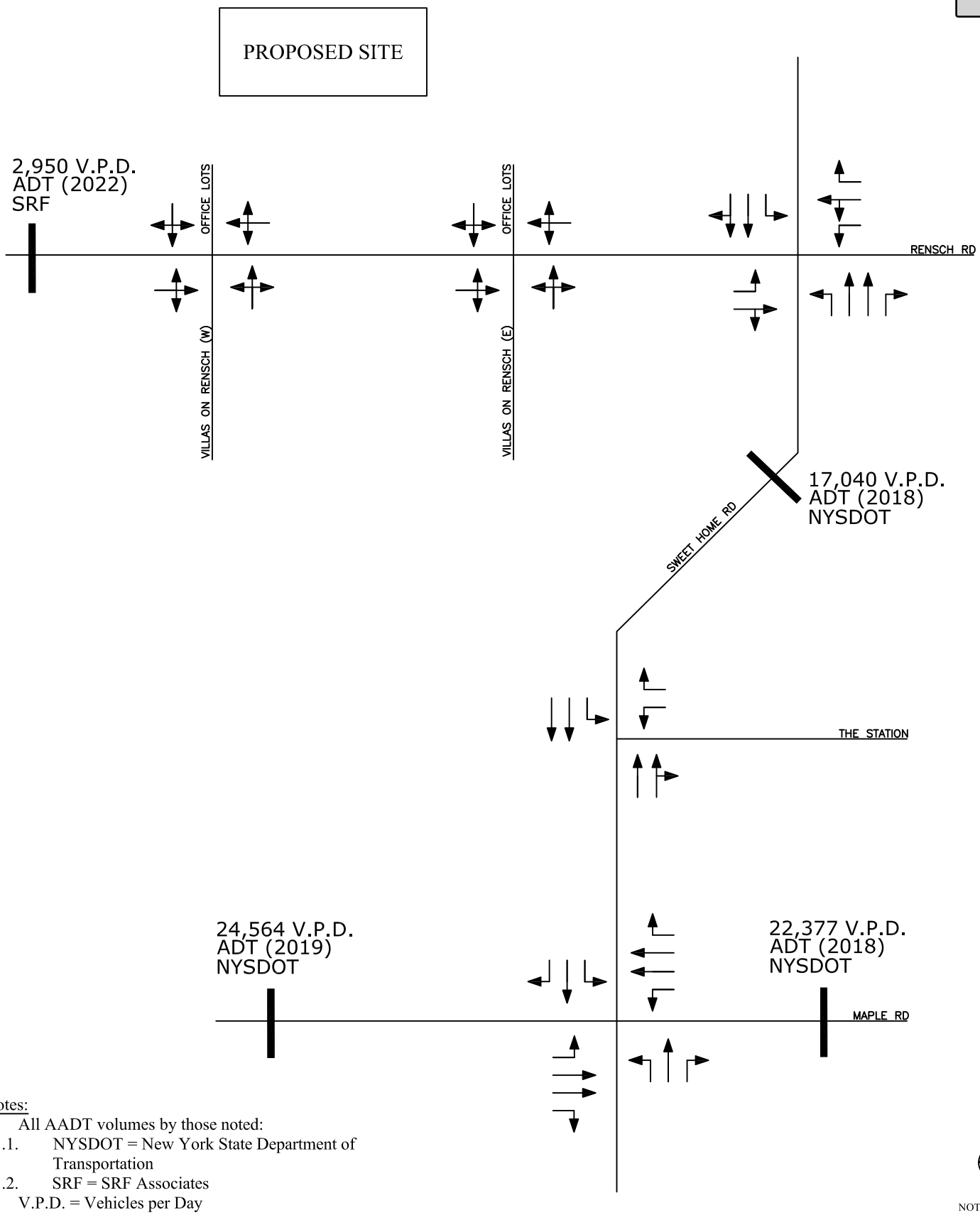

Notes:

1. All AADT volumes by those noted:
   - 1.1. NYSDOT = New York State Department of Transportation
   - 1.2. SRF = SRF Associates
2. V.P.D. = Vehicles per Day

N
NOT TO SCAI

KEY	FIGURE 2	SRF ASSOCIATES
	LANE GEOMETRY & AVERAGE DAILY TRAFFIC	Transportation Planning / Engineering / Design
PROJECT NO: 42019	PROPOSED MIXED-USE DEVELOPMENT TOWN OF AMHERST, NY	www.srfa.net / (58

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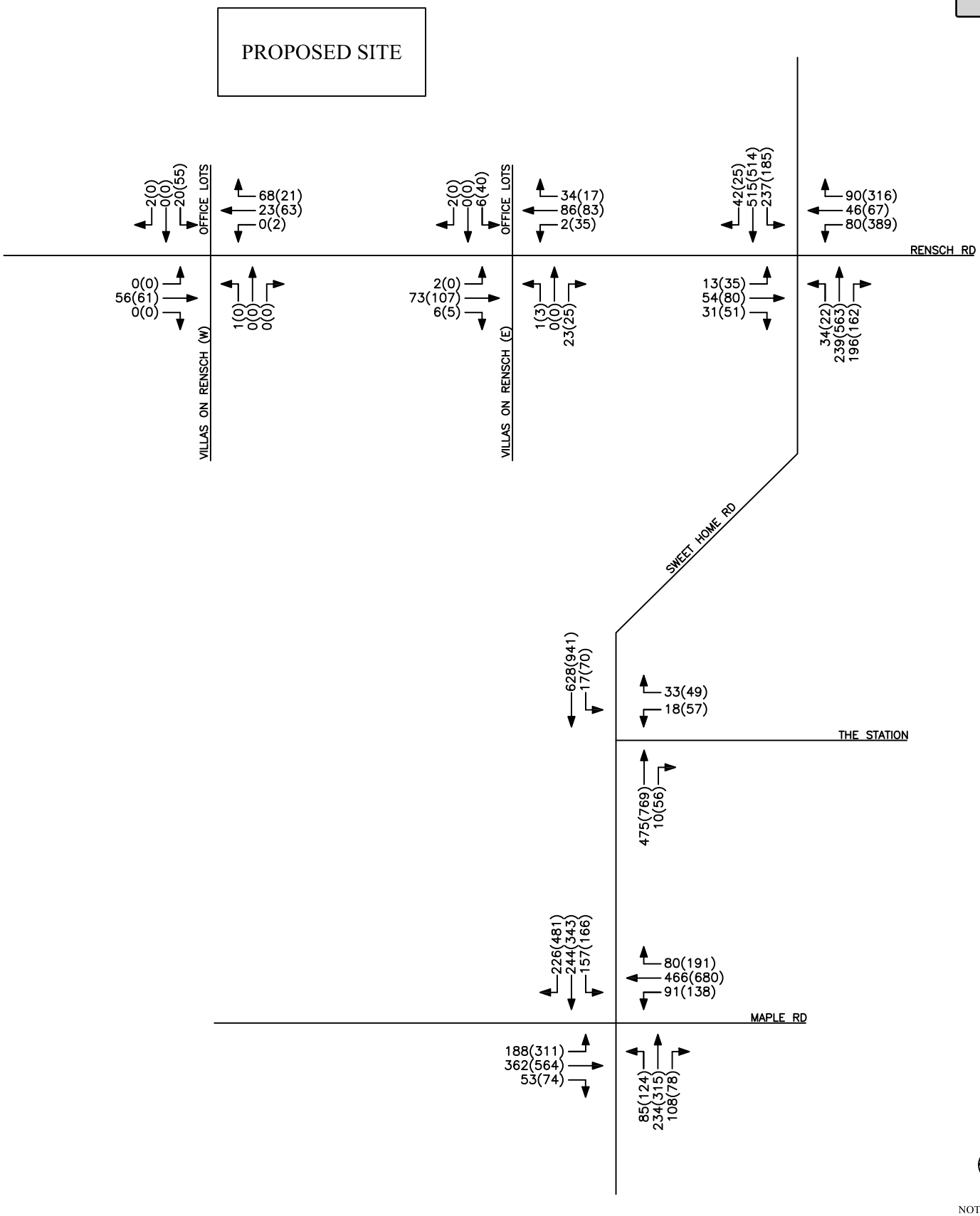
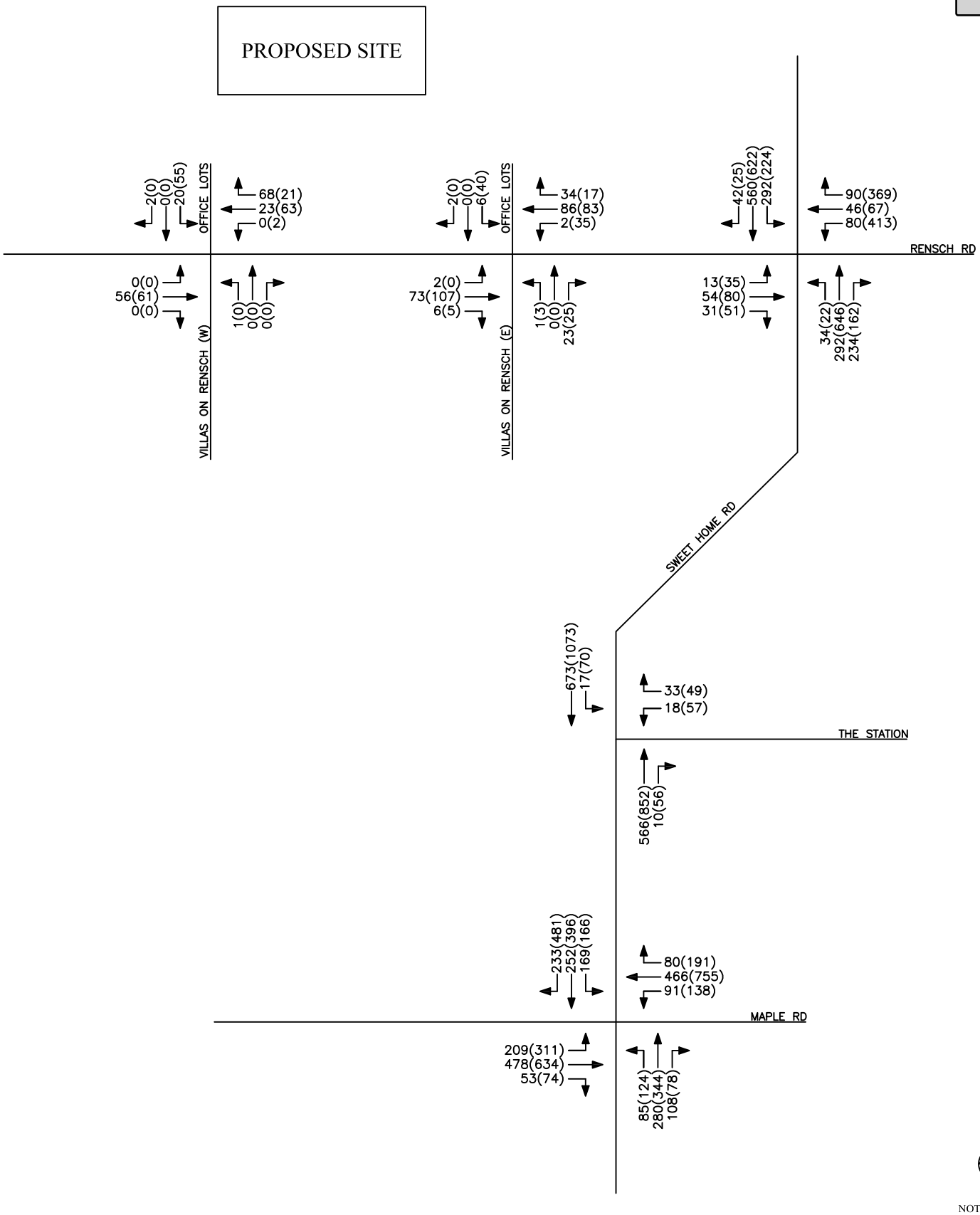


KEY	FIGURE 3A
00(00) = AM(PM)	PEAK HOUR VOLUMES 2022 UNADJUSTED CONDITIONS
PROJECT NO: 42019	PROPOSED MIXED-USE DEVELOPMENT TOWN OF AMHERST, NY

SRF ASSOCIATES
Transportation Planning / Engineering / Design
www.srfa.net / (58

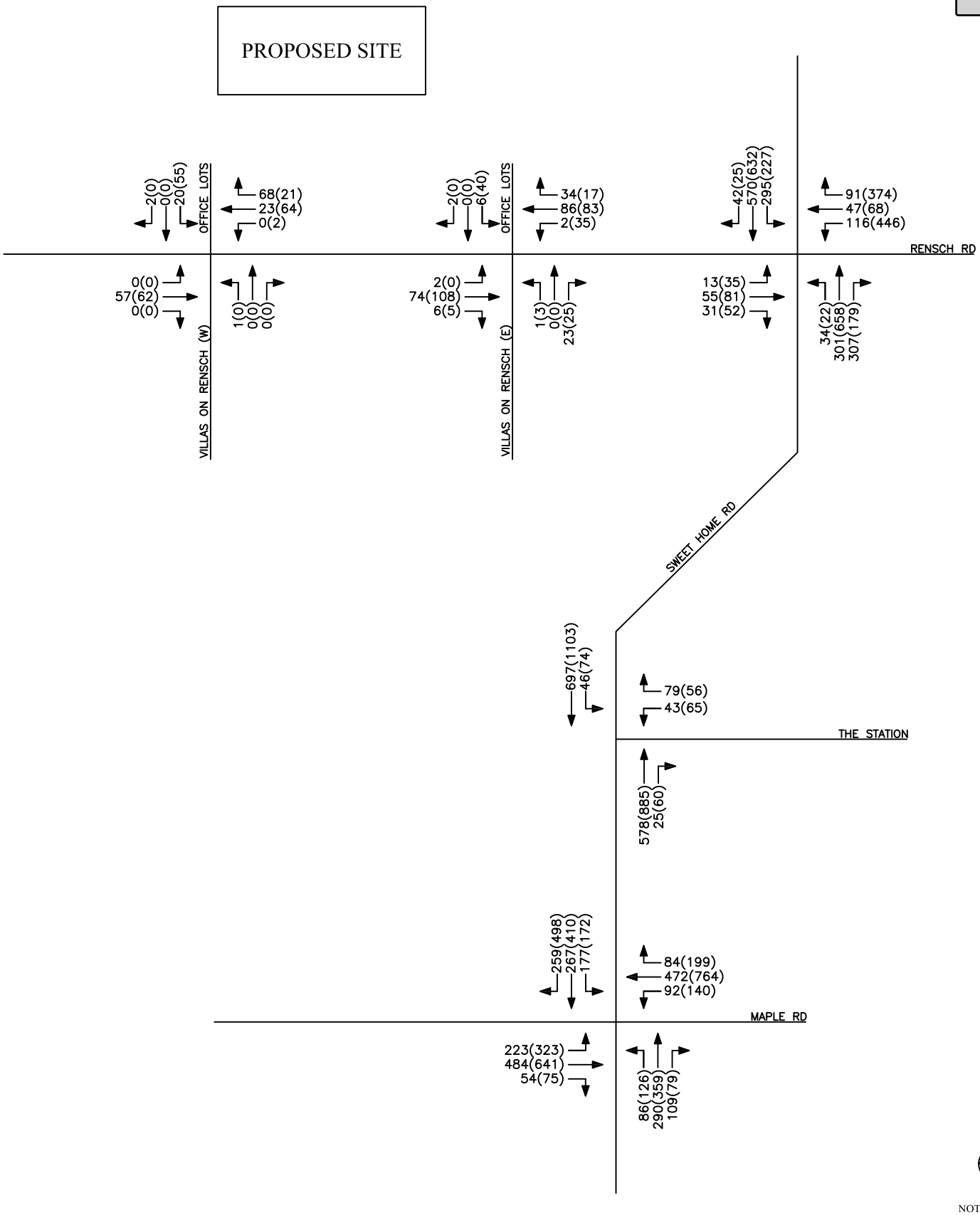
Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)



KEY	FIGURE 3B
00(00) = AM(PM)	PEAK HOUR VOLUMES 2022 EXISTING BASE CONDITIONS
PROJECT NO: 42019	PROPOSED MIXED-USE DEVELOPMENT TOWN OF AMHERST, NY

SRF ASSOCIATES
Transportation Planning / Engineering / Design
www.srfa.net / (58

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)



KEY	FIGURE 4
00(00) = AM(PM)	PEAK HOUR VOLUMES 2027 BACKGROUND CONDITIONS
PROJECT NO: 42019	PROPOSED MIXED-USE DEVELOPMENT TOWN OF AMHERST, NY

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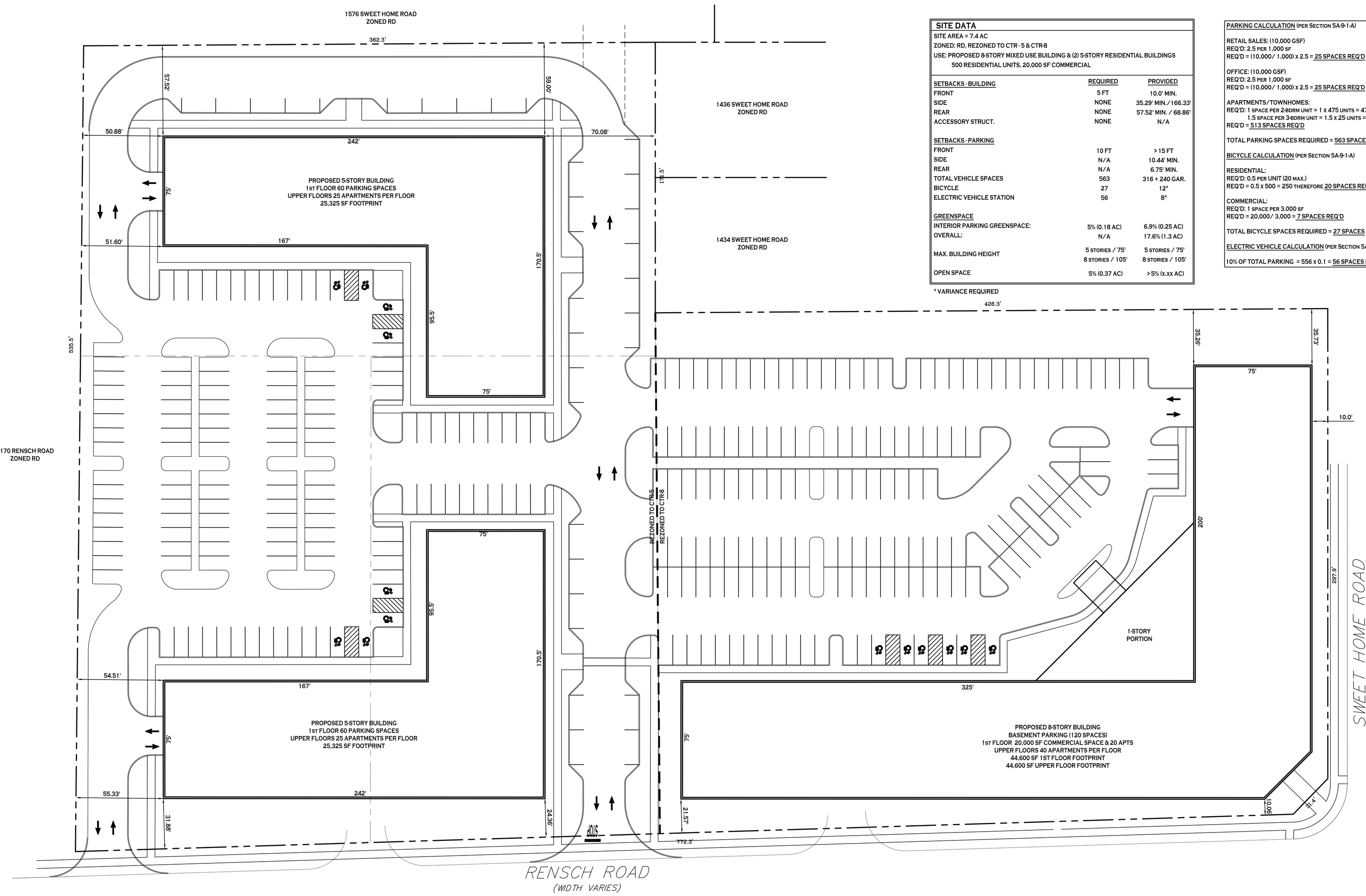


N **SITE PLAN**
SCALE: 1"=30'

SITE DATA

SITE AREA = 7.4 AC
ZONED: RD, REZONED TO CTR - 5 & CTR-8
USE: PROPOSED 8-STORY MIXED USE BUILDING & (2) 5-STORY RESIDENTIAL BUILDINGS
500 RESIDENTIAL UNITS, 20,000 SF COMMERCIAL

SETBACKS - BUILDING	REQUIRED	PROVIDED
FRONT	5 FT	10.0' MIN.
SIDE	NONE	35.29' MIN. / 166.33'
REAR	NONE	57.52' MIN. / 68.86'
ACCESSORY STRUCT.	NONE	N/A
SETBACKS - PARKING		
FRONT	10 FT	> 15 FT
SIDE	N/A	10.44' MIN.
REAR	N/A	6.75' MIN.
TOTAL VEHICLE SPACES	563	316 + 240 GAR.
BICYCLE	27	12*
ELECTRIC VEHICLE STATION	56	8*
GREENSPACE		
INTERIOR PARKING GREENSPACE:	5% (0.18 AC)	6.9% (0.25 AC)
OVERALL:	N/A	17.6% (1.3 AC)
MAX. BUILDING HEIGHT	5 STORIES / 75' 8 STORIES / 105'	5 STORIES / 75' 8 STORIES / 105'
OPEN SPACE	5% (0.37 AC)	> 5% (x.xx AC)

* VARIANCE REQUIRED

PARKING CALCULATION (PER SECTION 5A-9-1-A)

RETAIL SALES: (10,000 GSF)
REQ'D: 2.5 PER 1,000 SF
REQ'D = (10,000 / 1,000) x 2.5 = 25 SPACES REQ'D

OFFICE: (10,000 GSF)
REQ'D: 2.5 PER 1,000 SF
REQ'D = (10,000 / 1,000) x 2.5 = 25 SPACES REQ'D

APARTMENTS/TOWNHOMES:
REQ'D: 1 SPACE PER 2-BDRM UNIT = 1 X 475 UNITS = 475 SPACES
1.5 SPACE PER 3-BDRM UNIT = 1.5 X 25 UNITS = 38 SPACES
REQ'D = 513 SPACES REQ'D

TOTAL PARKING SPACES REQUIRED = 563 SPACES

BICYCLE CALCULATION (PER SECTION 5A-9-1-A)

RESIDENTIAL:
REQ'D: 0.5 PER UNIT (20 MAX.)
REQ'D = 0.5 X 500 = 250 THEREFORE 20 SPACES REQ'D.

COMMERCIAL:
REQ'D: 1 SPACE PER 3,000 SF
REQ'D = 20,000 / 3,000 = 7 SPACES REQ'D

TOTAL BICYCLE SPACES REQUIRED = 27 SPACES

ELECTRIC VEHICLE CALCULATION (PER SECTION 5A-9-1-D)

10% OF TOTAL PARKING = 556 X 0.1 = 56 SPACES REQ'D.

SITE LEGEND

- PROPERTY LINE
- PROPOSED CONCRETE CURB
- PROPOSED CONCRETE SIDEWALK
- PROPOSED SIGN
- PROPOSED PARKING NUMBER (27)
- PROPOSED LIGHT POLE & FIXTURE

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

30' 30 0 30 60Ft.

FIGURE 5 - CONCEPT SITE PLAN

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

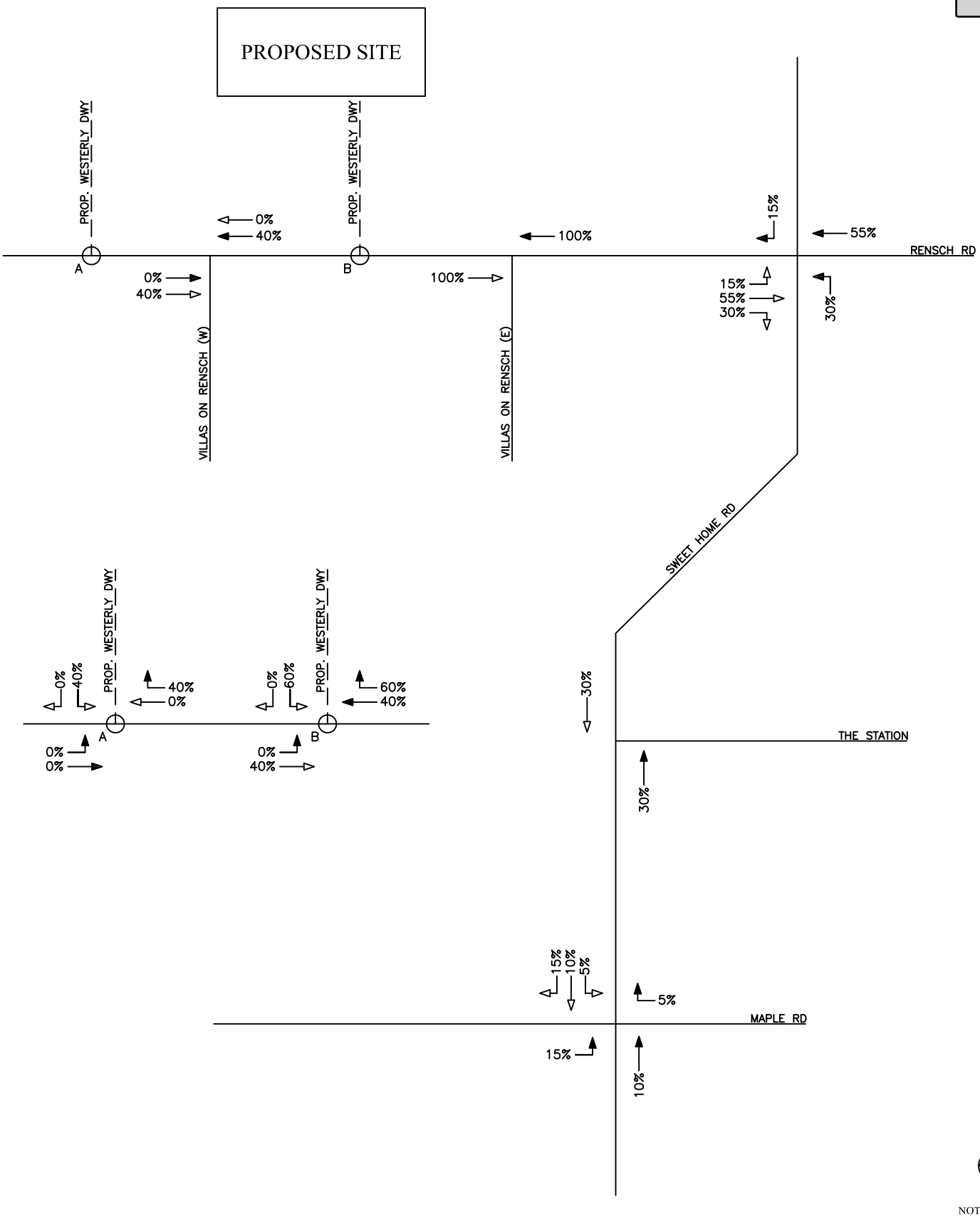
REVISIONS:
No. Description Date

PROJECT NAME:
New Construction
Prop. Mixed Use Development
1400 - 1416 Sweet Home Road
Amherst, New York

Date: 3/15/22
Drawn by: C. Wood
Scale: As Noted

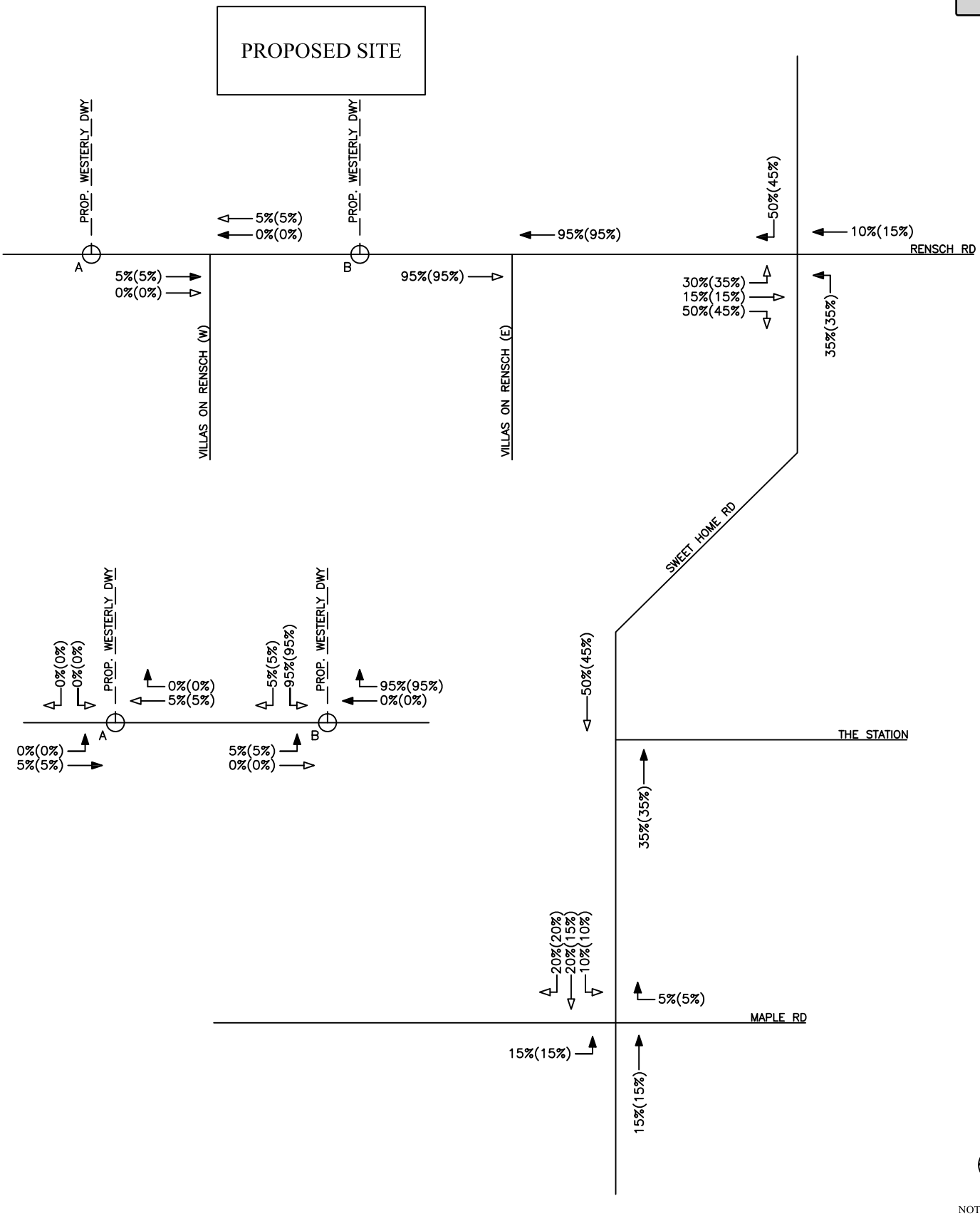
DRAWING NAME:
Concept Site Plan

DRAWING NO.
C-100
Project no.: 21.008



KEY	FIGURE 6A	
00(00) = AM(PM) ENTERING TRIPS → EXITING TRIPS →	TRIP DISTRIBUTION RESIDENTIAL	SRF ASSOCIATES Transportation Planning / Engineering / Design www.srfa.net / (58
PROJECT NO: 42019	PROPOSED MIXED-USE DEVELOPMENT TOWN OF AMHERST, NY	

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)



KEY	FIGURE 6B	SRF ASSOCIATES
00(00) = AM(PM) ENTERING TRIPS → EXITING TRIPS →	TRIP DISTRIBUTION COMMERCIAL	Transportation Planning / Engineering / Design www.srfa.net / (58
PROJECT NO: 42019	PROPOSED MIXED-USE DEVELOPMENT TOWN OF AMHERST, NY	

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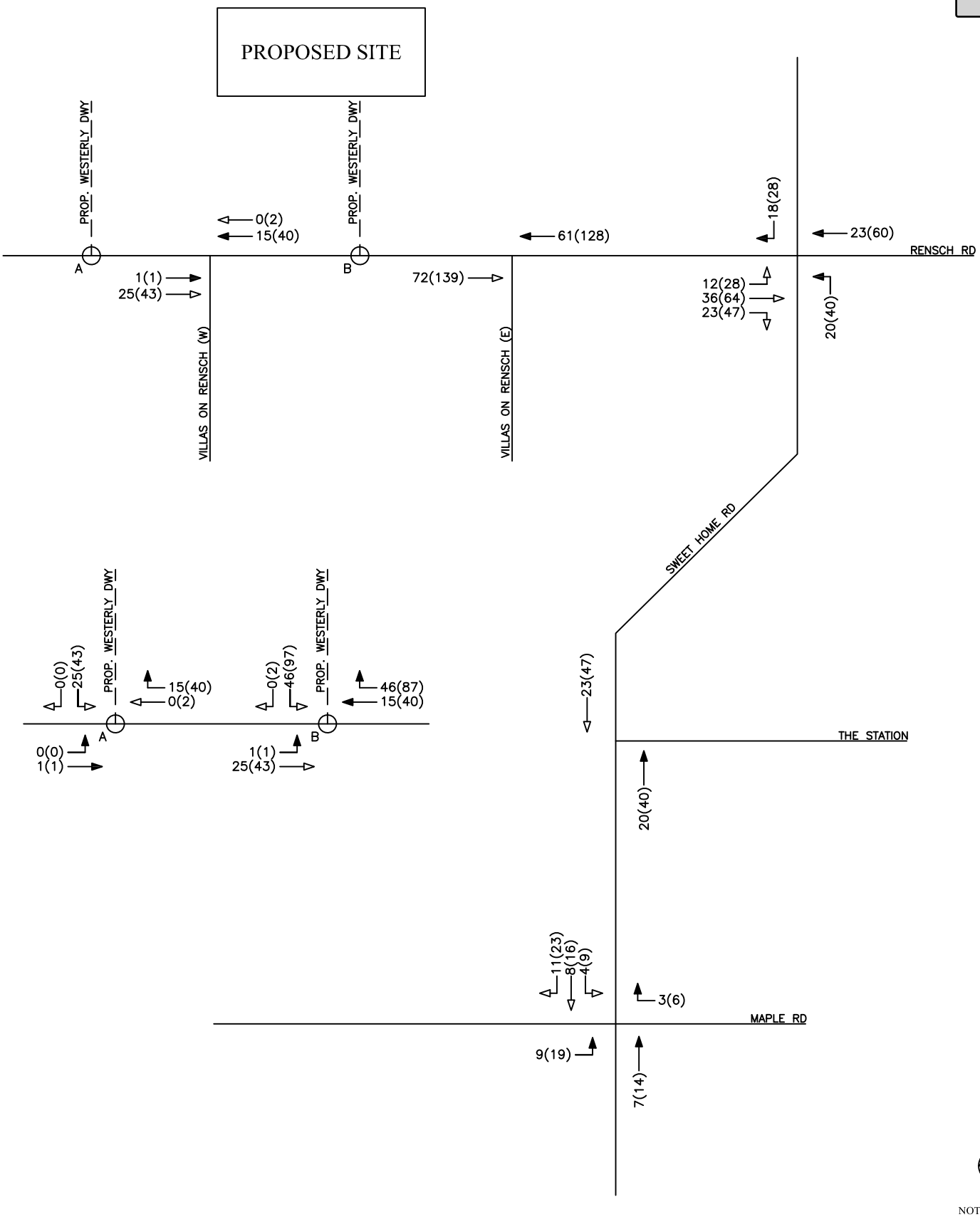
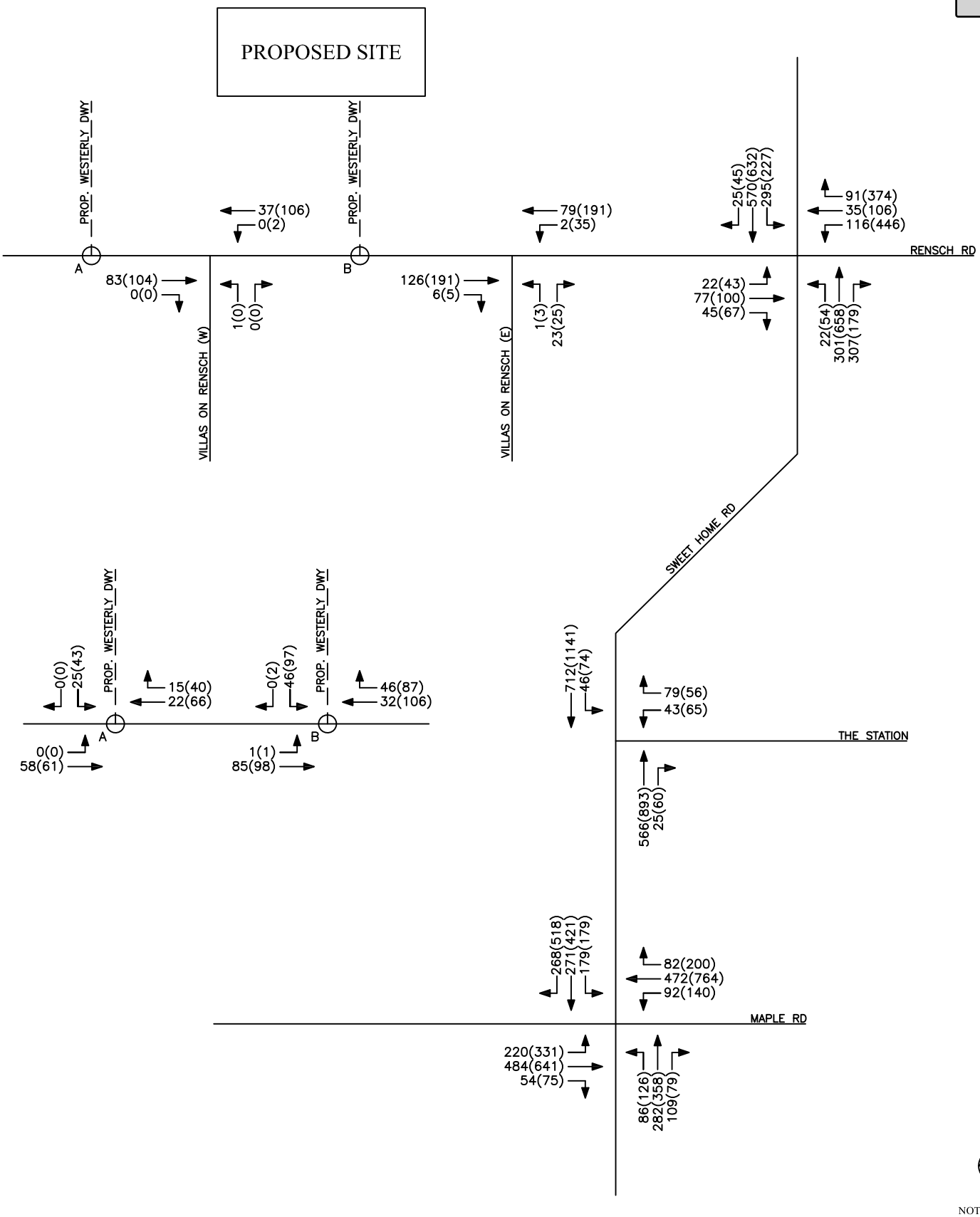


KEY	FIGURE 7	
00(00) = AM(PM) ENTERING TRIPS → EXITING TRIPS →	SITE GENERATED TRIPS	SRF ASSOCIATES Transportation Planning / Engineering / Design www.srfa.net / (58
PROJECT NO: 42019	PROPOSED MIXED-USE DEVELOPMENT TOWN OF AMHERST, NY	

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)



KEY	FIGURE 8	
00(00) = AM(PM)	PEAK HOUR VOLUMES FULL DEVELOPMENT CONDITIONS	SRF ASSOCIATES Transportation Planning / Engineering / Design www.srfa.net / (58
PROJECT NO: 42019	PROPOSED MIXED-USE DEVELOPMENT TOWN OF AMHERST, NY	

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

APPENDICES

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

A1

Collected Traffic Volume Data

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/Rensch Rd
Site Code:
Start Date: 03/03/2022

Turning Movement Data

Start Time	Sweet Home Rd Southbound						Rensch Rd Westbound						Sweet Home Rd Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:00 AM	2	72	19	0	0	93	30	6	3	0	0	39	18	66	3	0	0	87	3	3	3	0	0	9	228
7:15 AM	5	125	34	0	0	164	40	4	7	0	0	51	20	86	2	0	0	108	5	7	1	0	0	13	336
7:30 AM	4	151	77	0	1	232	24	6	10	0	0	40	31	74	5	0	0	110	8	6	4	0	0	18	400
7:45 AM	9	121	72	0	0	202	21	13	20	0	0	54	43	79	13	0	0	135	5	15	3	0	0	23	414
Hourly Total	20	469	202	0	1	691	115	29	40	0	0	184	112	305	23	0	0	440	21	31	11	0	0	63	1378
8:00 AM	13	112	49	0	0	174	19	8	24	0	0	51	39	56	6	0	0	101	5	8	3	0	0	16	342
8:15 AM	9	121	52	0	0	182	14	10	15	0	0	39	44	63	10	0	0	117	8	8	1	0	0	17	355
8:30 AM	9	132	64	0	4	205	27	13	16	0	0	56	57	68	6	0	0	131	9	12	4	0	0	25	417
8:45 AM	11	150	72	0	2	233	30	15	25	0	0	70	56	52	12	0	0	120	9	26	5	0	1	40	463
Hourly Total	42	515	237	0	6	794	90	46	80	0	0	216	196	239	34	0	0	469	31	54	13	0	1	98	1577
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	7	131	25	0	3	163	65	8	82	0	4	155	25	154	7	0	0	186	13	16	14	0	1	43	547
4:15 PM	7	118	27	0	3	152	57	13	57	0	2	127	39	131	10	0	0	180	12	9	15	0	1	36	495
4:30 PM	9	120	52	1	3	182	70	10	67	0	0	147	49	141	6	0	0	196	17	14	7	0	0	38	563
4:45 PM	9	144	54	0	3	207	75	16	117	0	4	208	56	94	4	0	1	154	13	28	4	0	1	45	614
Hourly Total	32	513	158	1	12	704	267	47	323	0	10	637	169	520	27	0	1	716	55	67	40	0	3	162	2219
5:00 PM	4	125	39	0	0	168	106	25	117	0	1	248	24	153	8	0	0	185	16	22	15	0	1	53	654
5:15 PM	3	125	40	0	1	168	65	16	88	0	0	169	33	175	4	0	1	212	5	16	9	0	1	30	579
5:30 PM	4	115	34	2	1	155	62	11	73	1	2	147	34	133	6	0	0	173	6	15	8	0	1	29	504
5:45 PM	5	119	35	1	1	160	59	8	62	0	1	129	47	146	8	0	1	201	13	8	5	0	0	26	516
Hourly Total	16	484	148	3	3	651	292	60	340	1	4	693	138	607	26	0	2	771	40	61	37	0	3	138	2253
Grand Total	110	1981	745	4	22	2840	764	182	783	1	14	1730	615	1671	110	0	3	2396	147	213	101	0	7	461	7427
Approach %	3.9	69.8	26.2	0.1	-	-	44.2	10.5	45.3	0.1	-	-	25.7	69.7	4.6	0.0	-	-	31.9	46.2	21.9	0.0	-	-	-
Total %	1.5	26.7	10.0	0.1	-	38.2	10.3	2.5	10.5	0.0	-	23.3	8.3	22.5	1.5	0.0	-	32.3	2.0	2.9	1.4	0.0	-	6.2	-
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	1	1	0	0	-	2	0	0	0	0	-	0	2
% Motorcycles	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.2	0.1	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	90	1929	707	4	-	2730	710	180	766	1	-	1657	601	1621	108	0	-	2330	146	190	96	0	-	432	7149
% Cars & Light Goods	81.8	97.4	94.9	100.0	-	96.1	92.9	98.9	97.8	100.0	-	95.8	97.7	97.0	98.2	-	-	97.2	99.3	89.2	95.0	-	-	93.7	96.3
Other Vehicles	20	52	38	0	-	110	54	2	17	0	-	73	13	49	2	0	-	64	1	23	5	0	-	29	276
% Other Vehicles	18.2	2.6	5.1	0.0	-	3.9	7.1	1.1	2.2	0.0	-	4.2	2.1	2.9	1.8	-	-	2.7	0.7	10.8	5.0	-	-	6.3	3.7
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	4.5	-	-	-	-	-	7.1	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	21	-	-	-	-	-	13	-	-	-	-	-	3	-	-	-	-	-	7	-	-

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

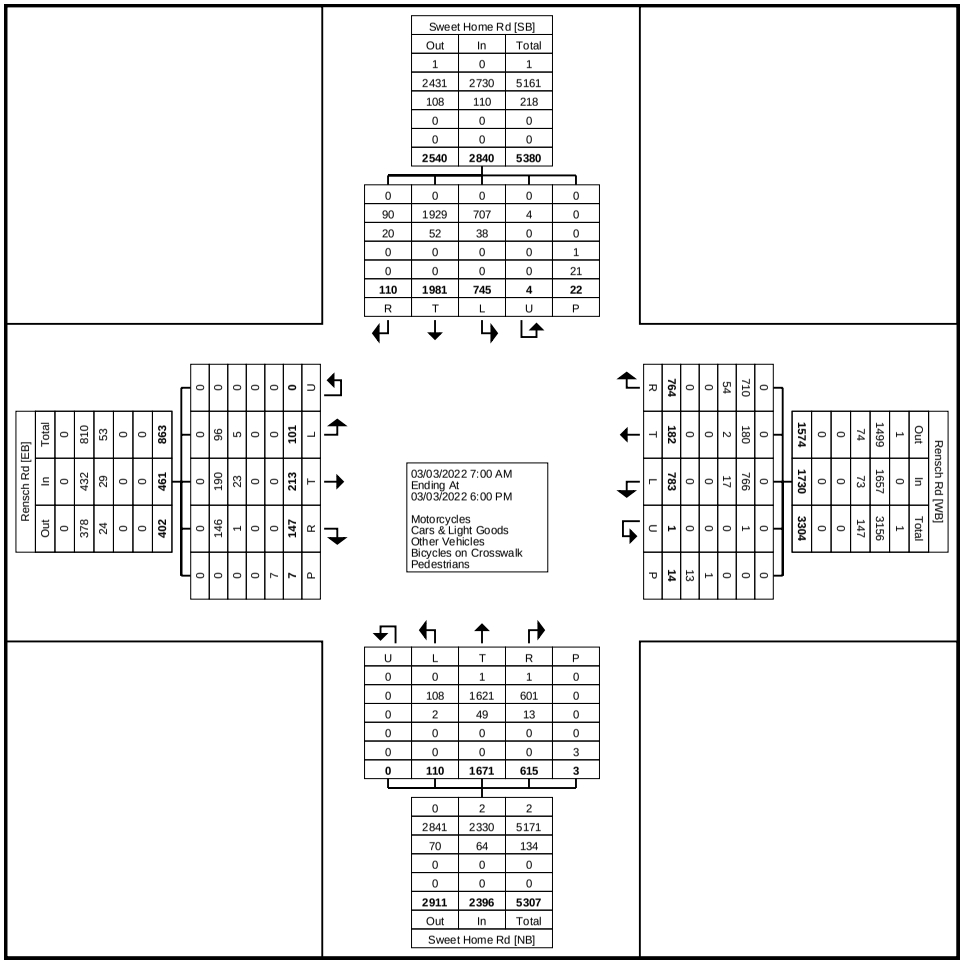
% Pedestrians	-	-	-	-	95.5	-	-	-	-	-	92.9	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/Rensch Rd
Site Code:
Start Date: 03/03/2022



Turning Movement Data Plot

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/Rensch Rd
Site Code:
Start Date: 03/03/2022

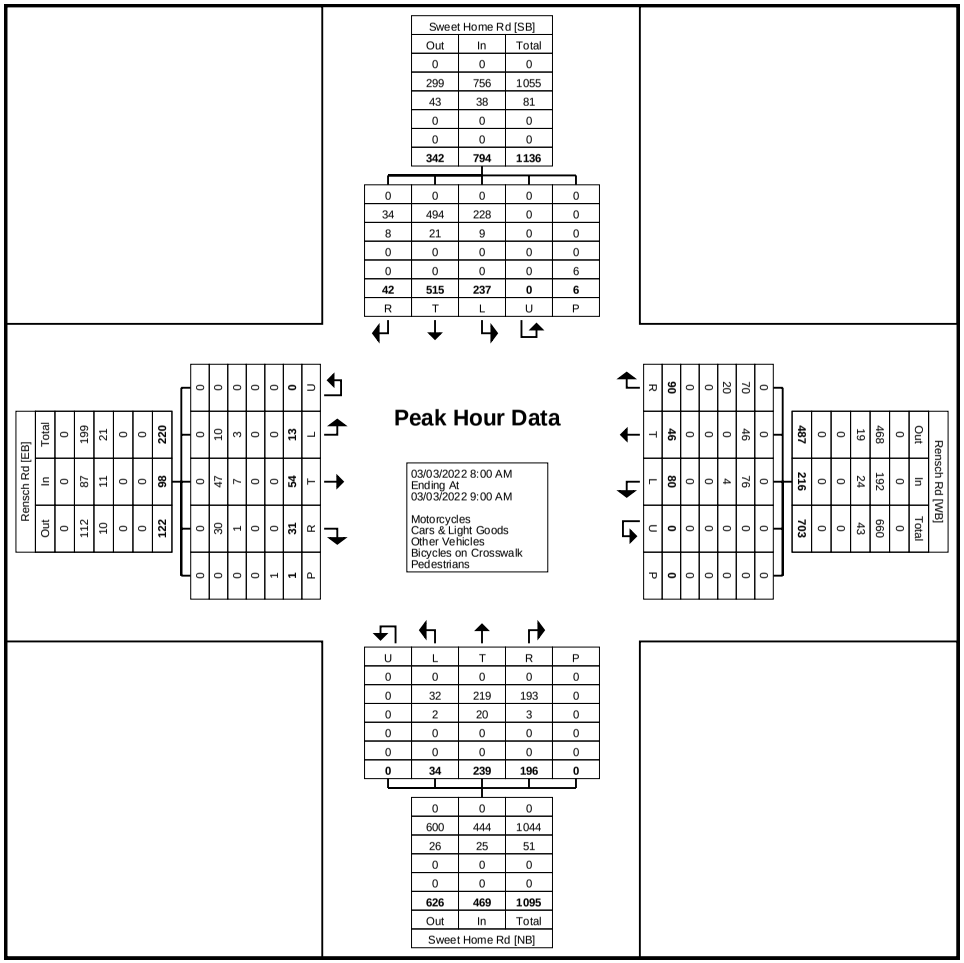
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Sweet Home Rd Southbound						Rensch Rd Westbound						Sweet Home Rd Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
8:00 AM	13	112	49	0	0	174	19	8	24	0	0	51	39	56	6	0	0	101	5	8	3	0	0	16	342
8:15 AM	9	121	52	0	0	182	14	10	15	0	0	39	44	63	10	0	0	117	8	8	1	0	0	17	355
8:30 AM	9	132	64	0	4	205	27	13	16	0	0	56	57	68	6	0	0	131	9	12	4	0	0	25	417
8:45 AM	11	150	72	0	2	233	30	15	25	0	0	70	56	52	12	0	0	120	9	26	5	0	1	40	463
Total	42	515	237	0	6	794	90	46	80	0	0	216	196	239	34	0	0	469	31	54	13	0	1	98	1577
Approach %	5.3	64.9	29.8	0.0	-	-	41.7	21.3	37.0	0.0	-	-	41.8	51.0	7.2	0.0	-	-	31.6	55.1	13.3	0.0	-	-	-
Total %	2.7	32.7	15.0	0.0	-	50.3	5.7	2.9	5.1	0.0	-	13.7	12.4	15.2	2.2	0.0	-	29.7	2.0	3.4	0.8	0.0	-	6.2	-
PHF	0.808	0.858	0.823	0.000	-	0.852	0.750	0.767	0.800	0.000	-	0.771	0.860	0.879	0.708	0.000	-	0.895	0.861	0.519	0.650	0.000	-	0.613	0.852
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	34	494	228	0	-	756	70	46	76	0	-	192	193	219	32	0	-	444	30	47	10	0	-	87	1479
% Cars & Light Goods	81.0	95.9	96.2	-	-	95.2	77.8	100.0	95.0	-	-	88.9	98.5	91.6	94.1	-	-	94.7	96.8	87.0	76.9	-	-	88.8	93.8
Other Vehicles	8	21	9	0	-	38	20	0	4	0	-	24	3	20	2	0	-	25	1	7	3	0	-	11	98
% Other Vehicles	19.0	4.1	3.8	-	-	4.8	22.2	0.0	5.0	-	-	11.1	1.5	8.4	5.9	-	-	5.3	3.2	13.0	23.1	-	-	11.2	6.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/Rensch Rd
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (8:00 AM)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/Rensch Rd
Site Code:
Start Date: 03/03/2022

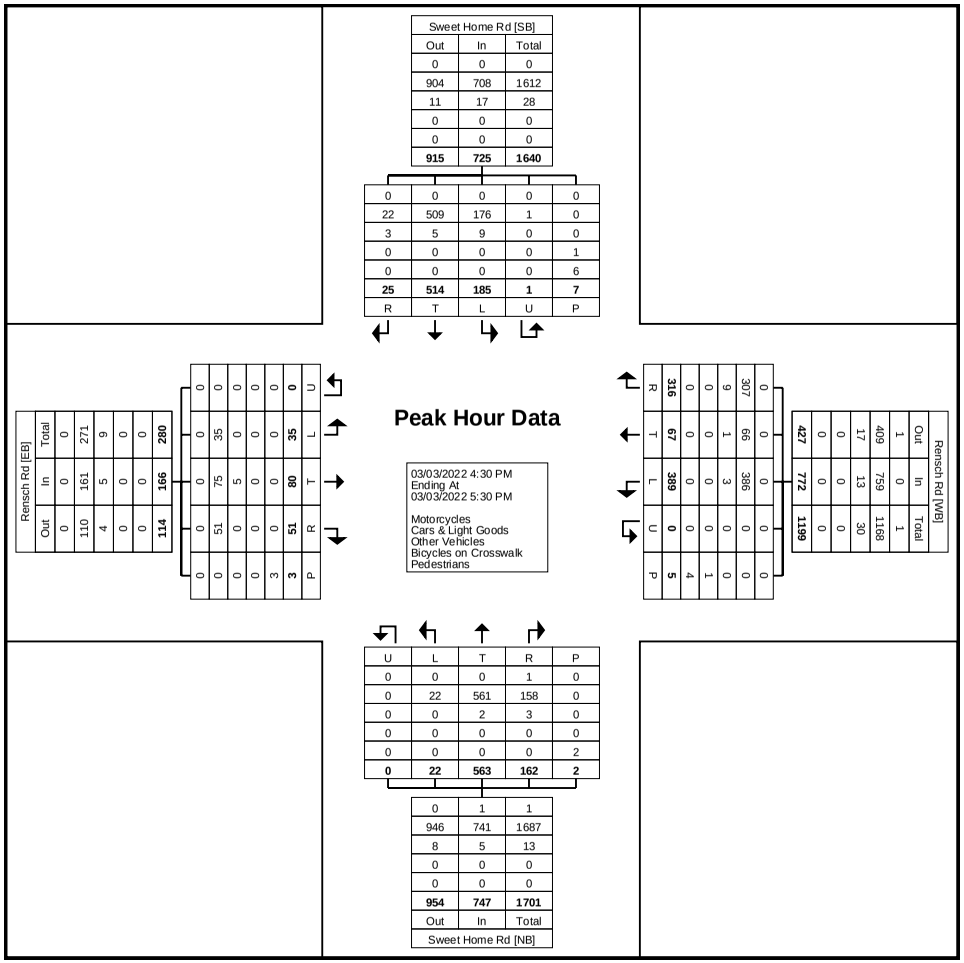
Turning Movement Peak Hour Data (4:30 PM)

Start Time	Sweet Home Rd Southbound						Rensch Rd Westbound						Sweet Home Rd Northbound						Rensch Rd Eastbound						
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
4:30 PM	9	120	52	1	3	182	70	10	67	0	0	147	49	141	6	0	0	196	17	14	7	0	0	38	563
4:45 PM	9	144	54	0	3	207	75	16	117	0	4	208	56	94	4	0	1	154	13	28	4	0	1	45	614
5:00 PM	4	125	39	0	0	168	106	25	117	0	1	248	24	153	8	0	0	185	16	22	15	0	1	53	654
5:15 PM	3	125	40	0	1	168	65	16	88	0	0	169	33	175	4	0	1	212	5	16	9	0	1	30	579
Total	25	514	185	1	7	725	316	67	389	0	5	772	162	563	22	0	2	747	51	80	35	0	3	166	2410
Approach %	3.4	70.9	25.5	0.1	-	-	40.9	8.7	50.4	0.0	-	-	21.7	75.4	2.9	0.0	-	-	30.7	48.2	21.1	0.0	-	-	-
Total %	1.0	21.3	7.7	0.0	-	30.1	13.1	2.8	16.1	0.0	-	32.0	6.7	23.4	0.9	0.0	-	31.0	2.1	3.3	1.5	0.0	-	6.9	-
PHF	0.694	0.892	0.856	0.250	-	0.876	0.745	0.670	0.831	0.000	-	0.778	0.723	0.804	0.688	0.000	-	0.881	0.750	0.714	0.583	0.000	-	0.783	0.921
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	-	0	1
% Motorcycles	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.6	0.0	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	22	509	176	1	-	708	307	66	386	0	-	759	158	561	22	0	-	741	51	75	35	0	-	161	2369
% Cars & Light Goods	88.0	99.0	95.1	100.0	-	97.7	97.2	98.5	99.2	-	-	98.3	97.5	99.6	100.0	-	-	99.2	100.0	93.8	100.0	-	-	97.0	98.3
Other Vehicles	3	5	9	0	-	17	9	1	3	0	-	13	3	2	0	0	-	5	0	5	0	0	-	5	40
% Other Vehicles	12.0	1.0	4.9	0.0	-	2.3	2.8	1.5	0.8	-	-	1.7	1.9	0.4	0.0	-	-	0.7	0.0	6.3	0.0	-	-	3.0	1.7
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	14.3	-	-	-	-	-	20.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	4	-	-	-	-	-	2	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	85.7	-	-	-	-	-	80.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/Rensch Rd
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (4:30 PM)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/The Station Driveway
Site Code:
Start Date: 03/03/2022

Turning Movement Data

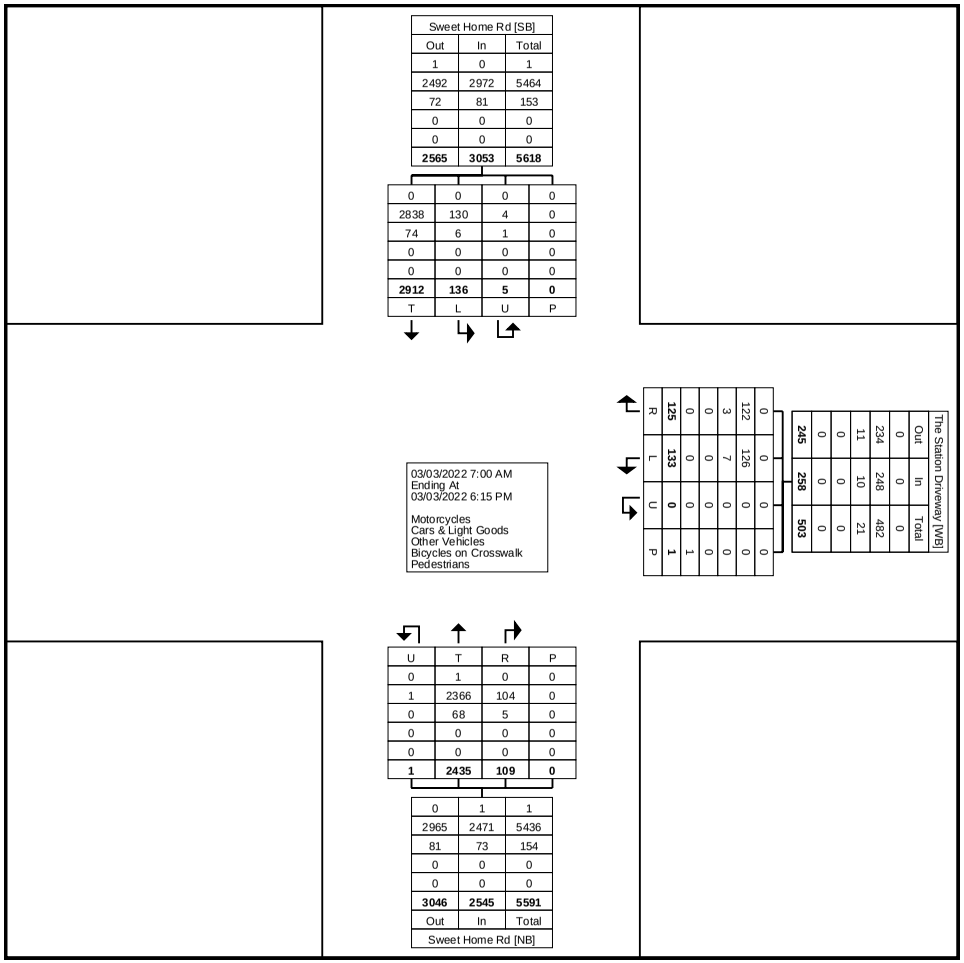
Start Time	Sweet Home Rd Southbound					The Station Driveway Westbound					Sweet Home Rd Northbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
7:00 AM	86	1	0	0	87	1	4	0	0	5	1	87	0	0	88	180
7:15 AM	137	0	0	0	137	3	5	0	0	8	2	110	0	0	112	257
7:30 AM	169	1	0	0	170	3	9	0	0	12	3	112	0	0	115	297
7:45 AM	165	2	0	0	167	11	6	0	0	17	3	120	0	0	123	307
Hourly Total	557	4	0	0	561	18	24	0	0	42	9	429	0	0	438	1041
8:00 AM	151	4	1	0	156	10	1	0	0	11	1	106	0	0	107	274
8:15 AM	126	3	0	0	129	3	4	0	0	7	3	118	0	0	121	257
8:30 AM	169	2	0	0	171	9	3	0	0	12	2	133	0	0	135	318
8:45 AM	182	8	0	0	190	11	10	0	0	21	4	118	0	0	122	333
Hourly Total	628	17	1	0	646	33	18	0	0	51	10	475	0	0	485	1182
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	195	19	1	0	215	3	11	0	0	14	7	188	0	0	195	424
4:15 PM	176	9	2	0	187	5	5	0	0	10	7	182	0	0	189	386
4:30 PM	208	9	0	0	217	8	7	0	0	15	7	201	0	0	208	440
4:45 PM	258	18	0	0	276	18	15	0	0	33	13	154	0	0	167	476
Hourly Total	837	55	3	0	895	34	38	0	0	72	34	725	0	0	759	1726
5:00 PM	251	22	0	0	273	11	15	0	0	26	14	197	0	0	211	510
5:15 PM	231	17	0	0	248	6	14	0	0	20	17	227	1	0	245	513
5:30 PM	201	13	1	0	215	14	13	0	0	27	12	191	0	0	203	445
5:45 PM	207	8	0	0	215	9	11	0	1	20	13	191	0	0	204	439
Hourly Total	890	60	1	0	951	40	53	0	1	93	56	806	1	0	863	1907
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	2912	136	5	0	3053	125	133	0	1	258	109	2435	1	0	2545	5856
Approach %	95.4	4.5	0.2	-	-	48.4	51.6	0.0	-	-	4.3	95.7	0.0	-	-	-
Total %	49.7	2.3	0.1	-	52.1	2.1	2.3	0.0	-	4.4	1.9	41.6	0.0	-	43.5	-
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	1
% Motorcycles	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Cars & Light Goods	2838	130	4	-	2972	122	126	0	-	248	104	2366	1	-	2471	5691
% Cars & Light Goods	97.5	95.6	80.0	-	97.3	97.6	94.7	-	-	96.1	95.4	97.2	100.0	-	97.1	97.2
Other Vehicles	74	6	1	-	81	3	7	0	-	10	5	68	0	-	73	164
% Other Vehicles	2.5	4.4	20.0	-	2.7	2.4	5.3	-	-	3.9	4.6	2.8	0.0	-	2.9	2.8
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/The Station Driveway
Site Code:
Start Date: 03/03/2022



Turning Movement Data Plot

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/The Station Driveway
Site Code:
Start Date: 03/03/2022

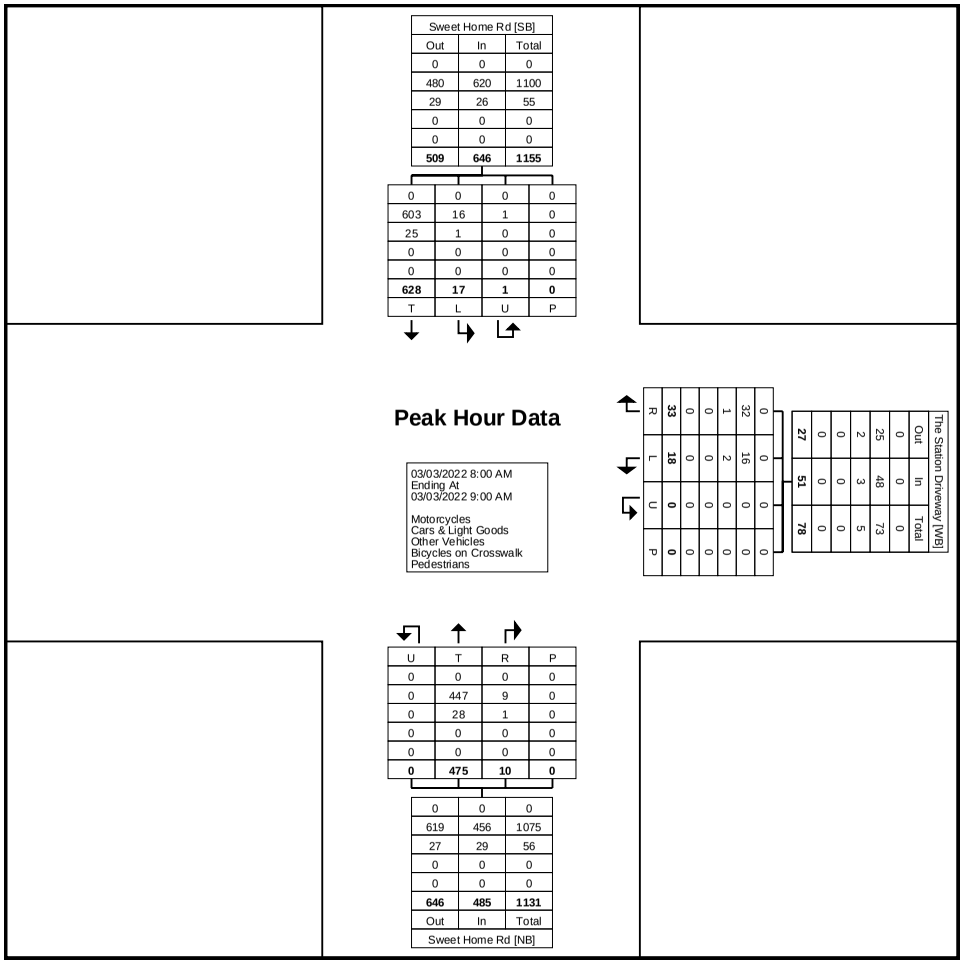
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Sweet Home Rd Southbound					The Station Driveway Westbound					Sweet Home Rd Northbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
8:00 AM	151	4	1	0	156	10	1	0	0	11	1	106	0	0	107	274
8:15 AM	126	3	0	0	129	3	4	0	0	7	3	118	0	0	121	257
8:30 AM	169	2	0	0	171	9	3	0	0	12	2	133	0	0	135	318
8:45 AM	182	8	0	0	190	11	10	0	0	21	4	118	0	0	122	333
Total	628	17	1	0	646	33	18	0	0	51	10	475	0	0	485	1182
Approach %	97.2	2.6	0.2	-	-	64.7	35.3	0.0	-	-	2.1	97.9	0.0	-	-	-
Total %	53.1	1.4	0.1	-	54.7	2.8	1.5	0.0	-	4.3	0.8	40.2	0.0	-	41.0	-
PHF	0.863	0.531	0.250	-	0.850	0.750	0.450	0.000	-	0.607	0.625	0.893	0.000	-	0.898	0.887
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	603	16	1	-	620	32	16	0	-	48	9	447	0	-	456	1124
% Cars & Light Goods	96.0	94.1	100.0	-	96.0	97.0	88.9	-	-	94.1	90.0	94.1	-	-	94.0	95.1
Other Vehicles	25	1	0	-	26	1	2	0	-	3	1	28	0	-	29	58
% Other Vehicles	4.0	5.9	0.0	-	4.0	3.0	11.1	-	-	5.9	10.0	5.9	-	-	6.0	4.9
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/The Station Driveway
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (8:00 AM)

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/The Station Driveway
Site Code:
Start Date: 03/03/2022

Turning Movement Peak Hour Data (4:45 PM)

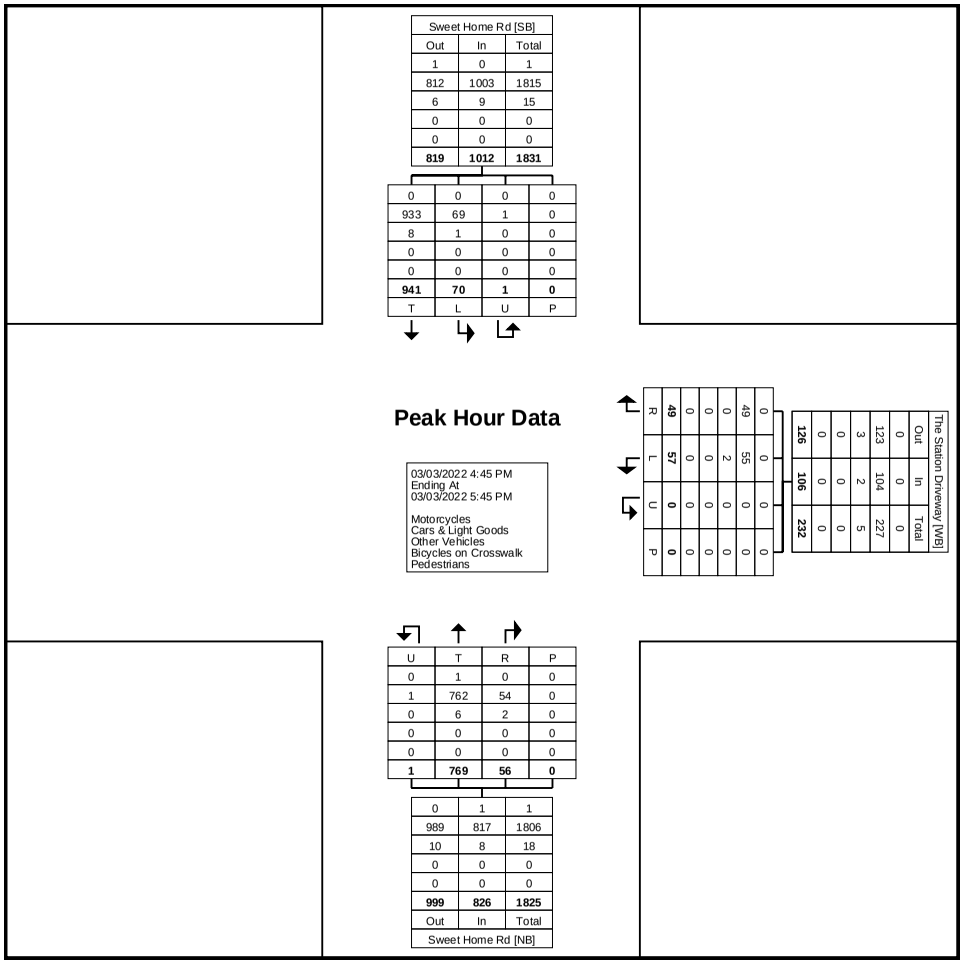
Start Time	Sweet Home Rd Southbound					The Station Driveway Westbound					Sweet Home Rd Northbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
4:45 PM	258	18	0	0	276	18	15	0	0	33	13	154	0	0	167	476
5:00 PM	251	22	0	0	273	11	15	0	0	26	14	197	0	0	211	510
5:15 PM	231	17	0	0	248	6	14	0	0	20	17	227	1	0	245	513
5:30 PM	201	13	1	0	215	14	13	0	0	27	12	191	0	0	203	445
Total	941	70	1	0	1012	49	57	0	0	106	56	769	1	0	826	1944
Approach %	93.0	6.9	0.1	-	-	46.2	53.8	0.0	-	-	6.8	93.1	0.1	-	-	-
Total %	48.4	3.6	0.1	-	52.1	2.5	2.9	0.0	-	5.5	2.9	39.6	0.1	-	42.5	-
PHF	0.912	0.795	0.250	-	0.917	0.681	0.950	0.000	-	0.803	0.824	0.847	0.250	-	0.843	0.947
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	1
% Motorcycles	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	-	0.1	0.1
Cars & Light Goods	933	69	1	-	1003	49	55	0	-	104	54	762	1	-	817	1924
% Cars & Light Goods	99.1	98.6	100.0	-	99.1	100.0	96.5	-	-	98.1	96.4	99.1	100.0	-	98.9	99.0
Other Vehicles	8	1	0	-	9	0	2	0	-	2	2	6	0	-	8	19
% Other Vehicles	0.9	1.4	0.0	-	0.9	0.0	3.5	-	-	1.9	3.6	0.8	0.0	-	1.0	1.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/The Station Driveway
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (4:45 PM)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Maple Rd/Sweet Home Rd
Site Code:
Start Date: 03/03/2022

Turning Movement Data

Start Time	Sweet Home Rd Southbound							Maple Rd Westbound							Sweet Home Rd Northbound							Maple Rd Eastbound							Int. Total
	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	
7:00 AM	15	9	34	27	0	0	85	16	3	51	10	0	0	80	5	13	39	7	0	0	64	1	3	63	27	0	0	94	323
7:15 AM	34	11	57	45	0	0	147	9	5	79	18	0	0	111	4	13	67	8	0	0	92	2	3	83	34	0	0	122	472
7:30 AM	24	27	80	49	0	0	180	11	7	78	21	0	0	117	8	6	57	5	0	0	76	6	3	110	36	0	0	155	528
7:45 AM	39	14	60	58	0	0	171	17	10	111	21	0	0	159	7	7	54	6	0	0	74	8	3	109	49	0	0	169	573
Hourly Total	112	61	231	179	0	0	583	53	25	319	70	0	0	467	24	39	217	26	0	0	306	17	12	365	146	0	0	540	1896
8:00 AM	20	18	48	42	0	0	128	13	10	100	18	0	0	141	8	18	50	15	0	0	91	0	7	95	42	0	0	144	504
8:15 AM	29	20	59	41	0	0	149	15	4	91	30	0	0	140	16	22	71	19	0	0	128	7	16	93	35	0	0	151	568
8:30 AM	27	20	76	41	0	0	164	12	7	124	24	0	0	167	10	13	52	18	0	0	93	8	2	96	59	0	0	165	589
8:45 AM	68	24	61	33	0	0	186	16	3	151	19	0	0	189	7	14	61	33	0	0	115	9	4	78	52	0	1	143	633
Hourly Total	144	82	244	157	0	0	627	56	24	466	91	0	0	637	41	67	234	85	0	0	427	24	29	362	188	0	1	603	2294
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	59	50	69	38	0	0	216	19	11	175	26	0	0	231	8	10	79	21	0	0	118	12	12	151	77	0	0	252	817
4:15 PM	54	40	86	36	0	0	216	30	20	161	35	0	0	246	13	11	73	21	0	0	118	6	8	120	77	0	0	211	791
4:30 PM	55	45	79	44	0	0	223	24	21	158	32	0	0	235	12	4	75	32	0	0	123	12	8	137	82	0	0	239	820
4:45 PM	63	63	88	38	0	0	252	16	28	154	32	0	0	230	10	5	76	29	0	0	120	12	6	134	65	0	0	217	819
Hourly Total	231	198	322	156	0	0	907	89	80	648	125	0	0	942	43	30	303	103	0	0	479	42	34	542	301	0	0	919	3247
5:00 PM	91	43	94	43	1	0	272	30	24	187	41	0	0	282	16	10	71	27	0	0	124	7	8	158	80	0	1	253	931
5:15 PM	84	37	82	41	0	0	244	32	16	181	33	0	0	262	7	14	93	36	0	0	150	6	15	135	84	0	0	240	896
5:30 PM	75	21	78	34	0	0	208	19	20	176	16	0	0	231	3	15	94	13	0	0	125	7	18	117	78	0	0	220	784
5:45 PM	65	43	72	40	0	1	220	20	18	137	29	0	0	204	8	4	68	36	0	0	116	7	12	132	97	0	0	248	788
Hourly Total	315	144	326	158	1	1	944	101	78	681	119	0	0	979	34	43	326	112	0	0	515	27	53	542	339	0	1	961	3399
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	802	485	1123	650	1	1	3061	299	207	2114	405	0	0	3025	142	179	1080	326	0	0	1727	110	128	1811	974	0	2	3023	10836
Approach %	26.2	15.8	36.7	21.2	0.0	-	-	9.9	6.8	69.9	13.4	0.0	-	-	8.2	10.4	62.5	18.9	0.0	-	-	3.6	4.2	59.9	32.2	0.0	-	-	-
Total %	7.4	4.5	10.4	6.0	0.0	-	28.2	2.8	1.9	19.5	3.7	0.0	-	27.9	1.3	1.7	10.0	3.0	0.0	-	15.9	1.0	1.2	16.7	9.0	0.0	-	27.9	-
Motorcycles	0	1	0	0	0	-	1	0	0	0	0	0	-	0	0	0	1	0	0	-	1	0	0	0	0	0	-	0	2
% Motorcycles	0.0	0.2	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.1	0.0	-	-	0.1	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	783	474	1095	635	1	-	2988	284	202	2083	399	0	-	2968	138	176	1049	323	0	-	1686	106	127	1778	954	0	-	2965	10607
% Cars & Light Goods	97.6	97.7	97.5	97.7	100.0	-	97.6	95.0	97.6	98.5	98.5	-	-	98.1	97.2	98.3	97.1	99.1	-	-	97.6	96.4	99.2	98.2	97.9	-	-	98.1	97.9
Other Vehicles	19	10	28	15	0	-	72	15	5	31	6	0	-	57	4	3	30	3	0	-	40	4	1	33	20	0	-	58	227
% Other Vehicles	2.4	2.1	2.5	2.3	0.0	-	2.4	5.0	2.4	1.5	1.5	-	-	1.9	2.8	1.7	2.8	0.9	-	-	2.3	3.6	0.8	1.8	2.1	-	-	1.9	2.1

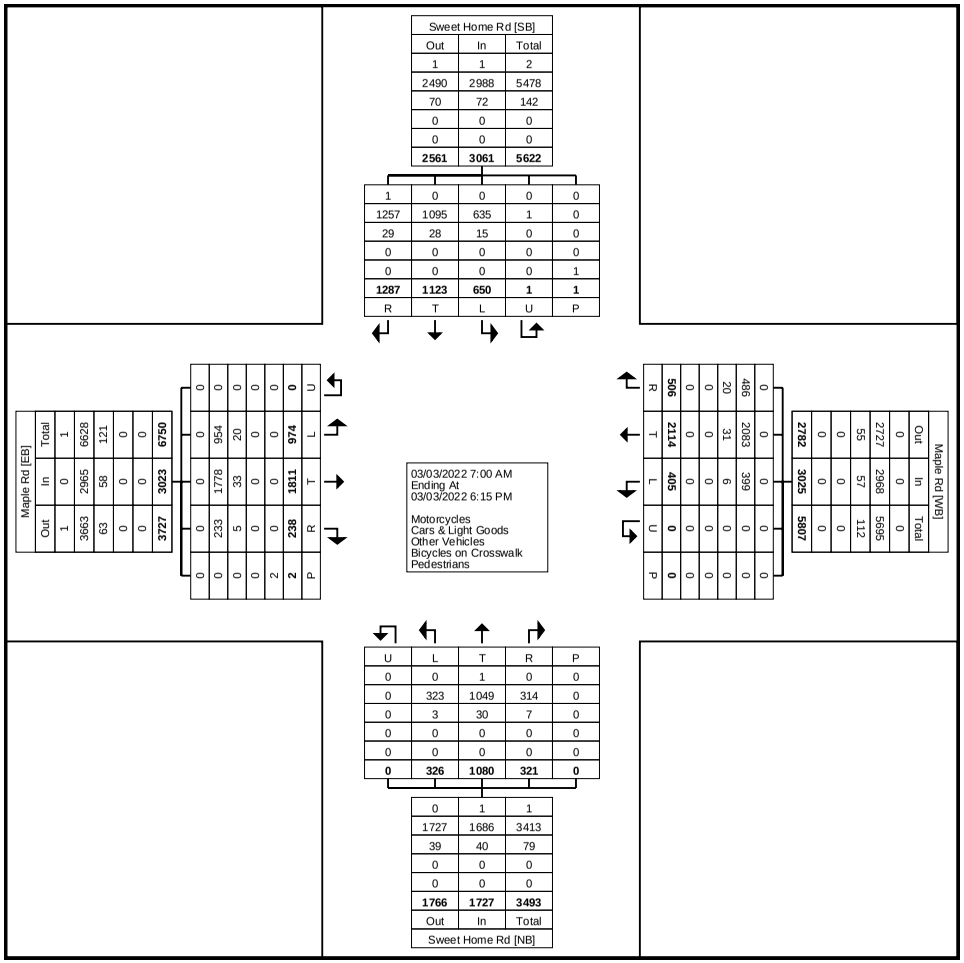
Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	2	-	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Maple Rd/Sweet Home Rd
Site Code:
Start Date: 03/03/2022



Turning Movement Data Plot

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Maple Rd/Sweet Home Rd
Site Code:
Start Date: 03/03/2022

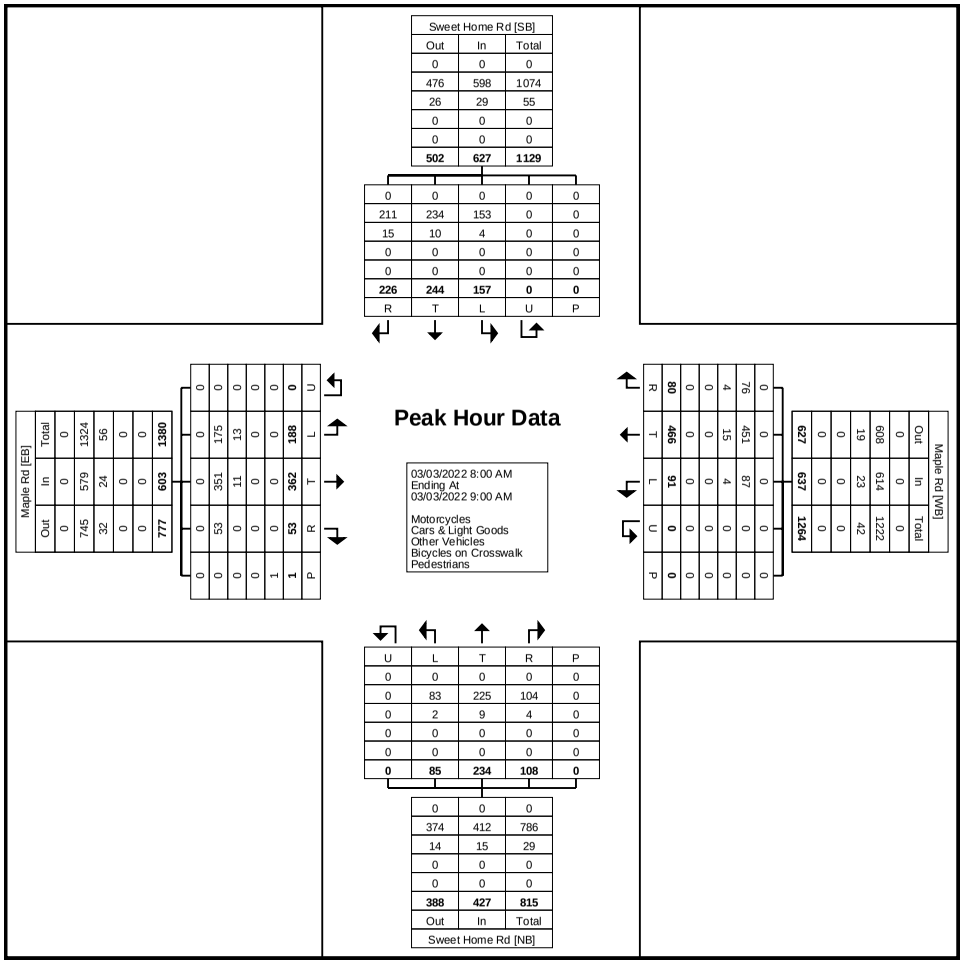
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Sweet Home Rd Southbound							Maple Rd Westbound							Sweet Home Rd Northbound							Maple Rd Eastbound							Int. Total
	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	
8:00 AM	20	18	48	42	0	0	128	13	10	100	18	0	0	141	8	18	50	15	0	0	91	0	7	95	42	0	0	144	504
8:15 AM	29	20	59	41	0	0	149	15	4	91	30	0	0	140	16	22	71	19	0	0	128	7	16	93	35	0	0	151	568
8:30 AM	27	20	76	41	0	0	164	12	7	124	24	0	0	167	10	13	52	18	0	0	93	8	2	96	59	0	0	165	589
8:45 AM	68	24	61	33	0	0	186	16	3	151	19	0	0	189	7	14	61	33	0	0	115	9	4	78	52	0	1	143	633
Total	144	82	244	157	0	0	627	56	24	466	91	0	0	637	41	67	234	85	0	0	427	24	29	362	188	0	1	603	2294
Approach %	23.0	13.1	38.9	25.0	0.0	-	-	8.8	3.8	73.2	14.3	0.0	-	-	9.6	15.7	54.8	19.9	0.0	-	-	4.0	4.8	60.0	31.2	0.0	-	-	-
Total %	6.3	3.6	10.6	6.8	0.0	-	27.3	2.4	1.0	20.3	4.0	0.0	-	27.8	1.8	2.9	10.2	3.7	0.0	-	18.6	1.0	1.3	15.8	8.2	0.0	-	26.3	-
PHF	0.529	0.854	0.803	0.935	0.000	-	0.843	0.875	0.600	0.772	0.758	0.000	-	0.843	0.641	0.761	0.824	0.644	0.000	-	0.834	0.667	0.453	0.943	0.797	0.000	-	0.914	0.906
Motorcycles	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	133	78	234	153	0	-	598	53	23	451	87	0	-	614	38	66	225	83	0	-	412	24	29	351	175	0	-	579	2203
% Cars & Light Goods	92.4	95.1	95.9	97.5	-	-	95.4	94.6	95.8	96.8	95.6	-	-	96.4	92.7	98.5	96.2	97.6	-	-	96.5	100.0	100.0	97.0	93.1	-	-	96.0	96.0
Other Vehicles	11	4	10	4	0	-	29	3	1	15	4	0	-	23	3	1	9	2	0	-	15	0	0	11	13	0	-	24	91
% Other Vehicles	7.6	4.9	4.1	2.5	-	-	4.6	5.4	4.2	3.2	4.4	-	-	3.6	7.3	1.5	3.8	2.4	-	-	3.5	0.0	0.0	3.0	6.9	-	-	4.0	4.0
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Maple Rd/Sweet Home Rd
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (8:00 AM)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Maple Rd/Sweet Home Rd
Site Code:
Start Date: 03/03/2022

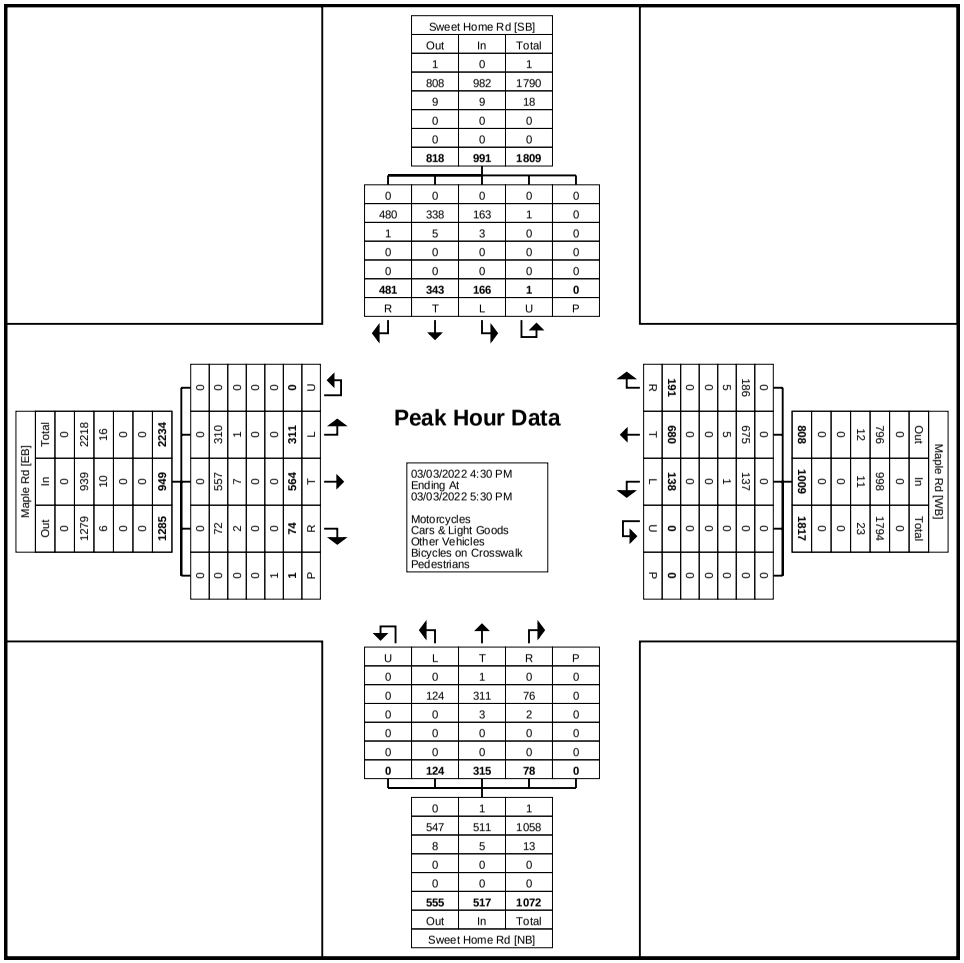
Turning Movement Peak Hour Data (4:30 PM)

Start Time	Sweet Home Rd Southbound							Maple Rd Westbound							Sweet Home Rd Northbound							Maple Rd Eastbound							Int. Total
	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	
4:30 PM	55	45	79	44	0	0	223	24	21	158	32	0	0	235	12	4	75	32	0	0	123	12	8	137	82	0	0	239	820
4:45 PM	63	63	88	38	0	0	252	16	28	154	32	0	0	230	10	5	76	29	0	0	120	12	6	134	65	0	0	217	819
5:00 PM	91	43	94	43	1	0	272	30	24	187	41	0	0	282	16	10	71	27	0	0	124	7	8	158	80	0	1	253	931
5:15 PM	84	37	82	41	0	0	244	32	16	181	33	0	0	262	7	14	93	36	0	0	150	6	15	135	84	0	0	240	896
Total	293	188	343	166	1	0	991	102	89	680	138	0	0	1009	45	33	315	124	0	0	517	37	37	564	311	0	1	949	3466
Approach %	29.6	19.0	34.6	16.8	0.1	-	-	10.1	8.8	67.4	13.7	0.0	-	-	8.7	6.4	60.9	24.0	0.0	-	-	3.9	3.9	59.4	32.8	0.0	-	-	-
Total %	8.5	5.4	9.9	4.8	0.0	-	28.6	2.9	2.6	19.6	4.0	0.0	-	29.1	1.3	1.0	9.1	3.6	0.0	-	14.9	1.1	1.1	16.3	9.0	0.0	-	27.4	-
PHF	0.805	0.746	0.912	0.943	0.250	-	0.911	0.797	0.795	0.909	0.841	0.000	-	0.895	0.703	0.589	0.847	0.861	0.000	-	0.862	0.771	0.617	0.892	0.926	0.000	-	0.938	0.931
Motorcycles	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	1	0	0	-	1	0	0	0	0	0	-	0	1
% Motorcycles	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.3	0.0	-	-	0.2	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	293	187	338	163	1	-	982	98	88	675	137	0	-	998	44	32	311	124	0	-	511	36	36	557	310	0	-	939	3430
% Cars & Light Goods	100.0	99.5	98.5	98.2	100.0	-	99.1	96.1	98.9	99.3	99.3	-	-	98.9	97.8	97.0	98.7	100.0	-	-	98.8	97.3	97.3	98.8	99.7	-	-	98.9	99.0
Other Vehicles	0	1	5	3	0	-	9	4	1	5	1	0	-	11	1	1	3	0	0	-	5	1	1	7	1	0	-	10	35
% Other Vehicles	0.0	0.5	1.5	1.8	0.0	-	0.9	3.9	1.1	0.7	0.7	-	-	1.1	2.2	3.0	1.0	0.0	-	-	1.0	2.7	2.7	1.2	0.3	-	-	1.1	1.0
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Maple Rd/Sweet Home Rd
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (4:30 PM)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (east driveway)
Site Code:
Start Date: 03/03/2022

Turning Movement Data

Start Time	Office Parking lots Southbound						Rensch Rd Westbound						Villas Dr E Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:00 AM	0	0	0	0	0	0	0	12	0	0	0	12	2	0	0	0	0	2	1	7	0	0	0	8	22
7:15 AM	0	0	0	0	0	0	5	6	0	0	0	11	3	0	0	0	0	3	2	10	0	0	0	12	26
7:30 AM	0	0	1	0	1	1	3	13	0	0	0	16	6	0	0	0	0	6	1	11	0	0	0	12	35
7:45 AM	0	0	1	0	0	1	11	21	1	2	0	35	6	0	0	0	0	6	2	15	0	0	0	17	59
Hourly Total	0	0	2	0	1	2	19	52	1	2	0	74	17	0	0	0	0	17	6	43	0	0	0	49	142
8:00 AM	0	0	0	0	0	0	6	20	1	0	0	27	3	0	0	0	0	3	2	13	0	0	0	15	45
8:15 AM	0	0	1	0	1	1	7	22	0	0	0	29	3	0	0	0	0	3	1	13	0	0	1	14	47
8:30 AM	0	0	2	0	2	2	5	19	1	0	0	25	7	0	1	0	1	8	1	21	0	0	1	22	57
8:45 AM	2	0	3	0	1	5	16	25	0	0	0	41	10	0	0	0	0	10	2	26	0	0	0	28	84
Hourly Total	2	0	6	0	4	8	34	86	2	0	0	122	23	0	1	0	1	24	6	73	0	0	2	79	233
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	8	0	0	8	2	18	3	0	2	23	3	0	0	0	0	3	0	33	0	0	0	33	67
4:15 PM	0	0	7	0	0	7	3	20	8	0	1	31	2	0	0	0	1	2	2	27	0	0	0	29	69
4:30 PM	0	0	9	0	0	9	5	17	4	0	2	26	6	0	0	0	0	6	2	23	1	0	0	26	67
4:45 PM	0	0	14	0	1	14	5	25	8	0	1	38	6	0	2	0	2	8	1	27	1	0	0	29	89
Hourly Total	0	0	38	0	1	38	15	80	23	0	6	118	17	0	2	0	3	19	5	110	2	0	0	117	292
5:00 PM	0	0	10	0	2	10	4	21	15	0	3	40	11	0	1	0	1	12	0	30	0	0	1	30	92
5:15 PM	0	0	8	0	3	8	0	19	5	0	1	24	8	0	1	0	0	9	1	15	0	0	1	16	57
5:30 PM	1	0	6	0	0	7	3	13	4	0	1	20	5	0	0	0	1	5	1	19	0	0	0	20	52
5:45 PM	0	0	5	0	0	5	2	16	4	0	1	22	9	0	1	0	1	10	2	16	0	0	0	18	55
Hourly Total	1	0	29	0	5	30	9	69	28	0	6	106	33	0	3	0	3	36	4	80	0	0	2	84	256
Grand Total	3	0	75	0	11	78	77	287	54	2	12	420	90	0	6	0	7	96	21	306	2	0	4	329	923
Approach %	3.8	0.0	96.2	0.0	-	-	18.3	68.3	12.9	0.5	-	-	93.8	0.0	6.3	0.0	-	-	6.4	93.0	0.6	0.0	-	-	-
Total %	0.3	0.0	8.1	0.0	-	8.5	8.3	31.1	5.9	0.2	-	45.5	9.8	0.0	0.7	0.0	-	10.4	2.3	33.2	0.2	0.0	-	35.6	-
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	3	0	73	0	-	76	77	265	54	2	-	398	71	0	5	0	-	76	3	299	1	0	-	303	853
% Cars & Light Goods	100.0	-	97.3	-	-	97.4	100.0	92.3	100.0	100.0	-	94.8	78.9	-	83.3	-	-	79.2	14.3	97.7	50.0	-	-	92.1	92.4
Other Vehicles	0	0	2	0	-	2	0	22	0	0	-	22	19	0	1	0	-	20	18	7	1	0	-	26	70
% Other Vehicles	0.0	-	2.7	-	-	2.6	0.0	7.7	0.0	0.0	-	5.2	21.1	-	16.7	-	-	20.8	85.7	2.3	50.0	-	-	7.9	7.6
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-

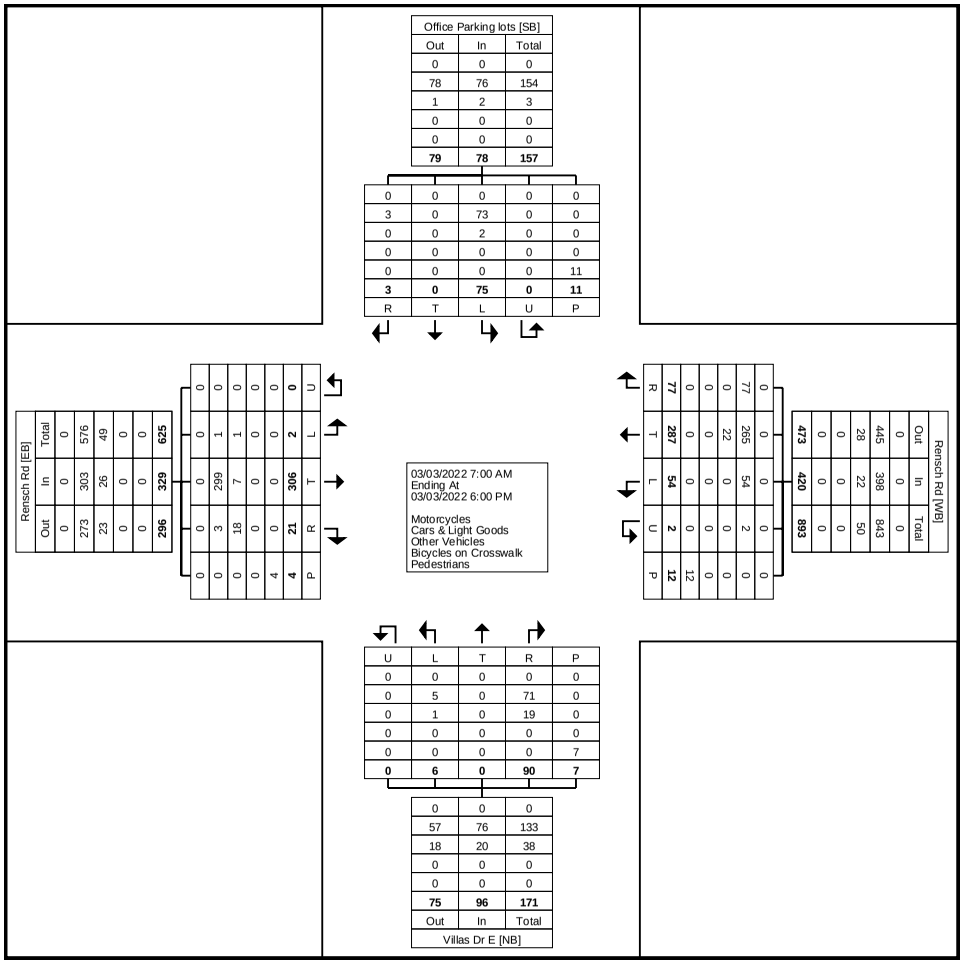
Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	11	-	-	-	-	-	12	-	-	-	-	-	7	-	-	-	-	-	4	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (east driveway)
Site Code:
Start Date: 03/03/2022



Turning Movement Data Plot

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (east driveway)
Site Code:
Start Date: 03/03/2022

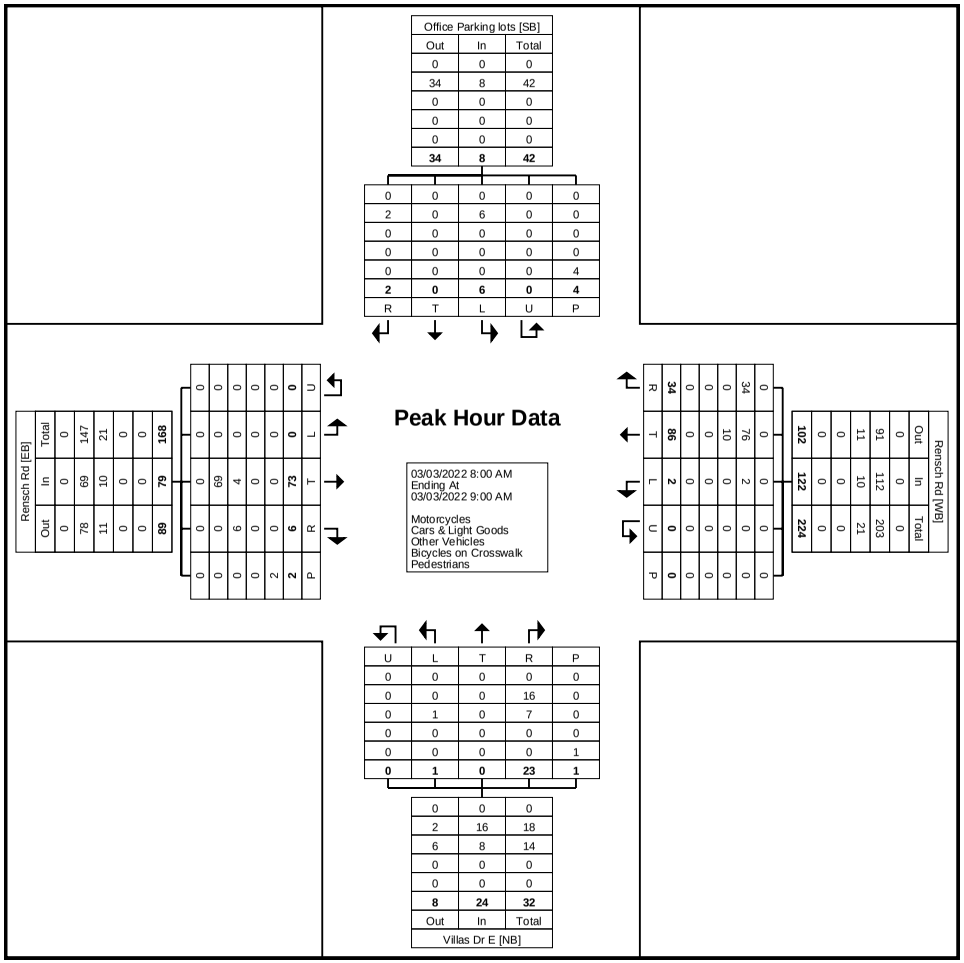
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Office Parking lots Southbound						Rensch Rd Westbound						Villas Dr E Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
8:00 AM	0	0	0	0	0	0	6	20	1	0	0	27	3	0	0	0	0	3	2	13	0	0	0	15	45
8:15 AM	0	0	1	0	1	1	7	22	0	0	0	29	3	0	0	0	0	3	1	13	0	0	1	14	47
8:30 AM	0	0	2	0	2	2	5	19	1	0	0	25	7	0	1	0	1	8	1	21	0	0	1	22	57
8:45 AM	2	0	3	0	1	5	16	25	0	0	0	41	10	0	0	0	0	10	2	26	0	0	0	28	84
Total	2	0	6	0	4	8	34	86	2	0	0	122	23	0	1	0	1	24	6	73	0	0	2	79	233
Approach %	25.0	0.0	75.0	0.0	-	-	27.9	70.5	1.6	0.0	-	-	95.8	0.0	4.2	0.0	-	-	7.6	92.4	0.0	0.0	-	-	-
Total %	0.9	0.0	2.6	0.0	-	3.4	14.6	36.9	0.9	0.0	-	52.4	9.9	0.0	0.4	0.0	-	10.3	2.6	31.3	0.0	0.0	-	33.9	-
PHF	0.250	0.000	0.500	0.000	-	0.400	0.531	0.860	0.500	0.000	-	0.744	0.575	0.000	0.250	0.000	-	0.600	0.750	0.702	0.000	0.000	-	0.705	0.693
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0
Cars & Light Goods	2	0	6	0	-	8	34	76	2	0	-	112	16	0	0	0	-	16	0	69	0	0	-	69	205
% Cars & Light Goods	100.0	-	100.0	-	-	100.0	100.0	88.4	100.0	-	-	91.8	69.6	-	0.0	-	-	66.7	0.0	94.5	-	-	-	87.3	88.0
Other Vehicles	0	0	0	0	-	0	0	10	0	0	-	10	7	0	1	0	-	8	6	4	0	0	-	10	28
% Other Vehicles	0.0	-	0.0	-	-	0.0	0.0	11.6	0.0	-	-	8.2	30.4	-	100.0	-	-	33.3	100.0	5.5	-	-	-	12.7	12.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (east driveway)
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (8:00 AM)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (east driveway)
Site Code:
Start Date: 03/03/2022

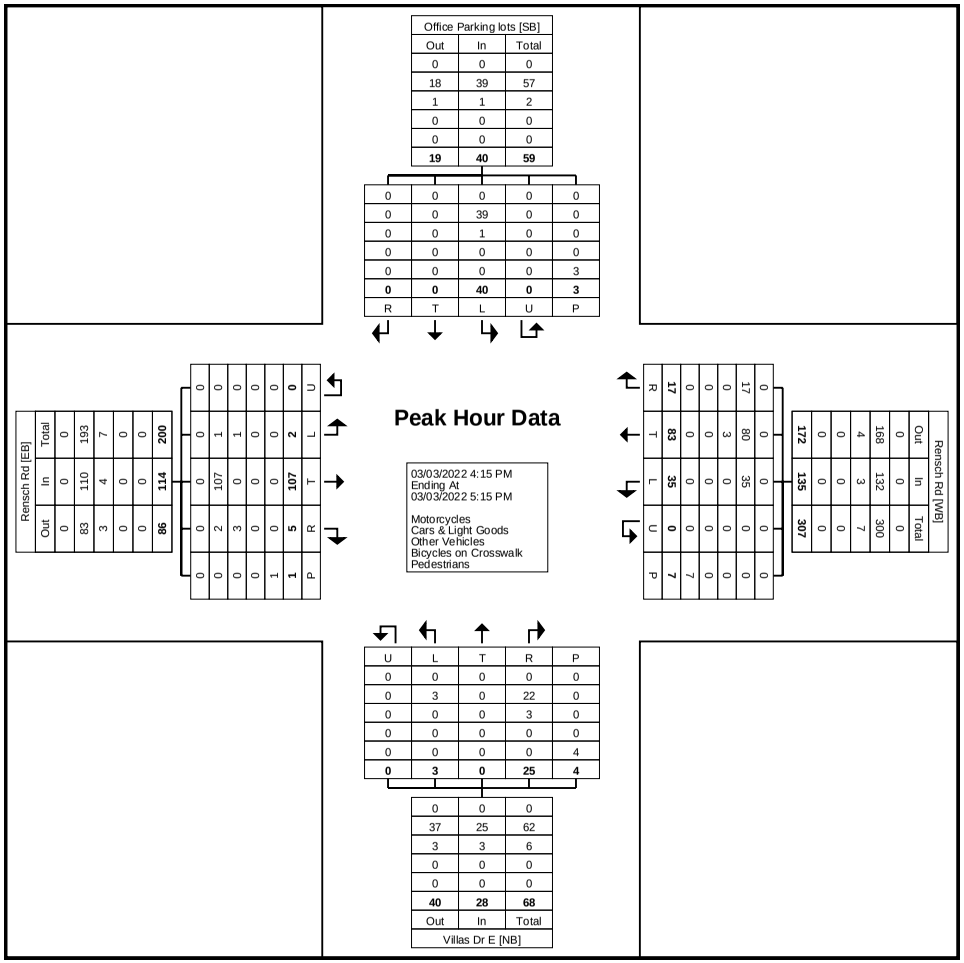
Turning Movement Peak Hour Data (4:15 PM)

Start Time	Office Parking lots Southbound						Rensch Rd Westbound						Villas Dr E Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:15 PM	0	0	7	0	0	7	3	20	8	0	1	31	2	0	0	0	1	2	2	27	0	0	0	29	69
4:30 PM	0	0	9	0	0	9	5	17	4	0	2	26	6	0	0	0	0	6	2	23	1	0	0	26	67
4:45 PM	0	0	14	0	1	14	5	25	8	0	1	38	6	0	2	0	2	8	1	27	1	0	0	29	89
5:00 PM	0	0	10	0	2	10	4	21	15	0	3	40	11	0	1	0	1	12	0	30	0	0	1	30	92
Total	0	0	40	0	3	40	17	83	35	0	7	135	25	0	3	0	4	28	5	107	2	0	1	114	317
Approach %	0.0	0.0	100.0	0.0	-	-	12.6	61.5	25.9	0.0	-	-	89.3	0.0	10.7	0.0	-	-	4.4	93.9	1.8	0.0	-	-	-
Total %	0.0	0.0	12.6	0.0	-	12.6	5.4	26.2	11.0	0.0	-	42.6	7.9	0.0	0.9	0.0	-	8.8	1.6	33.8	0.6	0.0	-	36.0	-
PHF	0.000	0.000	0.714	0.000	-	0.714	0.850	0.830	0.583	0.000	-	0.844	0.568	0.000	0.375	0.000	-	0.583	0.625	0.892	0.500	0.000	-	0.950	0.861
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	-	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	0	0	39	0	-	39	17	80	35	0	-	132	22	0	3	0	-	25	2	107	1	0	-	110	306
% Cars & Light Goods	-	-	97.5	-	-	97.5	100.0	96.4	100.0	-	-	97.8	88.0	-	100.0	-	-	89.3	40.0	100.0	50.0	-	-	96.5	96.5
Other Vehicles	0	0	1	0	-	1	0	3	0	0	-	3	3	0	0	0	-	3	3	0	1	0	-	4	11
% Other Vehicles	-	-	2.5	-	-	2.5	0.0	3.6	0.0	-	-	2.2	12.0	-	0.0	-	-	10.7	60.0	0.0	50.0	-	-	3.5	3.5
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	7	-	-	-	-	-	4	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (east driveway)
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (4:15 PM)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (west Driveway)
Site Code:
Start Date: 03/03/2022

Turning Movement Data

Start Time	Office Parking lots Southbound						Rensch Rd Westbound						Villas Dr E Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:00 AM	0	0	2	0	0	2	9	3	0	0	0	12	0	0	0	1	0	1	0	5	0	0	0	5	20
7:15 AM	0	0	3	0	0	3	5	3	0	0	0	8	0	0	0	0	0	0	0	9	0	0	0	9	20
7:30 AM	0	0	5	0	1	5	8	4	0	0	0	12	0	0	0	0	0	0	0	7	0	0	0	7	24
7:45 AM	0	0	5	0	0	5	15	3	0	0	0	18	0	0	0	0	0	0	0	13	0	0	0	13	36
Hourly Total	0	0	15	0	1	15	37	13	0	0	0	50	0	0	0	1	0	1	0	34	0	0	0	34	100
8:00 AM	1	0	4	0	0	5	15	7	0	0	0	22	0	0	0	0	0	0	0	9	0	0	0	9	36
8:15 AM	0	0	3	0	0	3	18	1	0	0	0	19	0	0	0	0	0	0	0	10	0	0	0	10	32
8:30 AM	0	0	8	0	0	8	13	7	0	0	0	20	0	0	0	0	3	0	0	16	0	0	0	16	44
8:45 AM	1	0	5	0	1	6	22	8	0	0	0	30	0	0	1	0	0	1	0	21	0	0	0	21	58
Hourly Total	2	0	20	0	1	22	68	23	0	0	0	91	0	0	1	0	3	1	0	56	0	0	0	56	170
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	20	0	0	20	4	15	0	0	0	19	0	0	0	0	0	0	0	11	0	0	0	11	50
4:15 PM	0	0	12	0	0	12	7	13	1	0	0	21	0	0	0	0	0	0	0	17	0	0	0	17	50
4:30 PM	0	0	17	0	0	17	5	11	0	0	0	16	0	0	0	0	0	0	0	12	0	0	0	12	45
4:45 PM	0	0	12	0	0	12	7	17	1	0	0	25	0	0	0	0	1	0	0	16	0	0	0	16	53
Hourly Total	0	0	61	0	0	61	23	56	2	0	0	81	0	0	0	0	1	0	0	56	0	0	0	56	198
5:00 PM	0	0	14	0	1	14	2	22	0	0	0	24	0	0	0	0	1	0	0	16	0	0	0	16	54
5:15 PM	0	0	9	0	0	9	2	18	0	0	0	20	0	0	0	0	2	0	0	11	0	0	0	11	40
5:30 PM	0	0	3	0	0	3	3	11	1	0	0	15	2	0	0	0	2	2	0	14	0	0	0	14	34
5:45 PM	0	0	2	0	0	2	3	14	0	0	0	17	0	0	0	0	2	0	0	13	0	0	0	13	32
Hourly Total	0	0	28	0	1	28	10	65	1	0	0	76	2	0	0	0	7	2	0	54	0	0	0	54	160
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	2	0	124	0	3	126	138	157	3	0	0	298	2	0	1	1	11	4	0	200	0	0	0	200	628
Approach %	1.6	0.0	98.4	0.0	-	-	46.3	52.7	1.0	0.0	-	-	50.0	0.0	25.0	25.0	-	-	0.0	100.0	0.0	0.0	-	-	-
Total %	0.3	0.0	19.7	0.0	-	20.1	22.0	25.0	0.5	0.0	-	47.5	0.3	0.0	0.2	0.2	-	0.6	0.0	31.8	0.0	0.0	-	31.8	-
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	0.0	-	0.0	-	0.0	-	-	-	0.0	0.0
Cars & Light Goods	0	0	123	0	-	123	135	136	3	0	-	274	2	0	1	0	-	3	0	176	0	0	-	176	576
% Cars & Light Goods	0.0	-	99.2	-	-	97.6	97.8	86.6	100.0	-	-	91.9	100.0	-	100.0	0.0	-	75.0	-	88.0	-	-	-	88.0	91.7
Other Vehicles	2	0	1	0	-	3	3	21	0	0	-	24	0	0	0	1	-	1	0	24	0	0	-	24	52
% Other Vehicles	100.0	-	0.8	-	-	2.4	2.2	13.4	0.0	-	-	8.1	0.0	-	0.0	100.0	-	25.0	-	12.0	-	-	-	12.0	8.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-

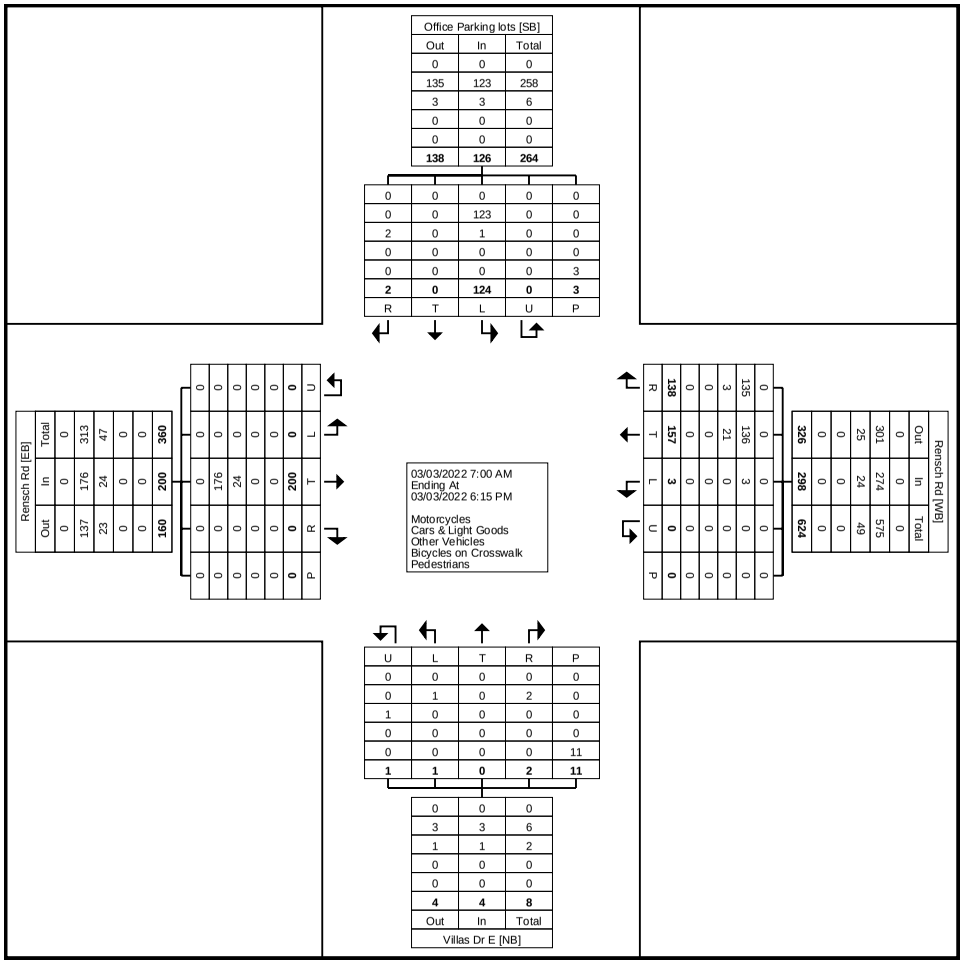
Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	11	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (west Driveway)
Site Code:
Start Date: 03/03/2022



Turning Movement Data Plot

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (west Driveway)
Site Code:
Start Date: 03/03/2022

Turning Movement Peak Hour Data (8:00 AM)

Start Time	Office Parking lots Southbound						Rensch Rd Westbound						Villas Dr E Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
8:00 AM	1	0	4	0	0	5	15	7	0	0	0	22	0	0	0	0	0	0	0	9	0	0	0	9	36
8:15 AM	0	0	3	0	0	3	18	1	0	0	0	19	0	0	0	0	0	0	0	10	0	0	0	10	32
8:30 AM	0	0	8	0	0	8	13	7	0	0	0	20	0	0	0	0	3	0	0	16	0	0	0	16	44
8:45 AM	1	0	5	0	1	6	22	8	0	0	0	30	0	0	1	0	0	1	0	21	0	0	0	21	58
Total	2	0	20	0	1	22	68	23	0	0	0	91	0	0	1	0	3	1	0	56	0	0	0	56	170
Approach %	9.1	0.0	90.9	0.0	-	-	74.7	25.3	0.0	0.0	-	-	0.0	0.0	100.0	0.0	-	-	0.0	100.0	0.0	0.0	-	-	-
Total %	1.2	0.0	11.8	0.0	-	12.9	40.0	13.5	0.0	0.0	-	53.5	0.0	0.0	0.6	0.0	-	0.6	0.0	32.9	0.0	0.0	-	32.9	-
PHF	0.500	0.000	0.625	0.000	-	0.688	0.773	0.719	0.000	0.000	-	0.758	0.000	0.000	0.250	0.000	-	0.250	0.000	0.667	0.000	0.000	-	0.667	0.733
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	-	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	-	-	0.0	-	-	0.0	-	0.0	-	-	-	0.0	0.0
Cars & Light Goods	0	0	19	0	-	19	65	15	0	0	-	80	0	0	1	0	-	1	0	48	0	0	-	48	148
% Cars & Light Goods	0.0	-	95.0	-	-	86.4	95.6	65.2	-	-	-	87.9	-	-	100.0	-	-	100.0	-	85.7	-	-	-	85.7	87.1
Other Vehicles	2	0	1	0	-	3	3	8	0	0	-	11	0	0	0	0	-	0	0	8	0	0	-	8	22
% Other Vehicles	100.0	-	5.0	-	-	13.6	4.4	34.8	-	-	-	12.1	-	-	0.0	-	-	0.0	-	14.3	-	-	-	14.3	12.9
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

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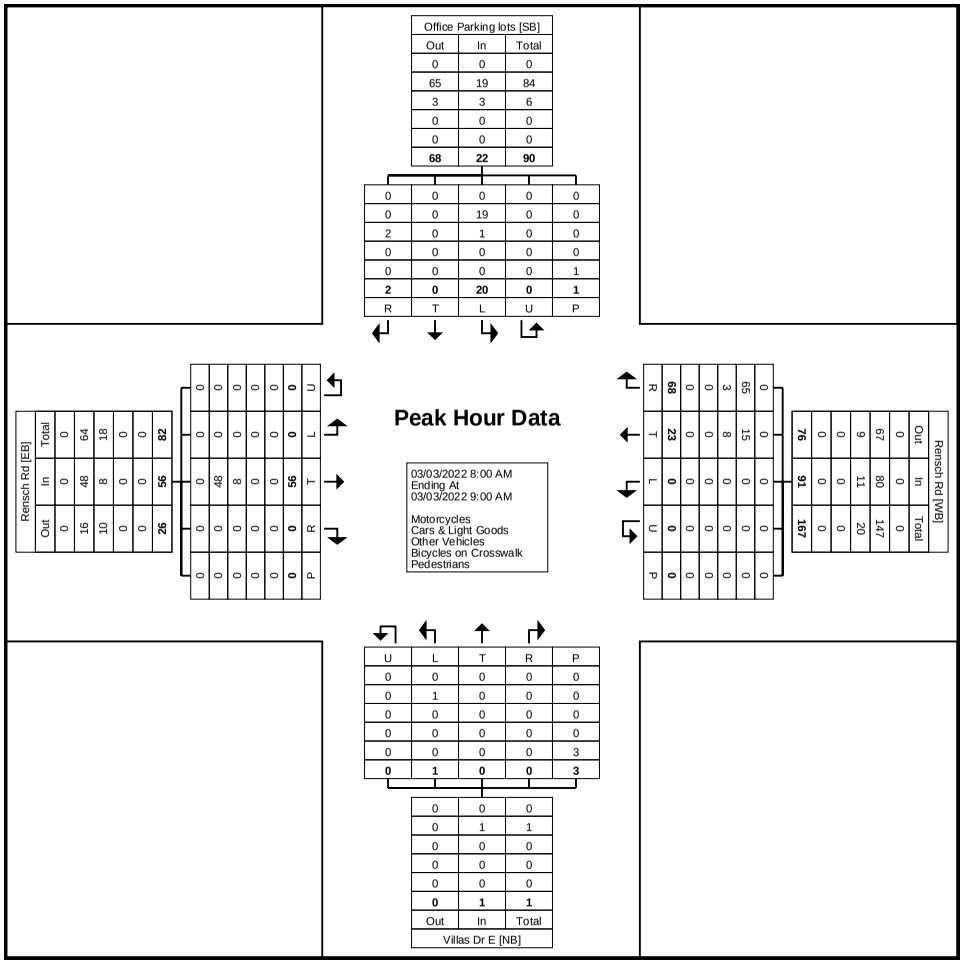

Turning Movement Peak Hour Data Plot (8:00 AM)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (west Driveway)
Site Code:
Start Date: 03/03/2022

Turning Movement Peak Hour Data (4:15 PM)

Start Time	Office Parking lots Southbound						Rensch Rd Westbound						Villas Dr E Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:15 PM	0	0	12	0	0	12	7	13	1	0	0	21	0	0	0	0	0	0	0	17	0	0	0	17	50
4:30 PM	0	0	17	0	0	17	5	11	0	0	0	16	0	0	0	0	0	0	0	12	0	0	0	12	45
4:45 PM	0	0	12	0	0	12	7	17	1	0	0	25	0	0	0	0	1	0	0	16	0	0	0	16	53
5:00 PM	0	0	14	0	1	14	2	22	0	0	0	24	0	0	0	0	1	0	0	16	0	0	0	16	54
Total	0	0	55	0	1	55	21	63	2	0	0	86	0	0	0	0	2	0	0	61	0	0	0	61	202
Approach %	0.0	0.0	100.0	0.0	-	-	24.4	73.3	2.3	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	100.0	0.0	0.0	-	-	-
Total %	0.0	0.0	27.2	0.0	-	27.2	10.4	31.2	1.0	0.0	-	42.6	0.0	0.0	0.0	0.0	-	0.0	0.0	30.2	0.0	0.0	-	30.2	-
PHF	0.000	0.000	0.809	0.000	-	0.809	0.750	0.716	0.500	0.000	-	0.860	0.000	0.000	0.000	0.000	-	0.000	0.000	0.897	0.000	0.000	-	0.897	0.935
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	-	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	-	-	-	-	-	-	-	0.0	-	-	-	0.0	0.0
Cars & Light Goods	0	0	55	0	-	55	21	60	2	0	-	83	0	0	0	0	-	0	0	57	0	0	-	57	195
% Cars & Light Goods	-	-	100.0	-	-	100.0	100.0	95.2	100.0	-	-	96.5	-	-	-	-	-	-	-	93.4	-	-	-	93.4	96.5
Other Vehicles	0	0	0	0	-	0	0	3	0	0	-	3	0	0	0	0	-	0	0	4	0	0	-	4	7
% Other Vehicles	-	-	0.0	-	-	0.0	0.0	4.8	0.0	-	-	3.5	-	-	-	-	-	-	-	6.6	-	-	-	6.6	3.5
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

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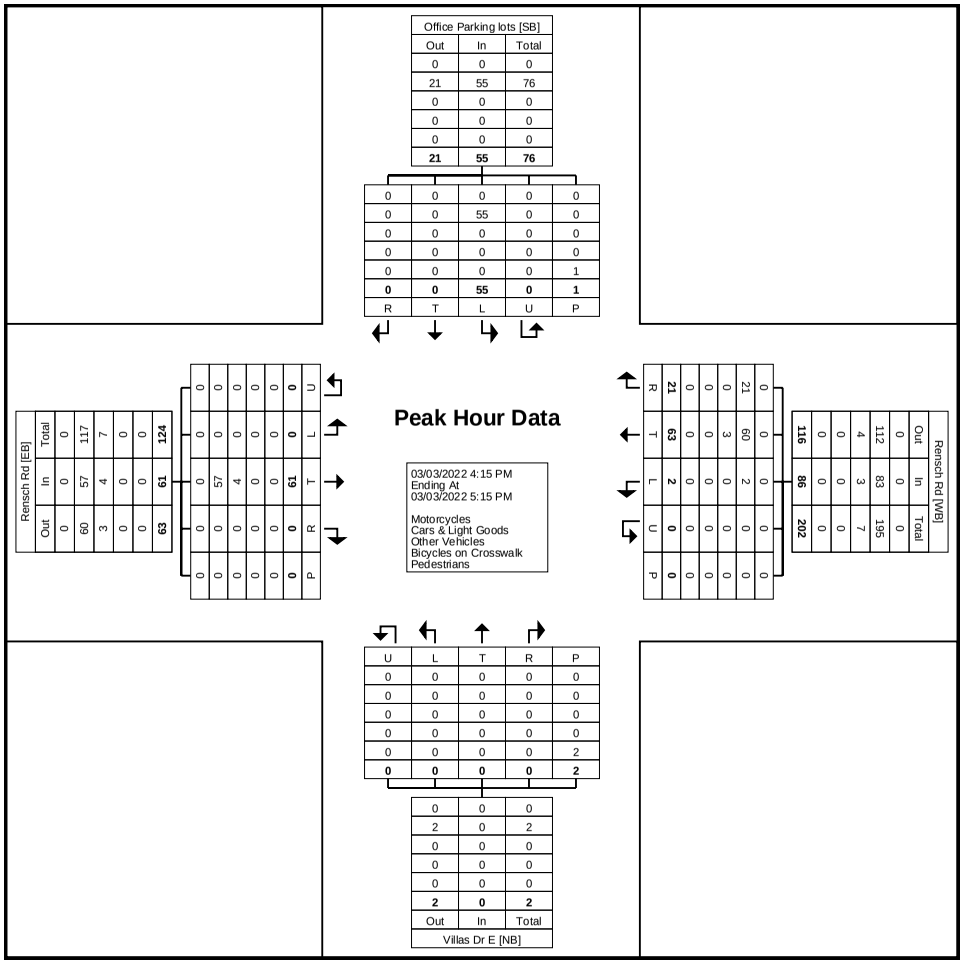


Turning Movement Peak Hour Data Plot (4:15 PM)

A2

Miscellaneous Traffic Data and Calculations

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

SRF ASSOCIATES
Transportation Planning / Engineering / Design

Proposed Mixed-Use Development, 1400-1416 Sweet Home Road, Town of Amherst, Erie County, NY

Documentation of Ambient Traffic Volume Growth

Roadway	Segment starts at	Segment end at	2013	2015	2018	2020	Annual Growth (2013-2018)
Sweet Home Road	Maple Road	Rensch Road	18,430	18,345	17,040	8,154	-1.56%

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Background Project Trip Estimates

	ITE LUC	Units	Enter	Exit	Enter	Exit
1265 Sweet Home	220	154	15	47	49	30
The Station Existing			27	51	126	106
The Station Proposed			71	121	132	119
			44	70	6	13

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Int #	Sweet Home Road/Rensch Road															
1	Left turn	Rear-end	Overtaking	Right Angle	Right Turn	Head On	Side-swipe	Fixed Object	Backing	Other	Animal	Bike/Ped	**Total**	Injury	Non Injury	Non-Repo	**Sum**
	4	17	2	1	2		1	4				1	**32**	8	18	6	**32**
TOTALS	**4**	**17**	**2**	**1**	**2**	**0**	**1**	**4**	**0**	**0**	**0**	**1**		**8**	**18**	**6**	

	Northbound	Southbound	Eastbound	Westbound	Unknown	**Totals**
Left turn	1		3			**4**
Rear-end	9	7		1		**17**
Overtaking			1		1	**2**
Right Angle	1					**1**
Right Turn	2					**2**
Head On						**0**
Side-swipe	1					**1**
Fixed Object	3		1			**4**
Backing						**0**
Other						**0**
Bike/Ped		1				**1**
Animal						**0**
Totals	**17**	**8**	**5**	**1**	**1**	**32**

ADT = Peak hour entering volume / k factor

ADT = 2716 VPH / 0.10 = 28589.4737 VPD

$$\text{Rate} = \frac{32 \text{ Acc.} \times 1{,}000{,}000}{28589.4737 \text{ VPD} \times 365 \text{ Days} \times 3.000 \text{ Yrs.}} = 1.02 \text{ Crash / MEV}$$

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Int #	Sweet Home Road/The Station	Left turn	Rear-end	Overtaking	Right Angle	Right Turn	Head On	Side-swipe	Fixed Object	Backing	Other	Animal	Bike/Ped	Total	Injury	Non Injury	Non-Repo	Sum
2		1												1	1			1
	TOTALS	1	0	0	0	0	0	0	0	0	0	0	0		1	0	0	

	Northbound	Southbound	Eastbound	Westbound	Unknown	Totals
Left turn				1		1
Rear-end						0
Overtaking						0
Right Angle						0
Right Turn						0
Head On						0
Side-swipe						0
Fixed Object						0
Backing						0
Other						0
Bike/Ped						0
Animal						0
Totals	**0**	**0**	**0**	**1**	**0**	**1**

ADT = Peak hour entering volume / k factor

ADT = 2157 VPH / 0.10 = 22705.2632 VPD

Rate = 1 Acc. x 1,000,000 / (22705.2632 VPD x 365 Days x 3.000 Yrs.) = 0.04 Crash / MEV

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Int #	Sweet Home Road/Maple Road															
3	Left turn	Rear-end	Overtaking	Right Angle	Right Turn	Head On	Side-swipe	Fixed Object	Backing	Other	Animal	Bike/Ped	**Total**	Injury	Non Injury	Non-Repo	**Sum**
	15	24	7	10	3	2		2				1	**64**	17	37	10	**64**
TOTALS	**15**	**24**	**7**	**10**	**3**	**2**	**0**	**2**	**0**	**0**	**0**	**1**		**17**	**37**	**10**	

	Northbound	Southbound	Eastbound	Westbound	Unknown	**Totals**
Left turn	6	7	2			**15**
Rear-end	3	9	4	8		**24**
Overtaking	1	1	1	4		**7**
Right Angle	4	1	3	2		**10**
Right Turn	1	1	1			**3**
Head On			1	1		**2**
Side-swipe						**0**
Fixed Object				1	1	**2**
Backing						**0**
Other						**0**
Bike/Ped		1				**1**
Animal						**0**
Totals	**15**	**20**	**12**	**16**	**1**	**64**

ADT = Peak hour entering volume / k factor

ADT = 3692 VPH / 0.10 = 38863.1579 VPD

Rate = $\frac{64 \text{ Acc.} \times 1{,}000{,}000}{38863.1579 \text{ VPD} \times 365 \text{ Days} \times 3.000 \text{ Yrs.}}$ = 1.50 Crash / MEV

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

INTERSECTION TYPE URBAN FUNCTION CLASS	ALL TYPES ACC/MEV	WET ROAD ACC/MEV	LEFT TURN ACC/MEV	REAR END CC/ME	OVER-TAKING ACC/MEV	RIGHT ANGLE ACC/MEV	RIGHT TURN ACC/MEV	HEAD ON ACC/MEV	SIDE-SWIPE ACC/MEV
3 LEGGED INTERSECTIONS									
SIGNAL 1-4 LANES	0.32	0.06	0.03	0.13	0.04	0.04	0.01	0	0.01
SIGNAL W/ LEFT TURN 5 &	0.17	0.03	0.01	0.07	0.03	0.02	0	0	0
SIGNAL W/0 LEFT TURN 5 &	0.13	0.02	0.01	0.05	0.02	0.01	0.01	0	0
SIGN 1-3 LANES	0.19	0.03	0.01	0.06	0.01	0.03	0.01	0	0
SIGN 4 LANES	0.13	0.02	0.01	0.04	0.02	0.02	0	0	0
SIGN 5 & > LANES	0.07	0.01	0	0.03	0.01	0.01	0	0	0
NO CONTROL ALL LANI	0.06	0.01	0	0.02	0.01	0.01	0	0	0
4 LEGGED &> INTERSECTIONS									
SIGNAL 1-4 LANES	0.56	0.1	0.05	0.21	0.08	0.09	0.02	0.01	0.01
SIGNAL W/ LEFT T	0.26	0.04	0.02	0.11	0.05	0.03	0.01	0	0
SIGNAL W/0 LEFT	0.24	0.04	0.02	0.07	0.04	0.05	0.01	0	0
SIGN 1-3 LANES	0.31	0.06	0.02	0.08	0.02	0.08	0.01	0	0.01
SIGN 4 & > LANES	0.15	0.03	0.01	0.05	0.02	0.03	0	0	0
NO CONTROL ALL	0.12	0.03	0.01	0.04	0.02	0.02	0	0	0
ON RAMP (ALL CONTROL)									
MERGE W/ 1 LANE	0.04	0	0	0.01	0.01	0	0	0	0
MERGE W/ 2 LANES	0.02	0	0	0.01	0.01	0	0	0	0
MERGE W/ 3&> LANES	0.02	0	0	0.01	0	0	0	0	0
OFF RAMP (ALL CONTROL)									
MERGE W/ 1 LANE	0.05	0.01	0	0.02	0.01	0.01	0	0	0
MERGE W/ 2 LANES	0.03	0.01	0	0.01	0.01	0	0	0	0
MERGE W/ 3&> LANES	0.02	0	0	0.01	0.01	0	0	0	0

Project: **Mixed-Use Development**
Location: **1400-1416 Sweet Home Road**

Description	ITE LUC	SIZE/ UNITS	AM PEAK HOUR		PM PEAK HOUR	
			Enter	Exit	Enter	Exit
Apartments	225	1,025 bedrooms	39	64	110	111
Office	710	10,000 SF	13	2	2	12
Retail	822	10,000 SF	14	10	33	33
Sub-Total Site Generated Trips			**66**	**76**	**145**	**156**
Apartments	225	1,025 bedrooms	38	63	101	107
Office	710	10,000 SF	12	1	1	9
Retail	822	14,600 SF	12	8	27	24
Total Net Site Generated Trips			**62**	**72**	**129**	**140**
Internal Trips			*4*	*4*	*16*	*16*

Base Internal Capture Percentages

AM PEAK HOUR		PM PEAK HOUR	
Enter	Exit	Enter	Exit
2%	1%	8%	4%
7%	50%	50%	23%
13%	17%	18%	26%
Adjusted Internal Capture Percentages			
2%	1%	8%	4%
7%	50%	50%	23%
13%	17%	18%	26%

ENTER	EXIT	ENTER	EXIT	
5%	5%	11%	10%	**Base %**
5%	5%	11%	10%	**Adjusted %**
0%	0%	0%	0%	**% change**

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Mixed-Use Development	**Organization:**	SRF Associates, D.P.C.
Project Location:	1400-1416 Sweet Home Road, Amherst, NY	**Performed By:**	David Kruse, AICP, PTP
Scenario Description:		**Date:**	March 16, 2022
Analysis Year:		**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	10,000	SF	15	13	2
Retail	822	10,000	SF	24	14	10
Restaurant				0		
Cinema/Entertainment				0		
Residential	225	1,025	bedrooms	103	39	64
Hotel				0		
All Other Land Uses[2]				0		
Total				142	66	76

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.06	0%	1%	1.06	0%	0%
Retail	1.17	0%	0%	1.16	0%	0%
Restaurant	1.41	0%	1%	1.39	0%	2%
Cinema/Entertainment						
Residential	1.13	0%	3%	1.09	0%	2%
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	1		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	158	74	84
Internal Capture Percentage	5%	5%	5%
External Vehicle-Trips[3]	133	61	72
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	2	1	1

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	7%	50%
Retail	13%	17%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	1%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Project Name:	Mixed-Use Development
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.06	13	14	1.06	2	2
Retail	1.17	14	16	1.16	10	12
Restaurant	1.41	0	0	1.39	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.13	39	44	1.09	64	70
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	1	0	0	0
Retail	3		2	0	2	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	1	14	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		5	0	0	0	0
Retail	1		0	0	1	0
Restaurant	2	1		0	2	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	3	0	0		0
Hotel	0	1	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	1	13	14	12	0	0
Retail	2	14	16	12	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	43	44	37	0	1
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	1	1	2	1	0	0
Retail	2	10	12	9	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	69	70	62	0	1
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Mixed-Use Development	**Organization:**	SRF Associates, D.P.C.
Project Location:	1400-1416 Sweet Home Road, Amherst, NY	**Performed By:**	David Kruse, AICP, PTP
Scenario Description:		**Date:**	March 16, 2022
Analysis Year:		**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	10,000	SF	14	2	12
Retail	822	10,000	SF	66	33	33
Restaurant				0		
Cinema/Entertainment				0		
Residential	225	1,025	bedrooms	221	110	111
Hotel				0		
All Other Land Uses[2]				0		
Total				301	145	156

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.11	0%	0%	1.07	0%	0%
Retail	1.21	0%	0%	1.18	0%	0%
Restaurant	1.41	0%	1%	1.39	0%	2%
Cinema/Entertainment						
Residential	1.15	0%	3%	1.21	0%	4%
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		300	300		500	
Retail					500	
Restaurant					500	
Cinema/Entertainment						
Residential		500	500			
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	0	0	0	0
Retail	0		0	0	10	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	4	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	355	169	186
Internal Capture Percentage	10%	11%	10%
External Vehicle-Trips[3]	262	126	136
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	9	4	5

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	50%	23%
Retail	18%	26%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	8%	4%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Project Name:	Mixed-Use Development
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.11	2	2	1.07	12	13
Retail	1.21	33	40	1.18	33	39
Restaurant	1.41	0	0	1.39	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.15	110	127	1.21	111	134
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	1	0	0	0
Retail	1		11	2	10	2
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	5	51	26	0		4
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	0	0	5	0
Retail	1		0	0	58	0
Restaurant	1	20		0	20	0
Cinema/Entertainment	0	2	0		5	0
Residential	1	4	0	0		0
Hotel	0	1	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	1	1	2	1	0	0
Retail	7	33	40	27	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	10	117	127	98	0	4
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	3	10	13	9	0	0
Retail	10	29	39	25	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	5	129	134	102	0	5
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Table 7.1a Adjusted Internal Trip Capture Rates for Trip Origins within a Multi-Use Development			
Land Use Pairs		Weekday	
		AM Peak Hour	PM Peak Hour
From OFFICE	To Office	0.0%	0.0%
	To Retail	28.0%	19.4%
	To Restaurant	63.0%	3.9%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	1.0%	2.0%
	To Hotel	0.0%	0.0%
From RETAIL	To Office	29.0%	2.0%
	To Retail	0.0%	0.0%
	To Restaurant	13.0%	29.0%
	To Cinema/Entertainment	0.0%	4.0%
	To Residential	14.0%	26.0%
	To Hotel	0.0%	5.0%
From RESTAURANT	To Office	31.0%	3.0%
	To Retail	14.0%	41.0%
	To Restaurant	0.0%	0.0%
	To Cinema/Entertainment	0.0%	8.0%
	To Residential	4.0%	18.0%
	To Hotel	3.0%	7.0%
From CINEMA/ENTERTAINMENT	To Office	0.0%	2.0%
	To Retail	0.0%	21.0%
	To Restaurant	0.0%	31.0%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	0.0%	8.0%
	To Hotel	0.0%	2.0%
From RESIDENTIAL	To Office	2.0%	4.0%
	To Retail	1.0%	38.2%
	To Restaurant	20.0%	19.1%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	0.0%	0.0%
	To Hotel	0.0%	3.0%
From HOTEL	To Office	75.0%	0.0%
	To Retail	14.0%	16.0%
	To Restaurant	9.0%	68.0%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	0.0%	2.0%
	To Hotel	0.0%	0.0%

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Table 7.2a Adjusted Internal Trip Capture Rates for Trip Destinations within a Multi-Use Development			
Land Use Pairs		Weekday	
		AM Peak Hour	PM Peak Hour
To OFFICE	From Office	0.0%	0.0%
	From Retail	4.0%	31.0%
	From Restaurant	14.0%	30.0%
	From Cinema/Entertainment	0.0%	6.0%
	From Residential	3.0%	57.0%
	From Hotel	3.0%	0.0%
To RETAIL	From Office	32.0%	7.8%
	From Retail	0.0%	0.0%
	From Restaurant	8.0%	50.0%
	From Cinema/Entertainment	0.0%	4.0%
	From Residential	17.0%	9.1%
	From Hotel	4.0%	2.0%
To RESTAURANT	From Office	23.0%	1.9%
	From Retail	50.0%	29.0%
	From Restaurant	0.0%	0.0%
	From Cinema/Entertainment	0.0%	3.0%
	From Residential	20.0%	12.7%
	From Hotel	6.0%	5.0%
To CINEMA/ENTERTAINMENT	From Office	0.0%	1.0%
	From Retail	0.0%	26.0%
	From Restaurant	0.0%	32.0%
	From Cinema/Entertainment	0.0%	0.0%
	From Residential	0.0%	0.0%
	From Hotel	0.0%	0.0%
To RESIDENTIAL	From Office	0.0%	4.0%
	From Retail	2.0%	46.0%
	From Restaurant	5.0%	16.0%
	From Cinema/Entertainment	0.0%	4.0%
	From Residential	0.0%	0.0%
	From Hotel	0.0%	0.0%
To HOTEL	From Office	0.0%	0.0%
	From Retail	0.0%	17.0%
	From Restaurant	4.0%	71.0%
	From Cinema/Entertainment	0.0%	1.0%
	From Residential	0.0%	12.0%
	From Hotel	0.0%	0.0%

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

PROJECT: Proposed Mixed-Use Development
LOCATION: 1400-1416 Sweet Home Road, Town of Amherst, NY
PEAK HOUR: AM Peak

Figure Number: 3A 3B 4 6a 6b 7 8

Num of yrs: 5

LOCATION NUMBER	INTERSECTION DESCRIPTION	2022 Collected Volumes	Pre-Covid Data	2022 Adjusted Volumes	Bkgd Volume 0.25%	The Station Enter Dist. %	The Station Exit Dist. %	The Station Trips IN 44	The Station Trips OUT 70	1265 Sweet Home Enter Dist. %	1265 Sweet Home Exit Dist. %	1265 Sweet Home Trips IN 15	1265 Sweet Home Trips OUT 47	Total Bkgd Volumes	Existing Bldg Adjust	2027 Vol. w/out Bldgs	Proposed Residential Enter Dist. %	Proposed Residential Exit Dist. %	Proposed Residential Trips IN 38	Proposed Residential Trips OUT 63	Proposed Commercial Enter Dist. %	Proposed Commercial Exit Dist. %	Proposed Commercial Trips IN 24	Proposed Commercial Trips OUT 9	Total Site Trips	Full Build Volumes
1	Rensch Road Proposed Westerly Driveway																									
	SR																	40%		25					25	25
	ST																									
	SL																40%		15			5%		0	15	15
	WR																								0	22
	WT	26		26	26									26	-4	22										
	WL																									
	NR																									
	NT																									
	NL																									
	ER																									
	ET	56		56	57									57		57					5%		1		1	58
	EL																									
2	Rensch Road Office Lot/Villas on Rensch (W)																									
	SR	2		2	2									2	-2											
	ST																									
	SL	20		20	20									20	-20											
	WR	68		68	68									68	-68											
	WT	23		23	23									23	-2	21	40%		15			5%		0	16	37
	WL																									
	NR																									
	NT																									
	NL	1		1	1									1		1										1
	ER																									
	ET	56		56	57									57		57		40%		25	5%		1		26	83
	EL																									
3	Rensch Road Proposed Easterly Driveway																									
	SR																					5%		0	0	0
	ST																									
	SL																	60%		38		95%		9	46	46
	WR																60%		23		95%		23		46	46
	WT	87		87	87									87	-70	17	40%		15						15	32
	WL																									
	NR																									
	NT																									
	NL																									
	ER																									
	ET	79		79	80									80	-20	60		40%		25					25	85
	EL																				5%		1		1	1
4	Rensch Road Office Lot/Villas on Rensch (E)																									
	SR	2		2	2									2	-2											
	ST																									
	SL	6		6	6									6	-6											
	WR	34		34	34									34	-34											
	WT	86		86	86									86	-68	18	100%		38		95%		23		61	79
	WL	2		2	2									2		2										2
	NR	23		23	23									23		23										23
	NT																									
	NL	1		1	1									1		1										1
	ER	6		6	6									6		6										6
	ET	73		73	74									74	-20	54		100%		63		95%		9	72	126
	EL																									
5	Rensch Road Sweet Home Road		2018																							
	SR	42	59	42	42									42	-35	7	15%		6		50%		12		18	25
	ST	515	605	560	567	5%		2		5%		1		570		570										570
	SL	237	346	292	295									295		295										295
	WR	90	100	90	91									91		91										91
	WT	46	54	46	47									47	-35	12	55%		21		10%		2		23	35
	WL	80	73	80	81	60%		26		60%		9		116		116										116
	NR	196	272	234	237		60%		42		60%		28	307		307										307
	NT	239	344	292	295		5%		4		5%		2	301		301										301
	NL	34	38	34	34									34	-32	2	30%		11		35%		8		20	22
	ER	31	25	31	31									31	-9	22		30%		19		50%		5	23	45
	ET	54	47	54	55									55	-14	41		55%		35		15%		1	36	77
	EL	13	13	13	13									13	-3	10		15%		9		30%		3	12	22
6	Sweet Home Road The Station																									
	SR																									
	ST	628		673	681						35%		16	697	-9	688		30%		19		50%		5	23	712
	SL	17		17	17	65%		29						46		46										46
	WR	33		33	33		65%		46					79		79										79
	WT																									
	WL	18		18	18		35%		25					43		43										43
	NR	10		10	10	35%		15						25		25										25
	NT	475		566	573					35%		5		578	-32	546	30%		11		35%		8		20	566
	NL																									
	ER																									
	ET																									
	EL																									
7	Sweet Home Road Maple Road		2018																							
	SR	226	240	233	236		20%		14		20%		9	259	-3	256		15%		9		20%		2	11	268
	ST	244	259	252	255		10%		7		10%		5	267	-4	263		10%		6		20%		2	8	271
	SL	157	180	169	171		5%		4		5%		2	177	-2	175		5%		3		10%		1	4	179
	WR	80	90	80	81	5%		2		5%		1		84	-5	79	5%		2		5%		1		3	82
	WT	466	498	466	472									472		472										472
	WL	91	94	91	92									92		92										92
	NR	108	157	108	109									109		109										109
	NT	234	326	280	284	10%		4		10%		2		290	-15	275	10%		4		15%		4		7	282
	NL	85	79	85	86									86		86										86
	ER	53	50	53	54									54		54										54
	ET	362	594	478	484									484		484										484
	EL	188	229	209	211	20%		9		20%		3		223	-12	211	15%		6		15%		4		9	220

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

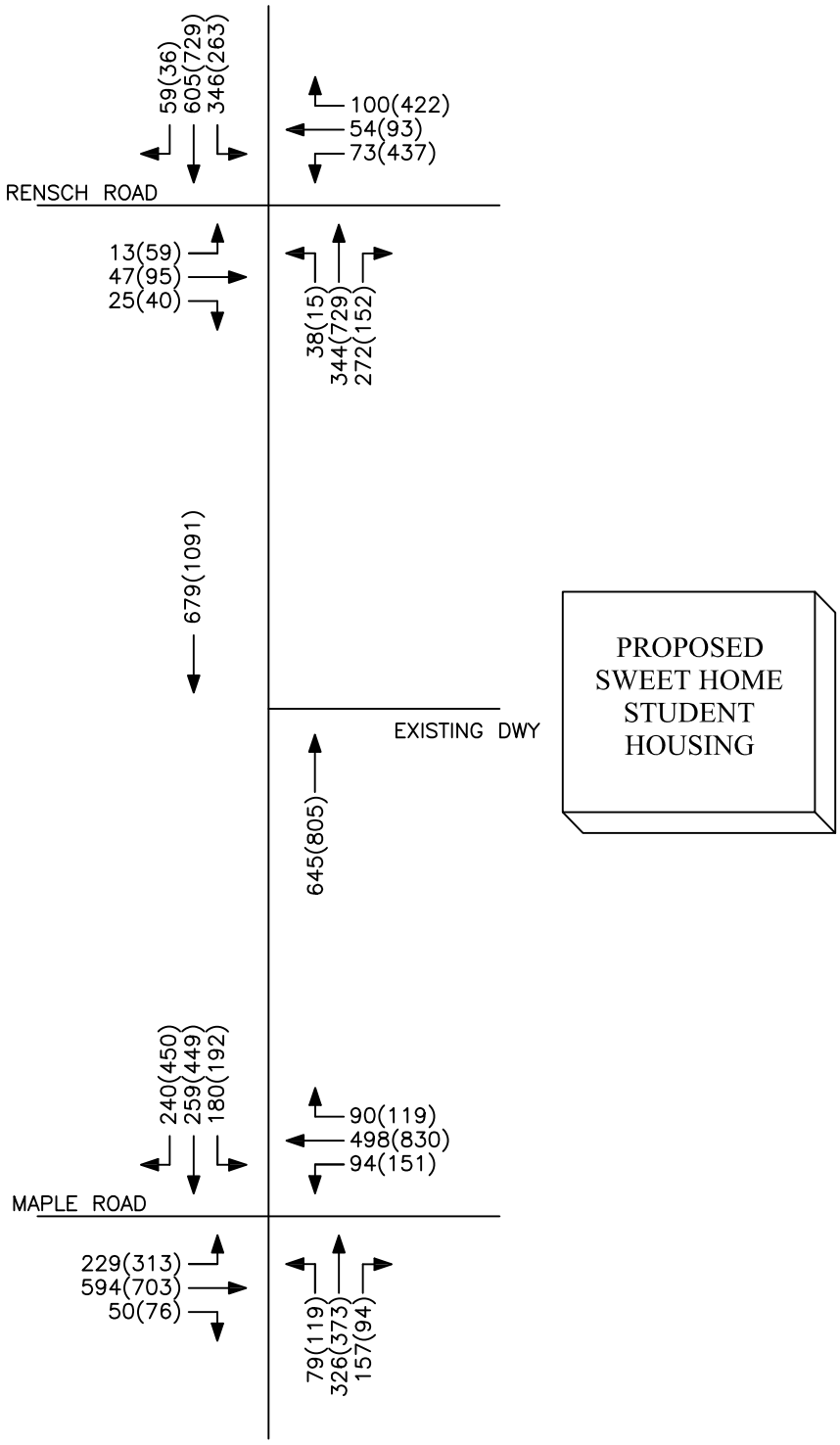
PROJECT: Proposed Mixed-Use Development
LOCATION: 1400-1416 Sweet Home Road, Town of Amherst, NY
PEAK HOUR: PM Peak

Figure Number: 3A 3B 4 6a 6b 7 8

Num of yrs: 5

LOCATION NUMBER	INTERSECTION DESCRIPTION	2022 Collected Volumes	Pre-Covid Data	2022 Adjusted Volumes	Bkgd Volume 0.25%	The Station Enter Dist. %	The Station Exit Dist. %	The Station Trips IN 6	The Station Trips OUT 13	1265 Sweet Home Enter Dist. %	1265 Sweet Home Exit Dist. %	1265 Sweet Home Trips IN 49	1265 Sweet Home Trips OUT 30	Total Bkgd Volumes	Existing Bldg Adjust	2027 Vol. w/out Bldgs	Proposed Residential Enter Dist. %	Proposed Residential Exit Dist. %	Proposed Residential Trips IN 101	Proposed Residential Trips OUT 107	Proposed Commercial Enter Dist. %	Proposed Commercial Exit Dist. %	Proposed Commercial Trips IN 28	Proposed Commercial Trips OUT 34	Total Site Trips	Full Build Volumes
1	Rensch Road Proposed Westerly Driveway																									
	SR																									
	ST																	40%		43						
	SL																								43	43
	WR																40%		40						40	40
	WT	63		63	64									64		64						5%		2	2	66
	WL																									
	NR																									
	NT																									
	NL																									
	ER																									
	ET	61		61	62									62	-2	60					5%		1		1	61
	EL																									
2	Rensch Road Office Lot/Villas on Rensch (W)																									
	SR																									
	ST																									
	SL	55		55	55									55	-55											
	WR	21		21	21									21	-21											
	WT	63		63	64									64		64	40%		40			5%		2	42	106
	WL	2		2	2									2		2										2
	NR																									
	NT																									
	NL																									
	ER																									
	ET	61		61	62									62	-2	60		40%		43	5%		1		44	104
	EL																									
3	Rensch Road Proposed Easterly Driveway																									
	SR																					5%		2	2	2
	ST																									
	SL																	60%		64		95%		32	97	97
	WR																60%		61		95%		27		87	87
	WT	86		86	87									87	-21	66	40%		40						40	106
	WL																									
	NR																									
	NT																									
	NL																									
	ER																									
	ET	112		112	113									113	-58	55		40%		43					43	98
	EL																				5%		1		1	1
4	Rensch Road Office Lot/Villas on Rensch (E)																									
	SR																									
	ST																									
	SL	40		40	40									40	-40											
	WR	17		17	17									17	-17											
	WT	83		83	84									84	-21	63	100%		101		95%		27		128	191
	WL	35		35	35									35		35										35
	NR	25		25	25									25		25										25
	NT																									
	NL	3		3	3									3		3										3
	ER	5		5	5									5		5										5
	ET	107		107	108									108	-56	52		100%		107		95%		32	139	191
	EL	2		2	2									2	-2											
5	Rensch Road Sweet Home Road		2018																							
	SR	25	36	25	25									25	-8	17	15%		15		45%		13		28	45
	ST	514	729	622	629	5%		0		5%		2		632		632										632
	SL	185	263	224	227									227		227										227
	WR	316	422	369	374									374		374										374
	WT	67	93	67	68									68	-22	46	55%		56		15%		4		60	106
	WL	389	437	413	418	50%		3		50%		25		446		446										446
	NR	162	152	162	164		35%		5		35%		11	179		179										179
	NT	563	729	646	654		10%		1		10%		3	658		658										658
	NL	22	15	22	22									22	-8	14	30%		30		35%		10		40	54
	ER	51	40	51	52									52	-32	20		30%		32		45%		15	47	67
	ET	80	95	80	81									81	-45	36		55%		59		15%		5	64	100
	EL	35	59	35	35									35	-20	15		15%		16		35%		12	28	43
6	Sweet Home Road The Station																									
	SR																									
	ST	941		1073	1086						55%		17	1103	-9	1094		30%		32		45%		15	47	1141
	SL	70		70	71	55%		3						74		74										74
	WR	49		49	50		45%		6					56		56										56
	WT																									
	WL	57		57	58		55%		7					65		65										65
	NR	56		56	57	45%		3						60		60										60
	NT	769		852	863					45%		22		885	-32	853	30%		30		35%		10		40	893
	NL																									
	ER																									
	ET																									
	EL																									
7	Sweet Home Road Maple Road		2018																							
	SR	481	450	481	487		25%		3		25%		8	498	-3	495		15%		16		20%		7	23	518
	ST	343	449	396	401		20%		3		20%		6	410	-4	406		10%		11		15%		5	16	421
	SL	166	192	166	168		10%		1		10%		3	172	-2	170		5%		5		10%		3	9	179
	WR	191	119	191	193	10%		1		10%		5		199	-5	194	5%		5		5%		1		6	200
	WT	680	830	755	764									764		764										764
	WL	138	151	138	140									140		140										140
	NR	78	94	78	79									79		79										79
	NT	315	373	344	348	20%		1		20%		10		359	-15	344	10%		10		15%		4		14	358
	NL	124	119	124	126									126		126										126
	ER	74	76	74	75									75		75										75
	ET	564	703	634	641									641		641										641
	EL	311	313	311	315	15%		1		15%		7		323	-12	311	15%		15		15%		4		19	331

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)



PROJECT NO: 38032

KEY
00(00) = AM(PM)

N
NOT TO SCALE

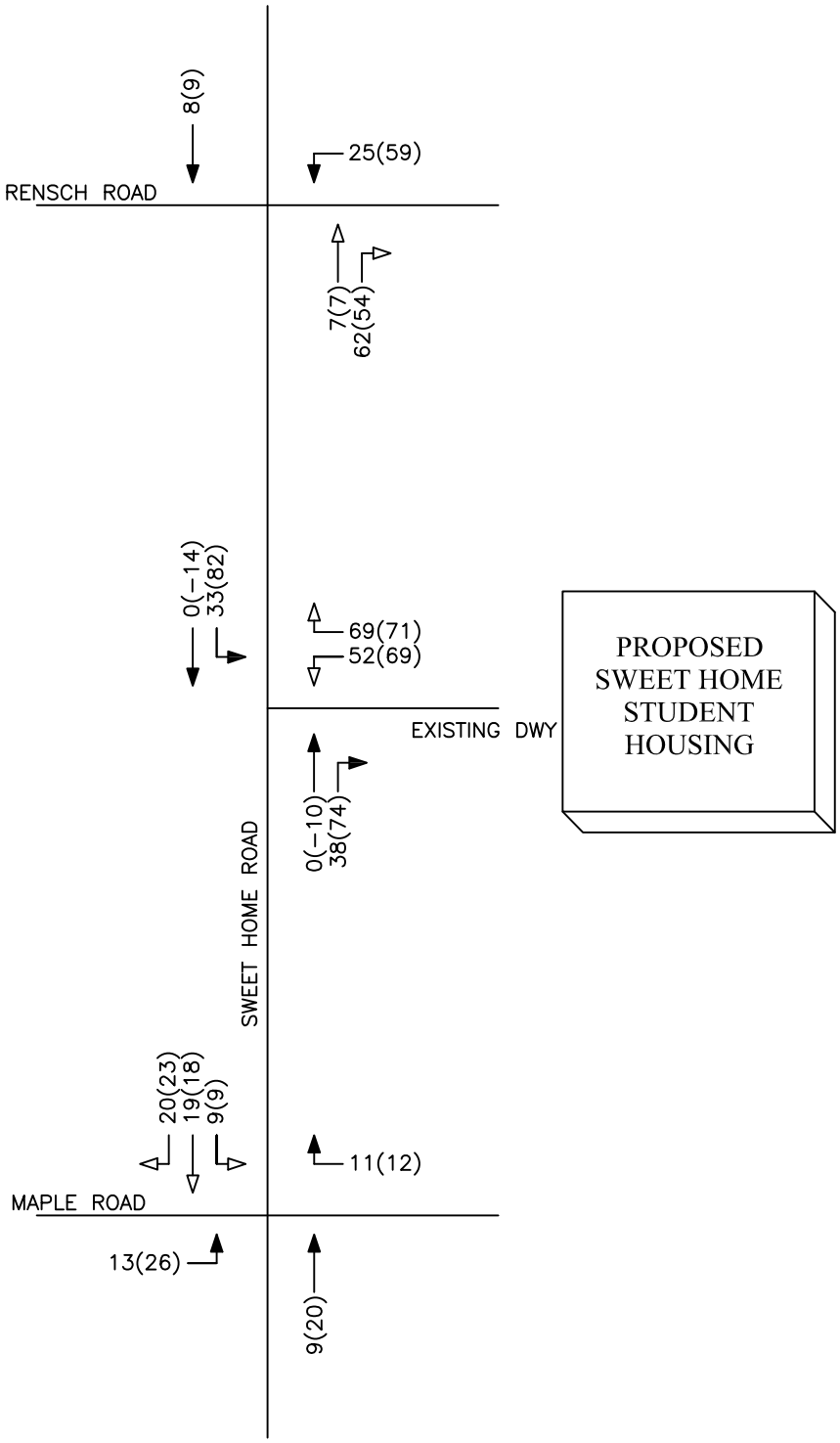
FIGURE 3

PEAK HOUR VOLUMES
2018 EXISTING BASE CONDITIONS

PROPOSED SWEET HOME
STUDENT HOUSING,
TOWN OF AMHERST, NY

SRF ASSOCIATES
WWW.SRFA.NET
Transportation Engineering & Planning Consultants

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)



PROJECT NO: 38032

KEY

N

NOT TO SCALE

00(00) = AM(PM)

→ = ENTERING TRIPS

→ = EXITING TRIPS

FIGURE 7

SITE GENERATED TRIPS

PROPOSED SWEET HOME
STUDENT HOUSING,
TOWN OF AMHERST, NY

SRF ASSOCIATES

WWW.SRFA.NET

Transportation Engineering & Planning Consultants

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

§ 5A-9 GENERAL DEVELOPMENT STANDARD

5A-9-1. Parking, Loading and Stacking

All parking, loading and stacking must meet the requirements of 7-1, except as required below.

A. Minimum Parking in Mixed Use Districts

(1) Off-Street Vehicle Parking

Off-street parking facilities must be provided in quantities not less than set forth in the following schedule.

SCHEDULE OF PARKING REQUIREMENTS

RESIDENTIAL USES	
Single-family detached	1.0 space per dwelling unit
Attached dwelling	1.0 space per dwelling unit
Multi-family dwelling, upper-story dwelling, assisted group living, senior citizen housing	.75 space per efficiency unit 1.0 space per one or two-bedroom unit 1.5 space per three or more bedroom unit
PUBLIC AND CIVIC USES	
Ambulance service	2.5 spaces per 1,000 SF
Business college, commercial school	3.5 spaces per 1,000 SF
College, university	3.5 spaces per 1,000 SF
Day care	3.5 spaces per 1,000 SF
Place of worship	3.5 spaces per 1,000 SF
Public utility service structure or facility	2.5 spaces per 1,000 SF
School, elementary/secondary (private)	3.5 spaces per 1,000 SF
Telecommunication facility, minor utility	1 space per facility
COMMERCIAL USES	
Animal grooming, cat boarding facility, animal hospital or veterinarian	2 spaces per 1,000 SF
Lodging	.75 spaces per room
Medical	3.5 spaces per 1,000 SF
Office	2.5 spaces per 1,000 SF
Personal service	2.5 spaces per 1,000 SF
Recreation, indoor	2.5 spaces per 1,000 SF
Restaurant	4.0 spaces per 1,000 SF
Retail sales and service	2.5 spaces per 1,000 SF

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

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Project: 1400-1416 Sweet Home Road
Description:

Shared Parking Demand Summary																		
Peak Month: DECEMBER -- Peak Period: 7 PM, WEEKEND																		
Land Use	Project Data		Weekday					Weekend					Weekday			Weekend		
	Quantity	Unit	Base Ratio	Driving Adj	Non-Captive Ratio	Project Ratio	Unit For Ratio	Base Ratio	Driving Adj	Non-Captive Ratio	Project Ratio	Unit For Ratio	Peak Hr Adj 7 PM	Peak Mo Adj December	Estimated Parking Demand	Peak Hr Adj 7 PM	Peak Mo Adj December	Estimated Parking Demand
Retail																		
Retail (<400 ksf)	10,000	sf GLA	2.90	100%	93%	2.69	ksf GLA	3.20	100%	91%	2.93	ksf GLA	90%	100%	24	60%	100%	18
Employee			0.70	100%	77%	0.54		0.80	100%	71%	0.57		100%	100%	5	80%	100%	5
Food and Beverage																		
Entertainment and Institutions																		
Hotel and Residential																		
Residential, Suburban																0%		
Studio Efficiency		units	0.00	100%	100%	0.00	unit	0.00	100%	100%	0.00	unit	70%	100%	-	80%	100%	-
1 Bedroom	475	units	0.00	100%	100%	0.00	unit	0.00	100%	100%	0.00	unit	70%	100%	-	80%	100%	-
2 Bedrooms	25	units	0.00	100%	100%	0.00	unit	0.00	100%	100%	0.00	unit	70%	100%	-	80%	100%	-
3+ Bedrooms		units	0.00	100%	100%	0.00	unit	0.00	100%	100%	0.00	unit	70%	100%	-	80%	100%	-
Reserved	100%	res spaces	0.94	100%	100%	0.94	unit	0.94	100%	100%	0.94	unit	100%	100%	469	100%	100%	469
Visitor	500	units	0.10	100%	100%	0.10	unit	0.15	100%	100%	0.15	unit	100%	100%	50	100%	100%	75
Office																		
Office <25 ksf	10,000	sf GFA	0.30	100%	100%	0.30	ksf GFA	0.03	100%	100%	0.03	ksf GFA	2%	100%	-	0%	100%	-
Reserved		empl	0.00	100%	100%	0.00		0.00	100%	100%	0.00		100%	100%	-	100%	100%	-
Employee			3.50	100%	72%	2.51		0.35	100%	72%	0.25		15%	100%	4	0%	100%	-
Additional Land Uses																		
													Customer/Visitor		74	Customer		93
													Employee/Resident		9	Employee/Resident		5
													Reserved		469	Reserved		469
													Total		552	Total		566
													Shared Parking Reduction		7%			4%

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

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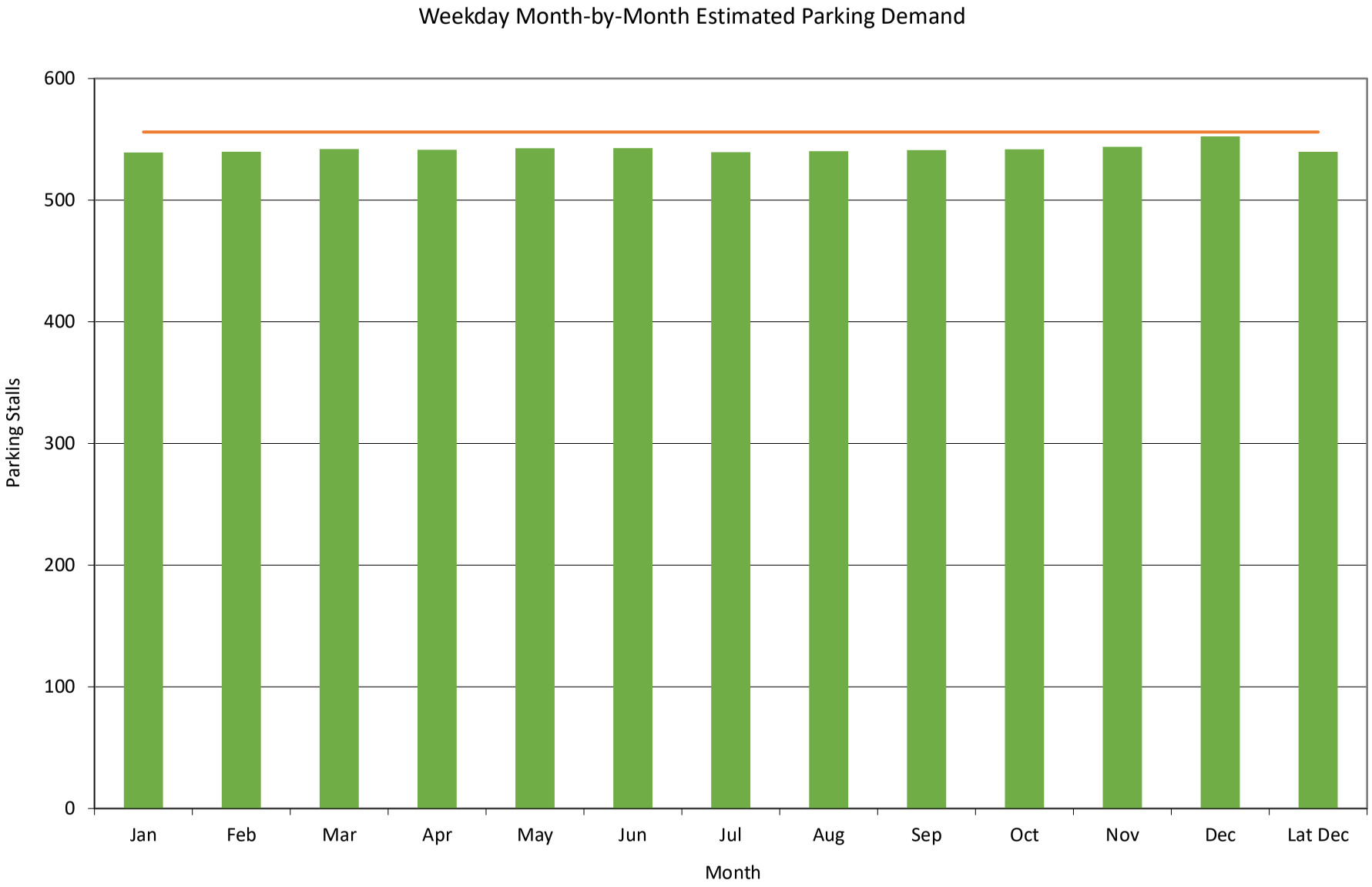
Project: 1400-1416 Sweet Home Road
Description:

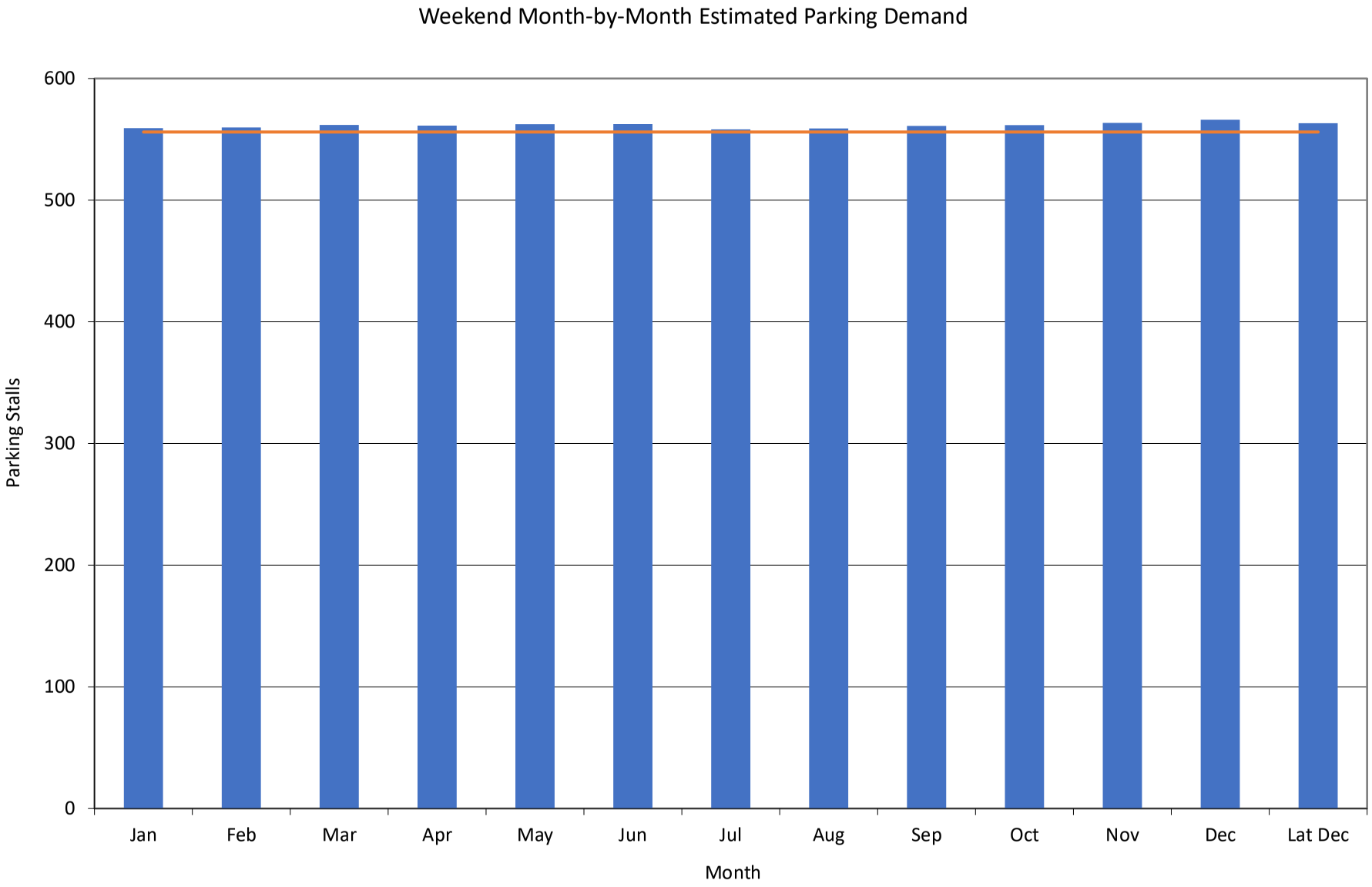
Monthly Comparison Summary								
Month	Weekday							
	Overall Pk		AM Peak Hr		PM Peak Hr		Eve Peak Hr	
	Time	Demand	Time	Demand	Time	Demand	Time	Demand
January	7 PM	539	11 AM	522	2 PM	525	7 PM	539
February	7 PM	540	11 AM	522	2 PM	526	7 PM	540
March	7 PM	542	11 AM	525	2 PM	529	7 PM	542
April	7 PM	541	11 AM	524	2 PM	528	7 PM	541
May	7 PM	543	11 AM	525	2 PM	530	7 PM	543
June	7 PM	543	11 AM	525	2 PM	530	7 PM	543
July	7 PM	539	11 AM	523	2 PM	527	7 PM	539
August	7 PM	540	11 AM	524	2 PM	524	7 PM	540
September	7 PM	541	11 AM	524	2 PM	528	7 PM	541
October	7 PM	542	11 AM	524	2 PM	529	7 PM	542
November	7 PM	544	11 AM	526	2 PM	531	7 PM	544
December	7 PM	552	11 AM	532	2 PM	540	7 PM	552
Late December	7 PM	540	11 AM	521	2 PM	530	7 PM	540

Monthly Comparison Summary								
Month	Weekend							
	Overall Pk		AM Peak Hr		PM Peak Hr		Eve Peak Hr	
	Time	Demand	Time	Demand	Time	Demand	Time	Demand
January	7 PM	559	11 AM	508	5 PM	517	7 PM	559
February	7 PM	560	11 AM	509	5 PM	517	7 PM	560
March	7 PM	562	11 AM	512	5 PM	520	7 PM	562
April	7 PM	561	11 AM	511	5 PM	519	7 PM	561
May	7 PM	562	11 AM	513	5 PM	521	7 PM	562
June	7 PM	563	11 AM	513	5 PM	521	7 PM	563
July	7 PM	558	11 AM	511	5 PM	519	7 PM	558
August	7 PM	559	11 AM	512	5 PM	519	7 PM	559
September	7 PM	561	11 AM	511	5 PM	519	7 PM	561
October	7 PM	562	11 AM	512	5 PM	520	7 PM	562
November	7 PM	563	11 AM	514	5 PM	522	7 PM	563
December	7 PM	566	11 AM	520	5 PM	528	7 PM	566
Late December	7 PM	563	11 AM	508	5 PM	526	7 PM	563

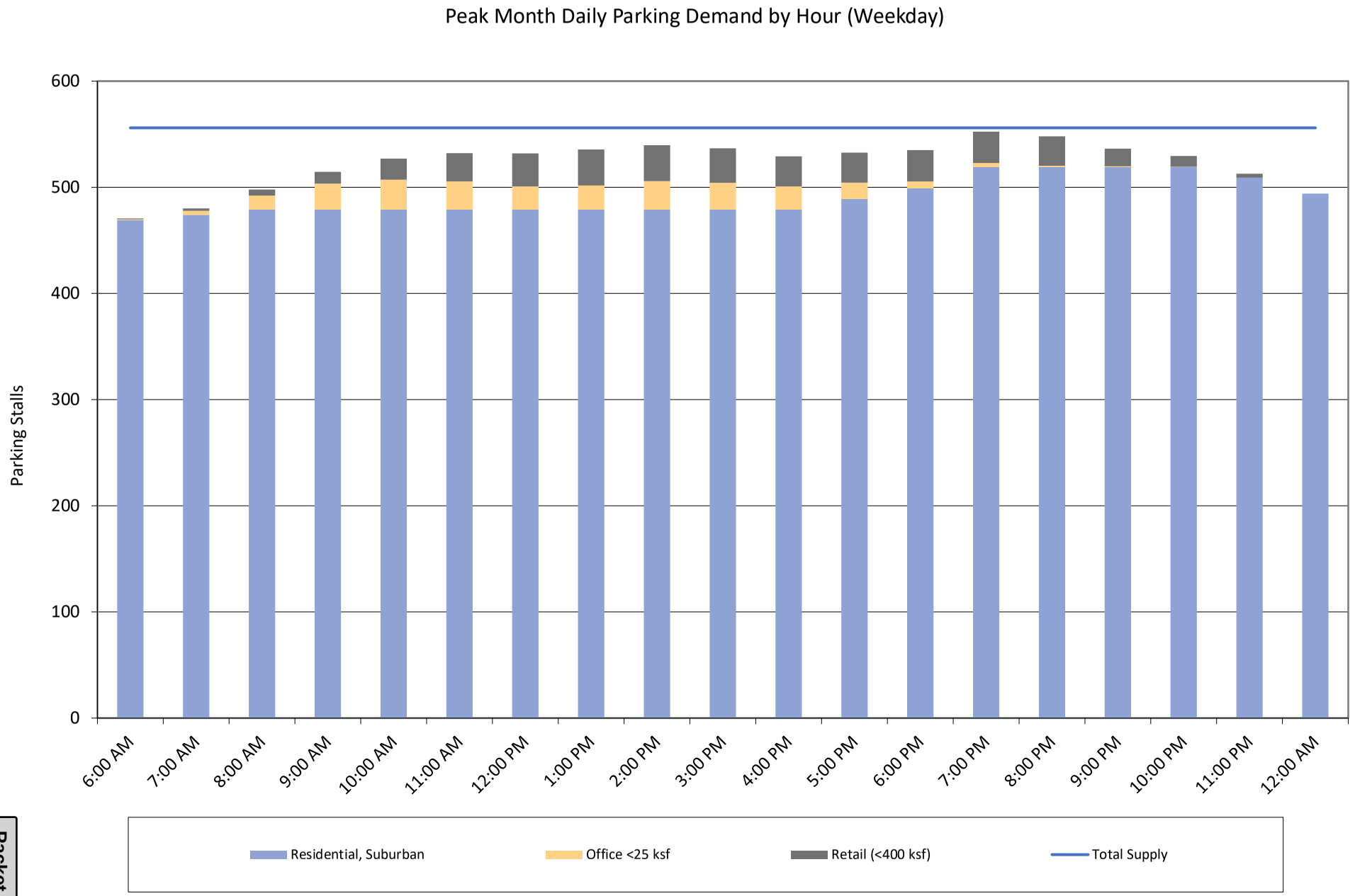
Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

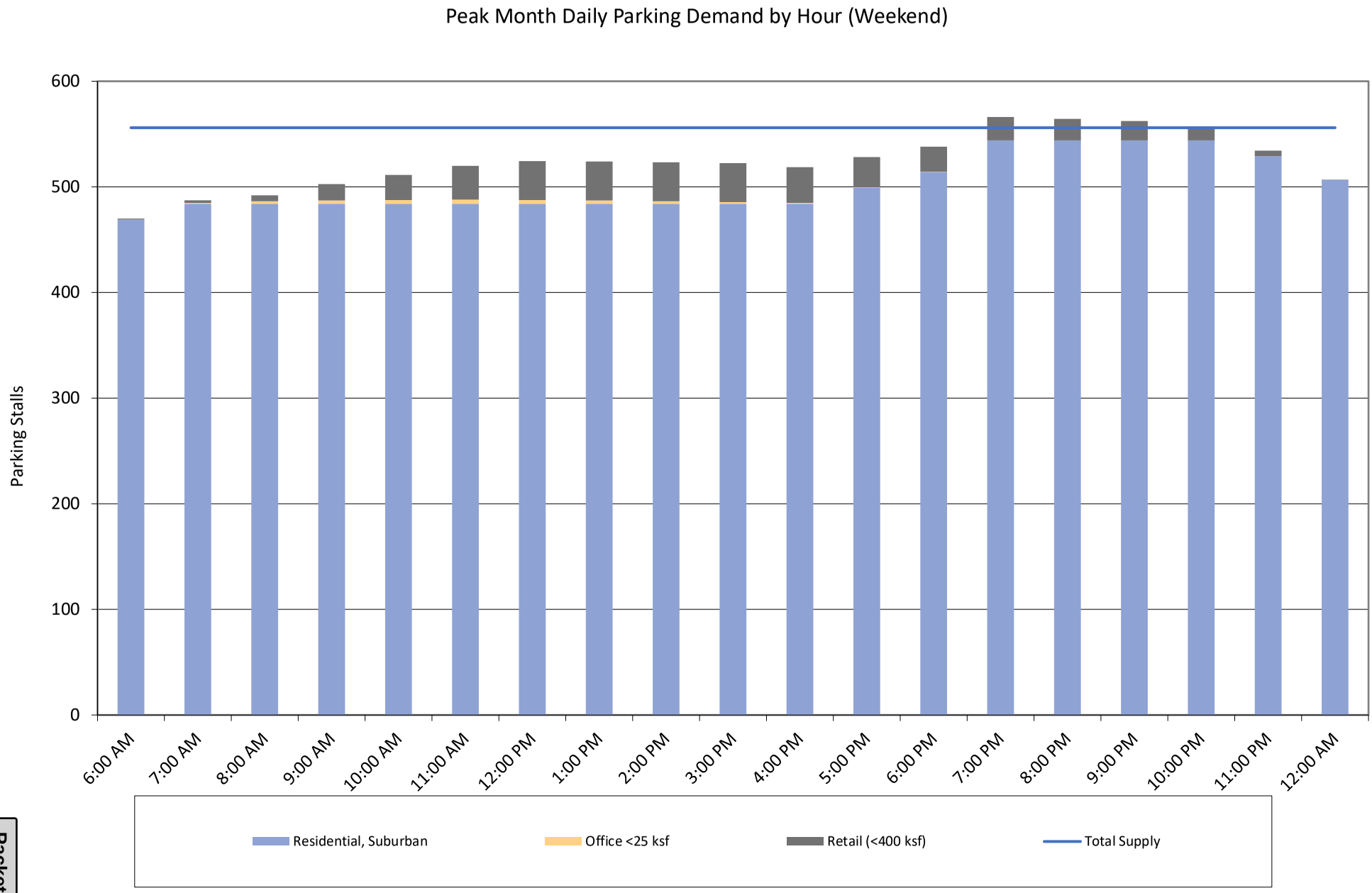


Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)



Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)


Peak Month Daily Parking Demand by Hour (Weekday)
Parking Stalls
600
500
400
300
200
100
0
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
12:00 AM
Residential, Suburban
Office <25 ksf
Retail (<400 ksf)
Total Supply



Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

A3

Level of Service: Criteria and Definitions

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Level of Service Criteria

Highway Capacity Manual 2016

SIGNALIZED INTERSECTIONS

Level of Service is a qualitative measure describing operational conditions within a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. Level of Service for signalized intersections is defined in terms of delay specifically, average total delay per vehicle for a 15-minute analysis period. The ranges are as follows:

Level of Service	Control Delay per vehicle (seconds)
A	< 10
B	10 – 20
C	20 – 35
D	35 – 55
E	55 – 80
F	>80

UNSIGNALIZED INTERSECTIONS

Level of Service for unsignalized intersections is also defined in terms of delay. However, the delay criteria are different from a signalized intersection. The primary reason for this is driver expectation that a signalized intersection is designed to carry higher volumes than an unsignalized intersection. The total delay threshold for any given Level of Service is less for an unsignalized intersection than for a signalized intersection. The ranges are as follows:

Level of Service	Control Delay per vehicle (seconds)
A	< 10
B	10 – 15
C	15 – 25
D	25 – 35
E	35 - 50
F	>50

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

A4

Level of Service Calculations: Existing Conditions

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	73	6	2	86	34	1	0	23	6	0	2
Future Volume (vph)	0	73	6	2	86	34	1	0	23	6	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.989			0.963			0.869			0.966	
Flt Protected					0.999			0.999			0.964	
Satd. Flow (prot)	0	1658	0	0	1685	0	0	1249	0	0	1769	0
Flt Permitted					0.999			0.999			0.964	
Satd. Flow (perm)	0	1658	0	0	1685	0	0	1249	0	0	1769	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		308			373			220			232	
Travel Time (s)		7.0			8.5			5.0			5.3	
Confl. Peds. (#/hr)	4		1	1		4	2					2
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Heavy Vehicles (%)	0%	6%	100%	0%	12%	0%	100%	0%	30%	0%	0%	0%
Adj. Flow (vph)	0	106	9	3	125	49	1	0	33	9	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	115	0	0	177	0	0	34	0	0	12	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	19.7%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	73	6	2	86	34	1	0	23	6	0	2
Future Volume (Veh/h)	0	73	6	2	86	34	1	0	23	6	0	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	0	106	9	3	125	49	1	0	33	9	0	3
Pedestrians		2						1			4	
Lane Width (ft)		12.0						12.0			12.0	
Walking Speed (ft/s)		4.0						4.0			4.0	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					373							
pX, platoon unblocked												
vC, conflicting volume	178			116			272	296	112	303	276	156
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	178			116			272	296	112	303	276	156
tC, single (s)	4.1			4.1			8.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			4.4	4.0	3.6	3.5	4.0	3.3
p0 queue free %	100			100			100	100	96	99	100	100
cM capacity (veh/h)	1405			1484			516	615	870	623	631	891

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	115	177	34	12
Volume Left	0	3	1	9
Volume Right	9	49	33	3
cSH	1405	1484	853	674
Volume to Capacity	0.00	0.00	0.04	0.02
Queue Length 95th (ft)	0	0	3	1
Control Delay (s)	0.0	0.1	9.4	10.4
Lane LOS		A	A	B
Approach Delay (s)	0.0	0.1	9.4	10.4
Approach LOS			A	B

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	19.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	56	0	0	23	68	1	0	0	20	0	2
Future Volume (vph)	0	56	0	0	23	68	1	0	0	20	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.900						0.986	
Flt Protected								0.950			0.957	
Satd. Flow (prot)	0	1667	0	0	1528	0	0	1805	0	0	1566	0
Flt Permitted								0.950			0.957	
Satd. Flow (perm)	0	1667	0	0	1528	0	0	1805	0	0	1566	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		219			308			216			216	
Travel Time (s)		5.0			7.0			4.9			4.9	
Confl. Peds. (#/hr)	1		3	3		1						
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	0%	14%	0%	0%	35%	4%	0%	0%	0%	5%	0%	100%
Adj. Flow (vph)	0	77	0	0	32	93	1	0	0	27	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	77	0	0	125	0	0	1	0	0	30	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	15.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	56	0	0	23	68	1	0	0	20	0	2
Future Volume (Veh/h)	0	56	0	0	23	68	1	0	0	20	0	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	0	77	0	0	32	93	1	0	0	27	0	3
Pedestrians								3			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					681							
pX, platoon unblocked												
vC, conflicting volume	126			80			162	206	80	156	160	80
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	126			80			162	206	80	156	160	80
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	4.2
p0 queue free %	100			100			100	100	100	97	100	100
cM capacity (veh/h)	1472			1527			801	692	983	800	734	765

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	77	125	1	30
Volume Left	0	0	1	27
Volume Right	0	93	0	3
cSH	1472	1527	801	797
Volume to Capacity	0.00	0.00	0.00	0.04
Queue Length 95th (ft)	0	0	0	3
Control Delay (s)	0.0	0.0	9.5	9.7
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	9.5	9.7
Approach LOS			A	A

Intersection Summary				
Average Delay	1.3			
Intersection Capacity Utilization	15.7%	ICU Level of Service		A
Analysis Period (min)	15			

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	54	31	80	46	90	34	292	234	292	560	42
Future Volume (vph)	13	54	31	80	46	90	34	292	234	292	560	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	170		0	200		185	320		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	60			60			125			185		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99					0.98	1.00				1.00	
Frt		0.946				0.850			0.850		0.990	
Flt Protected	0.950			0.950	0.986		0.950			0.950		
Satd. Flow (prot)	1467	1643	0	1633	1754	1324	1703	3343	1583	1736	3397	0
Flt Permitted	0.950			0.950	0.986		0.950			0.950		
Satd. Flow (perm)	1459	1643	0	1633	1754	1299	1702	3343	1583	1736	3397	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19				147			275		6	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		373			436			1900			810	
Travel Time (s)		8.5			9.9			28.8			12.3	
Confl. Peds. (#/hr)	6					6	1					1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	23%	13%	3%	5%	0%	22%	6%	8%	2%	4%	4%	19%
Adj. Flow (vph)	15	64	36	94	54	106	40	344	275	344	659	49
Shared Lane Traffic (%)				23%								
Lane Group Flow (vph)	15	100	0	72	76	106	40	344	275	344	708	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2	2	2	2	
Detector Template												
Leading Detector (ft)	49	49		49	49	49	49	49	49	49	49	
Trailing Detector (ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Position(ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	29	29		29	29	29	29	29	29	29	29	
Detector 2 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

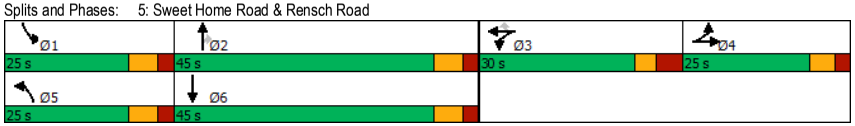
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Detector Phase	4	4		3	3	3	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	20.0	20.0	6.0	20.0	
Minimum Split (s)	40.2	40.2		41.0	41.0	41.0	12.8	37.8	37.8	12.8	37.8	
Total Split (s)	25.0	25.0		30.0	30.0	30.0	25.0	45.0	45.0	25.0	45.0	
Total Split (%)	20.0%	20.0%		24.0%	24.0%	24.0%	20.0%	36.0%	36.0%	20.0%	36.0%	
Maximum Green (s)	18.8	18.8		23.0	23.0	23.0	18.2	38.2	38.2	18.2	38.2	
Yellow Time (s)	3.8	3.8		3.2	3.2	3.2	4.3	4.3	4.3	4.3	4.3	
All-Red Time (s)	2.4	2.4		3.8	3.8	3.8	2.5	2.5	2.5	2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2		7.0	7.0	7.0	6.8	6.8	6.8	6.8	6.8	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	3.5	3.0	3.0	3.0	3.5	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0	27.0		24.0	24.0		24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)	9.8	9.8		9.8	9.8	9.8	7.8	21.1	21.1	18.5	37.8	
Actuated g/C Ratio	0.12	0.12		0.12	0.12	0.12	0.09	0.25	0.25	0.22	0.45	
v/c Ratio	0.09	0.48		0.38	0.37	0.38	0.25	0.41	0.45	0.89	0.46	
Control Delay	36.1	38.2		42.2	41.5	6.6	42.1	29.5	6.5	61.6	21.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	36.1	38.2		42.2	41.5	6.6	42.1	29.5	6.5	61.6	21.2	
LOS	D	D		D	D	A	D	C	A	E	C	
Approach Delay		37.9			27.1			20.7			34.4	
Approach LOS		D			C			C			C	
Queue Length 50th (ft)	7	41		37	40	0	20	81	0	179	153	
Queue Length 95th (ft)	25	89		83	86	17	53	129	50	#380	240	
Internal Link Dist (ft)		293			356			1820			730	
Turn Bay Length (ft)	100			170			200		185	320		
Base Capacity (vph)	336	391		458	492	470	378	1557	884	385	1713	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.04	0.26		0.16	0.15	0.23	0.11	0.22	0.31	0.89	0.41	

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 83.5			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 29.4		Intersection LOS: C	
Intersection Capacity Utilization 63.4%		ICU Level of Service B	

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Sweet Home Road & Rensch Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	18	33	566	10	17	673
Future Volume (vph)	18	33	566	10	17	673
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.997			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1568	3393	0	1703	3471
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1626	1568	3393	0	1703	3471
Link Speed (mph)	30		45			45
Link Distance (ft)	552		1491			1900
Travel Time (s)	12.5		22.6			28.8
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	11%	3%	6%	10%	6%	4%
Adj. Flow (vph)	20	37	636	11	19	756
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	37	647	0	19	756
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 28.6%		ICU Level of Service A	
Analysis Period (min) 15			

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	18	33	566	10	17	673
Future Volume (Veh/h)	18	33	566	10	17	673
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	20	37	636	11	19	756
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1058	324			647	
vC1, stage 1 conf vol	642					
vC2, stage 2 conf vol	416					
vCu, unblocked vol	1058	324			647	
tC, single (s)	7.0	7.0			4.2	
tC, 2 stage (s)	6.0					
tF (s)	3.6	3.3			2.3	
p0 queue free %	95	94			98	
cM capacity (veh/h)	398	669			908	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	20	37	424	223	19	378	378
Volume Left	20	0	0	0	19	0	0
Volume Right	0	37	0	11	0	0	0
cSH	398	669	1700	1700	908	1700	1700
Volume to Capacity	0.05	0.06	0.25	0.13	0.02	0.22	0.22
Queue Length 95th (ft)	4	4	0	0	2	0	0
Control Delay (s)	14.5	10.7	0.0	0.0	9.0	0.0	0.0
Lane LOS	B	B			A		
Approach Delay (s)	12.0		0.0		0.2		
Approach LOS	B						

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	28.6%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	209	478	53	91	466	80	85	280	108	169	252	233
Future Volume (vph)	209	478	53	91	466	80	85	280	108	169	252	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		175	105		0	100		130	190		0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			85			75			60		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor							1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3505	1615	1736	3505	1538	1770	1827	1553	1752	1827	1509
Flt Permitted	0.256			0.447			0.563			0.339		
Satd. Flow (perm)	455	3505	1615	817	3505	1538	1048	1827	1553	625	1827	1490
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			163			99			161			256
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		613			472			833			357	
Travel Time (s)		9.3			7.2			16.2			5.4	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	7%	3%	0%	4%	3%	5%	2%	4%	4%	3%	4%	7%
Adj. Flow (vph)	230	525	58	100	512	88	93	308	119	186	277	256
Shared Lane Traffic (%)												
Lane Group Flow (vph)	230	525	58	100	512	88	93	308	119	186	277	256
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2	2	2	2	2	2	2	2
Detector Template												
Leading Detector (ft)	49	49	49	49	49	49	49	49	49	49	49	49
Trailing Detector (ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Position(ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	29	29	29	29	29	29	29	29	29	29	29	29
Detector 2 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

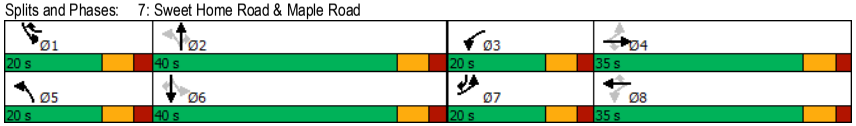
Packet Pg. 4388
3.e
Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	1	5	2	2	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	10.0	3.0	10.0	3.0	3.0	20.0	20.0	3.0	20.0	3.0
Minimum Split (s)	10.6	41.6	41.6	10.6	41.6	20.0	10.8	38.8	38.8	20.0	38.8	10.6
Total Split (s)	20.0	35.0	35.0	20.0	35.0	20.0	20.0	40.0	40.0	20.0	40.0	20.0
Total Split (%)	17.4%	30.4%	30.4%	17.4%	30.4%	17.4%	17.4%	34.8%	34.8%	17.4%	34.8%	17.4%
Maximum Green (s)	13.4	28.4	28.4	13.4	28.4	13.2	13.2	33.2	33.2	13.2	33.2	13.4
Yellow Time (s)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.8	6.8	6.8	6.8	6.8	6.8	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	2.0	2.0	4.0	4.0	2.0	4.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			25.0	25.0		25.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effct Green (s)	37.5	27.5	27.5	28.3	20.3	37.6	31.9	24.3	24.3	39.1	30.2	42.8
Actuated g/C Ratio	0.40	0.29	0.29	0.30	0.21	0.40	0.34	0.26	0.26	0.41	0.32	0.45
v/c Ratio	0.68	0.52	0.10	0.31	0.68	0.13	0.23	0.66	0.23	0.49	0.48	0.31
Control Delay	31.6	32.6	0.3	21.7	40.2	3.9	18.7	40.4	2.9	22.0	31.9	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.6	32.6	0.3	21.7	40.2	3.9	18.7	40.4	2.9	22.0	31.9	3.1
LOS	C	C	A	C	D	A	B	D	A	C	C	A
Approach Delay		30.0			33.0			28.0			19.1	
Approach LOS		C			C			C			B	
Queue Length 50th (ft)	87	139	0	35	147	0	32	168	0	68	140	0
Queue Length 95th (ft)	#177	235	0	81	234	26	70	290	19	130	250	42
Internal Link Dist (ft)		533			392			753			277	
Turn Bay Length (ft)	150		175	105			100		130	190		
Base Capacity (vph)	359	1095	616	424	1070	713	519	652	657	426	662	831
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.48	0.09	0.24	0.48	0.12	0.18	0.47	0.18	0.44	0.42	0.31

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 94.9			
Natural Cycle: 115			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 27.5		Intersection LOS: C	
Intersection Capacity Utilization 72.8%		ICU Level of Service C	

Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Sweet Home Road & Maple Road



Packet Pg. 4389
3.e
Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	107	5	35	83	17	3	0	25	40	0	0
Future Volume (vph)	2	107	5	35	83	17	3	0	25	40	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.994			0.983			0.878				
Flt Protected		0.999			0.987			0.995			0.950	
Satd. Flow (prot)	0	1823	0	0	1799	0	0	1497	0	0	1752	0
Flt Permitted		0.999			0.987			0.995			0.950	
Satd. Flow (perm)	0	1823	0	0	1799	0	0	1497	0	0	1752	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		308			373			220			232	
Travel Time (s)		7.0			8.5			5.0			5.3	
Confl. Peds. (#/hr)	3		4	4		3	1		7	7		1
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	50%	0%	60%	0%	4%	0%	0%	0%	12%	3%	0%	0%
Adj. Flow (vph)	2	124	6	41	97	20	3	0	29	47	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	132	0	0	158	0	0	32	0	0	47	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.7%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	107	5	35	83	17	3	0	25	40	0	0
Future Volume (Veh/h)	2	107	5	35	83	17	3	0	25	40	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	2	124	6	41	97	20	3	0	29	47	0	0
Pedestrians		1			7			4			3	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			1			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					373							
pX, platoon unblocked												
vC, conflicting volume	120			134			325	337	138	359	330	111
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	120			134			325	337	138	359	330	111
tC, single (s)	4.6			4.1			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.7			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			97			100	100	97	92	100	100
cM capacity (veh/h)	1215			1458			612	566	876	555	572	945

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	132	158	32	47
Volume Left	2	41	3	47
Volume Right	6	20	29	0
cSH	1215	1458	842	555
Volume to Capacity	0.00	0.03	0.04	0.08
Queue Length 95th (ft)	0	2	3	7
Control Delay (s)	0.1	2.1	9.4	12.1
Lane LOS	A	A	A	B
Approach Delay (s)	0.1	2.1	9.4	12.1
Approach LOS			A	B

Intersection Summary				
Average Delay		3.3		
Intersection Capacity Utilization		29.7%	ICU Level of Service	A
Analysis Period (min)		15		

Packet Pg. 4390
3.e
Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	61	0	2	63	21	0	0	0	55	0	0
Future Volume (vph)	0	61	0	2	63	21	0	0	0	55	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.967							
Flt Protected					0.999						0.950	
Satd. Flow (prot)	0	1776	0	0	1770	0	0	1900	0	0	1805	0
Flt Permitted					0.999						0.950	
Satd. Flow (perm)	0	1776	0	0	1770	0	0	1900	0	0	1805	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		219			308			216			216	
Travel Time (s)		5.0			7.0			4.9			4.9	
Confl. Peds. (#/hr)	1		2	2		1						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	7%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	65	0	2	67	22	0	0	0	59	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	65	0	0	91	0	0	0	0	0	59	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	16.5%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	61	0	2	63	21	0	0	0	55	0	0
Future Volume (Veh/h)	0	61	0	2	63	21	0	0	0	55	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	65	0	2	67	22	0	0	0	59	0	0
Pedestrians								2			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					681							
pX, platoon unblocked												
vC, conflicting volume	90			67			149	161	67	148	150	79
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	90			67			149	161	67	148	150	79
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	93	100	100
cM capacity (veh/h)	1517			1545			820	732	1001	822	742	986

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	65	91	0	59
Volume Left	0	2	0	59
Volume Right	0	22	0	0
cSH	1517	1545	1700	822
Volume to Capacity	0.00	0.00	0.00	0.07
Queue Length 95th (ft)	0	0	0	6
Control Delay (s)	0.0	0.2	0.0	9.7
Lane LOS		A	A	A
Approach Delay (s)	0.0	0.2	0.0	9.7
Approach LOS			A	A

Intersection Summary				
Average Delay	2.7			
Intersection Capacity Utilization	16.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Packet Pg. 4391
3.e
Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	80	51	413	67	369	22	646	162	224	622	25
Future Volume (vph)	35	80	51	413	67	369	22	646	162	224	622	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	170		0	200		185	320		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	60			60			125			185		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99		1.00	1.00	0.98	1.00		0.98	1.00	1.00	
Frt		0.942				0.850			0.850		0.994	
Flt Protected	0.950			0.950	0.965		0.950			0.950		
Satd. Flow (prot)	1805	1717	0	1698	1720	1568	1805	3574	1583	1719	3534	0
Flt Permitted	0.950			0.950	0.965		0.950			0.950		
Satd. Flow (perm)	1795	1717	0	1695	1718	1537	1801	3574	1555	1715	3534	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21				401			166		3	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		373			436			1900			810	
Travel Time (s)		8.5			9.9			28.8			12.3	
Confl. Peds. (#/hr)	7		2	2		7	3		5	5		3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	6%	0%	1%	2%	3%	0%	1%	2%	5%	1%	12%
Adj. Flow (vph)	38	87	55	449	73	401	24	702	176	243	676	27
Shared Lane Traffic (%)				42%								
Lane Group Flow (vph)	38	142	0	260	262	401	24	702	176	243	703	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2	2	2	2	
Detector Template												
Leading Detector (ft)	49	49		49	49	49	49	49	49	49	49	
Trailing Detector (ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Position(ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	29	29		29	29	29	29	29	29	29	29	
Detector 2 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

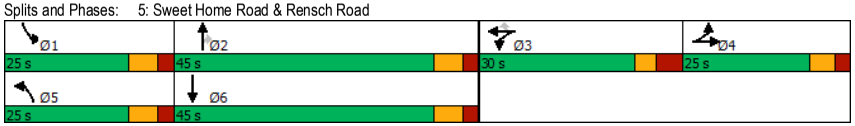
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Detector Phase	4	4		3	3	3	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	20.0	20.0	6.0	20.0	
Minimum Split (s)	40.2	40.2		41.0	41.0	41.0	12.8	37.8	37.8	12.8	37.8	
Total Split (s)	25.0	25.0		30.0	30.0	30.0	25.0	45.0	45.0	25.0	45.0	
Total Split (%)	20.0%	20.0%		24.0%	24.0%	24.0%	20.0%	36.0%	36.0%	20.0%	36.0%	
Maximum Green (s)	18.8	18.8		23.0	23.0	23.0	18.2	38.2	38.2	18.2	38.2	
Yellow Time (s)	3.8	3.8		3.2	3.2	3.2	4.3	4.3	4.3	4.3	4.3	
All-Red Time (s)	2.4	2.4		3.8	3.8	3.8	2.5	2.5	2.5	2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2		7.0	7.0	7.0	6.8	6.8	6.8	6.8	6.8	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	3.5	3.0	3.0	3.0	3.5	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0	27.0		24.0	24.0		24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)	12.9	12.9		21.3	21.3	21.3	7.3	27.8	27.8	18.5	44.9	
Actuated g/C Ratio	0.12	0.12		0.20	0.20	0.20	0.07	0.26	0.26	0.17	0.42	
v/c Ratio	0.18	0.64		0.78	0.77	0.64	0.20	0.76	0.34	0.83	0.48	
Control Delay	46.6	53.0		59.3	58.8	9.5	55.5	43.0	7.7	68.7	26.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	46.6	53.0		59.3	58.8	9.5	55.5	43.0	7.7	68.7	26.3	
LOS	D	D		E	E	A	E	D	A	E	C	
Approach Delay		51.7			37.5			36.5			37.2	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	24	81		177	178	0	16	239	5	165	203	
Queue Length 95th (ft)	60	159		#364	#364	94	47	325	59	#365	290	
Internal Link Dist (ft)		293			356			1820			730	
Turn Bay Length (ft)	100			170			200		185	320		
Base Capacity (vph)	319	321		368	372	647	309	1287	666	294	1476	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.12	0.44		0.71	0.70	0.62	0.08	0.55	0.26	0.83	0.48	

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 107.6			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 38.0		Intersection LOS: D	
Intersection Capacity Utilization 78.9%		ICU Level of Service D	

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Sweet Home Road & Rensch Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	57	49	852	56	70	1073
Future Volume (vph)	57	49	852	56	70	1073
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.991			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1736	1615	3536	0	1787	3574
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1736	1615	3536	0	1787	3574
Link Speed (mph)	30		45			45
Link Distance (ft)	552		1491			1900
Travel Time (s)	12.5		22.6			28.8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	0%	1%	4%	1%	1%
Adj. Flow (vph)	60	52	897	59	74	1129
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	52	956	0	74	1129
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min) 15			

Packet Pg. 4393
3.e
Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	57	49	852	56	70	1073
Future Volume (Veh/h)	57	49	852	56	70	1073
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	60	52	897	59	74	1129
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1639	478			956	
vC1, stage 1 conf vol	926					
vC2, stage 2 conf vol	712					
vCu, unblocked vol	1639	478			956	
tC, single (s)	6.9	6.9			4.1	
tC, 2 stage (s)	5.9					
tF (s)	3.5	3.3			2.2	
p0 queue free %	77	90			90	
cM capacity (veh/h)	264	539			721	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	60	52	598	358	74	564	564
Volume Left	60	0	0	0	74	0	0
Volume Right	0	52	0	59	0	0	0
cSH	264	539	1700	1700	721	1700	1700
Volume to Capacity	0.23	0.10	0.35	0.21	0.10	0.33	0.33
Queue Length 95th (ft)	21	8	0	0	9	0	0
Control Delay (s)	22.6	12.4	0.0	0.0	10.6	0.0	0.0
Lane LOS	C	B			B		
Approach Delay (s)	17.9		0.0		0.6		
Approach LOS	C						

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	311	634	74	138	755	191	124	344	78	166	396	481
Future Volume (vph)	311	634	74	138	755	191	124	344	78	166	396	481
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		175	105		0	100		130	190		0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			85			75			60		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					0.99	1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1583	1787	3574	1583	1805	1881	1568	1770	1863	1599
Flt Permitted	0.128			0.271			0.223			0.262		
Satd. Flow (perm)	241	3574	1583	510	3574	1563	424	1881	1568	488	1863	1578
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			163			161			161			143
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		613			472			833			357	
Travel Time (s)		9.3			7.2			16.2			5.4	
Confl. Peds. (#/hr)	1					1	1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	1%	1%	2%	1%	1%	2%	0%	1%	3%	2%	2%	1%
Adj. Flow (vph)	334	682	80	148	812	205	133	370	84	178	426	517
Shared Lane Traffic (%)												
Lane Group Flow (vph)	334	682	80	148	812	205	133	370	84	178	426	517
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2	2	2	2	2	2	2	2
Detector Template												
Leading Detector (ft)	49	49	49	49	49	49	49	49	49	49	49	49
Trailing Detector (ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Position(ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	29	29	29	29	29	29	29	29	29	29	29	29
Detector 2 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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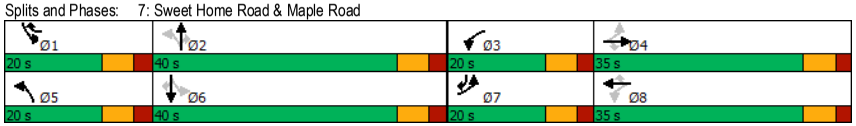
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	1	5	2	2	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	10.0	3.0	10.0	3.0	3.0	20.0	20.0	3.0	20.0	3.0
Minimum Split (s)	10.6	41.6	41.6	10.6	41.6	20.0	10.8	38.8	38.8	20.0	38.8	10.6
Total Split (s)	20.0	35.0	35.0	20.0	35.0	20.0	20.0	40.0	40.0	20.0	40.0	20.0
Total Split (%)	17.4%	30.4%	30.4%	17.4%	30.4%	17.4%	17.4%	34.8%	34.8%	17.4%	34.8%	17.4%
Maximum Green (s)	13.4	28.4	28.4	13.4	28.4	13.2	13.2	33.2	33.2	13.2	33.2	13.4
Yellow Time (s)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.8	6.8	6.8	6.8	6.8	6.8	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	2.0	2.0	4.0	4.0	2.0	4.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			25.0	25.0		25.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effct Green (s)	44.6	31.2	31.2	37.4	27.6	38.3	37.1	27.7	27.7	40.1	29.2	42.9
Actuated g/C Ratio	0.42	0.29	0.29	0.35	0.26	0.36	0.35	0.26	0.26	0.38	0.27	0.40
v/c Ratio	1.13	0.65	0.14	0.50	0.88	0.31	0.49	0.76	0.16	0.57	0.84	0.72
Control Delay	121.5	38.2	0.5	25.9	50.9	6.9	25.7	47.6	0.7	26.9	52.3	22.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	121.5	38.2	0.5	25.9	50.9	6.9	25.7	47.6	0.7	26.9	52.3	22.1
LOS	F	D	A	C	D	A	C	D	A	C	D	C
Approach Delay		60.8			40.0			35.9			34.3	
Approach LOS		E			D			D			C	
Queue Length 50th (ft)	~226	221	0	62	288	18	56	237	0	77	277	191
Queue Length 95th (ft)	#448	318	0	113	#426	66	95	351	0	124	#436	321
Internal Link Dist (ft)		533			392			753			277	
Turn Bay Length (ft)	150		175	105			100		130	190		
Base Capacity (vph)	296	1045	578	358	957	697	334	589	601	354	589	722
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.13	0.65	0.14	0.41	0.85	0.29	0.40	0.63	0.14	0.50	0.72	0.72

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 106.7			
Natural Cycle: 125			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.13			
Intersection Signal Delay: 43.6		Intersection LOS: D	
Intersection Capacity Utilization 88.6%		ICU Level of Service E	

Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Sweet Home Road & Maple Road



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3.e
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7: Sweet Home Road & Maple Road Performance by lane

Lane	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Movements Served	L	T	T	R	L	T	T	R	L	T	R	L
Denied Delay (hr)												
Denied Del/Veh (s)												
Total Delay (hr)	5.4	6.6	3.5	0.2	1.4	8.1	4.8	0.4	1.0	4.2	0.1	1.4
Total Del/Veh (s)	61.9	73.9	38.3	9.0	35.9	72.8	48.1	7.6	29.8	43.6	5.8	30.6
Stop Delay (hr)	5.2	5.1	2.6	0.2	1.3	6.6	3.9	0.3	0.9	3.2	0.1	1.3
Stop Del/Veh (s)	59.3	57.2	28.0	8.5	33.3	59.2	39.1	6.2	27.7	33.4	5.8	27.9

7: Sweet Home Road & Maple Road Performance by lane

Lane	SB	SB	All
Movements Served	T	R	
Denied Delay (hr)			1.4
Denied Del/Veh (s)			1.4
Total Delay (hr)	4.3	1.9	43.4
Total Del/Veh (s)	35.7	12.4	40.8
Stop Delay (hr)	3.4	1.7	35.8
Stop Del/Veh (s)	28.3	11.0	33.7

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Queuing and Blocking Report
2022 Existing PM

03/17/2022

Intersection: 7: Sweet Home Road & Maple Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	210	571	510	172	190	423	400	293	175	438	175	246
Average Queue (ft)	185	323	260	39	131	313	251	61	82	210	51	110
95th Queue (ft)	251	598	506	129	244	441	387	176	167	369	158	232
Link Distance (ft)		564	564			397	397	397		764		
Upstream Blk Time (%)		8	0			6	2	0				0
Queuing Penalty (veh)		0	0			0	0	0				0
Storage Bay Dist (ft)	150			175	105				100		130	190
Storage Blk Time (%)	45	12	10		5	60			2	31	0	0
Queuing Penalty (veh)	144	36	7		17	83			8	63	0	1

Intersection: 7: Sweet Home Road & Maple Road

Movement	SB	SB	B17
Directions Served	T	R	T
Maximum Queue (ft)	309	246	148
Average Queue (ft)	196	122	9
95th Queue (ft)	315	219	62
Link Distance (ft)	246	246	1422
Upstream Blk Time (%)	5	0	
Queuing Penalty (veh)	29	2	
Storage Bay Dist (ft)			
Storage Blk Time (%)	12		
Queuing Penalty (veh)	20		

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

A5

Level of Service Calculations: Background Conditions

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	74	6	2	86	34	1	0	23	6	0	2
Future Volume (vph)	0	74	6	2	86	34	1	0	23	6	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.990			0.963			0.869			0.966	
Flt Protected					0.999			0.999			0.964	
Satd. Flow (prot)	0	1660	0	0	1685	0	0	1249	0	0	1769	0
Flt Permitted					0.999			0.999			0.964	
Satd. Flow (perm)	0	1660	0	0	1685	0	0	1249	0	0	1769	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		308			373			220			232	
Travel Time (s)		7.0			8.5			5.0			5.3	
Confl. Peds. (#/hr)	4		1	1		4	2					2
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Heavy Vehicles (%)	0%	6%	100%	0%	12%	0%	100%	0%	30%	0%	0%	0%
Adj. Flow (vph)	0	107	9	3	125	49	1	0	33	9	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	116	0	0	177	0	0	34	0	0	12	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	19.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	74	6	2	86	34	1	0	23	6	0	2
Future Volume (Veh/h)	0	74	6	2	86	34	1	0	23	6	0	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	0	107	9	3	125	49	1	0	33	9	0	3
Pedestrians		2						1			4	
Lane Width (ft)		12.0						12.0			12.0	
Walking Speed (ft/s)		4.0						4.0			4.0	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					373							
pX, platoon unblocked												
vC, conflicting volume	178			117			273	296	112	304	276	156
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	178			117			273	296	112	304	276	156
tC, single (s)	4.1			4.1			8.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			4.4	4.0	3.6	3.5	4.0	3.3
p0 queue free %	100			100			100	100	96	99	100	100
cM capacity (veh/h)	1405			1483			515	615	869	622	631	891

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	116	177	34	12
Volume Left	0	3	1	9
Volume Right	9	49	33	3
cSH	1405	1483	852	673
Volume to Capacity	0.00	0.00	0.04	0.02
Queue Length 95th (ft)	0	0	3	1
Control Delay (s)	0.0	0.1	9.4	10.4
Lane LOS		A	A	B
Approach Delay (s)	0.0	0.1	9.4	10.4
Approach LOS			A	B

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	19.7%	ICU Level of Service		A
Analysis Period (min)	15			

Packet Pg. 4399
3.e
Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	57	0	0	23	68	1	0	0	20	0	2
Future Volume (vph)	0	57	0	0	23	68	1	0	0	20	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.900						0.986	
Flt Protected								0.950			0.957	
Satd. Flow (prot)	0	1667	0	0	1528	0	0	1805	0	0	1566	0
Flt Permitted								0.950			0.957	
Satd. Flow (perm)	0	1667	0	0	1528	0	0	1805	0	0	1566	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		219			308			216			216	
Travel Time (s)		5.0			7.0			4.9			4.9	
Confl. Peds. (#/hr)	1		3	3		1						
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	0%	14%	0%	0%	35%	4%	0%	0%	0%	5%	0%	100%
Adj. Flow (vph)	0	78	0	0	32	93	1	0	0	27	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	78	0	0	125	0	0	1	0	0	30	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	15.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	57	0	0	23	68	1	0	0	20	0	2
Future Volume (Veh/h)	0	57	0	0	23	68	1	0	0	20	0	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	0	78	0	0	32	93	1	0	0	27	0	3
Pedestrians								3			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					681							
pX, platoon unblocked												
vC, conflicting volume	126			81			162	207	81	158	160	80
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	126			81			162	207	81	158	160	80
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	4.2
p0 queue free %	100			100			100	100	100	97	100	100
cM capacity (veh/h)	1472			1526			800	691	982	799	733	765

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	78	125	1	30
Volume Left	0	0	1	27
Volume Right	0	93	0	3
cSH	1472	1526	800	796
Volume to Capacity	0.00	0.00	0.00	0.04
Queue Length 95th (ft)	0	0	0	3
Control Delay (s)	0.0	0.0	9.5	9.7
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	9.5	9.7
Approach LOS			A	A

Intersection Summary				
Average Delay	1.3			
Intersection Capacity Utilization	15.7%	ICU Level of Service		A
Analysis Period (min)	15			

Packet Pg. 4400
3.e
Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	55	31	116	47	91	34	301	307	295	570	42
Future Volume (vph)	13	55	31	116	47	91	34	301	307	295	570	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	170		0	200		185	320		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	60			60			125			185		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99					0.98	1.00				1.00	
Frt		0.947				0.850			0.850		0.990	
Flt Protected	0.950			0.950	0.979		0.950			0.950		
Satd. Flow (prot)	1467	1644	0	1633	1730	1324	1703	3343	1583	1736	3398	0
Flt Permitted	0.950			0.950	0.979		0.950			0.950		
Satd. Flow (perm)	1459	1644	0	1633	1730	1299	1702	3343	1583	1736	3398	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19				206			361		7	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		373			436			1900			810	
Travel Time (s)		8.5			9.9			28.8			12.3	
Confl. Peds. (#/hr)	6					6	1					1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	23%	13%	3%	5%	0%	22%	6%	8%	2%	4%	4%	19%
Adj. Flow (vph)	15	65	36	136	55	107	40	354	361	347	671	49
Shared Lane Traffic (%)				31%								
Lane Group Flow (vph)	15	101	0	94	97	107	40	354	361	347	720	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2	2	2	2	
Detector Template												
Leading Detector (ft)	49	49		49	49	49	49	49	49	49	49	
Trailing Detector (ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Position(ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	29	29		29	29	29	29	29	29	29	29	
Detector 2 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

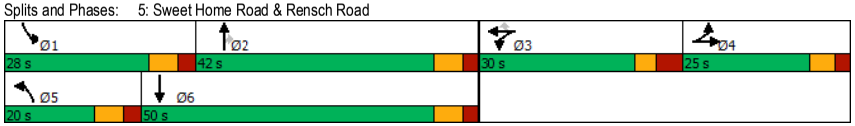
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Detector Phase	4	4		3	3	3	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	20.0	20.0	6.0	20.0	
Minimum Split (s)	40.2	40.2		41.0	41.0	41.0	12.8	37.8	37.8	12.8	37.8	
Total Split (s)	25.0	25.0		30.0	30.0	30.0	20.0	42.0	42.0	28.0	50.0	
Total Split (%)	20.0%	20.0%		24.0%	24.0%	24.0%	16.0%	33.6%	33.6%	22.4%	40.0%	
Maximum Green (s)	18.8	18.8		23.0	23.0	23.0	13.2	35.2	35.2	21.2	43.2	
Yellow Time (s)	3.8	3.8		3.2	3.2	3.2	4.3	4.3	4.3	4.3	4.3	
All-Red Time (s)	2.4	2.4		3.8	3.8	3.8	2.5	2.5	2.5	2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2		7.0	7.0	7.0	6.8	6.8	6.8	6.8	6.8	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	3.5	3.0	3.0	3.0	3.5	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0	27.0		24.0	24.0		24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)	10.0	10.0		11.1	11.1	11.1	7.9	21.0	21.0	21.6	40.8	
Actuated g/C Ratio	0.11	0.11		0.13	0.13	0.13	0.09	0.24	0.24	0.25	0.46	
v/c Ratio	0.09	0.50		0.45	0.44	0.31	0.26	0.44	0.55	0.82	0.46	
Control Delay	38.4	40.7		45.1	44.3	2.3	44.9	32.4	7.2	51.0	21.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	38.4	40.7		45.1	44.3	2.3	44.9	32.4	7.2	51.0	21.4	
LOS	D	D		D	D	A	D	C	A	D	C	
Approach Delay		40.4			29.5			21.0			31.0	
Approach LOS		D			C			C			C	
Queue Length 50th (ft)	8	44		52	53	0	21	91	0	185	162	
Queue Length 95th (ft)	27	94		105	107	0	55	142	56	#375	253	
Internal Link Dist (ft)		293			356			1820			730	
Turn Bay Length (ft)	100			170			200		185	320		
Base Capacity (vph)	319	372		434	460	497	260	1362	859	425	1788	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.05	0.27		0.22	0.21	0.22	0.15	0.26	0.42	0.82	0.40	

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 87.9			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 27.9		Intersection LOS: C	
Intersection Capacity Utilization 64.4%		ICU Level of Service C	

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Sweet Home Road & Rensch Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	43	79	578	25	46	697
Future Volume (vph)	43	79	578	25	46	697
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.994			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1568	3380	0	1703	3471
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1626	1568	3380	0	1703	3471
Link Speed (mph)	30		45			45
Link Distance (ft)	552		1491			1900
Travel Time (s)	12.5		22.6			28.8
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	11%	3%	6%	10%	6%	4%
Adj. Flow (vph)	48	89	649	28	52	783
Shared Lane Traffic (%)						
Lane Group Flow (vph)	48	89	677	0	52	783
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	33.4%	ICU Level of Service	A
Analysis Period (min) 15			

Packet Pg. 4402
3.e
Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	43	79	578	25	46	697
Future Volume (Veh/h)	43	79	578	25	46	697
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	48	89	649	28	52	783
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1158	338			677	
vC1, stage 1 conf vol	663					
vC2, stage 2 conf vol	496					
vCu, unblocked vol	1158	338			677	
tC, single (s)	7.0	7.0			4.2	
tC, 2 stage (s)	6.0					
tF (s)	3.6	3.3			2.3	
p0 queue free %	87	86			94	
cM capacity (veh/h)	367	654			884	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	48	89	433	244	52	392	392
Volume Left	48	0	0	0	52	0	0
Volume Right	0	89	0	28	0	0	0
cSH	367	654	1700	1700	884	1700	1700
Volume to Capacity	0.13	0.14	0.25	0.14	0.06	0.23	0.23
Queue Length 95th (ft)	11	12	0	0	5	0	0
Control Delay (s)	16.3	11.4	0.0	0.0	9.3	0.0	0.0
Lane LOS	C	B			A		
Approach Delay (s)	13.1		0.0		0.6		
Approach LOS	B						

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	33.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	223	484	54	92	472	84	86	290	109	177	267	259
Future Volume (vph)	223	484	54	92	472	84	86	290	109	177	267	259
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		175	105		0	100		130	190		0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			85			75			60		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor							1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3505	1615	1736	3505	1538	1770	1827	1553	1752	1827	1509
Flt Permitted	0.246			0.448			0.534			0.321		
Satd. Flow (perm)	437	3505	1615	818	3505	1538	994	1827	1553	592	1827	1490
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			163			99			161			268
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		613			472			833			357	
Travel Time (s)		9.3			7.2			16.2			5.4	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	7%	3%	0%	4%	3%	5%	2%	4%	4%	3%	4%	7%
Adj. Flow (vph)	245	532	59	101	519	92	95	319	120	195	293	285
Shared Lane Traffic (%)												
Lane Group Flow (vph)	245	532	59	101	519	92	95	319	120	195	293	285
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2	2	2	2	2	2	2	2
Detector Template												
Leading Detector (ft)	49	49	49	49	49	49	49	49	49	49	49	49
Trailing Detector (ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Position(ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	29	29	29	29	29	29	29	29	29	29	29	29
Detector 2 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

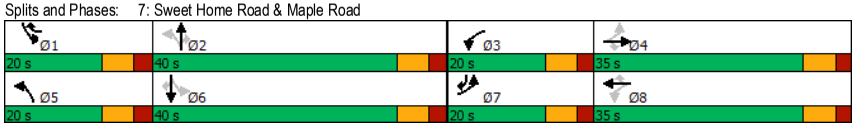
Packet Pg. 4403
3.e
Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	1	5	2	2	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	10.0	3.0	10.0	3.0	3.0	20.0	20.0	3.0	20.0	3.0
Minimum Split (s)	10.6	41.6	41.6	10.6	41.6	20.0	10.8	38.8	38.8	20.0	38.8	10.6
Total Split (s)	20.0	35.0	35.0	20.0	35.0	20.0	20.0	40.0	40.0	20.0	40.0	20.0
Total Split (%)	17.4%	30.4%	30.4%	17.4%	30.4%	17.4%	17.4%	34.8%	34.8%	17.4%	34.8%	17.4%
Maximum Green (s)	13.4	28.4	28.4	13.4	28.4	13.2	13.2	33.2	33.2	13.2	33.2	13.4
Yellow Time (s)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.8	6.8	6.8	6.8	6.8	6.8	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	2.0	2.0	4.0	4.0	2.0	4.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			25.0	25.0		25.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effct Green (s)	38.8	28.5	28.5	29.0	20.8	38.4	32.4	24.7	24.7	39.8	30.7	43.8
Actuated g/C Ratio	0.40	0.30	0.30	0.30	0.22	0.40	0.34	0.26	0.26	0.41	0.32	0.45
v/c Ratio	0.72	0.51	0.10	0.31	0.69	0.14	0.24	0.68	0.23	0.52	0.50	0.35
Control Delay	34.1	32.7	0.3	21.9	40.7	4.2	19.0	41.9	3.0	23.1	32.8	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.1	32.7	0.3	21.9	40.7	4.2	19.0	41.9	3.0	23.1	32.8	3.7
LOS	C	C	A	C	D	A	B	D	A	C	C	A
Approach Delay		30.9			33.3			29.1			19.7	
Approach LOS		C			C			C			B	
Queue Length 50th (ft)	97	145	0	36	153	0	34	180	0	74	154	5
Queue Length 95th (ft)	#210	239	0	81	237	28	72	300	21	136	266	52
Internal Link Dist (ft)		533			392			753			277	
Turn Bay Length (ft)	150		175	105			100		130	190		
Base Capacity (vph)	352	1086	613	422	1050	710	500	640	648	412	651	835
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.49	0.10	0.24	0.49	0.13	0.19	0.50	0.19	0.47	0.45	0.34

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 96.5			
Natural Cycle: 115			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 28.1		Intersection LOS: C	
Intersection Capacity Utilization 74.2%		ICU Level of Service D	

Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Sweet Home Road & Maple Road



Packet Pg. 4404
3.e
Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	108	5	35	84	17	3	0	25	40	0	0
Future Volume (vph)	2	108	5	35	84	17	3	0	25	40	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.994			0.983			0.878				
Flt Protected		0.999			0.987			0.995			0.950	
Satd. Flow (prot)	0	1824	0	0	1799	0	0	1497	0	0	1752	0
Flt Permitted		0.999			0.987			0.995			0.950	
Satd. Flow (perm)	0	1824	0	0	1799	0	0	1497	0	0	1752	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		308			373			220			232	
Travel Time (s)		7.0			8.5			5.0			5.3	
Confl. Peds. (#/hr)	3		4	4		3	1		7	7		1
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	50%	0%	60%	0%	4%	0%	0%	0%	12%	3%	0%	0%
Adj. Flow (vph)	2	126	6	41	98	20	3	0	29	47	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	134	0	0	159	0	0	32	0	0	47	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	29.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	108	5	35	84	17	3	0	25	40	0	0
Future Volume (Veh/h)	2	108	5	35	84	17	3	0	25	40	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	2	126	6	41	98	20	3	0	29	47	0	0
Pedestrians		1			7			4			3	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			1			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					373							
pX, platoon unblocked												
vC, conflicting volume	121			136			328	340	140	362	333	112
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	121			136			328	340	140	362	333	112
tC, single (s)	4.6			4.1			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.7			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			97			100	100	97	91	100	100
cM capacity (veh/h)	1213			1456			610	564	874	552	569	943

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	134	159	32	47
Volume Left	2	41	3	47
Volume Right	6	20	29	0
cSH	1213	1456	840	552
Volume to Capacity	0.00	0.03	0.04	0.09
Queue Length 95th (ft)	0	2	3	7
Control Delay (s)	0.1	2.1	9.5	12.1
Lane LOS	A	A	A	B
Approach Delay (s)	0.1	2.1	9.5	12.1
Approach LOS			A	B

Intersection Summary					
Average Delay		3.3			
Intersection Capacity Utilization	29.8%	ICU Level of Service		A	
Analysis Period (min)	15				

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	61	0	2	64	21	0	0	0	55	0	0
Future Volume (vph)	0	61	0	2	64	21	0	0	0	55	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.968							
Flt Protected					0.999						0.950	
Satd. Flow (prot)	0	1776	0	0	1772	0	0	1900	0	0	1805	0
Flt Permitted					0.999						0.950	
Satd. Flow (perm)	0	1776	0	0	1772	0	0	1900	0	0	1805	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		219			308			216			216	
Travel Time (s)		5.0			7.0			4.9			4.9	
Confl. Peds. (#/hr)	1		2	2		1						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	7%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	65	0	2	68	22	0	0	0	59	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	65	0	0	92	0	0	0	0	0	59	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	16.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	61	0	2	64	21	0	0	0	55	0	0
Future Volume (Veh/h)	0	61	0	2	64	21	0	0	0	55	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	65	0	2	68	22	0	0	0	59	0	0
Pedestrians								2			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					681							
pX, platoon unblocked												
vC, conflicting volume	91			67			150	162	67	149	151	80
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	91			67			150	162	67	149	151	80
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	93	100	100
cM capacity (veh/h)	1515			1545			819	731	1001	820	741	985

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	65	92	0	59
Volume Left	0	2	0	59
Volume Right	0	22	0	0
cSH	1515	1545	1700	820
Volume to Capacity	0.00	0.00	0.00	0.07
Queue Length 95th (ft)	0	0	0	6
Control Delay (s)	0.0	0.2	0.0	9.7
Lane LOS		A	A	A
Approach Delay (s)	0.0	0.2	0.0	9.7
Approach LOS			A	A

Intersection Summary				
Average Delay		2.7		
Intersection Capacity Utilization		16.6%	ICU Level of Service	A
Analysis Period (min)		15		

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	81	52	446	68	374	22	658	179	227	632	25
Future Volume (vph)	35	81	52	446	68	374	22	658	179	227	632	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	170		0	200		185	320		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	60			60			125			185		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99		1.00	1.00	0.98	1.00		0.98	1.00	1.00	
Frt		0.941				0.850			0.850		0.994	
Flt Protected	0.950			0.950	0.964		0.950			0.950		
Satd. Flow (prot)	1805	1715	0	1698	1718	1568	1805	3574	1583	1719	3535	0
Flt Permitted	0.950			0.950	0.964		0.950			0.950		
Satd. Flow (perm)	1796	1715	0	1695	1716	1537	1801	3574	1555	1715	3535	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22				407			181		3	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		373			436			1900			810	
Travel Time (s)		8.5			9.9			28.8			12.3	
Confl. Peds. (#/hr)	7		2	2		7	3		5	5		3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	6%	0%	1%	2%	3%	0%	1%	2%	5%	1%	12%
Adj. Flow (vph)	38	88	57	485	74	407	24	715	195	247	687	27
Shared Lane Traffic (%)				43%								
Lane Group Flow (vph)	38	145	0	276	283	407	24	715	195	247	714	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2	2	2	2	
Detector Template												
Leading Detector (ft)	49	49		49	49	49	49	49	49	49	49	
Trailing Detector (ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Position(ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	29	29		29	29	29	29	29	29	29	29	
Detector 2 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

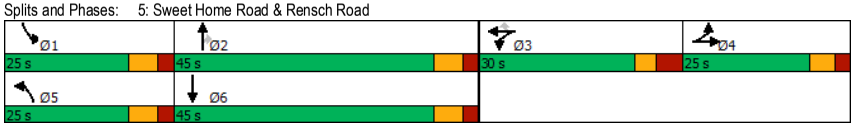
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Detector Phase	4	4		3	3	3	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	20.0	20.0	6.0	20.0	
Minimum Split (s)	40.2	40.2		41.0	41.0	41.0	12.8	37.8	37.8	12.8	37.8	
Total Split (s)	25.0	25.0		30.0	30.0	30.0	25.0	45.0	45.0	25.0	45.0	
Total Split (%)	20.0%	20.0%		24.0%	24.0%	24.0%	20.0%	36.0%	36.0%	20.0%	36.0%	
Maximum Green (s)	18.8	18.8		23.0	23.0	23.0	18.2	38.2	38.2	18.2	38.2	
Yellow Time (s)	3.8	3.8		3.2	3.2	3.2	4.3	4.3	4.3	4.3	4.3	
All-Red Time (s)	2.4	2.4		3.8	3.8	3.8	2.5	2.5	2.5	2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2		7.0	7.0	7.0	6.8	6.8	6.8	6.8	6.8	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	3.5	3.0	3.0	3.0	3.5	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0	27.0		24.0	24.0		24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)	13.0	13.0		22.0	22.0	22.0	7.3	28.4	28.4	18.4	45.3	
Actuated g/C Ratio	0.12	0.12		0.20	0.20	0.20	0.07	0.26	0.26	0.17	0.42	
v/c Ratio	0.18	0.65		0.80	0.82	0.64	0.20	0.77	0.36	0.85	0.49	
Control Delay	46.9	53.8		61.8	62.7	9.4	56.0	43.6	7.9	72.4	26.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	46.9	53.8		61.8	62.7	9.4	56.0	43.6	7.9	72.4	26.7	
LOS	D	D		E	E	A	E	D	A	E	C	
Approach Delay		52.4			40.0			36.5			38.4	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	25	84		194	201	0	16	246	7	172	208	
Queue Length 95th (ft)	61	163		#397	#408	96	47	332	63	#373	296	
Internal Link Dist (ft)		293			356			1820			730	
Turn Bay Length (ft)	100			170			200		185	320		
Base Capacity (vph)	315	317		362	367	648	305	1268	668	290	1472	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.12	0.46		0.76	0.77	0.63	0.08	0.56	0.29	0.85	0.49	

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 109			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 39.2		Intersection LOS: D	
Intersection Capacity Utilization 80.2%		ICU Level of Service D	

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Sweet Home Road & Rensch Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	65	56	885	60	74	1103
Future Volume (vph)	65	56	885	60	74	1103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.991			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1736	1615	3535	0	1787	3574
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1736	1615	3535	0	1787	3574
Link Speed (mph)	30		45			45
Link Distance (ft)	552		1491			1900
Travel Time (s)	12.5		22.6			28.8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	0%	1%	4%	1%	1%
Adj. Flow (vph)	68	59	932	63	78	1161
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	59	995	0	78	1161
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min) 15			

Packet Pg. 4408
3.e
Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	65	56	885	60	74	1103
Future Volume (Veh/h)	65	56	885	60	74	1103
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	68	59	932	63	78	1161
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1700	498			995	
vC1, stage 1 conf vol	964					
vC2, stage 2 conf vol	736					
vCu, unblocked vol	1700	498			995	
tC, single (s)	6.9	6.9			4.1	
tC, 2 stage (s)	5.9					
tF (s)	3.5	3.3			2.2	
p0 queue free %	73	89			89	
cM capacity (veh/h)	251	524			697	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	68	59	621	374	78	580	580
Volume Left	68	0	0	0	78	0	0
Volume Right	0	59	0	63	0	0	0
cSH	251	524	1700	1700	697	1700	1700
Volume to Capacity	0.27	0.11	0.37	0.22	0.11	0.34	0.34
Queue Length 95th (ft)	27	9	0	0	9	0	0
Control Delay (s)	24.6	12.7	0.0	0.0	10.8	0.0	0.0
Lane LOS	C	B			B		
Approach Delay (s)	19.1		0.0		0.7		
Approach LOS	C						

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	323	641	75	140	764	199	126	359	79	172	410	498
Future Volume (vph)	323	641	75	140	764	199	126	359	79	172	410	498
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		175	105		0	100		130	190		0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			85			75			60		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					0.99	1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1583	1787	3574	1583	1805	1881	1568	1770	1863	1599
Flt Permitted	0.128			0.261			0.208			0.242		
Satd. Flow (perm)	241	3574	1583	491	3574	1563	395	1881	1568	451	1863	1578
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			163			149			161			138
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		613			472			833			357	
Travel Time (s)		9.3			7.2			16.2			5.4	
Confl. Peds. (#/hr)	1					1	1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	1%	1%	2%	1%	1%	2%	0%	1%	3%	2%	2%	1%
Adj. Flow (vph)	347	689	81	151	822	214	135	386	85	185	441	535
Shared Lane Traffic (%)												
Lane Group Flow (vph)	347	689	81	151	822	214	135	386	85	185	441	535
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2	2	2	2	2	2	2	2
Detector Template												
Leading Detector (ft)	49	49	49	49	49	49	49	49	49	49	49	49
Trailing Detector (ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Position(ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	29	29	29	29	29	29	29	29	29	29	29	29
Detector 2 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

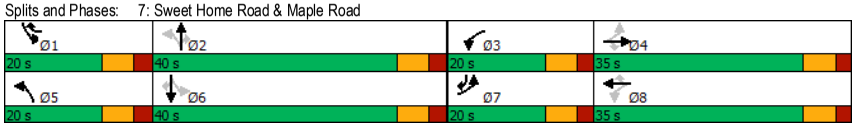
Packet Pg. 4409
3.e
Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	1	5	2	2	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	10.0	3.0	10.0	3.0	3.0	20.0	20.0	3.0	20.0	3.0
Minimum Split (s)	10.6	41.6	41.6	10.6	41.6	20.0	10.8	38.8	38.8	20.0	38.8	10.6
Total Split (s)	20.0	35.0	35.0	20.0	35.0	20.0	20.0	40.0	40.0	20.0	40.0	20.0
Total Split (%)	17.4%	30.4%	30.4%	17.4%	30.4%	17.4%	17.4%	34.8%	34.8%	17.4%	34.8%	17.4%
Maximum Green (s)	13.4	28.4	28.4	13.4	28.4	13.2	13.2	33.2	33.2	13.2	33.2	13.4
Yellow Time (s)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.8	6.8	6.8	6.8	6.8	6.8	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	2.0	2.0	4.0	4.0	2.0	4.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			25.0	25.0		25.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effct Green (s)	44.6	31.2	31.2	37.7	27.7	38.6	37.9	28.4	28.4	41.1	30.0	43.7
Actuated g/C Ratio	0.41	0.29	0.29	0.35	0.26	0.36	0.35	0.26	0.26	0.38	0.28	0.41
v/c Ratio	1.18	0.67	0.14	0.52	0.89	0.33	0.51	0.78	0.16	0.60	0.85	0.74
Control Delay	141.4	39.1	0.5	26.8	52.8	8.6	26.2	48.7	0.6	28.1	53.4	23.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	141.4	39.1	0.5	26.8	52.8	8.6	26.2	48.7	0.6	28.1	53.4	23.5
LOS	F	D	A	C	D	A	C	D	A	C	D	C
Approach Delay		68.1			41.5			37.0			35.6	
Approach LOS		E			D			D			D	
Queue Length 50th (ft)	~253	228	0	65	298	27	56	251	0	80	290	207
Queue Length 95th (ft)	#470	322	0	116	#434	79	96	369	0	128	#462	345
Internal Link Dist (ft)		533			392			753			277	
Turn Bay Length (ft)	150		175	105			100		130	190		
Base Capacity (vph)	293	1035	574	349	948	687	326	583	597	343	586	725
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.18	0.67	0.14	0.43	0.87	0.31	0.41	0.66	0.14	0.54	0.75	0.74

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 107.7			
Natural Cycle: 125			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 46.4		Intersection LOS: D	
Intersection Capacity Utilization 90.3%		ICU Level of Service E	

Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Sweet Home Road & Maple Road



Packet Pg. 4410
3.e
Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

SimTraffic Performance Report
2027 Background PM
03/17/2022

7: Sweet Home Road & Maple Road Performance by lane

Lane	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Movements Served	L	T	T	R	L	T	T	R	L	T	R	L
Denied Delay (hr)												
Denied Del/Veh (s)												
Total Delay (hr)	7.1	10.2	4.6	0.1	1.6	9.4	6.8	0.6	1.1	5.2	0.2	1.6
Total Del/Veh (s)	78.1	129.5	43.8	7.6	43.2	87.4	67.3	9.6	31.1	49.5	6.9	33.8
Stop Delay (hr)	6.9	8.9	3.3	0.1	1.5	7.9	5.8	0.4	1.0	4.0	0.2	1.5
Stop Del/Veh (s)	75.7	112.7	31.2	7.1	40.5	73.7	57.3	7.7	29.0	38.0	6.9	31.2

7: Sweet Home Road & Maple Road Performance by lane

Lane	SB	SB	All
Movements Served	T	R	
Denied Delay (hr)			6.9
Denied Del/Veh (s)			6.5
Total Delay (hr)	4.1	1.8	54.5
Total Del/Veh (s)	35.3	11.9	50.3
Stop Delay (hr)	3.3	1.6	46.5
Stop Del/Veh (s)	28.0	10.5	42.9

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Queuing and Blocking Report
2027 Background PM

03/17/2022

Intersection: 7: Sweet Home Road & Maple Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	210	587	570	157	190	426	421	410	175	487	175	246
Average Queue (ft)	201	455	381	44	136	328	280	109	96	258	61	112
95th Queue (ft)	248	704	629	152	242	470	434	325	190	447	175	232
Link Distance (ft)		564	564			397	397	397		764		
Upstream Blk Time (%)		30	0			15	8	3				0
Queuing Penalty (veh)		0	0			0	0	0				0
Storage Bay Dist (ft)	150			175	105				100		130	190
Storage Blk Time (%)	70	9	15		7	64			4	37	0	0
Queuing Penalty (veh)	224	28	11		26	90			16	76	0	1

Intersection: 7: Sweet Home Road & Maple Road

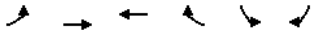
Movement	SB	SB	B17	B17
Directions Served	T	R	T	T
Maximum Queue (ft)	320	242	116	26
Average Queue (ft)	201	114	10	1
95th Queue (ft)	331	218	64	19
Link Distance (ft)	246	246	1422	1422
Upstream Blk Time (%)	6	0		
Queuing Penalty (veh)	33	2		
Storage Bay Dist (ft)				
Storage Blk Time (%)	12			
Queuing Penalty (veh)	20			

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

A6

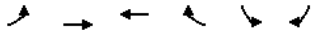
Level of Service Calculations: Full Development Conditions

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	58	22	15	25	0
Future Volume (vph)	0	58	22	15	25	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.945			
Flt Protected					0.950	
Satd. Flow (prot)	0	1900	1694	0	1805	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1900	1694	0	1805	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		308	153		412	
Travel Time (s)		7.0	3.5		9.4	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	10%	0%	10%	0%	0%	0%
Adj. Flow (vph)	0	83	31	21	36	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	83	52	0	36	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	58	22	15	25	0
Future Volume (Veh/h)	0	58	22	15	25	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	0	83	31	21	36	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			834			
pX, platoon unblocked						
vC, conflicting volume	52				124	42
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	52				124	42
tC, single (s)	4.2				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	100				96	100
cM capacity (veh/h)	1504				875	1035

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	83	52	36
Volume Left	0	0	36
Volume Right	0	21	0
cSH	1504	1700	875
Volume to Capacity	0.00	0.03	0.04
Queue Length 95th (ft)	0	0	3
Control Delay (s)	0.0	0.0	9.3
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.3
Approach LOS			A

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	83	0	0	37	1	0
Future Volume (vph)	83	0	0	37	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	1667	0	0	1407	1805	0
Flt Permitted					0.950	
Satd. Flow (perm)	1667	0	0	1407	1805	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	153			167	277	
Travel Time (s)	3.5			3.8	6.3	
Confl. Peds. (#/hr)		3	3			
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	14%	0%	0%	35%	0%	0%
Adj. Flow (vph)	114	0	0	51	1	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	114	0	0	51	1	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	83	0	0	37	1	0
Future Volume (Veh/h)	83	0	0	37	1	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	114	0	0	51	1	0
Pedestrians					3	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	153			681		
pX, platoon unblocked						
vC, conflicting volume			117		168	117
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			117		168	117
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1480		825	938

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	114	51	1
Volume Left	0	0	1
Volume Right	0	0	0
cSH	1700	1480	825
Volume to Capacity	0.07	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	9.4
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.4
Approach LOS			A

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	85	32	46	46	0
Future Volume (vph)	1	85	32	46	46	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.920			
Flt Protected					0.950	
Satd. Flow (prot)	0	1729	1679	0	1805	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1729	1679	0	1805	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		167	141		403	
Travel Time (s)		3.8	3.2		9.2	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	10%	10%	0%	0%	0%
Adj. Flow (vph)	1	121	46	66	66	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	122	112	0	66	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	15.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	85	32	46	46	0
Future Volume (Veh/h)	1	85	32	46	46	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	1	121	46	66	66	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			514			
pX, platoon unblocked						
vC, conflicting volume	112				202	79
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	112				202	79
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				92	100
cM capacity (veh/h)	1490				791	987

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	122	112	66
Volume Left	1	0	66
Volume Right	0	66	0
cSH	1490	1700	791
Volume to Capacity	0.00	0.07	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.1	0.0	10.0
Lane LOS	A		A
Approach Delay (s)	0.1	0.0	10.0
Approach LOS			A

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	15.3%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	126	6	2	79	1	23
Future Volume (vph)	126	6	2	79	1	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.994				0.869	
Flt Protected				0.999	0.999	
Satd. Flow (prot)	1711	0	0	1699	1249	0
Flt Permitted				0.999	0.999	
Satd. Flow (perm)	1711	0	0	1699	1249	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	141			373	292	
Travel Time (s)	3.2			8.5	6.6	
Confl. Peds. (#/hr)		1	1		2	
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69
Heavy Vehicles (%)	6%	100%	0%	12%	100%	30%
Adj. Flow (vph)	183	9	3	114	1	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	192	0	0	117	34	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	17.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	126	6	2	79	1	23
Future Volume (Veh/h)	126	6	2	79	1	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	183	9	3	114	1	33
Pedestrians	2				1	
Lane Width (ft)	12.0				12.0	
Walking Speed (ft/s)	4.0				4.0	
Percent Blockage	0				0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				373		
pX, platoon unblocked						
vC, conflicting volume			193		310	188
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			193		310	188
tC, single (s)			4.1		7.4	6.5
tC, 2 stage (s)						
tF (s)			2.2		4.4	3.6
p0 queue free %			100		100	96
cM capacity (veh/h)			1391		517	786

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	192	117	34
Volume Left	0	3	1
Volume Right	9	0	33
cSH	1700	1391	774
Volume to Capacity	0.11	0.00	0.04
Queue Length 95th (ft)	0	0	3
Control Delay (s)	0.0	0.2	9.9
Lane LOS		A	A
Approach Delay (s)	0.0	0.2	9.9
Approach LOS			A

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	17.2%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	77	45	116	35	91	22	301	307	295	570	30
Future Volume (vph)	22	77	45	116	35	91	22	301	307	295	570	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	170		0	200		185	320		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	60			60			125			185		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99					0.98	1.00				1.00	
Frt		0.945				0.850			0.850		0.993	
Flt Protected	0.950			0.950	0.973		0.950			0.950		
Satd. Flow (prot)	1467	1642	0	1633	1710	1324	1703	3343	1583	1736	3419	0
Flt Permitted	0.950			0.950	0.973		0.950			0.950		
Satd. Flow (perm)	1459	1642	0	1633	1710	1299	1702	3343	1583	1736	3419	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20				206			361		5	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		373			436			1900			810	
Travel Time (s)		8.5			9.9			28.8			12.3	
Confl. Peds. (#/hr)	6					6	1					1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	23%	13%	3%	5%	0%	22%	6%	8%	2%	4%	4%	19%
Adj. Flow (vph)	26	91	53	136	41	107	26	354	361	347	671	35
Shared Lane Traffic (%)				36%								
Lane Group Flow (vph)	26	144	0	87	90	107	26	354	361	347	706	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2	2	2	2	
Detector Template												
Leading Detector (ft)	49	49		49	49	49	49	49	49	49	49	
Trailing Detector (ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Position(ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	29	29		29	29	29	29	29	29	29	29	
Detector 2 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

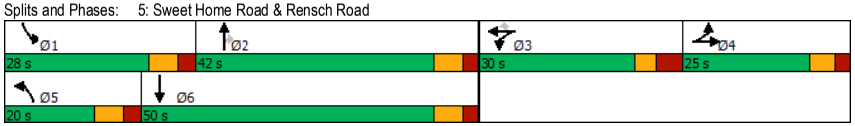
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Detector Phase	4	4		3	3	3	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	20.0	20.0	6.0	20.0	
Minimum Split (s)	40.2	40.2		41.0	41.0	41.0	12.8	37.8	37.8	12.8	37.8	
Total Split (s)	25.0	25.0		30.0	30.0	30.0	20.0	42.0	42.0	28.0	50.0	
Total Split (%)	20.0%	20.0%		24.0%	24.0%	24.0%	16.0%	33.6%	33.6%	22.4%	40.0%	
Maximum Green (s)	18.8	18.8		23.0	23.0	23.0	13.2	35.2	35.2	21.2	43.2	
Yellow Time (s)	3.8	3.8		3.2	3.2	3.2	4.3	4.3	4.3	4.3	4.3	
All-Red Time (s)	2.4	2.4		3.8	3.8	3.8	2.5	2.5	2.5	2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2		7.0	7.0	7.0	6.8	6.8	6.8	6.8	6.8	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	3.5	3.0	3.0	3.0	3.5	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0	27.0		24.0	24.0		24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)	12.4	12.4		10.8	10.8	10.8	7.2	20.5	20.5	21.3	43.0	
Actuated g/C Ratio	0.13	0.13		0.12	0.12	0.12	0.08	0.22	0.22	0.23	0.47	
v/c Ratio	0.13	0.60		0.45	0.45	0.32	0.20	0.48	0.57	0.86	0.44	
Control Delay	37.0	43.6		46.7	46.2	2.5	45.6	34.8	7.7	57.9	20.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	37.0	43.6		46.7	46.2	2.5	45.6	34.8	7.7	57.9	20.6	
LOS	D	D		D	D	A	D	C	A	E	C	
Approach Delay		42.6			29.9			22.0			32.9	
Approach LOS		D			C			C			C	
Queue Length 50th (ft)	13	68		49	51	0	14	94	0	192	119	
Queue Length 95th (ft)	37	128		100	103	0	41	147	58	#379	251	
Internal Link Dist (ft)		293			356			1820			730	
Turn Bay Length (ft)	100			170			200		185	320		
Base Capacity (vph)	301	353		410	430	480	245	1286	831	402	1730	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.09	0.41		0.21	0.21	0.22	0.11	0.28	0.43	0.86	0.41	

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 92.1			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 29.7		Intersection LOS: C	
Intersection Capacity Utilization 71.4%		ICU Level of Service C	

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Sweet Home Road & Rensch Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	43	79	566	25	46	712
Future Volume (vph)	43	79	566	25	46	712
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.994			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1568	3380	0	1703	3471
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1626	1568	3380	0	1703	3471
Link Speed (mph)	30		45			45
Link Distance (ft)	552		1491			1900
Travel Time (s)	12.5		22.6			28.8
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	11%	3%	6%	10%	6%	4%
Adj. Flow (vph)	48	89	636	28	52	800
Shared Lane Traffic (%)						
Lane Group Flow (vph)	48	89	664	0	52	800
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.1%		ICU Level of Service A	
Analysis Period (min) 15			

Packet Pg. 4419
3.e
Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	43	79	566	25	46	712
Future Volume (Veh/h)	43	79	566	25	46	712
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	48	89	636	28	52	800
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1154	332			664	
vC1, stage 1 conf vol	650					
vC2, stage 2 conf vol	504					
vCu, unblocked vol	1154	332			664	
tC, single (s)	7.0	7.0			4.2	
tC, 2 stage (s)	6.0					
tF (s)	3.6	3.3			2.3	
p0 queue free %	87	87			94	
cM capacity (veh/h)	369	661			894	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	48	89	424	240	52	400	400
Volume Left	48	0	0	0	52	0	0
Volume Right	0	89	0	28	0	0	0
cSH	369	661	1700	1700	894	1700	1700
Volume to Capacity	0.13	0.13	0.25	0.14	0.06	0.24	0.24
Queue Length 95th (ft)	11	12	0	0	5	0	0
Control Delay (s)	16.2	11.3	0.0	0.0	9.3	0.0	0.0
Lane LOS	C	B			A		
Approach Delay (s)	13.0		0.0		0.6		
Approach LOS	B						

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	220	484	54	92	472	82	86	282	109	179	271	268
Future Volume (vph)	220	484	54	92	472	82	86	282	109	179	271	268
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		175	105		0	100		130	190		0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			85			75			60		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor							1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3505	1615	1736	3505	1538	1770	1827	1553	1752	1827	1509
Flt Permitted	0.247			0.446			0.528			0.331		
Satd. Flow (perm)	439	3505	1615	815	3505	1538	983	1827	1553	611	1827	1490
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			163			99			161			268
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		613			472			833			357	
Travel Time (s)		9.3			7.2			16.2			5.4	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	7%	3%	0%	4%	3%	5%	2%	4%	4%	3%	4%	7%
Adj. Flow (vph)	242	532	59	101	519	90	95	310	120	197	298	295
Shared Lane Traffic (%)												
Lane Group Flow (vph)	242	532	59	101	519	90	95	310	120	197	298	295
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2	2	2	2	2	2	2	2
Detector Template												
Leading Detector (ft)	49	49	49	49	49	49	49	49	49	49	49	49
Trailing Detector (ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Position(ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	29	29	29	29	29	29	29	29	29	29	29	29
Detector 2 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Packet Pg. 4420
3.e
Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

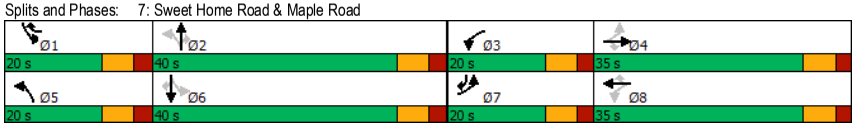
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	1	5	2	2	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	10.0	3.0	10.0	3.0	3.0	20.0	20.0	3.0	20.0	3.0
Minimum Split (s)	10.6	41.6	41.6	10.6	41.6	20.0	10.8	38.8	38.8	20.0	38.8	10.6
Total Split (s)	20.0	35.0	35.0	20.0	35.0	20.0	20.0	40.0	40.0	20.0	40.0	20.0
Total Split (%)	17.4%	30.4%	30.4%	17.4%	30.4%	17.4%	17.4%	34.8%	34.8%	17.4%	34.8%	17.4%
Maximum Green (s)	13.4	28.4	28.4	13.4	28.4	13.2	13.2	33.2	33.2	13.2	33.2	13.4
Yellow Time (s)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.8	6.8	6.8	6.8	6.8	6.8	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	2.0	2.0	4.0	4.0	2.0	4.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			25.0	25.0		25.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effct Green (s)	38.5	28.3	28.3	28.9	20.7	38.3	32.1	24.4	24.4	39.6	30.5	43.5
Actuated g/C Ratio	0.40	0.29	0.29	0.30	0.22	0.40	0.33	0.25	0.25	0.41	0.32	0.45
v/c Ratio	0.71	0.52	0.10	0.31	0.69	0.13	0.24	0.67	0.23	0.52	0.51	0.36
Control Delay	33.6	32.6	0.3	21.8	40.5	4.0	19.0	41.3	3.0	23.0	33.1	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	32.6	0.3	21.8	40.5	4.0	19.0	41.3	3.0	23.0	33.1	4.1
LOS	C	C	A	C	D	A	B	D	A	C	C	A
Approach Delay		30.6			33.2			28.5			19.7	
Approach LOS		C			C			C			B	
Queue Length 50th (ft)	95	144	0	36	152	0	34	174	0	75	156	8
Queue Length 95th (ft)	#204	239	0	81	237	26	72	291	21	136	270	57
Internal Link Dist (ft)		533			392			753			277	
Turn Bay Length (ft)	150		175	105			100		130	190		
Base Capacity (vph)	353	1088	613	422	1054	711	497	642	650	418	654	834
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.49	0.10	0.24	0.49	0.13	0.19	0.48	0.18	0.47	0.46	0.35

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 96.1
Natural Cycle: 115
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 27.9 Intersection LOS: C
Intersection Capacity Utilization 74.2% ICU Level of Service D

Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Sweet Home Road & Maple Road



Packet Pg. 4421
3.e
Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	61	66	40	43	0
Future Volume (vph)	0	61	66	40	43	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.949			
Flt Protected					0.950	
Satd. Flow (prot)	0	1810	1749	0	1805	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1810	1749	0	1805	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		308	153		412	
Travel Time (s)		7.0	3.5		9.4	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	5%	5%	0%	0%	0%
Adj. Flow (vph)	0	87	94	57	61	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	87	151	0	61	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60			60	60	60
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	15.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	61	66	40	43	0
Future Volume (Veh/h)	0	61	66	40	43	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	0	87	94	57	61	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			834			
pX, platoon unblocked						
vC, conflicting volume	151				210	122
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	151				210	122
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				92	100
cM capacity (veh/h)	1442				783	934

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	87	151	61
Volume Left	0	0	61
Volume Right	0	57	0
cSH	1442	1700	783
Volume to Capacity	0.00	0.09	0.08
Queue Length 95th (ft)	0	0	6
Control Delay (s)	0.0	0.0	10.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	10.0
Approach LOS			A

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	15.9%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	104	0	2	106	0	0
Future Volume (vph)	104	0	2	106	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected				0.999		
Satd. Flow (prot)	1776	0	0	1809	1900	0
Flt Permitted				0.999		
Satd. Flow (perm)	1776	0	0	1809	1900	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	153			167	277	
Travel Time (s)	3.5			3.8	6.3	
Confl. Peds. (#/hr)		2	2			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	7%	0%	0%	5%	0%	0%
Adj. Flow (vph)	111	0	2	113	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	111	0	0	115	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

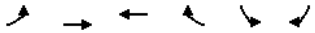
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	10.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	104	0	2	106	0	0
Future Volume (Veh/h)	104	0	2	106	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	111	0	2	113	0	0
Pedestrians					2	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				681		
pX, platoon unblocked						
vC, conflicting volume			113		230	113
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			113		230	113
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1487		760	944

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	111	115	0
Volume Left	0	2	0
Volume Right	0	0	0
cSH	1700	1487	1700
Volume to Capacity	0.07	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.1	0.0
Lane LOS		A	A
Approach Delay (s)	0.0	0.1	0.0
Approach LOS			A

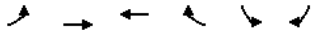
Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	10.5%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	98	106	87	97	2
Future Volume (vph)	1	98	106	87	97	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.939		0.997	
Flt Protected					0.953	
Satd. Flow (prot)	0	1810	1736	0	1805	0
Flt Permitted					0.953	
Satd. Flow (perm)	0	1810	1736	0	1805	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		167	141		403	
Travel Time (s)		3.8	3.2		9.2	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	5%	5%	0%	0%	0%
Adj. Flow (vph)	1	140	151	124	139	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	141	275	0	142	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60			60	60	60
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	23.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	98	106	87	97	2
Future Volume (Veh/h)	1	98	106	87	97	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	1	140	151	124	139	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			514			
pX, platoon unblocked						
vC, conflicting volume	275				355	213
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	275				355	213
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				79	100
cM capacity (veh/h)	1300				647	832

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	141	275	142
Volume Left	1	0	139
Volume Right	0	124	3
cSH	1300	1700	650
Volume to Capacity	0.00	0.16	0.22
Queue Length 95th (ft)	0	0	21
Control Delay (s)	0.1	0.0	12.1
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	12.1
Approach LOS			B

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	23.1%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	191	5	35	191	3	25
Future Volume (vph)	191	5	35	191	3	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.996				0.878	
Flt Protected				0.992	0.995	
Satd. Flow (prot)	1863	0	0	1823	1497	0
Flt Permitted				0.992	0.995	
Satd. Flow (perm)	1863	0	0	1823	1497	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	141			373	292	
Travel Time (s)	3.2			8.5	6.6	
Confl. Peds. (#/hr)		4	4		1	7
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	60%	0%	4%	0%	12%
Adj. Flow (vph)	222	6	41	222	3	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	228	0	0	263	32	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	191	5	35	191	3	25
Future Volume (Veh/h)	191	5	35	191	3	25
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	222	6	41	222	3	29
Pedestrians	1			7	4	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			1	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				373		
pX, platoon unblocked						
vC, conflicting volume			232		534	236
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			232		534	236
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			97		99	96
cM capacity (veh/h)			1343		493	772

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	228	263	32
Volume Left	0	41	3
Volume Right	6	0	29
cSH	1700	1343	733
Volume to Capacity	0.13	0.03	0.04
Queue Length 95th (ft)	0	2	3
Control Delay (s)	0.0	1.4	10.1
Lane LOS		A	B
Approach Delay (s)	0.0	1.4	10.1
Approach LOS			B

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	100	67	446	106	374	54	658	179	227	632	45
Future Volume (vph)	43	100	67	446	106	374	54	658	179	227	632	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	170		0	200		185	320		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	60			60			125			185		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99		1.00	1.00	0.98	1.00		0.98	1.00	1.00	
Frt		0.940				0.850			0.850		0.990	
Flt Protected	0.950			0.950	0.970		0.950			0.950		
Satd. Flow (prot)	1805	1714	0	1698	1727	1568	1805	3574	1583	1719	3507	0
Flt Permitted	0.950			0.950	0.970		0.950			0.950		
Satd. Flow (perm)	1796	1714	0	1695	1725	1537	1801	3574	1555	1715	3507	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23				407			181		6	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		373			436			1900			810	
Travel Time (s)		8.5			9.9			28.8			12.3	
Confl. Peds. (#/hr)	7		2	2		7	3		5	5		3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	6%	0%	1%	2%	3%	0%	1%	2%	5%	1%	12%
Adj. Flow (vph)	47	109	73	485	115	407	59	715	195	247	687	49
Shared Lane Traffic (%)				39%								
Lane Group Flow (vph)	47	182	0	296	304	407	59	715	195	247	736	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2	2	2	2	
Detector Template												
Leading Detector (ft)	49	49		49	49	49	49	49	49	49	49	
Trailing Detector (ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Position(ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	29	29		29	29	29	29	29	29	29	29	
Detector 2 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

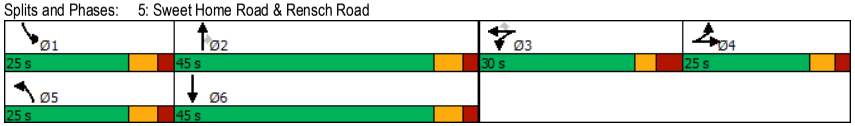
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Detector Phase	4	4		3	3	3	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	20.0	20.0	6.0	20.0	
Minimum Split (s)	40.2	40.2		41.0	41.0	41.0	12.8	37.8	37.8	12.8	37.8	
Total Split (s)	25.0	25.0		30.0	30.0	30.0	25.0	45.0	45.0	25.0	45.0	
Total Split (%)	20.0%	20.0%		24.0%	24.0%	24.0%	20.0%	36.0%	36.0%	20.0%	36.0%	
Maximum Green (s)	18.8	18.8		23.0	23.0	23.0	18.2	38.2	38.2	18.2	38.2	
Yellow Time (s)	3.8	3.8		3.2	3.2	3.2	4.3	4.3	4.3	4.3	4.3	
All-Red Time (s)	2.4	2.4		3.8	3.8	3.8	2.5	2.5	2.5	2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2		7.0	7.0	7.0	6.8	6.8	6.8	6.8	6.8	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	3.5	3.0	3.0	3.0	3.5	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0	27.0		24.0	24.0		24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)	14.9	14.9		22.9	22.9	22.9	9.2	28.8	28.8	18.4	40.9	
Actuated g/C Ratio	0.13	0.13		0.20	0.20	0.20	0.08	0.26	0.26	0.16	0.37	
v/c Ratio	0.20	0.73		0.85	0.86	0.64	0.40	0.78	0.37	0.88	0.57	
Control Delay	46.8	59.5		67.7	68.4	9.3	59.1	45.3	8.0	78.0	32.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	46.8	59.5		67.7	68.4	9.3	59.1	45.3	8.0	78.0	32.1	
LOS	D	E		E	E	A	E	D	A	E	C	
Approach Delay		56.9			44.3			38.6			43.6	
Approach LOS		E			D			D			D	
Queue Length 50th (ft)	31	112		221	227	0	42	254	8	179	232	
Queue Length 95th (ft)	71	204		#436	#448	96	90	332	63	#373	321	
Internal Link Dist (ft)		293			356			1820			730	
Turn Bay Length (ft)	100			170			200		185	320		
Base Capacity (vph)	305	309		351	357	641	295	1230	653	281	1302	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.15	0.59		0.84	0.85	0.63	0.20	0.58	0.30	0.88	0.57	

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 112			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 43.3		Intersection LOS: D	
Intersection Capacity Utilization 82.8%		ICU Level of Service E	

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Sweet Home Road & Rensch Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	65	56	893	60	74	1141
Future Volume (vph)	65	56	893	60	74	1141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.991			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1736	1615	3535	0	1787	3574
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1736	1615	3535	0	1787	3574
Link Speed (mph)	30		45			45
Link Distance (ft)	552		1491			1900
Travel Time (s)	12.5		22.6			28.8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	0%	1%	4%	1%	1%
Adj. Flow (vph)	68	59	940	63	78	1201
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	59	1003	0	78	1201
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min) 15			

Packet Pg. 4427
3.e
Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	65	56	893	60	74	1141
Future Volume (Veh/h)	65	56	893	60	74	1141
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	68	59	940	63	78	1201
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1728	502			1003	
vC1, stage 1 conf vol	972					
vC2, stage 2 conf vol	756					
vCu, unblocked vol	1728	502			1003	
tC, single (s)	6.9	6.9			4.1	
tC, 2 stage (s)	5.9					
tF (s)	3.5	3.3			2.2	
p0 queue free %	72	89			89	
cM capacity (veh/h)	247	520			692	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	68	59	627	376	78	600	600
Volume Left	68	0	0	0	78	0	0
Volume Right	0	59	0	63	0	0	0
cSH	247	520	1700	1700	692	1700	1700
Volume to Capacity	0.28	0.11	0.37	0.22	0.11	0.35	0.35
Queue Length 95th (ft)	27	10	0	0	9	0	0
Control Delay (s)	25.1	12.8	0.0	0.0	10.9	0.0	0.0
Lane LOS	D	B			B		
Approach Delay (s)	19.4		0.0		0.7		
Approach LOS	C						

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	331	641	75	140	764	200	126	358	79	179	421	518
Future Volume (vph)	331	641	75	140	764	200	126	358	79	179	421	518
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		175	105		0	100		130	190		0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			85			75			60		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					0.99	1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1583	1787	3574	1583	1805	1881	1568	1770	1863	1599
Flt Permitted	0.128			0.259			0.197			0.244		
Satd. Flow (perm)	241	3574	1583	487	3574	1563	374	1881	1568	455	1863	1578
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			163			148			161			135
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		613			472			833			357	
Travel Time (s)		9.3			7.2			16.2			5.4	
Confl. Peds. (#/hr)	1					1	1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	1%	1%	2%	1%	1%	2%	0%	1%	3%	2%	2%	1%
Adj. Flow (vph)	356	689	81	151	822	215	135	385	85	192	453	557
Shared Lane Traffic (%)												
Lane Group Flow (vph)	356	689	81	151	822	215	135	385	85	192	453	557
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2	2	2	2	2	2	2	2
Detector Template												
Leading Detector (ft)	49	49	49	49	49	49	49	49	49	49	49	49
Trailing Detector (ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Position(ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	29	29	29	29	29	29	29	29	29	29	29	29
Detector 2 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

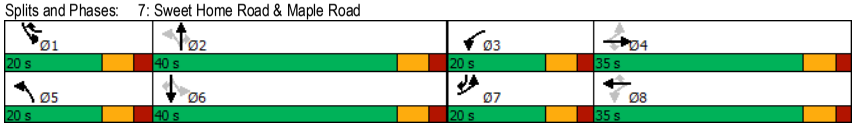
Packet Pg. 4428
3.e
Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	1	5	2	2	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	10.0	3.0	10.0	3.0	3.0	20.0	20.0	3.0	20.0	3.0
Minimum Split (s)	10.6	41.6	41.6	10.6	41.6	20.0	10.8	38.8	38.8	20.0	38.8	10.6
Total Split (s)	20.0	35.0	35.0	20.0	35.0	20.0	20.0	40.0	40.0	20.0	40.0	20.0
Total Split (%)	17.4%	30.4%	30.4%	17.4%	30.4%	17.4%	17.4%	34.8%	34.8%	17.4%	34.8%	17.4%
Maximum Green (s)	13.4	28.4	28.4	13.4	28.4	13.2	13.2	33.2	33.2	13.2	33.2	13.4
Yellow Time (s)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.8	6.8	6.8	6.8	6.8	6.8	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	2.0	2.0	4.0	4.0	2.0	4.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			25.0	25.0		25.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effct Green (s)	44.6	31.2	31.2	37.8	27.8	38.8	38.4	28.8	28.8	41.9	30.6	44.3
Actuated g/C Ratio	0.41	0.29	0.29	0.35	0.26	0.36	0.35	0.27	0.27	0.39	0.28	0.41
v/c Ratio	1.22	0.67	0.14	0.52	0.90	0.33	0.52	0.77	0.16	0.62	0.86	0.77
Control Delay	155.8	39.4	0.5	27.1	53.5	8.8	26.6	48.1	0.6	28.5	54.5	25.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	155.8	39.4	0.5	27.1	53.5	8.8	26.6	48.1	0.6	28.5	54.5	25.3
LOS	F	D	A	C	D	A	C	D	A	C	D	C
Approach Delay		73.4			42.0			36.7			36.8	
Approach LOS		E			D			D			D	
Queue Length 50th (ft)	~270	231	0	66	301	28	56	251	0	84	301	226
Queue Length 95th (ft)	#487	322	0	116	#434	80	96	367	0	133	#482	373
Internal Link Dist (ft)		533			392			753			277	
Turn Bay Length (ft)	150		175	105			100		130	190		
Base Capacity (vph)	291	1029	571	347	942	683	320	579	594	345	582	727
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.22	0.67	0.14	0.44	0.87	0.31	0.42	0.66	0.14	0.56	0.78	0.77

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 108.3			
Natural Cycle: 125			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.22			
Intersection Signal Delay: 48.3		Intersection LOS: D	
Intersection Capacity Utilization 91.3%		ICU Level of Service F	

Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Sweet Home Road & Maple Road



Packet Pg. 4429
3.e
Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

7: Sweet Home Road & Maple Road Performance by lane

Lane	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Movements Served	L	T	T	R	L	T	T	R	L	T	R	L
Denied Delay (hr)												
Denied Del/Veh (s)												
Total Delay (hr)	6.3	9.1	4.4	0.2	1.6	9.3	6.9	0.6	1.0	4.3	0.2	1.7
Total Del/Veh (s)	71.1	104.8	44.5	8.9	39.9	85.2	65.4	10.2	31.7	44.2	7.5	34.6
Stop Delay (hr)	6.1	7.8	3.2	0.2	1.5	7.8	5.9	0.5	1.0	3.3	0.2	1.5
Stop Del/Veh (s)	68.6	89.3	32.0	8.3	37.1	71.5	55.5	8.3	29.6	33.8	7.6	31.9

7: Sweet Home Road & Maple Road Performance by lane

Lane	SB	SB	All
Movements Served	T	R	
Denied Delay (hr)			10.0
Denied Del/Veh (s)			9.1
Total Delay (hr)	4.7	2.3	52.7
Total Del/Veh (s)	37.7	13.7	47.9
Stop Delay (hr)	3.8	2.0	44.7
Stop Del/Veh (s)	30.0	12.0	40.6

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Intersection: 7: Sweet Home Road & Maple Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	210	584	522	201	190	421	416	296	174	436	174	246
Average Queue (ft)	195	400	325	48	154	334	286	109	81	210	46	120
95th Queue (ft)	247	685	591	160	248	471	442	331	167	363	145	249
Link Distance (ft)		564	564			397	397	397		764		
Upstream Blk Time (%)		25	0			17	13	6				0
Queuing Penalty (veh)		0	0			0	0	0				0
Storage Bay Dist (ft)	150			175	105				100		130	190
Storage Blk Time (%)	58	11	15		6	62			3	34		0
Queuing Penalty (veh)	185	35	11		22	87			12	70		2

Intersection: 7: Sweet Home Road & Maple Road

Movement	SB	SB	B17	B17
Directions Served	T	R	T	T
Maximum Queue (ft)	322	288	159	33
Average Queue (ft)	211	133	16	2
95th Queue (ft)	338	247	91	17
Link Distance (ft)	246	246	1422	1422
Upstream Blk Time (%)	8	2		
Queuing Penalty (veh)	46	13		
Storage Bay Dist (ft)				
Storage Blk Time (%)	15			
Queuing Penalty (veh)	28			

Attachment: Z-2022-02_application_061622 (25580 : Z-2022-02)

Attachment: Z-2022-02_drawings_061622 (25580 : Z-2022-02)

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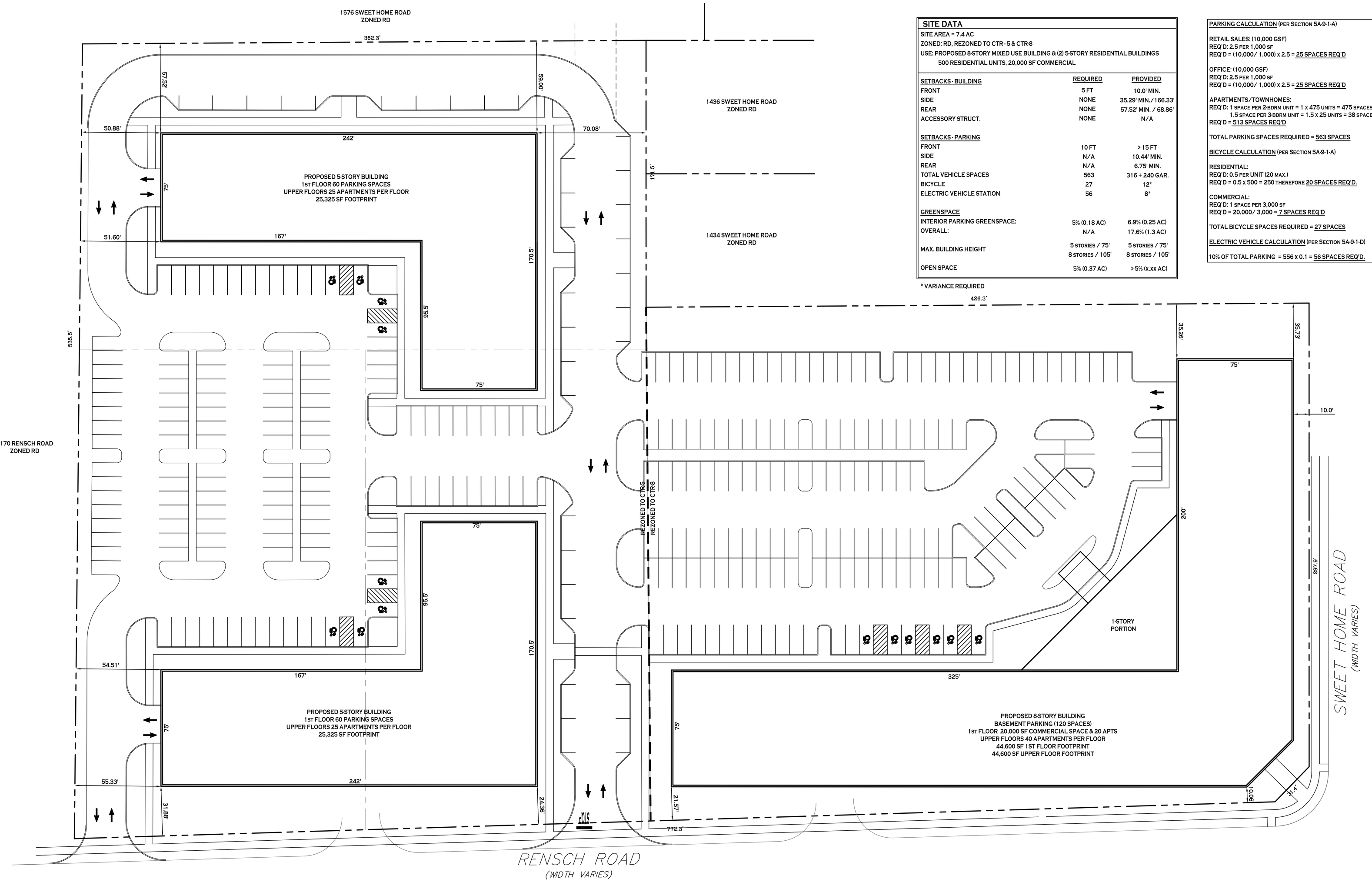

N **SITE PLAN**

SCALE: 1"=30'

SITE DATA

SITE AREA = 7.4 AC
ZONED: RD, REZONED TO CTR - 5 & CTR-8
USE: PROPOSED 8-STORY MIXED USE BUILDING & (2) 5-STORY RESIDENTIAL BUILDINGS
500 RESIDENTIAL UNITS, 20,000 SF COMMERCIAL

SETBACKS - BUILDING	REQUIRED	PROVIDED
FRONT	5 FT	10.0' MIN.
SIDE	NONE	35.29' MIN. / 166.33'
REAR	NONE	57.52' MIN. / 68.86'
ACCESSORY STRUCT.	NONE	N/A
SETBACKS - PARKING		
FRONT	10 FT	> 15 FT
SIDE	N/A	10.44' MIN.
REAR	N/A	6.75' MIN.
TOTAL VEHICLE SPACES	563	316 + 240 GAR.
BICYCLE	27	12*
ELECTRIC VEHICLE STATION	56	8*
GREENSPACE		
INTERIOR PARKING GREENSPACE:	5% (0.18 AC)	6.9% (0.25 AC)
OVERALL:	N/A	17.6% (1.3 AC)
MAX. BUILDING HEIGHT	5 STORIES / 75' 8 STORIES / 105'	5 STORIES / 75' 8 STORIES / 105'
OPEN SPACE	5% (0.37 AC)	> 5% (x.xx AC)

* VARIANCE REQUIRED

PARKING CALCULATION (PER SECTION 5A-9-1-A)

RETAIL SALES: (10,000 GSF)
REQ'D: 2.5 PER 1,000 SF
REQ'D = (10,000 / 1,000) x 2.5 = 25 SPACES REQ'D

OFFICE: (10,000 GSF)
REQ'D: 2.5 PER 1,000 SF
REQ'D = (10,000 / 1,000) x 2.5 = 25 SPACES REQ'D

APARTMENTS/TOWNHOMES:
REQ'D: 1 SPACE PER 2-BDRM UNIT = 1 X 475 UNITS = 475 SPACES
1.5 SPACE PER 3-BDRM UNIT = 1.5 X 25 UNITS = 38 SPACES
REQ'D = 513 SPACES REQ'D

TOTAL PARKING SPACES REQUIRED = 563 SPACES

BICYCLE CALCULATION (PER SECTION 5A-9-1-A)

RESIDENTIAL:
REQ'D: 0.5 PER UNIT (20 MAX.)
REQ'D = 0.5 X 500 = 250 THEREFORE 20 SPACES REQ'D.

COMMERCIAL:
REQ'D: 1 SPACE PER 3,000 SF
REQ'D = 20,000 / 3,000 = 7 SPACES REQ'D

TOTAL BICYCLE SPACES REQUIRED = 27 SPACES

ELECTRIC VEHICLE CALCULATION (PER SECTION 5A-9-1-D)

10% OF TOTAL PARKING = 556 x 0.1 = 56 SPACES REQ'D.

SITE LEGEND

- PROPERTY LINE
- PROPOSED CONCRETE CURB
- PROPOSED CONCRETE SIDEWALK
- PROPOSED SIGN
- PROPOSED PARKING NUMBER (27)
- PROPOSED LIGHT POLE & FIXTURE

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

30' 30 0 30 60Ft.

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:
No. Description Date

PROJECT NAME:
New Construction
Prop. Mixed Use Development
1400 - 1416 Sweet Home Road
Amherst, New York

Date: 3/15/22
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Concept Site Plan

DRAWING NO.

C-100

Project no.: 21.008

UNIVERSITY COMMONS

1400 - 1416 SWEET HOME ROAD
7.432± ACRES (PART 2 4.257± ACRES)
SBL #54.12-1-1, 2, 3 AND 4 ZONED RD

PARCEL ZONED RESEARCH-DEVELOPMENT DISTRICT (RD)
BUILDING SETBACK: FRONT 40', SIDE AND REAR 15'
PARKING SETBACK: FRONT 25', SIDE AND REAR 10'
MINIMUM LOT AREA: 1 ACRE
MINIMUM LOT FRONTAGE: 100'
MAXIMUM LOT COVERAGE: AS USE, YARD AND PARKING PERMIT
CONCACT THE TOWN OF AMHERST BUILDING DEPARTMENT AT 716-631-7080 FOR THEIR LATEST REQUIREMENTS

#1412
1.652± ACRES
ONE STORY BRICK
1412 SWEET HOME ROAD

#1408
1.279± ACRES
ONE STORY BRICK
1408 SWEET HOME ROAD.

#1416
1.326± ACRES
ONE STORY BRICK
1416 SWEET HOME ROAD

1404 SWEET HOME ROAD
F.F. 581.0
ONE STORY BRICK
16,864 SQ FT.

1400 SWEET HOME ROAD
ONE STORY BRICK
13,316 SQ FT

SBL #54.02-1-14 ZONED RD
SBL #54.12-1-39 ZONED RD
SBL #54.12-1-5 ZONED RD
SBL #54.12-1-6 ZONED RD

NORTH LINE LOT 79
N 89°38'35"E 362.34
PARALLEL TO NORTH LINE LOT 79
506.50
N 89°38'35"E
426.50
PARALLEL TO EAST LINE LOT 79
N 00°00'20"E 171.30
S 00°00'20"W 342.50
N 00°00'20"E 362.70
S 00°24'07"W 308.35
N 89°59'40"W 365.47
S 10°16'
S 88°14'38"W 887.77
S 47°39'05"W 33.63
105.05
401.68
772.32
S 88°14'38"W
183.60
370.64
187.04
535.55
N 00°23'00"E 310.78
196.64
198.91
181.30
184.17
CONCRETE GUTTER
CONCRETE WALK
BLACKTOP
BLACKTOP ON LINE
CONCRETE GUTTER
RETENTION POND
DETENTION POND
DUMPSTER ENCLOSURE
PARKING LOT
SIGN
HYDRANT
SAN MH
REC
ENTER/EXIT
CONCRETE VAULT IN BERM WITH METER AND RPZ
BENCH MARK NAIL IN POLE ELEV. 583.59
SAN MH RIM 582.73 INV 573.14 8"E/W
SAN MH RIM 585.34 INV 577.99 8"S/NE
SAN MH RIM 574.35 INV 576.29 8"E/SW
100'± TO HYDRANT
FRAME BARN
METAL BARN
POLE
GUY
C.O.
W.V.
A.D.W.
DRIVEWAY
13" STORM
6" WATER SERVICE
INV 578.07 E
8" WATERLINE
STORM PIPES
EDGE PAVEMENT
CENTERLINE
LOCKPORT EXPRESSWAY
R.O.W.
RIGHT OF WAY
SOUTHEAST CORNER L.2213 P.260
EAST LINE LOT 79
174.00' TO NORTHEAST CORNER LOT 79
UNIVERSITY OF BUFFALO ENTRANCE
WEST LINE LANDS ACQUIRED BY NYSDOT S.H. NO. 3409, MAP NO. 72, PARCEL NO. 73 L.10363 P.450
6' BURIED M.T.TELE. CABLE EASEMENT 43' FROM E. SWEET HOME ROAD L.10363 P.450
30' WIDE TOWN OF AMHERST SANITARY SEWER EASEMENT L.10947 P.2181
SWEET HOME ROAD (WIDTH VARIES, APPROX. 64' WIDE)
RENSCH ROAD (49.5' WIDE)

SURVEY #1416
NOV 15, 2007

ASBUILT #1412 AND #1416
DEC. 19, 2006 JN 54745

SURVEY #1412 SEPT. 8, 2006
JN 54650

FOUNDATION LOCATE #1416
AUG. 17, 2006

TOPOGRAPHIC SURVEY AND BOUNDARY SURVEY

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS SURVEY MAP IS A VIOLATION OF SECTION 7209, PART 2 OF THE NEW YORK STATE EDUCATION LAW.

NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE AND IS SUBJECT TO ANY STATE OF FACTS THAT MAY BE REVEALED BY AN EXAMINATION OF SAME.

BISSELL, STONE ASSOCIATES

BISSELL, STONE ASSOCIATES
ENGINEERING AND LAND SURVEYING, P.C.
CIVIL ENGINEERING LAND SURVEYING
SITE PLANNING CONSULTING
TELEPHONE: (716) 832-7000, FAX 832-7004

DATE APRIL 22, 2003 | JOB NO 53144-T | FIELD BOOK DC 32038 | SCALE 1" = 30'

ADD INFO JAN. 15, 2004 | FOUNDATION LOCATE #1408 AUG. 19, 2004 JN 53842 | FOUNDATION LOCATE #1412 SEPT. 22, 2005 JN 54282 | PARKING LOT ASBUILT JAN. 12, 2006 JN 54393

SURVEY OF PART OF LOT 79 TOWN OF AMHERST | TWP 12 RANGE 7 | ERIE CO., NY | HOLLAND LAND COMPANY

FORMERLY GEO. DIEHL SHEEHAN FRETTS & TALLAMY, FRETTS & SENIOR SENIOR BISSELL & BRONKIE DESIGN SYSTEM COLLABORATIVE THE BISSELL CO

G-1589

Attachment: Z-2022-02_drawings_061622 (25580 : Z-2022-02)

Amherst

Town of Amherst Planning Department *Erie County, New York*

Brian J. Kulpa
Supervisor
Daniel C. Howard, AICP
Planning Director
Daniel J. Ulatowski, AICP
Assistant Planning Director

June 21, 2022

North Forest Development LLC
c/o Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy
5500 Main Street, Suite 343
Williamsville, NY 14221

SUBJECT: REQUEST TO REZONE 7.43± ACRES OF LAND FROM **RD** TO **CTR-8** & **RD** TO **CTR-5**, **Z-2022-02**; PROPERTY LOCATED AT **1400-1404 & 1408-1416 SWEET HOME ROAD**.

Dear Sir/Madam:

At its meeting of June 16, 2022 the Planning Board considered your request to rezone the subject property from **RD** to **CTR-8 & CTR-5** and voted to adjourn the request.

This request will be placed on the Planning Board agenda for the August 18, 2022 meeting.

Should you have any questions regarding the Planning Board's decision, please do not hesitate to call us.

Very truly yours,

for Daniel C. Howard, AICP
Planning Director

DH/ac
X:\Current_Planning\Files\Rezonings\2022\Z-2022-02_(1400-1404_&_1408-1416_Sweet_Home_Rd)_2022\Z-2022-02_Adjourned Letter_061622.doc
cc: Chris Wood, Carmina Wood Design, 487 Main Street, Suite 500, Buffalo, NY 14203

Attachment: Z-2022-02_adjournment letter_061622 (25580 : Z-2022-02)

Amended Rezoning Application & Supporting Documentation - Rezoning of 1400-1404 and 1408-1416 Sweet Home Road from RD to CTR-8
Applicant: North Forest Development LLC
Date: July 25, 2022

Prepared by: Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221
Tel: 716.510-4338
E-mail: shopkins@hsmlegal.com

TOWN OF AMHERST PLANNING DEPARTMENT

Application for Rezoning Review and, if required Comprehensive Plan Amendment

For Official Use

File #: _____ **Acreage** 7.43 Acres **Fee $** _____

Address Verified by Assessor's Office _____ VERIFIED BY DATE

Materials Accepted by Town Clerk & Fee Paid _____ ACCEPTED BY DATE

Materials Checked by Building Dept. _____ RECEIVED BY DATE

Materials Received by Planning Dept. _____ RECEIVED BY DATE

		Fill In Applicable Fees
2 ACRES OR LESS	**$1,250**	_____
2 – 20 ACRES **$1,250 + $250/acres or fraction thereof over 2 acres**		$2750.00
20 – 30 ACRES **$5,700 + $150/acre or fraction thereof over 20 acres**		_____
OVER 30 ACRES **$6,900 +$75/acre or fraction thereof over 30 acres**		_____
Request for Relief of/Change to Conditions of Zoning Approval	**$ 1,200**	_____
AFFIDAVIT FEE FOR PUBLIC HEARING	**$ 15.00**	$15.00
	TOTAL FEE:	$ 2,765.00

[Note: Filing Fee in the amount of $2,765.00 previously paid.]

[Note: A completed Amended Full Environmental Assessment Form dated July 25, 2022 along with Page 5[a] attached as Exhibit "2".]

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

TO BE COMPLETED BY APPLICANT

1. **Petitioner:** Name: North Forest Development LLC

Address: c/o Sean Hopkins, Esq.
5500 Main Street, Suite 343
Williamsville, New York 14221
City State Zip Code

Phone: 510-4338 Fax:

E Mail shopkins@hsmlegal.com

2. **The undersigned hereby petitions the Honorable Town Board to rezone the following described property**

From: RD District

To: CTR-8 District

3. **Street address of land to be rezoned:** (must be verified by Town Assessor's Office)

1400-1404 and 1408-1416 Sweet Home Road

SBL #: SBL No. 54.12-1-42 and 54.12-1-43.1

4. **Area of land to be rezoned** (in acres): 7.43

5. **Owner of Land**:

Name: North Forest Properties #1 LLC

Address: 2829 Wehrle Drive, Suite 1 - Williamsville, NY 14221

Telephone: 716.626-9764

6. **Representative** (Architect, Engineer, Landscape Architect, Surveyor or Attorney):

Other Representative:
Christopher Wood, P.E.
Carmina Wood Morris DPC
487 Main Street, Suite 600
Buffalo, New York 14202
Tel: 842-3165 [Ext. 103]
E-mail: cwood@cwm-ae.com

Name: Sean W. Hopkins, Esq.

Address: 5500 Main Street, Suite 343
Williamsville, New York 14221
Tel: 716.510-4338 - E-mail: shopkins@hsmlegal.com
City State Zip Code

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

7. **Petitioner's interest in property** [Note: Authorization Letter of the Property Owner attached as Exhibit "1" of this Rezoning Application.]

_____Option to purchase

_____Owner

__X__Other (explain) The Project Site and Petitioner are related entities.

8. **The following are all others having an interest in this application and join herein with the petitioner named above:** (describe extent of interest; attach sheets as needed)

Not Applicable.

9. **Attach Survey and Legal description of land to be rezoned. The Survey must be prepared by a New York State Licensed Land Surveyor.** Legal description of property to be rezoned from RD to CTR-8 is attached as Exhibit "3" and a reduced size copy of the Survey of the Project Site is attached as Exhibit "4".

10. **Said property has the following deed restrictions or Covenants:** (attach copy) Not Applicable.

Liber _____ Page _____

11. **Information on proposed project:**

A. Description of the character of the proposed development:

See Exhibit 5.

B. Rationale for rezoning request:

1. Why was this site chosen?

See Exhibit 5.

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

2. Why cannot land be used with the existing zoning?

See Exhibit 5.

3. How will this rezoning impact surrounding properties?

See Exhibit 5.

4. How will this rezoning impact the school system?

See Exhibit 5.

12. Quantitative Data:

A. Total # of dwelling units: 500 units

B. Distribution of dwelling units by type: All dwelling units are apartments for lease

C. Gross Residential Density per acre: 67.29 units per acre.

D. Total amount of Open Space: 0

E. Proposed Non-Residential Floor Area: 20,000 sq. ft. first floor commercial space.

[Note: A reduced size copy of the Concept Site Plan [Drawing C-100] for the proposed mixed-use redevelopment project as prepared by Carmina Wood Morris is provided at Exhibit "7" and a full size copy is also attached.]

13. Development Schedule:

Start: To be Determined

Finish: To be Determined

Stages (# of): 1

14. If any portion of the proposed development is planned to be sold or leased, please describe:

The commercial space and residential units will be leased.

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

15. Open Space ownership and maintenance provisions (if applicable):

Greenspace and landscaping will be privately owned and maintained.

16. Basis for Findings (Sec. 8-3-5 of the Town Zoning Code) (Attach sheets and supplemental materials as necessary.)

A. The proposed zoning and development plan must be generally consistent with the policies of the Comprehensive Plan and the Town Zoning Ordinance.

1. State in detail why the proposed zoning is consistent with the adopted Town of Amherst Bicentennial Comprehensive Plan. Cite specific sections, maps, and/or figures in the plan that support the proposed zoning at this location (The Comprehensive Plan document is available at the Planning Department, Town Clerk's Office, Amherst libraries, or at www.amherst.ny.us). Add sheets as needed.

See Exhibit 6.

2. Pursuant to NYS Town Law Section 272a(11), "all Town land use regulations must be in accordance with a comprehensive plan adopted pursuant to this Section." The Town Board adopted the Comprehensive Plan pursuant to NYS Town Law 272 on January 2, 2007. If the rezoning is approved, the Town Board may require the Plan to be amended, as applicable.

Cite all text, map, and / or figures that must be amended to support the proposed zoning at this location (attach pages as necessary) and provide detailed suggested amendments.

See Exhibit 6.

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

3. State why the proposed zoning is consistent with intent and objectives (Sec. 1-2-2) of the Zoning Ordinance:

See Exhibit 6.

B. Adequate Services and Utilities are available or are proposed to be made available with the construction of the development:

1. Sanitary Sewer
   Yes.
2. Storm Sewer/Drainage
   Yes.
3. Water
   Yes.
4. Other Yes.

C. Compatibility with the present zoning and conforming uses of nearby property and with the character of the neighborhood:

See Exhibit 6.

D. Suitability of the subject property for uses permitted by the current versus the proposed district:

See Exhibit 6.

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

E. Whether the proposed change tends to improve the balance of uses, or meets a specific demand in the Town:

See Exhibit 6.

17. The petitioner encloses herewith the sum of $ N/A to pay the fee, and consents to the placement of a sign(s) at the described location identifying this request for a period of time to be determined by the Town Clerk.

18. The undersigned certifies that all information required to be disclosed pursuant to Section 809 of the General Municipal Law (see below) is as follows:

The undersigned swears or affirms that all statements made herein are true, that all drawings submitted correctly show the situation involved in this petition.

[Note: Authorization Letter of Property Owner signed attached as Exhibit "1".]

Counsel for Petitioner

Signature of Petitioner

Subscribed and sworn to before me this 25th day of July, 20 22

NOREEN A. ZIMMERMAN
Notary Public, State of New York
Qualified in Niagara County
My Commission Expires Aug. 31, 20 26

Notary Public, Erie County, New York

N.Y.S. General Municipal Law - Section 809 Disclosure in certain applications:

1. Every application, petition or request submitted for a variance, amendment, change of zoning, approval of a plat, exemption from a plat or official map, license or permit, pursuant to the provision of any ordinance, local law, rule or regulation constituting the zoning and planning regulations of a municipality shall state the name, residence and the nature and extent of the interest of any state office or any office or employee of such municipality or of a municipality of which such municipality is a part, in the person, partnership or association making such application, petition or request (hereinafter called the applicant) to the extent known to such applicant.

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

2. For the purpose of this section an officer or employee shall be deemed to have an interest in the applicant when he, his spouse, or their brothers, sisters, parents, children, grandchildren, or the spouse of any of them

   (a) is the applicant, or
   (b) is an officer, director, partner or employee of the applicant, or
   (c) legally or beneficially owns or controls stock of a corporate applicant or is a member of a partnership or association applicant, or
   (d) is a party to an agreement with such an applicant, express or implied, whereby he may receive any payment or other benefit, whether or not for services rendered, dependent or contingent upon the favorable approval of such applicant, petition or request.

3. In the county of Nassau the provisions of subdivisions one and two of this section shall also apply to a party officer. "Party Officer" shall mean any person holding any position or office, whether by election, appointment or otherwise, in any party as defined by subdivision four or section two of the election law.

4. Ownership of less than five per cent of the stock of a corporation whose stock is listed on the New York or American Stock Exchanges shall not constitute an interest for the purposes of this section.

5. A person who knowingly and intentionally violates this section shall be guilty of a misdemeanor.

P/CurrPlan/Applications2007/Rezoning & Comp Plan Amend App.
10/08

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Exhibit 1 – Authorization Form Signed by Property Owner

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

AUTHORIZATION

North Forest Properties #1 LLC, as the record owner of 1400-1416 Sweet Home Road [SBL No. 54.12-1-42 and 54.12-1-43.1] in the Town of Amherst (collectively the "***Project Site***") hereby authorizes representatives including Carmina Wood Morris DPC and Hopkins Sorgi & McCarthy PLLC to seek the approvals and permits required from the Town of Amherst as well as involved and interested agencies for the development of the Project Site as a mixed-use project.

Date: March 15, 2022

NORTH FOREST PROPERTIES #1 LLC

By: _____

Print Name: Roy Jordan

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Exhibit 2 – Amended Part 1 of the Full Environmental Assessment Form Prepared Pursuant to the State Environmental Quality Review Act ("SEQRA") with Attached Page 5[a]

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Amended Part 1 of Full EAF - Rezoning of 1400-1404 and 1408-1416 Sweet Home Road from RD to CTR-8
Applicant: North Forest Development LLC
Date: July 25, 2022

Full Environmental Assessment Form Part 1 - Project and Setting

Prepared By: Sean Hopkins, Esq
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221
Tel: 716.510-4338
E-mail: shopkins@hsmlegal.com

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project: Proposed Mixed-Use Redevelopment Project		
Project Location (describe, and attach a general location map): 1400-1404 and 1408-1416 Sweet Home Road - Town of Amherst - Erie County [SBL No. 54.12-1-42 and 54.12-1-43.1]		
Brief Description of Proposed Action (include purpose or need): The proposed project consists of a proposed mixed-use redevelopment project consisting of an 7-story mixed-use building with 20,000 sq. ft. of 1st floor commercial space and two 7-story multifamily buildings (total of 500 apartments with total of 585 parking spaces) and related site improvements. The action includes an amendment of the zoning classification of 1400-1404 and 1408-1416 Sweet Home Road (collectively the "Project Site") from RD to CTR-8. The proposed action has been defined broadly to include all required discretionary approvals required from the municipal boards of the Town of Amherst and involved agencies as well as the construction of the proposed mixed-use and multifamily buildings and all related site improvements including parking spaces, 2 driveways onto Rensch Road, access aisles, landscaping, lighting, underground storm water management improvements, water and sanitary sewer lines as well as utility connections. The Project Site consists of an existing office park to be replaced by the proposed mixed-use project. Given that the proposed mixed-use project ("action") will not result in any potentially significant adverse environmental impacts, the issuance of a negative declaration pursuant to SEQRA is appropriate. The action is a Type I action pursuant to SEQRA (6 NYCRR Part 617.4) since it involves more than 250 attached residential units.		
Name of Applicant/Sponsor: North Forest Development LLC c/o Sean Hopkins, Esq.	Telephone: 716.510-4338 E-Mail: shopkins@hsmlegal.com	
Address: 5500 Main Street, Suite 343		
City/PO: Williamsville	State: NY	Zip Code: 14221
Project Contact (if not same as sponsor; give name and title/role): Same as Above	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:
Property Owner (if not same as sponsor): North Forest Properties 1 LLC	Telephone: 716.626-9764 [Ext. 212] E-Mail: royj@nforest.com	
Address: 2829 Wehrle Drive, Suite 1		
City/PO: Williamsville	State: NY	Zip Code: 14221

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B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees ☑Yes ☐No	Town Board - Amended Rezoning Application	July 25, 2022
b. City, Town or Village Planning Board or Commission ☑Yes ☐No	Planning Board - Site Plan Approval	To be Determined ("TBD")
c. City, Town or Village Zoning Board of Appeals ☑Yes ☐No	Zoning Board of Appeals - Possible Area Variances	TBD
d. Other local agencies ☑Yes ☐No	Building Dept. - Demolition & Building Permits; Highway Department - Curb Cut Permits	TBD
e. County agencies ☑Yes ☐No	ECWA - Water	TBD
f. Regional agencies ☐Yes ☑No		
g. State agencies ☑Yes ☐No	NYSDEC - SPDES and DSCA	TBD
h. Federal agencies ☐Yes ☑No		

i. Coastal Resources.
i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☑Yes ☐No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☑Yes ☐No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☑Yes ☐No

If Yes, identify the plan(s):
NYS Heritage Areas:West Erie Canal Corridor

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes ☑No

If Yes, identify the plan(s):

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C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
Research Development District ("RD")

b. Is the use permitted or allowed by a special or conditional use permit? ☐ Yes ☑ No

c. Is a zoning change requested as part of the proposed action? ☑ Yes ☐ No
If Yes,
i. What is the proposed new zoning for the site? CTR-8

C.4. Existing community services.

a. In what school district is the project site located? Sweet Home Central School District

b. What police or other public protection forces serve the project site?
Town of Amherst Police Department

c. Which fire protection and emergency medical services serve the project site?
Volunteer Fire Department for the fire district in which the Project Site is located

d. What parks serve the project site?
There are various parks that will be accessible to the future tenants of the mixed-use redevelopment project

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)? Mixed-use project consisting of approximately 20,000 sq. of 1st floor commercial space and apartments for lease [3 proposed building consistent with the Concept Site Plan [Drawing C-100].

b. a. Total acreage of the site of the proposed action? 7.43 acres
b. Total acreage to be physically disturbed? 7.43 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 7.43 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % _____ Units: _____

d. Is the proposed action a subdivision, or does it include a subdivision? ☐ Yes ☑ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
ii. Is a cluster/conservation layout proposed? ☐ Yes ☐ No
iii. Number of lots proposed? _____
iv. Minimum and maximum proposed lot sizes? Minimum _____ Maximum _____

e. Will the proposed action be constructed in multiple phases? ☐ Yes ☑ No
i. If No, anticipated period of construction: _____ months
ii. If Yes:
- Total number of phases anticipated _____
- Anticipated commencement date of phase 1 (including demolition) _____ month _____ year
- Anticipated completion date of final phase _____ month _____ year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases: _____

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f. Does the project include new residential uses? ☑ Yes ☐ No

If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase				500
At completion of all phases				

g. Does the proposed action include new non-residential construction (including expansions)? ☑ Yes ☐ No

If Yes,

i. Total number of structures 1 Mixed-Use Building

ii. Dimensions (in feet) of largest proposed structure: 105' height; 170' width; and 242' length

iii. Approximate extent of building space to be heated or cooled: 20,000 square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☑ Yes ☐ No

If Yes,

i. Purpose of the impoundment: Undeground stormwater detention.

ii. If a water impoundment, the principal source of the water: ☑ Ground water ☐ Surface water streams ☐ Other specify:

iii. If other than water, identify the type of impounded/contained liquids and their source.

iv. Approximate size of the proposed impoundment. Volume: _____ million gallons; surface area: N/A acres

v. Dimensions of the proposed dam or impounding structure: N/A height; N/A length

vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):

N/A

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐ Yes ☑ No

If Yes:

i .What is the purpose of the excavation or dredging?

ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?

- Volume (specify tons or cubic yards):
- Over what duration of time?

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.

iv. Will there be onsite dewatering or processing of excavated materials? ☐ Yes ☐ No

If yes, describe.

v. What is the total area to be dredged or excavated? _____ acres

vi. What is the maximum area to be worked at any one time? _____ acres

vii. What would be the maximum depth of excavation or dredging? _____ feet

viii. Will the excavation require blasting? ☐ Yes ☐ No

ix. Summarize site reclamation goals and plan:

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☐ Yes ☑ No

If Yes:

i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description):

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ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

iii. Will the proposed action cause or result in disturbance to bottom sediments? ☐Yes ☐No
If Yes, describe:

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☐No
If Yes:

- acres of aquatic vegetation proposed to be removed:
- expected acreage of aquatic vegetation remaining after project completion:
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access):
- proposed method of plant removal:
- if chemical/herbicide treatment will be used, specify product(s):

v. Describe any proposed reclamation/mitigation following disturbance:

c. Will the proposed action use, or create a new demand for water? ☑Yes ☐No
If Yes:

i. Total anticipated water usage/demand per day: 110,000 gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑Yes ☐No
If Yes:

- Name of district or service area: ECWA Consolidated Water District
- Does the existing public water supply have capacity to serve the proposal? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No
- Do existing lines serve the project site? ☑Yes ☐No

iii. Will line extension within an existing district be necessary to supply the project? ☐Yes ☑No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project:
- Source(s) of supply for the district:

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐Yes ☑No
If, Yes:

- Applicant/sponsor for new district:
- Date application submitted or anticipated:
- Proposed source(s) of supply for new district:

v. If a public water supply will not be used, describe plans to provide water supply for the project:

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑Yes ☐No
If Yes:

i. Total anticipated liquid waste generation per day: 110,000 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each):
Sanitary wastewater.

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑Yes ☐No
If Yes:

- Name of wastewater treatment plant to be used: Town of Amherst Wastewater Treatment Plant
- Name of district: Town of Amherst
- Does the existing wastewater treatment plant have capacity to serve the project? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No

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- Do existing sewer lines serve the project site? ☑Yes ☐No
- Will a line extension within an existing district be necessary to serve the project? ☐Yes ☑No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☑No

If Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑Yes ☐No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or _____ acres (impervious surface)
_____ Square feet or _____ acres (parcel size)

ii. Describe types of new point sources. _____

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

- If to surface waters, identify receiving water bodies or wetlands: _____
- Will stormwater runoff flow to adjacent properties? ☐Yes ☑No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☐Yes ☑No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☑No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:

- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

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h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? [Note: Traffic Impact Study prepared by SRF Associates previously submittted with Rezoning Application and Supporting Documentation] ☐Yes ☑No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐Weekend ☐ Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): _____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☑Yes ☐No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: _____

To be determined for 1st floor commercial space and dependent on needs of commercial tenants.

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):

National Grid

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐Yes ☐No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 7:00 AM to 7:00 PM
- Saturday: 7:00 AM to 5:00 PM
- Sunday: As Needed
- Holidays: Not Applicable

ii. During Operations:

- Monday - Friday: To be Determined [Commercial]
- Saturday: TBD
- Sunday: TBD
- Holidays: TBD

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m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

There will be temporary and unavoidable short-term noise impacts resulting from the use of construction equipment during the construction of the proposed mixed-use redevelopment project.

ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☑ No

Describe: _____

n. Will the proposed action have outdoor lighting? ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

There will be outdoor lighting per the lighting standards contained in the Town of Amherst Zoning Code.

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☑ No

Describe: _____

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures: _____

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored _____

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally, describe the proposed storage facilities: _____

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☐ Yes ☑ No

If Yes:

i. Describe proposed treatment(s):

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☐ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☐ Yes ☐ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: _____ tons per _____ (unit of time)
- Operation : _____ tons per _____ (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: _____
- Operation: _____

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: _____
- Operation: _____

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s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☑ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)
☐ Forest ☐ Agriculture ☐ Aquatic ☑ Other (specify): UB North Campus and Center for Inquiry

ii. If mix of uses, generally describe:

There are a wide assortment of land uses on properties zoned GB, MFR-5, etc. in the vicinity of the Project Site.

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	6.5	6.74	.2
• Forested	0	0	0
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	0	0	0
• Agricultural (includes active orchards, field, greenhouse etc.)	0	0	0
• Surface water features (lakes, ponds, streams, rivers, etc.)	0	0	0
• Wetlands (freshwater or tidal)	0	0	0
• Non-vegetated (bare rock, earth or fill)	0	0	0
• Other Describe: Greenspace and Landscaping	1.2	1	(.2)

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c. Is the project site presently used by members of the community for public recreation? ☐ Yes ☑ No
i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☑ Yes ☐ No
If Yes,
i. Identify Facilities:
University of Buffalo North Campus and People Inc. Group Home

e. Does the project site contain an existing dam? ☐ Yes ☑ No
If Yes:
i. Dimensions of the dam and impoundment:
- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____
iii. Provide date and summarize results of last inspection:

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐ Yes ☑ No
If Yes:
i. Has the facility been formally closed? ☐ Yes ☐ No
- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:

iii. Describe any development constraints due to the prior solid waste activities: _____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐ Yes ☑ No
If Yes:
i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐ Yes ☑ No
If Yes:
i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐ Yes ☐ No
☐ Yes – Spills Incidents database — Provide DEC ID number(s): _____
☐ Yes – Environmental Site Remediation database — Provide DEC ID number(s): _____
☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures: _____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐ Yes ☑ No
If yes, provide DEC ID number(s): _____
iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):

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v. Is the project site subject to an institutional control limiting property uses? ☐ Yes ☑ No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐ Yes ☐ No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? >1 feet

b. Are there bedrock outcroppings on the project site? ☐ Yes ☑ No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____ %

c. Predominant soil type(s) present on project site:

Churchville Silt Loam	100 %
	%
	%

d. What is the average depth to the water table on the project site? Average: >3 feet

e. Drainage status of project site soils:

☐ Well Drained:	% of site
☐ Moderately Well Drained:	% of site
☑ Poorly Drained	100 % of site

f. Approximate proportion of proposed action site with slopes:

☑ 0-10%:	100 % of site
☐ 10-15%:	% of site
☐ 15% or greater:	% of site

g. Are there any unique geologic features on the project site? ☐ Yes ☑ No
If Yes, describe: _____

h. Surface water features.

i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☐ Yes ☑ No

ii. Do any wetlands or other waterbodies adjoin the project site? ☑ Yes ☐ No

If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.

iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑ Yes ☐ No

iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name _____ Approximate Size _____
- Wetland No. (if regulated by DEC) _____

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐ Yes ☑ No

If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐ Yes ☑ No

j. Is the project site in the 100-year Floodplain? ☐ Yes ☑ No

k. Is the project site in the 500-year Floodplain? ☐ Yes ☑ No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐ Yes ☑ No
If Yes:

i. Name of aquifer: _____

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m. Identify the predominant wildlife species that occupy or use the project site:
Typical suburban species

n. Does the project site contain a designated significant natural community? ☐Yes ☑No
If Yes:
i. Describe the habitat/community (composition, function, and basis for designation):
ii. Source(s) of description or evaluation:
iii. Extent of community/habitat:
- Currently: acres
- Following completion of project as proposed: acres
- Gain or loss (indicate + or -): acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐Yes ☑No
If Yes:
i. Species and listing (endangered or threatened):

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☐Yes ☑No
If Yes:
i. Species and listing:

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐Yes ☑No
If yes, give a brief description of how the proposed action may affect that use:

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐Yes ☑No
If Yes, provide county plus district name/number:

b. Are agricultural lands consisting of highly productive soils present? ☐Yes ☑No
i. If Yes: acreage(s) on project site?
ii. Source(s) of soil rating(s):

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐Yes ☑No
If Yes:
i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature
ii. Provide brief description of landmark, including values behind designation and approximate size/extent:

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐Yes ☑No
If Yes:
i. CEA name:
ii. Basis for designation:
iii. Designating agency and date:

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e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? ☐ Yes ☑ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: _____

iii. Brief description of attributes on which listing is based:

_____

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☑ Yes ☐ No

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s): _____

ii. Basis for identification: _____

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☐ Yes ☑ No

If Yes:

i. Identify resource: _____

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.): _____

iii. Distance between project and resource: _____ miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation: _____

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name North Forest Development LLC Date July 25, 2022

Signature _____ Title Project Counsel

Sean Hopkins, Esq.

PRINT FORM

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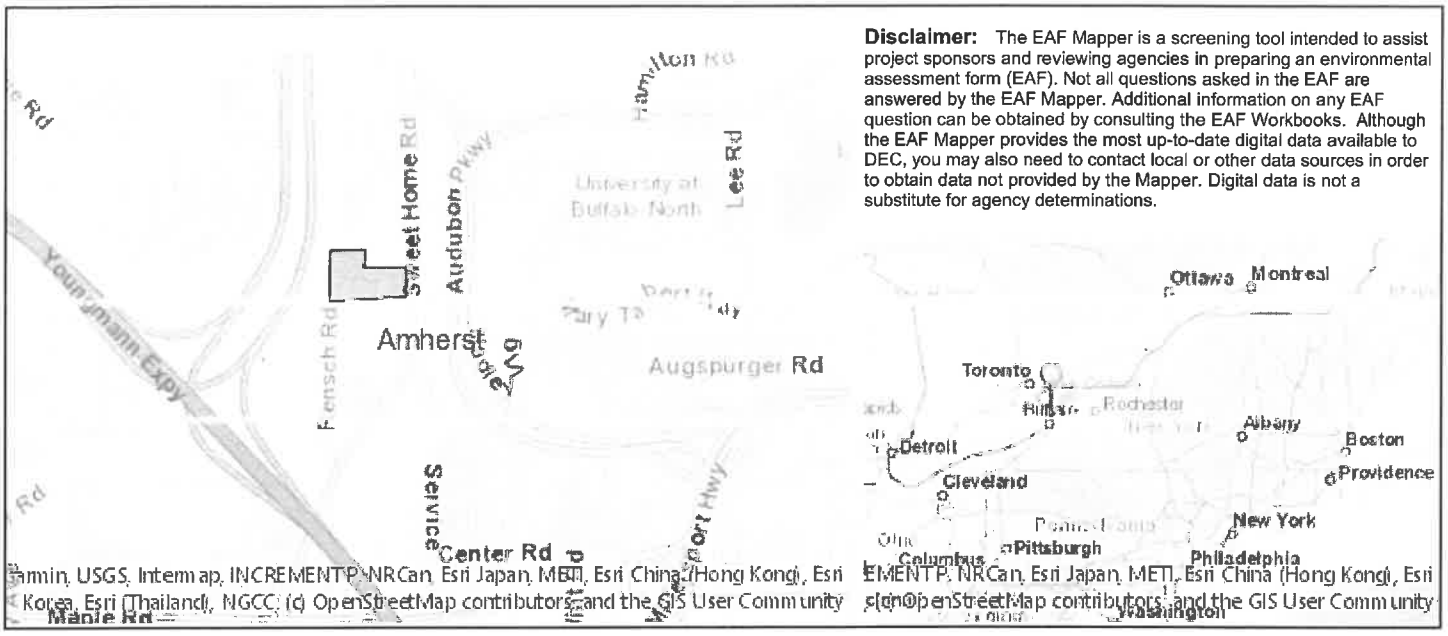
EAF Mapper Summary Report

Sunday, March 13, 2022 1:43 AM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.

B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Yes - Digital mapping data are not available for all Special Planning Districts. Refer to EAF Workbook.
C.2.b. [Special Planning District - Name]	NYS Heritage Areas:West Erie Canal Corridor
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	No
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	No
E.2.k. [500 Year Floodplain]	No
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	No
E.2.o. [Endangered or Threatened Species]	No

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E.2.p. [Rare Plants or Animals]	No
E.3.a. [Agricultural District]	No
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.3.f. [Archeological Sites]	Yes
E.3.i. [Designated River Corridor]	No

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Rezoning of 1400-14034 and 1408-1416 Sweet Home Road from from RD to CTR-8

TOWN OF AMHERST ATTACHMENT
State Environmental Quality Review
ENVIRONMENTAL ASSESSMENT FORM

1. For each applicable category of proposed new structures, including additions to existing structures, provide the following information for all soil types on the project site (*according to Soil Survey of Erie County, NY; Table 11, Building Site Development, pp 294-305):*

Soil Name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Churchville Silt Loam	Severe	Severe	Severe	Severe	Moderate

2. If the Soil survey indicates either "severe" or "moderate" suitability for the proposed types of construction, a geotechnical and hydrological analysis based on one test per 3.5 acres of project area must be provided (per Town Board resolution, 3/17/03, amended 6/16/03).

   __x__ Geotechnical report attached _____ Not applicable

   [Note: Three copies of the Geotechnical Report prepared by Glynn Geotechnical Engineering dated February 11, 2004 have been submitted to the Planning Department].

3. Is your property located: On Youngs Road between Dodge and Klein Roads? □ Yes x No
   On Wehrle Dr. between Spindrift Dr. and Oakwood Rd? □ Yes x No

   If so, the property may be within an area of the Town that is affected by a moratorium on connections to the sanitary sewer system.

4. Are there alternative locations on the site for this project? □ Yes x No

5. Location and size of real property owned by petitioner within one (1) mile of subject proposal:

   Not Applicable.

6. Are you aware of current or future plans or intentions by others in the Town of Amherst to develop property within 1000± ft. of the present project request: □ Yes ☒ No
   Describe: Not Applicable.

   (Potential environmental impacts from adjacent or nearby projects undergoing the approval process will receive a coordinated environmental review to determine cumulative effects on common receivers (e.g. traffic and drainage corridors) and other relevant environmental concerns.)

7. Maximum number of vehicular trips to be generated per peak hour upon completion of project 269
   Source: Traffic Impact Study prepared by SRF Associates dated March 21, 2022.

8. Will blasting occur during construction? □ Yes ☒ No

9. Does the project propose to connect and be tributary to the public sanitary sewer system? ☒ Yes □ No

10. Proposed net additional gallons per day (gpd) of sanitary sewer discharge upon completion of project:
    110,000 gpd average flow 440,000 gpd peak flow.

    (Average flows of 2,500 gpd or greater will require an Engineer's Report that includes a detailed downstream sewer capacity analysis and the identification of and commitment to required I/I offset work during peak wastewater flow conditions.)

11. Based on the Town's *2011 Reconnaissance Level Survey of Historic Resources,* is your property 'blue-rated' for historic significance? □ Yes ☒ No

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Exhibit 3 – Legal Description of Property to be Rezoned from RD to CTR-8

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EXHIBIT 3 OF AMENDED REZONING APPLICATION

LEGAL DESCRIPTION OF PROPERTY TO BE REZONED FROM RESEARCH DEVELOPMENT DISTRICT ("RD") TO CTR CENTER EIGHT ("CTR-8")

1400-1404 SWEET HOME ROAD [RD TO CTR-8]:

All that certain Piece or Parcel of Land, situate, lying and being in the Town of Amherst, County of Erie and State of New York, being Part of Lot 79, Township 12, Range 7 of the Holland Land Company's Survey, and being more particularly bounded and described as follows:

Commencing at a point in the east line of said Lot No. 79, 174.00 feet south of the northeast corner of said Lot No. 79, said point also being the southeast corner of Liber 2713 of Deeds at page 120, said east line also being the center line of Sweet Home Road (width varies, originally 66 feet wide); thence westerly along a line parallel to the north line of said Lot No. 79 and bearing S 89° 38' 35" W, 80.00 feet to a point in the west line of lands acquired by the New York State Department of Transportation for Sweet Home Road S.H. No. 9409, Map No. 72, Parcel No. 75 the point or place of beginning; thence southerly along the west line of said Parcel No. 75 and bearing of S 00° 00' 20" W, 297.93 feet to a point; thence southwesterly along the west line of said parcel No. 75 and bearing S 47° 59' 05" W, 33.65 feet to a point in the north line of Rensch Road (49.5 feet wide); thence westerly along the north line of said Rensch Road and bearing S 88° 14' 38" W, 401.68 feet to the west line of deed recorded in the Erie County Clerk's Office on March 3, 2017 in Liber 11310 of Deeds at page 1116; thence northerly along a line parallel to the east line of said Lot No. 79 and bearing N 00° 00' 20" E, 330.11 feet to a point; thence easterly along a line parallel to the north line of said Lot No. 79 and bearing N 89° 38' 35" E, 426.50 feet more or less to the point or place of beginning and containing 3.175 Acres, more or less.

Excepting therefrom, that portion of premises acquired by the People of the State of New York by Notice of Appropriation dated May 20, 2005, recorded September 26, 2005 in Liber 11101 of Deeds, page 8475.

1408, 1412 and 1416 SWEET HOME ROAD [RD TO CTR-8]:

All that certain Piece or Parcel of Land, situate, lying and being in the Town of Amherst, County of Erie and State of New York, being Part of Lot 79, Township 12, Range 7 of the Holland Land Company's Survey, and being more particularly bounded and described as follows:

Commencing at a point in the east line of said Lot 79, 174.00 feet south of the northeast corner of said Lot 79, said point also being the southeast corner of Liber 2713 of deeds at page 120, said east line also being the centerline of Sweet Home Road (width varies, originally 66 feet wide); Thence westerly along a line parallel to the north line of said Lot 79 and bearing S 89° 38' 35" W, 80.00 feet to a point in the west line of lands acquired by the New York State Department of Transportation for Sweet Home Road S.H. No. 9409, Map No. 72, Parcel No. 75; Thence southerly along the west line of said Parcel No. 75 and bearing S 00° 00' 20" W, 297.93 feet to a point; Thence southwesterly along the west line of said Parcel No. 75 and bearing S 47° 59' 05" W, 33.65 feet to a point in the north line of Rensch Road (49.50 feet wide); Thence westerly along the north

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line of said Rensch Road and bearing S 88° 14' 38" W, 401.68 feet to the principal point of beginning; Thence continuing westerly along the north line of said Rensch Road and bearing S 88° 14' 38" W, 370.64 feet to a point; Thence northerly along a line bearing N 00° 55' 05" E, 510.78 feet to a point in the north line of said Lot 79; Thence easterly along the north line of said Lot 79 and bearing N 89° 38' 35" E, 362.34 feet to a point; Thence southerly along a line parallel to the east line of said Lot 79 and bearing S 00° 00' 20" W, 501.61 feet to the point or place of beginning and containing 4.257 Acres, more or less.

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Exhibit 3 of Amended Rezoning Application
Legal Description of Property to be Rezoned from RD to CTR-8
Page 2 of 2

Exhibit 4 – Reduced Size Copy of Survey of Project Site

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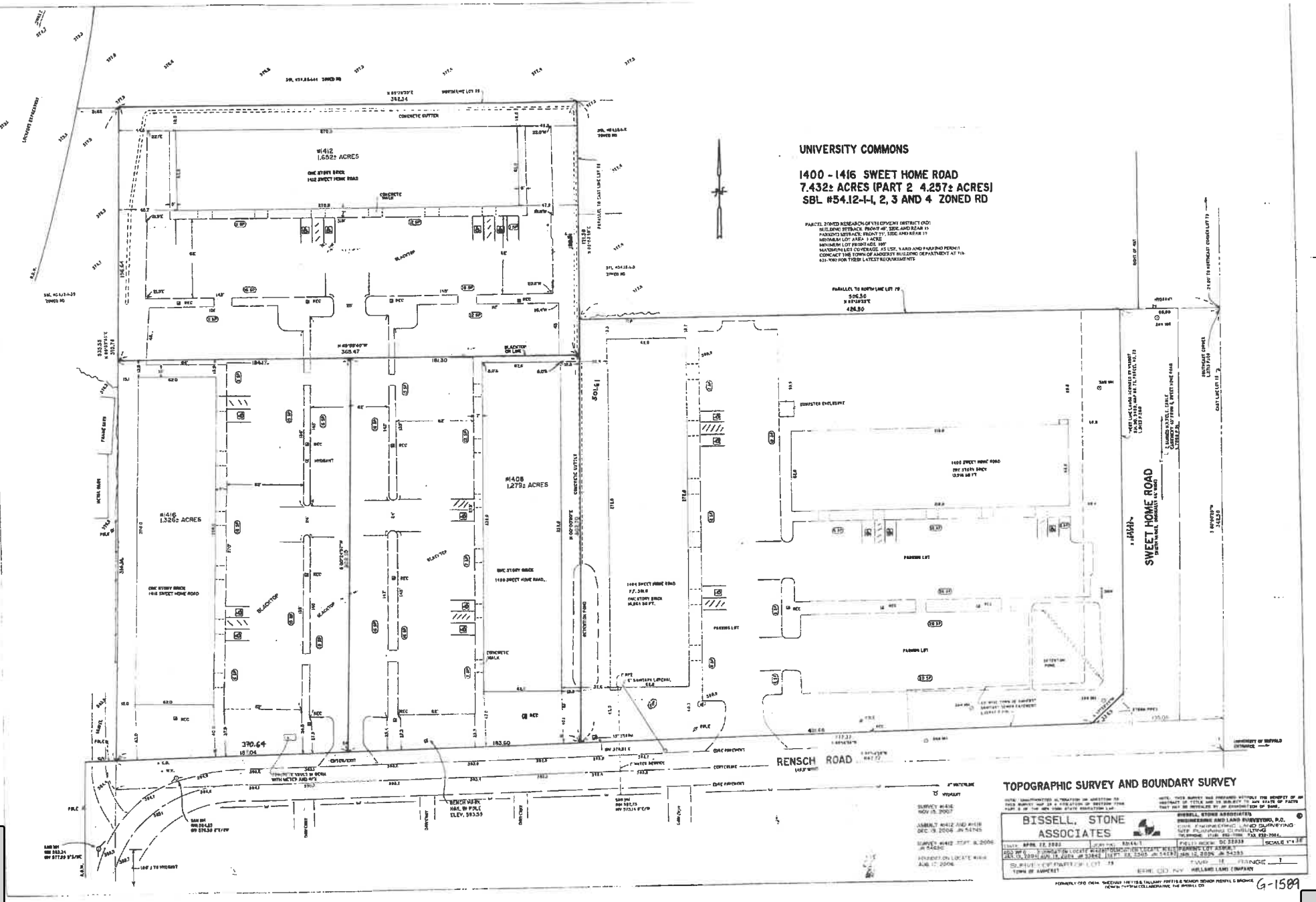
UNIVERSITY COMMONS
1400 - 1416 SWEET HOME ROAD
7.432± ACRES (PART 2 4.257± ACRES)
SBL #54.12-1-1, 2, 3 AND 4 ZONED RD
#1412
1.652± ACRES
#1416
1.326± ACRES
#1408
1.279± ACRES
SWEET HOME ROAD
RENSCH ROAD
TOPOGRAPHIC SURVEY AND BOUNDARY SURVEY
BISSELL, STONE ASSOCIATES
G-1589

Exhibit 5 – Responses to Questions 11A & 11B of the Rezoning Application

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EXHIBIT 5 OF AMENDED REZONING APPLICATION

RESPONSES TO QUESTION 11 OF REZONING APPLICATION REZONING OF 1400-1404 AND 1408-1416 SWEET HOME ROAD FROM RD TO CTR-5 AND CTR-8

Question 11(A): **Description of the character of the proposed development:**

Response to Question 11(A): The proposed mixed-use project will be upscale in character and will feature an eight-story mixed use building along the Sweet Home Road frontage of the Project Site and two five-story buildings on the remainder of the Project Site. The existing office buildings located on the Project Site would be demolished in connection with the mixed-use redevelopment project. The proposed mixed-use redevelopment project requires the zoning classification of the Project Site to be amended from Research Development District ("RD") to CTR-8 Center 8 District ("CTR-8").

The conceptual layout of the proposed mixed-use project is depicted on the full size Concept Site Plan [Drawing C-100] prepared by Carmina Wood Morris P.C. attached to this Rezoning Application. A reduced size copy of the Concept Site Plan is also provided at **Exhibit "7"**. It is important to mention that the layout of the proposed project as depicted on the Concept Site Plan provided is not meant to represent the final layout of the proposed mixed-use redevelopment project since modifications may be necessary based on the project review process and the preparation of fully engineered plans.

The proposed mixed-use redevelopment project will be consistent with the character of nearby parcels that have been rezoned by the Town during the past decade including the nearby student housing communities and mixed-use projects on properties on the west side of Sweet Home Road consisting of commercial space, apartments and hotels. Landscaping will be provided pursuant to a Landscaping Plan to be prepared by a licensed landscape architect during the site

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plan review stage of the project and the landscaping will feature numerous trees, bushes and shrubs.

Question 11(B)(1): Rationale for rezoning request: 1. What was this site chosen?

Response to Question 11(B)(1): The Project Site is an appropriate location for the proposed project given the character and scale of nearby land uses and the close proximity to the University of Buffalo North Campus. A primary reason the Project Site was selected for the proposed mixed-use project is that it is designated as "Suburban Corridor" per Figure 6-A of the Comprehensive Plan.

Question 11(B)(2): Why cannot land be used with the existing zoning?

Response to Question 11(B)(2): The Project Site is currently zoned Research and Development ("RD") and can continue to be utilized as an office park. The Applicant is requesting that the Project Site be rezoned to CTR-8 to accommodate the proposed mixed-use project. Nearly all of the nearby parcels on both sides of Sweet Home Road and Rensch Road in close proximity to the Project Site were rezoned to RD by the Town of Amherst in 1976, at the time the Town adopted a new zoning code.

The planning objective at that time was to provide RD zoned land that would accommodate uses that would benefit from close proximity to the UB North Campus. The development of the Project Site and parcels in the surrounding vicinity for research and development purposes did not occur and as a result the zoning classification of most of the properties in the vicinity have been amended in the past approximately fifteen years to accommodate existing land uses such as a hotel being constructed on GB zoned property at 1265 Sweet Home Road, the mixed-use projects on Rensch Road and the Villas on Rensch student housing community, located on approximately

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twenty acres of property that was rezoned from RD to Multi Family Residential District Six ("MFR-6") by the Town Board in August of 2007.

The redevelopment of the Project Site for the higher intensity uses expressly permitted by the existing RD zoning classification would not be compatible with the existing character of the neighborhood. The existing RD zoning classification expressly allows large buildings to accommodate uses that involve high intensity commercial and industrial operations and that often involve 24/7 business hours as well high volume use of large tractor trailers. The expressly permitted uses of property zoned Research and Development ("RD") is set forth in Section 4-9-2A of the Zoning Code and includes intensive commercial facilities for the compounding, manufacturing and assembly of products such as automotive accessories, clothing and textiles, electronic equipment and appliances, furniture, medical and scientific equipment and supplies, pharmaceutical products as well as experimental research and testing facilities, warehouses and storage facilities and wholesale distribution facilities. A copy of Section 4-9 of the Zoning Code has been attached as **Exhibit "8"** of this Amended Rezoning Application.

Question 11(B)(3): How will this rezoning impact surrounding properties?

Response to Question 11(B)(3): The proposed rezoning of the Project Site from RD to CTR-8 will not result in any significant adverse impacts on surrounding properties. The proposed mixed-use project will be much more compatible with the existing land uses in the vicinity of the Project Site than the higher intensity uses expressly permitted by the existing long-standing RD zoning classification.

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Question 11(B)(4): How will this rezoning impact the school system?

Response to Question 11(B)(4): The proposed mixed use project will have a positive impact on the Sweet Home Central School District since the property taxes that will be generated on an annual basis will be significantly higher than the current property taxes. The proposed project will not result in any significant increased demand for educational services since the proposed multifamily units are not likely to attract a substantial number of families with school age children.

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Exhibit 6 – Responses to Questions 16A, 16B, 16D & 16E of the Rezoning Application

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EXHIBIT 6 OF AMENDED REZONING APPLICATION

RESPONSES TO QUESTION 16 OF REZONING APPLICATION REZONING OF 1400-1404 AND 1408-1416 SWEET HOME ROAD FROM RD TO CTR-8

Question 16(A)(1): **State in detail why the proposed zoning is consistent with the adopted Town of Amherst Bicentennial Comprehensive Plan. Cite specific sections, maps and/or figures in the plan that support the proposed zoning at this location.**

Response to Question 16(A)(1): The request to amend the zoning classification of 1400-1404 and 1408-1416 Sweet Home Road from RD to CTR-8 (collectively the "***Project Site***") to accommodate the proposed mixed-use redevelopment project is consistent with the adopted Bicentennial Comprehensive Plan. The Town of Amherst adopted the Bicentennial Comprehensive Plan in January of 2007 after completing a lengthy planning process that included numerous public meetings and public hearings involving the Comprehensive Plan Advisory Committee, the Planning Board and the Town Board.[1] In December of 2020, the Town Board most recently adopted amendments to the Bicentennial Comprehensive Plan. The Comprehensive Plan is intended to guide future growth and redevelopment in the Town.

Figure 6 of the Bicentennial Comprehensive Plan is the Conceptual Land Use Plan and it depicts the Project Site as being as being appropriate for "Commercial/Mixed Use" uses. A copy of Figure 6 of the Comprehensive Plan is provided at **Exhibit "9"**. The Conceptual Land Use Plan is intended to communicate the overall direction and concept of future development in the Town

[1] A copy of the resolution adopted by the Town Board on January 2, 2007 for the purpose of adopting the Bicentennial Comprehensive Plan pursuant to Town Law Section 272-a is included at the beginning of the Comprehensive Plan. This resolution recites the lengthy planning history that incorporated numerous opportunities for public input as well as a coordinated environmental review pursuant to SEQRA that involved the preparation a Generic EIS and the issuance of a Findings Statement.

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of Amherst. Figure 6-A of the adopted Bicentennial Comprehensive Plan is the titled Commercial and Mixed-Use Designations and it depicts the Project Site as being designated as "Suburban Center". The Project Site is located within the University Place geographic location per Figure 6-A of the Comprehensive Plan. A copy of Figure 6 of the Comprehensive Plan is provided at **Exhibit "10"**.

Question 16(A)(2): Cite all text, map, and/or figures that must be amended to support the proposed zoning at this location and provide detailed suggested amendments.

Response to Question 16(A)(2): The proposed rezoning of the Project Site from RD to CTR-8 to accommodate the proposed mixed-use redevelopment project does not require an amendment to the Bicentennial Comprehensive Plan.

Question 16(A)(3): State why the proposed zoning is consistent with intent and objectives (Sec. 1-2-2) of the Zoning Ordinance:

Response to Question 16(A)(3): Section 1-2-1 of the Zoning Code is titled "Purpose" and it states as follows:

> *"The purpose of this Zoning Ordinance and the intent of the legislative authority in its adoption is to promote the environment of the town and its public health, safety, convenience, comfort, prosperity and the general welfare by regulating the use of buildings, other structures and land for residences, open space, public facilities, business, services, industry or other purposes; by regulating and restricting the bulk, height, design, building coverage and location of structures; by regulating and limiting population density; and for the aforesaid purposes, to divide the land within the limits of the town into districts of such number and dimensions generally consistent with the policies of the Comprehensive Plan and to provide procedures for the administration and amendment of said Zoning Ordinance."*

The proposed rezoning of the Project Site RD to CTR-8 to accommodate the proposed mixed-use redevelopment project is consistent with the "Purpose" of the Zoning Code. Section 1-

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2-2 of the Zoning Code sets forth the objectives of the Zoning Code. This section of the Zoning Code lists thirteen objectives that are discussed below as follows:

A. To protect the character and values of residential, institutional and public uses, business, commercial and manufacturing uses and to insure their orderly and beneficial development;

Response: The proposed rezoning of the Project Site from RD to CTR-8 to accommodate the mixed-use redevelopment project will be consistent with the objective of protecting the character and value of existing land uses. The proposed rezoning will allow the Project Site to be utilized as a mixed-use project, which represents orderly and beneficial development.

B. To provide adequate open spaces for light, air and outdoor uses to include public, common and private open space areas;

Response: The proposed rezoning of the Project Site and the proposed mixed-use project will not be inconsistent with this objective.

C. To prevent overcrowding of land;

Response: The proposed mixed-use project will not result in the overcrowding of land. The project is consistent with the type of development designated as appropriate for the Project Site per Figure 6 and Figure 6-A of the adopted Comprehensive Plan.

D. To prevent excessive concentration of population and to prevent spare and uncoordinated development;

Response: The proposed rezoning of the Project Site will not result in excessive concentration of population and the mixed-use redevelopment project represents an example of coordinated development. The mixed-use redevelopment project will require Site Plan Approval from the Planning Board.

E. To regulate and control the location and spacing of buildings on the lot and in relation to the surrounding property generally consistent with the policies of the Comprehensive Plan.

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Response: The responses to the Questions in this **Exhibit "6"** of the Amended Rezoning Application set forth the reasons the proposed rezoning is consistent with the policies of the Comprehensive Plan.

F. To protect persons and property from damage and injury due to fire or flood;

Response: The Site Plan Application review process will trigger the need for an Engineer's Report and SWPPP prepared by a licensed engineer to be prepared for review and approval by the Town's Engineering Department. The mixed-use redevelopment project to be located on the existing office park property will not increase the likelihood of damage and injury due to fire and flood. The proposed mixed-use redevelopment project will be constructed per the stringent requirements of the NYS Building Code including the fire safety standards contained therein.

G. To preserve and protect significant natural features and vegetation, thereby preventing ecological damage and visual blight which occur when those features or vegetation are eliminated or substantially altered to serve development purposes only.

Response: The proposed rezoning and the proposed mixed-use redevelopment project will not be inconsistent with this objective. There are not significant natural features located on the previously developed Project Site.

H. To assure that structure and land use arrangements are aesthetically harmonious with nearby areas and structures.

Response: The development of the Project Site in a manner consistent with the attached Concept Site Plan [Drawing C-100] will be aesthetically harmonious with nearby areas and structures. Conceptual color building renderings prepared by Brian Slevar, R.A. of Carmina Wood Design are attached as **Exhibit "11"**. The color building renderings will be updated based on the modifications to the project layout depicted on the updated Concept Site Plan included with this Amended Rezoning Application.

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I. To regulate the location of buildings and intensity of uses in relation to streets according to plans so as to cause the least interference with and be damaged least by traffic movements and hence result in lessened street congestion and improved public safety.

Response: The proposed mixed-use project will have two (2) driveway connections onto Rensch Road as depicted on the Concept Site Plan [Drawing C-100].

J. To establish zoning patterns that insure economical extensions for sewers, water supply waste disposal and other public utilities, as well as development of recreation, schools and other public facilities;

Response: The Project Site has access to sanitary sewer and water lines as well as necessary public utilities to service the proposed mixed-use redevelopment project.

K. To guide the future development of the town so as to being the gradual conformity of land, structures and uses generally consistent with the policies of the Comprehensive Plan.

Response: The proposed rezoning of the Project Site from RD to CTR-5 and CTR-8 is consistent with this objective since the infill mixed-use redevelopment project is consistent with the policies contained in the Comprehensive Plan.

L. To accomplish the specific intents and goals set forth in the introduction to the respective sections.

Response: The proposed rezoning of the Project Site will be consistent with this objective.

M. To protect the community from visual pollution resulting from the unregulated use of signs and other advertising devices.

Response: The proposed rezoning and the proposed mixed-use redevelopment project will not be inconsistent with this objective.

Question 16(C): Compatibility with the present zoning and conforming uses of nearby property and with the character of the neighborhood:

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Response to Question 16(C): The proposed rezoning of the Project Site from RD to CTR-8 is compatible with the present zoning and conforming uses of nearby properties and the character of the neighborhood. The Project Site is currently zoned RD which would allow the Project Site to be redeveloped for intensive uses permitted per Section 4-9 of the Zoning Code. A copy of Section 4-9 of the Zoning Code is provided at **Exhibit "8"**.

Question 16(D): Suitability of the subject property for uses permitted by the current versus the proposed district:

Response to Question 16(D): The Project Site is much more suitable for uses permitted by the proposed CTR-5 and CTR-8 zoning classifications than the existing RD zoning classification.

Question 16(E): Whether the proposed change tends to improve the balance of uses, or meets a specific demand in the Town:

Response to Question 16(D): The proposed change in the zoning classification of the Project Site from RD to CTR-8 to accommodate the proposed mixed-use redevelopment project will have positive impacts on the balance of uses in the Town by providing 1st floor commercial space and apartments for lease at an infill location in a portion of the Town in close proximity to the UB North Campus that has been designated as appropriate for mixed-use infill redevelopment as depicted on the Concept Site Plan [Drawing C-100].

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Exhibit 7 – Reduced Size Copy of the Concept Site Plan [Drawing C-100] as Prepared by Carmina Wood Morris DPC
[Note: Full Size Copy of the Concept Site Plan also attached]

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

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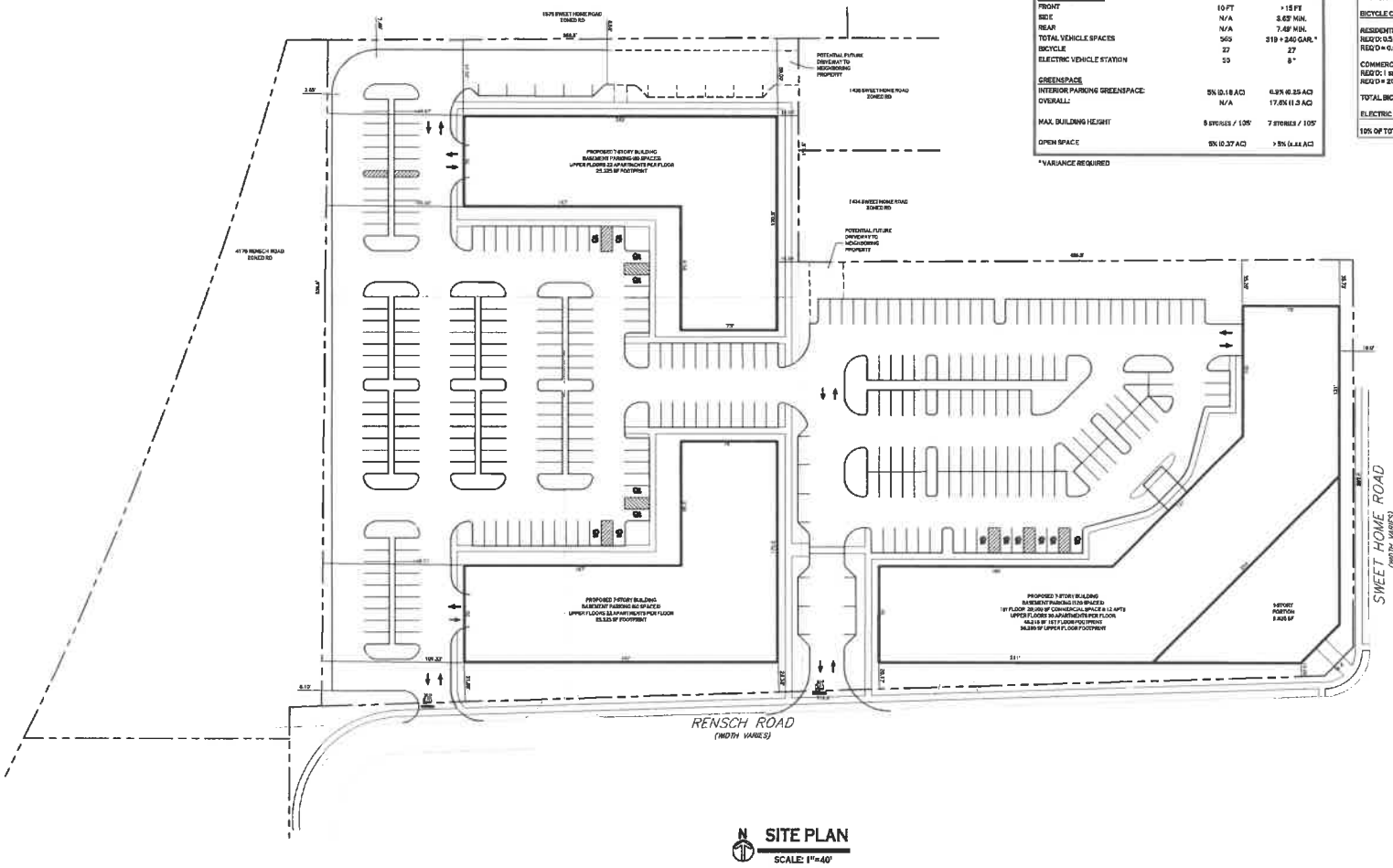

N

SITE PLAN

SCALE: 1"=40'

SITE DATA

SITE AREA = 7.4 AC
ZONED RD, REZONED TO CTR-8
USE: PROPOSED (5) 7-STORY RESIDENTIAL BUILDINGS
500 RESIDENTIAL UNITS, 20,000 SF COMMERCIAL

SETBACKS - BUILDING	REQUIRED	PROVIDED
FRONT	5 FT	10.0' MIN.
SIDE	NONE	16.08' MIN.
REAR	NONE	57.52' MIN.
ACCESSORY STRUCT.	NONE	N/A
SETBACKS - PARKING		
FRONT	10 FT	> 15 FT
SIDE	N/A	3.63' MIN.
REAR	N/A	7.49' MIN.
TOTAL VEHICLE SPACES	565	319 + 240 GAR.*
BICYCLE	22	27
ELECTRIC VEHICLE STATION	50	8*
GREENSPACE		
INTERIOR PARKING GREENSPACE:	5% (0.18 AC)	6.8% (0.25 AC)
OVERALL:	N/A	17.6% (1.3 AC)
MAX. BUILDING HEIGHT	5 STORIES / 105'	7 STORIES / 105'
OPEN SPACE	5% (0.37 AC)	> 5% (1.44 AC)

*VARIANCE REQUIRED

PARKING CALCULATION (PER SECTION 5A-9-1-4)

RETAIL SALES: (10,000 GSF)
REQ'D: 2.5 PER 1,000 SF
REQ'D = (10,000 / 1,000) x 2.5 = 25 SPACES REQ'D

OFFICE: (10,000 GSF)
REQ'D: 2.5 PER 1,000 SF
REQ'D = (10,000 / 1,000) x 2.5 = 25 SPACES REQ'D

APARTMENTS/TOWNHOMES:
REQ'D: 1 SPACE PER 2-BDRM UNIT = 1 x 470 UNITS = 470 SPACES
1.5 SPACE PER 3-BDRM UNIT = 1.5 x 30 UNITS = 45 SPACES
REQ'D = 565 SPACES REQ'D

TOTAL PARKING SPACES REQUIRED = 565 SPACES

BICYCLE CALCULATION (PER SECTION 5A-9-1-4)

RESIDENTIAL:
REQ'D: 0.5 PER UNIT (50 MAX.)
REQ'D = 0.5 x 500 = 250 THEREFORE 20 SPACES REQ'D.

COMMERCIAL:
REQ'D: 1 SPACE PER 3,000 SF
REQ'D = 20,000 / 3,000 = 7 SPACES REQ'D

TOTAL BICYCLE SPACES REQUIRED = 27 SPACES

ELECTRIC VEHICLE CALCULATION (PER SECTION 5A-9-1-5)

10% OF TOTAL PARKING = 500 x 0.1 = 50 SPACES REQ'D.

SITE LEGEND

- PROPERTY LINE
- PROPOSED CONCRETE CURB
- PROPOSED CONCRETE SIDEWALK
- PROPOSED SIGN
- PROPOSED PARKING NUMBER (27)
- PROPOSED LIGHT POLE & FIXTURE

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD DESIGN ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

40' 40 0 40 80FT.

CARMINAWOOD DESIGN
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Buffalo, New York 14203
Phone: (716) 842-1345
111 Bain Street, Suite 332
Greensboro, North Carolina 27406
Phone: (336) 937-8509

Mixed Use Development

1400 - 1416 Sweet Home Road
Amherst , New York
SBL No.

REVISIONS:

No.	Description	Date

DRAWING NAME:
Concept Site Plan

Date: 07.19.22
Drawn By: C. Wood
Scale: As Noted

DRAWING NO.
C-100

Project No: 21.008

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Exhibit 8: Copy of Section 4-9 of the Town of Amherst Zoning Code [Titled "Research & Development District (RD)"]

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§ 4-9. Research and Development District (RD)

4-9-1. **Purpose.** To provide areas within the Town for the location of research and development, related production activities, light manufacturing, offices, and related training schools on sufficient land to permit efficient development. Such districts shall be designed and located in such a way that they shall neither encroach upon surrounding uses nor shall surrounding uses interfere with the efficient development of these activities. The RD district is designed to encourage the development of a balanced employment mix within the Town and improve the Town's tax base while providing sufficient educational opportunities to contribute to the training of the workforce and thereby meet the employment needs of businesses locating in the Town.

4-9-2. **Principal and Special Uses.**

A. **Permitted Uses and Structures.**

RD	Permitted	Special Use	Standards
OPEN USES			
No open uses allowed			
RESIDENTIAL USES			
No residential uses allowed			
PUBLIC AND CIVIC USES			
Day-care center	✓		§ 6-3-2
Minor utilities	✓		
Place of worship	✓		§ 6-3-3
Public utility service structure or facility		✓	§ 6-3-4
Public works construction yard **[Added 12-7-2009 by L.L. No. 19-2009]**	✓		§ 6-3-5
Telecommunication facility		✓	§ 6-7
COMMERCIAL			

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§ 4-9

RD	Permitted	Special Use	Standards
Ambulance Service **[Added 2-24-2014 by L.L. No. 3-2014]**	✓		
Bank	✓		
Dog day care facility **[Added 10-17-2011 by L.L. No. 25-2011]**	✓		§ 6-4-13 **[Amended 11-5-2012 by L.L. No. 17-2012]**
Medical laboratory testing service	✓		
Office	✓		
Training school such as technical, trade, vocational or business	✓		
Truck service, wash, and repair **[Added 8-9-2021 by L.L. No. 11-2021]**	✓		§ 6-4-14
INDUSTRIAL			
Compounding, manufacturing and assembly of:			
Automobile and boating accessories from previously prepared materials			
Clothing or other textile products			
Electrical and electronic equipment and appliances			
Food and beverage products			
Household items, furniture	✓		
Musical, scientific, medical, dental or photographic instruments, equipment or supplies			
Office equipment			
Panels, sheets, tubes or rods			

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RD	Permitted	Special Use	Standards
Pharmaceutical products, cosmetics or toiletries Printing, publishing and engraving Recreation equipment or toys			
Experimental, research and testing facility	✓		
Ground-mounted solar energy systems, Tier III **[Added 12-11-2017 by L.L. No. 24-2017]**		✓	§ 6-10
Ground-mounted solar energy systems, Tier II **[Added 12-11-2017 by L.L. No. 24-2017]**	✓		§ 6-10
Research development facility	✓		
Tier I experimental pilot plant operation **[Amended 12-11-2017 by L.L. No. 24-2017]**	✓		
Warehousing and storage service	✓		
Wholesale distribution facility	✓		

B. **Dimensional Standards.**

For parcels 30 acres in size or more as of (effective date), the Planned Unit Development Process is required. See § 6-9. **[Added 5-20-2013 by L.L. No. 8-2013; amended 11-3-2014 by L.L. No. 39-2014]**

RD Principal & Accessory Use/ Structure Dimensional Standards		**Vehicle Use Area**
Min. district area	10 ac	
Min. lot area	1 ac	
Min. lot width	35 ft	
Min. front yard		

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

RD Principal & Accessory Use/ Structure Dimensional Standards		Vehicle Use Area
Height of structure for first 35 ft.	20 ft	25 ft*
Height of structure for any portion of building above 35 ft.	30 ft	25 ft*
Min. rear yard (abutting residential**/nonresidential)		
Height of structure up to 30 ft	See § 2-5-4B(3)/15 ft	25 ft* / 10 ft*
Height of structure 30 ft or more	See § 2-5-4B(3)/25 ft	25 ft* / 10 ft*
Min. side yard (abutting residential**/nonresidential)		
Height of structure up to 30 ft	See § 2-5-4B(3)/ 15 ft	25 ft* / 10 ft*
Height of structure 30 ft or more	See § 2-5-4B(3)/ 25 ft	25 ft* / 10 ft*
Max. height	65 ft	
Max. building coverage	None	
Min. interior building separation	30 ft	

*	The entire area must be landscaped.
**	R-R, S-A, R-1, R-2, R-3, CR-3A, TR-3, R-4, MFR-4A, MFR-5, MFR-6, MFR-7, PRD, PDD, PRD, NCD[1]

4-9-3. **Accessory Uses and Structures.**

A. **Permitted Accessory Uses and Structures.** The following accessory uses and structures incidental to any permitted principal use are allowed subject to the requirements of § 6-8, Accessory Uses or Part 7, General Development Standards.

RD Permitted Accessory Uses and Structures	Standards
Convenience Retail Service **[Added 12-14-2020 by L.L. No. 20-2020]**	§ 6-8-4
Day-care center	
Landscaping	§ 7-2

1. **Editor's Note: The diagram which immediately followed this table was repealed 2-8-2016 by L.L. No. 2-2016.**

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

RD Permitted Accessory Uses and Structures	Standards
Off-street parking, loading, and stacking	§ 7-1
Production operation accessory to a research or testing operation	
Restaurant without drive-through **[Added 12-14-2020 by L.L. No. 20-2020]**	§ 6-8-10
Retail sale of products assembled or stored on-site	§ 6-8-11
Solar energy systems **[Added 12-11-2017 by L.L. No. 24-2017]**	§ 6-10
Signs	§ 7-8
Small wind energy system **[Added 8-17-2009 by L.L. No. 12-2009]**	§ 6-8-14
Other uses and structures customarily incidental to the principal use	

B. **Dimensional Standards.** The dimensional standards for an accessory use or structure shall be the same as those for the principal use in § 4-9-2B.

4-9-4. **General Development Standards.**

A. Interior side or rear yards separating parking, loading and stacking area from lot lines are not required for unified developments.

B. Development in the RD district shall also comply with the requirements referenced in the table below.

RD General Development Standards	
Off-Street Parking, Loading and Stacking	§ 7-1
Landscaping, Buffers and Screening	§ 7-2
Site Lighting	§ 7-3
Outdoor Storage and Display	§ 7-4
Fences and Walls	§ 7-5
Access and Circulation	§ 7-6
Provisions for Flood Hazard Reduction	§ 7-7
Sign Regulations	§ 7-8
Performance Standards	§ 7-9
Bulk Storage of Combustible or Flammable Liquids	§ 7-10

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Exhibit 9 – Color Copy of Figure 6 of the Bicentennial Comprehensive Plan

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Town of Amherst Bicentennial Comprehensive Plan

The Conceptual Land Use Plan is intended to communicate the overall direction and concept of future development. While it is not a zoning map and does not show the existing or proposed use of individual parcels, it is intended to show land use relationships, provide a generalized guide for future development, and establish a context for detailed area planning and design.

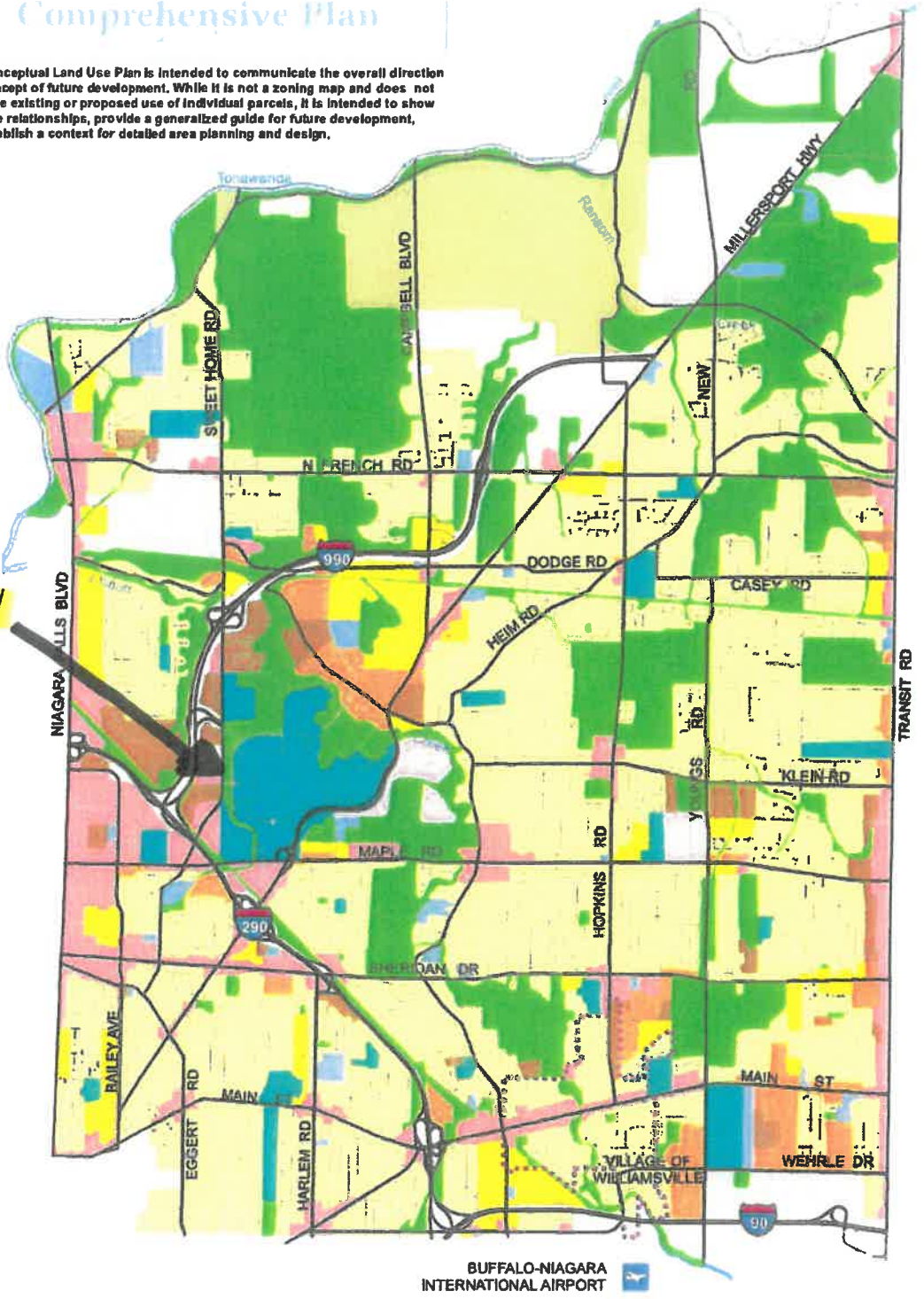


FIGURE 6

Conceptual Land Use Plan

- Rural Residential
- Single Family Residential
- Mixed Residential
- Medium Residential
- Commercial / Mixed Use*
- Special Use Center
- Commercial - Office
- Industrial - Office
- Community Facilities
- Educational Campus
- Recreation, Open Space & Greenways
- Agriculture
- Transportation
- Surface Water
- Village of Williamsville Boundary

* See Map Figure 6-A for Additional Designations

SOURCE NOTES:

Original Source Data Provided by the Town of Amherst Information Technology Department, URS Corporation and Wallace Roberts & Todd, LLC

Map Compiled by the Town of Amherst Planning Department

Date: December 2020

N

0 0.25 0.5 0.75 1 1.25

Miles

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

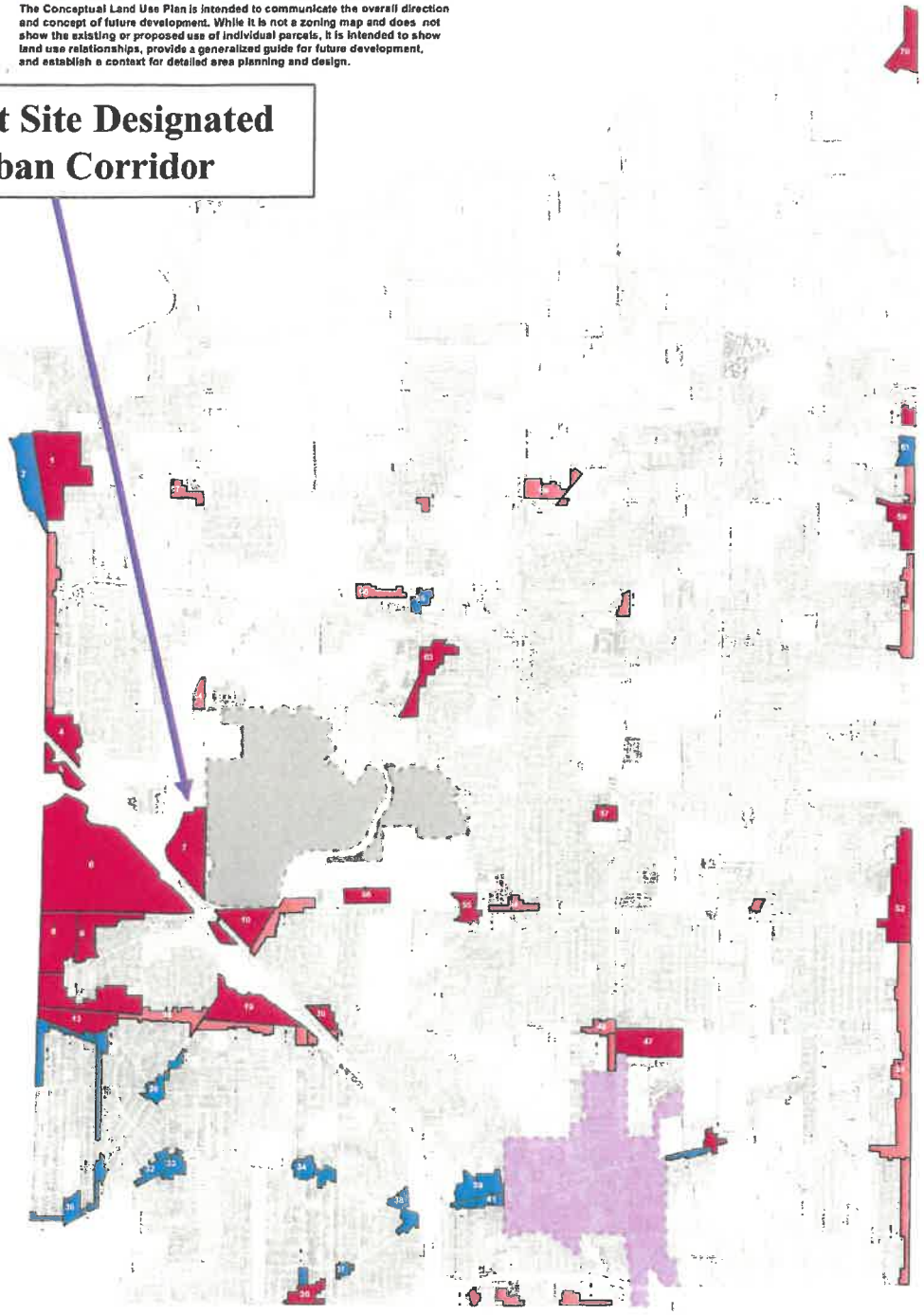
Exhibit 10 – Figure 6-A of the Comprehensive Plan

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Town of Amherst
Bicentennial
Comprehensive Plan

The Conceptual Land Use Plan is intended to communicate the overall direction and concept of future development. While it is not a zoning map and does not show the existing or proposed use of individual parcels, it is intended to show land use relationships, provide a generalized guide for future development, and establish a context for detailed area planning and design.

Project Site Designated Suburban Corridor



1 Wegmans (NFB)
2 Walgreens (NFB)
3 NFB / Ellicott Creek Strip
4 Home Depot (NFB)
5 Innkeepers Lane
6 Consumer Square / Ridge Lea
7 University Place
8 Boulevard Mall
9 Wegmans (Alberta)
10 Golden Triangle
11 Maple / Amherst Manor
12 Walmart (Sheridan)
13 Northtown Plaza
14 NFB Strip
15 Eggert Strip
16 Eggert / Bailey
17 Bailey Strip
18 Sheridan / Millersport Strip
19 Northtown Auto (Sheridan)
20 Sheridan / Sunrise - North Side
21 Sheridan / Sunrise - South Side
22 Sheridan / Harlem - West Side
23 Sheridan / Harlem - East Side
24 Sheridan / Getzville Strip
25 Millersport / Arcade
26 Six Corners
27 Bailey / Grover Cleveland
28 Bailey Live-Work
29 Main / Bailey
30 University Plaza
31 Kenmore Avenue
32 Eggertsville (Main / Eggert - West Side)
33 Eggertsville (Main / Eggert - East Side)
34 Snyder (Main / Harlem)
35 Harlem Strip
36 Harlem / Kensington
37 Kensington / Saratoga
38 Main / Kensington
39 West of Village - North of Main
40 West of Village - South of Main (West Side)
41 West of Village - South of Main (East Side)
42 Wehrle / South Forest
43 Wehrle / South Union
44 Wehrle / Cayuga
45 Sheridan / Hopkins
46 Evans Strip
47 Williamsville Place
48 Main Strip
49 Main / Youngs
50 Transit / Wehrle
51 Transit from Main to Maple
52 Transit / Maple
53 Maple / Ayer
54 Maple Strip
55 Maple / North Forest
56 Gun Club
57 Clearfield Plaza
58 Transit / Casey
59 Transit / North French
60 Transit / Dodge
61 Swormville
62 Hopkins / Dodge
63 Getzville Plaza
64 Sweet Home / Skinnersville
65 Campbell / Dodge
66 Dodge Strip
67 Sweet Home / North French
68 Campbell / North French
69 Crosspointe
70 Transit / Millersport
71 Transit Strip

FIGURE 6-A

Commercial and Mixed-Use Designations

- Suburban Center
- Suburban Corridor
- Traditional Areas
- Village of Williamsville
- University at Buffalo

SOURCE NOTES:

Original Source Data Provided by the Town of Amherst Information Technology Department, URS Corporation and Wallace Roberts & Todd, LLC

Map Compiled by the Town of Amherst Planning Department

Date: December 2020

0 0.2 0.4 0.6 0.8 1
Miles

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Exhibit 11: Color Conceptual Building Renderings Prepared by Brian Slevar, R.A. of Carmina Wood Morris DPC

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)



LOCAL LAW NO. _____-202_

TOWN OF AMHERST
COUNTY OF ERIE, STATE OF NEW YORK

A LOCAL LAW AMENDING CHAPTER 203 OF THE TOWN OF AMHERST CODE, KNOWN AS THE ZONING ORDINANCE TO REZONE 1400-1404 & 1408-1416 SWEET HOME ROAD FROM RD TO CTR-8 AND TO AMEND THE ZONING MAP ACCORDINGLY.

Be it enacted by the Town Board of the Town of Amherst as follows:

Section 1. Title.

This Local Law shall be referred to as, "A Local Law Amending Chapter 203 of Town of Amherst Code, Known As The Zoning Ordinance, to Rezone 1400-1404 & 1408-1416 Sweet Home Road from RD to CTR-8 and to Amend The Zoning Map Accordingly".

Section 2. Legislative Findings and Intent.

The Town Board of the Town of Amherst finds that an application to rezone 1400-1404 & 1408-1416 Sweet Home Road from RD to CTR-8 and to Amend the Zoning Map Accordingly has been filed and is in proper order. The Town Board further finds that the request including the rezoning is consistent with the Comprehensive Plan.

Section 3. Amherst Zoning Map.

The Town Board hereby amends its zoning map which is incorporated by reference in the Town zoning code by amending from 1400-1404 & 1408-1416 Sweet Home Road from RD to CTR-8, **subject to any conditions imposed by the authorizing resolution**; legally described as follows:

1400-1404 SWEET HOME ROAD [RD TO CTR-8]:

All that certain Piece or Parcel of Land, situate, lying and being in the Town of Amherst, County of Erie and State of New York, being Part of Lot 79, Township 12, Range 7 of the Holland Land Company's Survey, and being more particularly bounded and described as follows:

Commencing at a point in the east line of said Lot No. 79, 174.00 feet south of the northeast corner of said Lot No. 79, said point also being the southeast corner of Liber 2713 of Deeds at page 120, said east line also being the center line of Sweet Home Road (width varies, originally 66 feet wide); thence westerly along a line parallel to the north line of said Lot No. 79 and bearing S 89° 38' 35" W, 80.00 feet to a point in the

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

west line of lands acquired by the New York State Department of Transportation for Sweet Home Road S.H. No. 9409, Map No. 72, Parcel No. 75 the point or place of beginning; thence southerly along the west line of said Parcel No. 75 and bearing of S 00° 00' 20" W, 297.93 feet to a point; thence southwesterly along the west line of said parcel No. 75 and bearing S 47° 59' 05" W, 33.65 feet to a point in the north line of Rensch Road (49.5 feet wide); thence westerly along the north line of said Rensch Road and bearing S 88° 14' 38" W, 401.68 feet to the west line of deed recorded in the Erie County Clerk's Office on March 3, 2017 in Liber 11310 of Deeds at page 1116; thence northerly along a line parallel to the east line of said Lot No. 79 and bearing N 00° 00' 20" E, 330.11 feet to a point; thence easterly along a line parallel to the north line of said Lot No. 79 and bearing N 89° 38' 35" E, 426.50 feet more or less to the point or place of beginning and containing 3.175 Acres, more or less.

Excepting therefrom, that portion of premises acquired by the People of the State of New York by Notice of Appropriation dated May 20, 2005, recorded September 26, 2005 in Liber 11101 of Deeds, page 8475.

1408-1416 SWEET HOME ROAD [RD TO CTR-8]:

All that certain Piece or Parcel of Land, situate, lying and being in the Town of Amherst, County of Erie and State of New York, being Part of Lot 79, Township 12, Range 7 of the Holland Land Company's Survey, and being more particularly bounded and described as follows:

Commencing at a point in the east line of said Lot 79, 174.00 feet south of the northeast corner of said Lot 79, said point also being the southeast corner of Liber 2713 of deeds at page 120, said east line also being the centerline of Sweet Home Road (width varies, originally 66 feet wide); Thence westerly along a line parallel to the north line of said Lot 79 and bearing S 89° 38' 35" W, 80.00 feet to a point in the west line of lands acquired by the New York State Department of Transportation for Sweet Home Road S.H. No. 9409, Map No. 72, Parcel No. 75; Thence southerly along the west line of said Parcel No. 75 and bearing S 00° 00' 20" W, 297.93 feet to a point; Thence southwesterly along the west line of said Parcel No. 75 and bearing S 47° 59' 05" W, 33.65 feet to a point in the north line of Rensch Road (49.50 feet wide); Thence westerly along the north line of said Rensch Road and bearing S 88° 14' 38" W, 401.68 feet to the principal point of beginning; Thence continuing westerly along the north line of said Rensch Road and bearing S 88° 14' 38" W, 370.64 feet to a point; Thence northerly along a line bearing N 00° 55' 05" E, 510.78 feet to a point in the north line of said Lot 79; Thence easterly along the north line of said Lot 79 and bearing N 89° 38' 35" E, 362.34 feet to a point; Thence southerly along a line parallel to the east line of said Lot 79 and bearing S 00° 00' 20" W, 501.61 feet to the point or place of beginning and containing 4.257 Acres, more or less.

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Section 4. Validity.

This Local Law is adopted under the authority granted to the Town Board of the Town of Amherst pursuant to §§10(1)(ii)(a)(12), 20 and 27 of the Municipal Home Rule Law and §265 of the Town Law of the State of New York.

The invalidity of any provision of this Local Law shall not affect the validity of any other provision of this Local Law that can be given effect without such invalid provision.

Section 5. Effective Date.

This Local Law shall take effect immediately when it is filed in the Office of the Secretary of State in accordance with Section 27 of the Municipal Home Rule Law and published pursuant to Sections 130 & 133 of the Town Law and Chapter 28 of the Code of the Town of Amherst.

Francina J. Spoth
Town Clerk
Town of Amherst
County of Erie, State of New York

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

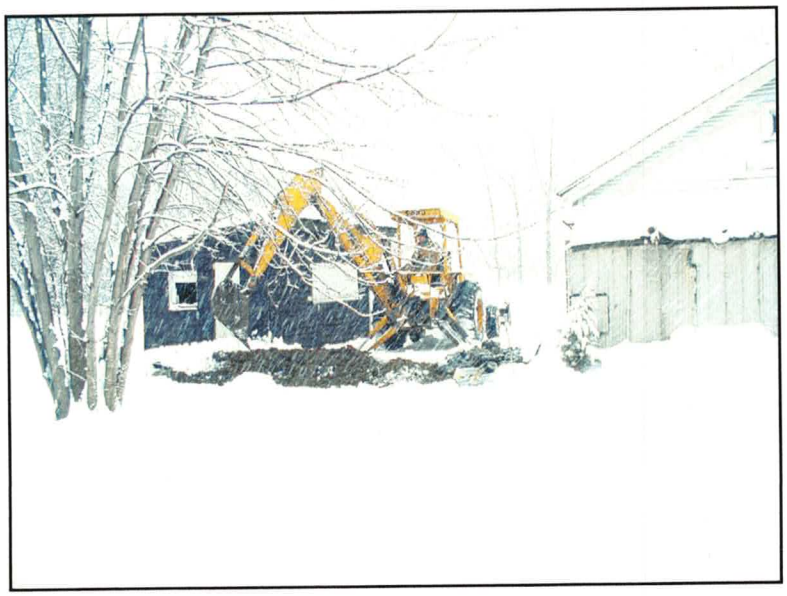
4180/4200 Rensch Rd
Amherst, New York

Geotechnical Engineering Report

GGE 04-5002

Prepared for:
North Forest Development, LLC
8201 Main Street, Suite 12
Williamsville, New York 14221

Prepared by:
Glynn Geotechnical Engineering
415 South Transit Street
Lockport, New York 14094





February 11, 2004

Civil • Structural • Geotechnical • Materials Testing • Consulting

GGE
a member of the GLYNN GROUP

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

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- C. Excavation and Backfill
- D. Mitigation of Expansive Soils
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- F. Expected Differential and Total Settlement
- G. Varying Soil Strength
- H. Site Class Definition
- I. General Recommendations

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- B Project Location Plan
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Civil • Structural • Geotechnical • Materials Testing • Consulting

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Civil • Structural • Geotechnical • Materials Testing • Consulting

I. INTRODUCTION

This report provides subsurface investigation data and foundation recommendations for the proposed building at 4180/4200 Rensch Road in the Town of Amherst, New York. Specifically, Glynn Geotechnical Engineering (GGE) has provided the following scope of services:

1. Observed the excavation of three test pits by North Forest Development.
2. Performed cone penetrometer testing at the proposed foundation subgrade to estimate an allowable bearing capacity.
3. Retrieved and classified soil samples in accordance with the Unified Soils Classification System (USCS) and prepared subsurface logs.
4. Provided laboratory testing on select samples to establish specific engineering properties and verify classifications.
5. Prepared a geotechnical report based on our findings.

This geotechnical study has been performed in accordance with a written January 13, 2004 GGE proposal and subsequent January 20, 2004 acceptance by North Forest Development. GGE was provided with a site plan from North Forest Development to aid in our efforts.

Project efforts by GGE included test pits, penetrometer testing, laboratory testing, USCS classification, site class definition and the preparation of this report. The scope of this report specifically excludes any review of former site use, in particular, environmental or pollution related concerns.

II. PROJECT BACKGROUND

The project site is located on Rensch Road in the Town of Amherst, New York, specifically at addresses 4180 and 4200. The site is relatively flat and currently occupied by two houses on the southern portion of the property and dense forest on the northern portion of the property. The existing houses will be demolished prior to construction of the proposed development. As seen on the Floodplain and Wetland Location Plan located in Appendix E, the site is not located within a floodplain or within a state wetland.

The development is to consist of three office buildings with associated parking areas. To accommodate for the low site elevation and to provide the necessary grades for sanitary and storm sewers, North Forest Development plans to raise the existing site elevation by 2 to 3 feet.

III. SITE GEOLOGY

The underlying geological conditions at the site are the result of the last glacial advance of the Pleistocene Epoch, known as the Wisconsinan Glacial Stage. As the glaciers transgressed across the Western New York terrain, they carved and crushed the underlying existing soil and rock to form glacial till.

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The surficial geology of the Rensch Road site is characterized by a thin stratum of clayey lake sediment overlying glacial till and shallow bedrock. The bedrock consists of shale, dolostone and gypsum of the Late Silurian Salina Group.

The Erie County Soil Survey identifies the site soils as belonging to the Churchville silt loam (CoA). This soil is deep and somewhat poorly drained, consisting of a thin mantle of clayey lake sediment underlain by glacial till. The soil is characterized by a slow permeability and a perched seasonal water table in the upper subsoil from December through May, which may lead to ponding in some areas. A Soil Survey Plan has been included in Appendix D for reference.

IV. FIELD INVESTIGATION AND SUBSURFACE CONDITIONS

Site investigation efforts consisted of three test pits performed by North Forest Development on January 27, 2004 and observed by GGE. One test pit was performed at each building location to provide the subsurface information necessary for the construction of all three buildings as well as satisfy the Town of Amherst preliminary geotechnical requirements of one soil boring per every 3.5 acres of site. A Site Plan indicating test pit locations can be found in Appendix C. GGE is confidant the extent of the investigation was sufficient to accurately characterize the subsurface conditions and provide the information necessary to prepare this report.

The subsurface soils were classified by GGE and assigned Unified Soil Classification System (USCS) classifications in accordance with ASTM D 2488 "Description and Identification of Soils (Visual – Manual Procedure)".

Subsurface conditions are generally characterized as follows:

0.0' – 1.0'	Dark brown topsoil.
1.0' – 3.0'	Moist, brown and tan, slightly mottled, stiff, silt (ML).
3.0' – 6.0'	Moist, light tan and gray, slightly mottled, stiff, sandy, silty clay with gravel (CL-ML) and bedrock fragments.
	Shale bedrock was encountered at a depth of 6.0 feet in all test pits with the exception of TP-2, where gypsum was encountered.

Clay fill was encountered in test pit TP-1. The original topsoil layer existed at a depth of 1.0 to 2.0 feet below the existing ground elevation. The removal of this material is imperative below any structural areas, including foundations, slabs on grade and parking facilities.

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Free groundwater was not encountered upon completion of the test pit excavations. The groundwater table is believed to be below the elevation of the bedrock. However, the slow permeability of the fine-grained soils will likely produce a perched water table at or near the ground surface during and after storm events and throughout winter and spring months. See section I.10 of this report.

Specific subsurface conditions can be found in Appendix A, Soil Investigation Logs. Laboratory testing data for select samples can be found in Appendix F.

V. GEOTECHNICAL EVALUATION AND FOUNDATION RECOMMENDATIONS

A. Bearing Capacity and Foundation Recommendations

The site subsurface conditions will permit the construction of a shallow foundation system consisting of conventional strip and spread footings. Due to the importation of fill to raise the site elevation, the footings will bear at an elevation of approximately 1.0 foot below existing grade on the compact silt directly beneath the surficial topsoil. All surficial topsoil must be removed from beneath structurally loaded areas. Based on a settlement criterion of 1.0 inch, the allowable bearing capacity for this material has been estimated by GGE to be 4000 psf. The bearing capacity was tested in the field using an ELE cone penetrometer.

The contractor must remove all buried topsoil located in the vicinity of TP-1 prior to constructing foundations.

B. Pavement and Slabs on Grade

GGE recommends that all slabs be designed using a recognized standard procedure. The text "Designing Floor Slabs on Grade" by Ringo and Anderson (ASBM 0-924659-34-3) identifies several methods of floor slab design. Slabs on grade and pavement will be constructed on imported fill due to the proposed elevation of the site finished grades.

Design and construction of floor slabs should be based on the following minimum recommendations:

1. Remove all topsoil and organic subsoil including buried topsoil encountered in the vicinity of TP-1.
2. Proof roll subgrade and replace yielding or "boiling" soils. Do not place any fill over saturated ground.

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3. Compact imported fill soil to 95% of the modified proctor maximum density (ASTM D-1557), at a moisture content within 2% of optimum.
4. Place one 6" lift of select structural fill (NYSDOT Item 304.2.02, Type 4). Compact all fill as specified in item 3 above.
5. Install structural concrete floor slab. Provide sufficient joints and flexibility at perimeter walls.

Design and construction of pavement should proceed in accordance with generally accepted criteria as follows:

1. Remove all topsoil, organic subsoil and debris including buried topsoil encountered in the vicinity of TP-1.
2. Proof roll subgrade to reveal soft and yielding soil. Use a fully loaded 10-wheel dump truck weighing at least 30 tons or a smooth drum roller having an effective force of at least 600 pounds per linear inch of roller width. Any area exhibiting deflections in excess of 0.5 inches or rutting should be classified as unsuitable. These areas should be reworked and compacted to produce an acceptable response or over excavated and replaced with suitable fill. The depth of the undercut and type of soil fill will depend on the soil material encountered, weather conditions and the bearing conditions at the base of the undercut. The site geotechnical engineer must consider each factor if the above conditions are encountered.
3. Install ditches, lateral drains, weeps and storm drainage piping. Backfill over the pipe bedding stone with native soils.
4. Place common fill as necessary to achieve design subgrade. Common fill can be any soil or processed material except Silt soil – USCS designation ML. The top 12 inches must be structural fill. Compact all fill to a minimum 95% of the maximum modified proctor density (ASTM D-1557-78), within a moisture range of 2% $\pm$ of the optimum moisture content. The top surface of the subgrade must be "sealed" with a smooth drum roller and pitched to drain such that the embankment soils cannot become saturated.
5. Once the subgrade has been established, the surface should be covered by a suitable geotextile selected for drainage and reinforcement properties. The geotextile shall have minimum (MARV) strength properties meeting the requirements of an AASHTO M 288-96 Class 2 geotextile. The material shall also have a minimum permittivity of 0.05 sec^{-1} and an AOS of less than 0.6 mm. Installation shall conform to the manufacturers recommendation for overlap.
6. Construct flexible pavement system as follows: (or equivalent structural system)

   a) Minimum 12 inch thick layer of 2" crushed stone meeting requirements of NYSDOT item 304-2.02, type 4 and the well graded qualifications of ASTM D-2487. Compact

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with a minimum of 5 passes of a smooth drum vibratory roller having an effective load of 600 pounds per linear inch. The finished surface should be uniform and dense. Avoid handling procedures that cause segregation.

b) Minimum 3 inch asphalt concrete binder, NYSDOT item 403.13, type 3.

c) Minimum 1-1/2 inch asphalt concrete top, NYSDOT item 403.18 or 403.19.

In the event the binder layer is used as a working surface for access to buildings under construction the surface must be power washed, not just swept, and a tack coat should be applied prior to installation of the top course. In addition, any yielding area of pavement binder should be removed and replaced prior to application of the top course.

All site contractors should be notified that roadways and parking areas will not support repeated travel by construction loads. Pavement and subgrade failure can be anticipated in areas that receive a high volume of heavy construction traffic. To preclude the overstressing of the pavement system it is recommended that haul roads be located in non-critical areas. As an option, the base course of stone can be overbuilt to a total thickness of twenty (20) inches to serve as a haul route. The additional thickness of stone and all areas of soil material that has contaminated the stone base should be removed prior to paving. Failure to remove fine grained soils from the stone base may cause pavement distress in the form of heaving resulting from freeze thaw effects.

Note that post construction heaving and cracking of pavement is often the result of poor compaction around catch basins and behind curbs. Loose material around these areas allows surface water to migrate beneath the pavement, providing increased potential for heaving due to ice build up during winter months and deterioration of the parking base during warmer months. The contractor should make sure to properly compact these areas. Also, weep holes should be installed into the bottom of catch basins to permit the drainage of any water that does manage to migrate beneath the pavement.

C. Excavation and Backfill

Excavation will basically consist of the removal of topsoil in most locations and the removal of buried topsoil in the vicinity of TP-1. The buried topsoil is typically covered by approximately 1.0 foot of soft clay. Excavation efforts are anticipated to be easy.

If deeper excavations are to be performed, the contractor should be sure to comply with OSHA standards. The soil encountered at this site should be classified by an OSHA competent person in accordance with 29 CFR, Part 1926, OSHA Subpart P, "Excavations and Trenches" prior to and during excavation.

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From the testing and investigation program, GGE estimates the site soils can be classified as Type B under the OSHA classification guidelines. This classification may change depending on other site criteria and moisture conditions at the time of construction. An OSHA competent person should judge the potential need for excavation bracing and excavation geometry in the field.

Native soils may be used for general fill against the foundation walls once the concrete has properly cured. All fill soil should be placed in lifts and compacted, with care taken not to damage the foundation walls. The fill at grade elevation should be sloped to drain away from the foundation walls to eliminate the potential for standing water to accumulate along the foundation. Note that drying of the native soils may be required to achieve optimum compaction.

C. Mitigation of Expansive Soils

Subsurface soils at this site are predominantly silt (ML) and silty clay with gravel (CL-ML). Some clay soils undergo volumetric change (shrinkage and swelling) with changes in moisture and degree of saturation, particularly soils classified as fat clay (CH). Fat clay is classified as a soil with a liquid limit of 50 or greater. The liquid limit is the water content, in percent, of a soil that defines the boundary between the plastic and viscous fluid states. The subsurface soils encountered at this site do exhibit characteristics of soils with a high shrink/swell potential.

D. Mitigation of the effects of Liquefaction

Liquefaction is the process where saturated cohesionless (granular) soils, specifically, fine sands and silts, transform from a solid into a liquid as a result of an increase in the pore water pressure caused by repeated disturbance such as experienced during seismic events. Liquefaction results in an immediate loss of shear strength, and thus, bearing capacity, causing total and differential settling due to a quick consolidation of the soils.

The soils located at the footing subgrade and below at this site are silts and silty clays and do not pose a concern for liquefaction. Soils with a silt and clay content in excess of 35% typically do not have the potential to liquefy. As seen in Appendix F, the subgrade material falls outside of the specification window for liquefaction potential as identified on the grain size analysis.

E. Expected Total and Differential Settlement.

Load induced total settlement for foundations bearing on undisturbed native soil is estimated to be primarily long-term (primary consolidation) settlement. The total settlement is estimated to be less than 1.0 inch for shallow foundations constructed in accordance with GGE's recommendations.

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Subsurface soils across the site are very consistent and exist in layers of uniform depths. The potential for differential settlement due to varying soil conditions over the building footprint is minimal under uniform bearing pressures.

F. Varying Soil Strength

Upon excavation of the footings, if soil types or moisture contents are found to be different than those encountered during the test pit excavation and represented within this report, the bearing capacity of the variable soil will need to be reevaluated by a qualified Geotechnical Engineer. Likewise, the footing design will then require adjustment to accommodate the bearing pressure on soils of varying bearing capacities.

G. Site Class Definition

In accordance with Section 1615 (Earthquake Loads – Site Ground Motion) of the NYS Building Code, the site is classified as Site Class C. The site classification is based upon subsurface conditions in the upper 100 feet, which consist of 6 feet of dense soil overlying 94 feet of rock.

The maximum considered earthquake ground motion for this site is interpolated as .320g for short period spectral response acceleration and .064g for a one second spectral response acceleration in accordance with New York State Code figures 1615(1) and 1615(2). Based on Site Class C, the maximum considered earthquake spectral response acceleration for this site is calculated as .380g for short period spectral response acceleration (S_{MS}) and .108g for a one second spectral response acceleration (S_{M1}) in accordance with New York State Code section 1615.1.2.

The design spectral response accelerations, based on the maximum considered earthquake spectral response accelerations, are .253g for short period design spectral response acceleration (S_{DS}) and .072g for one second design spectral response acceleration (S_{D1}). In accordance with tables 1616.3(1) and 1616.3(2), the site is classified as Seismic Design Category B.

H. General Recommendations

The following comments are relative to all foundation work unless specifically noted otherwise:

1. No fill material or concrete should be placed in water, over saturated subgrade or over frozen subgrade.
2. Upon completion of excavation for footings, bearing grades should be compacted to densify soil loosened by the backhoe bucket. Proper construction practice will assure the development of the anticipated bearing strength and reduce settlement potential.

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3. Excavations must not unnecessarily extend below the design subgrade elevation.

4. If additional undercut is necessary, the excavation bottom should be graded to a uniform elevation. Undercut "pockets" should be avoided.

5. Backfill all foundations prior to applying loads.

6. Extreme care must be exercised and conformance to OSHA standards is mandatory during excavation and trench work.

7. All topsoil and organic soils should be removed from any load bearing areas, including buried topsoil from previous fill efforts.

8. The use of a "mud" mat should be considered to protect bearing grades during any extended period or when construction proceeds during inclement weather.

9. Foundation bearing grades should not be allowed to freeze either prior to or after placement of concrete. Insulating blankets should be used to cover bearing grades plus 1 foot perimeter outside forms or completed footings until backfill is placed.

10. The site contractor should maintain proper grades for runoff control and seal roll all exposed areas. All excavations should be sloped to drain with sumps to permit dewatering during construction. The fine grained foundation subgrade will lose considerable strength if exposed to standing water for long periods of time. Any saturated subgrade should be dried and recompacted or removed to an acceptable bearing level prior to placement of subsequent layers of fill or concrete.

VI. SUMMARY

The site subsurface conditions are well suited for the proposed development and will provide a suitable subgrade for the proposed construction pending strict conformance with the recommendations provided within this report. The recommendations and engineering evaluations provided in this report are based on the encountered subsurface conditions at 4180/4200 Rensch Rd and pertinent data supplied by North Forest Development. Alteration of the plans, including relocation of the house or any abnormal foundation loading may serve to invalidate this report. Do not utilize this evaluation for any other type of structure. Please contact our office if major project changes are made or if encountered soils vary from conditions noted in this report.

Respectfully submitted,

G. Edward Lover
Senior Geologist

STATE OF NEW YORK
MARK W. GLYNN
LICENSE NO. 057491
LICENSED PROFESSIONAL ENGINEER

Mark W. Glynn, P.E.
Consulting Engineer, Principal

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Appendix A

Soil Investigation Logs

4180/4200 Rensch Rd
Amherst, New York

Geotechnical Engineering Report

GGE 04-5002

February 11, 2004

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

SOIL INVESTIGATION LOG

PROJECT NO.:	04-5002	REPORT NO.:	NA	PAGE:	1 OF 1
PROJECT:	4180/4200 Rensch Road	DAY:	Tuesday	DATE:	01.27.04
CLIENT:	North Forest Development			EL:	Unknown
WEATHER:	Snow, 25° F	SUBJECT:	Geotechnical Investigation	HOLE NO.:	TP - 1
LOCATION:	Building 1				

DEPTH (feet)	BLOW COUNT	N VALUE	SAMPLE NO.	SOIL DESCRIPTION
0.0				
1.0	N/A	N/A	1	Brown, moist, stiff, lean clay (CL) fill.
2.0	N/A	N/A	2	Dark brown, moist, silty topsoil (ML).
3.0	N/A	N/A	3	Light tan and gray, moist, stiff, sandy, silty clay with gravel (CL-ML) with shale fragments.
4.0				
5.0				
6.0				Shale bedrock encountered at 5.0 feet.
				No water present at excavation completion.
7.0				
8.0				
9.0				
10.0				

Soil investigation was performed with a rubber tire backhoe.

REPORTED BY: EDWARD LOVER

REVIEWED BY: MARK W. GLYNN, P.E.

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Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

SOIL INVESTIGATION LOG

PROJECT NO.:	04-5002	REPORT NO.:	NA	PAGE:	1 OF 1
PROJECT:	4180/4200 Rensch Road	DAY:	Tuesday	DATE:	01.27.04
CLIENT:	North Forest Development			EL:	Unknown
WEATHER:	Snow, 25° F	SUBJECT:	Geotechnical Investigation	HOLE NO.:	TP - 2
LOCATION:	Building 2				

DEPTH (feet)	BLOW COUNT	N VALUE	SAMPLE NO.	SOIL DESCRIPTION
0.0	N/A	N/A	1	Dark brown, moist, silty topsoil.
1.0	N/A	N/A	2	Brown and tan, moist, slightly mottled, stiff, silt (ML).
2.0				
3.0				
4.0	N/A	N/A	3	Light tan and gray, moist, stiff, sandy, silty clay with gravel (CL-ML).
5.0				
6.0				
				Gypsum bedrock encountered at 6.0 feet.
7.0				No water present at excavation completion.
8.0				
9.0				
10.0				

Soil investigation was performed with a rubber tire backhoe.

REPORTED BY: EDWARD LOVER

REVIEWED BY: MARK W. GLYNN, P.E.

Civil • Structural • Geotechnical • Materials Testing • Consulting

GGE a member of the GLYNN GROUP

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

SOIL INVESTIGATION LOG

PROJECT NO.:	04-5002	REPORT NO.:	NA	PAGE:	1 OF 1
PROJECT:	4180/4200 Rensch Road	DAY:	Tuesday	DATE:	01.27.04
CLIENT:	North Forest Development			EL:	Unknown
WEATHER:	Snow, 25° F	SUBJECT:	Geotechnical Investigation	HOLE NO.:	TP - 3
LOCATION:	Building 3				

DEPTH (feet)	BLOW COUNT	N VALUE	SAMPLE NO.	SOIL DESCRIPTION
0.0	N/A	N/A	1	Dark brown, moist, silty topsoil.
1.0				
2.0	N/A	N/A	2	Brown and tan, moist, slightly mottled, stiff, silt (ML).
3.0				
4.0	N/A	N/A	3	Light tan and gray, moist, stiff, sandy, silty clay with gravel (CL-ML) and shale fragments.
5.0				
6.0				Shale bedrock encountered at 6.0 feet.
7.0				No water present at excavation completion.
8.0				
9.0				
10.0				

Soil investigation was performed with a rubber tire backhoe.

REPORTED BY: EDWARD LOVER

REVIEWED BY: MARK W. GLYNN, P.E.

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Appendix B

Project Location Plan

4180/4200 Rensch Rd
Amherst, New York

Geotechnical Engineering Report

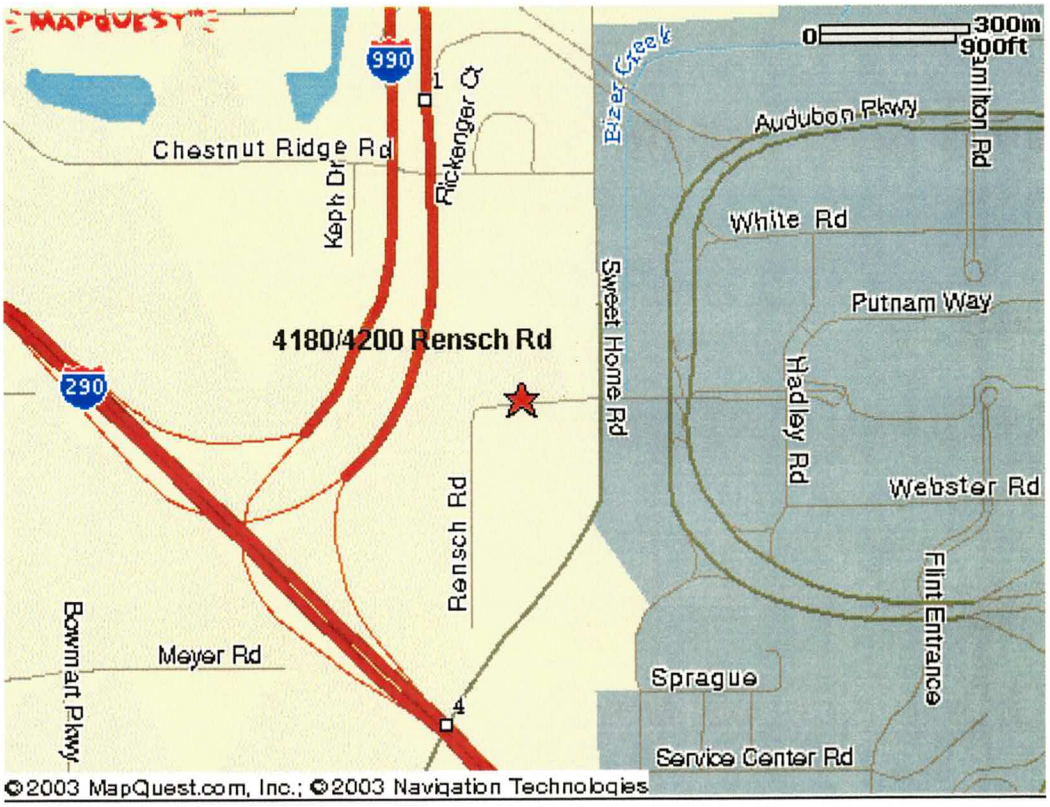
GGE 04-5002

February 11, 2004

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

PROJECT LOCATION PLAN

PROJECT: 4180/4200 Rensch Road, Amherst, NY
PROJECT NO.: 04-5002
SUBJECT: Geotechnical Engineering Report
SHEET 1 OF 1
PREPARED BY: G. Edward Lover
DATE: February 11,2004



Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

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Appendix C

Soil Boring Location Plan

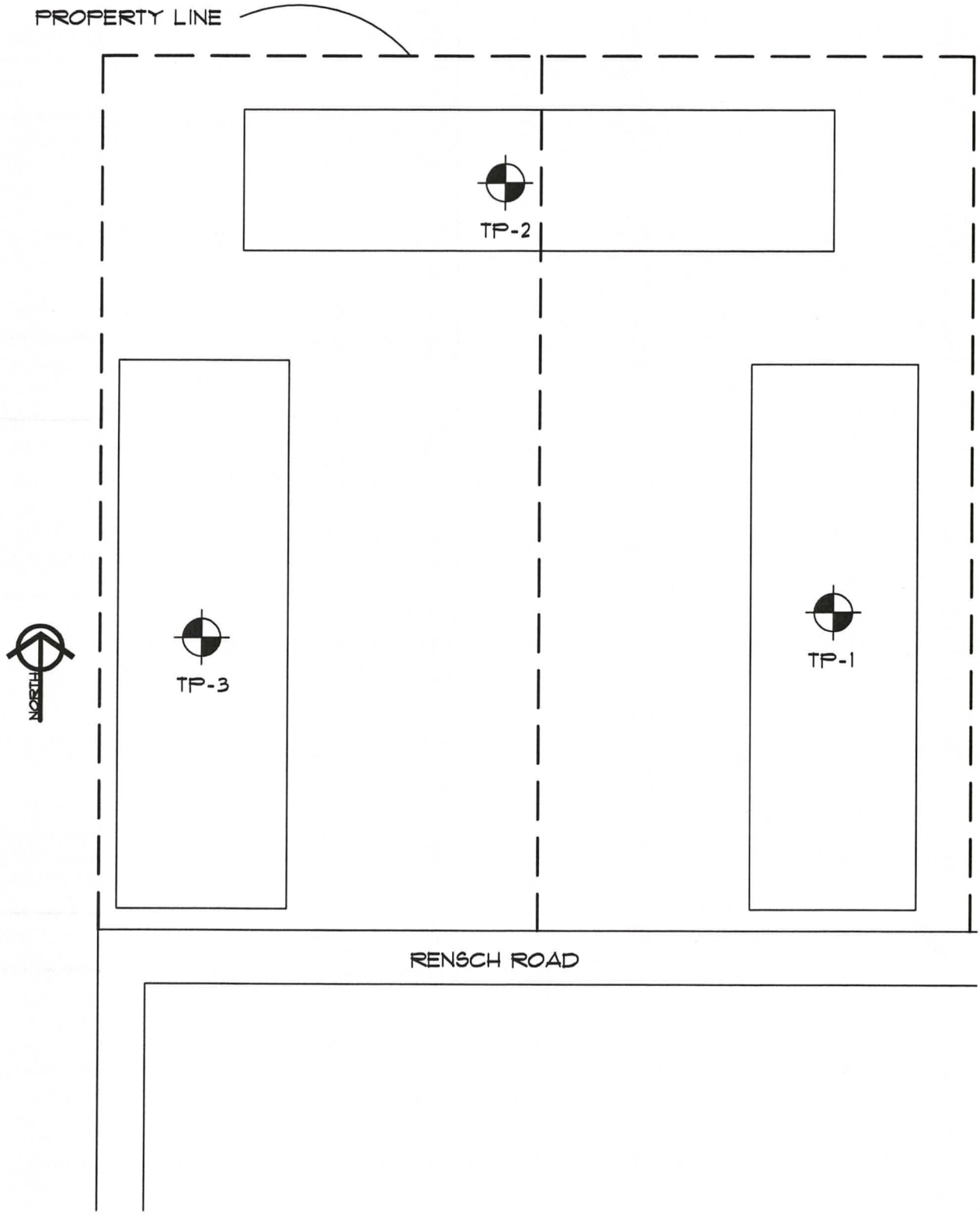
4180/4200 Rensch Rd
Amherst, New York

Geotechnical Engineering Report

GGE 04-5002

February 11, 2004

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)



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LOCKPORT, NEW YORK 14094
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www.glynngroup.com

PROJECT: 4180/4200 RENSCH ROAD			APPENDIX: C
SUBJECT: TEST PIT LOCATION PLAN			
CLIENT: NORTH FOREST DEVELOPMENT			
PROJ. NO.: 04-5002	SCALE: NOT TO SCALE	DATE: 02.02.04	BY: GEL

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

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Appendix D

Soil Survey Plan

4180/4200 Rensch Rd
Amherst, New York

Geotechnical Engineering Report

GGE 04-5002

February 11, 2004

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

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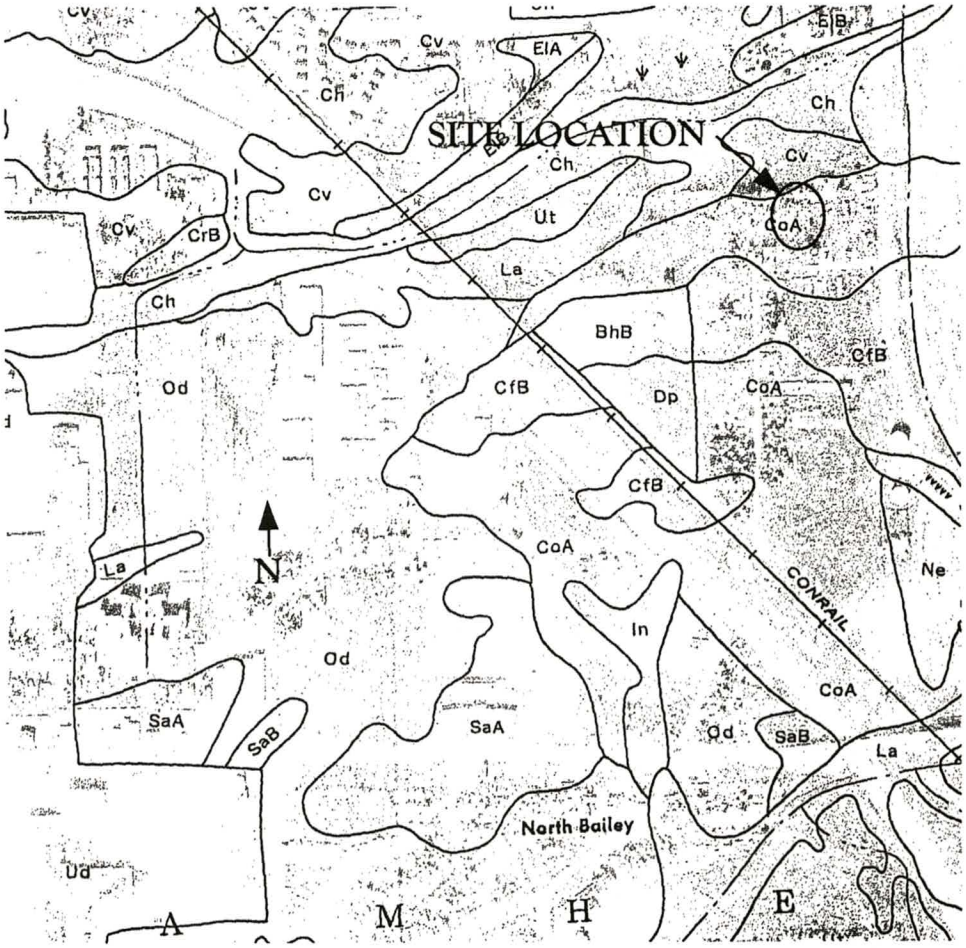
SOIL SURVEY PLAN

PROJECT: 4180/4200 Rensch Road, Amherst, NY
PROJECT NO.: 04-5002
SUBJECT: Geotechnical Engineering Report
SHEET 1 OF 1
PREPARED BY: G. Edward Lover
DATE: February 11, 2004



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Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Appendix E

Floodplain and State Wetland Plan

4180/4200 Rensch Rd
Amherst, New York

Geotechnical Engineering Report

GGE 04-5002

February 11, 2004

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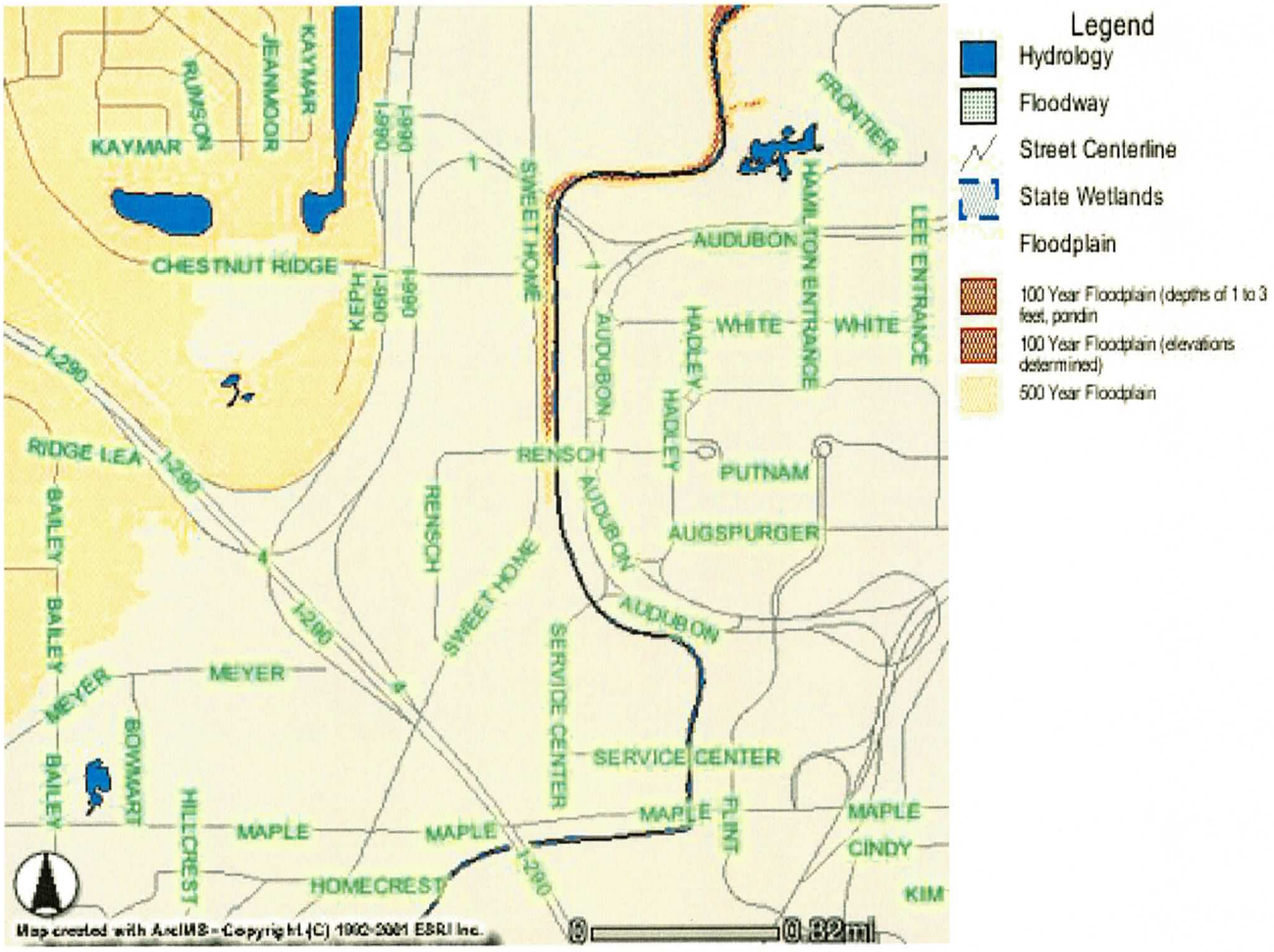
Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

FLOODPLAIN AND STATE WETLAND PLAN

PROJECT: 4180/4200 Rensch Road, Amherst, NY
PROJECT NO.: 04-5002
SUBJECT: Geotechnical Engineering Report
SHEET 1 OF 1
PREPARED BY: Edward Lover
DATE: February 11, 2204



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Appendix F

Laboratory Data

4180/4200 Rensch Rd
Amherst, New York

Geotechnical Engineering Report

GGE 04-5002

February 11, 2004

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

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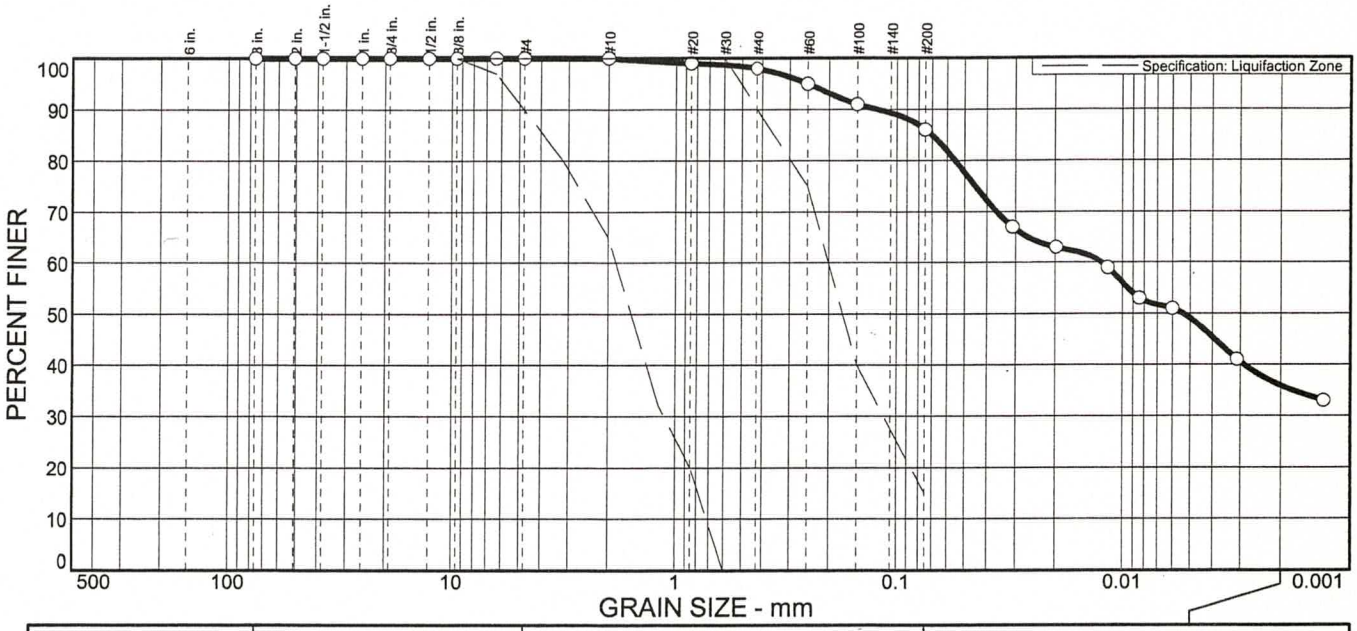
GRAIN SIZE ANALYSIS
ASTM D-422

Project: 4180/4200 Rensch Road **Project No.:** 04-5002

Client: North Forest Development

Sample No: 04-01 **Source of Sample:** soil boring **Date:** 02.03.04

Location: Footing Subgrade **Elev./Depth:** 1.0-3.5 ft.



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0	0	0	0	2	12	50	36

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3 in.	100		
2 in.	100		
1.5 in.	100		
1 in.	100		
3/4 in.	100		
1/2 in.	100		
3/8 in.	100	100 - 100	
1/4 in.	100	97 - 100	
#4	100		
#10	100	65 - 100	
#20	99	20 - 100	
#40	98		
#60	95	0 - 75	X
#100	91	0 - 40	X
#200	86	0 - 15	X

* Liquifaction Zone

Soil Description

Silt

Atterberg Limits

PL= 26 LL= 28 PI= 2

Coefficients

D_{85}= 0.0705 D_{60}= 0.0125 D_{50}= 0.0054

D_{30}= D_{15}= D_{10}=

C_u= C_c=

Classification

USCS= ML AASHTO=

Remarks

Natural Moisture Content 23.7%

Shrinkage Limit 12

GLYNN GEOTECHNICAL ENGINEERING
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Reported/Reviewed by

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Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

CARMINAWOOD
DESIGN

DOWNSTREAM SANITARY SEWER CAPACITY ANALYSIS REPORT

for

Proposed Mixed Use Development

1400 - 1416 Sweet Home Road
Town of Amherst, Erie, NY

Prepared for

North Forest Development

2829 Wehrle Dr Suite 1
Williamsville, NY 14221

Prepared by

Carmina Wood Design

487 Main Street, Suite 500
Buffalo, NY 14203

Telephone: (716) 842-3165
Fax: (716) 842-0263

May 2022



Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Project Description

This project is a redevelopment of a 7.40 acre +/- site located on the northwest corner of Sweet Home Road and Rensch Road in the Town of Amherst. The property will be redeveloped to accommodate 25 3-bedroom and 475 2-bedroom apartment units, as well as 10,000 gsf of retail space and 10,000 gsf of office space.

The proposed sewer service for this development will connect to an existing 8" Town of Amherst sewer main that runs along the north side of Rensch Road.

Node 1 - 3975 Rensch (8")

Existing Peak Flow measured (wet weather event)	= 0.080 cfs (0.052 mgd)*
Proposed Mixed Use Development Peak Flow	= 0.665 cfs**
Proposed Total Peak Flow	= 0.745 cfs
Existing Peak Flow measured (overall)	= 0.094 cfs (0.061 mgd)*
Proposed Mixed Use Development Peak Flow	= 0.665 cfs**
Proposed Total Peak Flow	= 0.759 cfs

Theoretical capacity of existing 8" PVC pipe @ 0.73% = 1.490 cfs

Conclusion: The proposed peak flow is less than the capacity of the 8" PVC pipe, therefore there is sufficient capacity. At no time during the monitoring did the flow depth exceed the pipe diameter at Node 1 of the downstream monitoring points during the rain events monitored.

Node 2 - Sweet Home (8")

Existing Peak Flow measured (wet weather event)	= 0.212 cfs (0.137 mgd)*
Proposed Mixed Use Development Peak Flow	= 0.665 cfs**
Proposed Total Peak Flow	= 0.877 cfs
Existing Peak Flow measured (overall)	= 0.215 cfs (0.139 mgd)*
Proposed Mixed Use Development Peak Flow	= 0.665 cfs**
Proposed Total Peak Flow	= 0.880 cfs

Theoretical capacity of existing 8" PVC pipe @ 0.66% = 1.417 cfs

Conclusion: The proposed total peak flow is less than the capacity of the 8" pipe, therefore there is sufficient capacity. At no time during the monitoring period did flow depth exceed the pipe diameter at Node 2 of the downstream monitoring points during the rain events monitored.

Node 3 - 1991 Sweet Home (36"):

Existing Peak Flow measured (wet weather event)	= 12.539 cfs (8.104 mgd)*
Proposed Mixed Use Development Peak Flow	= 0.665 cfs**
Proposed Total Peak Flow	= 13.204 cfs
Existing Peak Flow measured (overall)	= 13.466 cfs (8.703 mgd)*
Proposed Mixed Use Development Peak Flow	= 0.665 cfs**
Proposed Total Peak Flow	= 14.131 cfs

Theoretical capacity of existing 36" RCP pipe @ 0.05% = 16.143 cfs

Conclusion: The proposed total peak flow is less than the capacity of the 36" pipe, but at one time during the monitoring period following the 0.80" rainfall event did the flow depth exceed the pipe diameter at Node 3. At no time during the monitoring period did the flow at any point slow or stall which would have caused a backup or flooding at the manhole. I/I mitigation shall be required for the contribution proposed for this project.

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Node 4 - 66-Inch Peanut Line:

Existing Peak Flow	= 56.474 cfs (36.50 mgd)
Proposed Mixed Use Development Peak Flow	= 0.665 cfs**
Proposed Total Peak Flow	= 57.139 cfs

Capacity of existing 66" Peanut Line = 88.811 cfs (57.400 mgd)

Conclusion: The proposed total peak flow is less than the capacity of the 66" Town of Amherst Peanut Line, therefore there is sufficient capacity.

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Foot Notes:

Downstream capacity node information provided by Town of Amherst
*Converted from measurements in TECSmith report dated 4/28/22
** See Sanitary Sewage Demand Calculations

Location Map

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

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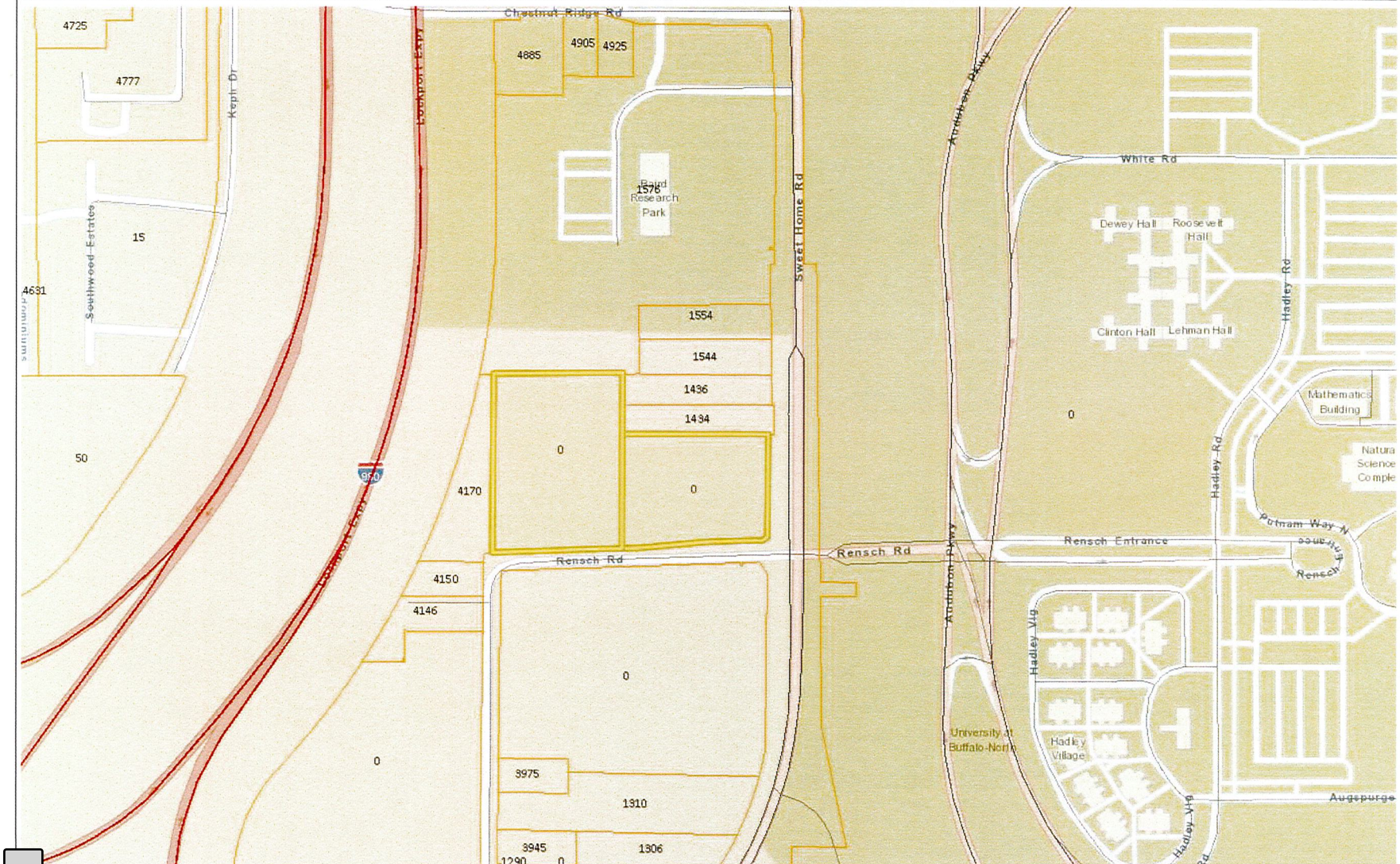
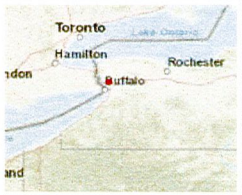
Erie County On-Line Mapping Application





Legend

- Parcels
- Streets and Highways
  - Interstate
  - Primary State Road
  - Secondary State Road
  - County Road
  - Local Road

0 0.07 0.1 Miles

S_1984_Web_Mercator_Auxiliary_Sphere
S MAP IS NOT TO BE USED FOR NAVIGATION

ERIE COUNTY
DEPARTMENT OF ENVIRONMENT & PLANNING
OFFICE OF GIS

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

1: 4,514

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Sanitary Demand Calculations

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

CARMINA WOOD DESIGN
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 21.008 Date: 5/10/2022
Project Name: Proposed Mixed Use Development
Project Address: 1400 - 1416 Sweet Home Road Amherst, NY
Subject: Sanitary Sewer Demand Calcs
Sheet: 1 of 1

Sanitary Sewage Demand Calculations:

Proposed Apartments/Townhomes

220 gal/d/unit	x	475 units	=	104,500	gpd	*use 220 gallons per unit per day (2-bdrm)
330 gal/d/unit	x	25 units	=	8,250	gpd	*use 330 gallons per unit per day (3-bdrm)

Proposed Retail Sales

0.1 gal/d/sf	x	10,000 sf	=	1,000	gpd	*use 0.1 gallons per sf per day

Proposed Office Space

15 gal/d/emp	x	30 emp	=	450	gpd	*use 15 gallons per employee per day

Total Mixed Use Developemt Site Sanitary Demand: = 114,200 gpd

Find Peak Sanitary Demand:

Peaking Factor based on Population:
Total demand: 114,200 gpd / 100 gpcd = 1142 per capita

Population (P) = 1142 people

Peaking Factor : (18 +ÖP) / (4 + ÖP) where P is in thousands

Peaking Factor = 3.76

Peak Sanitary Demand = 114,200 x 3.76 = 429,630 gpd
= 0.430 MGD
= 0.665 cfs

Required Infiltration and Inflow Mitigation:

Peak Sanitary Flow = 429,630 gpd = 298.35 gpm

4:1 offset flow per NYSDEC requirements = 298.35 x 4 = 1,193.42 gpm req'd

Mitigation Credit = $250 / gpm

Mitigation Agreement Amount = $298,353.84

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TECSmith Monitoring Report

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Date	Node 1			Node 2			Node 3			Rain₂
	3975 Rensch (8")			Sweet Home 8" (8")			1991 Sweet Home (36")			
	FLOW (GAL x 1,000)	PEAK FLOW (MGD)	PEAK LEVEL (IN)	FLOW (GAL x 1,000)	PEAK FLOW (MDG)	PEAK LEVEL (IN)	FLOW (GAL x 1,000)	PEAK FLOW (MDG)	PEAK LEVEL (IN)	(inches)
3/29/2022	2.933	0.061	4.737	20.525	0.085	1.557	791.787	2.190	15.003	0
3/30/2022	5.443	0.050	2.027	37.611	0.086	1.539	1695.118	2.330	15.056	0.01
3/31/2022	10.283	0.032	1.781	45.027	0.094	1.669	1768.671	3.486	17.201	0.09
4/1/2022	9.954	0.029	1.723	48.040	0.106	1.760	1848.436	2.439	15.334	0.06
4/2/2022	9.205	0.029	1.829	38.132	0.092	1.767	1708.643	2.278	15.118	0
4/3/2022	12.017	0.040	1.956	51.470	0.107	1.742	1679.525	2.182	14.998	0.01
4/4/2022	6.368	0.019	1.479	32.179	0.083	1.571	1750.801	2.392	15.512	0
4/5/2022	6.357	0.020	1.429	37.237	0.075	1.471	1680.447	2.274	15.090	0
4/6/2022	5.525	0.020	1.327	28.893	0.076	1.511	1648.804	2.368	15.027	0.21
4/7/2022	6.868	0.025	1.499	26.880	0.083	1.660	2075.621	2.797	16.070	0.25
4/8/2022	6.080	0.015	1.464	31.418	0.073	1.441	1865.739	2.540	15.577	0
4/9/2022	6.655	0.029	1.562	36.204	0.091	1.716	1683.460	2.311	15.174	0
4/10/2022	9.923	0.037	1.738	44.661	0.097	1.744	1630.299	2.240	14.964	0
4/11/2022	6.651	0.017	1.370	30.491	0.076	1.442	1659.159	2.217	15.000	0.13
4/12/2022	6.548	0.023	1.495	33.284	0.096	1.635	1872.977	2.512	15.798	0.14
4/13/2022	6.518	0.038	1.739	33.586	0.083	1.614	1726.198	2.331	15.438	0.05
4/14/2022	6.839	0.031	1.566	38.419	0.084	1.551	1684.863	2.300	15.396	0
4/15/2022	8.026	0.031	1.567	38.511	0.088	1.618	1563.837	2.055	14.665	0.05
4/16/2022	12.849	0.040	1.849	43.456	0.128	1.871	1840.184	2.463	15.680	0.32
4/17/2022	15.446	0.046	1.914	48.652	0.139	1.912	1609.674	2.154	14.827	0.05
4/18/2022	5.124	0.014	1.243	29.693	0.073	1.493	1946.144	3.213	17.334	0.27
4/19/2022	6.028	0.019	1.325	30.320	0.070	1.483	2405.354	3.076	17.441	0.03
4/20/2022	6.202	0.017	1.428	34.455	0.089	1.585	1987.563	2.692	15.566	0
4/21/2022	8.455	0.032	1.729	36.328	0.106	1.587	2020.769	2.935	16.302	0.11
4/22/2022	6.977	0.018	1.364	30.153	0.074	1.633	1868.774	2.431	15.683	0
4/23/2022	7.280	0.025	1.496	32.828	0.085	1.620	1630.007	2.184	15.365	0
4/24/2022	7.052	0.027	1.665	35.070	0.105	1.563	1581.642	2.213	15.283	0
4/25/2022	7.488	0.052	2.084	37.206	0.137	1.778	2343.512	8.104	32.237	0.8
4/26/2022	3.228	0.040	1.796	11.226	0.087	1.501	2439.575	8.703	56.014	0.04
---	---	---	---	---	---	---	---	---	---	2.62

	MGD	CFS
Wet	0.052	0.080
Dry	0.061	0.094

	MGD	CFS
Wet	0.137	0.212
Dry	0.139	0.215

	MGD	CFS
Wet	8.104	12.539
Dry	8.703	13.466

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TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

Date: April 28, 2022

SANITARY SEWER FLOW CAPACITY STUDY – Summary Review

Prepared For: 1400-1416 Sweet Home Road Capacity Analysis

R. Christopher Wood, PE Partner
487 Main Street, Suite 500
Buffalo, New York 14203

Project Name: 1400-1416 Sweet Home Road Capacity Analysis

Flow Monitoring Period: March 29, 22 to April 26, 2022

Rain Events (> 0.5-inches) Monitored: April 25, (0.80")

Number of Monitoring Nodes: Three (3) downstream manholes

Node Locations and Descriptions:

- Node 1 3975 Rensch (8")
- Node 2 Sweet Home 8" (8")
- Node 3 1991 Sweet Home (36")

Summary Conclusion:

Based on the data presented in this report, specifically the flow depth measurements recorded (see graphs below)

- At no time the flow depth exceeds pipe diameter at Node 1, and Node 2 of the downstream monitoring points during the wet weather events monitored.
- One time the flow depth exceeds pipe diameter at Node 3 of the downstream monitoring points during the wet weather events monitored.

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Elma, New York 14059-0383
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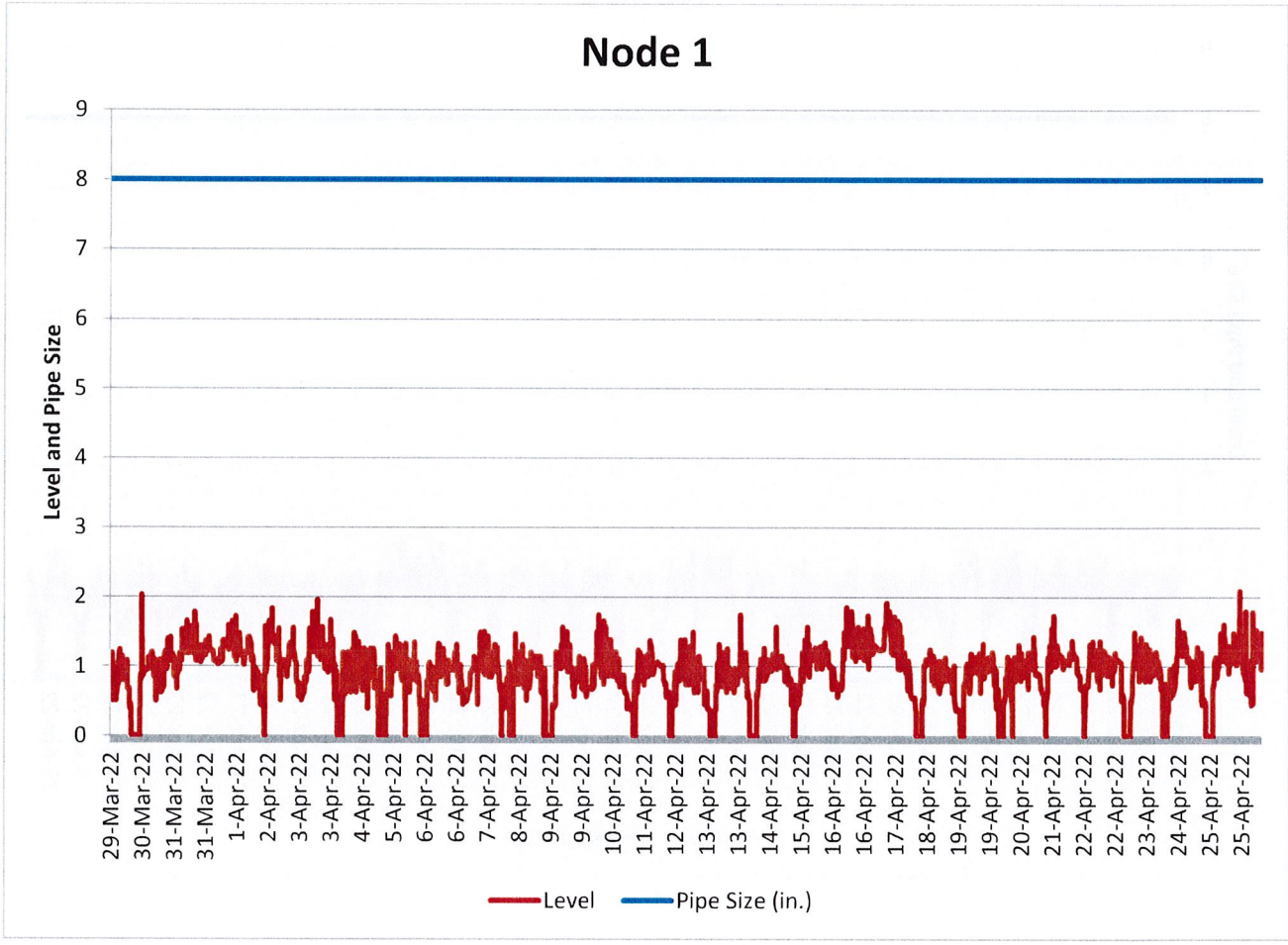
Fax: 716-687-1418

Depth of Flow Capacity Summary:

Depth of flow capacity is based on diameter of pipe. See graphs below.

- At no time during the monitoring period did depth of flow exceed pipe diameter at Node 1.



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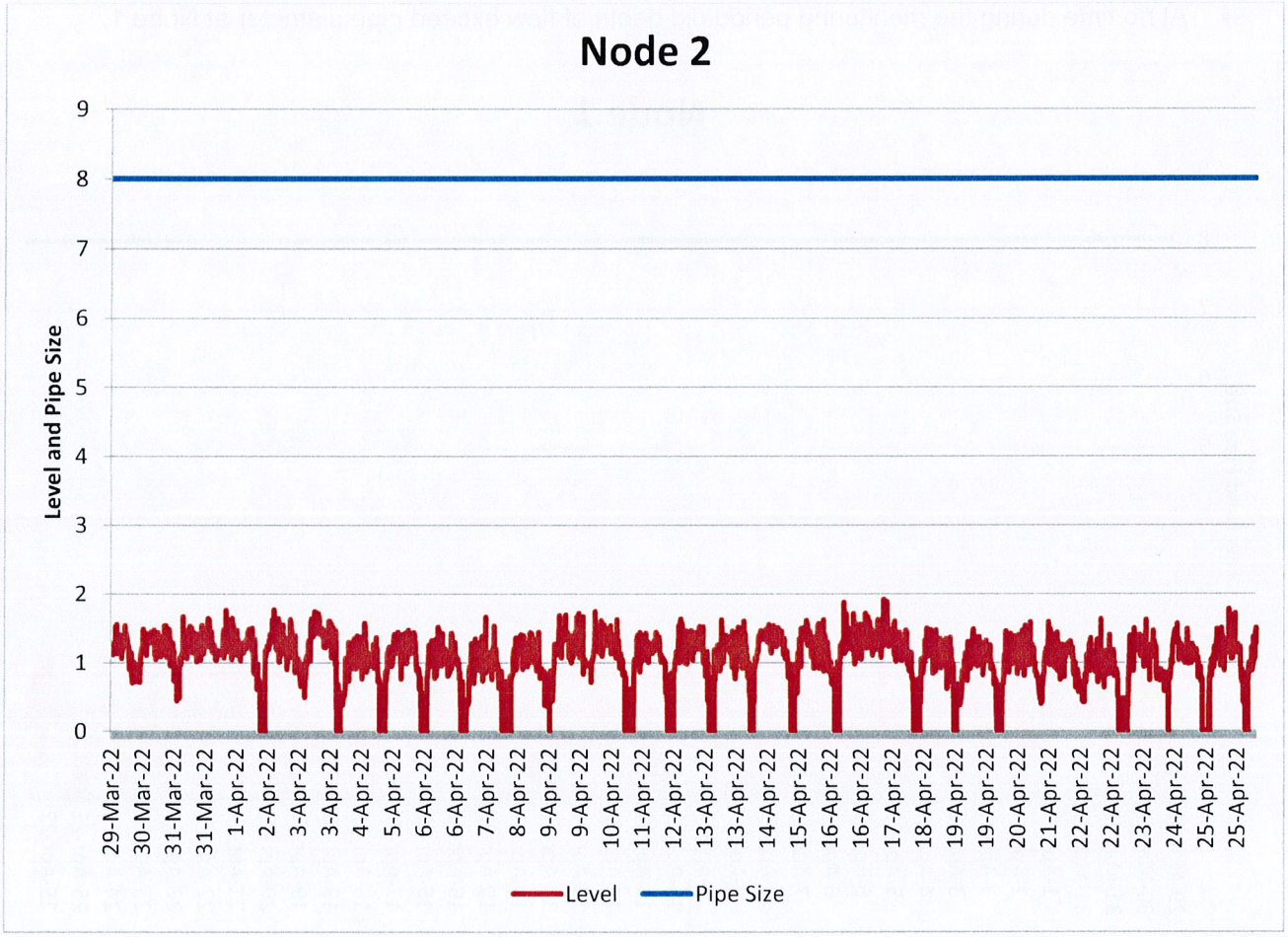
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

- At no time during the monitoring period did depth of flow exceed pipe diameter at Node 2.



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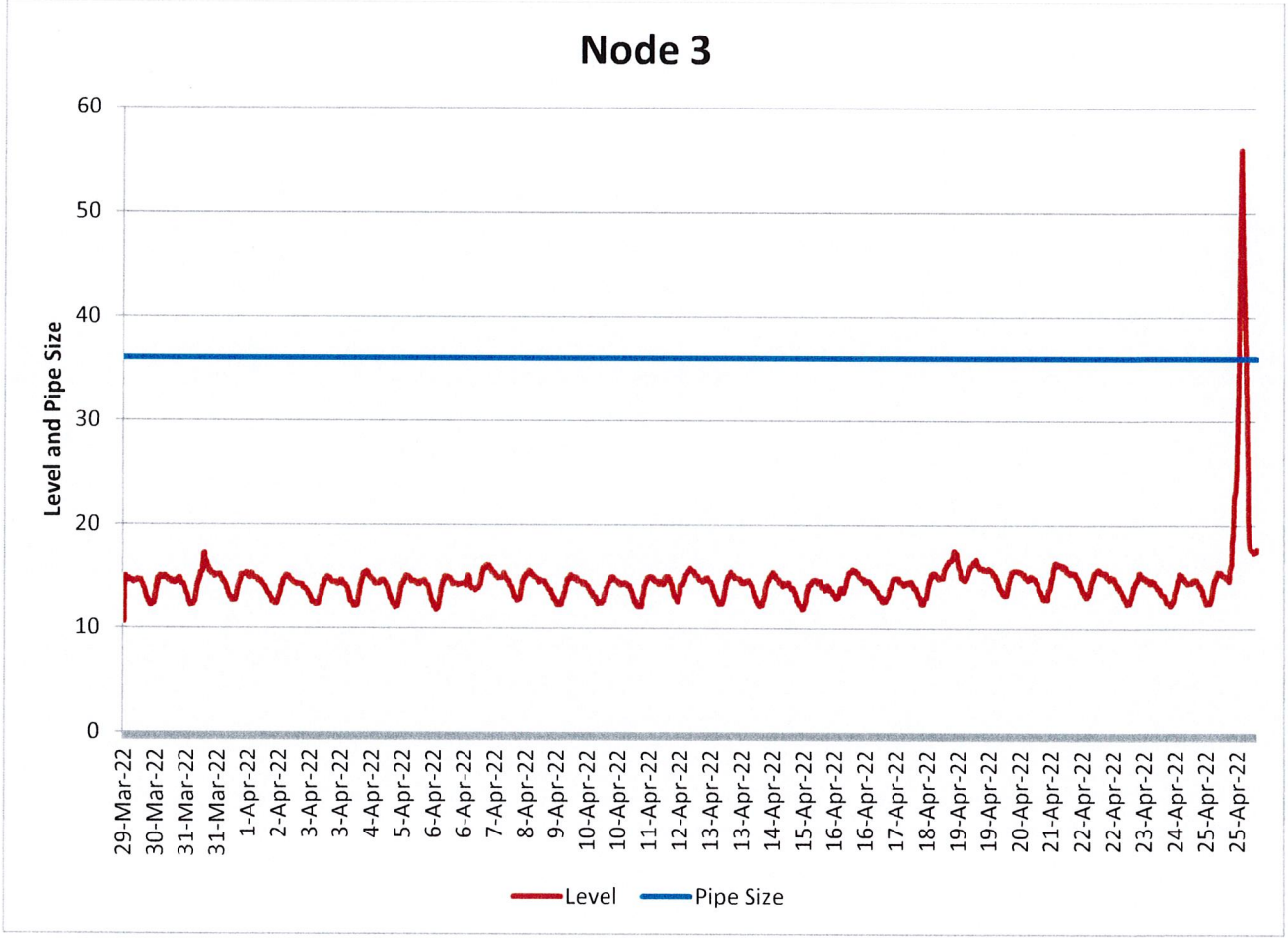
TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

- One time during the monitoring period did depth of flow exceed pipe diameter at Node 3.



Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Town of Amherst Sewer Node Maps

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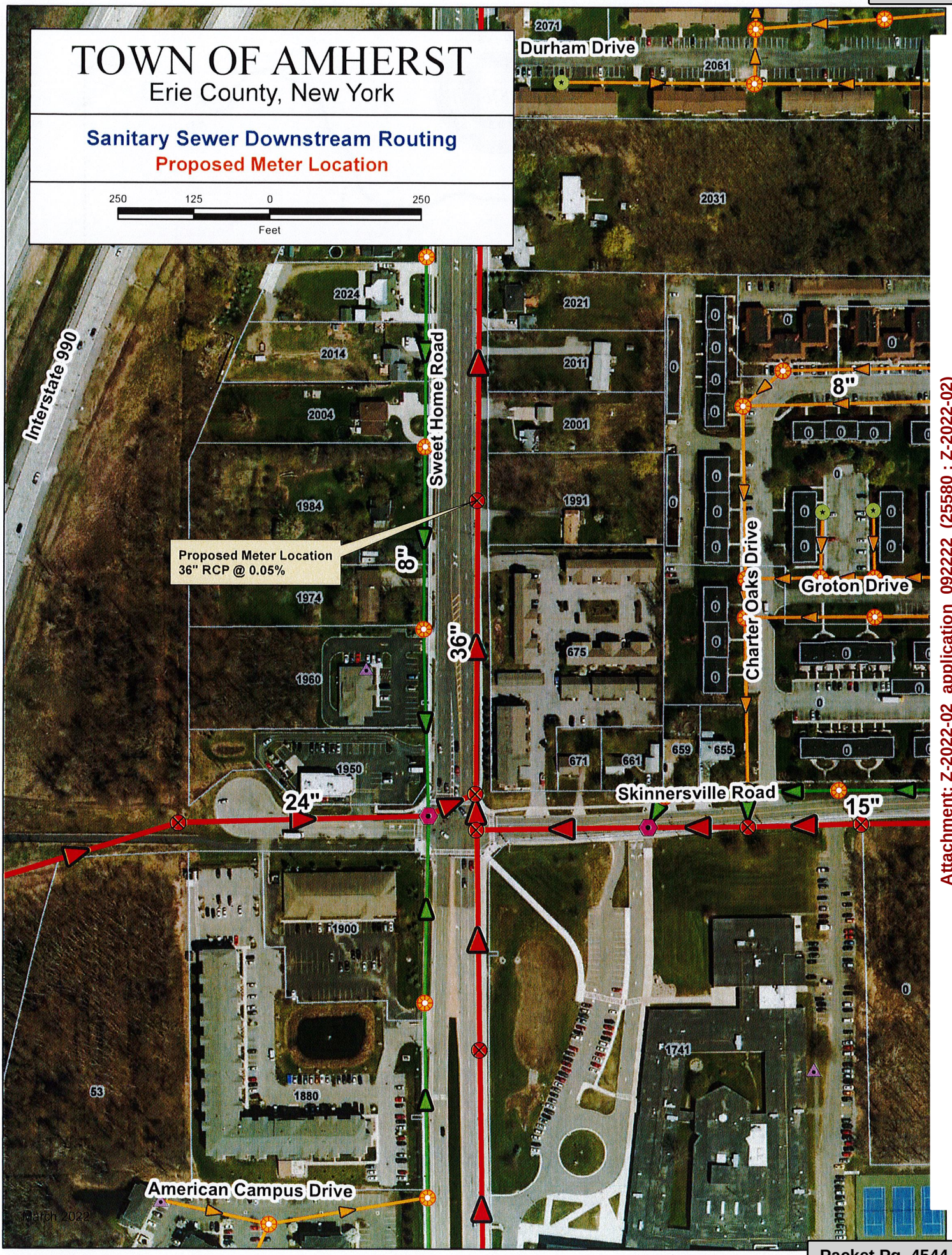
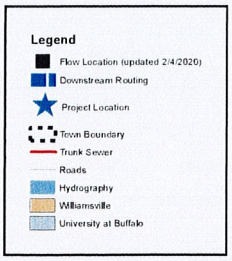


Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

TOWN OF AMHERST
Erie County, New York

Downstream Sewer Routing
Proposed Site: 1400 -1416 Sweet Home Road

0 0.5 1 Miles



March 2022

A. Pontikos

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
APPLICATION FOR APPROVAL OF PLANS FOR A WASTEWATER DISPOSAL SYSTEM

1. NAME OF APPLICANT	2. LOCATION OF WORKS (City, Village, Town)	3. COUNTY
North Forest Development	1400 - 1416 Sweet Home Road	Erie

4. ENTITY OR AREA SERVED
Mixed Use Development

5. TYPE OF OWNERSHIP
☐ Municipal ☐ Industrial ☐ Commercial ☐ Sewage Works Corp ☐ Private - Home ☒ Private – Other ☐ Private – Institutional ☐ Board of Education ☐ Authority ☐ Federal ☐ State ☐ Interstate ☐ International ☐ Indian Reservation

6. TYPE AND NATURE OF CONSTRUCTION		7. ESTIMATED COST OF CONSTRUCTION	
Collection System	Treatment and/or Disposal	Collection System	Treatment and/or Disposal
☐ New	☐ New	$	$
☒ Additions or Alterations	☐ Additions or Alterations		

8. TYPE OF WASTE
☒ Sewage ☐ Industrial (Specify) ☐ Other (Specify)

9. NAME OF RECEIVING TREATMENT WORKS	10. POINT OF DISCHARGE	
Town of Amherst Wastewater Treatment Facility	Surface Water: (Name of Watercourse) Tonawanda Creek	Class
	Ground Water: (Name of Watercourse to which ground water is tributary)	Class

11. IS STATE OR FEDERAL AID APPLIED FOR?	LOCATION (City, Village.Town)	TYPE OF PERMIT	PERMIT NO.	DATE ISSUED
☐ Yes ☒ No	Amherst	☐ NYDES ☒ SPDES	NY0025950	11/1/15

12. NAME OF DESIGN ENGINEER	NEW YORK STATE LICENSE NO.
Carmina Wood Morris, DPC - Christopher Wood, PE	076394
ADDRESS: 487 Main Street, Suite 500, Buffalo, NY 14203	TELEPHONE NO.: (716) 842-3165

13. WATER CONSUMPTION (GPD)		
Present	Future	Design Year
9,000	114,200	2022

14. POPULATION SERVED		
Present	Future	Design Year
600 employees +/-	(475) 2-bdrm (25) 3-bdrm, 10k sf office space, 10k sf retail space	2022

15. AVERAGE DAILY FLOW FOR NEW OR EXISTING TREATMENT WORKS (GPD)		
Present	Future	Design Year
9,000	114,200	2022

16. SOURCE OF WATER SUPPLY (if private well; give location, type, depth and character of soil)	17. DESIGN EQUIVALENT POPULATION (BOD Basis)	
Erie County Water Authority	Design Flow GPD	Design Plant Efficiency %

18. GIVE NUMBER, CHARACTER AND DISTANCE OF ANY BUILDINGS WHICH MAY BE AFFECTED BY THE PROPOSED TREATMENT WORKS	19. DESCRIBE PROPOSED OR EXISTING STORM WATER DISPOSAL
N/A	to Municipal System

ADDITIONAL INFORMATION MUST BE SUBMITTED FOR PRIVATE AND INSTITUTIONAL SYSTEMS.

20. INDICATE OF U.S.G.S. TOPOGRAPHIC MAP EXACT LOCATION OF SEWAGE TREATMENT WORKS AND ADJACENT BUILDINGS. SHOW LOCATION OF ALL WELLS OR OTHER SOURCES OF WATER SUPPLY WITHIN 200' OF THE PROPOSED WORKS. GIVE DESCRIPTION OF THESE SOURCES AND CHARACTER OF SOIL

N/A

21. STATE DEPTH BELOW EXISTING GROUND SURFACE AT WHICH GROUND WATER IS ENCOUNTERED	22. DESCRIBE SOIL AT SITE OF PROPOSED WORKS. GIVE DESIGN BASIS AND OBSERVED SOIL PERCOLATION RATE DATA (Use additional sheet, if necessary)
31 cm (source: USDA Online Web Soil Survey)	Churchville silt loam
DATE: 5/11/22	(source: USDA Online Web Soil Survey)

BSP-5 (3/75)

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

NOTE: All applications must be accompanied by plans, specifications and completed Form BSP-65 (appropriate portions). The submission must conform to a previously approved engineering report describing the system in detail. The plans must be stamped with the designing engineer's seal and must be of sufficient clarity and eligibility to permit satisfactory microfilming. Only white prints will be accepted because of the difficulty of microfilming blue prints. There must be a blank area, at least 4" X 7", in the lower right corner of each sheet so that the approval stamp may be placed on the face of the plans.

Any deviation from the Department's standards for wastewater collection and treatment facilities must be explained in detail.

Approved plans are to be returned to: ■ Applicant ■ Engineer

If the application is signed by a person other than the applicant shown in Item 1, the application must be accompanied by a letter of authorization. Failure to comply with this provision may be grounds for the rejection of any submission.

I hereby affirm under penalty of perjury that information provided on this form is true to the best of my knowledge and belief. False statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law.

Signatures and Official Titles: Roy Jordan
By John - managing member

Mailing Address: 2829 Wehrle Dr. Suite 1
Williamsville N.Y. 14221

Date of Application: 5-11-2022

REMARKS:

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

TECHNICAL REVIEW OF PLANS AND SPECIFICATIONS
FOR SEWAGE AND WASTE TREATMENT SYSTEMS

PROJECT DATA

1. Type of Facility: Proposed Mixed Use Development
   (Treatment plant, interceptor, pumping station, additions, etc.)
2. Location: 1400 - 1416 Sweet Home Road
3. Type of sewer system: Seperate
   (separate or combined)
4. Population to be immediately served: (475) 2-bdrm (25) 3-bdrm (10k sf) retail (30 office emp)
   Design Population: (475) 2-bdrm (25) 3-bdrm (10k sf) retail (30 office emp)
5. Design Period: 2022
6. Hydraulic Loading

	Present flow (mgd)	Design flow (mgd)
Sanitary sewage	0.009	0.114
Institutional sewage	0.0	0.0
Industrial waste	0.0	0.0
Infiltration	0.0	0.0
Total	0.009	0.114
Minimum flow	0.0	0.0
Maximum flow	0.036	0.430

Engineer's Signature and Seal:



92-15-8(5/77)
Formerly
BMW-65(11/73)

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

ENGINEERING REPORT - SEWER SYSTEM

Ref.	Point Under Review	Standard	This Project	Remarks
11.	Does the engineering report include a tabular form giving depths and velocities of flow at minimum, average, and maximum daily sewage flows for all sewers proposed?	yes	N/A	
	If the project is for sewer extensions only, is the engineering report prepared in accordance with section 11.1 and 11.2? The report should state:	yes		
	(1) Name and exact location of the treatment plant to which the proposed sewer extensions will be tributary.	-	Town of Amherst WWTP	
	(2) Present average daily sewage flow received by the plant.	-		unknown
	(3) Design flow and the design year for the plant.	-		unknown
	(4) The date when the permit for the plant was issued.	-	11/1/15	

OUTFALL SEWERS

Ref.	Point Under Review	Standard	This Project	Remarks
55.	Is the outfall sewer submerged?	yes	N/A	
	Is the discharge end of the outfall sewer extended into the middle of the receiving stream?	yes	N/A	
	Are diffusion facilities provided?	yes	N/A	

Remarks including explanation of departures from standard practice:

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

SEWER SYSTEM

Ref.*	Point Under Review	Standard	This Project	Remarks
31.	Is the proposed sewer system separate or combined?	separate	seperate	
	Does sewage overflow from proposed intercepting sewers?	no	no	
32.	Is sewer system designed for estimated ultimate tributary population?	yes	yes	
33.	Are sewers sized to meet requirements of sections 32, 33.1, 33.2 and 33.3?	yes	yes	
11.24	What average unit sewage flow (gpcd) is proposed for design?	100 gpcd	110 gpd/bdrm 0.1 gpd/sf retail 15 gpd/office emp	per NYSDEC standards
33.1	What is maximum diameter of sewers?	8"	6"	
33.2	Are sewers designed deep enough to drain all basements and to prevent freezing?	yes	yes	
33.4	Will all sewers be constructed at or greater than the specified minimum gradient?	yes	yes	
	Does the design comply with requirements stated in subsections 33.4, 33.5, 33.6, 33.7, and 33.8?	yes	yes	
34.	Are manholes designed and specified according to Section 34?	yes	yes	
34.3	What is minimum manhole diameter?	48"	48"	
35.	Are inverted siphons, if any, designed in accordance with Section 35?	yes	N/A	
38.	Where water lines are close to proposed sewers, does design protect water supplies according to Section 38?	yes	yes	

Remarks including explanation of departures from standard practice:

* Reference numbers refer to numbers of Sections and Paragraphs of Great Lakes - Upper Mississippi River Board of State Sanitary Engineers 1990 Edition, Recommended Standards for Sewage Works.

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SEWER SYSTEM

Location of Sewer (name of street)	Total Length (feet)	Dia. (in.) and Material	Min. & Max. slope (%)	Min. & Max. Depth (feet)	Max. Manhole Interval (feet)	Remarks

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CARMINAWOOD
DESIGN

May 11, 2022

Mr. Jeffrey Burroughs, PE
Town Engineer
Town of Amherst Engineering Department
1100 North French Road
Williamsville, NY 14221

Re: 1400 - 1416 Sweet Home Road - Proposed Mixed Use Development
Compliance Letter - Inflow and Infiltration Reduction Program

Dear Mr. Burroughs:

This compliance letter is being submitted by North Forest Development, project sponsor for the proposed 475 2-bdrm and 25 3-unit apartments/townhouses, as well as 10,000 gsf retail and 10,000 gsf office space redevelopment at 1400 - 1416 Sweet Home Road.

The Project Sponsor agrees to comply with the Town of Amherst's I/I mitigation-offset requirements for the wastewater flow from the proposed development.

Wastewater flow from the proposed development was generated as follows:

114,200 gpd * 3.76 = 429,630 gpd / 1440 = 298.35 gpm * 4 = 1,193.42 gpm

Based on the Town's requirement of $250 /gpm x 1,193.42 gpm = $298,535.84, the Project Sponsor's financial contribution of the Town's "Trust in Agency" fund.

The Project Sponsor also agrees to make this contribution prior to acceptance of the PIP's.

Agreed and Accepted:

Roy Jordan Date: 5-11-2022

Roy Jordan
North Forest Development

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Traffic Impact Study

for the proposed

Mixed-Use Development
1400-1416 Sweet Home Road

Town of Amherst
Erie County, New York

March 21, 2022

Project No. 42019

Prepared For:

North Forest Development

2829 Wehrle Drive, Suite 1
Williamsville, New York 14221
Attn: Mr. Roy Jordan

Prepared By:

SRF ASSOCIATES
www.srfa.net
Transportation Planning / Engineering / Design

3495 Winton Place
Building E, Suite 110
Rochester, New York 14623

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2. Trip Generation, 11th Edition. Institute of Transportation Engineers (ITE). Washington, DC. 2021.
3. Shared Parking Model (3rd Edition). Urban Land Institute (ULI). 2020.
4. New York State Department of Transportation (NYSDOT) Traffic Data Viewer. 2022. Retrieved from https://www.dot.ny.gov/tdv.
5. OnTheMap. U.S. Census Bureau. 2022.
6. Chapter 203 Zoning – Section 5A. Mixed Use Districts. Town of Amherst. 2019.
7. NCHRP Report 684: Enhance Internal Trip Capture Estimation for Mixed-Use Developments. TRB. 2016.

LIST OF COMMONLY USED ACRONYMS

ADT: Average Daily Traffic

AADT: Annual Average Daily Traffic

ECDPW: Erie County Department of Public Works

FHWA: Federal Highway Administration

HCM: Highway Capacity Manual

ITE: Institute of Transportation Engineers

LOS: Level of Service

LUC: Land Use Code

MPH: Miles per Hour

NCHRP: National Cooperative Highway Research Program

NYSDOT: New York State Department of Transportation

SF: Square Feet

ULI: Urban Land Institute

VPD: Vehicles per Day

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EXECUTIVE SUMMARY

OVERVIEW

The purpose of this report is to evaluate the potential traffic impacts related to the proposed mixed-use development at 1400-1416 Sweet Home Road in the Town of Amherst, NY. Within this report, the operating characteristics of the proposed access points and impacts to the adjacent roadway network are identified and mitigating measures (if needed) are provided to minimize operational concerns.

To define traffic impact, this analysis establishes existing baseline traffic conditions, projects background traffic flow including area growth, and determines the traffic operations that would result from the proposed project.

The proposed mixed-use project will be at 1400-1416 Sweet Home Road in the Town of Amherst, Erie County, New York. Currently, there are office buildings occupying the site. These buildings will be replaced by the proposed project and new uses. The project site is bounded by portions of undeveloped lands to the north; Sweet Home Road to the east; Rensch Road to the south; and I-990 to the west. Land uses in the vicinity of the proposed project include residential, education, office, and service.

To ensure a comprehensive analysis of potential traffic impacts, a geographically broad study area was determined consisting of the following intersections:

- Rensch Road/Villas on Rensch (W)/Office Lots (unsignalized)
- Rensch Road/Villas on Rensch (E)/Office Lots (unsignalized)
- Sweet Home Road/Rensch Road (signalized)
- Sweet Home Road/The Station (unsignalized)
- Sweet Home Road/Maple Road (signalized)

The proposed project consists of constructing:

- ±10,000 square feet (SF) of office space
- ±10,000 SF of retail space
- 500 residential units to be marketed as student housing (1,025 bedrooms)

Access to the proposed mixed- project will be provided via two full access driveways along Rensch Road. **Figure 5** illustrates the proposed Concept Site Plan as prepared by Carmina Wood Morris.

Construction of the proposed project is anticipated to reach full build-out within approximately five years depending on market conditions. Town of Amherst personnel were contacted to discuss any other specific projects that are currently approved or under construction that would generate additional traffic in the study area. Two projects were identified:

- 1265 Sweet Home Road
- Completion of The Station

The Station is currently partially occupied. SRF Associates reached out to the property management to determine actual occupancy but did not receive any information. SRF Associates produced the traffic study for this project and reviewed the projected trip generation estimates. The difference between the full development trip generation estimates in the study

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and the actual trips entering and entering the site during the peak hours were added to the study area intersections.

To account for normal increases in background traffic growth, including any unforeseen developments in the project study area, aside from the two projects mentioned, a growth rate of 0.25% was applied to the existing traffic volumes in the study area based upon a review of historical traffic information obtained from the New York State Department of Transportation.

CONCLUSIONS & RECOMMENDATIONS

This Traffic Impact Study identified and evaluated the potential traffic impacts that can be expected from the proposed mixed-use development at 1400-1416 Sweet Home Road in the Town of Amherst, New York. The results of this study determined that the existing transportation network can adequately accommodate the projected traffic volumes and resulting minor impacts to study area intersections with the following mitigation in place. The following sets forth the conclusions and recommendations based upon the results of the analyses:

1. Using ITE Trip Generation Manual data, the proposed project is expected to generate approximately 66 entering/76 exiting vehicle trips during the AM peak hour and 145 entering/156 exiting vehicle trips during the PM peak hour.

2. However, not all driveway volumes are new, but instead a portion of the proposed volume is reduced considering internal capture adjustments. Thus, the proposed project is expected to generate approximately 62 entering/72 exiting vehicle trips during the AM peak hour and 129 entering/140 exiting vehicle trips during the PM peak hour.

3. A crash analysis was conducted from 2017-2019 at the study intersections. Most of the crash types occurring at each study intersection were rear end events, a characteristic of signalized intersections along moderately to heavily trafficked arterials. However, an in-depth review of the crashes determined no deficiencies exist which can be corrected by geometric improvements. Consideration may be given to upgrading the signal at Sweet Home Road/Maple Road to change the green signals to flashing yellow arrows for permissive left turns to address the frequency of left turn crashes.

4. Minor signal timing adjustments are recommended at the intersection of Sweet Home Road/Rensch Road during the AM peak hour. These adjustments should be made under background conditions.

5. When considering Town of Amherst Zoning Code parking requirements and shared parking demands, the project site has a parking deficit of 10 or fewer spaces. It is noted that the proposed apartments are to be marketed as student housing given the proximity of the project site to the UB North Campus. When considering the requirements per Town Code and demands using the ULI Model, these sources assume that the residential demands are typical multifamily uses and not student uses. Students are highly likely to own fewer vehicles per unit than typical multifamily developments, especially given the proximity of the proposed project to the UB North Campus. Parking reduction strategies are being provided, such as bicycle parking spaces. Given these considerations, no significant adverse parking impacts are projected.

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6. The projected traffic impacts resulting from full development of the proposed mixed-use project during both peak hours can be accommodated by the existing transportation network and study area intersections. No capacity improvements are required.

7. The proposed mixed-use project will not result in any potentially significant adverse traffic impacts to the study area intersections. This Traffic Impact Study provides the Town of Amherst and involved agencies with a detailed analysis for the purpose of evaluating the potential traffic impacts associated with the proposed project.

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I. INTRODUCTION

The purpose of this report is to evaluate the potential traffic impacts related to the proposed mixed-use development at 1400-1416 Sweet Home Road in the Town of Amherst, NY. Within this report, the operating characteristics of the proposed access points and impacts to the adjacent roadway network are identified and mitigating measures (if needed) are provided to minimize operational concerns.

To define traffic impact, this analysis establishes existing baseline traffic conditions, projects background traffic flow including area growth, and determines the traffic operations that would result from the proposed project.

II. LOCATION

The proposed project will be at 1400-1416 Sweet Home Road in the Town of Amherst, Erie County, New York. Currently, there are office buildings occupying the site. These buildings will be replaced by the proposed mixed-use project. The project site is bounded by portions of undeveloped lands to the north; Sweet Home Road to the east; Rensch Road to the south; and I-990 to the west. Land uses in the vicinity of the proposed project include residential, education, office, and service.

To ensure a comprehensive analysis of potential traffic impacts, a geographically broad study area was determined consisting of the following intersections:

- Rensch Road/Villas on Rensch (W)/Office Lots (unsignalized)
- Rensch Road/Villas on Rensch (E)/Office Lots (unsignalized)
- Sweet Home Road/Rensch Road (signalized)
- Sweet Home Road/The Station (unsignalized)
- Sweet Home Road/Maple Road (signalized)

The project site location and study area are illustrated in **Figure 1** (all figures are included at the end of this report).

III. EXISTING HIGHWAY SYSTEM

A. Vehicular Network Description

The following information outlined in **Table I** provides a description of the existing roadway network within the project study area. **Figure 2** illustrates the lane geometry at each of the study intersections and the Annual Average Daily Traffic (AADT) volumes on the study roadways. The AADTs reflect the most recently collected data obtained from the New York State Department of Transportation (NYSDOT). Where data is not available or up to date, Average Daily Traffic (ADT) volumes are based upon an extrapolation of turning movement counts performed by SRF Associates.

Functional classification of highways within the study area is determined by the NYSDOT and the Federal Highway Administration (FHWA). Definitions of the functional classifications shown in **Table I** are provided after the table.

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TABLE I: EXISTING HIGHWAY SYSTEM

ROADWAY	CLASS[1]	AGENCY[2]	SPEED LIMIT[3]	TRAVEL LANES[4]	TRAVEL PATTERN/ DIRECTION	EST. AADT & SOURCE[5]
Sweet Home Road (952T)	16	NYSDOT	45	4	Two-way/ North-South	17,040 NYSDOT (2018)
Maple Road (W) (CR-192)	14	ECDPW	45	4	Two-way/ East-West	24,564 NYSDOT (2019)
Maple Road (E) (CR-192)	14	ECDPW	45	4	Two-way/ East-West	23,377 NYSDOT (2018)
Rensch Road	19	Town	30	2	Two-way/ East-West	2,950 SRF (2022)

Notes:
1. State Functional Classification of Roadway.
2. Jurisdictional Agency of Roadway.
3. Posted or Statewide Limit in Miles per Hour (mph).
4. Number of travel lanes. Excludes turning/auxiliary lanes developed at intersections.
5. Estimated AADT in Vehicles per Day (vpd). AADT Source (Year).

Urban Principal Arterial – Other (Class 14)

An urban principal arterial serves major activity centers, can interconnect and augment higher level arterials, serve trips of moderate length, and serve demand for intra-area travel between the central business district and outlying residential areas. Unlike access-controlled arterials, abutting land uses can be served directly.

Urban Minor Arterial (Class 16)

An urban minor arterial provide service for trips of moderate length, serve geographic areas that are smaller than higher arterial roadways, and offer connectivity to higher arterial systems. These roadways distribute traffic to smaller geographic areas, provide more land access without disrupting neighborhood access, and provide urban connections for rural collectors.

Urban Local (Class 19)

Locally classified roads account for the largest percentage of all roadway mileage and includes all facilities not in one of the higher systems. Local roadways do not typically serve as bus routes, are often designed to discourage through traffic, and have the lowest degree of mobility.

B. Multi-Modal Network Description

This evaluation reviewed the study area's pedestrian, bicycle, and transit network via field and aerial reconnaissance. A description of the multi-modal infrastructure is described hereafter.

Pedestrian & Bicycle Facilities

Sidewalks are located within the study area. The signalized intersections of Sweet Home Road/Rensch Road and Sweet Home Road/Maple Road feature pedestrian countdown signals and crosswalk striping.

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Dedicated bicycle lanes are in place along Sweet Home Road. Where there are no dedicated facility, cyclists are permitted to share the road with motorists.

Transit Facilities

The Niagara Frontier Transportation Authority (NFTA) provides regional bus and metro rail service. The nearest bus stops are at the intersections of Sweet Home Road/Rensch Road and is serviced via Route 35 (Sheridan).

IV. EXISTING TRAFFIC CONDITIONS

A. Peak Intervals for Analysis

Given the functional characteristics of the study corridors, adjacent land uses, and the proposed land uses for the project site (residential and commercial), the peak hours selected for analysis are the weekday commuter AM and PM peak periods. The combination of site traffic and adjacent through traffic produces the greatest demand during these time periods.

B. Existing Traffic Volume Data

Turning movement traffic counts were collected by SRF at the study intersections described in Section II on Thursday, March 3, 2022. Traffic counts were conducted from 7:00-9:00 AM and 4:00-6:00 PM. All traffic counts were conducted while local schools and the University at Buffalo were in session. The traffic volumes were reviewed to confirm the accuracy and relative balance of the collective traffic counts. For the purposes of this analysis, the data are utilized with the actual peak hours at each individual intersection. Using the actual peaks at each intersection provides a worst-case scenario when adding project related traffic. The unadjusted weekday AM and PM peak hour volumes are reflected in **Figure 3A**.

It is noted, however, that traffic volumes may be impacted by the COVID-19 pandemic. The NYSDOT released a study in February 2021 that described the effect the COVID-19 pandemic had on traffic in New York State in 2020. The NYSDOT study illustrated the percent difference 2020 weekday ADTs to average weekday ADTs prior to 2020. Additionally, traffic volumes were compared to traffic data obtained in 2018 traffic data at the intersections of Sweet Home Road/Rensch Road and Sweet Home Road/Maple Road before the COVID-19 pandemic by SRF Associates.

The historic counts in the study area were used to adjust the collected data to reflect 2022 representative traffic conditions by increasing the collected traffic volumes for specific movements, such as traffic entering and exiting the University at Buffalo. This is consistent with NYSDOT and ITE methodology for adjustments related to collected traffic volumes affected by the COVID-19 pandemic. The adjustments are reflected in the Appendices.

Figure 3B illustrates the representative 2022 weekday AM and PM peak hour base volumes used for analysis purposes in this study.

C. Field Observations

The study intersections were observed during both peak intervals to assess current traffic operations. Signal timing and phasing information was obtained by the NYSDOT to determine peak hour phasing plans and phase durations during each interval. This information was used to support and/or calibrate capacity analysis models described in detail later in this report.

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D. Existing Crash Investigation

The purpose of this crash analysis is to identify inherent safety issues by studying and quantifying historical crashes at the study intersections and identifying potential crash patterns and clusters.

A crash cluster is defined as an abnormal occurrence of similar crash types occurring at approximately the same location or involving the same geometric features. The severity of the crashes should also be considered. A history of crashes is an indication that further analysis is required to determine the cause(s) of the crash(es) and to identify what actions, if any, could be taken to mitigate the crashes.

A crash investigation within the study area was conducted to assess the safety history from January 1, 2017, through December 31, 2019. The data was provided by the New York State Department of Motor Vehicles through a Freedom of Information (FOIL) request. Given that the COVID-19 pandemic influenced daily travel in 2020 and 2021, any reported crashes were dismissed from the study.

Reportable (non-injury, injury, and fatal injury) type crashes are defined as damage to one person's property in the amount of $1,001 or more. The Non-Reportable type crashes result in property damage of $1,000 or less. Crash rates were computed for the study intersection and compared with NYSDOT average crash rates for similar intersections, as summarized in **Table II**. Intersection rates are listed as crashes per million entering vehicle (CR/MEV). Pertinent crash data is provided in the Appendices.

TABLE II: EXISTING CRASH RATES

INTERSECTION	TOTAL CRASHES	NUMBER OF ENTERING VEHICLES	ACTUAL CRASH RATE	STATEWIDE AVERAGE CRASH RATE
Sweet Home Road/Rensch Road	32	28,589	1.02	0.26
Sweet Home Road/The Station	1	22,705	0.04	0.07
Sweet Home Road/Maple Road	64	38,863	1.50	0.26

Notable crash clusters are approaches with three or greater identifiable consistent crash types.

Sweet Home Road/Rensch Road

As shown in **Table II**, the study intersection has a crash rate that is approximately 3.9 times higher than the statewide average crash rate for similar intersections. The following crashes occurred: rear end (17), fixed object (4), left turn (4), overtaking (2), right turn (2), right angle (1), sideswipe (1), bicycle (1). The bicycle crash resulted in an injury as the cyclist was crossing the road with traffic.

The following patterns were reported:

- Rear end
  - Northbound (nine crashes)
  - Southbound (seven crashes)
- Left turn
  - Eastbound (three crashes)

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- Fixed object
    - Northbound (three crashes)

The reported rear end crashes (53%) are characteristic of moderate to heavily trafficked signalized intersections. The causes of the rear end crashes were generally due to driver error, unsafe speeds, or following too closely. There are no correctable deficiencies at the intersection that could be improved to significantly improve safety.

Sweet Home Road/The Station

As shown in **Table II**, the study intersection has a crash rate that is lower than the statewide average crash rate for similar intersections. No discernible crash patterns exist; thus, no geometric improvements are recommended.

Sweet Home Road/Maple Road

As shown in **Table II**, the study intersection has a crash rate that is approximately 5.7 times higher than the statewide average crash rate for similar intersections. The following crashes occurred: rear end (24), left turn (15), right angle (10), overtaking (7), right turn (3), head on (2), fixed object (2), pedestrian (1). The pedestrian crash resulted in an injury as the pedestrian was crossing the road with traffic.

The following patterns were reported:

- Rear end
    - Northbound (three rashes)
    - Southbound (nine crashes)
    - Eastbound (four crashes)
    - Westbound (eight crashes)
- Left turn
    - Northbound (six crashes)
    - Southbound (seven crashes)
- Right angle
    - Northbound (four crashes)
    - Eastbound (three crashes)
- Overtaking
    - Westbound (four crashes)

The intersection is large consisting of numerous lanes in each direction and is frequently traveled during the peak hours. Rear end (37%) and left turn (23%) crashes are the most prominent. Most of the left turn crashes occurred due to drivers failing to yield the right of way due to the permissive movement during the thru movement on green. These drivers are likely to turn with smaller than desirable gaps in traffic and potentially creating an unsafe condition.

To correct this condition, protected left turn phases would reduce these crashes; however, this would also reduce the overall capacity of the intersection. One such improvement may be to upgrade the signals to change the green signal to flashing yellow arrow for permissive left turns. No geometric improvements are recommended.

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V. FUTURE AREA DEVELOPMENT AND LOCAL GROWTH

Construction of the proposed project is anticipated to reach full build-out within approximately five years depending on market conditions. Town of Amherst personnel were contacted to discuss any other specific projects that are currently approved or under construction that would generate additional traffic in the study area. Two projects were identified:

- 1265 Sweet Home Road
- Completion of The Station

The Station is currently partially occupied. SRF Associates reached out to the property management to determine actual occupancy but did not receive any information. SRF Associates produced the traffic study for this project and review the projected trip generation estimates. The difference between the full development trip generation estimates in the study and the actual trips entering and entering the site during the peak hours were added to the study area intersections.

To account for normal increases in background traffic growth, including any unforeseen developments in the project study area, aside from the two projects mentioned, a growth rate of 0.25% was applied to the existing traffic volumes in the study area based upon a review of historical traffic information obtained from the NYSDOT. All ambient growth calculations are included in the Appendices. The background traffic volumes are depicted in **Figure 4**.

VI. PROPOSED DEVELOPMENT

A. Project Description

The proposed project consists of constructing:

- ±10,000 square feet (SF) of office space
- ±10,000 SF of retail space
- 500 residential units marketed as student housing (1,025 bedrooms)

Access to the proposed project will be provided via two full access driveways along Rensch Road. **Figure 5** illustrates the proposed site plan as prepared by Carmina Wood Morris.

B. Site Generated Traffic

The volume of traffic generated by a site is dependent on the intended land use and size of the development. Trip generation is an estimate of the number of trips generated by a specific building or land use. These trips represent the volume of traffic entering and exiting the development. Trip Generation Manual (11th Edition) published by the Institute of Transportation Engineers (ITE) is used as a reference for this information. The trip rate for the peak hour of the generator may or may not coincide in time or volume with the trip rate for the peak hour of adjacent street traffic. Volumes generated during the peak hour of the adjacent street traffic and proposed land use, in this case, the weekday commuter AM and PM peaks, represent a more critical volume when analyzing the capacity of the system; those intervals will provide the basis of this analysis.

The proposed mixed-use project consists of three different land uses (residential, office, and retail) and is considered mixed-use (multi-use). According to the Institute of Transportation Engineers Trip Generation Handbook, (3rd Edition), "…a multi-use development is typically a single real-estate project that consists of two or more ITE land use classifications between

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which trips can be made without using the off-site road system. Because of the nature of these land uses, the trip-making characteristics are interrelated, and some trips are made among the on-site uses. This capture of trips internal to the site has the net effect of reducing vehicle trip generation between the overall development site and the external street system (compared to the total number of trips generated by comparable, standalone sites)." "In some multi-use developments, these internal trips can be made by walking or by vehicles entirely on internal pathways or internal roadways without using streets external to the site."

The Handbook indicates internal capture rates for trips within a multi-use development to vary between residential, office, retail, restaurant, hotel, entertainment and recreational uses during the AM and PM peak hours. Given the proposed land use components and interconnection between these components, multi-use total volume trips will likely occur.

Methodology contained in National Cooperative Highway Research Program (NCHRP) Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Development was consulted to perform the mixed-use adjustment. The interactive spreadsheet considers baseline mode shares and vehicle occupancy factors for the proposed land uses, as described in the Handbook, as well as average land use interchange distances (feet walking distance) to determine the internal capture percentage. This completed spreadsheet model is included in the Appendices. The NCHRP 684 model reported an internal baseline capture percentage of 5% during the AM peak hour and 10% during the PM peak hour.

These multi-use trip projection adjustments were applied to the respective site generated trips and subtracted from the traffic entering and exiting the site during the peak periods.

Table III shows the total site generated trips, internal trips, and resulting primary trips that are added to the existing highway system for full development of the project. All trip generation information has been included in the Appendices.

TABLE III: SITE GENERATED TRIPS

DESCRIPTION	ITE LUC	SIZE	AM PEAK HOUR		PM PEAK HOUR	
			ENTER	EXIT	ENTER	EXIT
Residential	225	1,025 bedrooms	39	64	110	111
Office	710	±10,000 SF	13	2	2	12
Retail	822	±10,000 SF	14	10	33	33
Total Site Generated Trips			**66**	**76**	**145**	**156**
Internal Trips			*-4*	*-4*	*-16*	*-16*
Total Primary Trips			**62**	**72**	**129**	**140**

Note:
1. ITE LUC = ITE Land Use Code

Using ITE Trip Generation Manual data, the proposed project is expected to generate approximately 66 entering/76 exiting vehicle trips during the AM peak hour and 145 entering/156 exiting vehicle trips during the PM peak hour.

However, not all driveway volumes are new, but instead a portion of the proposed volume is reduced considering internal capture adjustments. Thus, the proposed project is expected to generate approximately 62 entering/72 exiting vehicle trips during the AM peak hour and 129 entering/140 exiting vehicle trips during the PM peak hour.

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C. *Site Traffic Distribution*

The cumulative effect of site-generated traffic on the transportation network is dependent on the origins and destinations of that traffic and the location of the access drives serving the site. The proposed arrival/departure distribution of traffic generated by the proposed project is considered a function of several parameters, including:

- Proximity and access to the University at Buffalo
- Employment centers using Census Data
- Population centers using Census Data
- Commercial centers
- Proposed access locations
- Existing traffic patterns
- Existing traffic conditions and controls

Figure 6A shows the anticipated trip distribution pattern percentages for the traffic from the residential program and **Figure 6B** shows the anticipated trip distribution pattern percentages for the traffic from the commercial program. **Figure 7** illustrates the peak hour project site-generated traffic based on those percentages.

VII. FULL DEVELOPMENT VOLUMES

Proposed design hour traffic volumes are developed for the AM and PM peak hours by combining the background traffic conditions (**Figure 4**) and the new site generated traffic volumes (**Figure 7**) to yield the traffic volumes under full development conditions. The resulting design hour volumes for the proposed project are illustrated in **Figure 8** under full build-out conditions.

As stated, the existing site is currently occupied by office space. These tenants will be relocated upon full build-out of the proposed project. Traffic adjustments related to this condition is shown in the Appendices.

VIII. CAPACITY ANALYSIS

A. *Description of Capacity Analysis*

Capacity analysis is a technique used for determining a measure of effectiveness for a section of roadway and/or intersection based on the number of vehicles during a specific time period. The measure of effectiveness used for the capacity analysis is referred to as a Level of Service (LOS). Levels of Service are calculated to provide an indication of the amount of delay that a motorist experiences while traveling along a roadway or through an intersection. Since the most amount of delay to motorists usually occurs at intersections, capacity analysis focuses on intersections, as opposed to highway segments.

Six Levels of Service are defined for analysis purposes. They are assigned letter designations, from "A" to "F", with LOS "A" representing the conditions with little to no delay, and LOS "F" conditions with very long delays. Suggested ranges of service capacity and an explanation of Levels of Service are included in the Appendices. LOS “C” or better is generally desirable, but LOS “D” for signalized locations and LOS “E” for unsignalized are generally acceptable during peak periods so long as the volume to capacity ratio (v/c) is below 1.0.

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The standard procedure for capacity analysis of signalized and unsignalized intersections is outlined in the Highway Capacity Manual (HCM 2016) published by the Transportation Research Board. Traffic analysis software, Synchro 11, which is based on procedures and methodologies contained in the HCM, was used to analyze operating conditions at the study area intersections. The procedure yields a Level of Service based on the HCM 2016 as an indicator of how well intersections operate. This study used HCM 2000 methodology for determining operations at the unsignalized intersections in accordance with local NYSDOT Region 5 guidelines.

Given that the intersection of Sweet Home Road/Maple Road exceeds capacity (v/c ratio greater than 1.0) during the PM peak hour, traffic simulation modeling was also used using an extension of the Synchro software called SimTraffic. During simulation modeling, vehicles are individually tracked, and statistics are recorded on a second-by-second basis to determine the delays each vehicle experiences. Since SimTraffic simulation modeling is microscopic and stochastic, meaning car movement parameters vary randomly within a set distribution based on an initial seed number, the same traffic volume may result in slightly different results depending on the random seed used. Therefore, simulation results are reported based on an average value of multiple simulation runs to reduce the variability in results.

Synchro and SimTraffic results are contained in the Appendices.

B. Capacity Analysis Results

Existing and background operating conditions during the peak study periods are evaluated to determine a basis for comparison with the projected future conditions. The future traffic conditions generated by the proposed project were analyzed to assess the operation of the study area intersections. Capacity results for existing, background and full development conditions are listed in **Table IV**. The discussion following the table summarizes capacity conditions.

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TABLE IV: CAPACITY ANALYSIS RESULTS

INTERSECTION	2022 EXISTING CONDITIONS AM		2022 EXISTING CONDITIONS PM		2027 BACKGROUND CONDITIONS AM		2027 BACKGROUND CONDITIONS PM		2027 FULL BUILD CONDITIONS AM		2027 FULL BUILD CONDITIONS PM	
1. Rensch Road/Proposed Westerly Driveway (U)												
EB - Rensch Road	NA		NA		NA		NA		A	0.0	A	0.0
SB - Proposed Westerly Driveway									A	9.3	A	10.0
2. Rensch Road/Office Lot/Villas on Rensch (W) (U)												
EB - Rensch Road	A	0.0	A	0.1	A	0.0	A	0.1	NA		NA	
WB - Rensch Road	A	0.1	A	2.1	A	0.1	A	2.1	A	0.0	A	0.1
NB - Villas on Rensch (W)	A	9.4	A	9.4	A	9.4	A	9.5	A	9.4	A	0.0
SB - Office Lots	B	10.4	B	12.1	B	10.4	B	12.1	NA		NA	
3. Rensch Road/Proposed Easterly Driveway (U)												
EB - Rensch Road	NA		NA		NA		NA		A	0.1	A	0.1
SB - Proposed Easterly Driveway									A	10.0	B	12.1
4. Rensch Road/Office Lot/Villas on Rensch (E) (U)												
EB - Rensch Road	A	0.0	A	0.0	A	0.0	A	0.0	NA		NA	
WB - Rensch Road	A	0.0	A	0.2	A	0.0	A	0.2	A	0.2	A	1.4
NB - Villas on Rensch (E)	A	9.5	A	0.0	A	9.5	A	0.0	A	9.9	B	10.1
SB - Office Lots	A	9.7	A	9.7	A	9.7	A	9.7	NA		NA	

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TABLE IV: CAPACITY ANALYSIS RESULTS

INTERSECTION	2022 EXISTING CONDITIONS				2027 BACKGROUND CONDITIONS				2027 FULL BUILD CONDITIONS			
	AM		PM		AM		PM		AM		PM	
5. Sweet Home Road/Rensch Road (S)												
EB left - Rensch Road	D	36.1	D	46.6	D	38.4	D	46.9	D	37.0	D	46.8
EB thru/right - Rensch Road	D	38.2	D	53.0	D	40.7	D	53.8	D	43.6	E	59.5
WB left - Rensch Road	D	42.2	E	59.3	D	45.1	E	61.8	D	46.7	E	67.7
WB left/thru - Rensch Road	D	41.5	E	58.8	D	44.3	E	62.7	D	46.2	E	68.4
WB right - Rensch Road	A	6.6	A	9.5	A	2.3	A	9.4	A	2.5	A	9.3
NB left - Sweet Home Road	D	42.1	E	55.5	D	44.9	E	56.0	D	45.6	E	59.1
NB thru - Sweet Home Road	C	29.5	D	43.0	C	32.4	D	43.6	C	34.8	D	45.3
NB right - Sweet Home Road	A	6.5	A	7.7	A	7.2	A	7.9	A	7.7	A	8.0
SB left - Sweet Home Road	E	61.6	E	68.7	D	51.0	E	72.4	E	57.9	E	78.0
SB thru/right - Sweet Home Road	C	21.2	C	26.3	C	21.4	C	26.7	C	20.6	C	32.1
Overall LOS	**C**	**29.4**	**D**	**38.0**	**C**	**27.9**	**D**	**39.2**	**C**	**29.7**	**D**	**43.3**
Volume-to-Capacity (v/c) Ratio	**0.89**		**0.83**		**0.82**		**0.85**		**0.86**		**0.88**	
6. Sweet Home Road/The Station (U)												
WB left - The Station	B	14.5	C	22.6	C	16.3	C	24.6	C	16.2	D	25.1
WB right - The Station	B	10.7	B	12.4	B	11.4	B	12.7	B	11.3	B	12.8
SB left - Sweet Home Road	A	9.0	B	10.6	A	9.3	B	10.8	A	9.3	B	10.9
7. Sweet Home Road/Maple Road (S)												
EB left - Maple Road	C	31.6	E	61.9	C	34.1	E	78.1	C	33.6	E	71.1
EB thru - Maple Road	C	32.6	E	73.9	C	32.7	F	129.5	C	32.6	F	104.8
EB thru - Maple Road		NA	D	38.3		NA	D	43.8		NA	D	44.5
EB right - Maple Road	A	0.3	A	9.0	A	0.3	A	7.6	A	0.3	A	8.9
WB left - Maple Road	C	21.7	D	35.9	C	21.9	D	43.2	C	21.8	D	39.9
WB thru - Maple Road	D	40.2	E	72.8	D	40.7	F	87.4	D	40.5	F	85.2
WB thru - Maple Road		NA	D	48.1		NA	E	67.3		NA	E	65.4
WB right - Maple Road	A	3.9	A	7.6	A	4.2	A	9.6	A	4.0	B	10.2
NB left - Sweet Home Road	B	18.7	C	29.8	B	19.0	C	31.1	B	19.0	C	31.7
NB thru - Sweet Home Road	D	40.4	D	43.6	D	41.9	D	49.5	D	41.3	D	44.2
NB right - Sweet Home Road	A	2.9	A	5.8	A	3.0	A	6.9	A	3.0	A	7.5
SB left - Sweet Home Road	C	22.0	C	30.6	C	23.1	C	33.8	C	23.0	C	34.6
SB thru - Sweet Home Road	C	31.9	D	35.7	C	32.8	D	35.3	C	33.1	D	37.7
SB right - Sweet Home Road	A	3.1	B	12.4	A	3.7	B	11.9	A	4.1	B	13.7
Overall LOS	**C**	**27.5**	**D**	**40.8**	**C**	**28.1**	**D**	**54.5**	**C**	**27.9**	**D**	**52.7**
Volume-to-Capacity (v/c) Ratio	**0.68**		**1.13**		**0.72**		**1.18**		**0.71**		**1.22**	

Notes:

1. A (0.0) = Level of Service (Delay in seconds per vehicle)
2. EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound
3. (S) = Signalized; (U) = Unsignalized
4. N/A = Approach does not exist and/or was not analyzed during this condition
5. Green shaded cells indicate low delays, yellow shaded cells indicate moderate delays, red shaded cells indicate long delays.
6. The v/c ratio, also referred to as degree of saturation, represents the sufficiency of an intersection to accommodate the vehicular demand. A v/c ratio less than 0.85 generally indicates that adequate capacity is available and vehicles are not expected to experience significant queues and delays. A v/c ratio between 0.85 and 0.95 generally indicates an intersection is nearing capacity. Intersections with a v/c ratio of 1.0 or greater generally indicate conditions at or above capacity.
7. Due to v/c being greater than 1.0 at Sweet Home Road/Maple Road during the PM peak hour, the condition was analyzed using SimTraffic Simulations.

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1. Rensch Road/Proposed Westerly Driveway

All movements are projected to operate at LOS "A" under future build conditions during both peak hours studied. No capacity improvements are warranted nor recommended.

2. Rensch Road/Office Lots/Villas on Rensch (W)

All movements operate at LOS "B" or better under existing, projected background, and future build conditions during both peak hours studied. The intersection can accommodate the projected new traffic volumes resulting from the project; thus, no capacity improvements are warranted nor recommended.

3. Rensch Road/Proposed Easterly Driveway

All movements are projected to operate at LOS "B" or better under future build conditions during both peak hours studied. No capacity improvements are warranted nor recommended.

4. Rensch Road/Office Lots/Villas on Rensch (E)

All movements operate at LOS "A" under existing, projected background, and future build conditions during both peak hours studied. The intersection can accommodate the projected new traffic volumes resulting from the project; thus, no capacity improvements are warranted nor recommended.

5. Sweet Home Road/Rensch Road

All movements generally operate at LOS "E" or better under existing, projected background, and future build conditions during both peak hours studied. Signal timing improvements are recommended under background conditions during the AM peak hour to maintain optimization. This consists of reducing the northbound left green time to 20 seconds (from 25 seconds) and increasing the southbound left green time to 28 seconds (from 25 seconds).

Upon full build conditions, the southbound left movement during the AM peak hour is projected to change from LOS "D" to "E"; a borderline condition, as the threshold is at 55.0 seconds of delay per vehicle. During the PM peak hour, the eastbound thru/right movement changes from LOS "D" to "E"; a borderline condition.

The intersection can accommodate the projected new traffic volumes resulting from the project; thus, no capacity improvements are warranted nor recommended.

6. Sweet Home Road/The Station

All movements operate at LOS "D" or better under existing, projected background, and future build conditions during both peak hours studied. Between background and full build conditions, the westbound left movement changes from LOS "C" to "D" during the PM peak hour; a borderline condition as the threshold occurs at 25.0 seconds of delay per vehicle. The intersection can accommodate the projected new traffic volumes resulting from the project; thus, no capacity improvements are warranted nor recommended.

7. Sweet Home Road/Maple Road

All movements generally operate at LOS "D" or better under existing, projected background, and future build conditions during the AM peak hour. However, operational deficiencies exist during the PM peak hour under all conditions based upon traffic simulations. The overall intersection operates with a v/c ratio greater than 1.0 with an overall LOS of "D".

The eastbound left movement and existing traffic volumes are accommodated by a single lane. An additional left turn would be more appropriate based on the general rule of thumb of

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providing an additional left turn lane when peak hour left turn traffic volumes exceed 300 vehicles. Additionally, the southbound right turn movement is accommodated by a single lane. Additional lanes to accommodate these turning movements would improve overall capacity. However, the construction of these improvements would require significant widening, relocation of utilities, and widening past the intersection.

The proposed project will contribute approximately 1.7% of total intersection traffic during the AM peak hour and 2.3% of total intersection traffic during the PM peak hour.

When considering the projected traffic increases resulting from the proposed project, no project related capacity improvements are recommended.

IX. ALTERNATIVE PARKING PLAN

A. Town Parking Requirements

A Parking Demand Assessment was prepared consisting of an Alternate Parking Study per Section 7-1-7-A of the Zoning Code. When evaluating the parking supply needs for the proposed mixed-use project, our firm projected the parking demand considering shared parking (mixed-use) principles using nationally accepted methodology developed by the Urban Land Institute (ULI), ITE, International Council of Shopping Centers (ICSC), and National Parking Association (NPA). and a comparison to Town requirements, as set forth within Section 5A-9-1-A of the Town of Amherst's Updated Zoning Code Adopted on September 3, 2019 for Mixed-Use Districts.

Section 5A-9-1-A of the Zoning Code sets forth the off-street parking requirements for different categories of land uses. **Table V** depicts the required parking spaces for the project site.

TABLE V: TOWN CODE PARKING REQUIREMENTS

UNIT/USE TYPE	REQUIRED PARKING RATIO	SIZE	TOTAL REQUIRED PARKING SPACES
Two-bedroom unit	1.0 space per dwelling unit	475 units	475
Three or more bedroom unit	1.5 spaces per dwelling unit	25 units	38
Retail Sales	2.5 spaces per 1,000 SF	10,000 SF	25
Office	2.5 spaces per 1,000 SF	10,000 SF	25
Total Required Parking Spaces			**563**

Strict application of the unshared off-street parking standards in the Zoning Code results in a parking requirement of 563 spaces. The number of parking spaces to be provided is 316 surface spaces and 240 structured spaces for a total of 556 spaces. Thus, there is a deficit of seven parking spaces per strict application of Section 5A-9-1-A of the Zoning Code.

B. Shared Parking Demand

Shared parking studies are conducted to establish the total number of spaces necessary by mixed-use developments to effectively serve expected parking demands. The shared parking concept builds upon the premise that land uses in a mixed-use development often do not share the same peak demand period, so spaces can be shared between the different land uses

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during different peak periods. Each land use typically has a peak demand period where it would occupy the maximum number of spaces that the use requires and an off-peak period where a lesser percentage of the maximum spaces would be occupied; be it by time of day, day of week, or even month of the year. This allows for the project to provide fewer spaces than would be required if the land uses on a project site were to be treated separately with individual parking demands. The concept of shared parking is well recognized within the real estate and regulatory community and is proven to work.

To estimate the number of parking spaces required for the proposed mixed-use project, this assessment used the ULI methodology for shared parking. This methodology is utilized by transportation engineers and planners when evaluating the parking demand for a mixed-use project. The ULI Shared Parking 3rd Edition includes state-of-the-art practice methodologies for determining parking demand in these types of projects.

Accompanying the publication is an interactive Shared Parking Calculation Model (Model) that is used to estimate the shared parking demand. The Model requires a user to input the number of units associated with each proposed land use. Within the Model, 32 land uses are identified – some of which are subdivided into more refined categories – with 44 different recommended base parking ratios based on suburban locations with little or no transit. Data contained within the Model is from a combination of ULI surveys and the ITE Parking Generation Manual. Outputs consist of a summary table describing the base parking demand and shared parking reduction; a monthly demand comparison; weekday and weekend demand by month; and weekday and weekend demand by hour.

The peak hour demand, respective of weekday, weekend, and seasonal demands, is projected to occur at 7:00 PM on a December weekend. The projected peak hour demand for the mixed-use project (i.e., the busiest hour of the busiest weekday or weekend of the year) is ±566 spaces. Parking demand accumulations for the peak weekday and weekend are presented in **Table VI**.

TABLE VI: SHARED PARKING DEMAND PROJECTIONS

LAND USE	SIZE	WEEKDAY		WEEKEND	
		UNADJUSTED DEMAND	**SHARED DEMAND**	UNADJUSTED DEMAND	**SHARED DEMAND**
Residential	500 units	519	**519**	544	**544**
Retail	±10,000 SF	36	**29**	40	**23**
Office	±10,000 SF	38	**4**	5	**0**
Total Parking Spaces		593	**552**	589	**566**
Shared Parking Reduction		**7%**		**4%**	

Notes:
1. Weekday shared demand occurs in December at 7:00 PM
2. Weekend shared demand occurs in December at 7:00 PM

When considering the site's 556 total parking spaces, the projected peak shared demand is deficient by 10 spaces.

It is noted that the proposed residential use is marketed as student housing. When considering the requirements per Town Code and demands using the ULI Model, these sources assume that the residential demands are typical multifamily uses and not student uses. Students are

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highly likely to own fewer vehicles per than typical multifamily developments, especially given the proximity of the proposed project to the UB North Campus.

Parking reduction strategies are being provided, such as bicycle parking spaces. Given these considerations, no significant adverse parking impacts are projected.

X. CONCLUSIONS & RECOMMENDATIONS

This Traffic Impact Study identified and evaluated the potential traffic impacts that can be expected from the proposed mixed-use development at 1400-1416 Sweet Home Road in the Town of Amherst, New York. The results of this study determined that the existing transportation network can adequately accommodate the projected traffic volumes and resulting minor impacts to study area intersections with the following mitigation in place. The following sets forth the conclusions and recommendations based upon the results of the analyses:

1. Using ITE Trip Generation Manual data, the proposed project is expected to generate approximately 66 entering/76 exiting vehicle trips during the AM peak hour and 145 entering/156 exiting vehicle trips during the PM peak hour.

2. However, not all driveway volumes are new, but instead a portion of the proposed volume is reduced considering internal capture adjustments. Thus, the proposed project is expected to generate approximately 62 entering/72 exiting vehicle trips during the AM peak hour and 129 entering/140 exiting vehicle trips during the PM peak hour.

3. A crash analysis was conducted from 2017-2019 at the study intersections. Most of the crash types occurring at each study intersection were rear end events, a characteristic of signalized intersections along moderately to heavily trafficked arterials. However, an in-depth review of the crashes determined no deficiencies exist which can be corrected by geometric improvements. Consideration may be given to upgrading the signal at Sweet Home Road/Maple Road to change the green signals to flashing yellow arrows for permissive left turns to address the frequency of left turn crashes.

4. Minor signal timing adjustments are recommended at the intersection of Sweet Home Road/Rensch Road during the AM peak hour. These adjustments should be made under background conditions.

5. When considering Town of Amherst Zoning Code parking requirements and shared parking demands, the project site has a parking deficit of 10 or fewer spaces. It is noted that the proposed apartments are to be marketed as student housing given the proximity of the project site to the UB North Campus. When considering the requirements per Town Code and demands using the ULI Model, these sources assume that the residential demands are typical multifamily uses and not student uses. Students are highly likely to own fewer vehicles per unit than typical multifamily developments, especially given the proximity of the proposed project to the UB North Campus. Parking reduction strategies are being provided, such as bicycle parking spaces. Given these considerations, no significant adverse parking impacts are projected.

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6. The projected traffic impacts resulting from full development of the proposed mixed-use project during both peak hours can be accommodated by the existing transportation network and study area intersections. No capacity improvements are required.

7. The proposed mixed-use project will not result in any potentially significant adverse traffic impacts to the study area intersections. This Traffic Impact Study provides the Town of Amherst and involved agencies with a detailed analysis for the purpose of evaluating the potential traffic impacts associated with the proposed project.

XI. FIGURES

Figures 1 through 8 are included on the following pages.

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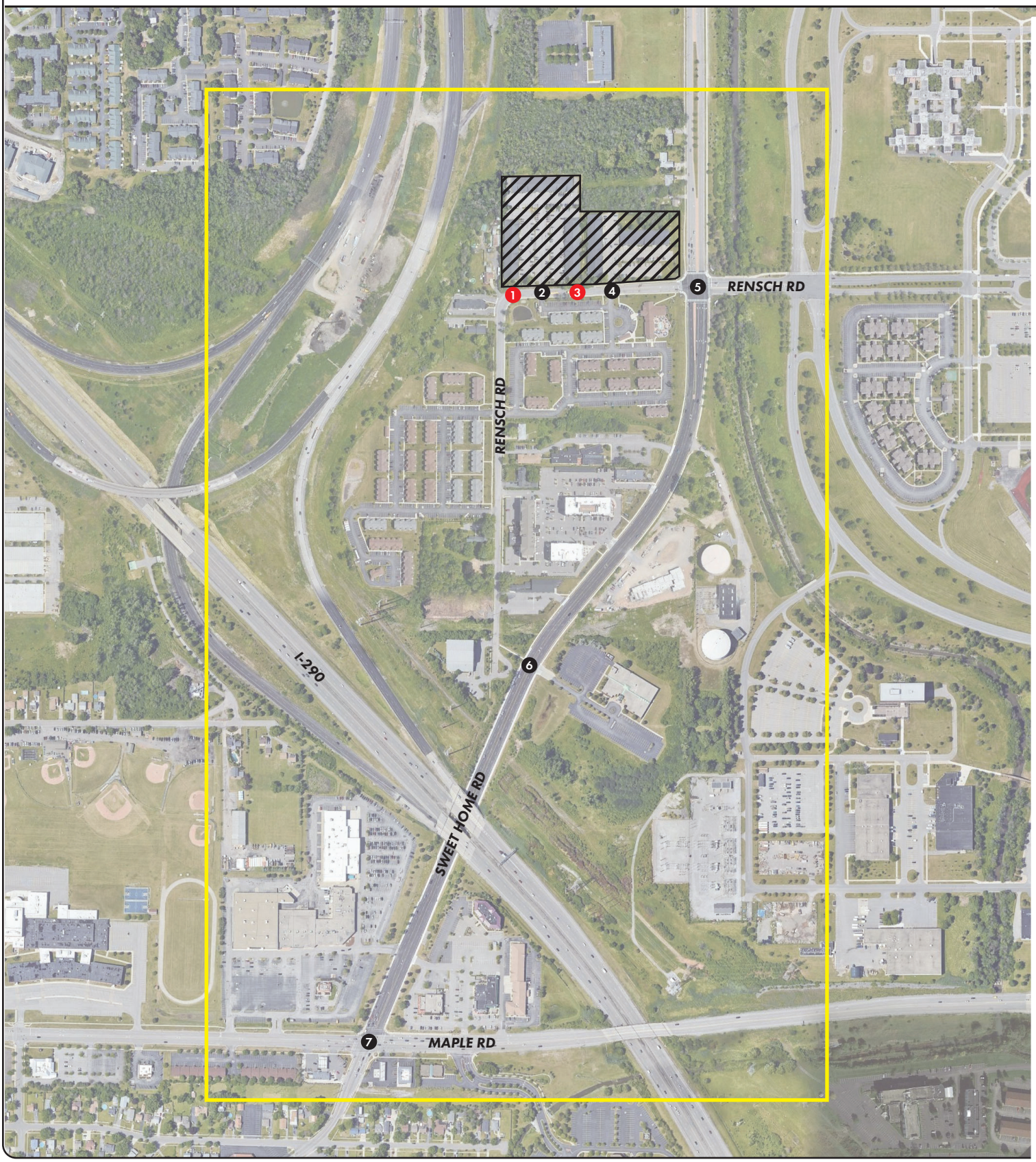
FIGURE 1: SITE LOCATION AND STUDY AREA



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Key

- 1 Study Intersection
- 1 Proposed Intersection
- Study Area
- Site Location

PROPOSED MIXED-USE DEVELOPMENT
1400-1416 SWEET HOME ROAD

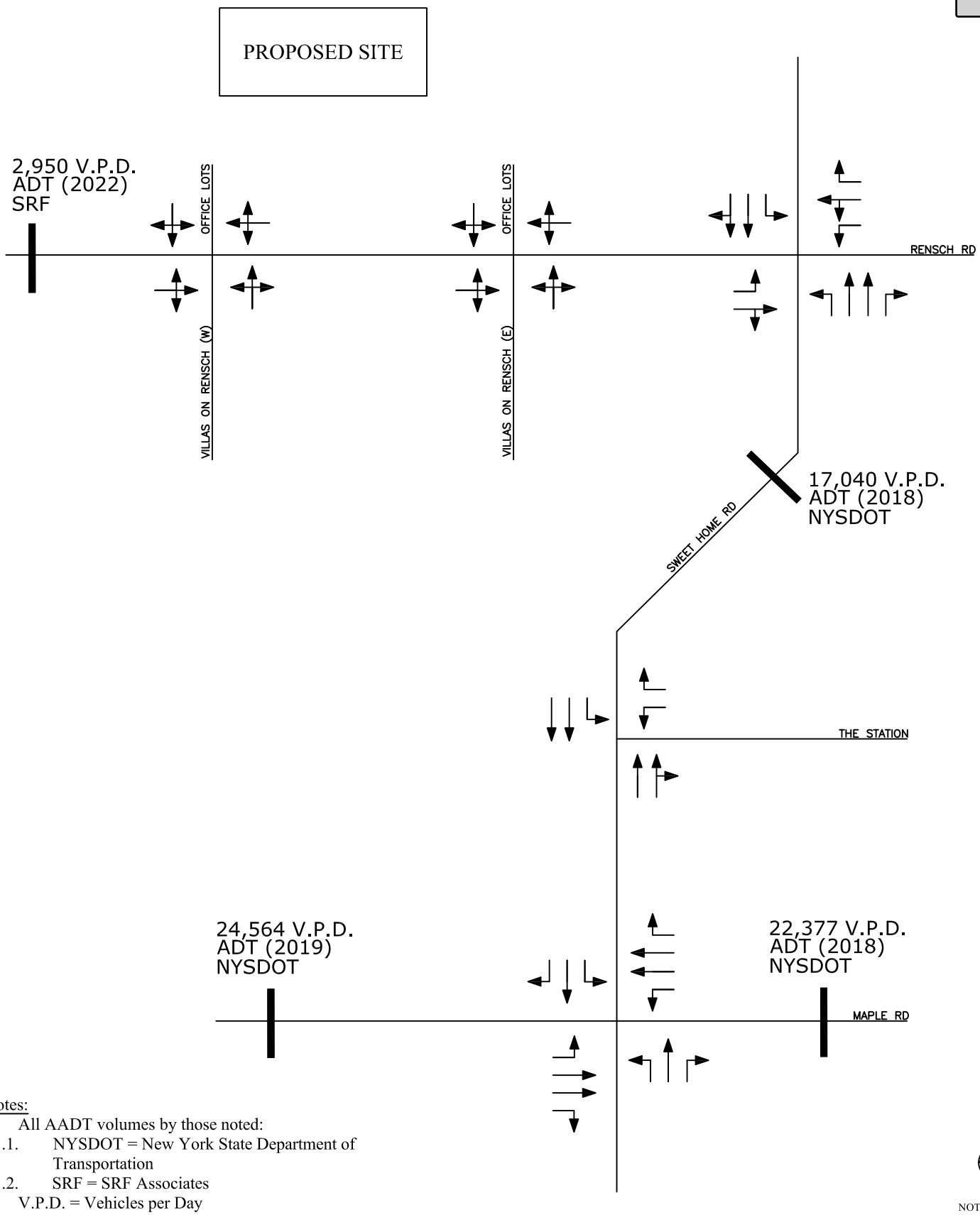
TOWN OF AMHERST, ERIE COUNTY, NEW YORK

N

0 700 1400 2100

Feet

SRF ASSOCIATE
Transportation Planning / Engineering / Design



Notes:
1. All AADT volumes by those noted:
   1.1. NYSDOT = New York State Department of Transportation
   1.2. SRF = SRF Associates
2. V.P.D. = Vehicles per Day

N
NOT TO SCAI

KEY	FIGURE 2
	LANE GEOMETRY & AVERAGE DAILY TRAFFIC
PROJECT NO: 42019	PROPOSED MIXED-USE DEVELOPMENT TOWN OF AMHERST, NY

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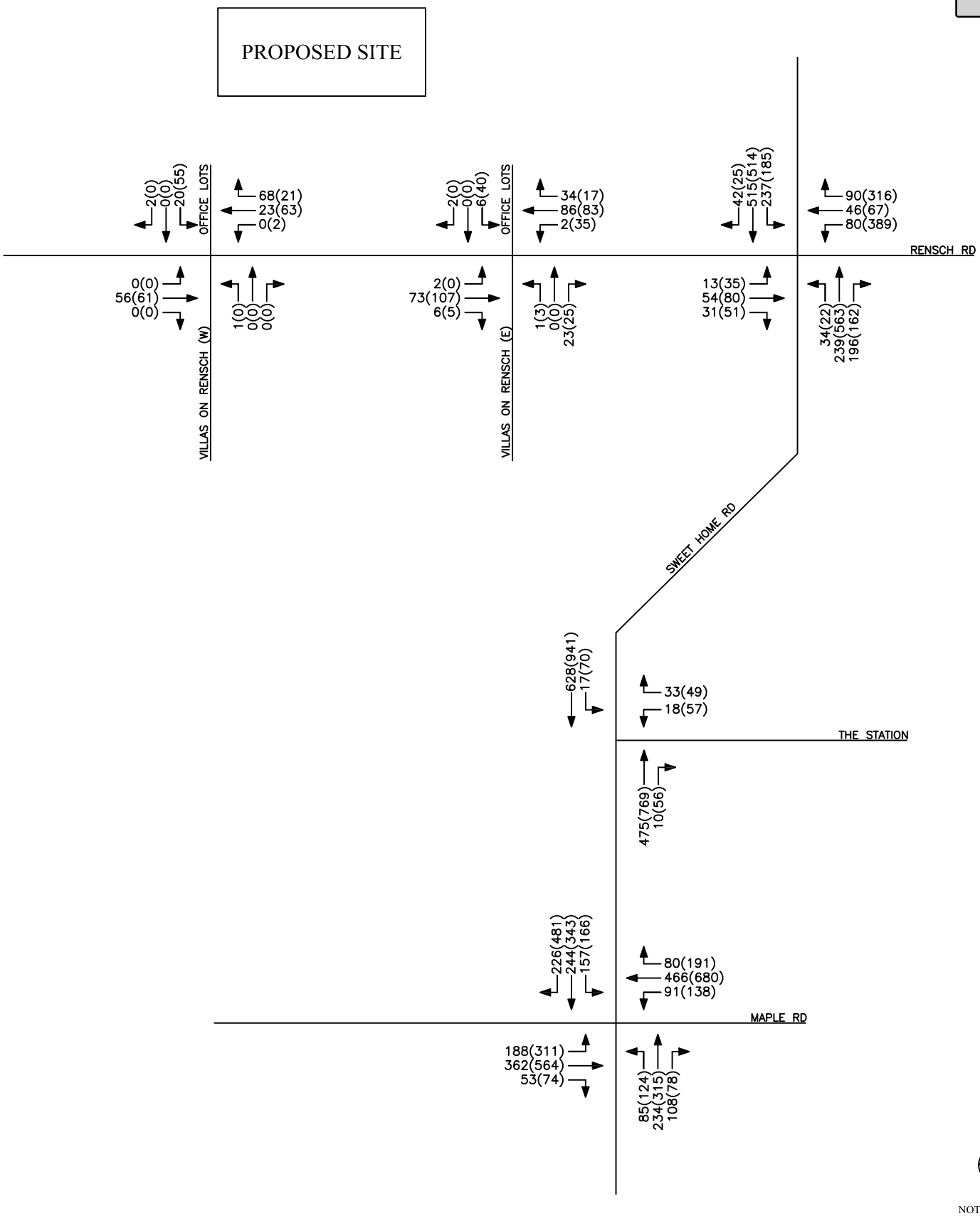

KEY	FIGURE 3A
00(00) = AM(PM)	PEAK HOUR VOLUMES 2022 UNADJUSTED CONDITIONS
PROJECT NO: 42019	PROPOSED MIXED-USE DEVELOPMENT TOWN OF AMHERST, NY

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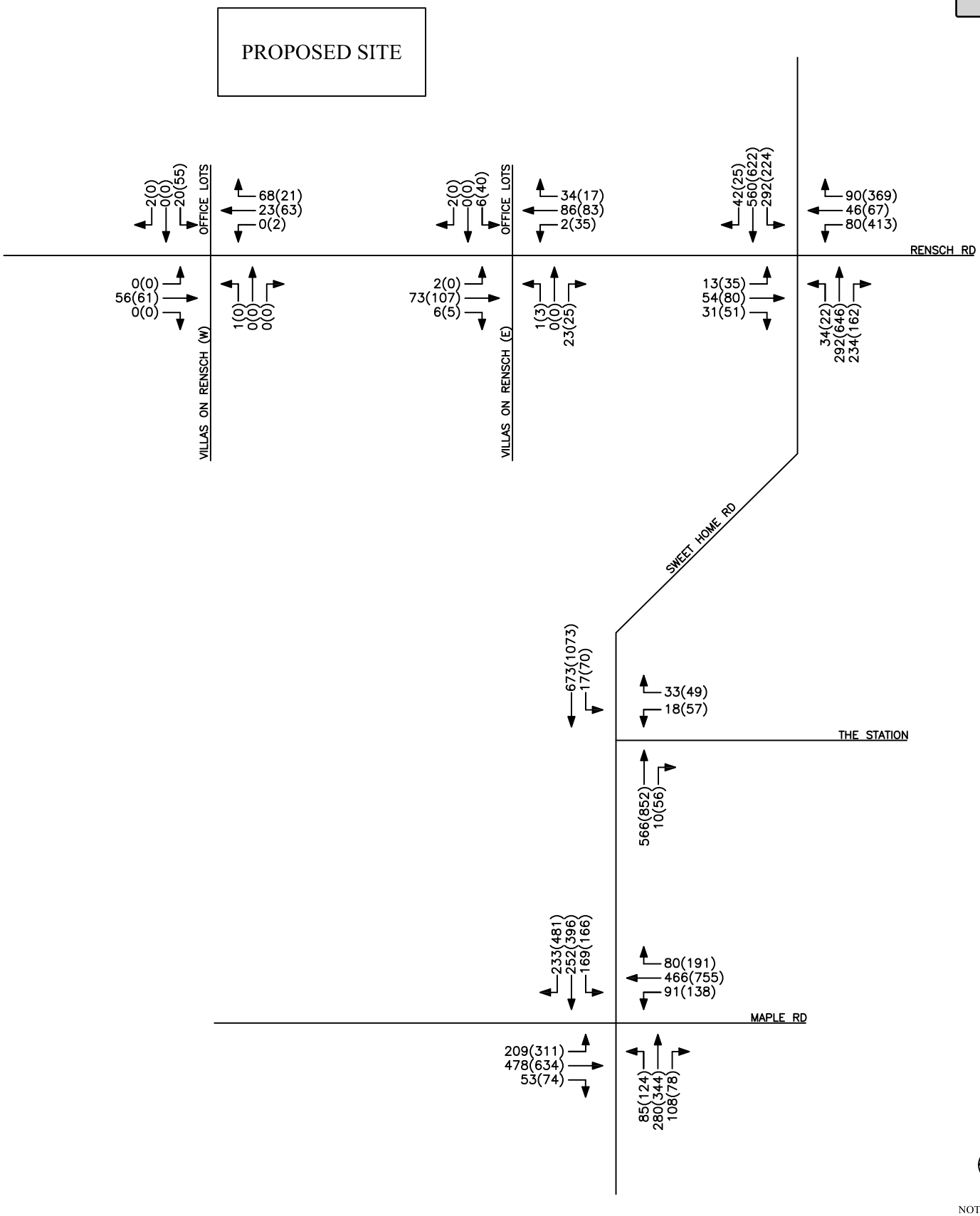

KEY	FIGURE 3B
00(00) = AM(PM)	PEAK HOUR VOLUMES 2022 EXISTING BASE CONDITIONS
PROJECT NO: 42019	PROPOSED MIXED-USE DEVELOPMENT TOWN OF AMHERST, NY

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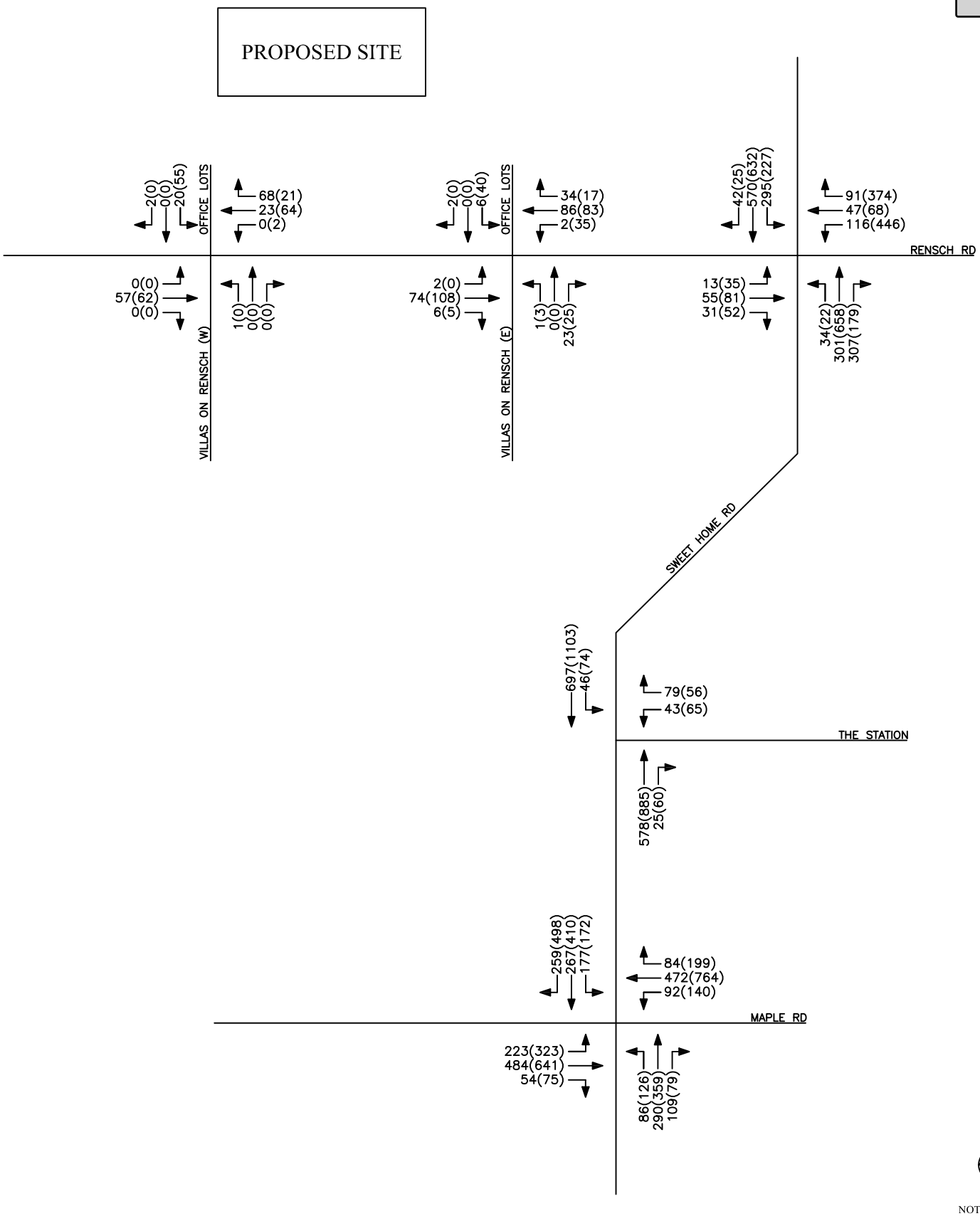

KEY	FIGURE 4	
00(00) = AM(PM)	PEAK HOUR VOLUMES 2027 BACKGROUND CONDITIONS	SRF ASSOCIATES Transportation Planning / Engineering / Design www.srfa.net / (58
PROJECT NO: 42019	PROPOSED MIXED-USE DEVELOPMENT TOWN OF AMHERST, NY	

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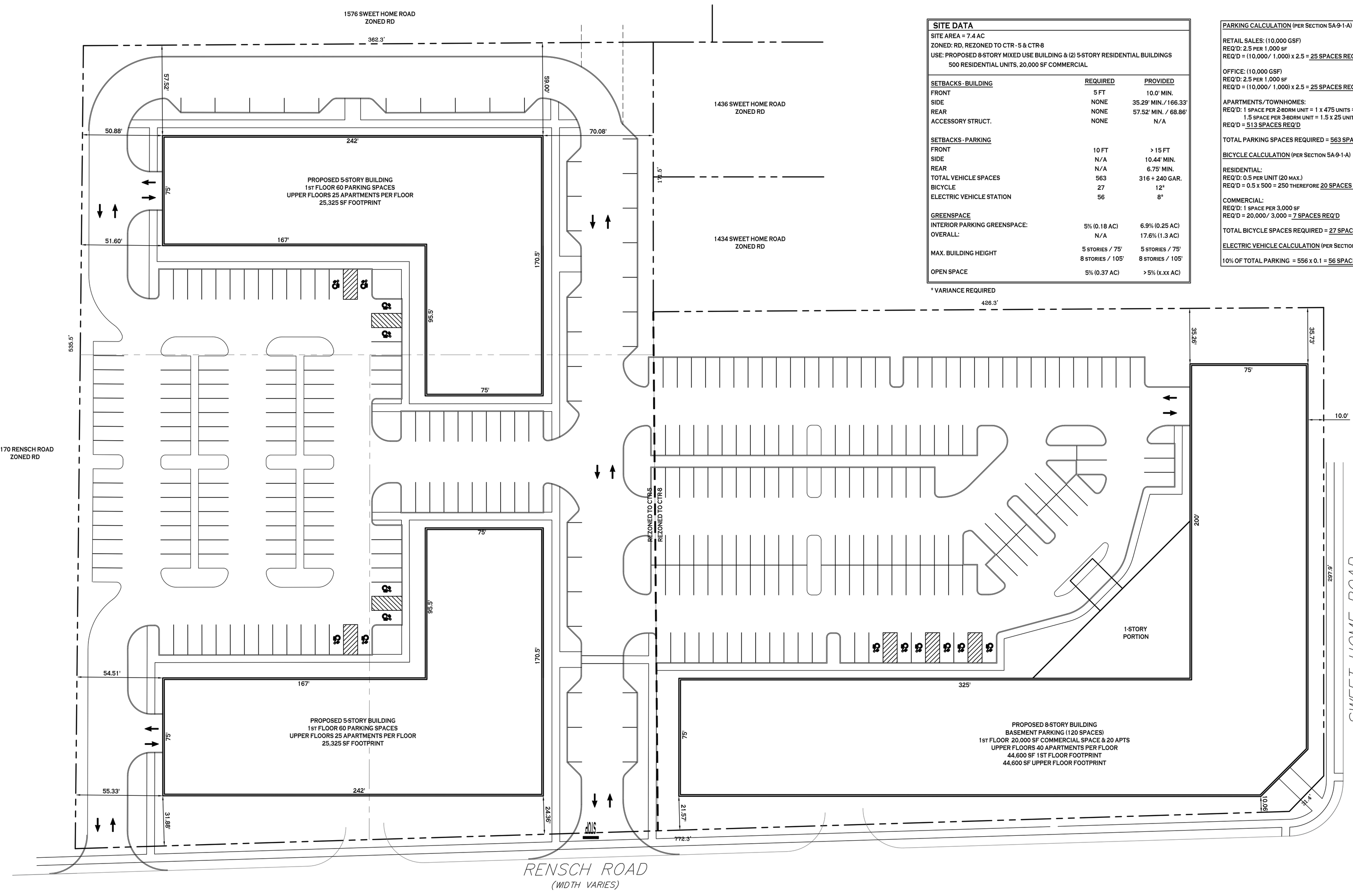


N **SITE PLAN**
SCALE: 1"=30'

SITE DATA

SITE AREA = 7.4 AC
ZONED: RD, REZONED TO CTR - 5 & CTR-8
USE: PROPOSED 8-STORY MIXED USE BUILDING & (2) 5-STORY RESIDENTIAL BUILDINGS
500 RESIDENTIAL UNITS, 20,000 SF COMMERCIAL

SETBACKS - BUILDING	REQUIRED	PROVIDED
FRONT	5 FT	10.0' MIN.
SIDE	NONE	35.29' MIN. / 166.33'
REAR	NONE	57.52' MIN. / 68.86'
ACCESSORY STRUCT.	NONE	N/A
SETBACKS - PARKING		
FRONT	10 FT	> 15 FT
SIDE	N/A	10.44' MIN.
REAR	N/A	6.75' MIN.
TOTAL VEHICLE SPACES	563	316 + 240 GAR.
BICYCLE	27	12*
ELECTRIC VEHICLE STATION	56	8*
GREENSPACE		
INTERIOR PARKING GREENSPACE:	5% (0.18 AC)	6.9% (0.25 AC)
OVERALL:	N/A	17.6% (1.3 AC)
MAX. BUILDING HEIGHT	5 STORIES / 75' 8 STORIES / 105'	5 STORIES / 75' 8 STORIES / 105'
OPEN SPACE	5% (0.37 AC)	> 5% (x.xx AC)

* VARIANCE REQUIRED

PARKING CALCULATION (PER SECTION 5A-9-1-A)

RETAIL SALES: (10,000 GSF)
REQ'D: 2.5 PER 1,000 SF
REQ'D = (10,000 / 1,000) x 2.5 = 25 SPACES REQ'D

OFFICE: (10,000 GSF)
REQ'D: 2.5 PER 1,000 SF
REQ'D = (10,000 / 1,000) x 2.5 = 25 SPACES REQ'D

APARTMENTS/TOWNHOMES:
REQ'D: 1 SPACE PER 2-BDRM UNIT = 1 X 475 UNITS = 475 SPACES
1.5 SPACE PER 3-BDRM UNIT = 1.5 X 25 UNITS = 38 SPACES
REQ'D = 513 SPACES REQ'D

TOTAL PARKING SPACES REQUIRED = 563 SPACES

BICYCLE CALCULATION (PER SECTION 5A-9-1-A)

RESIDENTIAL:
REQ'D: 0.5 PER UNIT (20 MAX.)
REQ'D = 0.5 X 500 = 250 THEREFORE 20 SPACES REQ'D.

COMMERCIAL:
REQ'D: 1 SPACE PER 3,000 SF
REQ'D = 20,000 / 3,000 = 7 SPACES REQ'D

TOTAL BICYCLE SPACES REQUIRED = 27 SPACES

ELECTRIC VEHICLE CALCULATION (PER SECTION 5A-9-1-D)

10% OF TOTAL PARKING = 556 x 0.1 = 56 SPACES REQ'D.

SITE LEGEND

- PROPERTY LINE
- PROPOSED CONCRETE CURB
- PROPOSED CONCRETE SIDEWALK
- PROPOSED SIGN
- PROPOSED PARKING NUMBER (27)
- PROPOSED LIGHT POLE & FIXTURE

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

30' 30 0 30 60Ft.

FIGURE 5 - CONCEPT SITE PLAN

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

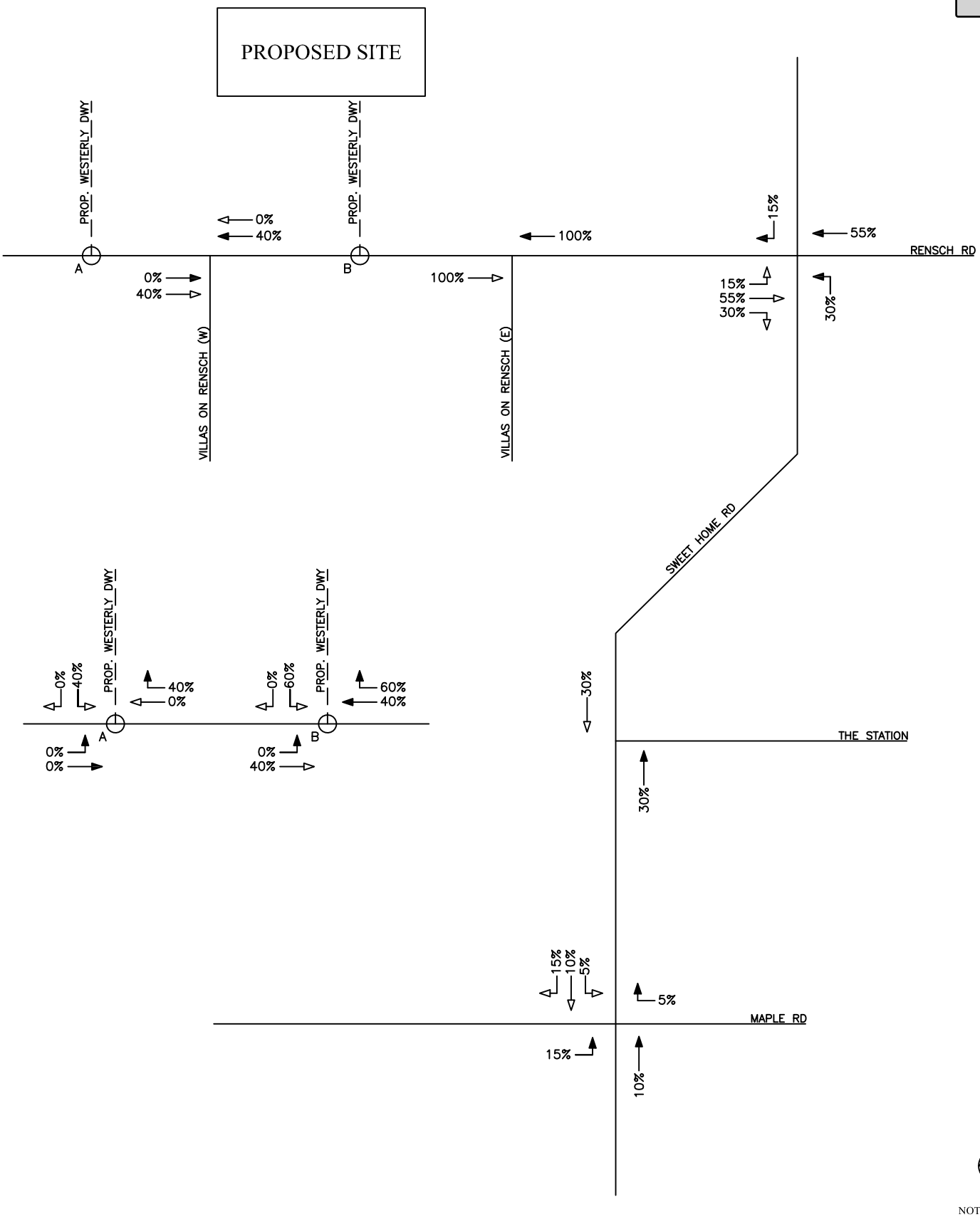
REVISIONS:
No. Description Date

PROJECT NAME:
New Construction
Prop. Mixed Use Development
1400 - 1416 Sweet Home Road
Amherst, New York

Date: 3/15/22
Drawn by: C. Wood
Scale: As Noted

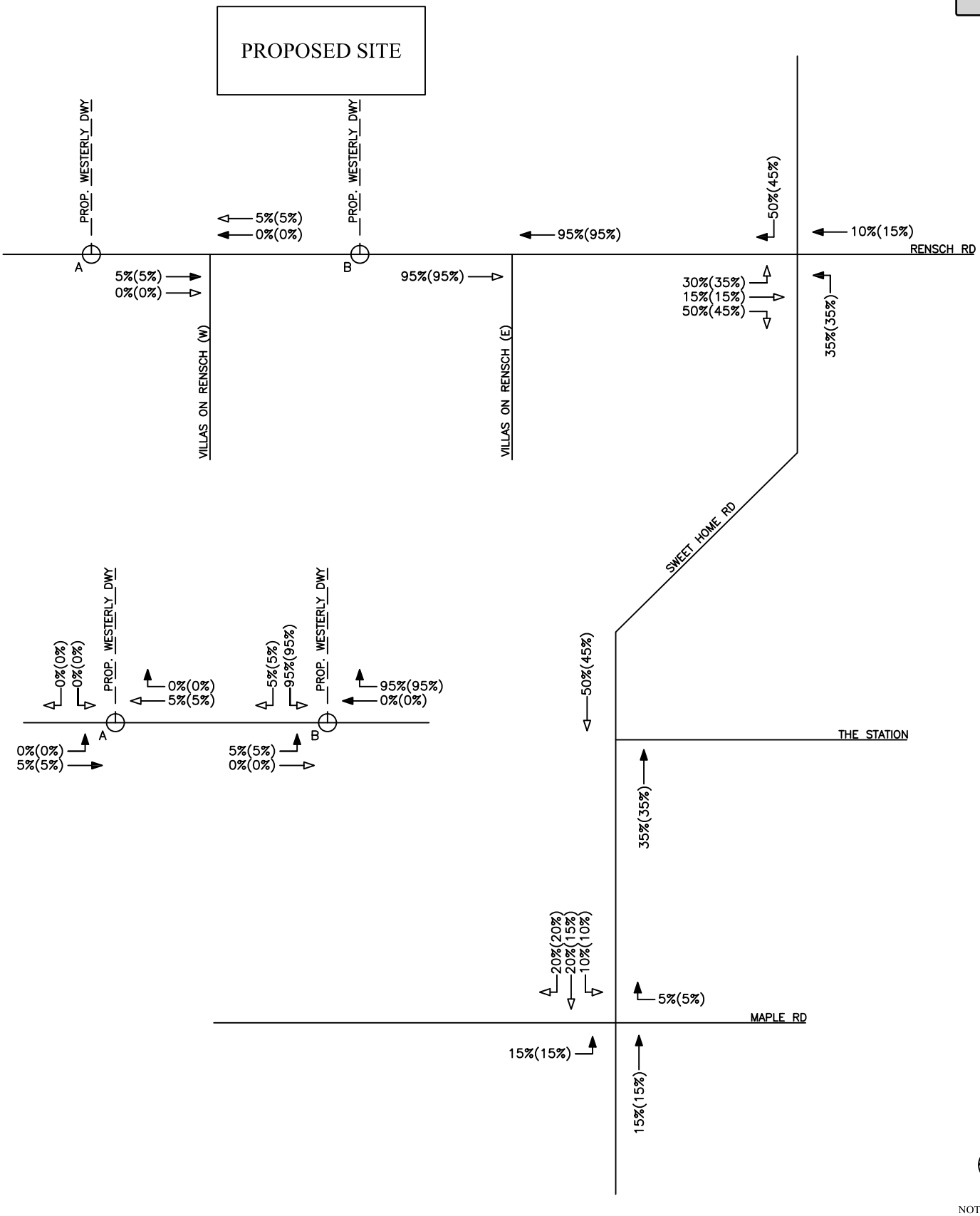
DRAWING NAME:
Concept Site Plan

DRAWING NO.
C-100
Project no.: 21.008



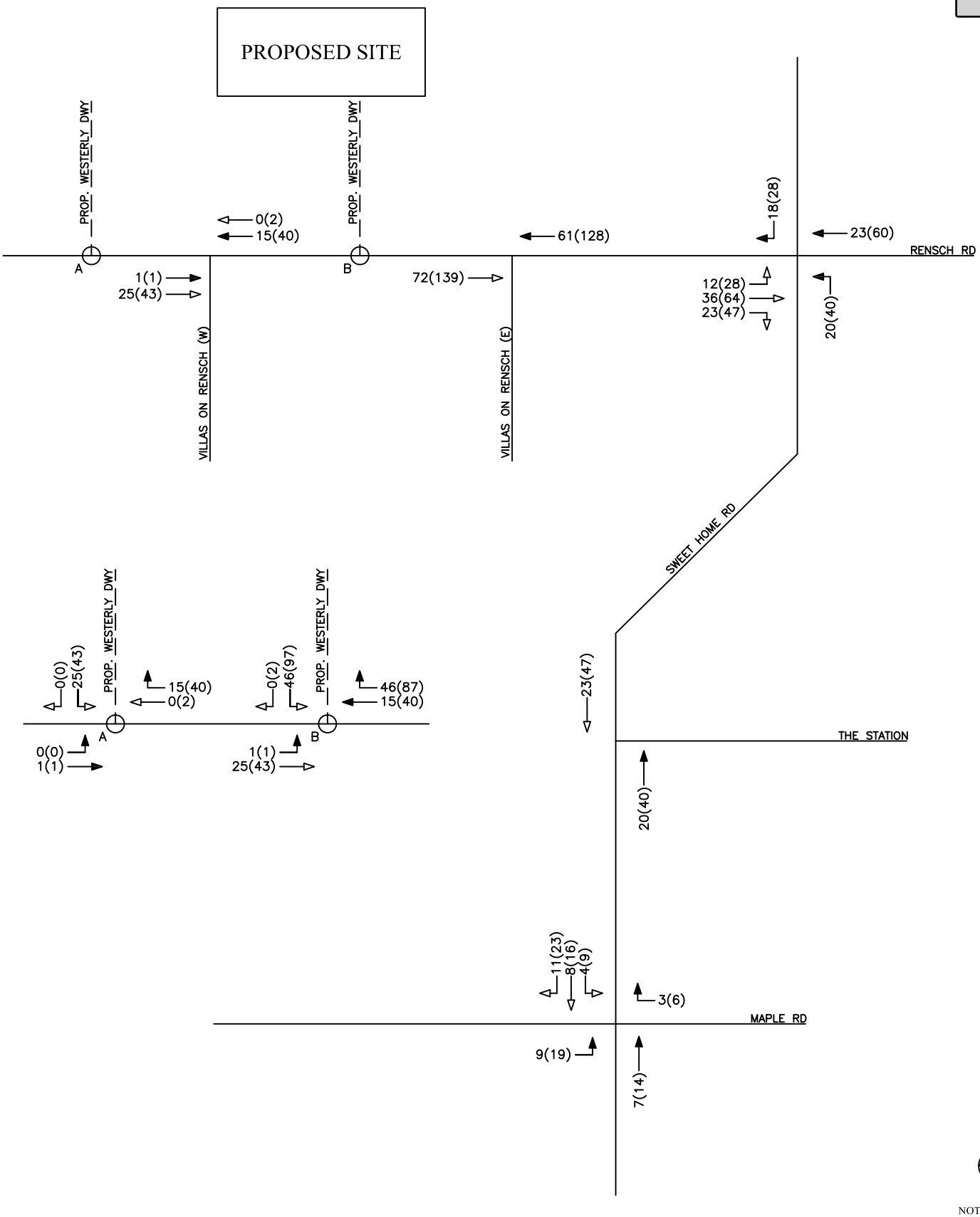
Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

KEY	FIGURE 6A	
00(00) = AM(PM) ENTERING TRIPS → EXITING TRIPS →	TRIP DISTRIBUTION RESIDENTIAL	SRF ASSOCIATES Transportation Planning / Engineering / Design www.srfa.net / (58
PROJECT NO: 42019	PROPOSED MIXED-USE DEVELOPMENT TOWN OF AMHERST, NY	



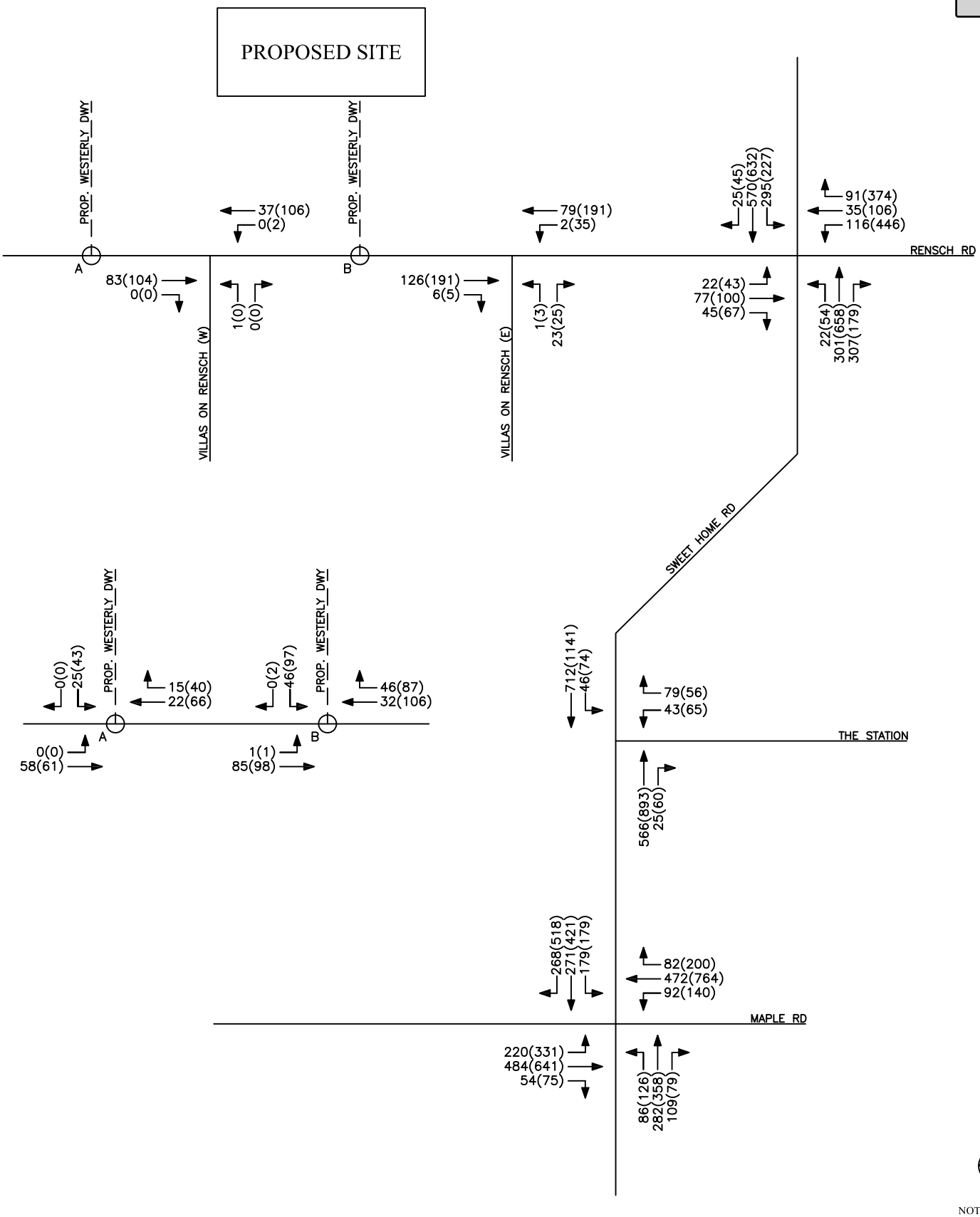
KEY	FIGURE 6B	SRF ASSOCIATES
00(00) = AM(PM) ENTERING TRIPS → EXITING TRIPS →	TRIP DISTRIBUTION COMMERCIAL	Transportation Planning / Engineering / Design www.srfa.net / (58
PROJECT NO: 42019	PROPOSED MIXED-USE DEVELOPMENT TOWN OF AMHERST, NY	

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)



KEY	FIGURE 7	
00(00) = AM(PM) ENTERING TRIPS → EXITING TRIPS →	SITE GENERATED TRIPS	SRF ASSOCIATES Transportation Planning / Engineering / Design www.srfa.net / (58
PROJECT NO: 42019	PROPOSED MIXED-USE DEVELOPMENT TOWN OF AMHERST, NY	

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)



KEY	FIGURE 8	
00(00) = AM(PM)	PEAK HOUR VOLUMES FULL DEVELOPMENT CONDITIONS	SRF ASSOCIATES Transportation Planning / Engineering / Design www.srfa.net / (58
PROJECT NO: 42019	PROPOSED MIXED-USE DEVELOPMENT TOWN OF AMHERST, NY	

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

APPENDICES

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

A1

Collected Traffic Volume Data

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/Rensch Rd
Site Code:
Start Date: 03/03/2022

Turning Movement Data

Start Time	Sweet Home Rd Southbound						Rensch Rd Westbound						Sweet Home Rd Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:00 AM	2	72	19	0	0	93	30	6	3	0	0	39	18	66	3	0	0	87	3	3	3	0	0	9	228
7:15 AM	5	125	34	0	0	164	40	4	7	0	0	51	20	86	2	0	0	108	5	7	1	0	0	13	336
7:30 AM	4	151	77	0	1	232	24	6	10	0	0	40	31	74	5	0	0	110	8	6	4	0	0	18	400
7:45 AM	9	121	72	0	0	202	21	13	20	0	0	54	43	79	13	0	0	135	5	15	3	0	0	23	414
Hourly Total	20	469	202	0	1	691	115	29	40	0	0	184	112	305	23	0	0	440	21	31	11	0	0	63	1378
8:00 AM	13	112	49	0	0	174	19	8	24	0	0	51	39	56	6	0	0	101	5	8	3	0	0	16	342
8:15 AM	9	121	52	0	0	182	14	10	15	0	0	39	44	63	10	0	0	117	8	8	1	0	0	17	355
8:30 AM	9	132	64	0	4	205	27	13	16	0	0	56	57	68	6	0	0	131	9	12	4	0	0	25	417
8:45 AM	11	150	72	0	2	233	30	15	25	0	0	70	56	52	12	0	0	120	9	26	5	0	1	40	463
Hourly Total	42	515	237	0	6	794	90	46	80	0	0	216	196	239	34	0	0	469	31	54	13	0	1	98	1577
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	7	131	25	0	3	163	65	8	82	0	4	155	25	154	7	0	0	186	13	16	14	0	1	43	547
4:15 PM	7	118	27	0	3	152	57	13	57	0	2	127	39	131	10	0	0	180	12	9	15	0	1	36	495
4:30 PM	9	120	52	1	3	182	70	10	67	0	0	147	49	141	6	0	0	196	17	14	7	0	0	38	563
4:45 PM	9	144	54	0	3	207	75	16	117	0	4	208	56	94	4	0	1	154	13	28	4	0	1	45	614
Hourly Total	32	513	158	1	12	704	267	47	323	0	10	637	169	520	27	0	1	716	55	67	40	0	3	162	2219
5:00 PM	4	125	39	0	0	168	106	25	117	0	1	248	24	153	8	0	0	185	16	22	15	0	1	53	654
5:15 PM	3	125	40	0	1	168	65	16	88	0	0	169	33	175	4	0	1	212	5	16	9	0	1	30	579
5:30 PM	4	115	34	2	1	155	62	11	73	1	2	147	34	133	6	0	0	173	6	15	8	0	1	29	504
5:45 PM	5	119	35	1	1	160	59	8	62	0	1	129	47	146	8	0	1	201	13	8	5	0	0	26	516
Hourly Total	16	484	148	3	3	651	292	60	340	1	4	693	138	607	26	0	2	771	40	61	37	0	3	138	2253
Grand Total	110	1981	745	4	22	2840	764	182	783	1	14	1730	615	1671	110	0	3	2396	147	213	101	0	7	461	7427
Approach %	3.9	69.8	26.2	0.1	-	-	44.2	10.5	45.3	0.1	-	-	25.7	69.7	4.6	0.0	-	-	31.9	46.2	21.9	0.0	-	-	-
Total %	1.5	26.7	10.0	0.1	-	38.2	10.3	2.5	10.5	0.0	-	23.3	8.3	22.5	1.5	0.0	-	32.3	2.0	2.9	1.4	0.0	-	6.2	-
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	1	1	0	0	-	2	0	0	0	0	-	0	2
% Motorcycles	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.2	0.1	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	90	1929	707	4	-	2730	710	180	766	1	-	1657	601	1621	108	0	-	2330	146	190	96	0	-	432	7149
% Cars & Light Goods	81.8	97.4	94.9	100.0	-	96.1	92.9	98.9	97.8	100.0	-	95.8	97.7	97.0	98.2	-	-	97.2	99.3	89.2	95.0	-	-	93.7	96.3
Other Vehicles	20	52	38	0	-	110	54	2	17	0	-	73	13	49	2	0	-	64	1	23	5	0	-	29	276
% Other Vehicles	18.2	2.6	5.1	0.0	-	3.9	7.1	1.1	2.2	0.0	-	4.2	2.1	2.9	1.8	-	-	2.7	0.7	10.8	5.0	-	-	6.3	3.7
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	4.5	-	-	-	-	-	7.1	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	21	-	-	-	-	-	13	-	-	-	-	-	3	-	-	-	-	-	7	-	-

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

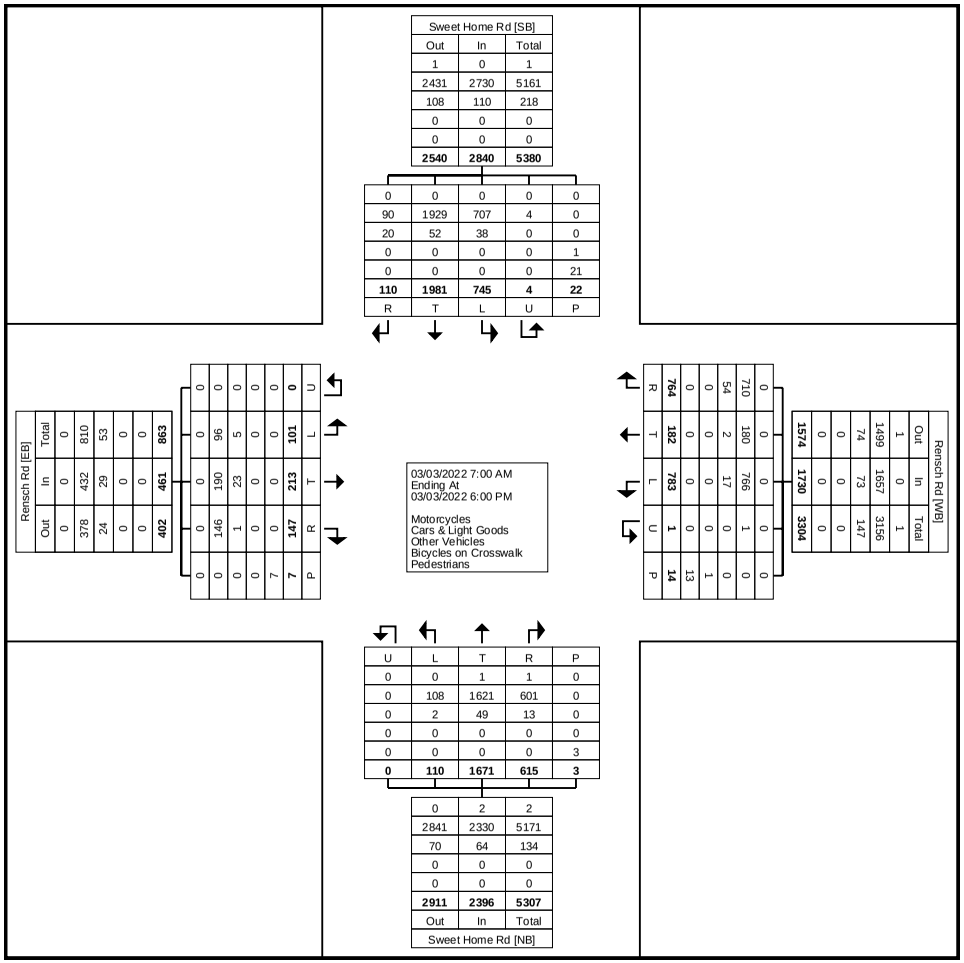
% Pedestrians	-	-	-	-	95.5	-	-	-	-	-	92.9	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/Rensch Rd
Site Code:
Start Date: 03/03/2022



Turning Movement Data Plot

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/Rensch Rd
Site Code:
Start Date: 03/03/2022

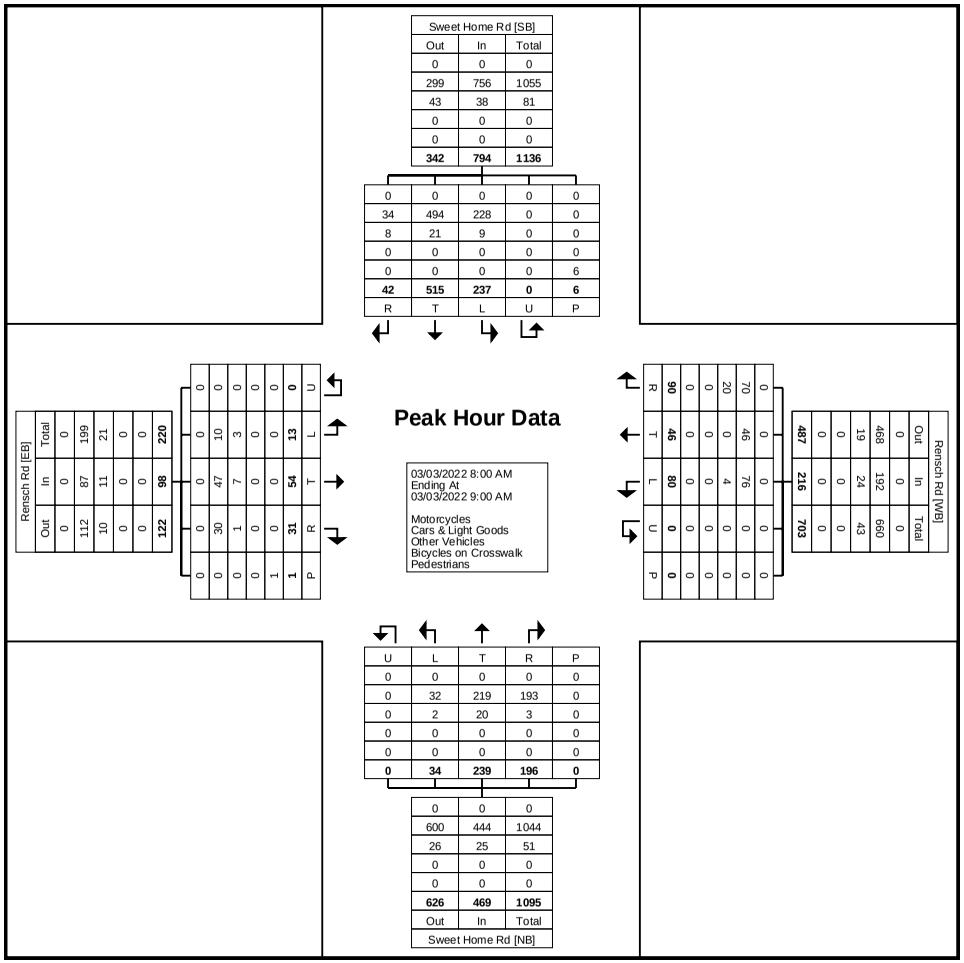
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Sweet Home Rd Southbound						Rensch Rd Westbound						Sweet Home Rd Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
8:00 AM	13	112	49	0	0	174	19	8	24	0	0	51	39	56	6	0	0	101	5	8	3	0	0	16	342
8:15 AM	9	121	52	0	0	182	14	10	15	0	0	39	44	63	10	0	0	117	8	8	1	0	0	17	355
8:30 AM	9	132	64	0	4	205	27	13	16	0	0	56	57	68	6	0	0	131	9	12	4	0	0	25	417
8:45 AM	11	150	72	0	2	233	30	15	25	0	0	70	56	52	12	0	0	120	9	26	5	0	1	40	463
Total	42	515	237	0	6	794	90	46	80	0	0	216	196	239	34	0	0	469	31	54	13	0	1	98	1577
Approach %	5.3	64.9	29.8	0.0	-	-	41.7	21.3	37.0	0.0	-	-	41.8	51.0	7.2	0.0	-	-	31.6	55.1	13.3	0.0	-	-	-
Total %	2.7	32.7	15.0	0.0	-	50.3	5.7	2.9	5.1	0.0	-	13.7	12.4	15.2	2.2	0.0	-	29.7	2.0	3.4	0.8	0.0	-	6.2	-
PHF	0.808	0.858	0.823	0.000	-	0.852	0.750	0.767	0.800	0.000	-	0.771	0.860	0.879	0.708	0.000	-	0.895	0.861	0.519	0.650	0.000	-	0.613	0.852
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	34	494	228	0	-	756	70	46	76	0	-	192	193	219	32	0	-	444	30	47	10	0	-	87	1479
% Cars & Light Goods	81.0	95.9	96.2	-	-	95.2	77.8	100.0	95.0	-	-	88.9	98.5	91.6	94.1	-	-	94.7	96.8	87.0	76.9	-	-	88.8	93.8
Other Vehicles	8	21	9	0	-	38	20	0	4	0	-	24	3	20	2	0	-	25	1	7	3	0	-	11	98
% Other Vehicles	19.0	4.1	3.8	-	-	4.8	22.2	0.0	5.0	-	-	11.1	1.5	8.4	5.9	-	-	5.3	3.2	13.0	23.1	-	-	11.2	6.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/Rensch Rd
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (8:00 AM)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/Rensch Rd
Site Code:
Start Date: 03/03/2022

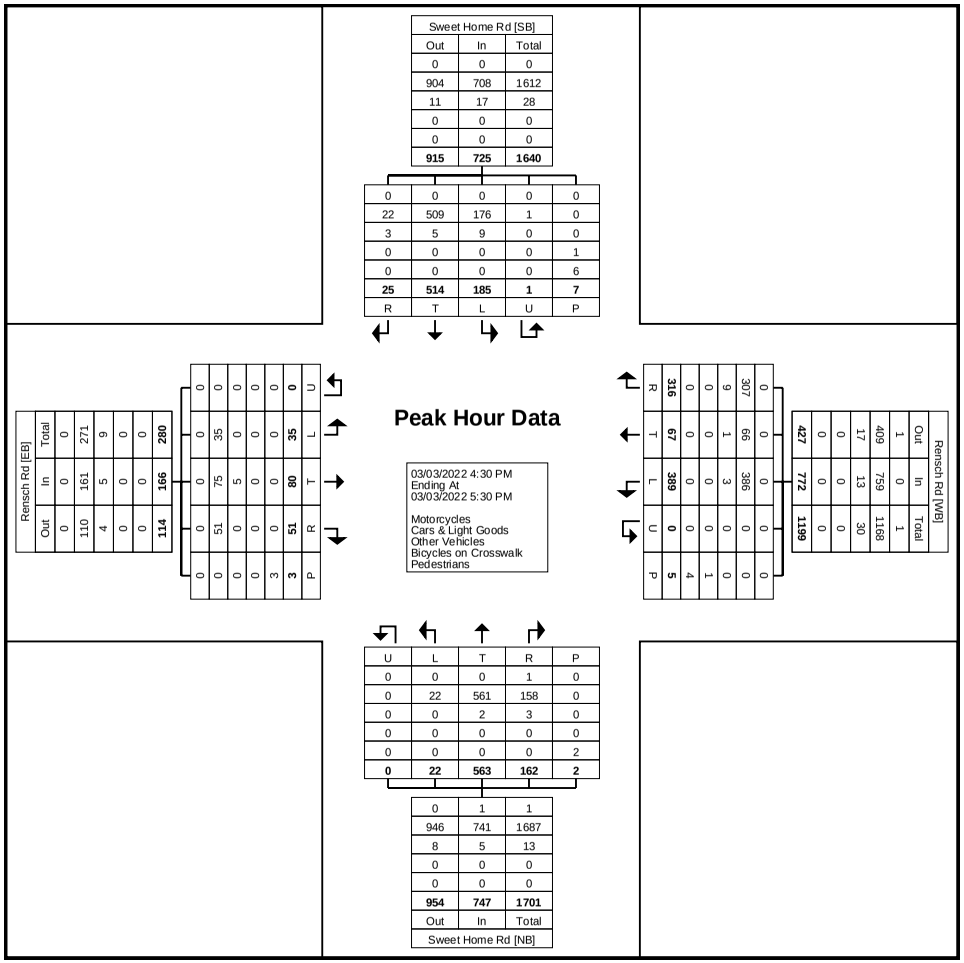
Turning Movement Peak Hour Data (4:30 PM)

Start Time	Sweet Home Rd Southbound						Rensch Rd Westbound						Sweet Home Rd Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:30 PM	9	120	52	1	3	182	70	10	67	0	0	147	49	141	6	0	0	196	17	14	7	0	0	38	563
4:45 PM	9	144	54	0	3	207	75	16	117	0	4	208	56	94	4	0	1	154	13	28	4	0	1	45	614
5:00 PM	4	125	39	0	0	168	106	25	117	0	1	248	24	153	8	0	0	185	16	22	15	0	1	53	654
5:15 PM	3	125	40	0	1	168	65	16	88	0	0	169	33	175	4	0	1	212	5	16	9	0	1	30	579
Total	25	514	185	1	7	725	316	67	389	0	5	772	162	563	22	0	2	747	51	80	35	0	3	166	2410
Approach %	3.4	70.9	25.5	0.1	-	-	40.9	8.7	50.4	0.0	-	-	21.7	75.4	2.9	0.0	-	-	30.7	48.2	21.1	0.0	-	-	-
Total %	1.0	21.3	7.7	0.0	-	30.1	13.1	2.8	16.1	0.0	-	32.0	6.7	23.4	0.9	0.0	-	31.0	2.1	3.3	1.5	0.0	-	6.9	-
PHF	0.694	0.892	0.856	0.250	-	0.876	0.745	0.670	0.831	0.000	-	0.778	0.723	0.804	0.688	0.000	-	0.881	0.750	0.714	0.583	0.000	-	0.783	0.921
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	-	0	1
% Motorcycles	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.6	0.0	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	22	509	176	1	-	708	307	66	386	0	-	759	158	561	22	0	-	741	51	75	35	0	-	161	2369
% Cars & Light Goods	88.0	99.0	95.1	100.0	-	97.7	97.2	98.5	99.2	-	-	98.3	97.5	99.6	100.0	-	-	99.2	100.0	93.8	100.0	-	-	97.0	98.3
Other Vehicles	3	5	9	0	-	17	9	1	3	0	-	13	3	2	0	0	-	5	0	5	0	0	-	5	40
% Other Vehicles	12.0	1.0	4.9	0.0	-	2.3	2.8	1.5	0.8	-	-	1.7	1.9	0.4	0.0	-	-	0.7	0.0	6.3	0.0	-	-	3.0	1.7
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	14.3	-	-	-	-	-	20.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	4	-	-	-	-	-	2	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	85.7	-	-	-	-	-	80.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/Rensch Rd
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (4:30 PM)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/The Station Driveway
Site Code:
Start Date: 03/03/2022

Turning Movement Data

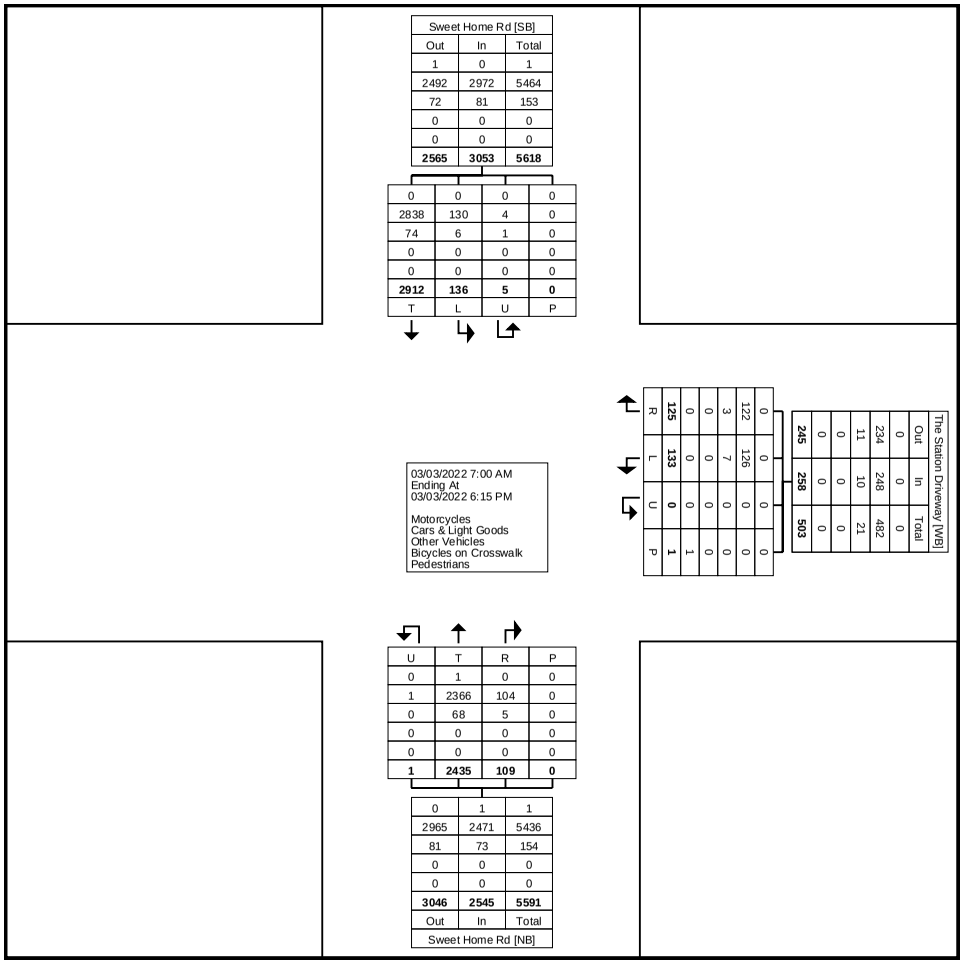
Start Time	Sweet Home Rd Southbound					The Station Driveway Westbound					Sweet Home Rd Northbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
7:00 AM	86	1	0	0	87	1	4	0	0	5	1	87	0	0	88	180
7:15 AM	137	0	0	0	137	3	5	0	0	8	2	110	0	0	112	257
7:30 AM	169	1	0	0	170	3	9	0	0	12	3	112	0	0	115	297
7:45 AM	165	2	0	0	167	11	6	0	0	17	3	120	0	0	123	307
Hourly Total	557	4	0	0	561	18	24	0	0	42	9	429	0	0	438	1041
8:00 AM	151	4	1	0	156	10	1	0	0	11	1	106	0	0	107	274
8:15 AM	126	3	0	0	129	3	4	0	0	7	3	118	0	0	121	257
8:30 AM	169	2	0	0	171	9	3	0	0	12	2	133	0	0	135	318
8:45 AM	182	8	0	0	190	11	10	0	0	21	4	118	0	0	122	333
Hourly Total	628	17	1	0	646	33	18	0	0	51	10	475	0	0	485	1182
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	195	19	1	0	215	3	11	0	0	14	7	188	0	0	195	424
4:15 PM	176	9	2	0	187	5	5	0	0	10	7	182	0	0	189	386
4:30 PM	208	9	0	0	217	8	7	0	0	15	7	201	0	0	208	440
4:45 PM	258	18	0	0	276	18	15	0	0	33	13	154	0	0	167	476
Hourly Total	837	55	3	0	895	34	38	0	0	72	34	725	0	0	759	1726
5:00 PM	251	22	0	0	273	11	15	0	0	26	14	197	0	0	211	510
5:15 PM	231	17	0	0	248	6	14	0	0	20	17	227	1	0	245	513
5:30 PM	201	13	1	0	215	14	13	0	0	27	12	191	0	0	203	445
5:45 PM	207	8	0	0	215	9	11	0	1	20	13	191	0	0	204	439
Hourly Total	890	60	1	0	951	40	53	0	1	93	56	806	1	0	863	1907
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	2912	136	5	0	3053	125	133	0	1	258	109	2435	1	0	2545	5856
Approach %	95.4	4.5	0.2	-	-	48.4	51.6	0.0	-	-	4.3	95.7	0.0	-	-	-
Total %	49.7	2.3	0.1	-	52.1	2.1	2.3	0.0	-	4.4	1.9	41.6	0.0	-	43.5	-
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	1
% Motorcycles	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Cars & Light Goods	2838	130	4	-	2972	122	126	0	-	248	104	2366	1	-	2471	5691
% Cars & Light Goods	97.5	95.6	80.0	-	97.3	97.6	94.7	-	-	96.1	95.4	97.2	100.0	-	97.1	97.2
Other Vehicles	74	6	1	-	81	3	7	0	-	10	5	68	0	-	73	164
% Other Vehicles	2.5	4.4	20.0	-	2.7	2.4	5.3	-	-	3.9	4.6	2.8	0.0	-	2.9	2.8
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/The Station Driveway
Site Code:
Start Date: 03/03/2022



Turning Movement Data Plot

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/The Station Driveway
Site Code:
Start Date: 03/03/2022

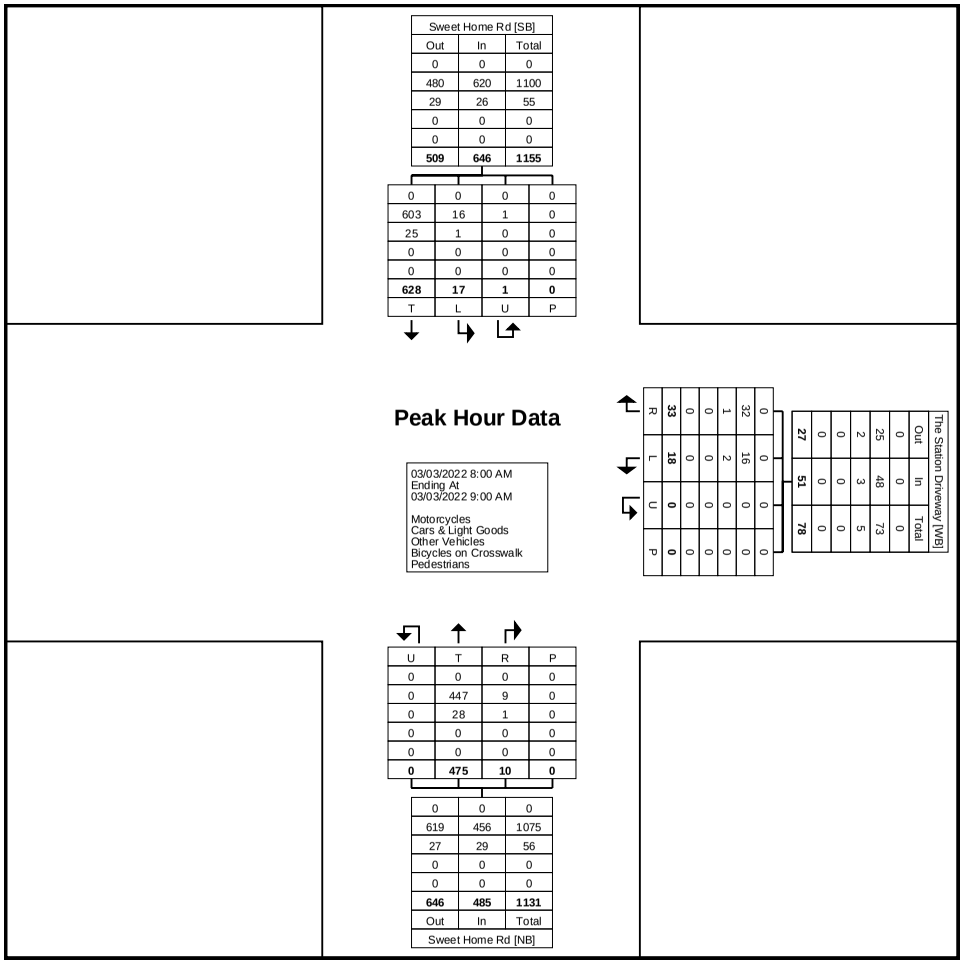
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Sweet Home Rd Southbound					The Station Driveway Westbound					Sweet Home Rd Northbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
8:00 AM	151	4	1	0	156	10	1	0	0	11	1	106	0	0	107	274
8:15 AM	126	3	0	0	129	3	4	0	0	7	3	118	0	0	121	257
8:30 AM	169	2	0	0	171	9	3	0	0	12	2	133	0	0	135	318
8:45 AM	182	8	0	0	190	11	10	0	0	21	4	118	0	0	122	333
Total	628	17	1	0	646	33	18	0	0	51	10	475	0	0	485	1182
Approach %	97.2	2.6	0.2	-	-	64.7	35.3	0.0	-	-	2.1	97.9	0.0	-	-	-
Total %	53.1	1.4	0.1	-	54.7	2.8	1.5	0.0	-	4.3	0.8	40.2	0.0	-	41.0	-
PHF	0.863	0.531	0.250	-	0.850	0.750	0.450	0.000	-	0.607	0.625	0.893	0.000	-	0.898	0.887
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	603	16	1	-	620	32	16	0	-	48	9	447	0	-	456	1124
% Cars & Light Goods	96.0	94.1	100.0	-	96.0	97.0	88.9	-	-	94.1	90.0	94.1	-	-	94.0	95.1
Other Vehicles	25	1	0	-	26	1	2	0	-	3	1	28	0	-	29	58
% Other Vehicles	4.0	5.9	0.0	-	4.0	3.0	11.1	-	-	5.9	10.0	5.9	-	-	6.0	4.9
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/The Station Driveway
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (8:00 AM)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/The Station Driveway
Site Code:
Start Date: 03/03/2022

Turning Movement Peak Hour Data (4:45 PM)

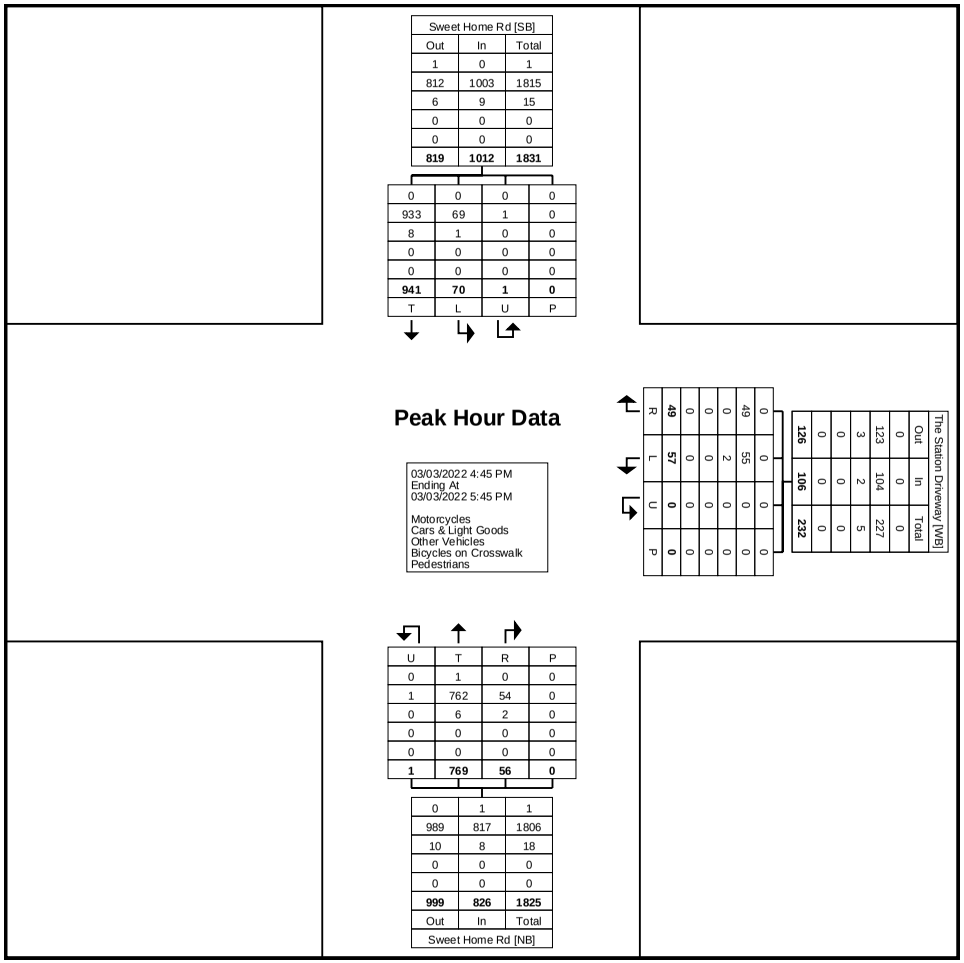
Start Time	Sweet Home Rd Southbound					The Station Driveway Westbound					Sweet Home Rd Northbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
4:45 PM	258	18	0	0	276	18	15	0	0	33	13	154	0	0	167	476
5:00 PM	251	22	0	0	273	11	15	0	0	26	14	197	0	0	211	510
5:15 PM	231	17	0	0	248	6	14	0	0	20	17	227	1	0	245	513
5:30 PM	201	13	1	0	215	14	13	0	0	27	12	191	0	0	203	445
Total	941	70	1	0	1012	49	57	0	0	106	56	769	1	0	826	1944
Approach %	93.0	6.9	0.1	-	-	46.2	53.8	0.0	-	-	6.8	93.1	0.1	-	-	-
Total %	48.4	3.6	0.1	-	52.1	2.5	2.9	0.0	-	5.5	2.9	39.6	0.1	-	42.5	-
PHF	0.912	0.795	0.250	-	0.917	0.681	0.950	0.000	-	0.803	0.824	0.847	0.250	-	0.843	0.947
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	1
% Motorcycles	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	-	0.1	0.1
Cars & Light Goods	933	69	1	-	1003	49	55	0	-	104	54	762	1	-	817	1924
% Cars & Light Goods	99.1	98.6	100.0	-	99.1	100.0	96.5	-	-	98.1	96.4	99.1	100.0	-	98.9	99.0
Other Vehicles	8	1	0	-	9	0	2	0	-	2	2	6	0	-	8	19
% Other Vehicles	0.9	1.4	0.0	-	0.9	0.0	3.5	-	-	1.9	3.6	0.8	0.0	-	1.0	1.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Sweet Home Rd/The Station Driveway
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (4:45 PM)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Maple Rd/Sweet Home Rd
Site Code:
Start Date: 03/03/2022

Turning Movement Data

Start Time	Sweet Home Rd Southbound							Maple Rd Westbound							Sweet Home Rd Northbound							Maple Rd Eastbound							Int. Total
	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	
7:00 AM	15	9	34	27	0	0	85	16	3	51	10	0	0	80	5	13	39	7	0	0	64	1	3	63	27	0	0	94	323
7:15 AM	34	11	57	45	0	0	147	9	5	79	18	0	0	111	4	13	67	8	0	0	92	2	3	83	34	0	0	122	472
7:30 AM	24	27	80	49	0	0	180	11	7	78	21	0	0	117	8	6	57	5	0	0	76	6	3	110	36	0	0	155	528
7:45 AM	39	14	60	58	0	0	171	17	10	111	21	0	0	159	7	7	54	6	0	0	74	8	3	109	49	0	0	169	573
Hourly Total	112	61	231	179	0	0	583	53	25	319	70	0	0	467	24	39	217	26	0	0	306	17	12	365	146	0	0	540	1896
8:00 AM	20	18	48	42	0	0	128	13	10	100	18	0	0	141	8	18	50	15	0	0	91	0	7	95	42	0	0	144	504
8:15 AM	29	20	59	41	0	0	149	15	4	91	30	0	0	140	16	22	71	19	0	0	128	7	16	93	35	0	0	151	568
8:30 AM	27	20	76	41	0	0	164	12	7	124	24	0	0	167	10	13	52	18	0	0	93	8	2	96	59	0	0	165	589
8:45 AM	68	24	61	33	0	0	186	16	3	151	19	0	0	189	7	14	61	33	0	0	115	9	4	78	52	0	1	143	633
Hourly Total	144	82	244	157	0	0	627	56	24	466	91	0	0	637	41	67	234	85	0	0	427	24	29	362	188	0	1	603	2294
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	59	50	69	38	0	0	216	19	11	175	26	0	0	231	8	10	79	21	0	0	118	12	12	151	77	0	0	252	817
4:15 PM	54	40	86	36	0	0	216	30	20	161	35	0	0	246	13	11	73	21	0	0	118	6	8	120	77	0	0	211	791
4:30 PM	55	45	79	44	0	0	223	24	21	158	32	0	0	235	12	4	75	32	0	0	123	12	8	137	82	0	0	239	820
4:45 PM	63	63	88	38	0	0	252	16	28	154	32	0	0	230	10	5	76	29	0	0	120	12	6	134	65	0	0	217	819
Hourly Total	231	198	322	156	0	0	907	89	80	648	125	0	0	942	43	30	303	103	0	0	479	42	34	542	301	0	0	919	3247
5:00 PM	91	43	94	43	1	0	272	30	24	187	41	0	0	282	16	10	71	27	0	0	124	7	8	158	80	0	1	253	931
5:15 PM	84	37	82	41	0	0	244	32	16	181	33	0	0	262	7	14	93	36	0	0	150	6	15	135	84	0	0	240	896
5:30 PM	75	21	78	34	0	0	208	19	20	176	16	0	0	231	3	15	94	13	0	0	125	7	18	117	78	0	0	220	784
5:45 PM	65	43	72	40	0	1	220	20	18	137	29	0	0	204	8	4	68	36	0	0	116	7	12	132	97	0	0	248	788
Hourly Total	315	144	326	158	1	1	944	101	78	681	119	0	0	979	34	43	326	112	0	0	515	27	53	542	339	0	1	961	3399
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	802	485	1123	650	1	1	3061	299	207	2114	405	0	0	3025	142	179	1080	326	0	0	1727	110	128	1811	974	0	2	3023	10836
Approach %	26.2	15.8	36.7	21.2	0.0	-	-	9.9	6.8	69.9	13.4	0.0	-	-	8.2	10.4	62.5	18.9	0.0	-	-	3.6	4.2	59.9	32.2	0.0	-	-	-
Total %	7.4	4.5	10.4	6.0	0.0	-	28.2	2.8	1.9	19.5	3.7	0.0	-	27.9	1.3	1.7	10.0	3.0	0.0	-	15.9	1.0	1.2	16.7	9.0	0.0	-	27.9	-
Motorcycles	0	1	0	0	0	-	1	0	0	0	0	0	-	0	0	0	1	0	0	-	1	0	0	0	0	0	-	0	2
% Motorcycles	0.0	0.2	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.1	0.0	-	-	0.1	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	783	474	1095	635	1	-	2988	284	202	2083	399	0	-	2968	138	176	1049	323	0	-	1686	106	127	1778	954	0	-	2965	10607
% Cars & Light Goods	97.6	97.7	97.5	97.7	100.0	-	97.6	95.0	97.6	98.5	98.5	-	-	98.1	97.2	98.3	97.1	99.1	-	-	97.6	96.4	99.2	98.2	97.9	-	-	98.1	97.9
Other Vehicles	19	10	28	15	0	-	72	15	5	31	6	0	-	57	4	3	30	3	0	-	40	4	1	33	20	0	-	58	227
% Other Vehicles	2.4	2.1	2.5	2.3	0.0	-	2.4	5.0	2.4	1.5	1.5	-	-	1.9	2.8	1.7	2.8	0.9	-	-	2.3	3.6	0.8	1.8	2.1	-	-	1.9	2.1

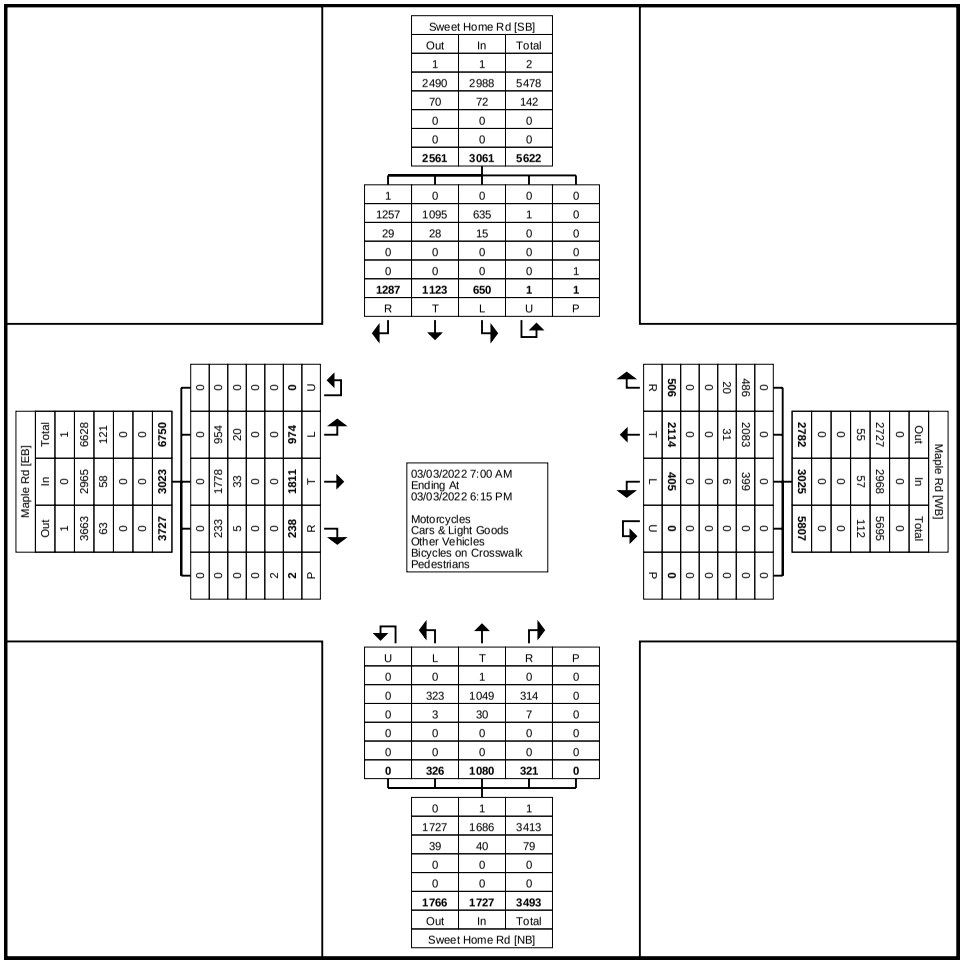
Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

| | | |

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Maple Rd/Sweet Home Rd
Site Code:
Start Date: 03/03/2022



Turning Movement Data Plot

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Maple Rd/Sweet Home Rd
Site Code:
Start Date: 03/03/2022

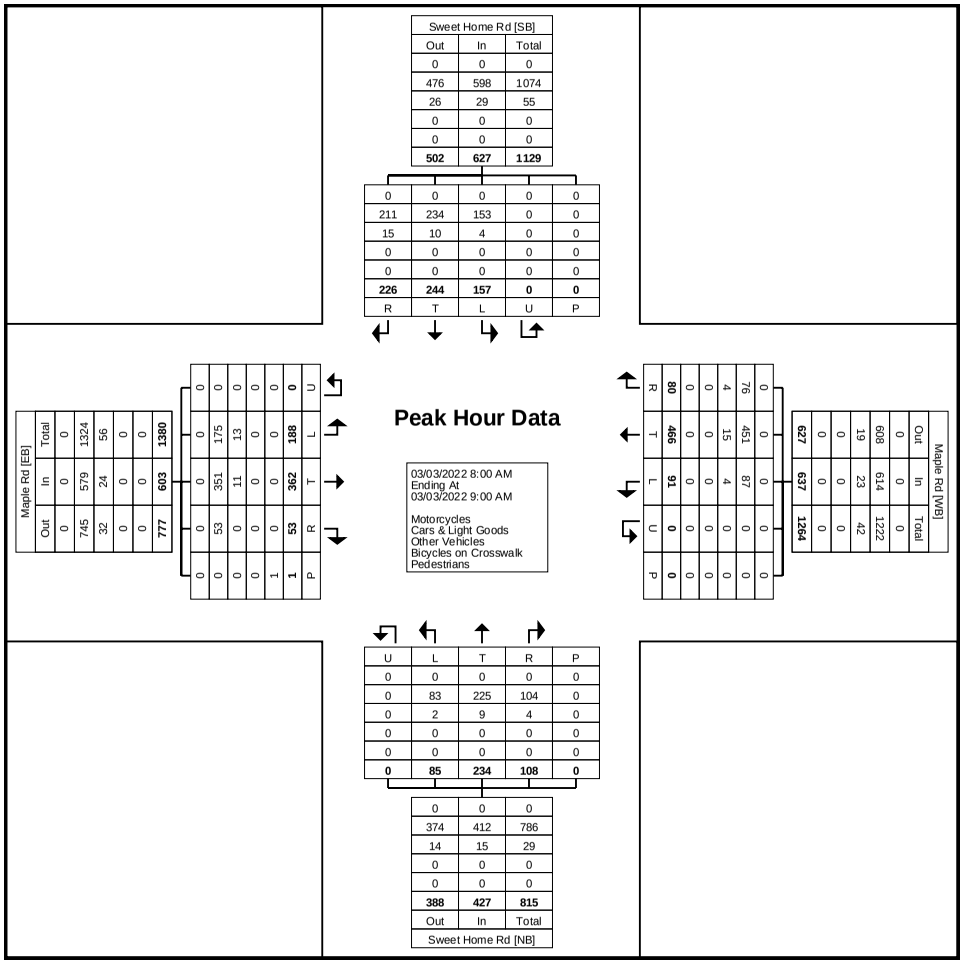
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Sweet Home Rd Southbound							Maple Rd Westbound							Sweet Home Rd Northbound							Maple Rd Eastbound							Int. Total
	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	
8:00 AM	20	18	48	42	0	0	128	13	10	100	18	0	0	141	8	18	50	15	0	0	91	0	7	95	42	0	0	144	504
8:15 AM	29	20	59	41	0	0	149	15	4	91	30	0	0	140	16	22	71	19	0	0	128	7	16	93	35	0	0	151	568
8:30 AM	27	20	76	41	0	0	164	12	7	124	24	0	0	167	10	13	52	18	0	0	93	8	2	96	59	0	0	165	589
8:45 AM	68	24	61	33	0	0	186	16	3	151	19	0	0	189	7	14	61	33	0	0	115	9	4	78	52	0	1	143	633
Total	144	82	244	157	0	0	627	56	24	466	91	0	0	637	41	67	234	85	0	0	427	24	29	362	188	0	1	603	2294
Approach %	23.0	13.1	38.9	25.0	0.0	-	-	8.8	3.8	73.2	14.3	0.0	-	-	9.6	15.7	54.8	19.9	0.0	-	-	4.0	4.8	60.0	31.2	0.0	-	-	-
Total %	6.3	3.6	10.6	6.8	0.0	-	27.3	2.4	1.0	20.3	4.0	0.0	-	27.8	1.8	2.9	10.2	3.7	0.0	-	18.6	1.0	1.3	15.8	8.2	0.0	-	26.3	-
PHF	0.529	0.854	0.803	0.935	0.000	-	0.843	0.875	0.600	0.772	0.758	0.000	-	0.843	0.641	0.761	0.824	0.644	0.000	-	0.834	0.667	0.453	0.943	0.797	0.000	-	0.914	0.906
Motorcycles	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	133	78	234	153	0	-	598	53	23	451	87	0	-	614	38	66	225	83	0	-	412	24	29	351	175	0	-	579	2203
% Cars & Light Goods	92.4	95.1	95.9	97.5	-	-	95.4	94.6	95.8	96.8	95.6	-	-	96.4	92.7	98.5	96.2	97.6	-	-	96.5	100.0	100.0	97.0	93.1	-	-	96.0	96.0
Other Vehicles	11	4	10	4	0	-	29	3	1	15	4	0	-	23	3	1	9	2	0	-	15	0	0	11	13	0	-	24	91
% Other Vehicles	7.6	4.9	4.1	2.5	-	-	4.6	5.4	4.2	3.2	4.4	-	-	3.6	7.3	1.5	3.8	2.4	-	-	3.5	0.0	0.0	3.0	6.9	-	-	4.0	4.0
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Maple Rd/Sweet Home Rd
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (8:00 AM)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Maple Rd/Sweet Home Rd
Site Code:
Start Date: 03/03/2022

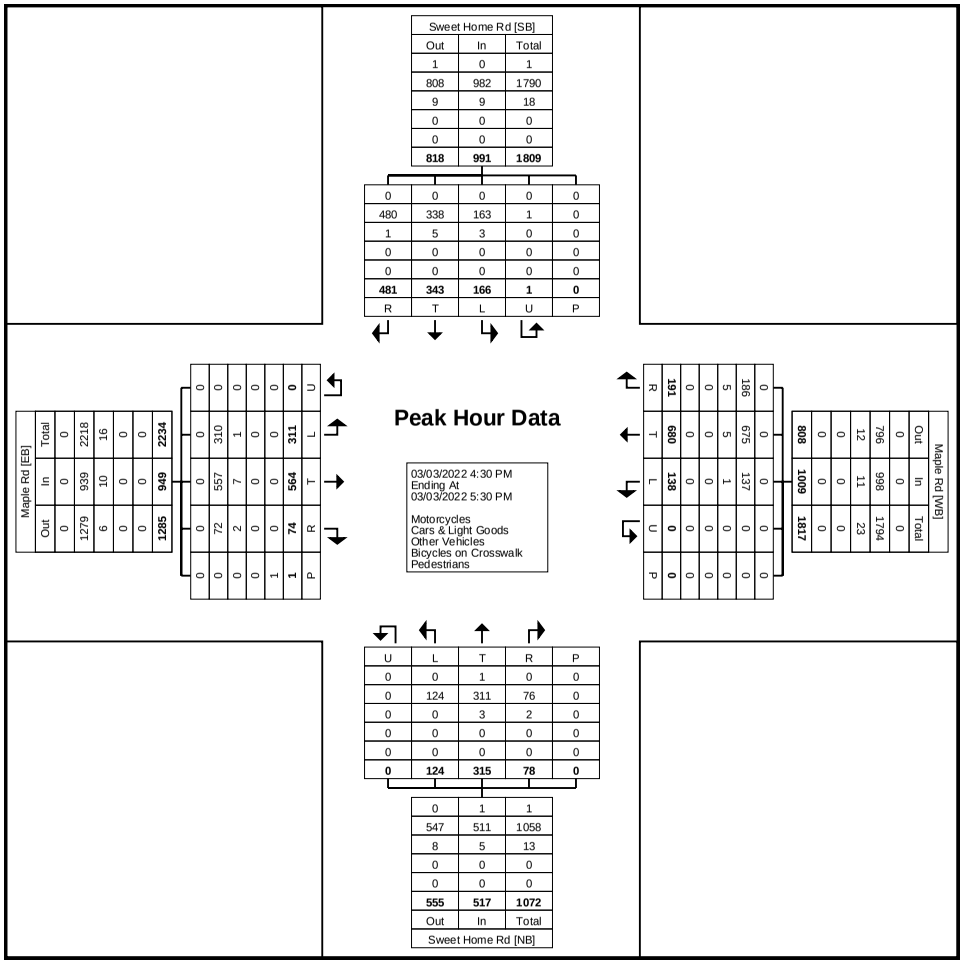
Turning Movement Peak Hour Data (4:30 PM)

Start Time	Sweet Home Rd Southbound							Maple Rd Westbound							Sweet Home Rd Northbound							Maple Rd Eastbound							Int. Total
	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	Right	Right on Red	Thru	Left	U-Turn	Peds	App. Total	
4:30 PM	55	45	79	44	0	0	223	24	21	158	32	0	0	235	12	4	75	32	0	0	123	12	8	137	82	0	0	239	820
4:45 PM	63	63	88	38	0	0	252	16	28	154	32	0	0	230	10	5	76	29	0	0	120	12	6	134	65	0	0	217	819
5:00 PM	91	43	94	43	1	0	272	30	24	187	41	0	0	282	16	10	71	27	0	0	124	7	8	158	80	0	1	253	931
5:15 PM	84	37	82	41	0	0	244	32	16	181	33	0	0	262	7	14	93	36	0	0	150	6	15	135	84	0	0	240	896
Total	293	188	343	166	1	0	991	102	89	680	138	0	0	1009	45	33	315	124	0	0	517	37	37	564	311	0	1	949	3466
Approach %	29.6	19.0	34.6	16.8	0.1	-	-	10.1	8.8	67.4	13.7	0.0	-	-	8.7	6.4	60.9	24.0	0.0	-	-	3.9	3.9	59.4	32.8	0.0	-	-	-
Total %	8.5	5.4	9.9	4.8	0.0	-	28.6	2.9	2.6	19.6	4.0	0.0	-	29.1	1.3	1.0	9.1	3.6	0.0	-	14.9	1.1	1.1	16.3	9.0	0.0	-	27.4	-
PHF	0.805	0.746	0.912	0.943	0.250	-	0.911	0.797	0.795	0.909	0.841	0.000	-	0.895	0.703	0.589	0.847	0.861	0.000	-	0.862	0.771	0.617	0.892	0.926	0.000	-	0.938	0.931
Motorcycles	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	1	0	0	-	1	0	0	0	0	0	-	0	1
% Motorcycles	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.3	0.0	-	-	0.2	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	293	187	338	163	1	-	982	98	88	675	137	0	-	998	44	32	311	124	0	-	511	36	36	557	310	0	-	939	3430
% Cars & Light Goods	100.0	99.5	98.5	98.2	100.0	-	99.1	96.1	98.9	99.3	99.3	-	-	98.9	97.8	97.0	98.7	100.0	-	-	98.8	97.3	97.3	98.8	99.7	-	-	98.9	99.0
Other Vehicles	0	1	5	3	0	-	9	4	1	5	1	0	-	11	1	1	3	0	0	-	5	1	1	7	1	0	-	10	35
% Other Vehicles	0.0	0.5	1.5	1.8	0.0	-	0.9	3.9	1.1	0.7	0.7	-	-	1.1	2.2	3.0	1.0	0.0	-	-	1.0	2.7	2.7	1.2	0.3	-	-	1.1	1.0
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Maple Rd/Sweet Home Rd
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (4:30 PM)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (east driveway)
Site Code:
Start Date: 03/03/2022

Turning Movement Data

Start Time	Office Parking lots Southbound						Rensch Rd Westbound						Villas Dr E Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:00 AM	0	0	0	0	0	0	0	12	0	0	0	12	2	0	0	0	0	2	1	7	0	0	0	8	22
7:15 AM	0	0	0	0	0	0	5	6	0	0	0	11	3	0	0	0	0	3	2	10	0	0	0	12	26
7:30 AM	0	0	1	0	1	1	3	13	0	0	0	16	6	0	0	0	0	6	1	11	0	0	0	12	35
7:45 AM	0	0	1	0	0	1	11	21	1	2	0	35	6	0	0	0	0	6	2	15	0	0	0	17	59
Hourly Total	0	0	2	0	1	2	19	52	1	2	0	74	17	0	0	0	0	17	6	43	0	0	0	49	142
8:00 AM	0	0	0	0	0	0	6	20	1	0	0	27	3	0	0	0	0	3	2	13	0	0	0	15	45
8:15 AM	0	0	1	0	1	1	7	22	0	0	0	29	3	0	0	0	0	3	1	13	0	0	1	14	47
8:30 AM	0	0	2	0	2	2	5	19	1	0	0	25	7	0	1	0	1	8	1	21	0	0	1	22	57
8:45 AM	2	0	3	0	1	5	16	25	0	0	0	41	10	0	0	0	0	10	2	26	0	0	0	28	84
Hourly Total	2	0	6	0	4	8	34	86	2	0	0	122	23	0	1	0	1	24	6	73	0	0	2	79	233
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	8	0	0	8	2	18	3	0	2	23	3	0	0	0	0	3	0	33	0	0	0	33	67
4:15 PM	0	0	7	0	0	7	3	20	8	0	1	31	2	0	0	0	1	2	2	27	0	0	0	29	69
4:30 PM	0	0	9	0	0	9	5	17	4	0	2	26	6	0	0	0	0	6	2	23	1	0	0	26	67
4:45 PM	0	0	14	0	1	14	5	25	8	0	1	38	6	0	2	0	2	8	1	27	1	0	0	29	89
Hourly Total	0	0	38	0	1	38	15	80	23	0	6	118	17	0	2	0	3	19	5	110	2	0	0	117	292
5:00 PM	0	0	10	0	2	10	4	21	15	0	3	40	11	0	1	0	1	12	0	30	0	0	1	30	92
5:15 PM	0	0	8	0	3	8	0	19	5	0	1	24	8	0	1	0	0	9	1	15	0	0	1	16	57
5:30 PM	1	0	6	0	0	7	3	13	4	0	1	20	5	0	0	0	1	5	1	19	0	0	0	20	52
5:45 PM	0	0	5	0	0	5	2	16	4	0	1	22	9	0	1	0	1	10	2	16	0	0	0	18	55
Hourly Total	1	0	29	0	5	30	9	69	28	0	6	106	33	0	3	0	3	36	4	80	0	0	2	84	256
Grand Total	3	0	75	0	11	78	77	287	54	2	12	420	90	0	6	0	7	96	21	306	2	0	4	329	923
Approach %	3.8	0.0	96.2	0.0	-	-	18.3	68.3	12.9	0.5	-	-	93.8	0.0	6.3	0.0	-	-	6.4	93.0	0.6	0.0	-	-	-
Total %	0.3	0.0	8.1	0.0	-	8.5	8.3	31.1	5.9	0.2	-	45.5	9.8	0.0	0.7	0.0	-	10.4	2.3	33.2	0.2	0.0	-	35.6	-
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	3	0	73	0	-	76	77	265	54	2	-	398	71	0	5	0	-	76	3	299	1	0	-	303	853
% Cars & Light Goods	100.0	-	97.3	-	-	97.4	100.0	92.3	100.0	100.0	-	94.8	78.9	-	83.3	-	-	79.2	14.3	97.7	50.0	-	-	92.1	92.4
Other Vehicles	0	0	2	0	-	2	0	22	0	0	-	22	19	0	1	0	-	20	18	7	1	0	-	26	70
% Other Vehicles	0.0	-	2.7	-	-	2.6	0.0	7.7	0.0	0.0	-	5.2	21.1	-	16.7	-	-	20.8	85.7	2.3	50.0	-	-	7.9	7.6
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-

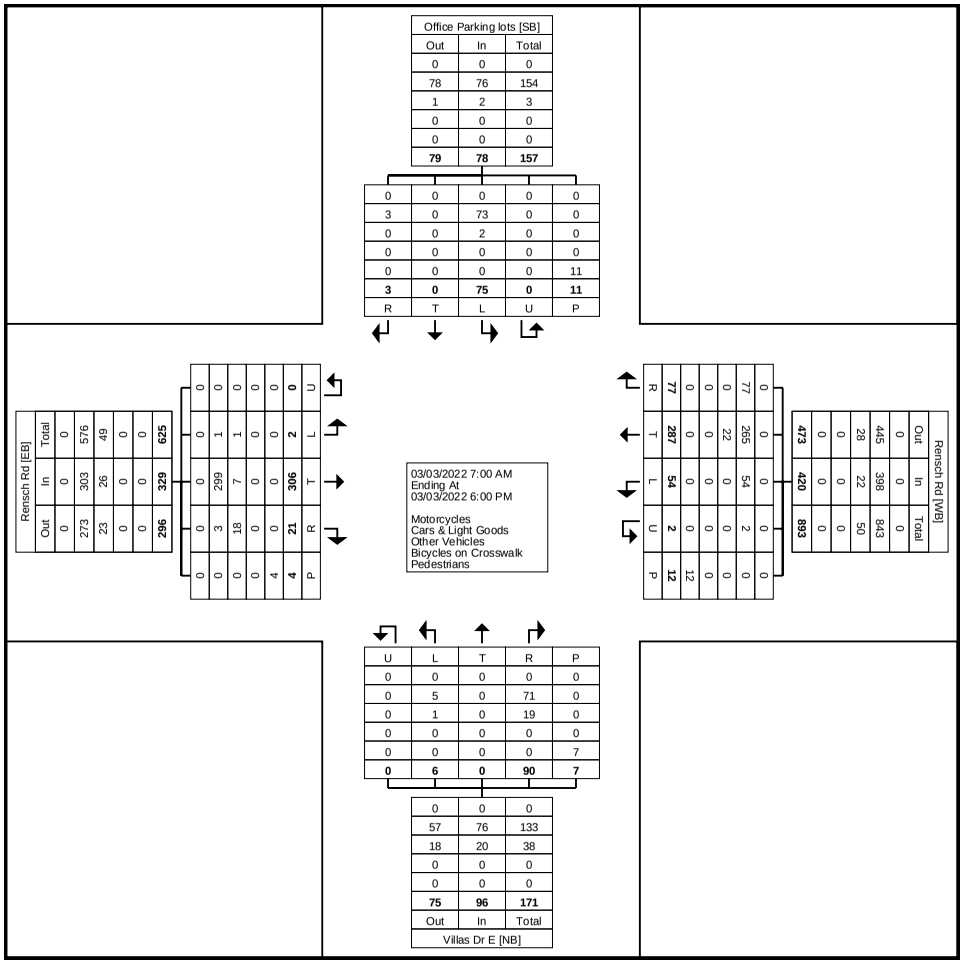
Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	11	-	-	-	-	-	12	-	-	-	-	-	7	-	-	-	-	-	4	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (east driveway)
Site Code:
Start Date: 03/03/2022



Turning Movement Data Plot

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (east driveway)
Site Code:
Start Date: 03/03/2022

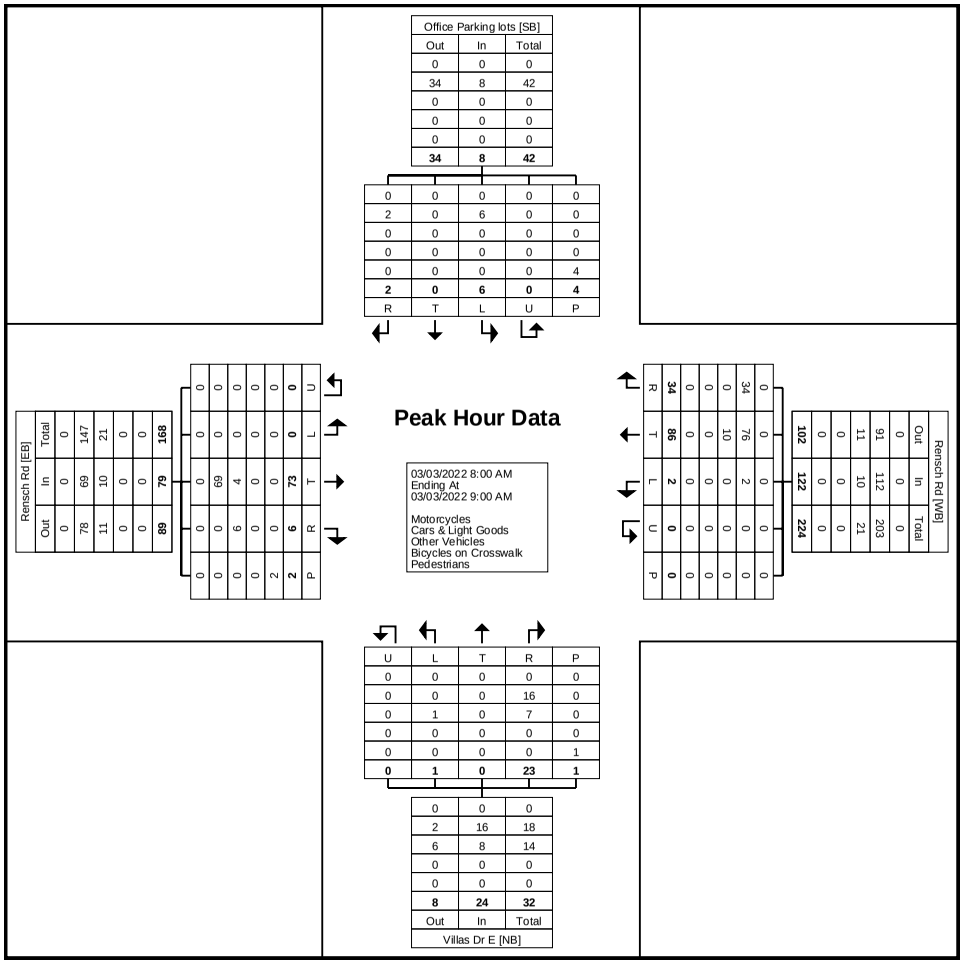
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Office Parking lots Southbound						Rensch Rd Westbound						Villas Dr E Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
8:00 AM	0	0	0	0	0	0	6	20	1	0	0	27	3	0	0	0	0	3	2	13	0	0	0	15	45
8:15 AM	0	0	1	0	1	1	7	22	0	0	0	29	3	0	0	0	0	3	1	13	0	0	1	14	47
8:30 AM	0	0	2	0	2	2	5	19	1	0	0	25	7	0	1	0	1	8	1	21	0	0	1	22	57
8:45 AM	2	0	3	0	1	5	16	25	0	0	0	41	10	0	0	0	0	10	2	26	0	0	0	28	84
Total	2	0	6	0	4	8	34	86	2	0	0	122	23	0	1	0	1	24	6	73	0	0	2	79	233
Approach %	25.0	0.0	75.0	0.0	-	-	27.9	70.5	1.6	0.0	-	-	95.8	0.0	4.2	0.0	-	-	7.6	92.4	0.0	0.0	-	-	-
Total %	0.9	0.0	2.6	0.0	-	3.4	14.6	36.9	0.9	0.0	-	52.4	9.9	0.0	0.4	0.0	-	10.3	2.6	31.3	0.0	0.0	-	33.9	-
PHF	0.250	0.000	0.500	0.000	-	0.400	0.531	0.860	0.500	0.000	-	0.744	0.575	0.000	0.250	0.000	-	0.600	0.750	0.702	0.000	0.000	-	0.705	0.693
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0
Cars & Light Goods	2	0	6	0	-	8	34	76	2	0	-	112	16	0	0	0	-	16	0	69	0	0	-	69	205
% Cars & Light Goods	100.0	-	100.0	-	-	100.0	100.0	88.4	100.0	-	-	91.8	69.6	-	0.0	-	-	66.7	0.0	94.5	-	-	-	87.3	88.0
Other Vehicles	0	0	0	0	-	0	0	10	0	0	-	10	7	0	1	0	-	8	6	4	0	0	-	10	28
% Other Vehicles	0.0	-	0.0	-	-	0.0	0.0	11.6	0.0	-	-	8.2	30.4	-	100.0	-	-	33.3	100.0	5.5	-	-	-	12.7	12.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (east driveway)
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (8:00 AM)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (east driveway)
Site Code:
Start Date: 03/03/2022

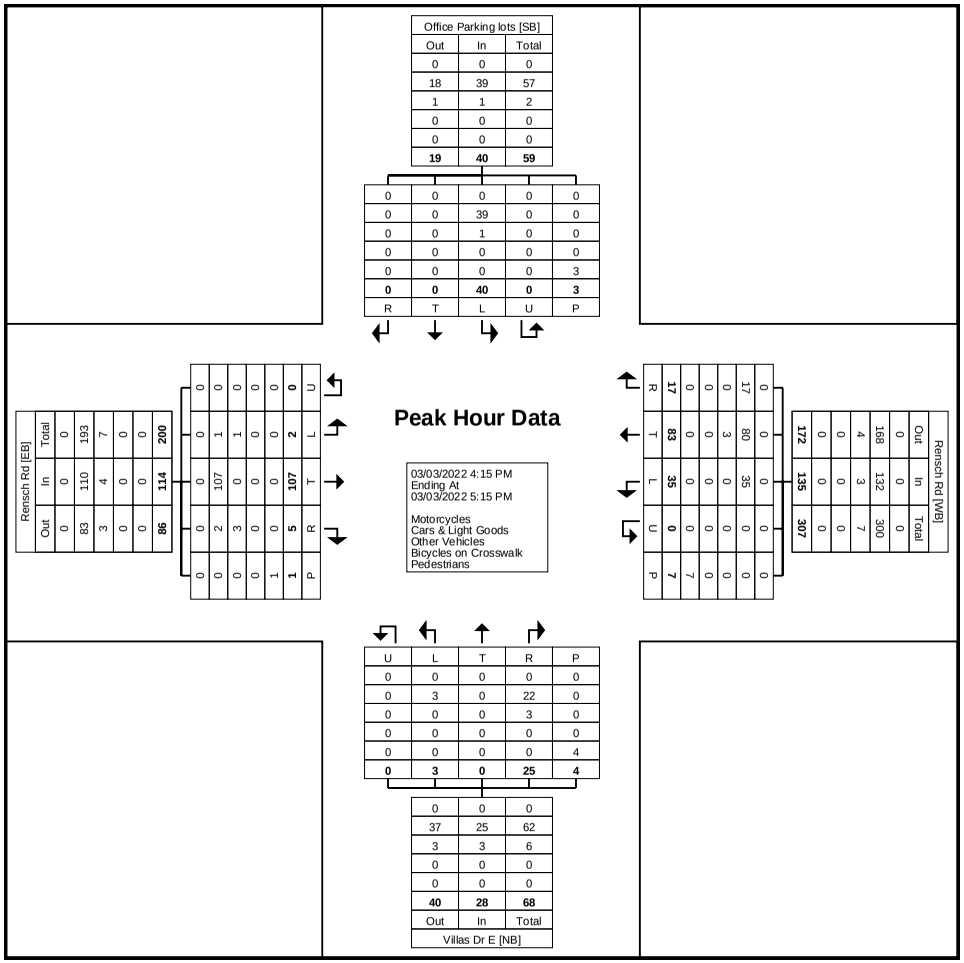
Turning Movement Peak Hour Data (4:15 PM)

Start Time	Office Parking lots Southbound						Rensch Rd Westbound						Villas Dr E Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:15 PM	0	0	7	0	0	7	3	20	8	0	1	31	2	0	0	0	1	2	2	27	0	0	0	29	69
4:30 PM	0	0	9	0	0	9	5	17	4	0	2	26	6	0	0	0	0	6	2	23	1	0	0	26	67
4:45 PM	0	0	14	0	1	14	5	25	8	0	1	38	6	0	2	0	2	8	1	27	1	0	0	29	89
5:00 PM	0	0	10	0	2	10	4	21	15	0	3	40	11	0	1	0	1	12	0	30	0	0	1	30	92
Total	0	0	40	0	3	40	17	83	35	0	7	135	25	0	3	0	4	28	5	107	2	0	1	114	317
Approach %	0.0	0.0	100.0	0.0	-	-	12.6	61.5	25.9	0.0	-	-	89.3	0.0	10.7	0.0	-	-	4.4	93.9	1.8	0.0	-	-	-
Total %	0.0	0.0	12.6	0.0	-	12.6	5.4	26.2	11.0	0.0	-	42.6	7.9	0.0	0.9	0.0	-	8.8	1.6	33.8	0.6	0.0	-	36.0	-
PHF	0.000	0.000	0.714	0.000	-	0.714	0.850	0.830	0.583	0.000	-	0.844	0.568	0.000	0.375	0.000	-	0.583	0.625	0.892	0.500	0.000	-	0.950	0.861
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	-	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	0	0	39	0	-	39	17	80	35	0	-	132	22	0	3	0	-	25	2	107	1	0	-	110	306
% Cars & Light Goods	-	-	97.5	-	-	97.5	100.0	96.4	100.0	-	-	97.8	88.0	-	100.0	-	-	89.3	40.0	100.0	50.0	-	-	96.5	96.5
Other Vehicles	0	0	1	0	-	1	0	3	0	0	-	3	3	0	0	0	-	3	3	0	1	0	-	4	11
% Other Vehicles	-	-	2.5	-	-	2.5	0.0	3.6	0.0	-	-	2.2	12.0	-	0.0	-	-	10.7	60.0	0.0	50.0	-	-	3.5	3.5
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	7	-	-	-	-	-	4	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (east driveway)
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (4:15 PM)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (west Driveway)
Site Code:
Start Date: 03/03/2022

Turning Movement Data

Start Time	Office Parking lots Southbound						Rensch Rd Westbound						Villas Dr E Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:00 AM	0	0	2	0	0	2	9	3	0	0	0	12	0	0	0	1	0	1	0	5	0	0	0	5	20
7:15 AM	0	0	3	0	0	3	5	3	0	0	0	8	0	0	0	0	0	0	0	9	0	0	0	9	20
7:30 AM	0	0	5	0	1	5	8	4	0	0	0	12	0	0	0	0	0	0	0	7	0	0	0	7	24
7:45 AM	0	0	5	0	0	5	15	3	0	0	0	18	0	0	0	0	0	0	0	13	0	0	0	13	36
Hourly Total	0	0	15	0	1	15	37	13	0	0	0	50	0	0	0	1	0	1	0	34	0	0	0	34	100
8:00 AM	1	0	4	0	0	5	15	7	0	0	0	22	0	0	0	0	0	0	0	9	0	0	0	9	36
8:15 AM	0	0	3	0	0	3	18	1	0	0	0	19	0	0	0	0	0	0	0	10	0	0	0	10	32
8:30 AM	0	0	8	0	0	8	13	7	0	0	0	20	0	0	0	0	3	0	0	16	0	0	0	16	44
8:45 AM	1	0	5	0	1	6	22	8	0	0	0	30	0	0	1	0	0	1	0	21	0	0	0	21	58
Hourly Total	2	0	20	0	1	22	68	23	0	0	0	91	0	0	1	0	3	1	0	56	0	0	0	56	170
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	20	0	0	20	4	15	0	0	0	19	0	0	0	0	0	0	0	11	0	0	0	11	50
4:15 PM	0	0	12	0	0	12	7	13	1	0	0	21	0	0	0	0	0	0	0	17	0	0	0	17	50
4:30 PM	0	0	17	0	0	17	5	11	0	0	0	16	0	0	0	0	0	0	0	12	0	0	0	12	45
4:45 PM	0	0	12	0	0	12	7	17	1	0	0	25	0	0	0	0	1	0	0	16	0	0	0	16	53
Hourly Total	0	0	61	0	0	61	23	56	2	0	0	81	0	0	0	0	1	0	0	56	0	0	0	56	198
5:00 PM	0	0	14	0	1	14	2	22	0	0	0	24	0	0	0	0	1	0	0	16	0	0	0	16	54
5:15 PM	0	0	9	0	0	9	2	18	0	0	0	20	0	0	0	0	2	0	0	11	0	0	0	11	40
5:30 PM	0	0	3	0	0	3	3	11	1	0	0	15	2	0	0	0	2	2	0	14	0	0	0	14	34
5:45 PM	0	0	2	0	0	2	3	14	0	0	0	17	0	0	0	0	2	0	0	13	0	0	0	13	32
Hourly Total	0	0	28	0	1	28	10	65	1	0	0	76	2	0	0	0	7	2	0	54	0	0	0	54	160
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	2	0	124	0	3	126	138	157	3	0	0	298	2	0	1	1	11	4	0	200	0	0	0	200	628
Approach %	1.6	0.0	98.4	0.0	-	-	46.3	52.7	1.0	0.0	-	-	50.0	0.0	25.0	25.0	-	-	0.0	100.0	0.0	0.0	-	-	-
Total %	0.3	0.0	19.7	0.0	-	20.1	22.0	25.0	0.5	0.0	-	47.5	0.3	0.0	0.2	0.2	-	0.6	0.0	31.8	0.0	0.0	-	31.8	-
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	0.0	-	0.0	-	0.0	-	-	-	0.0	0.0
Cars & Light Goods	0	0	123	0	-	123	135	136	3	0	-	274	2	0	1	0	-	3	0	176	0	0	-	176	576
% Cars & Light Goods	0.0	-	99.2	-	-	97.6	97.8	86.6	100.0	-	-	91.9	100.0	-	100.0	0.0	-	75.0	-	88.0	-	-	-	88.0	91.7
Other Vehicles	2	0	1	0	-	3	3	21	0	0	-	24	0	0	0	1	-	1	0	24	0	0	-	24	52
% Other Vehicles	100.0	-	0.8	-	-	2.4	2.2	13.4	0.0	-	-	8.1	0.0	-	0.0	100.0	-	25.0	-	12.0	-	-	-	12.0	8.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-

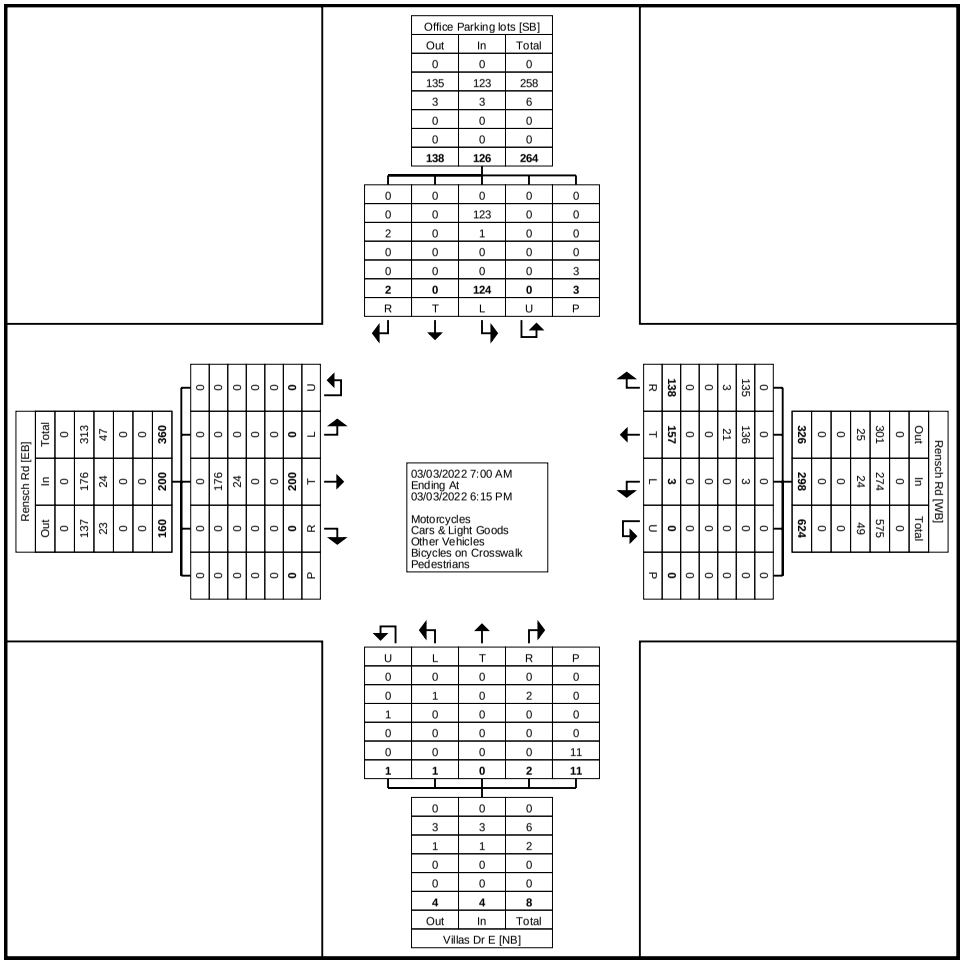
Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	11	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (west Driveway)
Site Code:
Start Date: 03/03/2022



Turning Movement Data Plot

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (west Driveway)
Site Code:
Start Date: 03/03/2022

Turning Movement Peak Hour Data (8:00 AM)

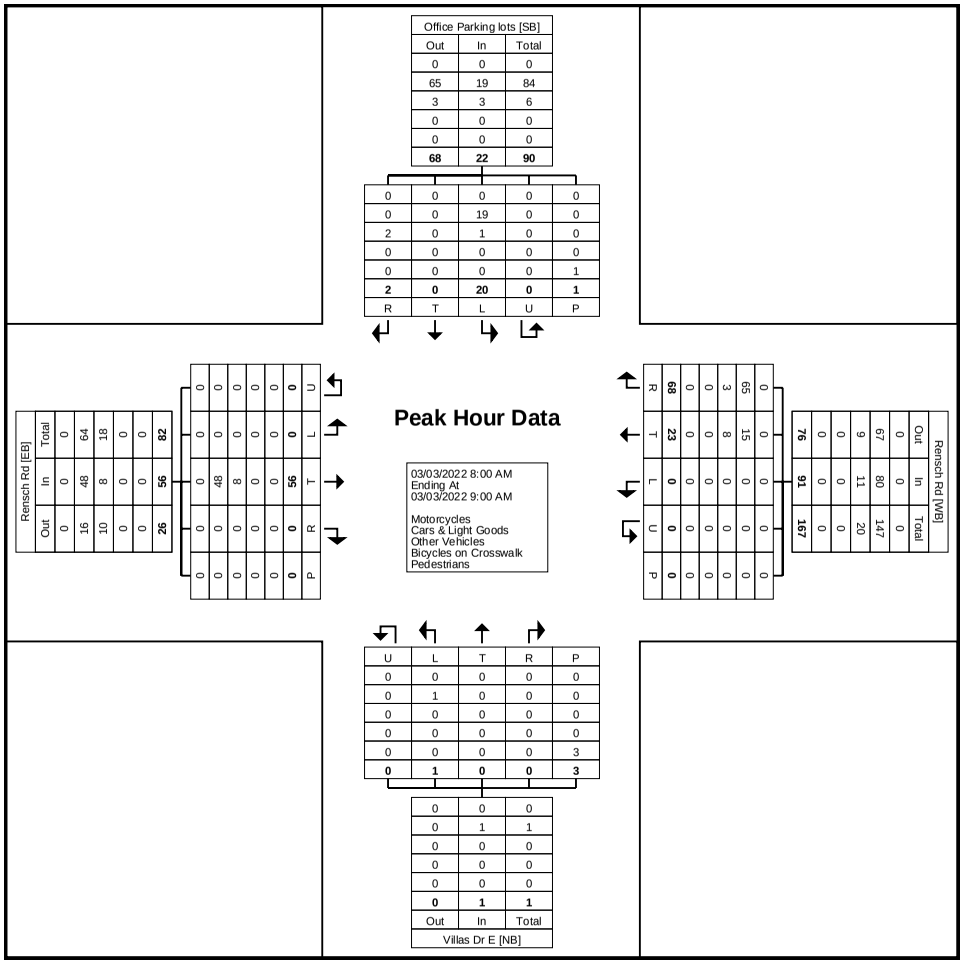
Start Time	Office Parking lots Southbound						Rensch Rd Westbound						Villas Dr E Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
8:00 AM	1	0	4	0	0	5	15	7	0	0	0	22	0	0	0	0	0	0	0	9	0	0	0	9	36
8:15 AM	0	0	3	0	0	3	18	1	0	0	0	19	0	0	0	0	0	0	0	10	0	0	0	10	32
8:30 AM	0	0	8	0	0	8	13	7	0	0	0	20	0	0	0	0	3	0	0	16	0	0	0	16	44
8:45 AM	1	0	5	0	1	6	22	8	0	0	0	30	0	0	1	0	0	1	0	21	0	0	0	21	58
Total	2	0	20	0	1	22	68	23	0	0	0	91	0	0	1	0	3	1	0	56	0	0	0	56	170
Approach %	9.1	0.0	90.9	0.0	-	-	74.7	25.3	0.0	0.0	-	-	0.0	0.0	100.0	0.0	-	-	0.0	100.0	0.0	0.0	-	-	-
Total %	1.2	0.0	11.8	0.0	-	12.9	40.0	13.5	0.0	0.0	-	53.5	0.0	0.0	0.6	0.0	-	0.6	0.0	32.9	0.0	0.0	-	32.9	-
PHF	0.500	0.000	0.625	0.000	-	0.688	0.773	0.719	0.000	0.000	-	0.758	0.000	0.000	0.250	0.000	-	0.250	0.000	0.667	0.000	0.000	-	0.667	0.733
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	-	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	-	-	0.0	-	-	0.0	-	0.0	-	-	-	0.0	0.0
Cars & Light Goods	0	0	19	0	-	19	65	15	0	0	-	80	0	0	1	0	-	1	0	48	0	0	-	48	148
% Cars & Light Goods	0.0	-	95.0	-	-	86.4	95.6	65.2	-	-	-	87.9	-	-	100.0	-	-	100.0	-	85.7	-	-	-	85.7	87.1
Other Vehicles	2	0	1	0	-	3	3	8	0	0	-	11	0	0	0	0	-	0	0	8	0	0	-	8	22
% Other Vehicles	100.0	-	5.0	-	-	13.6	4.4	34.8	-	-	-	12.1	-	-	0.0	-	-	0.0	-	14.3	-	-	-	14.3	12.9
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (west Driveway)
Site Code:
Start Date: 03/03/2022



Turning Movement Peak Hour Data Plot (8:00 AM)

Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Rensch Rd/Villas Dr E (west Driveway)
Site Code:
Start Date: 03/03/2022

Turning Movement Peak Hour Data (4:15 PM)

Start Time	Office Parking lots Southbound						Rensch Rd Westbound						Villas Dr E Northbound						Rensch Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:15 PM	0	0	12	0	0	12	7	13	1	0	0	21	0	0	0	0	0	0	0	17	0	0	0	17	50
4:30 PM	0	0	17	0	0	17	5	11	0	0	0	16	0	0	0	0	0	0	0	12	0	0	0	12	45
4:45 PM	0	0	12	0	0	12	7	17	1	0	0	25	0	0	0	0	1	0	0	16	0	0	0	16	53
5:00 PM	0	0	14	0	1	14	2	22	0	0	0	24	0	0	0	0	1	0	0	16	0	0	0	16	54
Total	0	0	55	0	1	55	21	63	2	0	0	86	0	0	0	0	2	0	0	61	0	0	0	61	202
Approach %	0.0	0.0	100.0	0.0	-	-	24.4	73.3	2.3	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	100.0	0.0	0.0	-	-	-
Total %	0.0	0.0	27.2	0.0	-	27.2	10.4	31.2	1.0	0.0	-	42.6	0.0	0.0	0.0	0.0	-	0.0	0.0	30.2	0.0	0.0	-	30.2	-
PHF	0.000	0.000	0.809	0.000	-	0.809	0.750	0.716	0.500	0.000	-	0.860	0.000	0.000	0.000	0.000	-	0.000	0.000	0.897	0.000	0.000	-	0.897	0.935
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	-	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	-	-	-	-	-	-	-	0.0	-	-	-	0.0	0.0
Cars & Light Goods	0	0	55	0	-	55	21	60	2	0	-	83	0	0	0	0	-	0	0	57	0	0	-	57	195
% Cars & Light Goods	-	-	100.0	-	-	100.0	100.0	95.2	100.0	-	-	96.5	-	-	-	-	-	-	-	93.4	-	-	-	93.4	96.5
Other Vehicles	0	0	0	0	-	0	0	3	0	0	-	3	0	0	0	0	-	0	0	4	0	0	-	4	7
% Other Vehicles	-	-	0.0	-	-	0.0	0.0	4.8	0.0	-	-	3.5	-	-	-	-	-	-	-	6.6	-	-	-	6.6	3.5
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

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Count Name: Rensch Rd/Villas Dr E (west Driveway)
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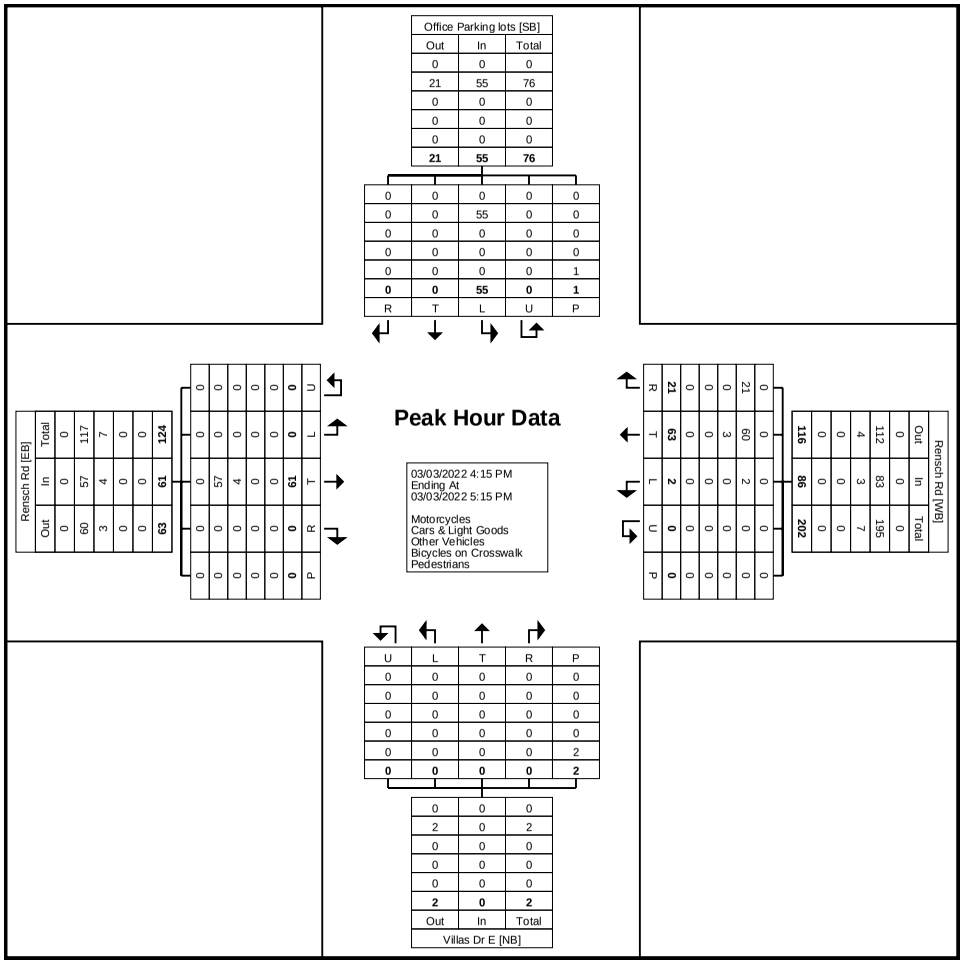


Turning Movement Peak Hour Data Plot (4:15 PM)

A2

Miscellaneous Traffic Data and Calculations

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

SRF ASSOCIATES
Transportation Planning / Engineering / Design

Proposed Mixed-Use Development, 1400-1416 Sweet Home Road, Town of Amherst, Erie County, NY

Documentation of Ambient Traffic Volume Growth

Roadway	Segment starts at	Segment end at	2013	2015	2018	2020	Annual Growth (2013-2018)
Sweet Home Road	Maple Road	Rensch Road	18,430	18,345	17,040	8,154	-1.56%

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Background Project Trip Estimates

	ITE LUC	Units	Enter	Exit	Enter	Exit
1265 Sweet Home	220	154	15	47	49	30
The Station Existing			27	51	126	106
The Station Proposed			71	121	132	119
			44	70	6	13

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Int #	Sweet Home Road/Rensch Road															
1	Left turn	Rear-end	Overtaking	Right Angle	Right Turn	Head On	Side-swipe	Fixed Object	Backing	Other	Animal	Bike/Ped	**Total**	Injury	Non Injury	Non-Repo	**Sum**
	4	17	2	1	2		1	4				1	**32**	8	18	6	**32**
TOTALS	**4**	**17**	**2**	**1**	**2**	**0**	**1**	**4**	**0**	**0**	**0**	**1**		**8**	**18**	**6**	

	Northbound	Southbound	Eastbound	Westbound	Unknown	**Totals**
Left turn	1		3			**4**
Rear-end	9	7		1		**17**
Overtaking			1		1	**2**
Right Angle	1					**1**
Right Turn	2					**2**
Head On						**0**
Side-swipe	1					**1**
Fixed Object	3		1			**4**
Backing						**0**
Other						**0**
Bike/Ped		1				**1**
Animal						**0**
Totals	**17**	**8**	**5**	**1**	**1**	**32**

ADT = Peak hour entering volume / k factor

ADT = 2716 VPH / 0.10 = 28589.4737 VPD

$$\text{Rate} = \frac{32 \text{ Acc.} \times 1{,}000{,}000}{28589.4737 \text{ VPD} \times 365 \text{ Days} \times 3.000 \text{ Yrs.}} = 1.02 \text{ Crash / MEV}$$

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Int #																
2	**Sweet Home Road/The Station**															
	Left turn	Rear-end	Overtaking	Right Angle	Right Turn	Head On	Side-swipe	Fixed Object	Backing	Other	Animal	Bike/Ped	**Total**	Injury	Non Injury	Non-Repo	**Sum**
	1												**1**	1			**1**
TOTALS	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**		**1**	**0**	**0**	

	Northbound	Southbound	Eastbound	Westbound	Unknown	**Totals**
Left turn				1		**1**
Rear-end						**0**
Overtaking						**0**
Right Angle						**0**
Right Turn						**0**
Head On						**0**
Side-swipe						**0**
Fixed Object						**0**
Backing						**0**
Other						**0**
Bike/Ped						**0**
Animal						**0**
Totals	**0**	**0**	**0**	**1**	**0**	**1**

ADT = Peak hour entering volume / k factor

ADT = 2157 VPH / 0.10 = 22705.2632 VPD

Rate = $\frac{1 \text{ Acc.} \times 1{,}000{,}000}{22705.2632 \text{ VPD} \times 365 \text{ Days} \times 3.000 \text{ Yrs.}}$ = 0.04 Crash / MEV

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Int #																
3	**Sweet Home Road/Maple Road**															
	Left turn	Rear-end	Overtaking	Right Angle	Right Turn	Head On	Side-swipe	Fixed Object	Backing	Other	Animal	Bike/Ped	**Total**	Injury	Non Injury	Non-Repo	**Sum**
	15	24	7	10	3	2		2				1	**64**	17	37	10	**64**
TOTALS	**15**	**24**	**7**	**10**	**3**	**2**	**0**	**2**	**0**	**0**	**0**	**1**		**17**	**37**	**10**	

	Northbound	Southbound	Eastbound	Westbound	Unknown	**Totals**
Left turn	6	7	2			**15**
Rear-end	3	9	4	8		**24**
Overtaking	1	1	1	4		**7**
Right Angle	4	1	3	2		**10**
Right Turn	1	1	1			**3**
Head On			1	1		**2**
Side-swipe						**0**
Fixed Object				1	1	**2**
Backing						**0**
Other						**0**
Bike/Ped		1				**1**
Animal						**0**
Totals	**15**	**20**	**12**	**16**	**1**	**64**

ADT = Peak hour entering volume / k factor

ADT = 3692 VPH / 0.10 = 38863.1579 VPD

Rate = 64 Acc. x 1,000,000 / (38863.1579 VPD x 365 Days x 3.000 Yrs.) = 1.50 Crash / MEV

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

INTERSECTION TYPE URBAN FUNCTION CLASS	ALL TYPES ACC/MEV	WET ROAD ACC/MEV	LEFT TURN ACC/MEV	REAR END CC/ME	OVER-TAKING ACC/MEV	RIGHT ANGLE ACC/MEV	RIGHT TURN ACC/MEV	HEAD ON ACC/MEV	SIDE-SWIPE ACC/MEV
3 LEGGED INTERSECTIONS									
SIGNAL 1-4 LANES	0.32	0.06	0.03	0.13	0.04	0.04	0.01	0	0.01
SIGNAL W/ LEFT TURN 5 &	0.17	0.03	0.01	0.07	0.03	0.02	0	0	0
SIGNAL W/0 LEFT TURN 5 &	0.13	0.02	0.01	0.05	0.02	0.01	0.01	0	0
SIGN 1-3 LANES	0.19	0.03	0.01	0.06	0.01	0.03	0.01	0	0
SIGN 4 LANES	0.13	0.02	0.01	0.04	0.02	0.02	0	0	0
SIGN 5 & > LANES	0.07	0.01	0	0.03	0.01	0.01	0	0	0
NO CONTROL ALL LANI	0.06	0.01	0	0.02	0.01	0.01	0	0	0
4 LEGGED &> INTERSECTIONS									
SIGNAL 1-4 LANES	0.56	0.1	0.05	0.21	0.08	0.09	0.02	0.01	0.01
SIGNAL W/ LEFT T	0.26	0.04	0.02	0.11	0.05	0.03	0.01	0	0
SIGNAL W/0 LEFT	0.24	0.04	0.02	0.07	0.04	0.05	0.01	0	0
SIGN 1-3 LANES	0.31	0.06	0.02	0.08	0.02	0.08	0.01	0	0.01
SIGN 4 & > LANES	0.15	0.03	0.01	0.05	0.02	0.03	0	0	0
NO CONTROL ALL	0.12	0.03	0.01	0.04	0.02	0.02	0	0	0
ON RAMP (ALL CONTROL)									
MERGE W/ 1 LANE	0.04	0	0	0.01	0.01	0	0	0	0
MERGE W/ 2 LANES	0.02	0	0	0.01	0.01	0	0	0	0
MERGE W/ 3&> LANES	0.02	0	0	0.01	0	0	0	0	0
OFF RAMP (ALL CONTROL)									
MERGE W/ 1 LANE	0.05	0.01	0	0.02	0.01	0.01	0	0	0
MERGE W/ 2 LANES	0.03	0.01	0	0.01	0.01	0	0	0	0
MERGE W/ 3&> LANES	0.02	0	0	0.01	0.01	0	0	0	0

Project: **Mixed-Use Development**
Location: **1400-1416 Sweet Home Road**

Description	ITE LUC	SIZE/ UNITS	AM PEAK HOUR		PM PEAK HOUR	
			Enter	Exit	Enter	Exit
Apartments	225	1,025 bedrooms	39	64	110	111
Office	710	10,000 SF	13	2	2	12
Retail	822	10,000 SF	14	10	33	33
Sub-Total Site Generated Trips			**66**	**76**	**145**	**156**
Apartments	225	1,025 bedrooms	38	63	101	107
Office	710	10,000 SF	12	1	1	9
Retail	822	14,600 SF	12	8	27	24
Total Net Site Generated Trips			**62**	**72**	**129**	**140**
Internal Trips			*4*	*4*	*16*	*16*

Base Internal Capture Percentages

AM PEAK HOUR		PM PEAK HOUR	
Enter	Exit	Enter	Exit
2%	1%	8%	4%
7%	50%	50%	23%
13%	17%	18%	26%
Adjusted Internal Capture Percentages			
2%	1%	8%	4%
7%	50%	50%	23%
13%	17%	18%	26%

ENTER	EXIT	ENTER	EXIT	
5%	5%	11%	10%	**Base %**
5%	5%	11%	10%	**Adjusted %**
0%	0%	0%	0%	**% change**

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Mixed-Use Development	**Organization:**	SRF Associates, D.P.C.
Project Location:	1400-1416 Sweet Home Road, Amherst, NY	**Performed By:**	David Kruse, AICP, PTP
Scenario Description:		**Date:**	March 16, 2022
Analysis Year:		**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	10,000	SF	15	13	2
Retail	822	10,000	SF	24	14	10
Restaurant				0		
Cinema/Entertainment				0		
Residential	225	1,025	bedrooms	103	39	64
Hotel				0		
All Other Land Uses[2]				0		
Total				142	66	76

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.06	0%	1%	1.06	0%	0%
Retail	1.17	0%	0%	1.16	0%	0%
Restaurant	1.41	0%	1%	1.39	0%	2%
Cinema/Entertainment						
Residential	1.13	0%	3%	1.09	0%	2%
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	1		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	158	74	84
Internal Capture Percentage	5%	5%	5%
External Vehicle-Trips[3]	133	61	72
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	2	1	1

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	7%	50%
Retail	13%	17%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	1%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Project Name:	Mixed-Use Development
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.06	13	14	1.06	2	2
Retail	1.17	14	16	1.16	10	12
Restaurant	1.41	0	0	1.39	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.13	39	44	1.09	64	70
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	1	0	0	0
Retail	3		2	0	2	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	1	14	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		5	0	0	0	0
Retail	1		0	0	1	0
Restaurant	2	1		0	2	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	3	0	0		0
Hotel	0	1	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	1	13	14	12	0	0
Retail	2	14	16	12	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	43	44	37	0	1
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	1	1	2	1	0	0
Retail	2	10	12	9	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	69	70	62	0	1
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Mixed-Use Development	**Organization:**	SRF Associates, D.P.C.
Project Location:	1400-1416 Sweet Home Road, Amherst, NY	**Performed By:**	David Kruse, AICP, PTP
Scenario Description:		**Date:**	March 16, 2022
Analysis Year:		**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	10,000	SF	14	2	12
Retail	822	10,000	SF	66	33	33
Restaurant				0		
Cinema/Entertainment				0		
Residential	225	1,025	bedrooms	221	110	111
Hotel				0		
All Other Land Uses[2]				0		
Total				301	145	156

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.11	0%	0%	1.07	0%	0%
Retail	1.21	0%	0%	1.18	0%	0%
Restaurant	1.41	0%	1%	1.39	0%	2%
Cinema/Entertainment						
Residential	1.15	0%	3%	1.21	0%	4%
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		300	300		500	
Retail					500	
Restaurant					500	
Cinema/Entertainment						
Residential		500	500			
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	0	0	0	0
Retail	0		0	0	10	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	4	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	355	169	186
Internal Capture Percentage	10%	11%	10%
External Vehicle-Trips[3]	262	126	136
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	9	4	5

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	50%	23%
Retail	18%	26%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	8%	4%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Project Name:	Mixed-Use Development
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.11	2	2	1.07	12	13
Retail	1.21	33	40	1.18	33	39
Restaurant	1.41	0	0	1.39	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.15	110	127	1.21	111	134
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	1	0	0	0
Retail	1		11	2	10	2
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	5	51	26	0		4
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	0	0	5	0
Retail	1		0	0	58	0
Restaurant	1	20		0	20	0
Cinema/Entertainment	0	2	0		5	0
Residential	1	4	0	0		0
Hotel	0	1	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	1	1	2	1	0	0
Retail	7	33	40	27	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	10	117	127	98	0	4
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	3	10	13	9	0	0
Retail	10	29	39	25	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	5	129	134	102	0	5
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Table 7.1a Adjusted Internal Trip Capture Rates for Trip Origins within a Multi-Use Development			
Land Use Pairs		Weekday	
		AM Peak Hour	PM Peak Hour
From OFFICE	To Office	0.0%	0.0%
	To Retail	28.0%	19.4%
	To Restaurant	63.0%	3.9%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	1.0%	2.0%
	To Hotel	0.0%	0.0%
From RETAIL	To Office	29.0%	2.0%
	To Retail	0.0%	0.0%
	To Restaurant	13.0%	29.0%
	To Cinema/Entertainment	0.0%	4.0%
	To Residential	14.0%	26.0%
	To Hotel	0.0%	5.0%
From RESTAURANT	To Office	31.0%	3.0%
	To Retail	14.0%	41.0%
	To Restaurant	0.0%	0.0%
	To Cinema/Entertainment	0.0%	8.0%
	To Residential	4.0%	18.0%
	To Hotel	3.0%	7.0%
From CINEMA/ENTERTAINMENT	To Office	0.0%	2.0%
	To Retail	0.0%	21.0%
	To Restaurant	0.0%	31.0%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	0.0%	8.0%
	To Hotel	0.0%	2.0%
From RESIDENTIAL	To Office	2.0%	4.0%
	To Retail	1.0%	38.2%
	To Restaurant	20.0%	19.1%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	0.0%	0.0%
	To Hotel	0.0%	3.0%
From HOTEL	To Office	75.0%	0.0%
	To Retail	14.0%	16.0%
	To Restaurant	9.0%	68.0%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	0.0%	2.0%
	To Hotel	0.0%	0.0%

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Table 7.2a Adjusted Internal Trip Capture Rates for Trip Destinations within a Multi-Use Development			
Land Use Pairs		Weekday	
		AM Peak Hour	PM Peak Hour
To OFFICE	From Office	0.0%	0.0%
	From Retail	4.0%	31.0%
	From Restaurant	14.0%	30.0%
	From Cinema/Entertainment	0.0%	6.0%
	From Residential	3.0%	57.0%
	From Hotel	3.0%	0.0%
To RETAIL	From Office	32.0%	7.8%
	From Retail	0.0%	0.0%
	From Restaurant	8.0%	50.0%
	From Cinema/Entertainment	0.0%	4.0%
	From Residential	17.0%	9.1%
	From Hotel	4.0%	2.0%
To RESTAURANT	From Office	23.0%	1.9%
	From Retail	50.0%	29.0%
	From Restaurant	0.0%	0.0%
	From Cinema/Entertainment	0.0%	3.0%
	From Residential	20.0%	12.7%
	From Hotel	6.0%	5.0%
To CINEMA/ENTERTAINMENT	From Office	0.0%	1.0%
	From Retail	0.0%	26.0%
	From Restaurant	0.0%	32.0%
	From Cinema/Entertainment	0.0%	0.0%
	From Residential	0.0%	0.0%
	From Hotel	0.0%	0.0%
To RESIDENTIAL	From Office	0.0%	4.0%
	From Retail	2.0%	46.0%
	From Restaurant	5.0%	16.0%
	From Cinema/Entertainment	0.0%	4.0%
	From Residential	0.0%	0.0%
	From Hotel	0.0%	0.0%
To HOTEL	From Office	0.0%	0.0%
	From Retail	0.0%	17.0%
	From Restaurant	4.0%	71.0%
	From Cinema/Entertainment	0.0%	1.0%
	From Residential	0.0%	12.0%
	From Hotel	0.0%	0.0%

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

PROJECT: Proposed Mixed-Use Development
LOCATION: 1400-1416 Sweet Home Road, Town of Amherst, NY
PEAK HOUR: AM Peak

Figure Number: 3A 3B Num of yrs: 5 4 6a 6b 7 8

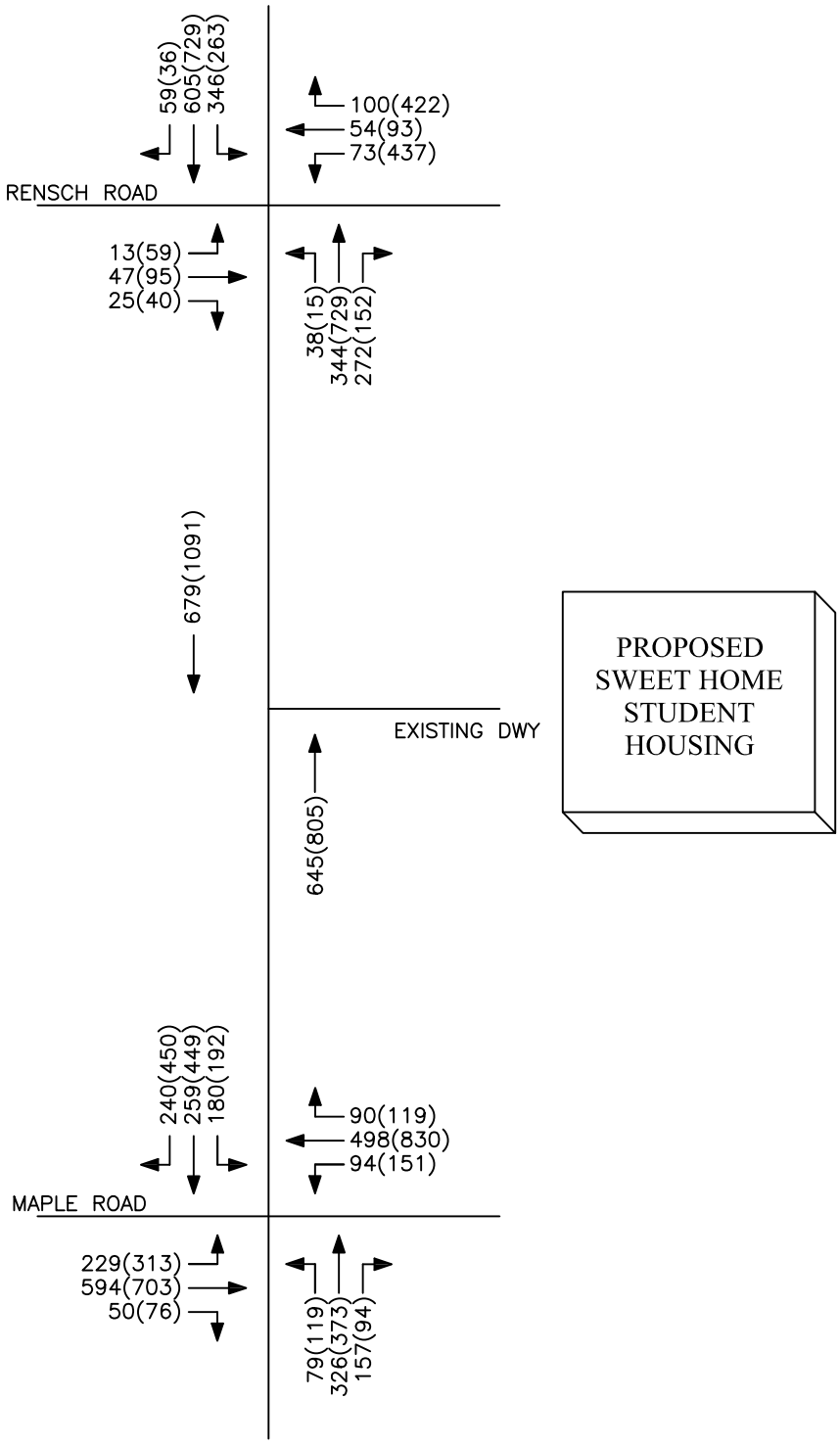
LOCATION NUMBER	INTERSECTION DESCRIPTION	2022 Collected Volumes	Pre-Covid Data	2022 Adjusted Volumes	Bkgd Volume 0.25%	The Station Enter Dist. %	The Station Exit Dist. %	The Station Trips IN 44	The Station Trips OUT 70	1265 Sweet Home Enter Dist. %	1265 Sweet Home Exit Dist. %	1265 Sweet Home Trips IN 15	1265 Sweet Home Trips OUT 47	Total Bkgd Volumes	Existing Bldg Adjust	2027 Vol. w/out Bldgs	Proposed Residential Enter Dist. %	Proposed Residential Exit Dist. %	Proposed Residential Trips IN 38	Proposed Residential Trips OUT 63	Proposed Commercial Enter Dist. %	Proposed Commercial Exit Dist. %	Proposed Commercial Trips IN 24	Proposed Commercial Trips OUT 9	Total Site Trips	Full Build Volumes
1	Rensch Road Proposed Westerly Driveway																									
	SR																	40%		25					25	25
	ST																									
	SL																									
	WR																40%		15						15	15
	WT	26		26	26									26	-4	22						5%		0	0	22
	WL																									
	NR																									
	NT																									
	NL																									
	ER																									
	ET	56		56	57									57		57					5%		1		1	58
	EL																									
2	Rensch Road Office Lot/Villas on Rensch (W)																									
	SR	2		2	2									2	-2											
	ST																									
	SL	20		20	20									20	-20											
	WR	68		68	68									68	-68											
	WT	23		23	23									23	-2	21	40%		15			5%		0	16	37
	WL																									
	NR																									
	NT																									
	NL	1		1	1									1		1										1
	ER																									
	ET	56		56	57									57		57		40%		25	5%		1		26	83
	EL																									
3	Rensch Road Proposed Easterly Driveway																									
	SR																					5%		0	0	0
	ST																									
	SL																	60%		38		95%		9	46	46
	WR																60%		23		95%		23		46	46
	WT	87		87	87									87	-70	17	40%		15						15	32
	WL																									
	NR																									
	NT																									
	NL																									
	ER																									
	ET	79		79	80									80	-20	60		40%		25					25	85
	EL																				5%		1		1	1
4	Rensch Road Office Lot/Villas on Rensch (E)																									
	SR	2		2	2									2	-2											
	ST																									
	SL	6		6	6									6	-6											
	WR	34		34	34									34	-34											
	WT	86		86	86									86	-68	18	100%		38		95%		23		61	79
	WL	2		2	2									2		2										2
	NR	23		23	23									23		23										23
	NT																									
	NL	1		1	1									1		1										1
	ER	6		6	6									6		6										6
	ET	73		73	74									74	-20	54		100%		63		95%		9	72	126
	EL																									
5	Rensch Road Sweet Home Road		2018																							
	SR	42	59	42	42									42	-35	7	15%		6		50%		12		18	25
	ST	515	605	560	567	5%		2		5%		1		570		570										570
	SL	237	346	292	295									295		295										295
	WR	90	100	90	91									91		91										91
	WT	46	54	46	47									47	-35	12	55%		21		10%		2		23	35
	WL	80	73	80	81	60%		26		60%		9		116		116										116
	NR	196	272	234	237		60%		42		60%		28	307		307										307
	NT	239	344	292	295		5%		4		5%		2	301		301										301
	NL	34	38	34	34									34	-32	2	30%		11		35%		8		20	22
	ER	31	25	31	31									31	-9	22		30%		19		50%		5	23	45
	ET	54	47	54	55									55	-14	41		55%		35		15%		1	36	77
	EL	13	13	13	13									13	-3	10		15%		9		30%		3	12	22
6	Sweet Home Road The Station																									
	SR																									
	ST	628		673	681						35%		16	697	-9	688		30%		19		50%		5	23	712
	SL	17		17	17	65%		29						46		46										46
	WR	33		33	33		65%		46					79		79										79
	WT																									
	WL	18		18	18		35%		25					43		43										43
	NR	10		10	10	35%		15						25		25										25
	NT	475		566	573					35%		5		578	-32	546	30%		11		35%		8		20	566
	NL																									
	ER																									
	ET																									
	EL																									
7	Sweet Home Road Maple Road		2018																							
	SR	226	240	233	236		20%		14		20%		9	259	-3	256		15%		9		20%		2	11	268
	ST	244	259	252	255		10%		7		10%		5	267	-4	263		10%		6		20%		2	8	271
	SL	157	180	169	171		5%		4		5%		2	177	-2	175		5%		3		10%		1	4	179
	WR	80	90	80	81	5%		2		5%		1		84	-5	79	5%		2		5%		1		3	82
	WT	466	498	466	472									472		472										472
	WL	91	94	91	92									92		92										92
	NR	108	157	108	109									109		109										109
	NT	234	326	280	284	10%		4		10%		2		290	-15	275	10%		4		15%		4		7	282
	NL	85	79	85	86									86		86										86
	ER	53	50	53	54									54		54										54
	ET	362	594	478	484									484		484										484
	EL	188	229	209	211	20%		9		20%		3		223	-12	211	15%		6		15%		4		9	220

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

PROJECT: Proposed Mixed-Use Development
LOCATION: 1400-1416 Sweet Home Road, Town of Amherst, NY
PEAK HOUR: PM Peak

Figure Number:		3A	3B			4				6a				6b				7	8
				Num of yrs		The Station				1265 Sweet Home									
LOCATION NUMBER	INTERSECTION DESCRIPTION	2022 Collected Volumes	Pre-Covid Data	2022 Adjusted Volumes	5 Bkgd Volume 0.25%	Enter Dist. %	Exit Dist. %	Trips IN 6	Trips OUT 13	Enter Dist. %	Exit Dist. %	Trips IN 49	Trips OUT 30	Total Bkgd Volumes	Existing Bldg Adjust	2027 Vol. w/out Bldgs	Proposed Residential Enter Dist. %	Exit Dist. %	Trips IN 101	Trips OUT 107	Proposed Commercial Enter Dist. %	Exit Dist. %	Trips IN 28	Trips OUT 34	Total Site Trips	Full Build Volumes
1	Rensch Road																									
	Proposed Westerly Driveway																									
	SR																									
	ST																									
	SL																	40%		43					43	43
	WR																40%		40						40	40
	WT	63		63	64									64		64						5%		2	2	66
	WL																									
	NR																									
	NT																									
	NL																									
	ER																									
	ET	61		61	62									62	-2	60					5%		1		1	61
	EL																									
2	Rensch Road																									
	Office Lot/Villas on Rensch (W)																									
	SR																									
	ST																									
	SL	55		55	55									55	-55											
	WR	21		21	21									21	-21											
	WT	63		63	64									64		64	40%		40			5%		2	42	106
	WL	2		2	2									2		2										2
	NR																									
	NT																									
	NL																									
	ER																									
	ET	61		61	62									62	-2	60		40%		43	5%		1		44	104
	EL																									
3	Rensch Road																									
	Proposed Easterly Driveway																									
	SR																					5%		2	2	2
	ST																									
	SL																	60%		64		95%		32	97	97
	WR																60%		61		95%		27		87	87
	WT	86		86	87									87	-21	66	40%		40						40	106
	WL																									
	NR																									
	NT																									
	NL																									
	ER																									
	ET	112		112	113									113	-58	55		40%		43					43	98
	EL																				5%		1		1	1
4	Rensch Road																									
	Office Lot/Villas on Rensch (E)																									
	SR																									
	ST																									
	SL	40		40	40									40	-40											
	WR	17		17	17									17	-17											
	WT	83		83	84									84	-21	63	100%		101		95%		27		128	191
	WL	35		35	35									35		35										35
	NR	25		25	25									25		25										25
	NT																									
	NL	3		3	3									3		3										3
	ER	5		5	5									5		5										5
	ET	107		107	108									108	-56	52		100%		107		95%		32	139	191
	EL	2		2	2									2	-2											
5	Rensch Road																									
	Sweet Home Road		2018																							
	SR	25	36	25	25									25	-8	17	15%		15		45%		13		28	45
	ST	514	729	622	629	5%		0		5%		2		632		632										632
	SL	185	263	224	227									227		227										227
	WR	316	422	369	374									374		374										374
	WT	67	93	67	68									68	-22	46	55%		56		15%		4		60	106
	WL	389	437	413	418	50%		3		50%		25		446		446										446
	NR	162	152	162	164		35%		5		35%		11	179		179										179
	NT	563	729	646	654		10%		1		10%		3	658		658										658
	NL	22	15	22	22									22	-8	14	30%		30		35%		10		40	54
	ER	51	40	51	52									52	-32	20		30%		32		45%		15	47	67
	ET	80	95	80	81									81	-45	36		55%		59		15%		5	64	100
	EL	35	59	35	35									35	-20	15		15%		16		35%		12	28	43
6	Sweet Home Road																									
	The Station																									
	SR																									
	ST	941		1073	1086						55%		17	1103	-9	1094		30%		32		45%		15	47	1141
	SL	70		70	71	55%		3						74		74										74
	WR	49		49	50		45%		6					56		56										56
	WT																									
	WL	57		57	58		55%		7					65		65										65
	NR	56		56	57	45%		3						60		60										60
	NT	769		852	863					45%		22		885	-32	853	30%		30		35%		10		40	893
	NL																									
	ER																									
	ET																									
	EL																									
7	Sweet Home Road																									
	Maple Road		2018																							
	SR	481	450	481	487		25%		3		25%		8	498	-3	495		15%		16		20%		7	23	518
	ST	343	449	396	401		20%		3		20%		6	410	-4	406		10%		11		15%		5	16	421
	SL	166	192	166	168		10%		1		10%		3	172	-2	170		5%		5		10%		3	9	179
	WR	191	119	191	193	10%		1		10%		5		199	-5	194	5%		5		5%		1		6	200
	WT	680	830	755	764									764		764										764
	WL	138	151	138	140									140		140										140
	NR	78	94	78	79									79		79										79
	NT	315	373	344	348	20%		1		20%		10		359	-15	344	10%		10		15%		4		14	358
	NL	124	119	124	126									126		126										126
	ER	74	76	74	75									75		75										75
	ET	564	703	634	641									641		641										641
	EL	311	313	311	315	15%		1		15%		7		323	-12	311	15%		15		15%		4		19	331

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)



PROJECT NO: 38032

KEY
00(00) = AM(PM)

N
NOT TO SCALE

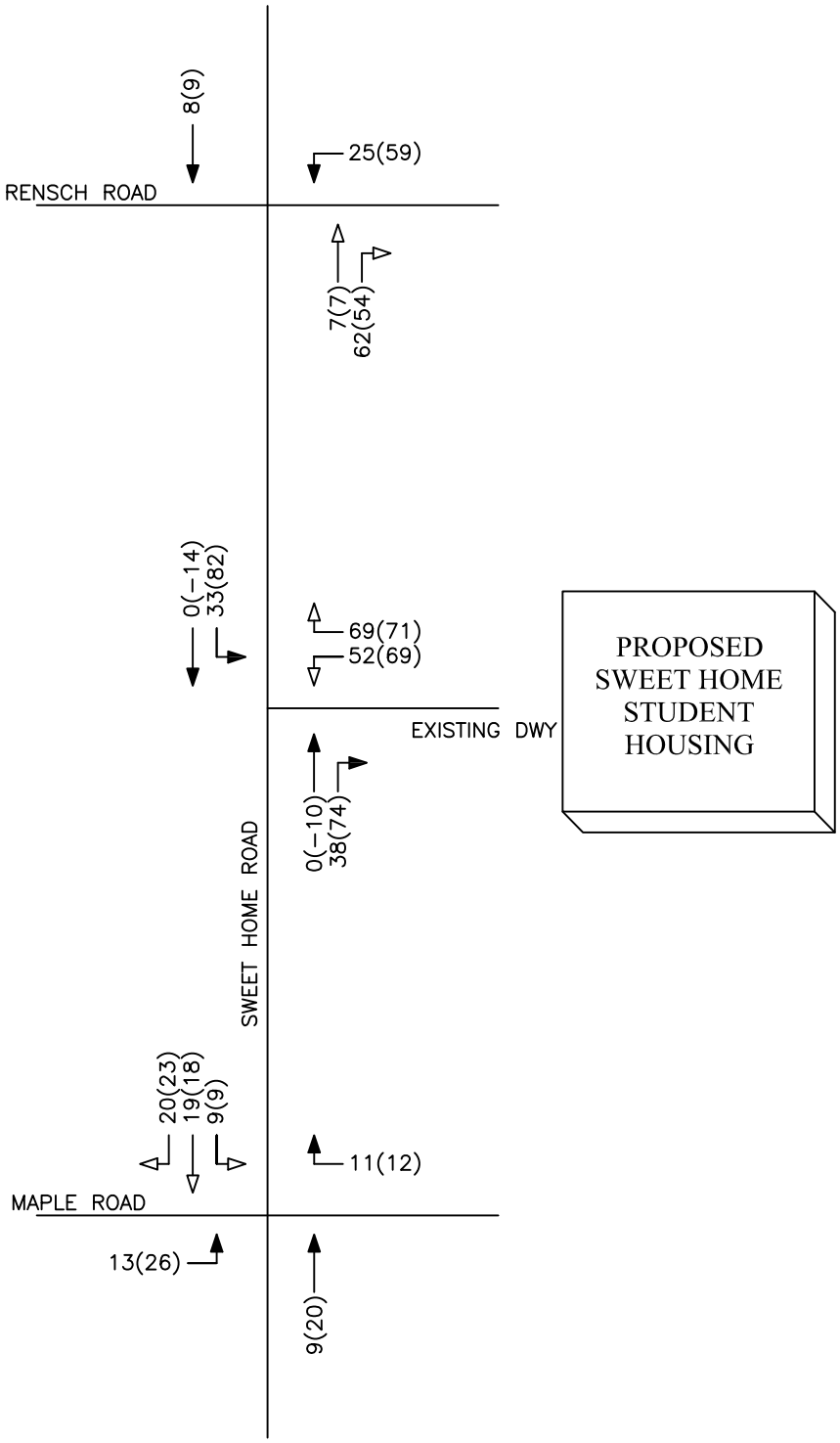
FIGURE 3

PEAK HOUR VOLUMES
2018 EXISTING BASE CONDITIONS

PROPOSED SWEET HOME
STUDENT HOUSING,
TOWN OF AMHERST, NY

SRF ASSOCIATES
WWW.SRFA.NET
Transportation Engineering & Planning Consultants

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)



PROJECT NO: 38032

KEY

NOT TO SCALE

00(00) = AM(PM)

N

→ = ENTERING TRIPS

→ = EXITING TRIPS

FIGURE 7

SITE GENERATED TRIPS

PROPOSED SWEET HOME
STUDENT HOUSING,
TOWN OF AMHERST, NY

SRF ASSOCIATES

WWW.SRFA.NET

Transportation Engineering & Planning Consultants

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

§ 5A-9 GENERAL DEVELOPMENT STANDARD

5A-9-1. Parking, Loading and Stacking

All parking, loading and stacking must meet the requirements of 7-1, except as required below.

A. Minimum Parking in Mixed Use Districts

(1) Off-Street Vehicle Parking

Off-street parking facilities must be provided in quantities not less than set forth in the following schedule.

SCHEDULE OF PARKING REQUIREMENTS

RESIDENTIAL USES	
Single-family detached	1.0 space per dwelling unit
Attached dwelling	1.0 space per dwelling unit
Multi-family dwelling, upper-story dwelling, assisted group living, senior citizen housing	.75 space per efficiency unit 1.0 space per one or two-bedroom unit 1.5 space per three or more bedroom unit
PUBLIC AND CIVIC USES	
Ambulance service	2.5 spaces per 1,000 SF
Business college, commercial school	3.5 spaces per 1,000 SF
College, university	3.5 spaces per 1,000 SF
Day care	3.5 spaces per 1,000 SF
Place of worship	3.5 spaces per 1,000 SF
Public utility service structure or facility	2.5 spaces per 1,000 SF
School, elementary/secondary (private)	3.5 spaces per 1,000 SF
Telecommunication facility, minor utility	1 space per facility
COMMERCIAL USES	
Animal grooming, cat boarding facility, animal hospital or veterinarian	2 spaces per 1,000 SF
Lodging	.75 spaces per room
Medical	3.5 spaces per 1,000 SF
Office	2.5 spaces per 1,000 SF
Personal service	2.5 spaces per 1,000 SF
Recreation, indoor	2.5 spaces per 1,000 SF
Restaurant	4.0 spaces per 1,000 SF
Retail sales and service	2.5 spaces per 1,000 SF

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

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Project: 1400-1416 Sweet Home Road
Description:

Shared Parking Demand Summary																		
Peak Month: DECEMBER -- Peak Period: 7 PM, WEEKEND																		
Land Use	Project Data		Weekday					Weekend					Weekday			Weekend		
	Quantity	Unit	Base Ratio	Driving Adj	Non-Captive Ratio	Project Ratio	Unit For Ratio	Base Ratio	Driving Adj	Non-Captive Ratio	Project Ratio	Unit For Ratio	Peak Hr Adj 7 PM	Peak Mo Adj December	Estimated Parking Demand	Peak Hr Adj 7 PM	Peak Mo Adj December	Estimated Parking Demand
Retail																		
Retail (<400 ksf)	10,000	sf GLA	2.90	100%	93%	2.69	ksf GLA	3.20	100%	91%	2.93	ksf GLA	90%	100%	24	60%	100%	18
Employee			0.70	100%	77%	0.54		0.80	100%	71%	0.57		100%	100%	5	80%	100%	5
Food and Beverage																		
Entertainment and Institutions																		
Hotel and Residential																		
Residential, Suburban																0%		
Studio Efficiency		units	0.00	100%	100%	0.00	unit	0.00	100%	100%	0.00	unit	70%	100%	-	80%	100%	-
1 Bedroom	475	units	0.00	100%	100%	0.00	unit	0.00	100%	100%	0.00	unit	70%	100%	-	80%	100%	-
2 Bedrooms	25	units	0.00	100%	100%	0.00	unit	0.00	100%	100%	0.00	unit	70%	100%	-	80%	100%	-
3+ Bedrooms		units	0.00	100%	100%	0.00	unit	0.00	100%	100%	0.00	unit	70%	100%	-	80%	100%	-
Reserved	100%	res spaces	0.94	100%	100%	0.94	unit	0.94	100%	100%	0.94	unit	100%	100%	469	100%	100%	469
Visitor	500	units	0.10	100%	100%	0.10	unit	0.15	100%	100%	0.15	unit	100%	100%	50	100%	100%	75
Office																		
Office <25 ksf	10,000	sf GFA	0.30	100%	100%	0.30	ksf GFA	0.03	100%	100%	0.03	ksf GFA	2%	100%	-	0%	100%	-
Reserved		empl	0.00	100%	100%	0.00		0.00	100%	100%	0.00		100%	100%	-	100%	100%	-
Employee			3.50	100%	72%	2.51		0.35	100%	72%	0.25		15%	100%	4	0%	100%	-
Additional Land Uses																		
													Customer/Visitor		74	Customer		93
													Employee/Resident		9	Employee/Resident		5
													Reserved		469	Reserved		469
													Total		552	Total		566
													Shared Parking Reduction		7%			4%

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

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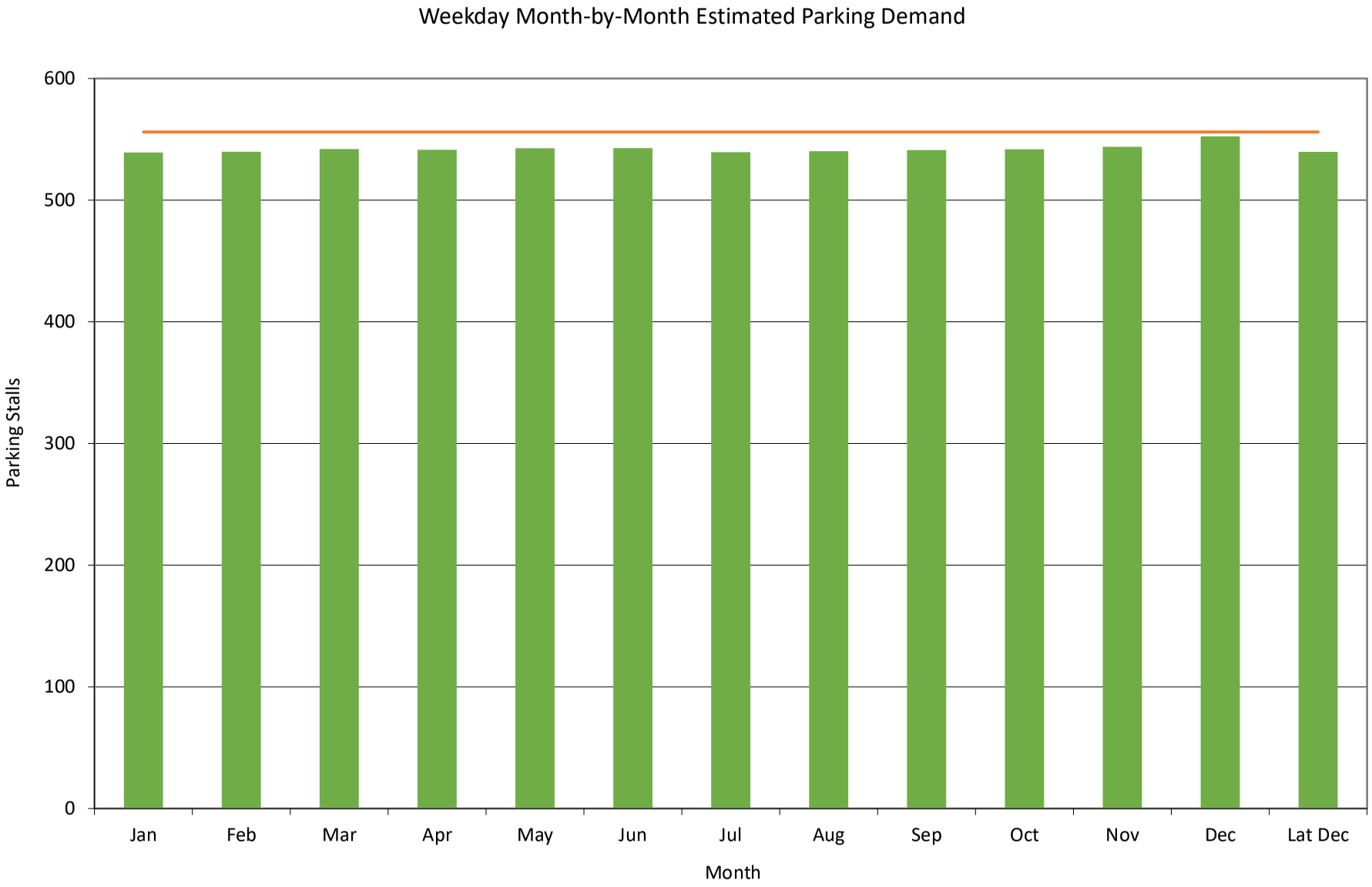
Project: 1400-1416 Sweet Home Road
Description:

Monthly Comparison Summary								
Month	Weekday							
	Overall Pk		AM Peak Hr		PM Peak Hr		Eve Peak Hr	
	Time	Demand	Time	Demand	Time	Demand	Time	Demand
January	7 PM	539	11 AM	522	2 PM	525	7 PM	539
February	7 PM	540	11 AM	522	2 PM	526	7 PM	540
March	7 PM	542	11 AM	525	2 PM	529	7 PM	542
April	7 PM	541	11 AM	524	2 PM	528	7 PM	541
May	7 PM	543	11 AM	525	2 PM	530	7 PM	543
June	7 PM	543	11 AM	525	2 PM	530	7 PM	543
July	7 PM	539	11 AM	523	2 PM	527	7 PM	539
August	7 PM	540	11 AM	524	2 PM	524	7 PM	540
September	7 PM	541	11 AM	524	2 PM	528	7 PM	541
October	7 PM	542	11 AM	524	2 PM	529	7 PM	542
November	7 PM	544	11 AM	526	2 PM	531	7 PM	544
December	7 PM	552	11 AM	532	2 PM	540	7 PM	552
Late December	7 PM	540	11 AM	521	2 PM	530	7 PM	540

Monthly Comparison Summary								
Month	Weekend							
	Overall Pk		AM Peak Hr		PM Peak Hr		Eve Peak Hr	
	Time	Demand	Time	Demand	Time	Demand	Time	Demand
January	7 PM	559	11 AM	508	5 PM	517	7 PM	559
February	7 PM	560	11 AM	509	5 PM	517	7 PM	560
March	7 PM	562	11 AM	512	5 PM	520	7 PM	562
April	7 PM	561	11 AM	511	5 PM	519	7 PM	561
May	7 PM	562	11 AM	513	5 PM	521	7 PM	562
June	7 PM	563	11 AM	513	5 PM	521	7 PM	563
July	7 PM	558	11 AM	511	5 PM	519	7 PM	558
August	7 PM	559	11 AM	512	5 PM	519	7 PM	559
September	7 PM	561	11 AM	511	5 PM	519	7 PM	561
October	7 PM	562	11 AM	512	5 PM	520	7 PM	562
November	7 PM	563	11 AM	514	5 PM	522	7 PM	563
December	7 PM	566	11 AM	520	5 PM	528	7 PM	566
Late December	7 PM	563	11 AM	508	5 PM	526	7 PM	563

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)



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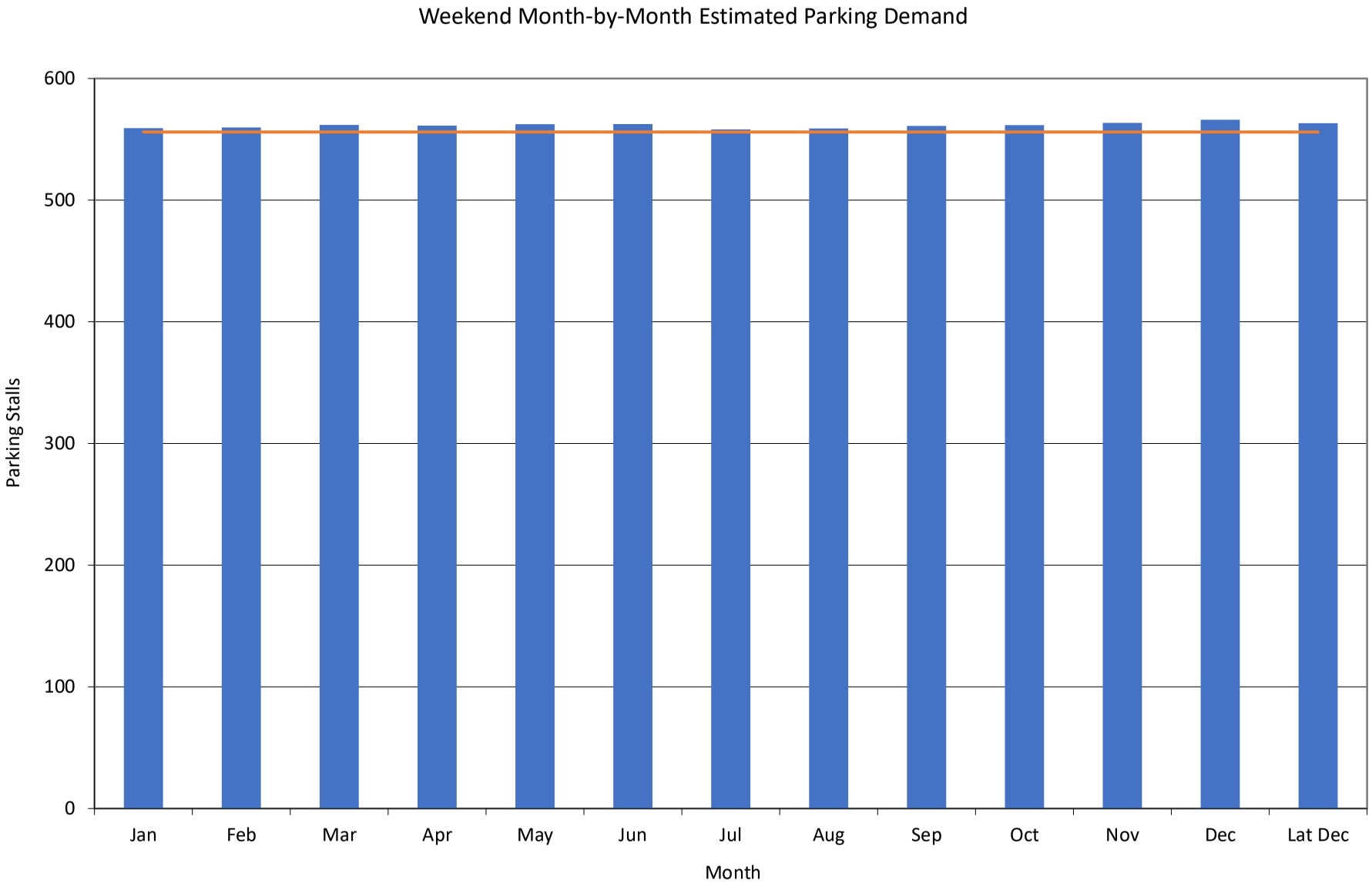
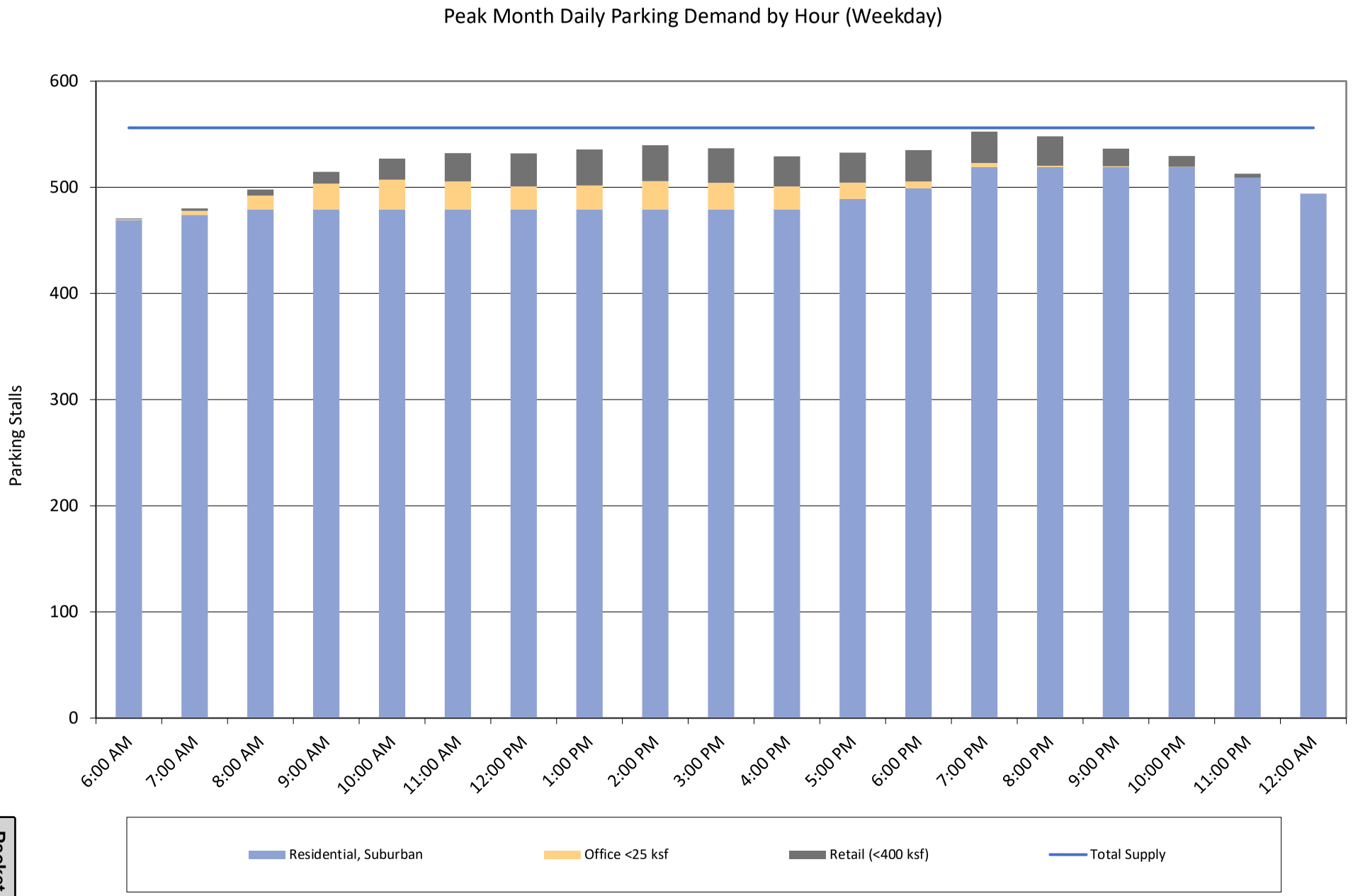
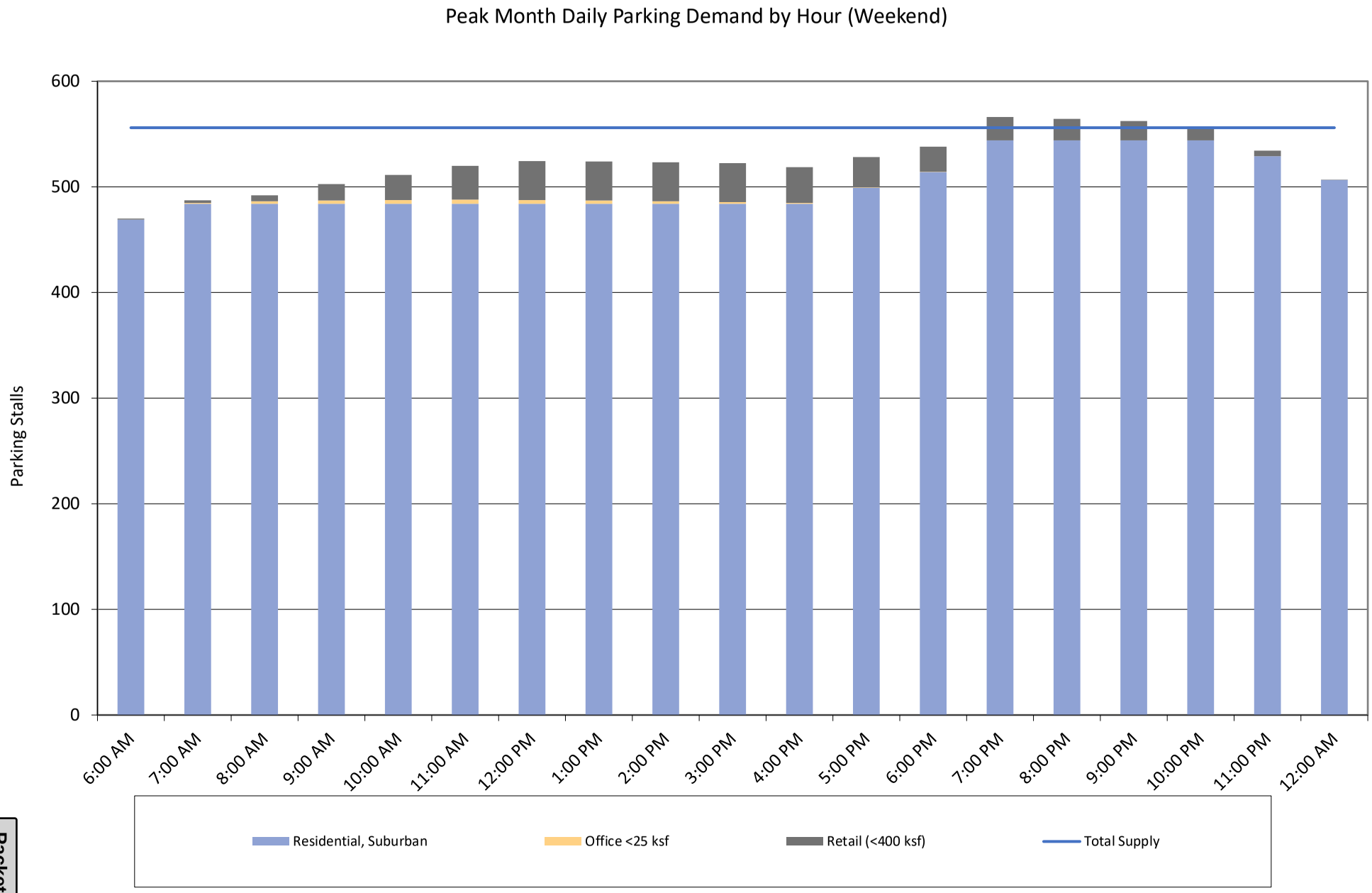


Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)


Peak Month Daily Parking Demand by Hour (Weekday)
Parking Stalls
600
500
400
300
200
100
0
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
12:00 AM
Residential, Suburban
Office <25 ksf
Retail (<400 ksf)
Total Supply



Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

A3

Level of Service: Criteria and Definitions

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Level of Service Criteria

Highway Capacity Manual 2016

SIGNALIZED INTERSECTIONS

Level of Service is a qualitative measure describing operational conditions within a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. Level of Service for signalized intersections is defined in terms of delay specifically, average total delay per vehicle for a 15-minute analysis period. The ranges are as follows:

Level of Service	Control Delay per vehicle (seconds)
A	< 10
B	10 – 20
C	20 – 35
D	35 – 55
E	55 – 80
F	>80

UNSIGNALIZED INTERSECTIONS

Level of Service for unsignalized intersections is also defined in terms of delay. However, the delay criteria are different from a signalized intersection. The primary reason for this is driver expectation that a signalized intersection is designed to carry higher volumes than an unsignalized intersection. The total delay threshold for any given Level of Service is less for an unsignalized intersection than for a signalized intersection. The ranges are as follows:

Level of Service	Control Delay per vehicle (seconds)
A	< 10
B	10 – 15
C	15 – 25
D	25 – 35
E	35 - 50
F	>50

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

A4

Level of Service Calculations: Existing Conditions

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	73	6	2	86	34	1	0	23	6	0	2
Future Volume (vph)	0	73	6	2	86	34	1	0	23	6	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.989			0.963			0.869			0.966	
Flt Protected					0.999			0.999			0.964	
Satd. Flow (prot)	0	1658	0	0	1685	0	0	1249	0	0	1769	0
Flt Permitted					0.999			0.999			0.964	
Satd. Flow (perm)	0	1658	0	0	1685	0	0	1249	0	0	1769	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		308			373			220			232	
Travel Time (s)		7.0			8.5			5.0			5.3	
Confl. Peds. (#/hr)	4		1	1		4	2					2
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Heavy Vehicles (%)	0%	6%	100%	0%	12%	0%	100%	0%	30%	0%	0%	0%
Adj. Flow (vph)	0	106	9	3	125	49	1	0	33	9	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	115	0	0	177	0	0	34	0	0	12	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	19.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	73	6	2	86	34	1	0	23	6	0	2
Future Volume (Veh/h)	0	73	6	2	86	34	1	0	23	6	0	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	0	106	9	3	125	49	1	0	33	9	0	3
Pedestrians		2						1			4	
Lane Width (ft)		12.0						12.0			12.0	
Walking Speed (ft/s)		4.0						4.0			4.0	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					373							
pX, platoon unblocked												
vC, conflicting volume	178			116			272	296	112	303	276	156
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	178			116			272	296	112	303	276	156
tC, single (s)	4.1			4.1			8.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			4.4	4.0	3.6	3.5	4.0	3.3
p0 queue free %	100			100			100	100	96	99	100	100
cM capacity (veh/h)	1405			1484			516	615	870	623	631	891

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	115	177	34	12
Volume Left	0	3	1	9
Volume Right	9	49	33	3
cSH	1405	1484	853	674
Volume to Capacity	0.00	0.00	0.04	0.02
Queue Length 95th (ft)	0	0	3	1
Control Delay (s)	0.0	0.1	9.4	10.4
Lane LOS		A	A	B
Approach Delay (s)	0.0	0.1	9.4	10.4
Approach LOS			A	B

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	19.7%	ICU Level of Service		A
Analysis Period (min)	15			

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	56	0	0	23	68	1	0	0	20	0	2
Future Volume (vph)	0	56	0	0	23	68	1	0	0	20	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.900						0.986	
Flt Protected								0.950			0.957	
Satd. Flow (prot)	0	1667	0	0	1528	0	0	1805	0	0	1566	0
Flt Permitted								0.950			0.957	
Satd. Flow (perm)	0	1667	0	0	1528	0	0	1805	0	0	1566	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		219			308			216			216	
Travel Time (s)		5.0			7.0			4.9			4.9	
Confl. Peds. (#/hr)	1		3	3		1						
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	0%	14%	0%	0%	35%	4%	0%	0%	0%	5%	0%	100%
Adj. Flow (vph)	0	77	0	0	32	93	1	0	0	27	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	77	0	0	125	0	0	1	0	0	30	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	15.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	56	0	0	23	68	1	0	0	20	0	2
Future Volume (Veh/h)	0	56	0	0	23	68	1	0	0	20	0	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	0	77	0	0	32	93	1	0	0	27	0	3
Pedestrians								3			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					681							
pX, platoon unblocked												
vC, conflicting volume	126			80			162	206	80	156	160	80
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	126			80			162	206	80	156	160	80
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	4.2
p0 queue free %	100			100			100	100	100	97	100	100
cM capacity (veh/h)	1472			1527			801	692	983	800	734	765

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	77	125	1	30
Volume Left	0	0	1	27
Volume Right	0	93	0	3
cSH	1472	1527	801	797
Volume to Capacity	0.00	0.00	0.00	0.04
Queue Length 95th (ft)	0	0	0	3
Control Delay (s)	0.0	0.0	9.5	9.7
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	9.5	9.7
Approach LOS			A	A

Intersection Summary				
Average Delay	1.3			
Intersection Capacity Utilization	15.7%	ICU Level of Service		A
Analysis Period (min)	15			

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	54	31	80	46	90	34	292	234	292	560	42
Future Volume (vph)	13	54	31	80	46	90	34	292	234	292	560	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	170		0	200		185	320		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	60			60			125			185		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99					0.98	1.00				1.00	
Frt		0.946				0.850			0.850		0.990	
Flt Protected	0.950			0.950	0.986		0.950			0.950		
Satd. Flow (prot)	1467	1643	0	1633	1754	1324	1703	3343	1583	1736	3397	0
Flt Permitted	0.950			0.950	0.986		0.950			0.950		
Satd. Flow (perm)	1459	1643	0	1633	1754	1299	1702	3343	1583	1736	3397	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19				147			275		6	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		373			436			1900			810	
Travel Time (s)		8.5			9.9			28.8			12.3	
Confl. Peds. (#/hr)	6					6	1					1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	23%	13%	3%	5%	0%	22%	6%	8%	2%	4%	4%	19%
Adj. Flow (vph)	15	64	36	94	54	106	40	344	275	344	659	49
Shared Lane Traffic (%)				23%								
Lane Group Flow (vph)	15	100	0	72	76	106	40	344	275	344	708	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2	2	2	2	
Detector Template												
Leading Detector (ft)	49	49		49	49	49	49	49	49	49	49	
Trailing Detector (ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Position(ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	29	29		29	29	29	29	29	29	29	29	
Detector 2 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

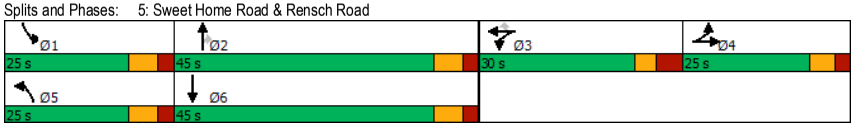
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Detector Phase	4	4		3	3	3	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	20.0	20.0	6.0	20.0	
Minimum Split (s)	40.2	40.2		41.0	41.0	41.0	12.8	37.8	37.8	12.8	37.8	
Total Split (s)	25.0	25.0		30.0	30.0	30.0	25.0	45.0	45.0	25.0	45.0	
Total Split (%)	20.0%	20.0%		24.0%	24.0%	24.0%	20.0%	36.0%	36.0%	20.0%	36.0%	
Maximum Green (s)	18.8	18.8		23.0	23.0	23.0	18.2	38.2	38.2	18.2	38.2	
Yellow Time (s)	3.8	3.8		3.2	3.2	3.2	4.3	4.3	4.3	4.3	4.3	
All-Red Time (s)	2.4	2.4		3.8	3.8	3.8	2.5	2.5	2.5	2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2		7.0	7.0	7.0	6.8	6.8	6.8	6.8	6.8	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	3.5	3.0	3.0	3.0	3.5	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0	27.0		24.0	24.0		24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)	9.8	9.8		9.8	9.8	9.8	7.8	21.1	21.1	18.5	37.8	
Actuated g/C Ratio	0.12	0.12		0.12	0.12	0.12	0.09	0.25	0.25	0.22	0.45	
v/c Ratio	0.09	0.48		0.38	0.37	0.38	0.25	0.41	0.45	0.89	0.46	
Control Delay	36.1	38.2		42.2	41.5	6.6	42.1	29.5	6.5	61.6	21.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	36.1	38.2		42.2	41.5	6.6	42.1	29.5	6.5	61.6	21.2	
LOS	D	D		D	D	A	D	C	A	E	C	
Approach Delay		37.9			27.1			20.7			34.4	
Approach LOS		D			C			C			C	
Queue Length 50th (ft)	7	41		37	40	0	20	81	0	179	153	
Queue Length 95th (ft)	25	89		83	86	17	53	129	50	#380	240	
Internal Link Dist (ft)		293			356			1820			730	
Turn Bay Length (ft)	100			170			200		185	320		
Base Capacity (vph)	336	391		458	492	470	378	1557	884	385	1713	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.04	0.26		0.16	0.15	0.23	0.11	0.22	0.31	0.89	0.41	

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 83.5			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 29.4		Intersection LOS: C	
Intersection Capacity Utilization 63.4%		ICU Level of Service B	

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Sweet Home Road & Rensch Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	18	33	566	10	17	673
Future Volume (vph)	18	33	566	10	17	673
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.997			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1568	3393	0	1703	3471
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1626	1568	3393	0	1703	3471
Link Speed (mph)	30		45			45
Link Distance (ft)	552		1491			1900
Travel Time (s)	12.5		22.6			28.8
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	11%	3%	6%	10%	6%	4%
Adj. Flow (vph)	20	37	636	11	19	756
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	37	647	0	19	756
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	28.6%	ICU Level of Service	A
Analysis Period (min) 15			

Packet Pg. 4654
3.h
Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	18	33	566	10	17	673
Future Volume (Veh/h)	18	33	566	10	17	673
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	20	37	636	11	19	756
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1058	324			647	
vC1, stage 1 conf vol	642					
vC2, stage 2 conf vol	416					
vCu, unblocked vol	1058	324			647	
tC, single (s)	7.0	7.0			4.2	
tC, 2 stage (s)	6.0					
tF (s)	3.6	3.3			2.3	
p0 queue free %	95	94			98	
cM capacity (veh/h)	398	669			908	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	20	37	424	223	19	378	378
Volume Left	20	0	0	0	19	0	0
Volume Right	0	37	0	11	0	0	0
cSH	398	669	1700	1700	908	1700	1700
Volume to Capacity	0.05	0.06	0.25	0.13	0.02	0.22	0.22
Queue Length 95th (ft)	4	4	0	0	2	0	0
Control Delay (s)	14.5	10.7	0.0	0.0	9.0	0.0	0.0
Lane LOS	B	B			A		
Approach Delay (s)	12.0		0.0		0.2		
Approach LOS	B						

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	28.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	209	478	53	91	466	80	85	280	108	169	252	233
Future Volume (vph)	209	478	53	91	466	80	85	280	108	169	252	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		175	105		0	100		130	190		0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			85			75			60		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor							1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3505	1615	1736	3505	1538	1770	1827	1553	1752	1827	1509
Flt Permitted	0.256			0.447			0.563			0.339		
Satd. Flow (perm)	455	3505	1615	817	3505	1538	1048	1827	1553	625	1827	1490
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			163			99			161			256
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		613			472			833			357	
Travel Time (s)		9.3			7.2			16.2			5.4	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	7%	3%	0%	4%	3%	5%	2%	4%	4%	3%	4%	7%
Adj. Flow (vph)	230	525	58	100	512	88	93	308	119	186	277	256
Shared Lane Traffic (%)												
Lane Group Flow (vph)	230	525	58	100	512	88	93	308	119	186	277	256
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2	2	2	2	2	2	2	2
Detector Template												
Leading Detector (ft)	49	49	49	49	49	49	49	49	49	49	49	49
Trailing Detector (ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Position(ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	29	29	29	29	29	29	29	29	29	29	29	29
Detector 2 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

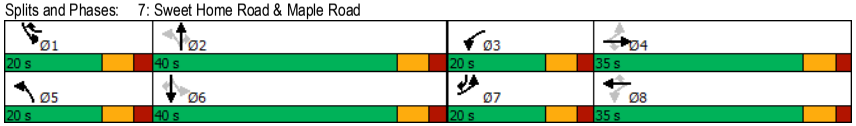
Packet Pg. 4655
3.h
Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	1	5	2	2	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	10.0	3.0	10.0	3.0	3.0	20.0	20.0	3.0	20.0	3.0
Minimum Split (s)	10.6	41.6	41.6	10.6	41.6	20.0	10.8	38.8	38.8	20.0	38.8	10.6
Total Split (s)	20.0	35.0	35.0	20.0	35.0	20.0	20.0	40.0	40.0	20.0	40.0	20.0
Total Split (%)	17.4%	30.4%	30.4%	17.4%	30.4%	17.4%	17.4%	34.8%	34.8%	17.4%	34.8%	17.4%
Maximum Green (s)	13.4	28.4	28.4	13.4	28.4	13.2	13.2	33.2	33.2	13.2	33.2	13.4
Yellow Time (s)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.8	6.8	6.8	6.8	6.8	6.8	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	2.0	2.0	4.0	4.0	2.0	4.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			25.0	25.0		25.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effct Green (s)	37.5	27.5	27.5	28.3	20.3	37.6	31.9	24.3	24.3	39.1	30.2	42.8
Actuated g/C Ratio	0.40	0.29	0.29	0.30	0.21	0.40	0.34	0.26	0.26	0.41	0.32	0.45
v/c Ratio	0.68	0.52	0.10	0.31	0.68	0.13	0.23	0.66	0.23	0.49	0.48	0.31
Control Delay	31.6	32.6	0.3	21.7	40.2	3.9	18.7	40.4	2.9	22.0	31.9	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.6	32.6	0.3	21.7	40.2	3.9	18.7	40.4	2.9	22.0	31.9	3.1
LOS	C	C	A	C	D	A	B	D	A	C	C	A
Approach Delay		30.0			33.0			28.0			19.1	
Approach LOS		C			C			C			B	
Queue Length 50th (ft)	87	139	0	35	147	0	32	168	0	68	140	0
Queue Length 95th (ft)	#177	235	0	81	234	26	70	290	19	130	250	42
Internal Link Dist (ft)		533			392			753			277	
Turn Bay Length (ft)	150		175	105			100		130	190		
Base Capacity (vph)	359	1095	616	424	1070	713	519	652	657	426	662	831
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.48	0.09	0.24	0.48	0.12	0.18	0.47	0.18	0.44	0.42	0.31

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 94.9			
Natural Cycle: 115			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 27.5		Intersection LOS: C	
Intersection Capacity Utilization 72.8%		ICU Level of Service C	

Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Sweet Home Road & Maple Road



Packet Pg. 4656
3.h
Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	107	5	35	83	17	3	0	25	40	0	0
Future Volume (vph)	2	107	5	35	83	17	3	0	25	40	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.994			0.983			0.878				
Flt Protected		0.999			0.987			0.995			0.950	
Satd. Flow (prot)	0	1823	0	0	1799	0	0	1497	0	0	1752	0
Flt Permitted		0.999			0.987			0.995			0.950	
Satd. Flow (perm)	0	1823	0	0	1799	0	0	1497	0	0	1752	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		308			373			220			232	
Travel Time (s)		7.0			8.5			5.0			5.3	
Confl. Peds. (#/hr)	3		4	4		3	1		7	7		1
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	50%	0%	60%	0%	4%	0%	0%	0%	12%	3%	0%	0%
Adj. Flow (vph)	2	124	6	41	97	20	3	0	29	47	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	132	0	0	158	0	0	32	0	0	47	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.7%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	107	5	35	83	17	3	0	25	40	0	0
Future Volume (Veh/h)	2	107	5	35	83	17	3	0	25	40	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	2	124	6	41	97	20	3	0	29	47	0	0
Pedestrians		1			7			4			3	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			1			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					373							
pX, platoon unblocked												
vC, conflicting volume	120			134			325	337	138	359	330	111
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	120			134			325	337	138	359	330	111
tC, single (s)	4.6			4.1			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.7			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			97			100	100	97	92	100	100
cM capacity (veh/h)	1215			1458			612	566	876	555	572	945

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	132	158	32	47
Volume Left	2	41	3	47
Volume Right	6	20	29	0
cSH	1215	1458	842	555
Volume to Capacity	0.00	0.03	0.04	0.08
Queue Length 95th (ft)	0	2	3	7
Control Delay (s)	0.1	2.1	9.4	12.1
Lane LOS	A	A	A	B
Approach Delay (s)	0.1	2.1	9.4	12.1
Approach LOS			A	B

Intersection Summary				
Average Delay		3.3		
Intersection Capacity Utilization		29.7%	ICU Level of Service	A
Analysis Period (min)		15		

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	61	0	2	63	21	0	0	0	55	0	0
Future Volume (vph)	0	61	0	2	63	21	0	0	0	55	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.967							
Flt Protected					0.999						0.950	
Satd. Flow (prot)	0	1776	0	0	1770	0	0	1900	0	0	1805	0
Flt Permitted					0.999						0.950	
Satd. Flow (perm)	0	1776	0	0	1770	0	0	1900	0	0	1805	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		219			308			216			216	
Travel Time (s)		5.0			7.0			4.9			4.9	
Confl. Peds. (#/hr)	1		2	2		1						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	7%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	65	0	2	67	22	0	0	0	59	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	65	0	0	91	0	0	0	0	0	59	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	16.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	61	0	2	63	21	0	0	0	55	0	0
Future Volume (Veh/h)	0	61	0	2	63	21	0	0	0	55	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	65	0	2	67	22	0	0	0	59	0	0
Pedestrians								2			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					681							
pX, platoon unblocked												
vC, conflicting volume	90			67			149	161	67	148	150	79
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	90			67			149	161	67	148	150	79
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	93	100	100
cM capacity (veh/h)	1517			1545			820	732	1001	822	742	986

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	65	91	0	59
Volume Left	0	2	0	59
Volume Right	0	22	0	0
cSH	1517	1545	1700	822
Volume to Capacity	0.00	0.00	0.00	0.07
Queue Length 95th (ft)	0	0	0	6
Control Delay (s)	0.0	0.2	0.0	9.7
Lane LOS		A	A	A
Approach Delay (s)	0.0	0.2	0.0	9.7
Approach LOS			A	A

Intersection Summary				
Average Delay		2.7		
Intersection Capacity Utilization		16.5%	ICU Level of Service	A
Analysis Period (min)		15		

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	80	51	413	67	369	22	646	162	224	622	25
Future Volume (vph)	35	80	51	413	67	369	22	646	162	224	622	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	170		0	200		185	320		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	60			60			125			185		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99		1.00	1.00	0.98	1.00		0.98	1.00	1.00	
Frt		0.942				0.850			0.850		0.994	
Flt Protected	0.950			0.950	0.965		0.950			0.950		
Satd. Flow (prot)	1805	1717	0	1698	1720	1568	1805	3574	1583	1719	3534	0
Flt Permitted	0.950			0.950	0.965		0.950			0.950		
Satd. Flow (perm)	1795	1717	0	1695	1718	1537	1801	3574	1555	1715	3534	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21				401			166		3	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		373			436			1900			810	
Travel Time (s)		8.5			9.9			28.8			12.3	
Confl. Peds. (#/hr)	7		2	2		7	3		5	5		3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	6%	0%	1%	2%	3%	0%	1%	2%	5%	1%	12%
Adj. Flow (vph)	38	87	55	449	73	401	24	702	176	243	676	27
Shared Lane Traffic (%)				42%								
Lane Group Flow (vph)	38	142	0	260	262	401	24	702	176	243	703	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2	2	2	2	
Detector Template												
Leading Detector (ft)	49	49		49	49	49	49	49	49	49	49	
Trailing Detector (ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Position(ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	29	29		29	29	29	29	29	29	29	29	
Detector 2 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

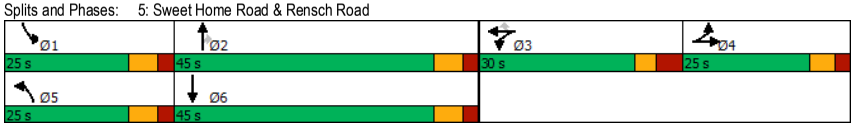
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Detector Phase	4	4		3	3	3	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	20.0	20.0	6.0	20.0	
Minimum Split (s)	40.2	40.2		41.0	41.0	41.0	12.8	37.8	37.8	12.8	37.8	
Total Split (s)	25.0	25.0		30.0	30.0	30.0	25.0	45.0	45.0	25.0	45.0	
Total Split (%)	20.0%	20.0%		24.0%	24.0%	24.0%	20.0%	36.0%	36.0%	20.0%	36.0%	
Maximum Green (s)	18.8	18.8		23.0	23.0	23.0	18.2	38.2	38.2	18.2	38.2	
Yellow Time (s)	3.8	3.8		3.2	3.2	3.2	4.3	4.3	4.3	4.3	4.3	
All-Red Time (s)	2.4	2.4		3.8	3.8	3.8	2.5	2.5	2.5	2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2		7.0	7.0	7.0	6.8	6.8	6.8	6.8	6.8	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	3.5	3.0	3.0	3.0	3.5	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0	27.0		24.0	24.0		24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)	12.9	12.9		21.3	21.3	21.3	7.3	27.8	27.8	18.5	44.9	
Actuated g/C Ratio	0.12	0.12		0.20	0.20	0.20	0.07	0.26	0.26	0.17	0.42	
v/c Ratio	0.18	0.64		0.78	0.77	0.64	0.20	0.76	0.34	0.83	0.48	
Control Delay	46.6	53.0		59.3	58.8	9.5	55.5	43.0	7.7	68.7	26.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	46.6	53.0		59.3	58.8	9.5	55.5	43.0	7.7	68.7	26.3	
LOS	D	D		E	E	A	E	D	A	E	C	
Approach Delay		51.7			37.5			36.5			37.2	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	24	81		177	178	0	16	239	5	165	203	
Queue Length 95th (ft)	60	159		#364	#364	94	47	325	59	#365	290	
Internal Link Dist (ft)		293			356			1820			730	
Turn Bay Length (ft)	100			170			200		185	320		
Base Capacity (vph)	319	321		368	372	647	309	1287	666	294	1476	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.12	0.44		0.71	0.70	0.62	0.08	0.55	0.26	0.83	0.48	

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 107.6			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 38.0		Intersection LOS: D	
Intersection Capacity Utilization 78.9%		ICU Level of Service D	

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Sweet Home Road & Rensch Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	57	49	852	56	70	1073
Future Volume (vph)	57	49	852	56	70	1073
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.991			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1736	1615	3536	0	1787	3574
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1736	1615	3536	0	1787	3574
Link Speed (mph)	30		45			45
Link Distance (ft)	552		1491			1900
Travel Time (s)	12.5		22.6			28.8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	0%	1%	4%	1%	1%
Adj. Flow (vph)	60	52	897	59	74	1129
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	52	956	0	74	1129
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min) 15			

Packet Pg. 4660
3.h
Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	57	49	852	56	70	1073
Future Volume (Veh/h)	57	49	852	56	70	1073
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	60	52	897	59	74	1129
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1639	478			956	
vC1, stage 1 conf vol	926					
vC2, stage 2 conf vol	712					
vCu, unblocked vol	1639	478			956	
tC, single (s)	6.9	6.9			4.1	
tC, 2 stage (s)	5.9					
tF (s)	3.5	3.3			2.2	
p0 queue free %	77	90			90	
cM capacity (veh/h)	264	539			721	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	60	52	598	358	74	564	564
Volume Left	60	0	0	0	74	0	0
Volume Right	0	52	0	59	0	0	0
cSH	264	539	1700	1700	721	1700	1700
Volume to Capacity	0.23	0.10	0.35	0.21	0.10	0.33	0.33
Queue Length 95th (ft)	21	8	0	0	9	0	0
Control Delay (s)	22.6	12.4	0.0	0.0	10.6	0.0	0.0
Lane LOS	C	B			B		
Approach Delay (s)	17.9		0.0		0.6		
Approach LOS	C						

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	311	634	74	138	755	191	124	344	78	166	396	481
Future Volume (vph)	311	634	74	138	755	191	124	344	78	166	396	481
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		175	105		0	100		130	190		0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			85			75			60		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					0.99	1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1583	1787	3574	1583	1805	1881	1568	1770	1863	1599
Flt Permitted	0.128			0.271			0.223			0.262		
Satd. Flow (perm)	241	3574	1583	510	3574	1563	424	1881	1568	488	1863	1578
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			163			161			161			143
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		613			472			833			357	
Travel Time (s)		9.3			7.2			16.2			5.4	
Confl. Peds. (#/hr)	1					1	1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	1%	1%	2%	1%	1%	2%	0%	1%	3%	2%	2%	1%
Adj. Flow (vph)	334	682	80	148	812	205	133	370	84	178	426	517
Shared Lane Traffic (%)												
Lane Group Flow (vph)	334	682	80	148	812	205	133	370	84	178	426	517
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2	2	2	2	2	2	2	2
Detector Template												
Leading Detector (ft)	49	49	49	49	49	49	49	49	49	49	49	49
Trailing Detector (ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Position(ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	29	29	29	29	29	29	29	29	29	29	29	29
Detector 2 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

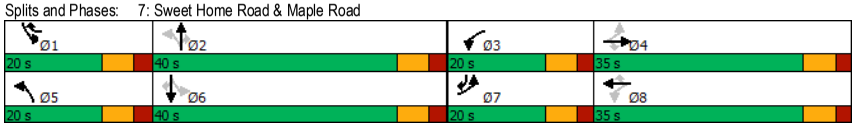
Packet Pg. 4661
3.h
Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	1	5	2	2	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	10.0	3.0	10.0	3.0	3.0	20.0	20.0	3.0	20.0	3.0
Minimum Split (s)	10.6	41.6	41.6	10.6	41.6	20.0	10.8	38.8	38.8	20.0	38.8	10.6
Total Split (s)	20.0	35.0	35.0	20.0	35.0	20.0	20.0	40.0	40.0	20.0	40.0	20.0
Total Split (%)	17.4%	30.4%	30.4%	17.4%	30.4%	17.4%	17.4%	34.8%	34.8%	17.4%	34.8%	17.4%
Maximum Green (s)	13.4	28.4	28.4	13.4	28.4	13.2	13.2	33.2	33.2	13.2	33.2	13.4
Yellow Time (s)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.8	6.8	6.8	6.8	6.8	6.8	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	2.0	2.0	4.0	4.0	2.0	4.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			25.0	25.0		25.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effct Green (s)	44.6	31.2	31.2	37.4	27.6	38.3	37.1	27.7	27.7	40.1	29.2	42.9
Actuated g/C Ratio	0.42	0.29	0.29	0.35	0.26	0.36	0.35	0.26	0.26	0.38	0.27	0.40
v/c Ratio	1.13	0.65	0.14	0.50	0.88	0.31	0.49	0.76	0.16	0.57	0.84	0.72
Control Delay	121.5	38.2	0.5	25.9	50.9	6.9	25.7	47.6	0.7	26.9	52.3	22.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	121.5	38.2	0.5	25.9	50.9	6.9	25.7	47.6	0.7	26.9	52.3	22.1
LOS	F	D	A	C	D	A	C	D	A	C	D	C
Approach Delay		60.8			40.0			35.9			34.3	
Approach LOS		E			D			D			C	
Queue Length 50th (ft)	~226	221	0	62	288	18	56	237	0	77	277	191
Queue Length 95th (ft)	#448	318	0	113	#426	66	95	351	0	124	#436	321
Internal Link Dist (ft)		533			392			753			277	
Turn Bay Length (ft)	150		175	105			100		130	190		
Base Capacity (vph)	296	1045	578	358	957	697	334	589	601	354	589	722
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.13	0.65	0.14	0.41	0.85	0.29	0.40	0.63	0.14	0.50	0.72	0.72

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 106.7			
Natural Cycle: 125			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.13			
Intersection Signal Delay: 43.6		Intersection LOS: D	
Intersection Capacity Utilization 88.6%		ICU Level of Service E	

Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Sweet Home Road & Maple Road



Packet Pg. 4662
3.h
Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

7: Sweet Home Road & Maple Road Performance by lane

Lane	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Movements Served	L	T	T	R	L	T	T	R	L	T	R	L
Denied Delay (hr)												
Denied Del/Veh (s)												
Total Delay (hr)	5.4	6.6	3.5	0.2	1.4	8.1	4.8	0.4	1.0	4.2	0.1	1.4
Total Del/Veh (s)	61.9	73.9	38.3	9.0	35.9	72.8	48.1	7.6	29.8	43.6	5.8	30.6
Stop Delay (hr)	5.2	5.1	2.6	0.2	1.3	6.6	3.9	0.3	0.9	3.2	0.1	1.3
Stop Del/Veh (s)	59.3	57.2	28.0	8.5	33.3	59.2	39.1	6.2	27.7	33.4	5.8	27.9

7: Sweet Home Road & Maple Road Performance by lane

Lane	SB	SB	All
Movements Served	T	R	
Denied Delay (hr)			1.4
Denied Del/Veh (s)			1.4
Total Delay (hr)	4.3	1.9	43.4
Total Del/Veh (s)	35.7	12.4	40.8
Stop Delay (hr)	3.4	1.7	35.8
Stop Del/Veh (s)	28.3	11.0	33.7

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Queuing and Blocking Report
2022 Existing PM

03/17/2022

Intersection: 7: Sweet Home Road & Maple Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	210	571	510	172	190	423	400	293	175	438	175	246
Average Queue (ft)	185	323	260	39	131	313	251	61	82	210	51	110
95th Queue (ft)	251	598	506	129	244	441	387	176	167	369	158	232
Link Distance (ft)		564	564			397	397	397		764		
Upstream Blk Time (%)		8	0			6	2	0				0
Queuing Penalty (veh)		0	0			0	0	0				0
Storage Bay Dist (ft)	150			175	105				100		130	190
Storage Blk Time (%)	45	12	10		5	60			2	31	0	0
Queuing Penalty (veh)	144	36	7		17	83			8	63	0	1

Intersection: 7: Sweet Home Road & Maple Road

Movement	SB	SB	B17
Directions Served	T	R	T
Maximum Queue (ft)	309	246	148
Average Queue (ft)	196	122	9
95th Queue (ft)	315	219	62
Link Distance (ft)	246	246	1422
Upstream Blk Time (%)	5	0	
Queuing Penalty (veh)	29	2	
Storage Bay Dist (ft)			
Storage Blk Time (%)	12		
Queuing Penalty (veh)	20		

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

A5

Level of Service Calculations: Background Conditions

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	74	6	2	86	34	1	0	23	6	0	2
Future Volume (vph)	0	74	6	2	86	34	1	0	23	6	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.990			0.963			0.869			0.966	
Flt Protected					0.999			0.999			0.964	
Satd. Flow (prot)	0	1660	0	0	1685	0	0	1249	0	0	1769	0
Flt Permitted					0.999			0.999			0.964	
Satd. Flow (perm)	0	1660	0	0	1685	0	0	1249	0	0	1769	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		308			373			220			232	
Travel Time (s)		7.0			8.5			5.0			5.3	
Confl. Peds. (#/hr)	4		1	1		4	2					2
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Heavy Vehicles (%)	0%	6%	100%	0%	12%	0%	100%	0%	30%	0%	0%	0%
Adj. Flow (vph)	0	107	9	3	125	49	1	0	33	9	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	116	0	0	177	0	0	34	0	0	12	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	19.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	74	6	2	86	34	1	0	23	6	0	2
Future Volume (Veh/h)	0	74	6	2	86	34	1	0	23	6	0	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	0	107	9	3	125	49	1	0	33	9	0	3
Pedestrians		2						1			4	
Lane Width (ft)		12.0						12.0			12.0	
Walking Speed (ft/s)		4.0						4.0			4.0	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					373							
pX, platoon unblocked												
vC, conflicting volume	178			117			273	296	112	304	276	156
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	178			117			273	296	112	304	276	156
tC, single (s)	4.1			4.1			8.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			4.4	4.0	3.6	3.5	4.0	3.3
p0 queue free %	100			100			100	100	96	99	100	100
cM capacity (veh/h)	1405			1483			515	615	869	622	631	891

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	116	177	34	12
Volume Left	0	3	1	9
Volume Right	9	49	33	3
cSH	1405	1483	852	673
Volume to Capacity	0.00	0.00	0.04	0.02
Queue Length 95th (ft)	0	0	3	1
Control Delay (s)	0.0	0.1	9.4	10.4
Lane LOS		A	A	B
Approach Delay (s)	0.0	0.1	9.4	10.4
Approach LOS			A	B

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	19.7%	ICU Level of Service		A
Analysis Period (min)	15			

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	57	0	0	23	68	1	0	0	20	0	2
Future Volume (vph)	0	57	0	0	23	68	1	0	0	20	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.900						0.986	
Flt Protected								0.950			0.957	
Satd. Flow (prot)	0	1667	0	0	1528	0	0	1805	0	0	1566	0
Flt Permitted								0.950			0.957	
Satd. Flow (perm)	0	1667	0	0	1528	0	0	1805	0	0	1566	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		219			308			216			216	
Travel Time (s)		5.0			7.0			4.9			4.9	
Confl. Peds. (#/hr)	1		3	3		1						
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	0%	14%	0%	0%	35%	4%	0%	0%	0%	5%	0%	100%
Adj. Flow (vph)	0	78	0	0	32	93	1	0	0	27	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	78	0	0	125	0	0	1	0	0	30	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	15.7%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	57	0	0	23	68	1	0	0	20	0	2
Future Volume (Veh/h)	0	57	0	0	23	68	1	0	0	20	0	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	0	78	0	0	32	93	1	0	0	27	0	3
Pedestrians								3			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					681							
pX, platoon unblocked												
vC, conflicting volume	126			81			162	207	81	158	160	80
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	126			81			162	207	81	158	160	80
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	4.2
p0 queue free %	100			100			100	100	100	97	100	100
cM capacity (veh/h)	1472			1526			800	691	982	799	733	765

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	78	125	1	30
Volume Left	0	0	1	27
Volume Right	0	93	0	3
cSH	1472	1526	800	796
Volume to Capacity	0.00	0.00	0.00	0.04
Queue Length 95th (ft)	0	0	0	3
Control Delay (s)	0.0	0.0	9.5	9.7
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	9.5	9.7
Approach LOS			A	A

Intersection Summary				
Average Delay	1.3			
Intersection Capacity Utilization	15.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	55	31	116	47	91	34	301	307	295	570	42
Future Volume (vph)	13	55	31	116	47	91	34	301	307	295	570	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	170		0	200		185	320		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	60			60			125			185		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99					0.98	1.00				1.00	
Frt		0.947				0.850			0.850		0.990	
Flt Protected	0.950			0.950	0.979		0.950			0.950		
Satd. Flow (prot)	1467	1644	0	1633	1730	1324	1703	3343	1583	1736	3398	0
Flt Permitted	0.950			0.950	0.979		0.950			0.950		
Satd. Flow (perm)	1459	1644	0	1633	1730	1299	1702	3343	1583	1736	3398	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19				206			361		7	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		373			436			1900			810	
Travel Time (s)		8.5			9.9			28.8			12.3	
Confl. Peds. (#/hr)	6					6	1					1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	23%	13%	3%	5%	0%	22%	6%	8%	2%	4%	4%	19%
Adj. Flow (vph)	15	65	36	136	55	107	40	354	361	347	671	49
Shared Lane Traffic (%)				31%								
Lane Group Flow (vph)	15	101	0	94	97	107	40	354	361	347	720	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2	2	2	2	
Detector Template												
Leading Detector (ft)	49	49		49	49	49	49	49	49	49	49	
Trailing Detector (ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Position(ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	29	29		29	29	29	29	29	29	29	29	
Detector 2 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

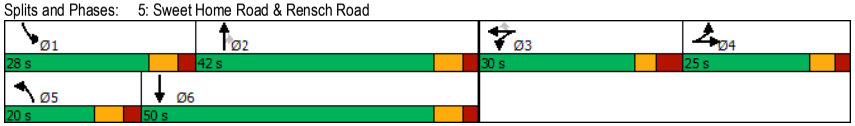
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Detector Phase	4	4		3	3	3	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	20.0	20.0	6.0	20.0	
Minimum Split (s)	40.2	40.2		41.0	41.0	41.0	12.8	37.8	37.8	12.8	37.8	
Total Split (s)	25.0	25.0		30.0	30.0	30.0	20.0	42.0	42.0	28.0	50.0	
Total Split (%)	20.0%	20.0%		24.0%	24.0%	24.0%	16.0%	33.6%	33.6%	22.4%	40.0%	
Maximum Green (s)	18.8	18.8		23.0	23.0	23.0	13.2	35.2	35.2	21.2	43.2	
Yellow Time (s)	3.8	3.8		3.2	3.2	3.2	4.3	4.3	4.3	4.3	4.3	
All-Red Time (s)	2.4	2.4		3.8	3.8	3.8	2.5	2.5	2.5	2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2		7.0	7.0	7.0	6.8	6.8	6.8	6.8	6.8	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	3.5	3.0	3.0	3.0	3.5	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0	27.0		24.0	24.0		24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)	10.0	10.0		11.1	11.1	11.1	7.9	21.0	21.0	21.6	40.8	
Actuated g/C Ratio	0.11	0.11		0.13	0.13	0.13	0.09	0.24	0.24	0.25	0.46	
v/c Ratio	0.09	0.50		0.45	0.44	0.31	0.26	0.44	0.55	0.82	0.46	
Control Delay	38.4	40.7		45.1	44.3	2.3	44.9	32.4	7.2	51.0	21.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	38.4	40.7		45.1	44.3	2.3	44.9	32.4	7.2	51.0	21.4	
LOS	D	D		D	D	A	D	C	A	D	C	
Approach Delay		40.4			29.5			21.0			31.0	
Approach LOS		D			C			C			C	
Queue Length 50th (ft)	8	44		52	53	0	21	91	0	185	162	
Queue Length 95th (ft)	27	94		105	107	0	55	142	56	#375	253	
Internal Link Dist (ft)		293			356			1820			730	
Turn Bay Length (ft)	100			170			200		185	320		
Base Capacity (vph)	319	372		434	460	497	260	1362	859	425	1788	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.05	0.27		0.22	0.21	0.22	0.15	0.26	0.42	0.82	0.40	

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 87.9			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 27.9		Intersection LOS: C	
Intersection Capacity Utilization 64.4%		ICU Level of Service C	

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Sweet Home Road & Rensch Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	43	79	578	25	46	697
Future Volume (vph)	43	79	578	25	46	697
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.994			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1568	3380	0	1703	3471
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1626	1568	3380	0	1703	3471
Link Speed (mph)	30		45			45
Link Distance (ft)	552		1491			1900
Travel Time (s)	12.5		22.6			28.8
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	11%	3%	6%	10%	6%	4%
Adj. Flow (vph)	48	89	649	28	52	783
Shared Lane Traffic (%)						
Lane Group Flow (vph)	48	89	677	0	52	783
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	33.4%	ICU Level of Service	A
Analysis Period (min) 15			

Packet Pg. 4669
3.h
Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	43	79	578	25	46	697
Future Volume (Veh/h)	43	79	578	25	46	697
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	48	89	649	28	52	783
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1158	338			677	
vC1, stage 1 conf vol	663					
vC2, stage 2 conf vol	496					
vCu, unblocked vol	1158	338			677	
tC, single (s)	7.0	7.0			4.2	
tC, 2 stage (s)	6.0					
tF (s)	3.6	3.3			2.3	
p0 queue free %	87	86			94	
cM capacity (veh/h)	367	654			884	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	48	89	433	244	52	392	392
Volume Left	48	0	0	0	52	0	0
Volume Right	0	89	0	28	0	0	0
cSH	367	654	1700	1700	884	1700	1700
Volume to Capacity	0.13	0.14	0.25	0.14	0.06	0.23	0.23
Queue Length 95th (ft)	11	12	0	0	5	0	0
Control Delay (s)	16.3	11.4	0.0	0.0	9.3	0.0	0.0
Lane LOS	C	B			A		
Approach Delay (s)	13.1		0.0		0.6		
Approach LOS	B						

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	33.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	223	484	54	92	472	84	86	290	109	177	267	259
Future Volume (vph)	223	484	54	92	472	84	86	290	109	177	267	259
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		175	105		0	100		130	190		0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			85			75			60		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor							1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3505	1615	1736	3505	1538	1770	1827	1553	1752	1827	1509
Flt Permitted	0.246			0.448			0.534			0.321		
Satd. Flow (perm)	437	3505	1615	818	3505	1538	994	1827	1553	592	1827	1490
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			163			99			161			268
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		613			472			833			357	
Travel Time (s)		9.3			7.2			16.2			5.4	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	7%	3%	0%	4%	3%	5%	2%	4%	4%	3%	4%	7%
Adj. Flow (vph)	245	532	59	101	519	92	95	319	120	195	293	285
Shared Lane Traffic (%)												
Lane Group Flow (vph)	245	532	59	101	519	92	95	319	120	195	293	285
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2	2	2	2	2	2	2	2
Detector Template												
Leading Detector (ft)	49	49	49	49	49	49	49	49	49	49	49	49
Trailing Detector (ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Position(ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	29	29	29	29	29	29	29	29	29	29	29	29
Detector 2 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

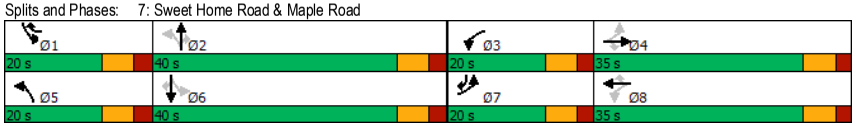
Packet Pg. 4670
3.h
Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	1	5	2	2	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	10.0	3.0	10.0	3.0	3.0	20.0	20.0	3.0	20.0	3.0
Minimum Split (s)	10.6	41.6	41.6	10.6	41.6	20.0	10.8	38.8	38.8	20.0	38.8	10.6
Total Split (s)	20.0	35.0	35.0	20.0	35.0	20.0	20.0	40.0	40.0	20.0	40.0	20.0
Total Split (%)	17.4%	30.4%	30.4%	17.4%	30.4%	17.4%	17.4%	34.8%	34.8%	17.4%	34.8%	17.4%
Maximum Green (s)	13.4	28.4	28.4	13.4	28.4	13.2	13.2	33.2	33.2	13.2	33.2	13.4
Yellow Time (s)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.8	6.8	6.8	6.8	6.8	6.8	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	2.0	2.0	4.0	4.0	2.0	4.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			25.0	25.0		25.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effct Green (s)	38.8	28.5	28.5	29.0	20.8	38.4	32.4	24.7	24.7	39.8	30.7	43.8
Actuated g/C Ratio	0.40	0.30	0.30	0.30	0.22	0.40	0.34	0.26	0.26	0.41	0.32	0.45
v/c Ratio	0.72	0.51	0.10	0.31	0.69	0.14	0.24	0.68	0.23	0.52	0.50	0.35
Control Delay	34.1	32.7	0.3	21.9	40.7	4.2	19.0	41.9	3.0	23.1	32.8	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.1	32.7	0.3	21.9	40.7	4.2	19.0	41.9	3.0	23.1	32.8	3.7
LOS	C	C	A	C	D	A	B	D	A	C	C	A
Approach Delay		30.9			33.3			29.1			19.7	
Approach LOS		C			C			C			B	
Queue Length 50th (ft)	97	145	0	36	153	0	34	180	0	74	154	5
Queue Length 95th (ft)	#210	239	0	81	237	28	72	300	21	136	266	52
Internal Link Dist (ft)		533			392			753			277	
Turn Bay Length (ft)	150		175	105			100		130	190		
Base Capacity (vph)	352	1086	613	422	1050	710	500	640	648	412	651	835
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.49	0.10	0.24	0.49	0.13	0.19	0.50	0.19	0.47	0.45	0.34

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 96.5			
Natural Cycle: 115			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 28.1		Intersection LOS: C	
Intersection Capacity Utilization 74.2%		ICU Level of Service D	

Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Sweet Home Road & Maple Road



Packet Pg. 4671
3.h
Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	108	5	35	84	17	3	0	25	40	0	0
Future Volume (vph)	2	108	5	35	84	17	3	0	25	40	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.994			0.983			0.878				
Flt Protected		0.999			0.987			0.995			0.950	
Satd. Flow (prot)	0	1824	0	0	1799	0	0	1497	0	0	1752	0
Flt Permitted		0.999			0.987			0.995			0.950	
Satd. Flow (perm)	0	1824	0	0	1799	0	0	1497	0	0	1752	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		308			373			220			232	
Travel Time (s)		7.0			8.5			5.0			5.3	
Confl. Peds. (#/hr)	3		4	4		3	1		7	7		1
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	50%	0%	60%	0%	4%	0%	0%	0%	12%	3%	0%	0%
Adj. Flow (vph)	2	126	6	41	98	20	3	0	29	47	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	134	0	0	159	0	0	32	0	0	47	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	29.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	108	5	35	84	17	3	0	25	40	0	0
Future Volume (Veh/h)	2	108	5	35	84	17	3	0	25	40	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	2	126	6	41	98	20	3	0	29	47	0	0
Pedestrians		1			7			4			3	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			1			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					373							
pX, platoon unblocked												
vC, conflicting volume	121			136			328	340	140	362	333	112
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	121			136			328	340	140	362	333	112
tC, single (s)	4.6			4.1			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.7			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			97			100	100	97	91	100	100
cM capacity (veh/h)	1213			1456			610	564	874	552	569	943

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	134	159	32	47
Volume Left	2	41	3	47
Volume Right	6	20	29	0
cSH	1213	1456	840	552
Volume to Capacity	0.00	0.03	0.04	0.09
Queue Length 95th (ft)	0	2	3	7
Control Delay (s)	0.1	2.1	9.5	12.1
Lane LOS	A	A	A	B
Approach Delay (s)	0.1	2.1	9.5	12.1
Approach LOS			A	B

Intersection Summary					
Average Delay		3.3			
Intersection Capacity Utilization		29.8%	ICU Level of Service		A
Analysis Period (min)		15			

Packet Pg. 4672
3.h
Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	61	0	2	64	21	0	0	0	55	0	0
Future Volume (vph)	0	61	0	2	64	21	0	0	0	55	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.968							
Flt Protected					0.999						0.950	
Satd. Flow (prot)	0	1776	0	0	1772	0	0	1900	0	0	1805	0
Flt Permitted					0.999						0.950	
Satd. Flow (perm)	0	1776	0	0	1772	0	0	1900	0	0	1805	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		219			308			216			216	
Travel Time (s)		5.0			7.0			4.9			4.9	
Confl. Peds. (#/hr)	1		2	2		1						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	7%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	65	0	2	68	22	0	0	0	59	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	65	0	0	92	0	0	0	0	0	59	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	16.6%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	61	0	2	64	21	0	0	0	55	0	0
Future Volume (Veh/h)	0	61	0	2	64	21	0	0	0	55	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	65	0	2	68	22	0	0	0	59	0	0
Pedestrians								2			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					681							
pX, platoon unblocked												
vC, conflicting volume	91			67			150	162	67	149	151	80
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	91			67			150	162	67	149	151	80
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	93	100	100
cM capacity (veh/h)	1515			1545			819	731	1001	820	741	985

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	65	92	0	59
Volume Left	0	2	0	59
Volume Right	0	22	0	0
cSH	1515	1545	1700	820
Volume to Capacity	0.00	0.00	0.00	0.07
Queue Length 95th (ft)	0	0	0	6
Control Delay (s)	0.0	0.2	0.0	9.7
Lane LOS		A	A	A
Approach Delay (s)	0.0	0.2	0.0	9.7
Approach LOS			A	A

Intersection Summary				
Average Delay		2.7		
Intersection Capacity Utilization		16.6%	ICU Level of Service	A
Analysis Period (min)		15		

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	81	52	446	68	374	22	658	179	227	632	25
Future Volume (vph)	35	81	52	446	68	374	22	658	179	227	632	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	170		0	200		185	320		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	60			60			125			185		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99		1.00	1.00	0.98	1.00		0.98	1.00	1.00	
Frt		0.941				0.850			0.850		0.994	
Flt Protected	0.950			0.950	0.964		0.950			0.950		
Satd. Flow (prot)	1805	1715	0	1698	1718	1568	1805	3574	1583	1719	3535	0
Flt Permitted	0.950			0.950	0.964		0.950			0.950		
Satd. Flow (perm)	1796	1715	0	1695	1716	1537	1801	3574	1555	1715	3535	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22				407			181		3	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		373			436			1900			810	
Travel Time (s)		8.5			9.9			28.8			12.3	
Confl. Peds. (#/hr)	7		2	2		7	3		5	5		3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	6%	0%	1%	2%	3%	0%	1%	2%	5%	1%	12%
Adj. Flow (vph)	38	88	57	485	74	407	24	715	195	247	687	27
Shared Lane Traffic (%)				43%								
Lane Group Flow (vph)	38	145	0	276	283	407	24	715	195	247	714	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2	2	2	2	
Detector Template												
Leading Detector (ft)	49	49		49	49	49	49	49	49	49	49	
Trailing Detector (ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Position(ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	29	29		29	29	29	29	29	29	29	29	
Detector 2 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

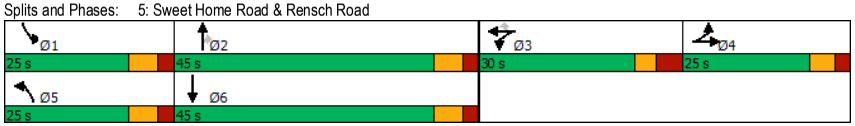
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Detector Phase	4	4		3	3	3	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	20.0	20.0	6.0	20.0	
Minimum Split (s)	40.2	40.2		41.0	41.0	41.0	12.8	37.8	37.8	12.8	37.8	
Total Split (s)	25.0	25.0		30.0	30.0	30.0	25.0	45.0	45.0	25.0	45.0	
Total Split (%)	20.0%	20.0%		24.0%	24.0%	24.0%	20.0%	36.0%	36.0%	20.0%	36.0%	
Maximum Green (s)	18.8	18.8		23.0	23.0	23.0	18.2	38.2	38.2	18.2	38.2	
Yellow Time (s)	3.8	3.8		3.2	3.2	3.2	4.3	4.3	4.3	4.3	4.3	
All-Red Time (s)	2.4	2.4		3.8	3.8	3.8	2.5	2.5	2.5	2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2		7.0	7.0	7.0	6.8	6.8	6.8	6.8	6.8	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	3.5	3.0	3.0	3.0	3.5	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0	27.0		24.0	24.0		24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)	13.0	13.0		22.0	22.0	22.0	7.3	28.4	28.4	18.4	45.3	
Actuated g/C Ratio	0.12	0.12		0.20	0.20	0.20	0.07	0.26	0.26	0.17	0.42	
v/c Ratio	0.18	0.65		0.80	0.82	0.64	0.20	0.77	0.36	0.85	0.49	
Control Delay	46.9	53.8		61.8	62.7	9.4	56.0	43.6	7.9	72.4	26.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	46.9	53.8		61.8	62.7	9.4	56.0	43.6	7.9	72.4	26.7	
LOS	D	D		E	E	A	E	D	A	E	C	
Approach Delay		52.4			40.0			36.5			38.4	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	25	84		194	201	0	16	246	7	172	208	
Queue Length 95th (ft)	61	163		#397	#408	96	47	332	63	#373	296	
Internal Link Dist (ft)		293			356			1820			730	
Turn Bay Length (ft)	100			170			200		185	320		
Base Capacity (vph)	315	317		362	367	648	305	1268	668	290	1472	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.12	0.46		0.76	0.77	0.63	0.08	0.56	0.29	0.85	0.49	

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 109			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 39.2		Intersection LOS: D	
Intersection Capacity Utilization 80.2%		ICU Level of Service D	

Packet Pg. 4674
3.h
Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Sweet Home Road & Rensch Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	65	56	885	60	74	1103
Future Volume (vph)	65	56	885	60	74	1103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.991			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1736	1615	3535	0	1787	3574
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1736	1615	3535	0	1787	3574
Link Speed (mph)	30		45			45
Link Distance (ft)	552		1491			1900
Travel Time (s)	12.5		22.6			28.8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	0%	1%	4%	1%	1%
Adj. Flow (vph)	68	59	932	63	78	1161
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	59	995	0	78	1161
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.1%		ICU Level of Service A	
Analysis Period (min) 15			

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	65	56	885	60	74	1103
Future Volume (Veh/h)	65	56	885	60	74	1103
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	68	59	932	63	78	1161
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1700	498			995	
vC1, stage 1 conf vol	964					
vC2, stage 2 conf vol	736					
vCu, unblocked vol	1700	498			995	
tC, single (s)	6.9	6.9			4.1	
tC, 2 stage (s)	5.9					
tF (s)	3.5	3.3			2.2	
p0 queue free %	73	89			89	
cM capacity (veh/h)	251	524			697	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	68	59	621	374	78	580	580
Volume Left	68	0	0	0	78	0	0
Volume Right	0	59	0	63	0	0	0
cSH	251	524	1700	1700	697	1700	1700
Volume to Capacity	0.27	0.11	0.37	0.22	0.11	0.34	0.34
Queue Length 95th (ft)	27	9	0	0	9	0	0
Control Delay (s)	24.6	12.7	0.0	0.0	10.8	0.0	0.0
Lane LOS	C	B			B		
Approach Delay (s)	19.1		0.0		0.7		
Approach LOS	C						

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	323	641	75	140	764	199	126	359	79	172	410	498
Future Volume (vph)	323	641	75	140	764	199	126	359	79	172	410	498
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		175	105		0	100		130	190		0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			85			75			60		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					0.99	1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1583	1787	3574	1583	1805	1881	1568	1770	1863	1599
Flt Permitted	0.128			0.261			0.208			0.242		
Satd. Flow (perm)	241	3574	1583	491	3574	1563	395	1881	1568	451	1863	1578
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			163			149			161			138
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		613			472			833			357	
Travel Time (s)		9.3			7.2			16.2			5.4	
Confl. Peds. (#/hr)	1					1	1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	1%	1%	2%	1%	1%	2%	0%	1%	3%	2%	2%	1%
Adj. Flow (vph)	347	689	81	151	822	214	135	386	85	185	441	535
Shared Lane Traffic (%)												
Lane Group Flow (vph)	347	689	81	151	822	214	135	386	85	185	441	535
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2	2	2	2	2	2	2	2
Detector Template												
Leading Detector (ft)	49	49	49	49	49	49	49	49	49	49	49	49
Trailing Detector (ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Position(ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	29	29	29	29	29	29	29	29	29	29	29	29
Detector 2 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

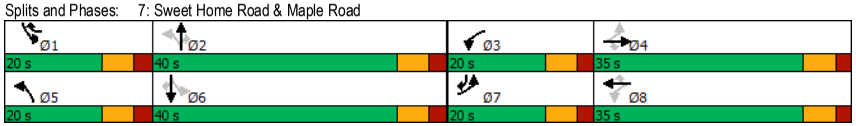
Packet Pg. 4676
3.h
Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	1	5	2	2	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	10.0	3.0	10.0	3.0	3.0	20.0	20.0	3.0	20.0	3.0
Minimum Split (s)	10.6	41.6	41.6	10.6	41.6	20.0	10.8	38.8	38.8	20.0	38.8	10.6
Total Split (s)	20.0	35.0	35.0	20.0	35.0	20.0	20.0	40.0	40.0	20.0	40.0	20.0
Total Split (%)	17.4%	30.4%	30.4%	17.4%	30.4%	17.4%	17.4%	34.8%	34.8%	17.4%	34.8%	17.4%
Maximum Green (s)	13.4	28.4	28.4	13.4	28.4	13.2	13.2	33.2	33.2	13.2	33.2	13.4
Yellow Time (s)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.8	6.8	6.8	6.8	6.8	6.8	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	2.0	2.0	4.0	4.0	2.0	4.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			25.0	25.0		25.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effct Green (s)	44.6	31.2	31.2	37.7	27.7	38.6	37.9	28.4	28.4	41.1	30.0	43.7
Actuated g/C Ratio	0.41	0.29	0.29	0.35	0.26	0.36	0.35	0.26	0.26	0.38	0.28	0.41
v/c Ratio	1.18	0.67	0.14	0.52	0.89	0.33	0.51	0.78	0.16	0.60	0.85	0.74
Control Delay	141.4	39.1	0.5	26.8	52.8	8.6	26.2	48.7	0.6	28.1	53.4	23.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	141.4	39.1	0.5	26.8	52.8	8.6	26.2	48.7	0.6	28.1	53.4	23.5
LOS	F	D	A	C	D	A	C	D	A	C	D	C
Approach Delay		68.1			41.5			37.0			35.6	
Approach LOS		E			D			D			D	
Queue Length 50th (ft)	~253	228	0	65	298	27	56	251	0	80	290	207
Queue Length 95th (ft)	#470	322	0	116	#434	79	96	369	0	128	#462	345
Internal Link Dist (ft)		533			392			753			277	
Turn Bay Length (ft)	150		175	105			100		130	190		
Base Capacity (vph)	293	1035	574	349	948	687	326	583	597	343	586	725
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.18	0.67	0.14	0.43	0.87	0.31	0.41	0.66	0.14	0.54	0.75	0.74

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 107.7			
Natural Cycle: 125			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 46.4		Intersection LOS: D	
Intersection Capacity Utilization 90.3%		ICU Level of Service E	

Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Sweet Home Road & Maple Road



Packet Pg. 4677
3.h
Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

7: Sweet Home Road & Maple Road Performance by lane

Lane	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Movements Served	L	T	T	R	L	T	T	R	L	T	R	L
Denied Delay (hr)												
Denied Del/Veh (s)												
Total Delay (hr)	7.1	10.2	4.6	0.1	1.6	9.4	6.8	0.6	1.1	5.2	0.2	1.6
Total Del/Veh (s)	78.1	129.5	43.8	7.6	43.2	87.4	67.3	9.6	31.1	49.5	6.9	33.8
Stop Delay (hr)	6.9	8.9	3.3	0.1	1.5	7.9	5.8	0.4	1.0	4.0	0.2	1.5
Stop Del/Veh (s)	75.7	112.7	31.2	7.1	40.5	73.7	57.3	7.7	29.0	38.0	6.9	31.2

7: Sweet Home Road & Maple Road Performance by lane

Lane	SB	SB	All
Movements Served	T	R	
Denied Delay (hr)			6.9
Denied Del/Veh (s)			6.5
Total Delay (hr)	4.1	1.8	54.5
Total Del/Veh (s)	35.3	11.9	50.3
Stop Delay (hr)	3.3	1.6	46.5
Stop Del/Veh (s)	28.0	10.5	42.9

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Queuing and Blocking Report
2027 Background PM

03/17/2022

Intersection: 7: Sweet Home Road & Maple Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	210	587	570	157	190	426	421	410	175	487	175	246
Average Queue (ft)	201	455	381	44	136	328	280	109	96	258	61	112
95th Queue (ft)	248	704	629	152	242	470	434	325	190	447	175	232
Link Distance (ft)		564	564			397	397	397		764		
Upstream Blk Time (%)		30	0			15	8	3				0
Queuing Penalty (veh)		0	0			0	0	0				0
Storage Bay Dist (ft)	150			175	105				100		130	190
Storage Blk Time (%)	70	9	15		7	64			4	37	0	0
Queuing Penalty (veh)	224	28	11		26	90			16	76	0	1

Intersection: 7: Sweet Home Road & Maple Road

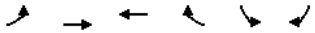
Movement	SB	SB	B17	B17
Directions Served	T	R	T	T
Maximum Queue (ft)	320	242	116	26
Average Queue (ft)	201	114	10	1
95th Queue (ft)	331	218	64	19
Link Distance (ft)	246	246	1422	1422
Upstream Blk Time (%)	6	0		
Queuing Penalty (veh)	33	2		
Storage Bay Dist (ft)				
Storage Blk Time (%)	12			
Queuing Penalty (veh)	20			

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

A6

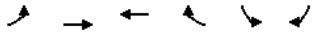
Level of Service Calculations: Full Development Conditions

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	58	22	15	25	0
Future Volume (vph)	0	58	22	15	25	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.945			
Flt Protected					0.950	
Satd. Flow (prot)	0	1900	1694	0	1805	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1900	1694	0	1805	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		308	153		412	
Travel Time (s)		7.0	3.5		9.4	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	10%	0%	10%	0%	0%	0%
Adj. Flow (vph)	0	83	31	21	36	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	83	52	0	36	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	58	22	15	25	0
Future Volume (Veh/h)	0	58	22	15	25	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	0	83	31	21	36	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			834			
pX, platoon unblocked						
vC, conflicting volume	52				124	42
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	52				124	42
tC, single (s)	4.2				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	100				96	100
cM capacity (veh/h)	1504				875	1035

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	83	52	36
Volume Left	0	0	36
Volume Right	0	21	0
cSH	1504	1700	875
Volume to Capacity	0.00	0.03	0.04
Queue Length 95th (ft)	0	0	3
Control Delay (s)	0.0	0.0	9.3
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.3
Approach LOS			A

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	83	0	0	37	1	0
Future Volume (vph)	83	0	0	37	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	1667	0	0	1407	1805	0
Flt Permitted					0.950	
Satd. Flow (perm)	1667	0	0	1407	1805	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	153			167	277	
Travel Time (s)	3.5			3.8	6.3	
Confl. Peds. (#/hr)		3	3			
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	14%	0%	0%	35%	0%	0%
Adj. Flow (vph)	114	0	0	51	1	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	114	0	0	51	1	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	83	0	0	37	1	0
Future Volume (Veh/h)	83	0	0	37	1	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	114	0	0	51	1	0
Pedestrians					3	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	153			681		
pX, platoon unblocked						
vC, conflicting volume			117		168	117
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			117		168	117
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1480		825	938

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	114	51	1
Volume Left	0	0	1
Volume Right	0	0	0
cSH	1700	1480	825
Volume to Capacity	0.07	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	9.4
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.4
Approach LOS			A

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	85	32	46	46	0
Future Volume (vph)	1	85	32	46	46	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.920			
Flt Protected					0.950	
Satd. Flow (prot)	0	1729	1679	0	1805	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1729	1679	0	1805	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		167	141		403	
Travel Time (s)		3.8	3.2		9.2	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	10%	10%	0%	0%	0%
Adj. Flow (vph)	1	121	46	66	66	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	122	112	0	66	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	15.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	85	32	46	46	0
Future Volume (Veh/h)	1	85	32	46	46	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	1	121	46	66	66	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			514			
pX, platoon unblocked						
vC, conflicting volume	112				202	79
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	112				202	79
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				92	100
cM capacity (veh/h)	1490				791	987

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	122	112	66
Volume Left	1	0	66
Volume Right	0	66	0
cSH	1490	1700	791
Volume to Capacity	0.00	0.07	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.1	0.0	10.0
Lane LOS	A		A
Approach Delay (s)	0.1	0.0	10.0
Approach LOS			A

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	15.3%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	126	6	2	79	1	23
Future Volume (vph)	126	6	2	79	1	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.994				0.869	
Flt Protected				0.999	0.999	
Satd. Flow (prot)	1711	0	0	1699	1249	0
Flt Permitted				0.999	0.999	
Satd. Flow (perm)	1711	0	0	1699	1249	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	141			373	292	
Travel Time (s)	3.2			8.5	6.6	
Confl. Peds. (#/hr)		1	1		2	
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69
Heavy Vehicles (%)	6%	100%	0%	12%	100%	30%
Adj. Flow (vph)	183	9	3	114	1	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	192	0	0	117	34	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	17.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	126	6	2	79	1	23
Future Volume (Veh/h)	126	6	2	79	1	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	183	9	3	114	1	33
Pedestrians	2				1	
Lane Width (ft)	12.0				12.0	
Walking Speed (ft/s)	4.0				4.0	
Percent Blockage	0				0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				373		
pX, platoon unblocked						
vC, conflicting volume			193		310	188
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			193		310	188
tC, single (s)			4.1		7.4	6.5
tC, 2 stage (s)						
tF (s)			2.2		4.4	3.6
p0 queue free %			100		100	96
cM capacity (veh/h)			1391		517	786

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	192	117	34
Volume Left	0	3	1
Volume Right	9	0	33
cSH	1700	1391	774
Volume to Capacity	0.11	0.00	0.04
Queue Length 95th (ft)	0	0	3
Control Delay (s)	0.0	0.2	9.9
Lane LOS		A	A
Approach Delay (s)	0.0	0.2	9.9
Approach LOS			A

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	17.2%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	77	45	116	35	91	22	301	307	295	570	30
Future Volume (vph)	22	77	45	116	35	91	22	301	307	295	570	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	170		0	200		185	320		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	60			60			125			185		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99					0.98	1.00				1.00	
Frt		0.945				0.850			0.850		0.993	
Flt Protected	0.950			0.950	0.973		0.950			0.950		
Satd. Flow (prot)	1467	1642	0	1633	1710	1324	1703	3343	1583	1736	3419	0
Flt Permitted	0.950			0.950	0.973		0.950			0.950		
Satd. Flow (perm)	1459	1642	0	1633	1710	1299	1702	3343	1583	1736	3419	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20				206			361		5	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		373			436			1900			810	
Travel Time (s)		8.5			9.9			28.8			12.3	
Confl. Peds. (#/hr)	6					6	1					1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	23%	13%	3%	5%	0%	22%	6%	8%	2%	4%	4%	19%
Adj. Flow (vph)	26	91	53	136	41	107	26	354	361	347	671	35
Shared Lane Traffic (%)				36%								
Lane Group Flow (vph)	26	144	0	87	90	107	26	354	361	347	706	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2	2	2	2	
Detector Template												
Leading Detector (ft)	49	49		49	49	49	49	49	49	49	49	
Trailing Detector (ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Position(ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	29	29		29	29	29	29	29	29	29	29	
Detector 2 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

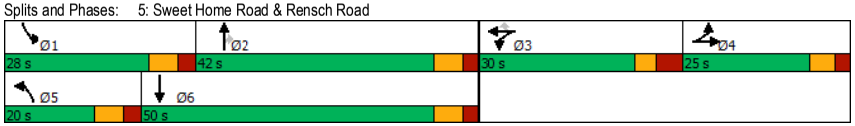
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Detector Phase	4	4		3	3	3	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	20.0	20.0	6.0	20.0	
Minimum Split (s)	40.2	40.2		41.0	41.0	41.0	12.8	37.8	37.8	12.8	37.8	
Total Split (s)	25.0	25.0		30.0	30.0	30.0	20.0	42.0	42.0	28.0	50.0	
Total Split (%)	20.0%	20.0%		24.0%	24.0%	24.0%	16.0%	33.6%	33.6%	22.4%	40.0%	
Maximum Green (s)	18.8	18.8		23.0	23.0	23.0	13.2	35.2	35.2	21.2	43.2	
Yellow Time (s)	3.8	3.8		3.2	3.2	3.2	4.3	4.3	4.3	4.3	4.3	
All-Red Time (s)	2.4	2.4		3.8	3.8	3.8	2.5	2.5	2.5	2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2		7.0	7.0	7.0	6.8	6.8	6.8	6.8	6.8	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	3.5	3.0	3.0	3.0	3.5	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0	27.0		24.0	24.0		24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)	12.4	12.4		10.8	10.8	10.8	7.2	20.5	20.5	21.3	43.0	
Actuated g/C Ratio	0.13	0.13		0.12	0.12	0.12	0.08	0.22	0.22	0.23	0.47	
v/c Ratio	0.13	0.60		0.45	0.45	0.32	0.20	0.48	0.57	0.86	0.44	
Control Delay	37.0	43.6		46.7	46.2	2.5	45.6	34.8	7.7	57.9	20.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	37.0	43.6		46.7	46.2	2.5	45.6	34.8	7.7	57.9	20.6	
LOS	D	D		D	D	A	D	C	A	E	C	
Approach Delay		42.6			29.9			22.0			32.9	
Approach LOS		D			C			C			C	
Queue Length 50th (ft)	13	68		49	51	0	14	94	0	192	119	
Queue Length 95th (ft)	37	128		100	103	0	41	147	58	#379	251	
Internal Link Dist (ft)		293			356			1820			730	
Turn Bay Length (ft)	100			170			200		185	320		
Base Capacity (vph)	301	353		410	430	480	245	1286	831	402	1730	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.09	0.41		0.21	0.21	0.22	0.11	0.28	0.43	0.86	0.41	

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 92.1			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 29.7		Intersection LOS: C	
Intersection Capacity Utilization 71.4%		ICU Level of Service C	

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Sweet Home Road & Rensch Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	43	79	566	25	46	712
Future Volume (vph)	43	79	566	25	46	712
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.994			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1568	3380	0	1703	3471
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1626	1568	3380	0	1703	3471
Link Speed (mph)	30		45			45
Link Distance (ft)	552		1491			1900
Travel Time (s)	12.5		22.6			28.8
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	11%	3%	6%	10%	6%	4%
Adj. Flow (vph)	48	89	636	28	52	800
Shared Lane Traffic (%)						
Lane Group Flow (vph)	48	89	664	0	52	800
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.1%		ICU Level of Service A	
Analysis Period (min) 15			

Packet Pg. 4686
3.h
Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	43	79	566	25	46	712
Future Volume (Veh/h)	43	79	566	25	46	712
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	48	89	636	28	52	800
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1154	332			664	
vC1, stage 1 conf vol	650					
vC2, stage 2 conf vol	504					
vCu, unblocked vol	1154	332			664	
tC, single (s)	7.0	7.0			4.2	
tC, 2 stage (s)	6.0					
tF (s)	3.6	3.3			2.3	
p0 queue free %	87	87			94	
cM capacity (veh/h)	369	661			894	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	48	89	424	240	52	400	400
Volume Left	48	0	0	0	52	0	0
Volume Right	0	89	0	28	0	0	0
cSH	369	661	1700	1700	894	1700	1700
Volume to Capacity	0.13	0.13	0.25	0.14	0.06	0.24	0.24
Queue Length 95th (ft)	11	12	0	0	5	0	0
Control Delay (s)	16.2	11.3	0.0	0.0	9.3	0.0	0.0
Lane LOS	C	B			A		
Approach Delay (s)	13.0		0.0		0.6		
Approach LOS	B						

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	220	484	54	92	472	82	86	282	109	179	271	268
Future Volume (vph)	220	484	54	92	472	82	86	282	109	179	271	268
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		175	105		0	100		130	190		0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			85			75			60		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor							1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3505	1615	1736	3505	1538	1770	1827	1553	1752	1827	1509
Flt Permitted	0.247			0.446			0.528			0.331		
Satd. Flow (perm)	439	3505	1615	815	3505	1538	983	1827	1553	611	1827	1490
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			163			99			161			268
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		613			472			833			357	
Travel Time (s)		9.3			7.2			16.2			5.4	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	7%	3%	0%	4%	3%	5%	2%	4%	4%	3%	4%	7%
Adj. Flow (vph)	242	532	59	101	519	90	95	310	120	197	298	295
Shared Lane Traffic (%)												
Lane Group Flow (vph)	242	532	59	101	519	90	95	310	120	197	298	295
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2	2	2	2	2	2	2	2
Detector Template												
Leading Detector (ft)	49	49	49	49	49	49	49	49	49	49	49	49
Trailing Detector (ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Position(ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	29	29	29	29	29	29	29	29	29	29	29	29
Detector 2 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

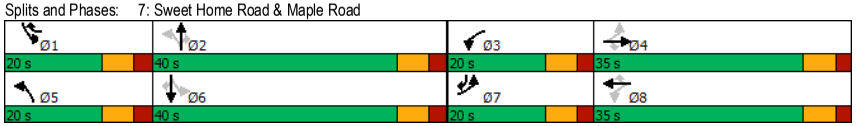
Packet Pg. 4687
3.h
Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	1	5	2	2	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	10.0	3.0	10.0	3.0	3.0	20.0	20.0	3.0	20.0	3.0
Minimum Split (s)	10.6	41.6	41.6	10.6	41.6	20.0	10.8	38.8	38.8	20.0	38.8	10.6
Total Split (s)	20.0	35.0	35.0	20.0	35.0	20.0	20.0	40.0	40.0	20.0	40.0	20.0
Total Split (%)	17.4%	30.4%	30.4%	17.4%	30.4%	17.4%	17.4%	34.8%	34.8%	17.4%	34.8%	17.4%
Maximum Green (s)	13.4	28.4	28.4	13.4	28.4	13.2	13.2	33.2	33.2	13.2	33.2	13.4
Yellow Time (s)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.8	6.8	6.8	6.8	6.8	6.8	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	2.0	2.0	4.0	4.0	2.0	4.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			25.0	25.0		25.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effct Green (s)	38.5	28.3	28.3	28.9	20.7	38.3	32.1	24.4	24.4	39.6	30.5	43.5
Actuated g/C Ratio	0.40	0.29	0.29	0.30	0.22	0.40	0.33	0.25	0.25	0.41	0.32	0.45
v/c Ratio	0.71	0.52	0.10	0.31	0.69	0.13	0.24	0.67	0.23	0.52	0.51	0.36
Control Delay	33.6	32.6	0.3	21.8	40.5	4.0	19.0	41.3	3.0	23.0	33.1	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	32.6	0.3	21.8	40.5	4.0	19.0	41.3	3.0	23.0	33.1	4.1
LOS	C	C	A	C	D	A	B	D	A	C	C	A
Approach Delay		30.6			33.2			28.5			19.7	
Approach LOS		C			C			C			B	
Queue Length 50th (ft)	95	144	0	36	152	0	34	174	0	75	156	8
Queue Length 95th (ft)	#204	239	0	81	237	26	72	291	21	136	270	57
Internal Link Dist (ft)		533			392			753			277	
Turn Bay Length (ft)	150		175	105			100		130	190		
Base Capacity (vph)	353	1088	613	422	1054	711	497	642	650	418	654	834
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.49	0.10	0.24	0.49	0.13	0.19	0.48	0.18	0.47	0.46	0.35

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 96.1			
Natural Cycle: 115			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 27.9		Intersection LOS: C	
Intersection Capacity Utilization 74.2%		ICU Level of Service D	

Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Sweet Home Road & Maple Road



Packet Pg. 4688
3.h
Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	61	66	40	43	0
Future Volume (vph)	0	61	66	40	43	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.949			
Flt Protected					0.950	
Satd. Flow (prot)	0	1810	1749	0	1805	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1810	1749	0	1805	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		308	153		412	
Travel Time (s)		7.0	3.5		9.4	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	5%	5%	0%	0%	0%
Adj. Flow (vph)	0	87	94	57	61	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	87	151	0	61	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60			60	60	60
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	15.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	61	66	40	43	0
Future Volume (Veh/h)	0	61	66	40	43	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	0	87	94	57	61	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			834			
pX, platoon unblocked						
vC, conflicting volume	151				210	122
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	151				210	122
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				92	100
cM capacity (veh/h)	1442				783	934

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	87	151	61
Volume Left	0	0	61
Volume Right	0	57	0
cSH	1442	1700	783
Volume to Capacity	0.00	0.09	0.08
Queue Length 95th (ft)	0	0	6
Control Delay (s)	0.0	0.0	10.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	10.0
Approach LOS			A

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	15.9%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	104	0	2	106	0	0
Future Volume (vph)	104	0	2	106	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected				0.999		
Satd. Flow (prot)	1776	0	0	1809	1900	0
Flt Permitted				0.999		
Satd. Flow (perm)	1776	0	0	1809	1900	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	153			167	277	
Travel Time (s)	3.5			3.8	6.3	
Confl. Peds. (#/hr)		2	2			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	7%	0%	0%	5%	0%	0%
Adj. Flow (vph)	111	0	2	113	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	111	0	0	115	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

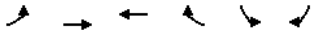
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	10.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	104	0	2	106	0	0
Future Volume (Veh/h)	104	0	2	106	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	111	0	2	113	0	0
Pedestrians					2	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				681		
pX, platoon unblocked						
vC, conflicting volume			113		230	113
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			113		230	113
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1487		760	944

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	111	115	0
Volume Left	0	2	0
Volume Right	0	0	0
cSH	1700	1487	1700
Volume to Capacity	0.07	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.1	0.0
Lane LOS		A	A
Approach Delay (s)	0.0	0.1	0.0
Approach LOS			A

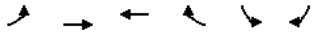
Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	10.5%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	98	106	87	97	2
Future Volume (vph)	1	98	106	87	97	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.939		0.997	
Flt Protected					0.953	
Satd. Flow (prot)	0	1810	1736	0	1805	0
Flt Permitted					0.953	
Satd. Flow (perm)	0	1810	1736	0	1805	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		167	141		403	
Travel Time (s)		3.8	3.2		9.2	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	5%	5%	0%	0%	0%
Adj. Flow (vph)	1	140	151	124	139	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	141	275	0	142	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60			60	60	60
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	23.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	98	106	87	97	2
Future Volume (Veh/h)	1	98	106	87	97	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	1	140	151	124	139	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			514			
pX, platoon unblocked						
vC, conflicting volume	275				355	213
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	275				355	213
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				79	100
cM capacity (veh/h)	1300				647	832

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	141	275	142
Volume Left	1	0	139
Volume Right	0	124	3
cSH	1300	1700	650
Volume to Capacity	0.00	0.16	0.22
Queue Length 95th (ft)	0	0	21
Control Delay (s)	0.1	0.0	12.1
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	12.1
Approach LOS			B

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	23.1%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	191	5	35	191	3	25
Future Volume (vph)	191	5	35	191	3	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.996				0.878	
Flt Protected				0.992	0.995	
Satd. Flow (prot)	1863	0	0	1823	1497	0
Flt Permitted				0.992	0.995	
Satd. Flow (perm)	1863	0	0	1823	1497	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	141			373	292	
Travel Time (s)	3.2			8.5	6.6	
Confl. Peds. (#/hr)		4	4		1	7
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	60%	0%	4%	0%	12%
Adj. Flow (vph)	222	6	41	222	3	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	228	0	0	263	32	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	191	5	35	191	3	25
Future Volume (Veh/h)	191	5	35	191	3	25
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	222	6	41	222	3	29
Pedestrians	1			7	4	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			1	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				373		
pX, platoon unblocked						
vC, conflicting volume			232		534	236
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			232		534	236
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			97		99	96
cM capacity (veh/h)			1343		493	772

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	228	263	32
Volume Left	0	41	3
Volume Right	6	0	29
cSH	1700	1343	733
Volume to Capacity	0.13	0.03	0.04
Queue Length 95th (ft)	0	2	3
Control Delay (s)	0.0	1.4	10.1
Lane LOS		A	B
Approach Delay (s)	0.0	1.4	10.1
Approach LOS			B

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	100	67	446	106	374	54	658	179	227	632	45
Future Volume (vph)	43	100	67	446	106	374	54	658	179	227	632	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	170		0	200		185	320		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	60			60			125			185		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99		1.00	1.00	0.98	1.00		0.98	1.00	1.00	
Frt		0.940				0.850			0.850		0.990	
Flt Protected	0.950			0.950	0.970		0.950			0.950		
Satd. Flow (prot)	1805	1714	0	1698	1727	1568	1805	3574	1583	1719	3507	0
Flt Permitted	0.950			0.950	0.970		0.950			0.950		
Satd. Flow (perm)	1796	1714	0	1695	1725	1537	1801	3574	1555	1715	3507	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23				407			181		6	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		373			436			1900			810	
Travel Time (s)		8.5			9.9			28.8			12.3	
Confl. Peds. (#/hr)	7		2	2		7	3		5	5		3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	6%	0%	1%	2%	3%	0%	1%	2%	5%	1%	12%
Adj. Flow (vph)	47	109	73	485	115	407	59	715	195	247	687	49
Shared Lane Traffic (%)				39%								
Lane Group Flow (vph)	47	182	0	296	304	407	59	715	195	247	736	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2	2	2	2	
Detector Template												
Leading Detector (ft)	49	49		49	49	49	49	49	49	49	49	
Trailing Detector (ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Position(ft)	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	
Detector 1 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	29	29		29	29	29	29	29	29	29	29	
Detector 2 Size(ft)	20	20		20	20	20	20	20	20	20	20	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

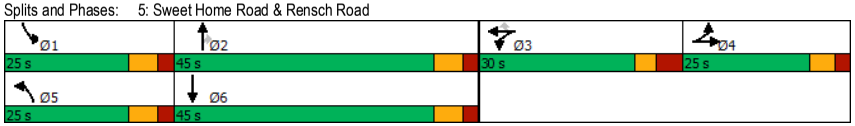
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Detector Phase	4	4		3	3	3	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	20.0	20.0	6.0	20.0	
Minimum Split (s)	40.2	40.2		41.0	41.0	41.0	12.8	37.8	37.8	12.8	37.8	
Total Split (s)	25.0	25.0		30.0	30.0	30.0	25.0	45.0	45.0	25.0	45.0	
Total Split (%)	20.0%	20.0%		24.0%	24.0%	24.0%	20.0%	36.0%	36.0%	20.0%	36.0%	
Maximum Green (s)	18.8	18.8		23.0	23.0	23.0	18.2	38.2	38.2	18.2	38.2	
Yellow Time (s)	3.8	3.8		3.2	3.2	3.2	4.3	4.3	4.3	4.3	4.3	
All-Red Time (s)	2.4	2.4		3.8	3.8	3.8	2.5	2.5	2.5	2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2		7.0	7.0	7.0	6.8	6.8	6.8	6.8	6.8	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	3.5	3.0	3.0	3.0	3.5	3.0	
Recall Mode	None	None		None	None	None	None	Min	Min	None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0	27.0		24.0	24.0		24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)	14.9	14.9		22.9	22.9	22.9	9.2	28.8	28.8	18.4	40.9	
Actuated g/C Ratio	0.13	0.13		0.20	0.20	0.20	0.08	0.26	0.26	0.16	0.37	
v/c Ratio	0.20	0.73		0.85	0.86	0.64	0.40	0.78	0.37	0.88	0.57	
Control Delay	46.8	59.5		67.7	68.4	9.3	59.1	45.3	8.0	78.0	32.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	46.8	59.5		67.7	68.4	9.3	59.1	45.3	8.0	78.0	32.1	
LOS	D	E		E	E	A	E	D	A	E	C	
Approach Delay		56.9			44.3			38.6			43.6	
Approach LOS		E			D			D			D	
Queue Length 50th (ft)	31	112		221	227	0	42	254	8	179	232	
Queue Length 95th (ft)	71	204		#436	#448	96	90	332	63	#373	321	
Internal Link Dist (ft)		293			356			1820			730	
Turn Bay Length (ft)	100			170			200		185	320		
Base Capacity (vph)	305	309		351	357	641	295	1230	653	281	1302	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.15	0.59		0.84	0.85	0.63	0.20	0.58	0.30	0.88	0.57	

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 112			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 43.3		Intersection LOS: D	
Intersection Capacity Utilization 82.8%		ICU Level of Service E	

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Sweet Home Road & Rensch Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	65	56	893	60	74	1141
Future Volume (vph)	65	56	893	60	74	1141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.991			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1736	1615	3535	0	1787	3574
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1736	1615	3535	0	1787	3574
Link Speed (mph)	30		45			45
Link Distance (ft)	552		1491			1900
Travel Time (s)	12.5		22.6			28.8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	0%	1%	4%	1%	1%
Adj. Flow (vph)	68	59	940	63	78	1201
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	59	1003	0	78	1201
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min) 15			

Packet Pg. 4694
3.h
Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	65	56	893	60	74	1141
Future Volume (Veh/h)	65	56	893	60	74	1141
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	68	59	940	63	78	1201
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1728	502			1003	
vC1, stage 1 conf vol	972					
vC2, stage 2 conf vol	756					
vCu, unblocked vol	1728	502			1003	
tC, single (s)	6.9	6.9			4.1	
tC, 2 stage (s)	5.9					
tF (s)	3.5	3.3			2.2	
p0 queue free %	72	89			89	
cM capacity (veh/h)	247	520			692	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	68	59	627	376	78	600	600
Volume Left	68	0	0	0	78	0	0
Volume Right	0	59	0	63	0	0	0
cSH	247	520	1700	1700	692	1700	1700
Volume to Capacity	0.28	0.11	0.37	0.22	0.11	0.35	0.35
Queue Length 95th (ft)	27	10	0	0	9	0	0
Control Delay (s)	25.1	12.8	0.0	0.0	10.9	0.0	0.0
Lane LOS	D	B			B		
Approach Delay (s)	19.4		0.0		0.7		
Approach LOS	C						

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	331	641	75	140	764	200	126	358	79	179	421	518
Future Volume (vph)	331	641	75	140	764	200	126	358	79	179	421	518
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		175	105		0	100		130	190		0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			85			75			60		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					0.99	1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1583	1787	3574	1583	1805	1881	1568	1770	1863	1599
Flt Permitted	0.128			0.259			0.197			0.244		
Satd. Flow (perm)	241	3574	1583	487	3574	1563	374	1881	1568	455	1863	1578
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			163			148			161			135
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		613			472			833			357	
Travel Time (s)		9.3			7.2			16.2			5.4	
Confl. Peds. (#/hr)	1					1	1					1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	1%	1%	2%	1%	1%	2%	0%	1%	3%	2%	2%	1%
Adj. Flow (vph)	356	689	81	151	822	215	135	385	85	192	453	557
Shared Lane Traffic (%)												
Lane Group Flow (vph)	356	689	81	151	822	215	135	385	85	192	453	557
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2	2	2	2	2	2	2	2
Detector Template												
Leading Detector (ft)	49	49	49	49	49	49	49	49	49	49	49	49
Trailing Detector (ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Position(ft)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Detector 1 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	29	29	29	29	29	29	29	29	29	29	29	29
Detector 2 Size(ft)	20	20	20	20	20	20	20	20	20	20	20	20
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

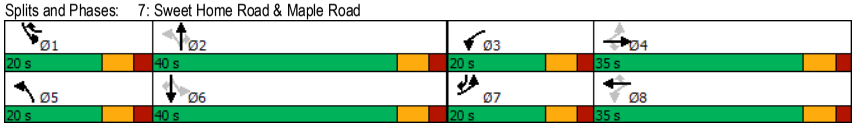
Packet Pg. 4695
3.h
Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	1	5	2	2	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	10.0	3.0	10.0	3.0	3.0	20.0	20.0	3.0	20.0	3.0
Minimum Split (s)	10.6	41.6	41.6	10.6	41.6	20.0	10.8	38.8	38.8	20.0	38.8	10.6
Total Split (s)	20.0	35.0	35.0	20.0	35.0	20.0	20.0	40.0	40.0	20.0	40.0	20.0
Total Split (%)	17.4%	30.4%	30.4%	17.4%	30.4%	17.4%	17.4%	34.8%	34.8%	17.4%	34.8%	17.4%
Maximum Green (s)	13.4	28.4	28.4	13.4	28.4	13.2	13.2	33.2	33.2	13.2	33.2	13.4
Yellow Time (s)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.8	6.8	6.8	6.8	6.8	6.8	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0	2.0	2.0	4.0	4.0	2.0	4.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			25.0	25.0		25.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effct Green (s)	44.6	31.2	31.2	37.8	27.8	38.8	38.4	28.8	28.8	41.9	30.6	44.3
Actuated g/C Ratio	0.41	0.29	0.29	0.35	0.26	0.36	0.35	0.27	0.27	0.39	0.28	0.41
v/c Ratio	1.22	0.67	0.14	0.52	0.90	0.33	0.52	0.77	0.16	0.62	0.86	0.77
Control Delay	155.8	39.4	0.5	27.1	53.5	8.8	26.6	48.1	0.6	28.5	54.5	25.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	155.8	39.4	0.5	27.1	53.5	8.8	26.6	48.1	0.6	28.5	54.5	25.3
LOS	F	D	A	C	D	A	C	D	A	C	D	C
Approach Delay		73.4			42.0			36.7			36.8	
Approach LOS		E			D			D			D	
Queue Length 50th (ft)	~270	231	0	66	301	28	56	251	0	84	301	226
Queue Length 95th (ft)	#487	322	0	116	#434	80	96	367	0	133	#482	373
Internal Link Dist (ft)		533			392			753			277	
Turn Bay Length (ft)	150		175	105			100		130	190		
Base Capacity (vph)	291	1029	571	347	942	683	320	579	594	345	582	727
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.22	0.67	0.14	0.44	0.87	0.31	0.42	0.66	0.14	0.56	0.78	0.77

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 108.3			
Natural Cycle: 125			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.22			
Intersection Signal Delay: 48.3		Intersection LOS: D	
Intersection Capacity Utilization 91.3%		ICU Level of Service F	

Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Sweet Home Road & Maple Road



Packet Pg. 4696
3.h
Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

SimTraffic Performance Report
2027 Full PM
03/18/2022

7: Sweet Home Road & Maple Road Performance by lane

Lane	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Movements Served	L	T	T	R	L	T	T	R	L	T	R	L
Denied Delay (hr)												
Denied Del/Veh (s)												
Total Delay (hr)	6.3	9.1	4.4	0.2	1.6	9.3	6.9	0.6	1.0	4.3	0.2	1.7
Total Del/Veh (s)	71.1	104.8	44.5	8.9	39.9	85.2	65.4	10.2	31.7	44.2	7.5	34.6
Stop Delay (hr)	6.1	7.8	3.2	0.2	1.5	7.8	5.9	0.5	1.0	3.3	0.2	1.5
Stop Del/Veh (s)	68.6	89.3	32.0	8.3	37.1	71.5	55.5	8.3	29.6	33.8	7.6	31.9

7: Sweet Home Road & Maple Road Performance by lane

Lane	SB	SB	All
Movements Served	T	R	
Denied Delay (hr)			10.0
Denied Del/Veh (s)			9.1
Total Delay (hr)	4.7	2.3	52.7
Total Del/Veh (s)	37.7	13.7	47.9
Stop Delay (hr)	3.8	2.0	44.7
Stop Del/Veh (s)	30.0	12.0	40.6

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

Queuing and Blocking Report
2027 Full PM

03/18/2022

Intersection: 7: Sweet Home Road & Maple Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	210	584	522	201	190	421	416	296	174	436	174	246
Average Queue (ft)	195	400	325	48	154	334	286	109	81	210	46	120
95th Queue (ft)	247	685	591	160	248	471	442	331	167	363	145	249
Link Distance (ft)		564	564			397	397	397		764		
Upstream Blk Time (%)		25	0			17	13	6				0
Queuing Penalty (veh)		0	0			0	0	0				0
Storage Bay Dist (ft)	150			175	105				100		130	190
Storage Blk Time (%)	58	11	15		6	62			3	34		0
Queuing Penalty (veh)	185	35	11		22	87			12	70		2

Intersection: 7: Sweet Home Road & Maple Road

Movement	SB	SB	B17	B17
Directions Served	T	R	T	T
Maximum Queue (ft)	322	288	159	33
Average Queue (ft)	211	133	16	2
95th Queue (ft)	338	247	91	17
Link Distance (ft)	246	246	1422	1422
Upstream Blk Time (%)	8	2		
Queuing Penalty (veh)	46	13		
Storage Bay Dist (ft)				
Storage Blk Time (%)	15			
Queuing Penalty (veh)	28			

Attachment: Z-2022-02_application_092222 (25580 : Z-2022-02)

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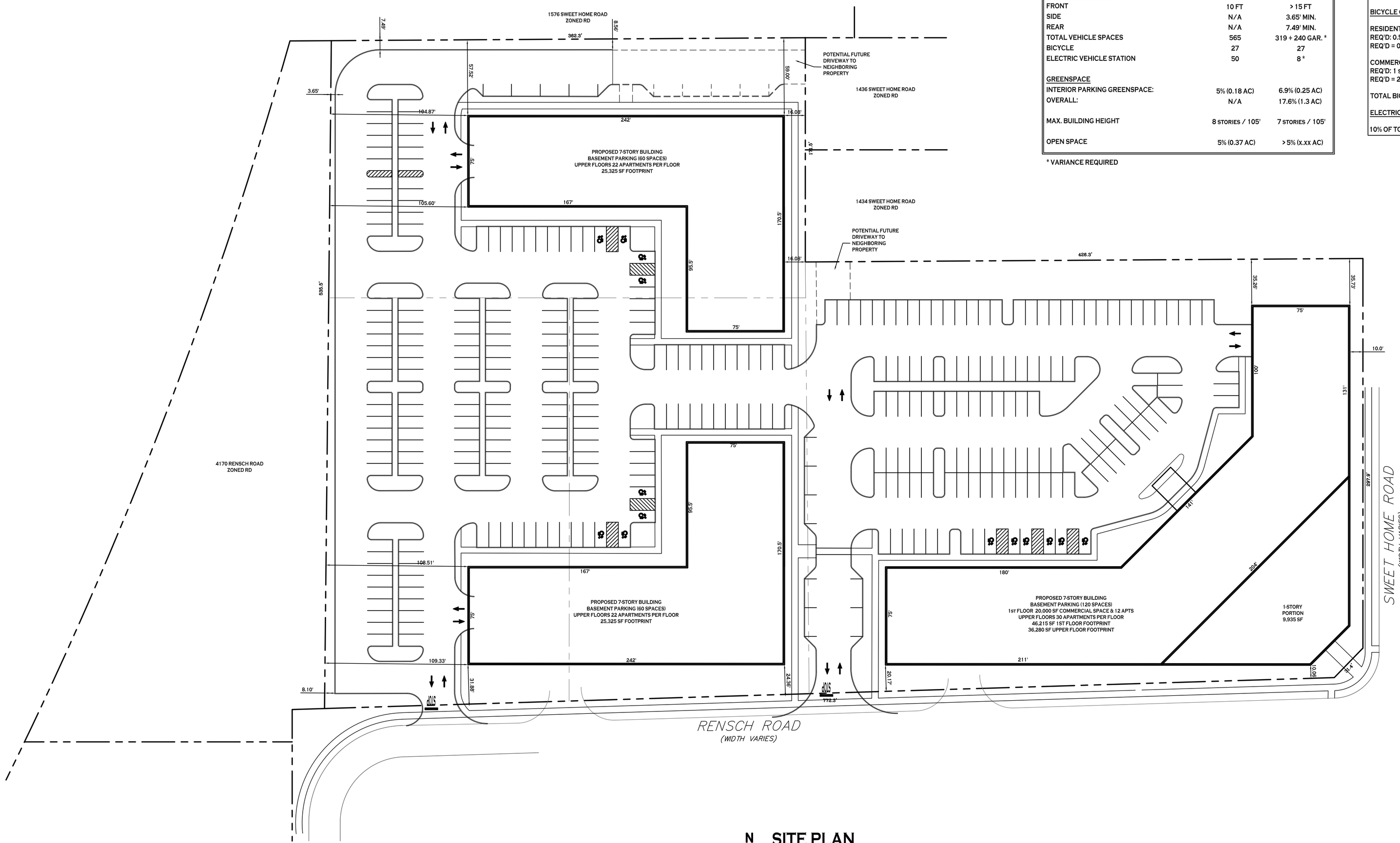
© CARMINA WOOD DESIGN

Attachment: Z-2022-02_drawings_092222 (2558O : Z-2022-02)



N **SITE PLAN**

SCALE: 1"=40'

SITE DATA

SITE AREA = 7.4 AC
ZONED: RD, REZONED TO CTR-8
USE: PROPOSED (3) 7-STORY RESIDENTIAL BUILDINGS
500 RESIDENTIAL UNITS, 20,000 SF COMMERCIAL

SETBACKS - BUILDING	REQUIRED	PROVIDED
FRONT	5 FT	10.0' MIN.
SIDE	NONE	16.08' MIN.
REAR	NONE	57.52' MIN.
ACCESSORY STRUCT.	NONE	N/A
SETBACKS - PARKING		
FRONT	10 FT	> 15 FT
SIDE	N/A	3.65' MIN.
REAR	N/A	7.49' MIN.
TOTAL VEHICLE SPACES	565	319 + 240 GAR. *
BICYCLE	27	27
ELECTRIC VEHICLE STATION	50	8 *
GREENSPACE		
INTERIOR PARKING GREENSPACE:	5% (0.18 AC)	6.9% (0.25 AC)
OVERALL:	N/A	17.6% (1.3 AC)
MAX. BUILDING HEIGHT	8 STORIES / 105'	7 STORIES / 105'
OPEN SPACE	5% (0.37 AC)	> 5% (x.xx AC)

* VARIANCE REQUIRED

PARKING CALCULATION (PER SECTION 5A-9-1-A)

RETAIL SALES: (10,000 GSF)
REQ'D: 2.5 PER 1,000 SF
REQ'D = (10,000/ 1,000) x 2.5 = 25 SPACES REQ'D

OFFICE: (10,000 GSF)
REQ'D: 2.5 PER 1,000 SF
REQ'D = (10,000/ 1,000) x 2.5 = 25 SPACES REQ'D

APARTMENTS/TOWNHOMES:
REQ'D: 1 SPACE PER 2-BDRM UNIT = 1 x 470 UNITS = 470 SPACES
1.5 SPACE PER 3-BDRM UNIT = 1.5 x 30 UNITS = 45 SPACES
REQ'D = 565 SPACES REQ'D

TOTAL PARKING SPACES REQUIRED = 585 SPACES

BICYCLE CALCULATION (PER SECTION 5A-9-1-A)

RESIDENTIAL:
REQ'D: 0.5 PER UNIT (20 MAX.)
REQ'D = 0.5 X 500 = 250 THEREFORE 20 SPACES REQ'D.

COMMERCIAL:
REQ'D: 1 SPACE PER 3,000 SF
REQ'D = 20,000/ 3,000 = 7 SPACES REQ'D

TOTAL BICYCLE SPACES REQUIRED = 27 SPACES

ELECTRIC VEHICLE CALCULATION (PER SECTION 5A-9-1-D)

10% OF TOTAL PARKING = 500 x 0.1 = 50 SPACES REQ'D.

SITE LEGEND

PROPERTY LINE
PROPOSED CONCRETE CURB
PROPOSED CONCRETE SIDEWALK
PROPOSED SIGN
PROPOSED PARKING NUMBER (27)
PROPOSED LIGHT POLE & FIXTURE

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD DESIGN ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

40' 40 0 40 80Ft.

CARMINAWOOD DESIGN
487 Main Street, Suite 500
Buffalo, New York 14203
Phone: (716) 842-3165
111 Bain Street, Suite 332
Greensboro, North Carolina 27406
Phone: (336) 937-9009

Mixed Use Development

1400 - 1416 Sweet Home Road
Amherst , New York
SBL No.

REVISIONS:
No. Description Date

PRELIMINARY
NOT FOR CONSTRUCTION

Scale(s): XX.XX.XXXX

DRAWING NAME:
Concept Site Plan

Date: 07.19.22
Drawn By: C. Wood
Scale: As Noted

DRAWING NO.
C-100

Project No: 21.008

UNIVERSITY COMMONS

1400 - 1416 SWEET HOME ROAD
7.432± ACRES (PART 2 4.257± ACRES)
SBL #54.12-1-1, 2, 3 AND 4 ZONED RD

PARCEL ZONED RESEARCH-DEVELOPMENT DISTRICT (RD)
BUILDING SETBACK: FRONT 40', SIDE AND REAR 15'
PARKING SETBACK: FRONT 25', SIDE AND REAR 10'
MINIMUM LOT AREA: 1 ACRE
MINIMUM LOT FRONTAGE: 100'
MAXIMUM LOT COVERAGE: AS USE, YARD AND PARKING PERMIT
CONCACT THE TOWN OF AMHERST BUILDING DEPARTMENT AT 716-631-7080 FOR THEIR LATEST REQUIREMENTS

#1412
1.652± ACRES
ONE STORY BRICK
1412 SWEET HOME ROAD

#1408
1.279± ACRES
ONE STORY BRICK
1408 SWEET HOME ROAD.

#1416
1.326± ACRES
ONE STORY BRICK
1416 SWEET HOME ROAD

1404 SWEET HOME ROAD
F.F. 581.0
ONE STORY BRICK
16,864 SQ FT.

1400 SWEET HOME ROAD
ONE STORY BRICK
13,316 SQ FT

SBL #54.02-1-14 ZONED RD
SBL #54.12-1-39 ZONED RD
SBL #54.12-1-5 ZONED RD
SBL #54.12-1-6 ZONED RD

NORTH LINE LOT 79
N 89°38'35"E 362.34
CONCRETE GUTTER
CONCRETE WALK
BLACKTOP
PARALLEL TO EAST LINE LOT 79
N 00°00'20"E 171.30
N 00°00'20"E 362.70
BLACKTOP ON LINE
N 89°59'40"W 365.47
N 00°23'20"E 310.78
535.55
PARALLEL TO NORTH LINE LOT 79
506.50
N 89°38'35"E
426.30
RIGHT OF WAY
HYDRANT
80.00
SAN MH
174.00' TO NORTHEAST CORNER LOT 79
SOUTHEAST CORNER L.2213 P.120
EAST LINE LOT 79
WEST LINE LANDS ACQUIRED BY NYSDOT S.H. NO. 3409, MAP NO. 72, PARCEL NO. 73 L.3583 P.453
S. BURIED N.Y.TELE. CABLE EASEMENT 43' FROM E. SWEET HOME ROAD L.3583 P.453
SWEET HOME ROAD
(WIDTH VARIES, APPROX. 64' WIDE)
S 00°00'20"W 342.50
S 88°14'38"W 772.32
S 88°14'38"W 887.77
S 47°59'05"W 33.63
105.05
STORM PIPES
401.68
RENSCH ROAD
(49.5' WIDE)
UNIVERSITY OF BUFFALO ENTRANCE
30' WIDE TOWN OF AMHERST SANITARY SEWER EASEMENT L.10947 P.2181
DETENTION POND
RETENTION POND
CONCRETE GUTTER
DUMPSTER ENCLOSURE
PARKING LOT
SIGN
SAN MH
POLE
GUY
HYDRANT
REC
FRAME BARN
METAL BARN
GRAVEL
ENTER/EXIT
DRIVEWAY
CONCRETE VAULT IN BERM WITH METER AND RPZ
1" WATER SERVICE
1" RPZ
6" SANITARY LATERAL
13" STORM
INV 578.07 E
EDGE PAVEMENT
CENTERLINE
8" WATERLINE
C.O.
W.V.
BENCH MARK
NAIL IN POLE
ELEV. 583.59
SAN MH
RIM 582.73
INV 573.14 8"E/W
SAN MH
RIM 585.34
INV 577.99 8"S/NE
SAN MH
RIM 584.35
INV 576.29 8"E/SW
100' ± TO HYDRANT
A.O.W.
LOCKPORT EXPRESSWAY
R.O.W.
SWALE

SURVEY #1416
NOV 15, 2007

ASBUILT #1412 AND #1416
DEC. 19, 2006 JN 54745

SURVEY #1412 SEPT. 8, 2006
JN 54650

FOUNDATION LOCATE #1416
AUG. 17, 2006

TOPOGRAPHIC SURVEY AND BOUNDARY SURVEY

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS SURVEY MAP IS A VIOLATION OF SECTION 7209, PART 2 OF THE NEW YORK STATE EDUCATION LAW.

NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE AND IS SUBJECT TO ANY STATE OF FACTS THAT MAY BE REVEALED BY AN EXAMINATION OF SAME.

BISSELL, STONE ASSOCIATES

BISSELL, STONE ASSOCIATES
ENGINEERING AND LAND SURVEYING, P.C.
CIVIL ENGINEERING LAND SURVEYING
SITE PLANNING CONSULTING
TELEPHONE: (716) 832-7000, FAX 832-7004

DATE APRIL 22, 2003	JOB NO 53144-T	FIELD BOOK DC 32038	SCALE 1" = 30'
ADD INFO JAN. 15, 2004	FOUNDATION LOCATE #1408 JAN. 19, 2004 JN 53842	FOUNDATION LOCATE #1412 SEPT. 22, 2005 JN 54282	PARKING LOT ASBUILT JAN. 12, 2006 JN 54393

SURVEY OF PART OF LOT 79 TOWN OF AMHERST — TWP 12 RANGE 7
ERIE CO., NY HOLLAND LAND COMPANY

FORMERLY GEO. DIEHL SHEEHAN FRETTS & TALLAMY, FRETTS & SENIOR SENIOR BISSELL & BRONKIE DESIGN SYSTEM COLLABORATIVE THE BISSELL CO

G-1589

Attachment: Z-2022-02_drawings_092222 (25580 : Z-2022-02)

DRAFT (9/22/22)
TOWN OF AMHERST
PLANNING BOARD
ZONING RESOLUTION
Z-2022-02

PETITIONER

North Forest Development LLC
c/o Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221

PROPERTY LOCATION

1400-1404 & 1408-1416 Sweet Home Rd.

WHEREAS the Town of Amherst Planning Board on Thursday, September 22, 2022 held a public hearing on the proposed rezoning of land from RD to CTR-8, and

WHEREAS the Planning Board has reviewed plans and other materials regarding the rezoning proposal, and

WHEREAS the materials and plans have been referred to the Town's various review agencies, and

WHEREAS in accordance with Section 8-3-5 of the Zoning Ordinance the Planning Board finds that:

A. The proposed zoning and development plan is generally consistent with the policies of the Comprehensive Plan and the Zoning Ordinance.

B. The proposal is consistent with the Conceptual Land Use Plan which shows Commercial-Mixed Use" in this area of the Town.

C. The proposal is consistent with Section 3.3.2 of the Plan, "Suburban Centers" as the subject proposal illustrates a mixed-use project located along a high-volume arterial away from residential uses on large parcels of land.

D. There are adequate services and utilities available or proposed to be made available in the construction of the development.

E. The proposal is compatible with the present zoning and conforming uses of nearby property and with the character of the neighborhood.

F. The subject property is suitable for uses permitted by the current versus the proposed district.

G. The proposed change does tend to improve the balance of uses, or meets a specific demand in the Town.

H. Review by the US Army Corps of Engineers under Section 404 of the Clean Water Act may be waived because the parcel is developed.

Attachment: Z-2022-02_draft resolution_092222 (25580 : Z-2022-02)

DRAFT (9/22/22)
TOWN OF AMHERST
PLANNING BOARD
ZONING RESOLUTION
Z-2022-02

PETITIONER	PROPERTY LOCATION
North Forest Development LLC	1400-1404 & 1408-1416 Sweet Home Rd.

WHEREAS pursuant to Local Law #3-82, as amended, the Planning Board recommends that the Town Board determine that the requirements of SEQR are complete and that the subject proposal is not expected to have a significant adverse effect on the environment.

NOW THEREFORE BE IT RESOLVED that the Planning Board recommends to the Town Board in accordance with Section 8-3-4 of the Zoning Ordinance, that the rezoning request be approved.

The foregoing resolution was adopted by the Town of Amherst Planning Board, _____; moved by - _____; seconded by - _____; ayes _, noes _; absent - ____.

_____ _____
Robert J. Gilmour, Chair Date

TV/ac
X:\Current_Planning\Files\Rezonings\2022\Z-2022-02_(1400-1404_&_1408-1416_Sweet_Home_Rd)_2022\Z-2022-02_draft resolution_092222.doc

Cc: Town Clerk
Commissioner of Building
Highway Superintendent
Town Engineer
Traffic/Safety Coordinator
Sean Hopkins, Hopkins Sorgi & McCarthy, 5500 Main Street, Suite 343, Williamsville, NY 14221
Chris Wood, Carmina Wood Morris, 487 Main Street, Suite 500, Buffalo, NY 14203

Attachment: Z-2022-02_draft resolution_092222 (25580 : Z-2022-02)

TOWN OF AMHERST
PLANNING BOARD
ZONING RESOLUTION
Z-2022-02

PETITIONER

North Forest Development LLC
c/o Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221

PROPERTY LOCATION

1400-1404 & 1408-1416 Sweet Home Rd.

'22 SEP 29 PM4:11

WHEREAS the Town of Amherst Planning Board on Thursday, September 22, 2022 held a public hearing on the proposed rezoning of land from RD to CTR-8, and

WHEREAS the Planning Board has reviewed plans and other materials regarding the rezoning proposal, and

WHEREAS the materials and plans have been referred to the Town's various review agencies, and

WHEREAS in accordance with Section 8-3-5 of the Zoning Ordinance the Planning Board finds that:

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D. There are adequate services and utilities available or proposed to be made available in the construction of the development.

E. The proposal is compatible with the present zoning and conforming uses of nearby property and with the character of the neighborhood.

F. The subject property is suitable for uses permitted by the current versus the proposed district.

G. The proposed change does tend to improve the balance of uses, or meets a specific demand in the Town.

H. Review by the US Army Corps of Engineers under Section 404 of the Clean Water Act may be waived because the parcel is developed.

Attachment: Z-2022-02 signed resolution 092222 (25580 : Z-2022-02)

TOWN OF AMHERST
PLANNING BOARD
ZONING RESOLUTION
Z-2022-02

PETITIONER

North Forest Development LLC

PROPERTY LOCATION

1400-1404 & 1408-1416 Sweet Home Rd.

'22 SEP 29 PM4:1

WHEREAS pursuant to Local Law #3-82, as amended, the Planning Board recommends that the Town Board determine that the requirements of SEQR are complete and that the subject proposal is not expected to have a significant adverse effect on the environment.

NOW THEREFORE BE IT RESOLVED that the Planning Board recommends to the Town Board in accordance with Section 8-3-4 of the Zoning Ordinance, that the rezoning request be approved.

The foregoing resolution was adopted by the Town of Amherst Planning Board, September 22, 2022; moved by – Giuliani; seconded by – Chmiel; ayes 5, noes 0; absent – Kahn, Raffaele.

Robert J. Gilmour, Planning Board Chair

9-29-22
Date

TV/ac
X:\Current_Planning\Files\Rezonings\2022\Z-2022-02_(1400-1404_&_1408-1416_Sweet_Home_Rd)_2022\Z-2022-02_resolution_092222.doc

Cc: Town Clerk
Commissioner of Building
Highway Superintendent
Town Engineer
Traffic/Safety Coordinator
Sean Hopkins, Hopkins Sorgi & McCarthy, 5500 Main Street, Suite 343, Williamsville, NY 14221
Chris Wood, Carmina Wood Morris, 487 Main Street, Suite 500, Buffalo, NY 14203

Attachment: Z-2022-02 signed resolution 092222 (25580 : Z-2022-02)

Amherst Planning Board
5583 Main Street
Williamsville, NY 14221

Meeting: 09/22/22 06:30 PM
Department: Planning
Category: Rezoning and Relief from Conditions of Rezoning
Prepared By: Bryan Fadel
Initiator: Dan Howard
Sponsors:
DOC ID: 26078 B

TABLED

PLANNING BOARD ITEM (ID # 26078)

Request to Rezone 6.27± Acres of Land from GB to DC-5, Z-2022-07

Property located at a portion of 4110-4120 Sheridan Drive
Sheridan Commons, LLC, Petitioner

September 22, 2022
No comments were heard on this proposal.

Mr. Giuliani moved to adjourn the proposal at the petitioners request. The motion was seconded by Ms. Penberthy and carried. Ayes 5, Noes 0, Absent 2 (Kahn, Raffaele).

ATTACHMENTS:

- Z-2022-07_application_092222 (PDF)
- Z-2022-07_drawings_092222 (PDF)
- Z-2022-07_draft resolution_092222 (PDF)

RESULT:	**ADJOURNED [UNANIMOUS]**	**Next: 10/20/2022 6:30 PM**
MOVER:	Dal Giuliani, Board Member	
SECONDER:	Brittany Lee Penberthy, Board Member	
AYES:	Gilmour, Chmiel, Gill, Giuliani, Penberthy	
ABSENT:	Joseph P. Raffaele Jr., Carrie H. Kahn	

Application for Rezoning of Portion of
4110-4120 Sheridan Drive [Z-2022-07]
Applicant: Sheridan Commons LLC

Prepared By: Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221
Tel: 510-4338
E-mail: shopkins@hsmlegal.com

TOWN OF AMHERST PLANNING DEPARTMENT

Application for Rezoning

For Official Use

File #: Z-2022-07 **Acreage** 6.27 Acres **Fee $** $2,515.00

Address Verified by Assessor's Office _____ VERIFIED BY DATE

Application Received by Planning Department 7/18/2022 ACCEPTED BY DATE

Materials Checked by Zoning Enforcement Officer _____ CHECKED BY DATE

Materials & Fee Paid to Town Clerk _____ ACCEPTED BY DATE

		Fill In Applicable Fees
2 ACRES OR LESS	**$1,250.**	$1,250.00
2 – 20 ACRES **$1,250 + $250/acre or fraction thereof over 2 acres** (fractions of an acre to be counted as 1 acre)		$1,250.00
21 – 30 ACRES **$5,700 + $150/acre or fraction thereof over 21 acres** (fractions of an acre to be counted as 1 acre)		_____
OVER 30 ACRES **$6,900 +$75/acre or fraction thereof over 30 acres** (fractions of an acre to be counted as 1 acre)		_____
Request for Relief of / Change to Conditions of Zoning Approval	**$1,200.**	_____
AFFIDAVIT FEE FOR PUBLIC HEARING	**$15.**	$15.00
	TOTAL FEE:	$ 2,515.00

RECEIVED JUL 18 2022 TOWN OF AMHERST PLANNING DEPT.

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

TO BE COMPLETED BY APPLICANT

1. **Petitioner:** Name: Sheridan Commons LLC

Address: c/o Sean Hopkins, Esq., Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, New York 14221
City State Zip Code

Phone: 510-4338 Fax:

E Mail shopkins@hsmlegal.com

2. **The undersigned hereby petitions the Honorable Town Board to rezone the following described property**
[Not Applicable - The Petitioner has filed a separate Application for the purpose of seeking to amend the zoning classification of a portion of 4110-4120 Sheridan Drive from GB to DC-5.]
From: District

To: District

3. **Street address of land to be rezoned:** (must be verified by Town Assessor's Office)
4110-4120 Sheridan Drive

SBL #: SBL No. 68.09-5-1.21

4. **Area of land to be rezoned** (in acres): Not Applicable

5. **Owner of Land:**
Name: Sheridan Commons LLC c/o Sean Hopkins, Esq.
Address: 5500 Main Street, Suite 343, Williamsville, NY 14221
Telephone: 716.510-4338

6. **Representative** (Architect, Engineer, Landscape Architect, Surveyor or Attorney):

Name: Sean W. Hopkins, Esq.
Address: 5500 Main Street, Suite 343
Williamsville, New York 14221
Tel: 716.510-4338 - E-mail: shopkins@hsmlegal.com
City State Zip Code

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

7. **Petitioner's interest in property** [Note: Authorization Letter of the Property Owner attached as Exhibit "1" of this Rezoning Application.]

_____ Option to purchase

__X__ Owner

_____ Other (explain)

8. **The following are all others having an interest in this application and join herein with the petitioner named above:** (describe extent of interest; attach sheets as needed)

Not Applicable.

9. **Attach Survey and Legal description of land to be rezoned. The Survey must be prepared by a New York State Licensed Land Surveyor.** Legal description of property to be rezoned from GB to DC-5 is attached as Exhibit "3" and a reduced size copy of the Survey of the Project Site is attached as Exhibit "4". Full size copy of the Survey is also attached.

10. **Said property has the following deed restrictions or Covenants:** (attach copy) - Copy of the Declaration of Restrictions recorded on September 18, 1997 is attached as Exhibit as Exhibit "7".

Liber 10921 Page 3979

[Note: A copy of correspondence issued by the Town Clerk's Office on July 10, 1997 regarding the decision of the Town Board to amend the zoning classification of 4100 Sheridan Drive [which includes the parcel at 4110-4120 Sheridan Drive from the Project Site from CS to GB subject to five conditions is attached as Exhibit "9".]

11. **Information on proposed project:**

A. Description of the character of the proposed development:

See Exhibit 5.

B. Rationale for rezoning request:

1. Why was this site chosen?

See Exhibit 5.

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

2. Why cannot land be used with the existing zoning?

See Exhibit 5.

3. How will this rezoning impact surrounding properties?

See Exhibit 5.

4. How will this rezoning impact the school system?

See Exhibit 5.

12. Quantitative Data:

A. Total # of dwelling units: Not Applicable

B. Distribution of dwelling units by type: Not Applicable

C. Gross Residential Density per acre: Not Applicable

D. Total amount of Open Space: 2.09 Acres

E. Proposed Non-Residential Floor Area: 140,500 sq. ft.

[Note: A reduced size copy of the Concept Site Plan [Drawing C-100] for the proposed project prepared by Kideney Architects is provided at Exhibit "8" and a full size copy is also attached.]

13. Development Schedule:

Start: To be Determined

Finish: To be Determined

Stages (# of): 1

11" x 17" sized color Concept Elevation Plans prepared by Kideney Architects are provided at Exhibit "11". The maximum building height for the proposed four-story as measured from finished will be 65 ft.]

14. If any portion of the proposed development is planned to be sold or leased, please describe:

The office space will be leased to tenants.

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

15. Open Space ownership and maintenance provisions (if applicable):

Greenspace and landscaping will be privately owned and maintained.

16. Basis for Findings (Sec. 8-3-5 of the Town Zoning Code) (Attach sheets and supplemental materials as necessary.)

A. <u>The proposed zoning and development plan must be generally consistent with the policies of the Comprehensive Plan and the Town Zoning Ordinance.</u>

1. State in detail why the proposed zoning is consistent with the adopted Town of Amherst Bicentennial Comprehensive Plan. Cite specific sections, maps, and/or figures in the plan that support the proposed zoning at this location (The Comprehensive Plan document is available at the Planning Department, Town Clerk's Office, Amherst libraries, or at www.amherst.ny.us). Add sheets as needed.

See Exhibit 6. A color copy of Figure 6-A of the adopted Comprehensive Plan confirming the Project Site is designated as appropriate for Suburban Center development is provided at Exhibit "10".

2. Pursuant to NYS Town Law Section 272a(11), "all Town land use regulations must be in accordance with a comprehensive plan adopted pursuant to this Section." The Town Board adopted the Comprehensive Plan pursuant to NYS Town Law 272 on January 2, 2007. If the rezoning is approved, the Town Board may require the Plan to be amended, as applicable.

Cite all text, map, and / or figures that must be amended to support the proposed zoning at this location (attach pages as necessary) and provide detailed suggested amendments.

See Exhibit 6.

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

3. State why the proposed zoning is consistent with intent and objectives (Sec. 1-2-2) of the Zoning Ordinance:

See Exhibit 6.

B. Adequate Services and Utilities are available or are proposed to be made available with the construction of the development:

1. Sanitary Sewer
   Yes.
2. Storm Sewer/Drainage
   Yes.
3. Water
   Yes.
4. Other Yes.

C. Compatibility with the present zoning and conforming uses of nearby property and with the character of the neighborhood:

See Exhibit 6.

D. Suitability of the subject property for uses permitted by the current versus the proposed district:

See Exhibit 6.

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

E. Whether the proposed change tends to improve the balance of uses, or meets a specific demand in the Town:

See Exhibit 6.

17. The petitioner encloses herewith the sum of $2,515.00 to pay the fee, and consents to the placement of a sign(s) at the described location identifying this request for a period of time to be determined by the Town Clerk.

18. The undersigned certifies that all information required to be disclosed pursuant to Section 809 of the General Municipal Law (see below) is as follows:

The undersigned swears or affirms that all statements made herein are true, that all drawings submitted correctly show the situation involved in this petition.

[Note: Authorization Letter of Property Owner signed attached as Exhibit "1".]

Counsel for Petitioner

Signature of Petitioner

Subscribed and sworn to before me this 18th day of July, 20 22

Notary Public, Erie County, New York

JOHN J. FLAHERTY
Notary Public, State of New Yo
Qualified in Erie County
My Commission Expires Feb. 28/20

N.Y.S. General Municipal Law - Section 809 Disclosure in certain applications:

1. Every application, petition or request submitted for a variance, amendment, change of zoning, approval of a plat, exemption from a plat or official map, license or permit, pursuant to the provision of any ordinance, local law, rule or regulation constituting the zoning and planning regulations of a municipality shall state the name, residence and the nature and extent of the interest of any state office or any office or employee of such municipality or of a municipality of which such municipality is a part, in the person, partnership or association making such application, petition or request (hereinafter called the applicant) to the extent known to such applicant.

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

2. For the purpose of this section an officer or employee shall be deemed to have an interest in the applicant when he, his spouse, or their brothers, sisters, parents, children, grandchildren, or the spouse of any of them

   (a) is the applicant, or
   (b) is an officer, director, partner or employee of the applicant, or
   (c) legally or beneficially owns or controls stock of a corporate applicant or is a member of a partnership or association applicant, or
   (d) is a party to an agreement with such an applicant, express or implied, whereby he may receive any payment or other benefit, whether or not for services rendered, dependent or contingent upon the favorable approval of such applicant, petition or request.

3. In the county of Nassau the provisions of subdivisions one and two of this section shall also apply to a party officer. "Party Officer" shall mean any person holding any position or office, whether by election, appointment or otherwise, in any party as defined by subdivision four or section two of the election law.

4. Ownership of less than five per cent of the stock of a corporation whose stock is listed on the New York or American Stock Exchanges shall not constitute an interest for the purposes of this section.

5. A person who knowingly and intentionally violates this section shall be guilty of a misdemeanor.

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

Exhibit 1 - Authorization Form Signed by Property Owner

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

AUTHORIZATION

Sheridan Commons LLC, as the record owner of property located in the Town of Amherst located at 4110-4120 Sheridan Drive [SBL No. 68.09-5-1.21] (the "Project Site"), hereby authorizes, the law firm of Hopkins Sorgi & McCarthy PLLC, to seek all required approvals and permits from the Town of Amherst and other involved governmental agencies relative to the development of the Project Site including but not limited to an amendment of the zoning classification of the Project Site from GB to DC-5 and for relief of a zoning condition from the Town Board, Site Plan Approval by the Planning Board and any required area variances needed from the Zoning Board of Appeals.

Date: June 23, 2022

SHERIDAN COMMONS LLC

Benjamin Obletz

STATE OF NEW YORK)
ss.:
COUNTY OF ERIE)

On this 23rd day of June, 2022, before me, the undersigned, a notary public in and for said state, personally appeared Benjamin Obletz, personally known to me or proved to me on the basis of satisfactory evidence to the be the individual whose name is subscribed to within this instrument and acknowledged to me that he/she executed the same in his/her capacity, and that by his/her signature on the instrument, the individual or the person upon behalf of which the individual acted, executed the instrument.

Brenda Kislack

Notary Public

Brenda Kislack
NOTARY PUBLIC, STATE OF NEW YORK
Registration No. 02KI6321069
Qualified in Niagara County
Commission Expires March 16, 2023

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

Exhibit 2 - Part 1 of the Full Environmental Assessment Form Prepared Pursuant to the State Environmental Quality Review Act ("SEQRA") with Attached Page 5[a]

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

Full Environmental Assessment Form
Part 1 - Project and Setting

Prepared By: Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221
Tel: 510-4338
E-mail: shopkins@hsmlegal.com

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project: Proposed Medical Office Project		
Project Location (describe, and attach a general location map): 4110-4120 Sheridan Drive [SBL No. 68.09-1-5-1.21] - Town of Amherst - Erie County		
Brief Description of Proposed Action (include purpose or need): The proposed project consists of a proposed office project consisting of a 4-story medical office building consisting of 140,500 sq. ft. and and related site improvements. The proposed action includes an amendment of the zoning classification of 6.27 acres of 4110-4120 Sheridan Drive ("Project Site") from GB to DC-5 and a request to remove a Declaration of Restrictions imposed in connection with a rezoning approved by the Town Board in 1996. The proposed action has been defined broadly to include all required discretionary approvals required from the municipal boards of the Town of Amherst and involved agencies as well as the construction of the medical office building and all related site improvements including parking spaces, access aisles, landscaping, lighting, water and sanitary sewer lines as well as utility connections. The heavily vegetated Permanent Open Space along the northern edge the Project Site will remain undisturbed [approximately 2.09] acres will not be disturbed and will remain zoned GB. Given that the proposed project ("action") will not result in any potentially significant adverse environmental impacts, the issuance of a negative declaration pursuant to SEQRA is appropriate. The action is a Type I action pursuant to SEQRA (6 NYCRR Part 617.4) since it includes a commercial building with a size of more than 100,000 sq. ft.		
Name of Applicant/Sponsor: Sheridan Commons LLC c/o Sean Hopkins, Esq.	Telephone: 716.510-4338 E-Mail: shopkins@hsmlegal.com	
Address: 5500 Main Street, Suite 343		
City/PO: Williamsville	State: NY	Zip Code: 14221
Project Contact (if not same as sponsor; give name and title/role):	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:
Property Owner (if not same as sponsor): Sheridan Commons LLC c/o Sean Hopkins, Esq.	Telephone: 716.510-4338 E-Mail: shopkins@hsmlegal.com	
Address: 5500 Main Street, Suite 343		
City/PO: Williamsville	State: NY	Zip Code: 14221

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PLANNING DEPT.

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B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees ☑Yes ☐No	Town Board - Rezoning and	July 18, 2022
b. City, Town or Village Planning Board or Commission ☑Yes ☐No	Planning Board - Site Plan Approval	To be Determined
c. City, Town or Village Zoning Board of Appeals ☐Yes ☑No		
d. Other local agencies ☑Yes ☐No	Building Dept - Building Permit; Eng. Dept. - Stormwater Per. & DSCA; AIDA - Potential PILOT	To be Determined
e. County agencies ☑Yes ☐No	ECWA - Water and RPZ	To be Determined
f. Regional agencies ☐Yes ☑No		
g. State agencies ☑Yes ☐No	NYSDEC - SPDES and DSCA	To be Determined
h. Federal agencies ☐Yes ☑No		

i. Coastal Resources.
i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐Yes ☑No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☑Yes ☐No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☑Yes ☐No

If Yes, identify the plan(s):
NYS Heritage Areas:West Erie Canal Corridor

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes ☑No

If Yes, identify the plan(s):

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
General Business District ("GB")

b. Is the use permitted or allowed by a special or conditional use permit? ☐ Yes ☑ No

c. Is a zoning change requested as part of the proposed action? ☑ Yes ☐ No
If Yes,
i. What is the proposed new zoning for the site? Deep Corridor 5 ("DC-5")

C.4. Existing community services.

a. In what school district is the project site located? Sweet Home Central School District

b. What police or other public protection forces serve the project site?
Town of Amherst Police Department

c. Which fire protection and emergency medical services serve the project site?
Volunteer Fire Department

d. What parks serve the project site?
There are various Town parks located in relative close proximity to the Project Site.

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)? Office Space.

b. a. Total acreage of the site of the proposed action? 8.36 acres
b. Total acreage to be physically disturbed? 6.27 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 8.36 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % _____ Units: _____

d. Is the proposed action a subdivision, or does it include a subdivision? ☐ Yes ☑ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
ii. Is a cluster/conservation layout proposed? ☐ Yes ☐ No
iii. Number of lots proposed? _____
iv. Minimum and maximum proposed lot sizes? Minimum _____ Maximum _____

e. Will the proposed action be constructed in multiple phases? ☐ Yes ☑ No
i. If No, anticipated period of construction: _____ months
ii. If Yes:
- Total number of phases anticipated _____
- Anticipated commencement date of phase 1 (including demolition) _____ month _____ year
- Anticipated completion date of final phase _____ month _____ year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases: _____

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

f. Does the project include new residential uses? ☐Yes ☑No
If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase				
At completion of all phases				

g. Does the proposed action include new non-residential construction (including expansions)? ☑Yes ☐No
If Yes,
i. Total number of structures 1
ii. Dimensions (in feet) of largest proposed structure: 65 ft. height; TBD width; and TBD length
iii. Approximate extent of building space to be heated or cooled: 140,500 square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? [Existing stormwater facility location on the northwest portion of the Project Site will be utilized for stormwater management purposes.] ☐Yes ☑No
If Yes,
i. Purpose of the impoundment:
ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☐Other specify:
iii. If other than water, identify the type of impounded/contained liquids and their source.
iv. Approximate size of the proposed impoundment. Volume: _____ million gallons; surface area: _____ acres
v. Dimensions of the proposed dam or impounding structure: _____ height; _____ length
vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐Yes ☑No
If Yes:
i .What is the purpose of the excavation or dredging?
ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?
- Volume (specify tons or cubic yards):
- Over what duration of time?

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.

iv. Will there be onsite dewatering or processing of excavated materials? ☐Yes ☐No
If yes, describe.

v. What is the total area to be dredged or excavated? _____ acres
vi. What is the maximum area to be worked at any one time? _____ acres
vii. What would be the maximum depth of excavation or dredging? _____ feet
viii. Will the excavation require blasting? ☐Yes ☐No
ix. Summarize site reclamation goals and plan:

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☐Yes ☑No
If Yes:
i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description):

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

iii. Will the proposed action cause or result in disturbance to bottom sediments? ☐Yes ☐No
If Yes, describe:

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☑No
If Yes:

- acres of aquatic vegetation proposed to be removed:
- expected acreage of aquatic vegetation remaining after project completion:
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access):
- proposed method of plant removal:
- if chemical/herbicide treatment will be used, specify product(s):

v. Describe any proposed reclamation/mitigation following disturbance:

c. Will the proposed action use, or create a new demand for water? ☑Yes ☐No
If Yes:

i. Total anticipated water usage/demand per day: 14,500 gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑Yes ☐No
If Yes:

- Name of district or service area: ECWA Consolidated Water District
- Does the existing public water supply have capacity to serve the proposal? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No
- Do existing lines serve the project site? ☑Yes ☐No

iii. Will line extension within an existing district be necessary to supply the project? ☐Yes ☑No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project:
- Source(s) of supply for the district:

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐Yes ☐No
If, Yes:

- Applicant/sponsor for new district:
- Date application submitted or anticipated:
- Proposed source(s) of supply for new district:

v. If a public water supply will not be used, describe plans to provide water supply for the project:

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑Yes ☐No
If Yes:

i. Total anticipated liquid waste generation per day: 14,500 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each):
Sanitary wastewater.

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑Yes ☐No
If Yes:

- Name of wastewater treatment plant to be used: Town of Amherst Wastewater Treatment Plant
- Name of district: Town of Amherst Consolidated Sanitary Sewer District
- Does the existing wastewater treatment plant have capacity to serve the project? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

- Do existing sewer lines serve the project? ☑Yes ☐No
- Will a line extension within an existing district be necessary to serve the project? ☐Yes ☑No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☑No

If Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑Yes ☐No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or _____ acres (impervious surface)

_____ Square feet or _____ acres (parcel size)

ii. Describe types of new point sources. _____

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

- If to surface waters, identify receiving water bodies or wetlands: _____
- Will stormwater runoff flow to adjacent properties? ☐Yes ☑No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☐Yes ☑No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☑No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:

- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

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h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? [Note: A Traffic Impact Study is being prepared by SRF Associates for the purpose of evaluating the potential traffic impacts for the proposed project.] ☐Yes ☑No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐Weekend
☐ Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): _____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☑Yes ☐No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: _____
To be Determined

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):
National Grid

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐Yes ☑No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 7:00 a.m. to 7:00 p.m.
- Saturday: 7:00 a.m. to 5:00 p.m.
- Sunday: As Needed
- Holidays: Not Applicable

ii. During Operations:

- Monday - Friday: 7:00 a.m. to 7:00 p.m.
- Saturday: 7:00 a.m. to 5:00 p.m.
- Sunday: To be Determined
- Holidays: To be Determined

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m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

There will be temporary and unavoidable short-term noise impacts resulting from the use of construction equipment during the construction of the proposed medical office project.

ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☑ No

Describe:

n. Will the proposed action have outdoor lighting? ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

On-site lighting will comply with the Town's stringent lighting standards and a Photometric Plan will be required in connection with the Site Plan Application review process for the development of the Project Site.

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☑ No

Describe:

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☑ Yes ☐ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures:

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally, describe the proposed storage facilities:

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☑ Yes ☐ No

If Yes:

i. Describe proposed treatment(s):

Use of pesticides may occur in connection with maintenance of greenspace and landscaping but will only be utilized if applied by licensed applicator.

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☑ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☐ Yes ☑ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: _____ tons per _____ (unit of time)
- Operation : _____ tons per _____ (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction:
- Operation:

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction:
- Operation:

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s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☑ Yes ☐ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: The future medical tenant(s) may generate hazardous medical waste that will be properly disposed of any required by the NYS Department of Health requirements.

ii. Generally describe processes or activities involving hazardous wastes or constituents: See above.

iii. Specify amount to be handled or generated TBD tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: Not applicable.

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☑ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☑ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)
☐ Forest ☐ Agriculture ☐ Aquatic ☑ Other (specify): Motor Service and I-290

ii. If mix of uses, generally describe:

There are a wide assortment of land uses in the vicinity of Project with various zoning classifications.

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	0	4.9	4.9
• Forested	2.09	2.09	0
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	6.27	0	(6.27)
• Agricultural (includes active orchards, field, greenhouse etc.)	0	0	0
• Surface water features (lakes, ponds, streams, rivers, etc.)	0	0	0
• Wetlands (freshwater or tidal)	0	0	0
• Non-vegetated (bare rock, earth or fill)	0	0	0
• Other Describe: Greenspace and Landscaping	0	1.37	1.37

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c. Is the project site presently used by members of the community for public recreation? ☐Yes ☑No
i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☐Yes ☐No
If Yes,
i. Identify Facilities:

e. Does the project site contain an existing dam? ☐Yes ☑No
If Yes:
i. Dimensions of the dam and impoundment:
- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____
iii. Provide date and summarize results of last inspection:

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐Yes ☑No
If Yes:
i. Has the facility been formally closed? ☐Yes ☐ No
- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:

iii. Describe any development constraints due to the prior solid waste activities: _____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐Yes ☑No
If Yes:
i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐Yes ☑ No
If Yes:
i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐Yes ☐No
☐ Yes – Spills Incidents database — Provide DEC ID number(s): _____
☐ Yes – Environmental Site Remediation database — Provide DEC ID number(s): _____
☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures: _____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☑Yes ☐No
If yes, provide DEC ID number(s): C915291

iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):
The Project Sponsor is not aware of status of the above referenced site relative to the NYSDEC Environmental Site Remediation database.

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v. Is the project site subject to an institutional control limiting property uses? ☐Yes ☐No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐Yes ☐No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? >5 ft. feet

b. Are there bedrock outcroppings on the project site? ☐Yes ☑No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____%

c. Predominant soil type(s) present on project site: _____ _____%
_____ _____%
_____ _____%

d. What is the average depth to the water table on the project site? Average: _____ feet

e. Drainage status of project site soils: ☐ Well Drained: _____% of site
☐ Moderately Well Drained: _____% of site
☐ Poorly Drained _____% of site

f. Approximate proportion of proposed action site with slopes: ☑ 0-10%: 100 % of site
☐ 10-15%: _____% of site
☐ 15% or greater: _____% of site

g. Are there any unique geologic features on the project site? ☐Yes ☑No
If Yes, describe: _____

h. Surface water features.

i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☐Yes ☑No

ii. Do any wetlands or other waterbodies adjoin the project site? [There are no an wetlands subject to the jurisdiction of either the NYSDEC or USACE on the Project Site.] ☑Yes ☐No

If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.

iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑Yes ☐No

iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name _____ Approximate Size _____
- Wetland No. (if regulated by DEC) _____

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐Yes ☑No

If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐Yes ☑No

j. Is the project site in the 100-year Floodplain? ☐Yes ☑No

k. Is the project site in the 500-year Floodplain? ☐Yes ☑No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐Yes ☑No
If Yes:

i. Name of aquifer: _____

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m. Identify the predominant wildlife species that occupy or use the project site:
Typical suburban species

n. Does the project site contain a designated significant natural community? ☐Yes ☑No
If Yes:
i. Describe the habitat/community (composition, function, and basis for designation):
ii. Source(s) of description or evaluation:
iii. Extent of community/habitat:
- Currently: acres
- Following completion of project as proposed: acres
- Gain or loss (indicate + or -): acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐Yes ☑No
If Yes:
i. Species and listing (endangered or threatened):

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☐Yes ☑No
If Yes:
i. Species and listing:

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐Yes ☑No
If yes, give a brief description of how the proposed action may affect that use:

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐Yes ☑No
If Yes, provide county plus district name/number:

b. Are agricultural lands consisting of highly productive soils present? ☐Yes ☑No
i. If Yes: acreage(s) on project site?
ii. Source(s) of soil rating(s):

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐Yes ☑No
If Yes:
i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature
ii. Provide brief description of landmark, including values behind designation and approximate size/extent:

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐Yes ☑No
If Yes:
i. CEA name:
ii. Basis for designation:
iii. Designating agency and date:

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e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? ☐ Yes ☑ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: _____

iii. Brief description of attributes on which listing is based:

_____

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☐ Yes ☑ No

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s): _____

ii. Basis for identification: _____

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☐ Yes ☑ No

If Yes:

i. Identify resource: _____

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.): _____

iii. Distance between project and resource: _____ miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation: _____

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name Sheridan Commons LLC Date July 18, 2022

Signature _____ Title Attorney for Project Sponsor

PRINT FORM

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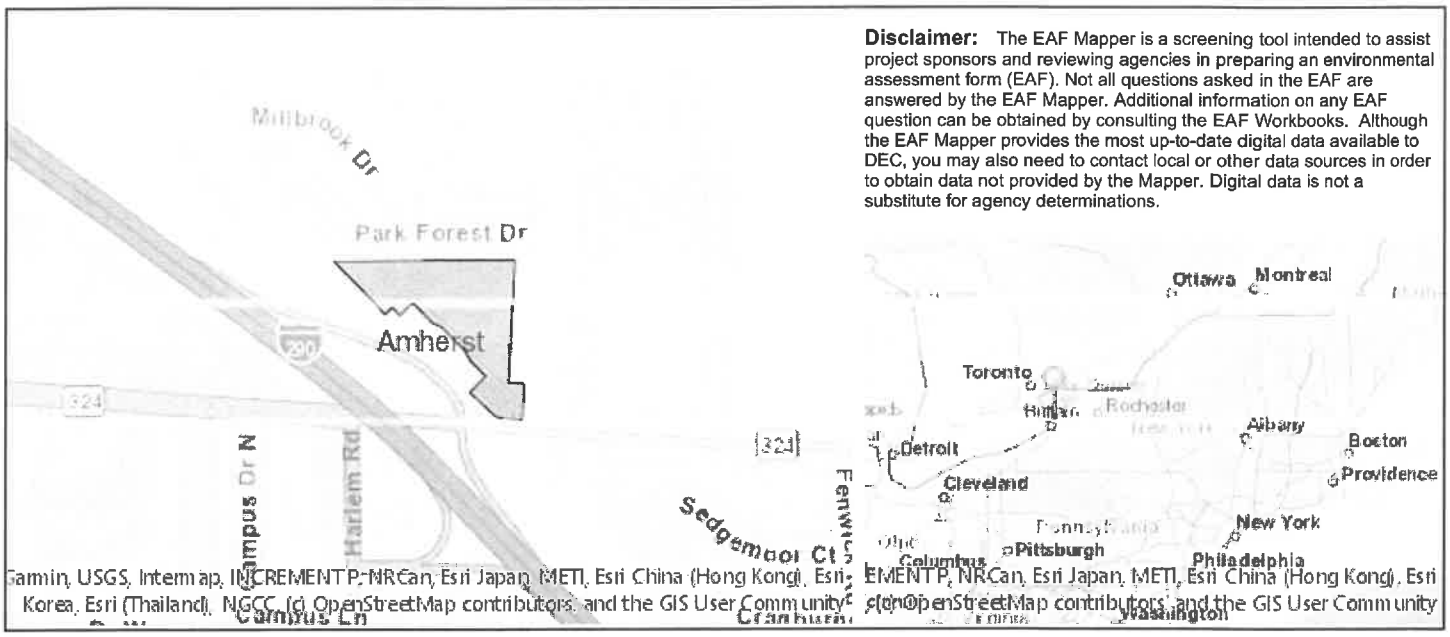
EAF Mapper Summary Report



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.

B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Yes - Digital mapping data are not available for all Special Planning Districts. Refer to EAF Workbook.
C.2.b. [Special Planning District - Name]	NYS Heritage Areas:West Erie Canal Corridor
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	Yes
E.1.h.iii [Within 2,000' of DEC Remediation Site - DEC ID]	C915291
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	No
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	No
E.2.k. [500 Year Floodplain]	No
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	No

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E.2.o. [Endangered or Threatened Species]	No
E.2.p. [Rare Plants or Animals]	No
E.3.a. [Agricultural District]	No
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.3.f. [Archeological Sites]	No
E.3.i. [Designated River Corridor]	No

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Rezoning of 4110-4120 Sheridan Drive and
Removal of Declaration of Restrictions
TOWN OF AMHERST ATTACHMENT
State Environmental Quality Review
ENVIRONMENTAL ASSESSMENT FORM

1. For each applicable category of proposed new structures, including additions to existing structures, provide the following information for all soil types on the project site (*according to Soil Survey of Erie County, NY; Table 11, Building Site Development, pp 294-305):*

Soil Name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Odessa Silt Loam	Severe	Severe	Severe	Severe	Moderate
Schoharie Silt Loam	Moderate	Moderate	Moderate	Moderate	Moderate

2. If the Soil survey indicates either "severe" or "moderate" suitability for the proposed types of construction, a geotechnical and hydrological analysis based on one test per 3.5 acres of project area must be provided (per Town Board resolution, 3/17/03, amended 6/16/03).

   _x_ Geotechnical report attached _____ Not applicable

   [Note: Three copies of the Geotechnical Report have been submitted to the Planning Department].

3. Is your property located: On Youngs Road between Dodge and Klein Roads? □ Yes x No
   On Wehrle Dr. between Spindrift Dr. and Oakwood Rd? □ Yes x No

   If so, the property may be within an area of the Town that is affected by a moratorium on connections to the sanitary sewer system.

4. Are there alternative locations on the site for this project? □ Yes x No

5. Location and size of real property owned by petitioner within one (1) mile of subject proposal:

   Not Applicable.

6. Are you aware of current or future plans or intentions by others in the Town of Amherst to develop property within 1000± ft. of the present project request: □ Yes ☒ No
   Describe: Not Applicable.

   (Potential environmental impacts from adjacent or nearby projects undergoing the approval process will receive a coordinated environmental review to determine cumulative effects on common receivers (e.g. traffic and drainage corridors) and other relevant environmental concerns.)

7. Maximum number of vehicular trips to be generated per peak hour upon completion of project TBD
   Source: Traffic Impact Study being prepared by SRF Associates and will be submitted upon completion.

8. Will blasting occur during construction? □ Yes ☒ No

9. Does the project propose to connect and be tributary to the public sanitary sewer system? ☒ Yes □ No

10. Proposed net additional gallons per day (gpd) of sanitary sewer discharge upon completion of project:
    14,500 average flow 58,000 gpd peak flow.

    (Average flows of 2,500 gpd or greater will require an Engineer's Report that includes a detailed downstream sewer capacity analysis and the identification of and commitment to required I/I offset work during peak wastewater flow conditions.)

11. Based on the Town's *2011 Reconnaissance Level Survey of Historic Resources,* is your property 'blue-rated' for historic significance? □ Yes ☒ No

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Exhibit 3 – Legal Description of Property to be Rezoned from GB to DC-5

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EXHIBIT 3 OF REZONING APPLICATION

LEGAL DESCRIPTION OF PORTION OF 4110-4120 SHERIDAN DRIVE TO BE REZONED FROM GENERAL BUSINESS DISTRICT ("GB") TO DC DEEP CORRIDOR 5 DISTRICT ("DC-5")

PORTION OF 4110-4120 SHERIDAN DRIVE:

ALL THAT TRACT OR PARCEL OF LAND, SITUATE IN THE TOWN OF AMHERST, COUNTY OF ERIE AND STATE OF NEW YORK, BEING PART OF LOT NOS. 72 AND 66, TOWNSHIP 12, RANGE 7 OF THE HOLLAND LAND COMPANY'S SURVEY, MORE PARTICULARLY BOUNDED AND DESCRIBED AS FOLLOWS:

Commencing at a point which is the following courses and distances from the intersection of the northerly line of Sheridan Drive, as a 100 foot highway and the former northeast boundary of the Lehigh Valley Railroad right of way; (a) running thence easterly along the northerly line of Sheridan Drive as a 100 foot highway, a distance of 200 feet to a point; thence (b) north 03° 16' 50" east a distance of 10 feet to the beginning of the parcel herein described; thence north 85° 33' 10" west, and along the northerly boundary of said Sheridan Drive, a distance of 103.00 feet to a point; thence north 77° 01' 19" west, and along the northerly boundary of said Sheridan Drive, a distance of 38.30 feet to a point; thence north 46° 41' 05" west a distance of 192.14 feet to a point; thence north 44° 44' 25"" east a distance of 120.65 feet to a point; thence north 45° 14' 15" west a distance of 111.74 feet to a point; thence north 26° 55' 31"" west a distance of 65.86 feet to a point; thence north 45° 15' 35" west a distance of 173.07 feet to a point; thence north 67° 16' 29"" west a distance of 55.69 feet to a point; thence north 43° 41' 10" west a distance of 147.82 feet to a point; thence south 44° 44' 25"" west a distance of 96.04 feet to a point; thence north 43° 41' 10"" west a distance of 61.10 feet to a point; thence south 44° 44' 25"" west a distance of 54.02 feet to a point; thence north 43° 41' 10" west a distance of 243.31 feet to a point; thence north 89° 44' 25"" east a distance of 859.13 feet to a point; thence south 03° 16' 50" west a distance of 544.30 feet to a point; thence south 85° 33' 10" east a distance of 80.00 feet to a point; thence south 03° 16' 50" west a distance of 190.00 feet to the point and place of beginning and containing 6.27 acres, more or less.

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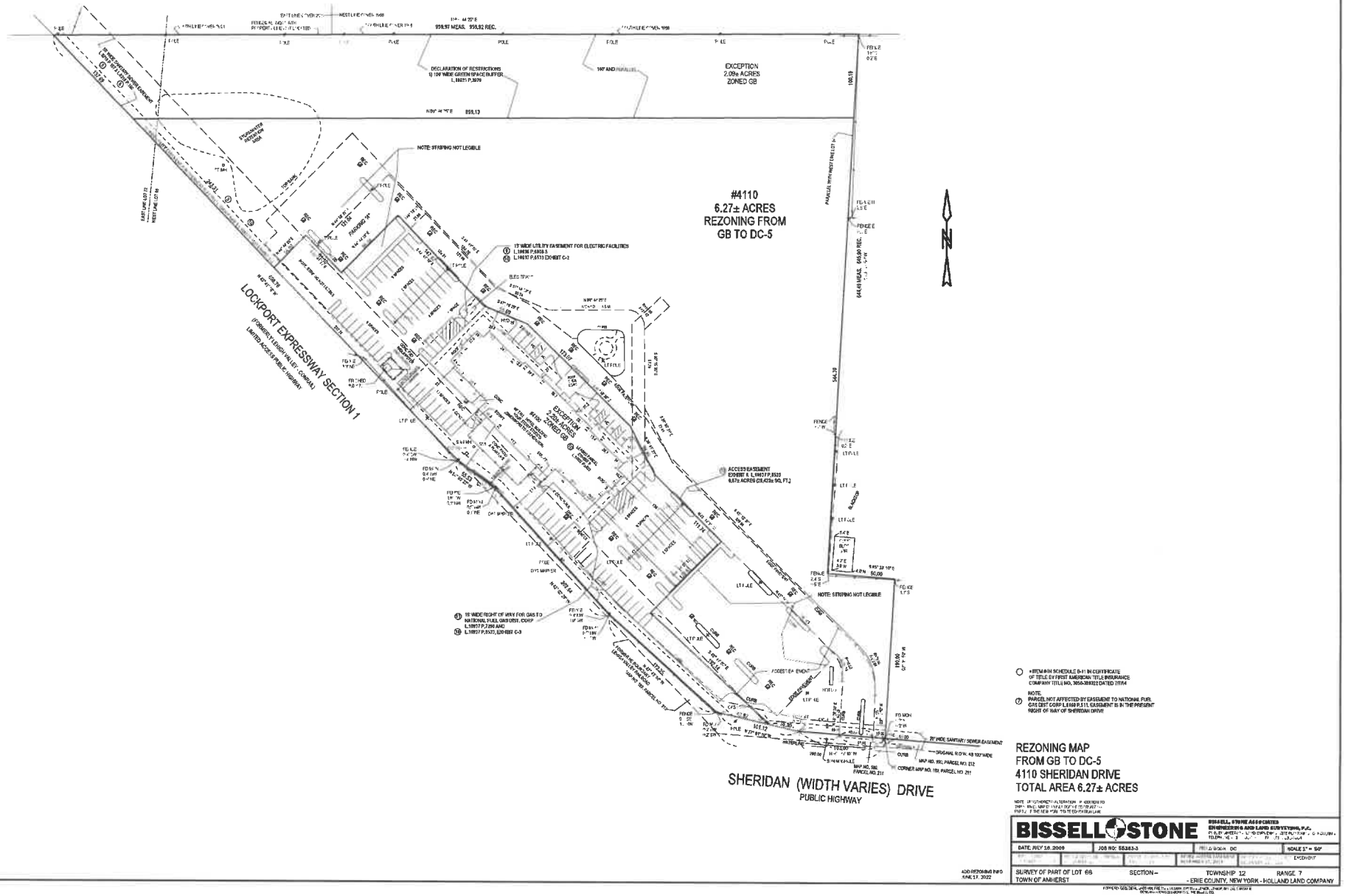
Exhibit 4 – Reduced Size Copy of Survey Prepared by Bissell Stone Associates [Full Size Copy also Attached]

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)



○ = ITEM # IN SCHEDULE B-II IN CERTIFICATE OF TITLE BY FIRST AMERICAN TITLE INSURANCE COMPANY TITLE NO. 3050-389322 DATED 7/7/14

NOTE:
⑦ PARCEL NOT AFFECTED BY EASEMENT TO NATIONAL FUEL GAS DIST CORP L.6160 P.311, EASEMENT IS IN THE PRESENT RIGHT OF WAY OF SHERIDAN DRIVE

REZONING MAP
FROM GB TO DC-5
4110 SHERIDAN DRIVE
TOTAL AREA 6.27± ACRES

BISSELL STONE
BISSELL, STONE & ASSOCIATES
ENGINEERING AND LAND SURVEYING, P.C.

DATE: JULY 18, 2009	JOB NO: 55363-3		SCALE 1" = 50'
			EXHIBIT

SURVEY OF PART OF LOT 66 — SECTION – — TOWNSHIP 12 — RANGE 7
TOWN OF AMHERST — - ERIE COUNTY, NEW YORK - HOLLAND LAND COMPANY

ADD REZONING INFO
JUNE 17, 2022

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

Exhibit 5 – Responses to Questions 11A & 11B of the Rezoning Application

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

EXHIBIT 5

RESPONSES TO QUESTION 11 OF REZONING APPLICATION

REZONING OF PORTION OF 4100 SHERIDAN DRIVE FROM GB TO DC-5

Question 11(A): Description of the character of the proposed development:

Response to Question 11(A): The proposed project will be upscale in character and will feature a four-story building on the property at 4100-4120 Sheridan Drive ("Project Site").[1] The Petitioner is seeking to amend the zoning classification of a portion of the Project Site from General Business District ("GB") to DC-5 Deep Corridor 5 District ("DC-5"). A survey depicting the portion of the Project Site to be rezoned from GB to DC-5 is attached to this Application and a reduced size copy of the survey is also provided at **Exhibit "4"**. It is important to mention that the vegetated 100 ft. of Permanent Open Space located on the northern portion of the Project Site zoned GB will remain undisturbed.

The conceptual layout of the proposed project is depicted on the full size Concept Site Plan [Drawing SP01] prepared by Kideney Architects attached to this Rezoning Application. A reduced size copy of the Concept Site Plan is also provided at **Exhibit "8"**. It is important to mention that the layout of the proposed project as depicted on the Concept Site Plan provided is not meant to represent the final layout of the proposed project since modifications may be necessary based on the project review process, potential future tenant(s) requirements, and the preparation of fully engineered plans for the project.

[1] Color Conceptual Elevation Plans [Drawing A201 and A202] as prepared by Kideney Architects are attached as **Exhibit "10"** of this Application.

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

The proposed project will be consistent with the character of the existing hotel on the Project Site and surrounding land uses in the vicinity that include automotive dealerships directly to east of the Project Site and a used automotive dealership on the south side of Sheridan Drive in the vicinity of the Project Site. Landscaping will be provided pursuant to a Landscape Plan to be prepared by a licensed landscape architect during the Site Plan Application review stage of the project and the landscaping will feature numerous trees, bushes and shrubs.

Question 11(B)(1): Rationale for rezoning request: 1. What was this site chosen?

Response to Question 11(B)(1): The Project Site is an appropriate location for the proposed project given the character and scale of nearby land uses. It is also important to mention that the Project Site is designated as appropriate for "Suburban Center" development per Figure 6-A of the Comprehensive Plan. A color copy of Figure 6-A is attached as **Exhibit "9"**.

Question 11(B)(2): Why cannot land be used with the existing zoning?

Response to Question 11(B)(2): The Project Site could be developed pursuant to its existing long-standing GB zoning classification but a development based on the GB zoning standards would be inconsistent with the adopted Comprehensive Plan since Figure 6-A of the Comprehensive Plan designates the Project Site as appropriate for "Suburban Center" development.

Question 11(B)(3): How will this rezoning impact surrounding properties?

Response to Question 11(B)(3): The proposed rezoning of a portion of the Project Site from GB to DC-5 will not result in any significant adverse impacts on surrounding properties. As mentioned previously, the vegetated 100 ft. of Permanent Open Space located on the northern portion of the Project Site zoned GB will remain undisturbed. The proposed project will be more compatible

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

with the existing land uses in the vicinity of the Project Site than the higher intensity uses expressly permitted by the existing long-standing GB zoning classification.

Question 11(B)(4): How will this rezoning impact the school system?

Response to Question 11(B)(4): The proposed project will result in positive fiscal impacts for the Sweet Home Central School District since it will result in substantial annual school taxes revenues without any demand for educational services.

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

Exhibit 6 – Responses to Questions 16A, 16B, 16D & 16E of the Rezoning Application

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

EXHIBIT 6

RESPONSES TO QUESTION 16 OF REZONING APPLICATION

REZONING OF PORTION OF 4100 SHERIDAN DRIVE FROM GB TO DC-5

Question 16(A)(1): **State in detail why the proposed zoning is consistent with the adopted Town of Amherst Bicentennial Comprehensive Plan. Cite specific sections, maps and/or figures in the plan that support the proposed zoning at this location.**

Response to Question 16(A)(1): The request to amend the zoning classification of a portion of 4100-4120 Sheridan Drive (the "***Project Site***") to accommodate the proposed project is consistent with the adopted Bicentennial Comprehensive Plan. The Town of Amherst adopted the Bicentennial Comprehensive Plan in January of 2007 after completing a lengthy planning process that included numerous public meetings and public hearings involving the Comprehensive Plan Advisory Committee, the Planning Board and the Town Board.[1] In December of 2020, the Town Board most recently adopted amendments to the Bicentennial Comprehensive Plan. The Comprehensive Plan is intended to guide future growth and redevelopment in the Town.

Figure 6-A of the adopted Bicentennial Comprehensive Plan is the titled Commercial and Mixed-Use Designations and it depicts the Project Site as being designated as "Suburban Center". The Project Site is located within the University Place geographic location per Figure 6-A of the Comprehensive Plan. A copy of Figure 6 of the Comprehensive Plan is provided at **Exhibit "10"**.

[1] A copy of the resolution adopted by the Town Board on January 2, 2007 for the purpose of adopting the Bicentennial Comprehensive Plan pursuant to Town Law Section 272-a is included at the beginning of the Comprehensive Plan. This resolution recites the lengthy planning history that incorporated numerous opportunities for public input as well as a coordinated environmental review pursuant to SEQRA that involved the preparation a Generic EIS and the issuance of a Findings Statement.

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

Question 16(A)(2): Cite all text, map, and/or figures that must be amended to support the proposed zoning at this location and provide detailed suggested amendments.

Response to Question 16(A)(2): The proposed rezoning of a portion of the Project Site from GB to DC-5 to accommodate the proposed project does not require an amendment to the Bicentennial Comprehensive Plan.

Question 16(A)(3): State why the proposed zoning is consistent with intent and objectives (Sec. 1-2-2) of the Zoning Ordinance:

Response to Question 16(A)(3): Section 1-2-1 of the Zoning Code is titled "Purpose" and it states as follows:

> *"The purpose of this Zoning Ordinance and the intent of the legislative authority in its adoption is to promote the environment of the town and its public health, safety, convenience, comfort, prosperity and the general welfare by regulating the use of buildings, other structures and land for residences, open space, public facilities, business, services, industry or other purposes; by regulating and restricting the bulk, height, design, building coverage and location of structures; by regulating and limiting population density; and for the aforesaid purposes, to divide the land within the limits of the town into districts of such number and dimensions generally consistent with the policies of the Comprehensive Plan and to provide procedures for the administration and amendment of said Zoning Ordinance."*

The proposed rezoning of a portion of the Project Site GB to DC-5 to accommodate the proposed project is consistent with the "Purpose" of the Zoning Code. Section 1-2-2 of the Zoning Code sets forth the objectives of the Zoning Code. This section of the Zoning Code lists thirteen objectives that are discussed below as follows:

A. To protect the character and values of residential, institutional and public uses, business, commercial and manufacturing uses and to insure their orderly and beneficial development;

Response: The proposed rezoning of a portion of the Project Site from GB to DC-5 to accommodate the proposed project will be consistent with the objective of

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

protecting the character and value of existing land uses. The proposed rezoning will allow the Project Site to be utilized as an upscale office building project, which represents orderly and beneficial development.

B. To provide adequate open spaces for light, air and outdoor uses to include public, common and private open space areas;

Response: The proposed rezoning of a portion of the Project Site from GB to DC-5 and the proposed project will not be inconsistent with this objective.

C. To prevent overcrowding of land;

Response: The proposed project will not result in the overcrowding of land. The project is consistent with the type of development designated as appropriate for the Project Site per Figure 6-A of the adopted Comprehensive Plan.

D. To prevent excessive concentration of population and to prevent spare and uncoordinated development;

Response: The proposed rezoning of a portion of the Project Site from GB to DC-5 will not result in excessive concentration of population and the proposed project represents an example of coordinated development. The project will require Site Plan Approval from the Planning Board.

E. To regulate and control the location and spacing of buildings on the lot and in relation to the surrounding property generally consistent with the policies of the Comprehensive Plan.

Response: The responses to the Questions in this **Exhibit "6"** of the Rezoning Application set forth the reasons the proposed rezoning is consistent with the policies of the Comprehensive Plan.

F. To protect persons and property from damage and injury due to fire or flood;

Response: The Site Plan Application review process will trigger the need for an Engineer's Report and SWPPP prepared by a licensed engineer to be prepared for review and approval by the Town's Engineering Department. The proposed project will not

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

increase the likelihood of damage and injury due to fire and flood. The proposed office building will be constructed per the stringent requirements of the NYS Building Code including the fire safety standards contained therein.

G. To preserve and protect significant natural features and vegetation, thereby preventing ecological damage and visual blight which occur when those features or vegetation are eliminated or substantially altered to serve development purposes only.

Response: The proposed rezoning of a portion of the Project Site from GB to DC-5 and the proposed project will not be inconsistent with this objective. There are not significant natural features located on the previously disturbed portion of the Project Site to be developed.

H. To assure that structure and land use arrangements are aesthetically harmonious with nearby areas and structures.

Response: The development of the Project Site in a manner generally consistent with the Concept Site Plan [Drawing SP01] prepared by Kideney Architects will be aesthetically harmonious with nearby areas and structures. Color Conceptual Elevation Plans depicting a proposed four-story office building as prepared by Kideney Architects are attached as **Exhibit "10"**.

I. To regulate the location of buildings and intensity of uses in relation to streets according to plans so as to cause the least interference with and be damaged least by traffic movements and hence result in lessened street congestion and improved public safety.

Response: The proposed project will utilize the existing driveway onto Sheridan Drive, which is the only available access to the roadway network in the vicinity of the Project Site.

J. To establish zoning patterns that insure economical extensions for sewers, water supply waste disposal and other public utilities, as well as development of recreation, schools and other public facilities;

Response: The Project Site has access to sanitary sewer and water lines as well as necessary public utilities to service the proposed project.

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

K. To guide the future development of the town so as to being the gradual conformity of land, structures and uses generally consistent with the policies of the Comprehensive Plan.

Response: The proposed rezoning of a portion of the Project Site from GB to DC-5 is consistent with this objective since the proposed project is consistent with the policies contained in the Comprehensive Plan.

L. To accomplish the specific intents and goals set forth in the introduction to the respective sections.

Response: The proposed rezoning of a portion of the Project Site will be consistent with this objective.

M. To protect the community from visual pollution resulting from the unregulated use of signs and other advertising devices.

Response: The proposed rezoning and the proposed project will not be inconsistent with this objective.

Question 16(C): Compatibility with the present zoning and conforming uses of nearby property and with the character of the neighborhood:

Response to Question 16(C): The proposed rezoning of a portion of the Project Site from GB to DC-5 is compatible with the present zoning and conforming uses of nearby properties and the character of the neighborhood. The Project Site is currently zoned GB which would allow the Project Site to be developed for intensive uses including a wide assortment of commercial uses.

Question 16(D): Suitability of the subject property for uses permitted by the current versus the proposed district:

Response to Question 16(D): The Project Site is more suitable for uses permitted by the proposed DC-5 zoning classification than the existing GB zoning classification.

Question 16(E): Whether the proposed change tends to improve the balance of uses, or meets a specific demand in the Town:

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

Response to Question 16(D): The proposed change in the zoning classification of a portion of the Project Site from GB to DC-5 to accommodate the proposed project will have positive impacts on the balance of uses in the Town by providing a high quality office building designed for occupancy by medical users. It is important to mention that the Petitioner will be required to present the architectural plans for the proposed project to the Town's Design Advisory Board for its issuance of a recommendation to the Planning Board in connection with the future Site Plan Application review process.

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

Exhibit 7 – Copy of Declaration of Restrictions as Recorded at the Erie County Clerk's Office on September 18, 1997

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

THIS IS NOT
A BILL

Erie County Clerk's Office
County Clerk's Recording Page

Control # 199709180935

Index DEED LIBER

Book 10921 Page 3979

No. Pages 0004

Instrument DECL RSTRCT COV
Date : 9/18/1997
Time : 3:18:23

Return To:

BOX 243

4100 SHERIDAN DRIVE LLC

COUNTY	$	17.00
	$	.00
COE	$	5.00
	$	.00
	$	.00
	$	.00
	$	.00
	$	.00
	$	.00
Total:	$	22.00

MORTGAGE TAX

Serial #

City/Town	$	.00
S.M.A.	$	.00
Trans. Auth.	$	.00
Total	$	.00

STATE OF NEW YORK
Erie County Clerk's Office

WARNING - THIS SHEET CONSTITUTES THE CLERKS ENDORSEMENT, REQUIRED BY SECTION 316-A(5) OF THE REAL PROPERTY LAW OF THE STATE OF NEW YORK DO NOT DETACH

DAVID J SWARTS
County Clerk

TRANSFER TAX

Transfer Tax	$	.00
Amount	$	.00

Transfer Tax #

D109213979

RECEIVED
JUL 18 2022
TOWN OF AMHERST
PLANNING DEPT.

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

Box 243

DECLARATION OF RESTRICTIONS

WHEREAS, 4100 SHERIDAN DRIVE, L.L.C. is the sole owner of property referred to herein in Exhibit A, attached hereto and made a part hereof. Said parcel being situated in the Town of Amherst, County of Erie and State of New York, and being identified as 4100 SHERIDAN DRIVE, L.L.C., and

WHEREAS, 4100 SHERIDAN DRIVE, L.L.C. is the successor in interest to 428 CO., INC. and now holds legal title to the property described in Exhibit A, and

WHEREAS, the Town of Amherst approved the rezoning of said property and adopted a resolution approving said rezoning at their meeting on July 7, 1997 subject to the following restrictions:

1. Maintenance of a 100 foot wide green-space buffer along the entire northerly line of the property, including the retention of existing woods. The developer will provide additional fill-in trees or other suitable landscaping within the buffer area.

2. No building foundation will be constructed closer than 175 feet to the northerly property line, nor will any building foundation be constructed closer than 75 feet from the eastern property line.

3. Any office buildings to be constructed on this site will be to a maximum height of 48 feet, including the stair and utility towers.

4. Hotel construction will be located along the westerly property line and will set back a minimum of 330 feet from the said northerly property line.

5. The height of the hotel shall be restricted to a maximum overall height of 55 feet including the stair and utility towers.

The above restrictions shall be binding on 4100 SHERIDAN DRIVE, L.L.C., their successors and assigns and shall run with the land except that the above-described descriptions can be changed, modified or eliminated only by majority vote of the Town Board of Amherst, New York.

4100 SHERIDAN DRIVE, L.L.C.

By: _____
Stephen S. Obletz, General Manager

935

779-3

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

STATE OF NEW YORK)
) SS.:
COUNTY OF ERIE)

On this 11th day of September, 1997, before me personally came STEPHEN S. OBLETZ, to me known, who, being by me duly sworn, did depose and say that he is the General Manager of 4100 SHERIDAN DRIVE, L.L.C., the Limited Liability Company described in and which executed the above instrument; and that he signed his name thereto as and for the act of said Limited Liability Company.

Notary Public

ANTHONY J. RENALDO
Notary Public, State of New York
Qualified in Erie County
My Commission Expires 9/13/19~~97~~ 1997

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

renaldo.ms\miscellaneous\declaration.41

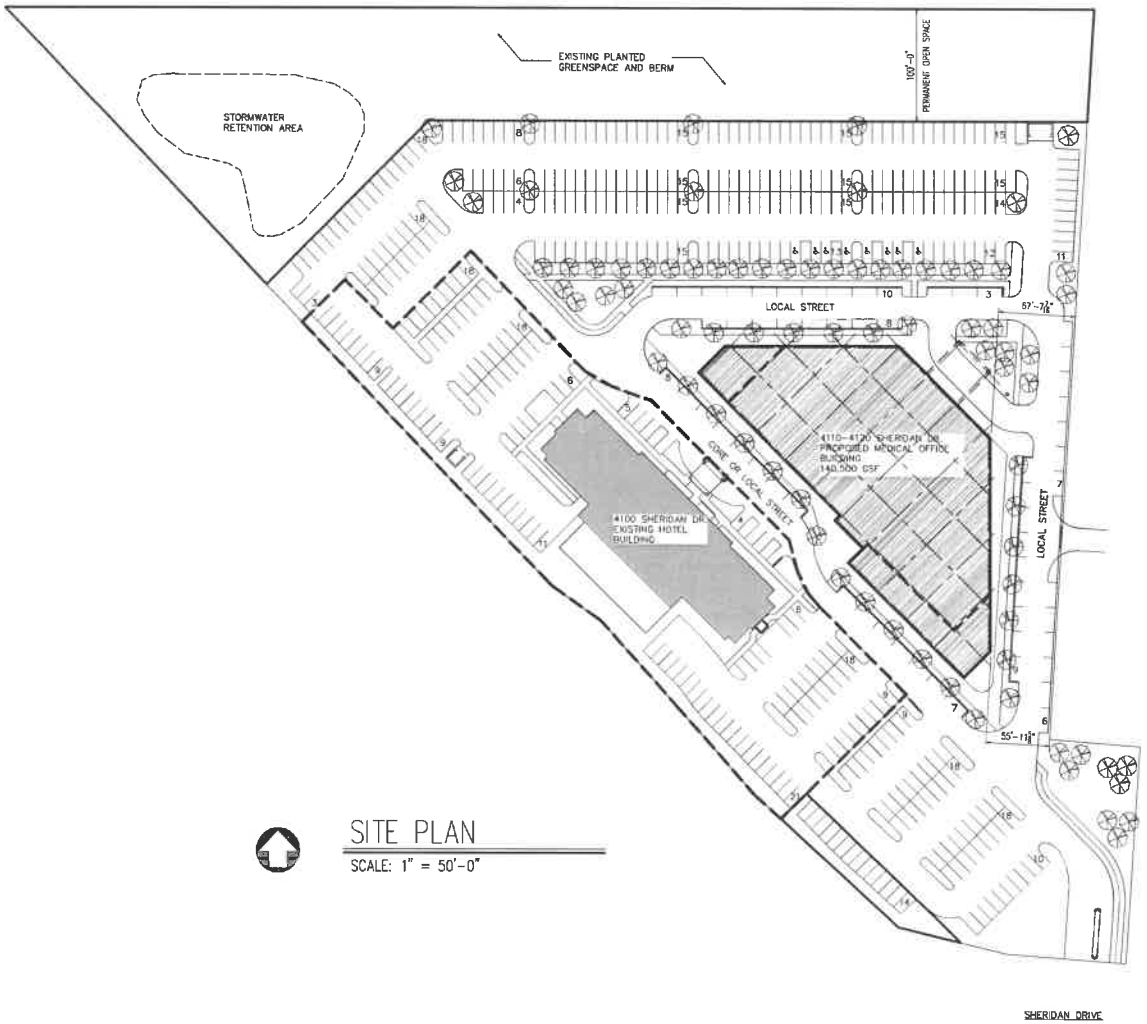
EXHIBIT A

Commencing at the intersection of the northerly line of Sheridan Drive as a 100 foot highway and the northeast boundary of the 100 foot wide Lehigh Valley Railroad right of way: running thence easterly along the northerly line of Sheridan Drive, 200 feet: running thence northerly parallel with the west line of Lot No. 66, 200.00 feet: running thence westerly parallel with the northerly line of Sheridan Drive 80.00 feet to a point: running thence northerly parallel with the west line of Lot No. 66, 645.90 feet: running thence westerly at an inside angle of 86° 22', 959.92 feet to a point in the said northeast bounds of the Lehigh Valley Railroad right of way which is distant 1146.70 feet northwest from the point of beginning: running thence southeasterly along the said northeasterly boundary of the Lehigh Valley Railroad right of way 1146.70 feet to the point or place of beginnng.

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

Exhibit 8 – Concept Site Plan [Drawing SP01] as Prepared by Kideney Architects [Full Size Copy also Attached]

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)



SITE PLAN

SCALE: 1" = 50'-0"

4100 SHERIDAN DR AND 4110-4120 SHERIDAN DR. SITE
DEVELOPMENT AREAS

TOTAL SITE AREA	458,185 SF 10.52 ACRES
AREA TO BE REZONED FROM GB TO DC-5 (PORTION OF 4110-4120 SHERIDAN DR.)	110,518 SF 8.37 ACRES
EXISTING ZONING DISTRICT	GB (GENERAL BUSINESS)
PROPOSED ZONING DISTRICT	DC-5 (DEEP CORRIDOR 5)
BUILDING INFORMATION	
BUILDING HEIGHT	65 FT MAX (MEASURED FROM FINISHED GRADE)
STORIES	4 FLOORS

4100 SHERIDAN DR. AND 4110-4120 SHERIDAN DR. SITE
PARKING REQUIREMENTS

EXISTING HOTEL (4100 SHERIDAN DR.)
REQUIRES 104 SPACES

PROPOSED MEDICAL OFFICE BUILDING (4110-4120 SHERIDAN DR.)
TOTAL BUILDING AREA 140,500 SF

PARKING SPACES REQUIRED:

MULTI-STORY MULTI TENANT GROSS SF x .75
140,500SF x .75 = 105,375SF
105,375SF/1000SF = 105.375
MEDICAL: 105.375 x 3.5 = 369 SPACES
OFFICE: 105.375 x 2.5 = 264 SPACES

MULTI-STORY SINGLE TENANT GROSS SF x .80
140,500SF x .80 = 112400SF
112400SF/1000SF = 112.4
MEDICAL: 112.4 x 3.5 = 394 SPACES (max)
OFFICE: 112.4 x 2.5 = 281 SPACES

TOTAL SPACES SHOWN = 373 (8 HC)

4110-4120 SHERIDAN DR SITE
OUTDOOR AMENITY SPACE

OUTDOOR AMENITY SPACE REQUIRED
5%
LOT : 225,815 SF x .05 = 11290.75 SF

WARNING

Kideney Architects

Kideney Architects, P.C.
ARCHITECTS | PLANNERS
INTERIORS | LANDSCAPE DESIGN
143 Genesee Street
Buffalo, New York 14203
716.249.7837 | kideney.com

SHERIDAN COMMONS
4110-4120 Sheridan Dr.
Amherst, NY

Concept Site Plan

AS NOTED	
GCU	
GCU	NO. DATE
2022005	JUNE 21, 2022

SP01

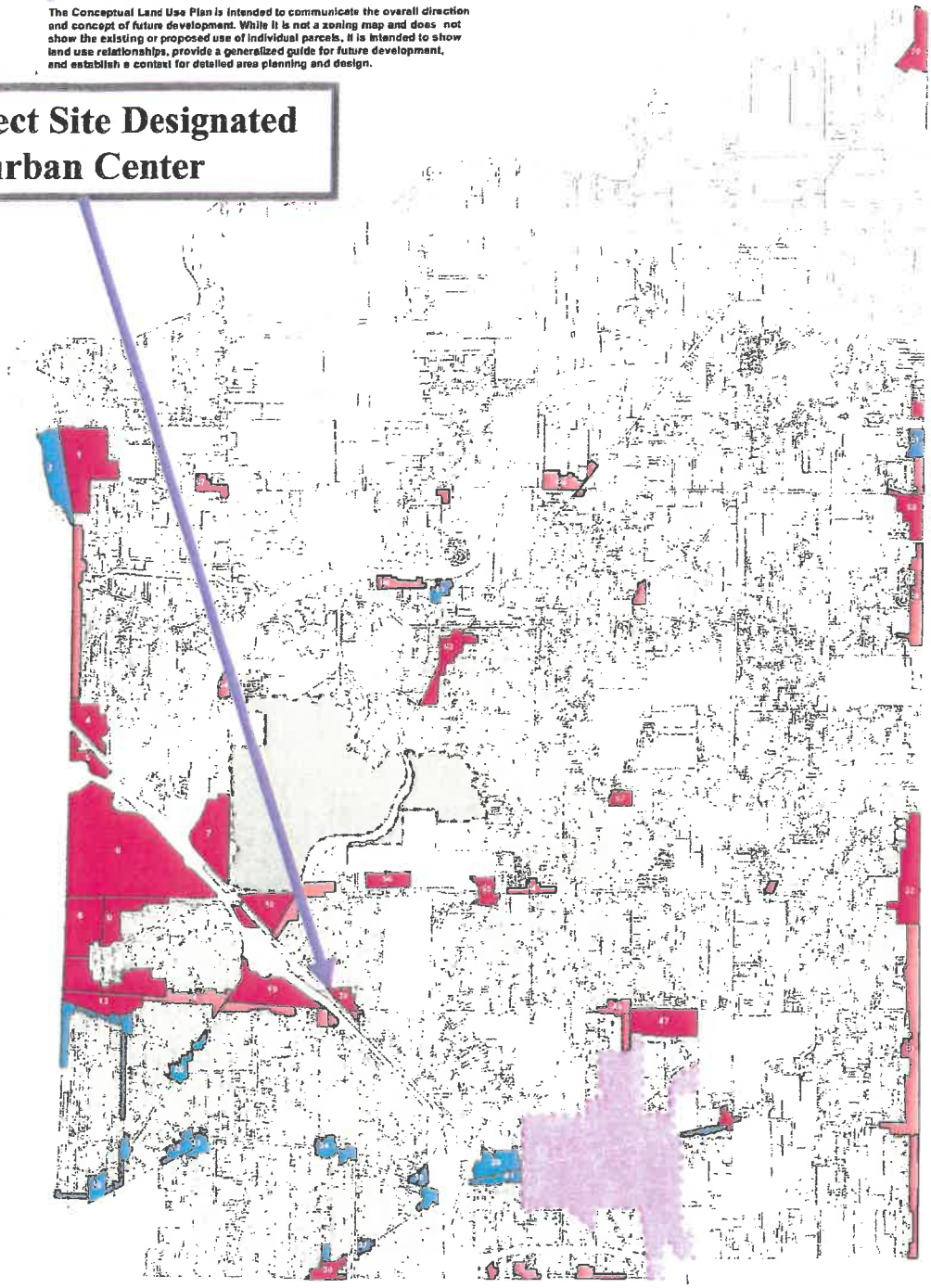
Exhibit 9 – Color Copy of Figure 6-A of the Comprehensive Plan

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

Town of Amherst
Bicentennial
Comprehensive Plan

The Conceptual Land Use Plan is intended to communicate the overall direction and concept of future development. While it is not a zoning map and does not show the existing or proposed use of individual parcels, it is intended to show land use relationships, provide a generalized guide for future development, and establish a context for detailed area planning and design.

Project Site Designated Suburban Center



1 Wegmans (NFB)
2 Walgreens (NFB)
3 NFB / Ellicott Creek Strip
4 Home Depot (NFB)
5 Innkeepers Lane
6 Consumer Square / Ridge Lea
7 University Place
8 Boulevard Mall
9 Wegmans (Alberta)
10 Golden Triangle
11 Maple / Amherst Manor
12 Walmart (Sheridan)
13 Northtown Plaza
14 NFB Strip
15 Eggert Strip
16 Eggert / Bailey
17 Bailey Strip
18 Sheridan / Millersport Strip
19 Northtown Auto (Sheridan)
20 Sheridan / Sunrise - North Side
21 Sheridan / Sunrise - South Side
22 Sheridan / Harlem - West Side
23 Sheridan / Harlem - East Side
24 Sheridan / Getzville Strip
25 Millersport / Arcade
26 Six Corners
27 Bailey / Grover Cleveland
28 Bailey Live-Work
29 Main / Bailey
30 University Plaza
31 Kenmore Avenue
32 Eggertsville (Main / Eggert - West Side)
33 Eggertsville (Main / Eggert - East Side)
34 Snyder (Main / Harlem)
35 Harlem Strip
36 Harlem / Kensington
37 Kensington / Saratoga
38 Main / Kensington
39 West of Village - North of Main
40 West of Village - South of Main (West Side)
41 West of Village - South of Main (East Side)
42 Wehrle / South Forest
43 Wehrle / South Union
44 Wehrle / Cayuga
45 Sheridan / Hopkins
46 Evans Strip
47 Williamsville Place
48 Main Strip
49 Main / Youngs
50 Transit / Wehrle
51 Transit from Main to Maple
52 Transit / Maple
53 Maple / Ayer
54 Maple Strip
55 Maple / North Forest
56 Gun Club
57 Clearfield Plaza
58 Transit / Casey
59 Transit / North French
60 Transit / Dodge
61 Swormville
62 Hopkins / Dodge
63 Getzville Plaza
64 Sweet Home / Skinnersville
65 Campbell / Dodge
66 Dodge Strip
67 Sweet Home / North French
68 Campbell / North French
69 Crosspointe
70 Transit / Millersport
71 Transit Strip

FIGURE 6-A

Suburban Center
Suburban Corridor
Traditional Areas
Village of Williamsville
University at Buffalo

SOURCE NOTES:

Original Source Data Provided by the Town of Amherst Information Technology Department, URS Corporation and Wallace Roberts & Todd, LLC

Map Compiled by the Town of Amherst Planning Department

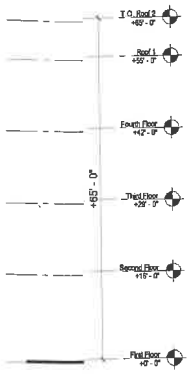
Date: December 2020

0 0.2 0.4 0.6 0.8 1
Miles

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

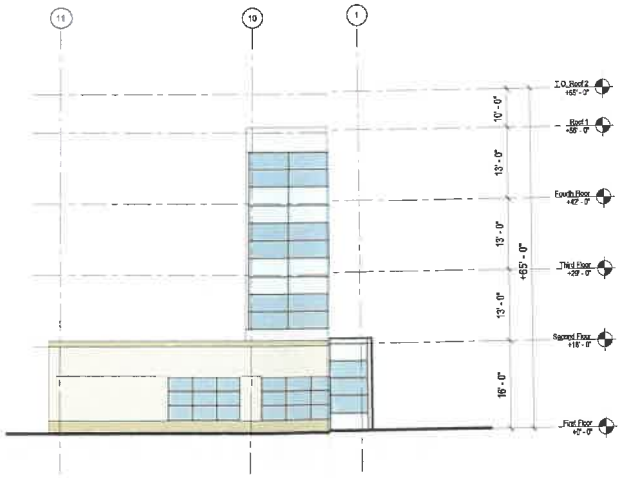
Exhibit 10: Color Conceptual Elevation Plans [Drawing A201 and A202] as Prepared by Kideney Architects [11" x 17"]

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)



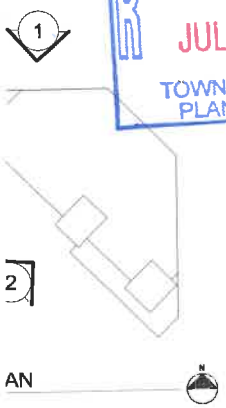
NORT

SCALE: 3/32" = 1



SOUTH-WEST ELEVATION

SCALE: 3/32" = 1'-0"



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JUL 18 2022
TOWN OF AMHERST
PLANNING DEPT.

Kideney Architects

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SHERIDAN COMMONS

4110-4120 SHERIDAN DR.
AMHERST, NY

CONCEPT

ELEVATIONS

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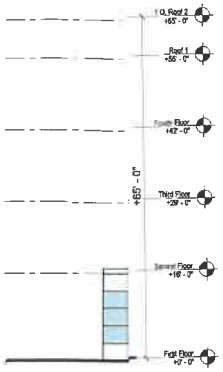

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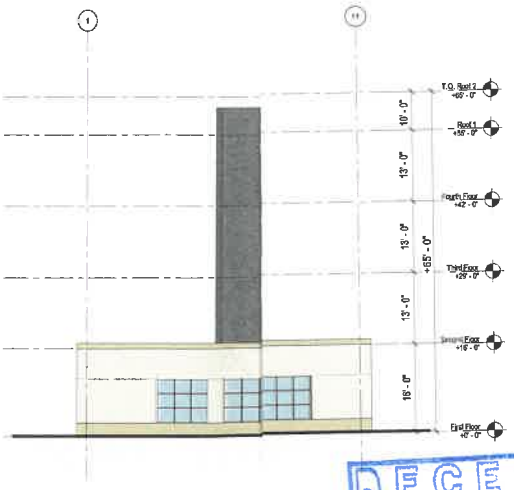

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LOCAL LAW NO. _____-202_

TOWN OF AMHERST
COUNTY OF ERIE, STATE OF NEW YORK

A LOCAL LAW AMENDING CHAPTER 203 OF THE TOWN OF AMHERST CODE, KNOWN AS THE ZONING ORDINANCE TO REZONE A PORTION OF 4110-4120 SHERIDAN DRIVE FROM GB TO DC-5, TO REMOVE DECLARATION OF RESTRICTIONS IMPOSED IN CONNECTION WITH A REZONING DECISION AND TO AMEND THE ZONING MAP ACCORDINGLY.

Be it enacted by the Town Board of the Town of Amherst as follows:

Section 1. Title.

This Local Law shall be referred to as, "A Local Law Amending Chapter 203 of Town of Amherst Code, Known As The Zoning Ordinance, to Rezone a Portion of 4110-4120 Sheridan Drive from GB to DC-5, to Remove a Declaration of Restrictions Imposed in Connection with a Rezoning Decision and to Amend The Zoning Map Accordingly".

Section 2. Legislative Findings and Intent.

The Town Board of the Town of Amherst finds that an application to Rezone a Portion of 4110-4120 Sheridan Drive from GB to DC-5, to Remove a Declaration of Restrictions Imposed in Connection with a Rezoning Decision and to Amend The Zoning Map Accordingly has been filed and is in proper order. The Town Board further finds that the request including the rezoning is consistent with the Comprehensive Plan.

Section 3. Amherst Zoning Map.

The Town Board hereby amends its zoning map which is incorporated by reference in the Town zoning code by amending from GB to DC-5 the zoning classification of 4110-4120 Sheridan Drive from GB to DC-5, and removing a Declaration of Restrictions imposed in connection with a Rezoning Decision, **subject to any conditions imposed by the authorizing resolution**; legally described as follows:

PORTION OF 4110-4120 SHERIDAN DRIVE [GB TO DC-5]:

ALL THAT TRACT OR PARCEL OF LAND, SITUATE IN THE TOWN OF AMHERST, COUNTY OF ERIE AND STATE OF NEW YORK, BEING PART OF LOT NOS. 72 AND 66, TOWNSHIP 12, RANGE 7 OF THE HOLLAND LAND COMPANY'S SURVEY, MORE PARTICULARLY BOUNDED AND DESCRIBED AS FOLLOWS:

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Commencing at a point which is the following courses and distances from the intersection of the northerly line of Sheridan Drive, as a 100 foot highway and the former northeast boundary of the Lehigh Valley Railroad right of way; (a) running thence easterly along the northerly line of Sheridan Drive as a 100 foot highway, a distance of 200 feet to a point; thence (b) north 03° 16’ 50" east a distance of 10 feet to the beginning of the parcel herein described; thence north 85° 33’ 10" west, and along the northerly boundary of said Sheridan Drive, a distance of 103.00 feet to a point; thence north 77° 01’ 19" west, and along the northerly boundary of said Sheridan Drive, a distance of 38.30 feet to a point; thence north 46° 41’ 05" west a distance of 192.14 feet to a point; thence north 44° 44’ 25"” east a distance of 120.65 feet to a point; thence north 45° 14’ 15" west a distance of 111.74 feet to a point; thence north 26° 55’ 31"” west a distance of 65.86 feet to a point; thence north 45° 15’ 35" west a distance of 173.07 feet to a point; thence north 67° 16’ 29"” west a distance of 55.69 feet to a point; thence north 43° 41’ 10" west a distance of 147.82 feet to a point; thence south 44° 44’ 25"” west a distance of 96.04 feet to a point; thence north 43° 41’ 10"” west a distance of 61.10 feet to a point; thence south 44° 44’ 25"” west a distance of 54.02 feet to a point; thence north 43° 41’ 10" west a distance of 243.31 feet to a point; thence north 89° 44’ 25"” east a distance of 859.13 feet to a point; thence south 03° 16’ 50" west a distance of 544.30 feet to a point; thence south 85° 33’ 10" east a distance of 80.00 feet to a point; thence south 03° 16’ 50" west a distance of 190.00 feet to the point and place of beginning and containing 6.27 acres, more or less.

Section 4. Validity.

This Local Law is adopted under the authority granted to the Town Board of the Town of Amherst pursuant to §§10(1)(ii)(a)(12), 20 and 27 of the Municipal Home Rule Law and §265 of the Town Law of the State of New York.

The invalidity of any provision of this Local Law shall not affect the validity of any other provision of this Local Law that can be given effect without such invalid provision.

Section 5. Effective Date.

This Local Law shall take effect immediately when it is filed in the Office of the Secretary of State in accordance with Section 27 of the Municipal Home Rule Law and published pursuant to Sections 130 & 133 of the Town Law and Chapter 28 of the Code of the Town of Amherst.

Francina J. Spoth
Town Clerk
Town of Amherst
County of Erie, State of New York

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

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MEMBER
ACEC New York

July 27, 2011
Project No. BE-11-075

BHNT Architects, P.C.
2495 Main Street, Suite 434
Buffalo, New York
14214

Attention: Mr. Gregory C. Usewicz

Re: Geotechnical Engineering Report for
Proposed Medical Office Building
4100 Sheridan Drive
Amherst, New York

Dear Mr. Usewicz:

Empire Geo-Services, Inc. is pleased to submit two copies of the enclosed Geotechnical Engineering Report for the above referenced project. An electronic pdf file copy of the report has also been e-mailed to you for your use and distribution as appropriate.

Please contact the undersigned should you have any questions or wish to discuss this report. Thank you for considering Empire for this work and we look forward to working with you in the future.

Sincerely,

EMPIRE GEO-SERVICES, INC.

Thomas R. Seider, P.E.
Senior Geotechnical Engineer

Enc.: Geotechnical Engineering Report (2 copies)

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

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MEMBER
ACEC New York

Geotechnical Engineering Report
for
Proposed Medical Office Building
4100 Sheridan Drive
Amherst, New York

Prepared For:

BHNT Architects, P.C.
2495 Main Street, Suite 434
Buffalo, New York
14214

Prepared By:

Empire Geo-Services, Inc.
5167 South Park Avenue
Hamburg, New York
14075



Project No. BE-11-075
July 2011

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

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1.00 INTRODUCTION

1.10 GENERAL

This report presents the results of a subsurface exploration and geotechnical engineering evaluation completed by Empire Geo-Services, Inc. (Empire) for the proposed Medical Office Building, planned at 4100 Sheridan Drive, in Amherst, New York. The approximate site location is shown on Figure 1.

BHNT Architects, P.C. (BHNT) retained Empire to complete the subsurface exploration program and provide geotechnical engineering recommendations for the proposed project. SJB Services, Inc. (SJB), Empire's affiliated drilling company, completed 13 test borings at the project site. On this basis, Empire prepared this report, which summarizes the subsurface conditions encountered by the test borings and presents geotechnical recommendations for design and construction of the foundations, slab-on-grade and pavement construction, and the associated site preparation work. This work was completed in general accordance with our June 7, 2011 proposal, as authorized on June 20, 2011.

1.20 SITE AND PROJECT DESCRIPTION

The project site is located at 4100 Sheridan Drive, northeast of the existing Courtyard Hotel. The project site consists of an open filed covered with tall grasses. The ground surface is relatively level with surface elevations at the test borings ranging from 597.5 feet to 599.0 feet, based on the benchmark datum described below.

Based on the information provided by BHNT, and Siracuse Engineers, P.C. (Structural Engineer for the project), the project will include the construction of a thee story, approximate 90,000 square feet, steel framed structure, with a slab-on-grade floor. No basement or pit structures are planned. The finished floor elevation has not been established but is expected to be near the existing site grades. New asphalt concrete pavement parking areas and driveways will be constructed within portions of the site not occupied by the building. Traffic is expected to consist mainly of automobiles with occasional delivery trucks. Figure 2 shows the major components of the planned site development and the approximate test boring locations.

2.00 SUBSURFACE EXPLORATION

The subsurface exploration program consisted of 13 test borings, designated as B-1 through B-13, completed by SJB between July 11th, and July 17th, 2011. The

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exploration locations were selected by BHNT and Siracuse Engineers, P.C. (Siracuse), and staked in the field by SJB using tape measurements referenced to the existing hotel. The approximate test boring locations are shown on Figure 2. Optical survey techniques were utilized to determine the surface elevations at the test borings using the finished floor of the existing hotel, at the northeast entrance, as a benchmark. The approximate benchmark location is shown on Figure 2 and has a reported elevation of 599.5 feet.

The test borings were made with a Diedrich D-50, rubber track mounted drill rig, using hollow stem auger and split spoon sampling techniques. Split spoon samples and Standard Penetration Tests (SPTs) were taken continuously to a depth of 12 feet and in intervals of five feet or less for the remaining depth of the test borings. Split spoon samples and SPTs were completed in general accordance with *ASTM D1586 – "Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils"*.

Test borings B-1, B-2, B-8, and B-13 were drilled and sampled through the overburden, until encountering auger refusal conditions at the top of apparent bedrock, at depths ranging from 42.5 feet to 45.8 feet. Test boring B-7 was completed to a depth of 35.8 feet where sample spoon refusal conditions where encountered and test boring B-12 was completed to a depth of 30.2 feet where auger refusal conditions were encountered. These shallower refusal conditions do not appear to represent the top of bedrock. The remaining test borings were completed to a depth of 30 feet.

Following auger refusal within test borings B-1, B-8, and B-13, the refusal material was cored 5 feet in general accordance with *ASTM D 2113 – "Standard Practice for Rock Core Drilling and Sampling of Rock for Site Investigation"* using a "NQ 2" size core barrel.

A Geologist prepared the test boring logs based on visual observations of the recovered soil samples and bedrock core, along with a review of the driller's field notes. The soil samples were described based on a visual/manual estimation of the grain size distribution, along with characteristics such as color, relative density, consistency, moisture, etc. The recovered rock core was also described, including characteristics such as color, rock type, hardness, weathering, bedding thickness, core recovery, and rock quality designation (RQD). The test boring logs are presented in Appendix A, along with general information and a key of terms and symbols used to prepare the logs.

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3.00 SUBSURFACE CONDITIONS

3.10 GENERAL

The general stratigraphy encountered at the test borings consisted of fill soils at the surface followed by an upper stratum of silty clay and clayey silt. Beneath the upper cohesive soils, the soils become granular, consisting of silty sands and sandy silts with varying amounts of gravel. Shale and Gypsum bedrock was encountered at a depth of about 43 to 46 feet. The soil stratigraphy encountered along with the groundwater conditions observed are described in more detail below, in order of increasing depth below the existing ground surface, and on the test boring logs presented in Appendix A.

3.20 FILL SOILS

Fill soils were encountered within each of the test borings and typically extended to a depth of about 2 to 4 feet, except at test boring B-12 where the fill extended to a depth of about 6 feet. The fill soils generally consisted of sandy silt and clayey silt, with lesser amounts of silty sand. Trace amounts of organics or wood were observed within 5 of the 13 test borings and a majority of the fill soils were described, at least partially, as having a black color.

Within test boring B-7 at a depth of 2 to 4 feet, a zone of organic clayey silt was encountered. Within test boring B-12 at a depth of 2 to 4 feet, the fill was noted to contain "and" organics. At the time of this report, these two soils samples were being tested for organic content in accordance with *ASTM D-2974 – "Moisture, Ash, and Organic Matter of Peat and Other Organic Soils"*. The laboratory test data will be forwarded when complete.

In addition to the organics, trace amounts of concrete fragments, asphalt fragments, or brick fragments were observed within most of the fill soils. The Standard Penetration Test (SPT) "N" values obtained within the fill soils ranged from 6 to 44, suggesting the fill was installed in an uncontrolled manner.

3.30 INDIGENOUS SOILS

The upper most indigenous soils encountered beneath the fill layer, consisted of cohesive silty clay and clayey silt soils. These upper soils are classified as a CL and ML group soil using the Unified Soil Classification System (USCS). The Standard Penetration Test "N" values obtained within this stratum ranged from 4 to 24, but typically exceeded 9 indicating the soils are generally have a "stiff" to "very stiff" consistency with some isolated softer zones.

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Beneath a depth of about 20 to 25 feet, the soils become more granular and are identified as a: silty sand; silty sand and gravel; silty gravel and sand; or sandy silt. These soils are classified as a SM, SW-SM, GW-GM, and ML group soil using the USCS. The SPT "N" values obtained within these soils ranged from 12 to "refusal conditions" (i.e. more than 50 blows required to advance the sample spoon six inches or less), indicating the non-cohesive granular soils have a "firm" to "very compact" relative density.

3.40 REFUSAL CONDITIONS AND BEDROCK

Auger refusal conditions were encountered within test borings B-1, B-2, B-8, and B-13 at a depth ranging from 42.5 feet to 45.8 feet, suggesting the top of bedrock was encountered. Sample spoon refusal or auger refusal was also encountered within test borings B-7 and B-12, although at a shallower depth. These shallower depths to refusal appear to be the result of encountering a boulder or very compact soils.

After encountering auger refusal within test borings B-1, B-8, and B-13, five feet of bedrock coring was performed. The recovered rock core is described as soft to medium hard, sound, thinly bedded to bedded, gray Shale and white Gypsum bedrock. The core recoveries ranged from 50% to 82% and the rock quality designation (RQD) values ranged from 0% to 50% indicating a "very poor" to "poor" rock mass quality.

3.50 GROUNDWATER CONDITIONS

Water level measurements were made in most of the test borings at the completion of overburden drilling and soil sampling. In addition, test borings B-2, B-8, and B13 were completed during two days, allowing for the water level to stabilize within the augers overnight. These measurements are noted on the subsurface exploration logs in Appendix A.

Within test borings B-6, B-10, B-11, and B-12, no free standing water was encountered at the completion of overburden drilling. Within test borings B-3, B-4, B-5, B-7, and B-9, free standing water at the completion of overburden drilling was encountered at depths ranging from 16 feet to 27 feet. These variable depths to groundwater within the test borings suggest the groundwater did not have sufficient time to accumulate or stabilize in the test holes following the completion of drilling operations and the time of measurement.

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As noted, test borings B-2, B-8, and B13 were completed during a 2 day period. At test borings B-2 and B-8, the boring was initially advanced to a depth of 25 feet. The next morning, the water level was about 7.5 feet to 8.5 feet below the ground surface. Test boring B-13 was initially advanced to the top of bedrock. The next morning, the water level was about 23.5 feet below the ground surface. It is not clear why the water level at this location was deeper than that observed at test borings B-2 and B-8.

The upper stratum of cohesive silty clays and clayey silts are typically described as having a "moist" soil condition, suggesting the absence of a general groundwater condition. The deeper, more granular soils, are occasionally described as "moist to wet" or "wet", suggesting free standing zones of water. It is possible that the groundwater within the deeper granular soils is partially confined by the overlying cohesive soils. Accordingly, once the cohesive soils are penetrated, the water level then stabilizes into the upper cohesive soils, such as that observed at test borings B-2 and B-8. Installation of groundwater observation wells would be necessary to further evaluate the groundwater conditions at the site.

Although not observed during our investigation, it is possible that some localized zones of perched or trapped groundwater may be present at various times and locations. Perched groundwater conditions would be expected to be more prevalent within the more pervious fill soils, which overlie the less permeable silty clay soils. Perched groundwater conditions can be particularly more prevalent following heavy or extended periods of precipitation and during seasonally wet periods. It should be expected that both perched and general groundwater conditions will vary with location and with changes in soil conditions, precipitation, and seasonal conditions.

4.00 GEOTECHNICAL CONSIDERATIONS AND RECOMMENDATIONS

4.10 GENERAL

The following general considerations and recommendations are provided to assist with planning for the design and construction of the proposed building. More detailed recommendations are presented in subsequent sections of this report.

Based on our analysis of the conditions encountered in the test borings, it is Empire's opinion that spread foundations can be used to support the proposed building. From a geotechnical standpoint, development of the building with spread foundations will be primarily impacted by the variable amounts of fill soils at the project site, and the upper silty clay soils which will limit the allowable bearing capacity to 2,500 pounds per square foot.

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Settlement beneath spread foundations and floor slabs constructed over the existing fill soils can be variable, potentially excessive, and is difficult to predict. Accordingly, to use spread foundations, it will be necessary to remove the existing fill soils and any unsuitable indigenous soils from beneath the foundations and install an engineered fill layer which replaces the fill and unsuitable soils, where necessary. This will require excavations up to 6 to 7 feet deep below existing site grades in some areas.

As an alternative to spread foundations, a deep foundation system consisting of driven piles end bearing on the shale and gypsum bedrock could be considered to support the proposed structure. It is possible that some cobbles, boulders, or very compact sand and gravel soils, encountered beneath a depth of about 25 feet, could pose some difficulties with driven pile installation. Therefore, these conditions should be anticipated by the Contractor and appropriate contingencies planned for.

With regard to the slab-on-grade floor, it is common practice to recommend that the existing fill be removed and replaced with a properly controlled and compacted Suitable Granular Fill material installed beneath the slab-on-grade areas. We understand, however, because up to 6 feet of fill was encountered, it may not be economically practical to remove the fill in its entirety for the floor construction. Therefore, the Owner could consider removing a portion of the existing fill and provide some additional Structural Fill/Subbase Stone beneath the slab-on-grade construction. There are some uncertainties with this approach, such as long-term differential settlement, which could occur with leaving potentially undetected unsuitable fill soils in-place. If the Owner is willing accept these risks, then we recommend the following be implemented as minimum requirements for constructing the slab-on-grade over the existing fill soils.

- Pending the results of the organic content testing, the organic clayey silt encountered within test boring B-7, at a depth of about 2 to 4 feet and the highly organic fill soils encountered within test boring B-12, at a depth of 2 to 4 feet should possibly be removed.
- After removal of the areas with a high percentage of organics, and removal of the surface materials (i.e. organics, grass, topsoil, etc.) the existing fill subgrades must be thoroughly compacted and properly proof rolled, evaluated, and prepared in accordance with our recommendations in Section 4.70.4.

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- The slab-on-grade floor system should be constructed over a minimum 10 inch thick layer of Subbase Stone, where the existing fill remains in-place and the floors are lightly loaded (i.e. office space). The Subbase Stone layer should be increased to a minimum of 18 inches where heavier loads are expected such as storage areas and mechanical rooms.
- Any deleterious materials, such as organics, soft soils, highly voided debris, etc., which are present within the fill soils at the bottom of the subgrade excavation, should be further undercut, removed, and replaced with additional Structural Fill material.
- Any wood or organics observed within the sidewall of the foundation excavations, beneath the proposed slab-on-grade floors, should be removed.
- A suitable stabilization/separation geotextile, such as Mirafi 500X, should be placed between the existing fill subgrade and the overlying Suitable Granular Fill or Subbase Stone layer for the slab-on-grade construction.

If the Owner is not willing to accept the risks with leaving the fill in-place in its current state beneath the slab-on-grade floor, then consideration will need to be given to completely removing the fill soils in the areas beneath the slab-on-grade floors, or using a structural floor slab.

Site filling and grading to establish the building pad and pavement subgrades should be performed in a controlled manner in order to help limit post construction settlement. The on-site soils excavated from other portions of the project site, could potentially be used for filling beneath the floor and beneath the pavement areas, provided they can be installed to the requirements outlined for Suitable Granular Fill, in Appendix B. However, the existing fill soils and the finer grained silty clay and clayey silt indigenous soils will be difficult to work with, especially during seasonally wet periods.

As mentioned above, the potential exists to encounter localized perched groundwater within the fill soils. Perched groundwater seepage generally should be able to be controlled with conventional sump and pump methods of dewatering.

4.20 SPREAD FOUNDATION DESIGN

Spread foundations should bear on suitable, relatively undisturbed, indigenous soil subgrades or on flowable fill placed over suitable indigenous soil subgrades. Suitable indigenous soil bearing grades should consist of the “stiff” silty clay soils, which are free of organics, soft, loose, wet or otherwise deleterious conditions that may be present at the proposed foundation locations and depths. The suitable

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bearing grade depths/elevations that were present at the test boring locations are presented in the following table.

Recommended Suitable Bearing Grade Depth / Elevation for Spread Foundations or Engineered Fill		
Test Boring	Approximate Ground Surface Elevation (feet)	Suitable Bearing Grade Depth / Elevation (feet)
B-1	597.8	5.0 / 592.8
B-2	598.0	2.5 / 595.5
B-3	597.5	4.0 / 593.5
B-4	598.2	3.5 / 594.7
B-5	598.8	4.5 / 594.3
B-6	597.9	3.0 / 594.9
B-7	599.0	4.5 / 594.5
B-8	597.5	5.0 / 592.5
B-9	597.6	4.5 / 593.1
B-10	598.7	6.5 / 592.2
B-11	598.9	5.0 / 593.9
B-12	598.1	6.5 / 591.6
B-13	598.3	4.0 / 594.3

Spread foundations should bear at or below the suitable bearing grades noted above, or they may bear on flowable fill which is placed following excavation to or below these grades. Subsurface conditions away from the test boring locations could vary and require adjustments in the suitable subgrade elevation based on actual conditions encountered at the time of construction. Accordingly, close inspection of the foundation bearing grades by Empire is recommended at the time of construction.

Flowable backfill material, if used, should be a non-swelling type material and should have a minimum 28-day compressive strength (f'c) of 250 pounds per square inch (psi). The flowable backfill should extend at least 12 inches horizontally beyond the foundation limits on all sides where its thickness is less than 3 feet. The flowable backfill should extend at least 18 inches horizontally beyond the foundation limits on all sides where its thickness is more than 3 feet thick.

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It is recommended that continuous footings be at least 2.0 feet in width and column/individual footings should be at least 3.0 feet in width. Exterior foundations should be embedded a minimum of 4.0 feet below finished exterior grades for frost protection. Interior foundations should be embedded a minimum of 2.5 feet below finished interior floor grades to develop adequate bearing capacity. All foundations, however, must bear at or below the suitable bearing grades in accordance with the recommendations above.

Spread foundations constructed on suitable indigenous soil bearing grades or on flowable fill placed over the suitable bearing grades can be sized based on a maximum net allowable bearing pressure of 2,500 pounds per square foot (psf). It is estimated that spread foundations sized and properly constructed in accordance with these recommendations will undergo a total settlement of about 1 inch or less.

4.30 DRIVEN PILE FOUNDATION DESIGN

The Shale and Gypsum bedrock encountered about 43 to 46 feet below the existing ground surface should provide a suitable bearing stratum for supporting the building, using end bearing piles driven to absolute refusal. The piles should be equipped with a driving shoe to limit potential damage when driving into the top of bedrock. Due to the very compact zones of soil, an H-pile (minimum size HP 12x53) or open ended pipe pile with a minimum wall thickness or 0.375 inches is recommend.

A steel pile, driven to absolute refusal at the top of the Shale and Gypsum bedrock, may be designed for an allowable axial capacity equal to 30% of the pile yield strength times the cross sectional area of the pile. On this basis, an HP12 x 53 section (Grade 50 steel), with a cross sectional area of 15.5 in^2, would provide an allowable axial compressive capacity of about 116 tons per pile. Other H-pile sections or steel pipe piles could also be used to obtain a different allowable axial capacity, using the same criteria outlined above.

Steel H-piles or pipe piles driven to absolute refusal at the top of the Shale and Gypsum bedrock and in accordance with our recommendations should undergo insignificant total settlement. Driven piles should be spaced a minimum of 3 pile widths apart, or three feet, whichever is greater. At this spacing, no group reduction factor is considered necessary. All exterior grade beams should be embedded a minimum of 4 feet for frost protection.

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At least 3 to 4 random piles should be dynamically tested in accordance with *ASTM D 4945 – "Standard Test Method for High Strain Dynamic Testing of Piles"* to confirm that the pile capacity has been obtained with an adequate factor of safety (i.e. Factor of Safety of 2.0 or greater as required by the Building Code of New York State). The piles should be tested both during the initial installation and after a minimum 48 hour set up period to verify relaxation at the pile tip does not occur.

4.40 SLAB-ON-GRADE FLOOR DESIGN

As discussed in Section 4.10 above, where the floor is constructed as a slab-on-grade over the existing fill, it is recommended that a minimum of 10 inches of Subbase Stone be placed beneath the slab-on-grade construction for lightly loaded floors. The Subbase Stone layer should be increased to a minimum of 18 inches where heavier loads are expected.

Depending on the subgrade and the proposed floor loading conditions, the recommended minimum Subbase Stone (i.e. Structural Fill) thicknesses are summarized in the following table.

Recommended Subbase Stone Thickness Beneath Slab-on-Grade Floors

Subgrade Condition	Mechanical Rooms and Storage Areas	Lightly Loaded Office Space
Existing fill soil subgrades or areas with Suitable Granular Fill installed over the existing fill soils.	18-inches	10-inches
All existing fill soils removed. Subgrade consisting of 12 to 24 inches of Suitable Granular Fill.	12-inches	6-inches
All existing fill soils removed. Subgrade consisting of more than 24 inches of Suitable Granular Fill.	8-inches	4-inches

If the floors are structurally supported by the deep foundation system, it is recommended a minimum of 4-inches Subbase Stone material be placed beneath the structural slab to provide a suitable working surface to construct the slabs.

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A suitable stabilization/separation geotextile, such as Mirafi 500X, should be placed over the existing fill soil subgrades prior to placement of the Suitable Granular Fill to raise site grades. Where the fill soils are removed and replaced with Suitable Granular Fill, a suitable stabilization/separation geotextile should be placed beneath the Subbase Stone.

In all cases, the existing fill soil subgrades or subgrades after removal of the fill soils, should be thoroughly compacted and properly prepared and evaluated in accordance with our recommendations in Section 4.70.4 prior to placement of the geotextile, Suitable Granular Fill, or Subbase Stone material.

The slab-on-grade floor slabs can be designed using a modulus of subgrade reaction of 150 pounds per cubic inch at the top of the Structural Fill layer.

Where the finished floor grade will be established above the surrounding exterior grades, the use of a moisture barrier does not appear warranted, unless otherwise recommended by the finished flooring manufacturer. It is recommended that the slab-on-grade be constructed such that it floats on the subbase and subgrades and is not structurally connected to, or resting directly on, perimeter walls or column footings in order to limit differential settlement effects.

We note that the above subbase stone thicknesses, in some cases, are not designed for carrying construction vehicle loads. Therefore, it may be desirable for the Contractor to temporarily increase the Subbase Stone thickness within the building pad areas to provide a suitable working surface to stage the construction, carry construction vehicle loads and protect the underlying subgrades. This will be particularly important if construction proceeds during seasonally wet periods. The additional subbase stone material could then be removed in preparation for the actual floor construction and re-used as foundation backfill, pavement area subbase or as otherwise determined appropriate.

4.50 SEISMIC DESIGN CONSIDERATIONS

Based on the subsurface conditions encountered in the test borings, the upper 100 feet of the project site can be classified as Seismic Site Class “D” in accordance with Table 1613.5.2 of the Building Code of New York State (December 2010). Therefore, seismic design may be based on this seismic site classification.

The spectral response accelerations in the project area were obtained by Empire using the United States Geological Survey (USGS) web site application (https://geohazards.usgs.gov/secure/designmaps/us/). The accelerations are based on the 2009 NEHRP Recommended Seismic Provisions, which makes use of the

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

2008 USGS seismic hazard data. The acceleration values obtained from this application were then adjusted, as recommended by the USGS, to obtain the 2% probability in 50 years mapping accelerations, as presented in the NYS Building Code.

Using the site address, the calculated spectral response accelerations for Site Class "B" soils are 0.220g for the short period (0.2 second) response (S_S) and 0.051g for the one second response (S_1). For design purposes, these spectral response accelerations were then adjusted for the Seismic Site Class "D" soil profile determined for the project site.

Accordingly, the adjusted spectral response accelerations for Site Class "D" are as follows:

- Short Period Response (S_{MS}) - 0.352g
- 1 Second Period Response (S_{M1}) - 0.122g

The corresponding five percent damped design spectral response accelerations (S_{DS} and S_{D1}) are as follows:

- S_{DS} - 0.235g
- S_{D1} - 0.081g

4.60 PAVEMENT DESIGN

Pavement design recommendations are provided for a Light Duty Asphalt Concrete Pavement structure which will be used mainly for automobile parking areas. The recommended pavement section is based on the assumption that the subgrades will be prepared as discussed in Section 4.70.4 below.

Light Duty Asphalt Concrete Pavement

- 1.5 inches – Top Course
- 2.5 inches – Binder Course
- 12 to 18 inches – Subbase Course*
- Geotextile
- Prepared Subgrade

*It is recommended to increase the subbase course thickness to 18 inches in the entrance, and drive lanes, which will be subject to more frequent and heavier loads. The subbase can be reduced to 12 inches for the parking areas. It may also be necessary to increase the subbase thickness in some areas to improve subgrade conditions and to promote drainage to underdrains as discussed below.

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Materials for the above pavement structure components should consist of the following:

A. Asphalt Concrete Top Course - NYSDOT Standard Specifications, Item No. 403.198902 - Hot Mix Asphalt, Type 7 Top Course.

B. Asphalt Concrete Binder Course - NYSDOT Standard Specifications, Item No. 403.138902 - Hot Mix Asphalt, Type 3 Binder Course.

C. Subbase Course – Should comply with NYSDOT Standard Specifications, Item No. 304.12 - Type 4 Subbase.

D. Geotextile - Woven polypropylene stabilization/separation geotextile (i.e., Mirafi 500X or approved suitable equivalent).

Proper grading and drainage of the subgrades is recommended to help limit potential frost action and improve pavement structure life and performance. Accumulation of water on pavement subgrades can be limited by grading the subgrade to a slope of at least 2 percent. Under-drains or adjacent drainage swales are recommended to drain the pavement subgrades and the subbase layer.

4.70 SITE PREPARATION AND CONSTRUCTION

4.70.1 Construction Dewatering

Construction dewatering will be required for surface water control and for excavations, which encounter perched groundwater conditions, particularly for the deeper excavations necessary to remove the fill soils. Surface water should be diverted away from and prevented from accumulating on exposed soil subgrades. The exposed soil subgrades will be susceptible to strength degradation in the presence of excess moisture. Surface water should be controlled with diversion berms, swales, and proper site grading.

Excavation dewatering should be implemented in conjunction with excavation work such that the work generally proceeds in the dry. Groundwater levels should be maintained below the proposed excavation bottom. It is anticipated that sump and pump methods of dewatering should generally be sufficient to control surface water and perched groundwater conditions, should they be encountered. The Contractor should consider excavating some test pits in advance of the construction to help determine the dewatering means and methods that will be required.

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4.70.2 Excavation for Spread Foundations, Grade Beams, and Pile Caps

Excavation for spread foundations, grade beams, and pile cap construction should be performed using a method which reduces disturbance to the subgrade soils, such as a backhoe equipped with a smooth blade bucket. Depending on the Owners selection of the foundation type as described above, the foundation elements should bear on suitable subgrade materials and any unsuitable soils encountered should be removed in their entirety. Any ridges or loose soil left by machine excavation should be manually trimmed and removed prior to constructing these structures. The proposed foundation bearing grades should be observed and evaluated by a representative of Empire, prior to placement of engineered fill and/or the foundation.

Subgrades for spread foundations, grade beam, and pile cap construction should be protected from precipitation and surface water. Water should not be allowed to accumulate on the soil subgrades and the subgrades should not be allowed to freeze, either prior to or after construction of foundations. If subgrades are not protected and degrade, they must be undercut/removed accordingly.

Where spread foundations are constructed directly on suitable subgrades, placement of a nominal 2 to 3-inch thick, lean concrete (f'c > 500 psi) "mud mat", following observation of the bearing grade, should be considered to protect the bearing grade where the foundation cannot be constructed on the same day the excavation is made, particularly during periods of wet or inclement weather.

Spread foundations, as well as grade beam and pile cap excavations should be backfilled as soon as possible and prior to construction of the superstructure. It is recommended that foundation excavations, within slab-on-grade and pavement areas be backfilled with a Structural Fill or Suitable Granular Fill, as recommended in Appendix B. Suitable on-site soils may be used for foundation backfill in exterior non-loaded landscape areas provided the on-site soil can be properly compacted as recommended in Appendix B.

4.70.3 Driven Pile Construction and Testing

The H-piles or pipe piles should be driven to absolute refusal, into the Shale and Gypsum bedrock, using a pile hammer having a suitable energy rating. The pile driving criteria should be confirmed by the contractor through the use of the wave equation, based on the actual pile, pile hammer and cushions that will be used, to determine the final driving criteria and that adequate stresses can be developed in the pile to confirm its capacity through dynamic testing and to determine that the pile will not be overstressed during driving. Pile stresses should not exceed 85% of

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the pile yield stress. Plumbness of the piles should be maintained within 1% of the total length. Any misaligned or damage piles should be replaced.

Absolute refusal should be defined as when about 5 blows have been recorded for less than ¼ inch of pile penetration and the pile reaches the anticipated bedrock elevation. At least 3 to 4 random piles should be dynamically tested in accordance with *ASTM D 4945 – "Standard Test Method for High Strain Dynamic Testing of Piles"* to confirm the driving criteria and to evaluate that the pile capacity has been obtained with an adequate factor of safety (i.e. Factor of Safety of 2.0 or greater). The dynamic testing should also include piles which are suspect of not having been seated on bedrock. The piles should be tested both during the initial installation and after a minimum 48 hour set up period to verify relaxation at the pile tip does not occur.

A qualified individual should observe all pile driving and should prepare an individual pile driving report for each pile installed. The report should include, pile number and location, hammer and cushion types, pile size and material, installed length, blows per foot, unusual conditions encountered during driving, top of pile elevation following driving and notes on any necessary re-striking. Installed piles should be monitored for potential heaving during installation of adjacent piles. Any piles that heave should be re-driven and reseated as appropriate.

4.70.4 Subgrade Preparation for Slab-on-Grade and Pavement Construction

Existing vegetation, organic soils, and any other deleterious materials within the proposed pavement and slab-on-grade areas should be removed. Following stripping of the surface materials and any required excavation to the proposed subgrade, the exposed subgrades should thoroughly compacted and proof-rolled. The proof-rolling should be performed prior to any required fill placement, using a smooth drum roller weighing at least 7 tons. The roller should be operated in the static mode and complete at least two passes over the exposed subgrades.

The subgrade proof-rolling should be done under the guidance of, and observed by, a representative of Empire. Any areas which appear wet, loose, soft, unstable or otherwise unsuitable, should be undercut. Over excavation, which may be required as the result of the proof-rolling, should be performed based on evaluation of the conditions by Empire. Resulting over-excavations should be backfilled with a controlled Structural Fill as described in Appendix B.

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Suitable Granular Fill, as described in Appendix B, can be used as subgrade fill to raise the site grades, beneath the Subbase Stone course for the slab-on-grade and pavement construction. It is recommended that utility trenches located within the slab-on-grade and pavement areas be backfilled with controlled Structural Fill.

During construction the contractor should take precautions to limit construction traffic over the subgrades for the pavement construction. Any subgrades, which become damaged, rutted or unstable should be undercut and repaired as necessary prior to placement of the overlying fill courses.

5.00 CONCLUDING REMARKS

This report was prepared to assist in planning the design and construction of the proposed Medical Office Building, planned at 4100 Sheridan Drive, in Amherst, New York. The report has been prepared for the exclusive use of BHNT Architects, P.C., Siracuse Engineers, P.C., and other members of the design team, for specific application to this site and this project only.

The recommendations were prepared based on Empire Geo-Services, Inc.'s understanding of the proposed project, as described herein, and through the application of generally accepted soils and foundation engineering practices. No warranties, expressed or implied are made by the conclusions, opinions, recommendations or services provided.

Empire Geo-Services, Inc. should be informed of any changes to the planned construction so that it may be determined if any changes to the recommendations presented in this report are necessary. Empire Geo-Services, Inc. should also review final plans and specifications to verify that the recommendations were properly interpreted and implemented.

Important information regarding the use and interpretation of this report is presented in Appendix C.

Respectfully Submitted:

EMPIRE GEO-SERVICES, INC.

Thomas R. Seider, P.E.
Senior Geotechnical Engineer

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

FIGURES

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)



NOTE:
SITE LOCATION PLAN DEVELOPED
FROM MICROSOFT STREETS & TRIPS 2006

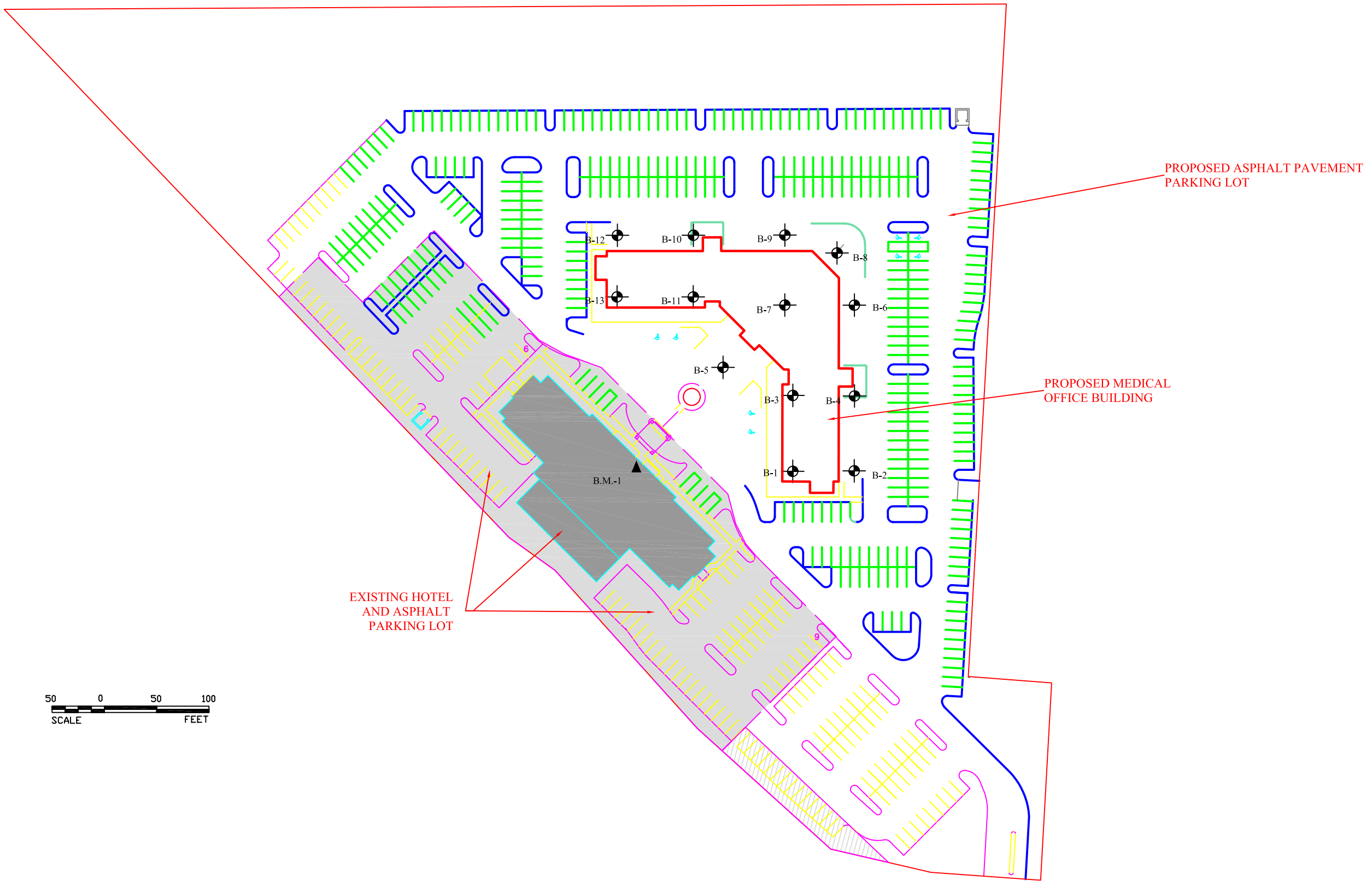
EMPIRE GEO SERVICES INC
a subsidiary of SJB Services, Inc.

PROPOSED MEDICAL OFFICE BUILDING
4100 SHERIDAN DRIVE
AMHERST, NEW YORK

SITE LOCATION PLAN

DR BY: BFS	SCALE: NTS	PROJ NO.: BE-11-075
CHKD BY: TRS	DATE: 07/26/11	FIGURE NO: 1

Attachment: Z-2022-07_application_09222 (26078 : Z-2022-07)



LEGEND:

B-1 ⊕ INDICATES APPROXIMATE LOCATION AND DESIGNATION OF TEST BORING.

B.M. ▲ BENCHMARK: FINISHED FLOOR OF EXISTING HOTEL, REPORTED ELEVATION = 599.50 FEET.

N

NOTE:

SUBSURFACE EXPLORATION PLAN DEVELOPED FROM "WORKING SITE PLAN" PREPARED BY BHNT ARCHITECTS, P.C.

PROPOSED MEDICAL OFFICE BUILDING
4100 SHERIDAN DRIVE
AMHERST, NEW YORK

DR BY: BFS	SCALE: AS SHOWN	PROJ NO.: BE-11-075
CHKD BY: TRS	DATE: 07/26/11	FIGURE NO: 2

APPENDIX A

SUBSURFACE EXPLORATION LOGS

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

DATE

STARTED _____

FINISHED _____

SHEET _____ OF _____

SJB SERVICES, INC.
SUBSURFACE LOG

PROJ. No. _____

HOLE No. _____

SURF. ELEV. _____

G.W. DEPTH _____

PROJECT _____ LOCATION _____

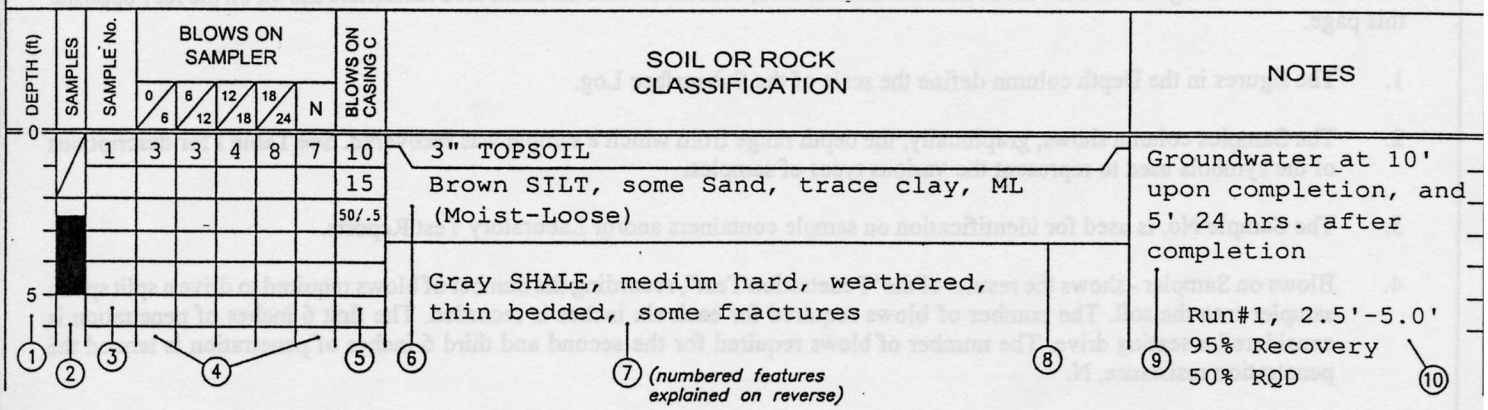


TABLE I

- Split Spoon Sample
- Shelby Tube Sample
- Geoprobe Macro-Core
- Auger or Test Pit Sample
- Rock Core

TABLE II

Identification of soil type is made on basis of an estimate of particle sizes, and in the case of fine grained soils also on basis of plasticity.

Soil Type	Soil Particle Size	
Boulder	>12"	Coarse Grained (Granular)
Cobble	3" - 12"	
Gravel - Coarse	3" - 3/4"	
- Fine	3/4" - #4	
Sand - Coarse	#4 - #10	
- Medium	#10 - #40	
- Fine	#40 - #200	
Silt - Non Plastic (Granular)	<#200	Fine Grained
Clay - Plastic (Cohesive)		

TABLE III

The following terms are used in classifying soils consisting of mixtures of two or more soil types. The estimate is based on weight of total sample.

Term	Percent of Total Sample
"and"	35 - 50
"some"	20 - 35
"little"	10 - 20
"trace"	less than 10

(When sampling gravelly soils with a standard split spoon, the true percentage of gravel is often not recovered due to the relatively small sampler diameter.)

TABLE IV

The relative compactness or consistency is described in accordance with the following terms:

Granular Soils		Cohesive Soils	
Term	Blows per Foot, N	Term	Blows per Foot, N
Very Loose	0 - 4	Very Soft	0 - 2
Loose	4 - 10	Soft	2 - 4
Firm	10 - 30	Medium	4 - 8
Compact	30 - 50	Stiff	8 - 15
Very Compact	>50	Very Stiff	15 - 30
		Hard	>30

(Large particles in the soils will often significantly influence the blows per foot recorded during the penetration test)

TABLE V

Varved	Horizontal uniform layers or seams of soil(s).
Layer	Soil deposit more than 6" thick.
Seam	Soil deposit less than 6" thick.
Parting	Soil deposit less than 1/8" thick.
Laminated	Irregular, horizontal and angled seams and partings of soil(s).

TABLE VI

Rock Classification Term		Meaning
Hardness	- Soft	Scratched by fingernail
	- Medium Hard	Scratched easily by penknife
	- Hard	Scratched with difficulty by penknife
	- Very Hard	Cannot be scratched by penknife
Weathering	- Very Weathered	Judged from the relative amounts of disintegration, iron staining, core recovery, clay seams, etc.
	- Weathered	
	- Sound	

Rock Classification Term		Meaning	
Bedding	- Laminated	(<1")	Natural breaks in Rock Layers
	- Thin Bedded	(1" - 4")	
	- Bedded	(4" - 12")	
	- Thick Bedded	(12" - 36")	
	- Massive	(>36")	

(Fracturing refers to natural breaks in the rock oriented at some angle to the rock layers)

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GENERAL INFORMATION & KEY TO SUBSURFACE LOGS

The Subsurface Logs attached to this report present the observations and mechanical data collected by the driller at the site, supplemented by classification of the material removed from the borings as determined through visual identification by technicians in the laboratory. It is cautioned that the materials removed from the borings represent only a fraction of the total volume of the deposits at the site and may not necessarily be representative of the subsurface conditions between adjacent borings or between the sampled intervals. The data presented on the Subsurface Logs together with the recovered samples provide a basis for evaluating the character of the subsurface conditions relative to the project. The evaluation must consider all the recorded details and their significance relative to each other. Often analyses of standard boring data indicate the need for additional testing or sampling procedures to more accurately evaluate the subsurface conditions. Any evaluation of the contents of this report and recovered samples must be performed by qualified professionals. The following information defines some of the procedures and terms used on the Subsurface Logs to describe the conditions encountered, consistent with the numbered identifiers shown on the Key opposite this page.

1. The figures in the Depth column define the scale of the Subsurface Log.

2. The Samples column shows, graphically, the depth range from which a sample was recovered. See Table I for descriptions of the symbols used to represent the various types of samples.

3. The Sample No. is used for identification on sample containers and/or Laboratory Test Reports.

4. Blows on Sampler - shows the results of the "Penetration Test", recording the number of blows required to drive a split spoon sampler into the soil. The number of blows required for each six inches is recorded. The first 6 inches of penetration is considered a seating drive. The number of blows required for the second and third 6 inches of penetration is termed the penetration resistance, N.

5. Blows on Casing - Shows the number of blows required to advance the casing a distance of 12 inches. The casing size, hammer weight, and length of drop are noted at the bottom of the Subsurface Log. If the casing is advanced by means other than driving, the method of advancement will be indicated in the Notes column or under the Method of Investigation at the bottom of the Subsurface Log. Alternatively, sample recovery may be shown in this column, or other data consistent with the column heading.

6. All recovered soil samples are reviewed in the laboratory by an engineering technician, geologist or geotechnical engineer, unless noted otherwise. Visual descriptions are made on the basis of a combination of the driller's field descriptions and noted observations together with the sample as received in the laboratory. The method of visual classification is based primarily on the Unified Soil Classification System (ASTM D 2487) with regard to the particle size and plasticity (See Table No. II), and the Unified Soil Classification System group symbols for the soil types are sometimes included with the soil classification. Additionally, the relative portion, by weight, of two or more soil types is described for granular soils in accordance with "Suggested Methods of Test for Identification of Soils" by D.M. Burmister, ASTM Special Technical Publication 479, June 1970. (See Table No. III). Description of the relative soil density or consistency is based upon the penetration records as defined in Table No. IV. The description of the soil moisture is based upon the relative wetness of the soil as recovered and is described as dry, moist, wet and saturated. Water introduced into the boring either naturally or during drilling may have affected the moisture condition of the recovered sample. Special terms are used as required to describe soil deposition in greater detail; several such terms are listed in Table V. When sampling gravelly soils with a standard two inch diameter split spoon, the true percentage of gravel is often not recovered due to the relatively small sampler diameter. The presence of boulders and large gravel is sometimes, but not necessarily, detected by an evaluation of the casing and sampler blows or through the "action" of the drill rig as reported by the driller.

7. Rock description is based on review of the recovered rock core and the driller's notes. Frequently used rock classification terms are included in Table VI.

8. The stratification lines represent the approximate boundary between soil types and the transition may be gradual. Solid stratification lines delineate apparent changes in soil type, based upon review of recovered soil samples and the driller's notes. Dashed lines convey a lesser degree of certainty with respect to either a change in soil type or where such change may occur.

9. Miscellaneous observations and procedures noted by the driller are shown in this column, including water level observations. It is important to realize the reliability of the water level observations depends upon the soil type (water does not readily stabilize in a hole through fine grained soils), and that any drill water used to advance the boring may have influenced the observations. The ground water level will fluctuate seasonally, typically. One or more perched or trapped water levels may exist in the ground seasonally. All the available readings should be evaluated. If definite conclusions cannot be made, it is often prudent to examine the conditions more thoroughly through test pit excavations or groundwater observation wells.

10. The length of core run is defined as the length of penetration of the core barrel. Core recovery is the length of core recovered divided by the core run. The RQD (Rock Quality Designation) is the total length of pieces of NX core exceeding 4 inches divided by the core run. The size core barrel used is also noted in the Method of Investigation at the bottom of the Subsurface Log.

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DATE:
STARTED 7/11/2011
FINISHED 7/11/2011
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-1
SURF. ELEV 597.8'
G.W. DEPTH See Notes

PROJECT: Proposed Medical Office Building
PROJ. NO.: BE-11-075
LOCATION: 4100 Sheridan Drive
Amherst, New York

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	7	8			Black-brown SILT, little f-c Sand, trace wood,	
		8	7		16	trace organics (moist, FILL)	
	2	4	5			Brown-black Clayey SILT, trace sand (moist, FILL	
		6	6		11		
5	3	2	3			Red-brown Silty CLAY, trace sand, occasional Silt	
		5	5		8	partings (moist, medium, CL)	
	4	4	4				
		7	5		11	(stiff)	
	5	6	7				Poor Recovery
10		7	6		14		Sample No. 5
	6	4	7				
		7	4		14		
15							
	7	5	7			Red-brown Clayey SILT, little f-c Sand, trace	
		9	2		16	gravel (moist, very stiff, ML)	
20							
	8	4	6			Red-brown Silty CLAY, trace sand, occasional	
		8	5		14	silt partings (moist, stiff, CL)	
25							
	9	4	5			Brown-gray f-c SAND and Clayey Silt,	
		6	7		11	trace gravel (moist, Firm, SC-SM)	
30							
	10	5	6			Brown-gray f-c SAND and Silt, trace gravel	
		6	6		12	(moist, Firm, SM)	
35							
	11	17	21	50/.02	REF	(very compact)	REF = Sample
							Spoon Refusal
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSFIED BY: Geologist

DRILLER: S. Wolkiewicz

DRILL RIG TYPE : Diedrich D-50

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

DATE:
STARTED 7/11/2011
FINISHED 7/11/2011
SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-1
SURF. ELEV 597.8'
G.W. DEPTH See Notes

PROJECT: Proposed Medical Office Building
PROJ. NO.: BE-11-075
LOCATION: 4100 Sheridan Drive
Amherst, New York

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR Rock CLASSIFICATION	NOTES
	12	50/.02			REF	(v. compact)	
							NQ '2' Size Rock Core
45						Gray SHALE Rock, medium hard, sound, thinly bedded, contains occasional Gypsum Partings	Run #1: 43.0' to 48.0' REC = Approximately 50% RQD = 0%
50						BORING COMPLETE AT 48.0 FEET	No Free standing water reading obtained at boring completion
55							
60							
65							
70							
75							
80							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSFIED BY: Geologist

DRILLER: S. Wolkiewicz

DRILL RIG TYPE : Diedrich D-50

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

DATE:
STARTED 7/16/2011
FINISHED 7/17/2011
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-2
SURF. ELEV 598.0'
G.W. DEPTH See Notes

PROJECT: Proposed Medical Office Building
PROJ. NO.: BE-11-075
LOCATION: 4100 Sheridan Drive
Amherst, New York

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	7	5			Yellow-Brown & Black SILT, little f-m Sand,	
		4	4		9	trace organics (moist, FILL)	
	2	7	6			Red-Brown Silty CLAY, trace sand, occasional	
		6	4		12	silt partings (moist, stiff, CL)	
5	3	4	6				
		7	5		13		
	4	7	10				
		10	10		20	Contains trace gravel (v. stiff)	
	5	4	5			Red-Brown Clayey SILT, little f-c Sand, trace	
10		7	8		12	gravel (moist, stiff, ML)	
	6	5	5				
		5	5		10		
15							
	7	3	6				
		7	7		13		
20							
	8	5	5			Red-Brown f-c SAND and Clayey Silt, trace	
		8	7		13	gravel (moist, firm, SC-SM)	
25							
	9	3	4			(moist-wet, loose)	Free standing water recorded at 7.5' with Augers at 25' on 7/16/11 at 0800
		4	3		8		
30							
	10	5	7			Brown-Gray f-c SAND, little f-c Gravel, trace-little	
		8	4		15	silt (wet, firm, SW-SM)	
35							
	11	28	31			Brown f-c SAND, some Silt, little Fine gravel,	
		39	48		70	occasional boulder fragments (moist, v. compact,	
						SM)	
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSFIED BY: Geologist

DRILLER: S. Wolkiewicz

DRILL RIG TYPE : Diedrich D-50

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

DATE:
STARTED 7/16/2011
FINISHED 7/17/2011
SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-2
SURF. ELEV 598.0'
G.W. DEPTH See Notes

PROJECT: Proposed Medical Office Building
PROJ. NO.: BE-11-075
LOCATION: 4100 Sheridan Drive
Amherst, New York

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	12	43	30			Brown-Gray weathered SHALE Rock	
		26	14		56	(wet)	
						BORING COMPLETE WITH AUGER REFUSAL AT 42.5 FEET	Free Standing Water Recorded at 12.2 Feet at Boring Completion
45							
50							
55							
60							
65							
70							
75							
80							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSFIED BY: Geologist

DRILLER: S. Wolkiewicz

DRILL RIG TYPE : Diedrich D-50

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

DATE:
STARTED 7/15/2011
FINISHED 7/15/2011
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-3
SURF. ELEV 597.5'
G.W. DEPTH See Notes

PROJECT: Proposed Medical Office Building
PROJ. NO.: BE-11-075
LOCATION: 4100 Sheridan Drive
Amherst, New York

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	3	3			Brown-Black Clayey SILT, little f-c Sand, trace	
		2	3		5	organics (moist, FILL)	
	2	4	5			Red-Brown Silty CLAY, trace sand (moist, stiff, CL)	
		4	5		9		
5	3	4	5				
		5	5		10		
	4	8	8			(v.stiff)	
		8	8		16		
	5	5	4			Red-Brown Clayey SILT, little-some f-c Sand,	
10		14	8		18	trace gravel (moist, v.stiff, ML)	
	6	7	6			(stiff)	
		5	9		11		
15							
	7	3	8			(v.stiff)	
		12	12		20		
20							
	8	6	7				
		9	11		16		
25							
	9	17	21			Gray-Brown f-c SAND, little f-c Gravel, trace-little	
		32	25		53	Silt (moist-wet, v.compact, SW-SM)	
	10	10	12			(firm)	
30		15	17		27		
						BORING COMPLETE AT 30.0 FEET	Free Standing Water Recorded at 27.2 Feet at Boring Completion
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSFIED BY: Geologist

DRILLER: S. Wolkiewicz

DRILL RIG TYPE : Diedrich D-50

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

DATE:
STARTED 7/15/2011
FINISHED 7/15/2011
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-4
SURF. ELEV 598.2'
G.W. DEPTH See Notes

PROJECT: Proposed Medical Office Building
PROJ. NO.: BE-11-075
LOCATION: 4100 Sheridan Drive
Amherst, New York

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	4	4			Brown-Black SILT, little-some f-c Sand, trace	
		5	4		9	gravel, trace brick (moist, FILL)	
	2	2	3			Brown Clayey SILT, trace-little fine sand	
		5	7		8	(moist, medium, ML)	
5	3	5	9			Red-Brown Silty CLAY, trace sand	
		7	9		16	(moist, v. stiff, CL)	
	4	7	9				
		12	10		21		
	5	2	3			Contains occasional Silt Partings	
10		5	5		8	(moist-wet, medium)	
	6	3	3			Red-Brown Clayey SILT, some f-c Sand, trace	
		5	5		8	gravel (moist, medium, ML)	
15							
	7	5	7			Red-Brown Silty CLAY, trace sand	
		10	10		17	(moist, v. stiff, CL)	
20							
	8	7	7				
		10	12		17		
25							
	9	15	21			Gray-Brown f-c SAND, some-and Silt, trace	
		20	17		41	gravel (moist, compact, SM)	
	10	9	10			(firm)	
30		15	17		25		
						BORING COMPLETE AT 30.0 FEET	Free Standing Water Recorded at 26.5 Feet at Boring Completion
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSFIED BY: Geologist

DRILLER: S. Wolkiewicz

DRILL RIG TYPE : Diedrich D-50

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

DATE:
STARTED 7/13/2011
FINISHED 7/13/2011
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-5
SURF. ELEV 598.8'
G.W. DEPTH See Notes

PROJECT: Proposed Medical Office Building
PROJ. NO.: BE-11-075
LOCATION: 4100 Sheridan Drive
Amherst, New York

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	4	13			Brown f-c SAND and Silt, little f-c gravel, trace	
		31	43		44	brick, trace concrete (moist, Fill)	
	2	8	7			Black-Brown Clayey SILT, little f-c Sand, trace	
		8	8		15	wood (moist, Fill)	
5	3	4	7			Red-Brown Silty CLAY, trace sand	
		7	5		14	(moist, stiff, CL)	
	4	8	6				
		7	5		13		
	5	5	6			Red-Brown f-c SAND, some-and Silt, trace	
10		7	6		13	gravel (moist, firm, SM)	
	6	7	9			Red-Brown Clayey SILT, trace sand, trace gravel	
		8	9		17	(moist, v. stiff, ML)	
15							
	7	7	12			(stiff)	
		12	10		24		
20							
	8	5	4			Contains some f-c Sand	
		6	5		10		
25							
	9	17	19			Gray f-c GRAVEL and f-c Sand, trace-little	
		30	30		49	silt (moist-wet, compact, GW-GM)	
	10	36	30			(v. compact)	
30		25	13		55		
						BORING COMPLETE AT 30.0 FEET	Free Standing Water Recorded at 24.0 Feet at Boring Completion
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSFIED BY: Geologist

DRILLER: S. Wolkiewicz

DRILL RIG TYPE : Diedrich D-50

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

DATE:
STARTED 7/14/2011
FINISHED 7/14/2011
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-6
SURF. ELEV 597.9'
G.W. DEPTH See Notes

PROJECT: Proposed Medical Office Building
PROJ. NO.: BE-11-075
LOCATION: 4100 Sheridan Drive
Amherst, New York

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	5	4			Brown f-c SAND and Silt, little f-c Gravel	
		4	7		8	(moist, FILL)	
	2	4	4			Brown Silty CLAY, trace sand, trace gravel	
		6	7		10	(moist, stiff, CL)	
5	3	3	5				
		5	5		10		
	4	8	9			Becomes Red-Brown (v.stiff)	
		10	8		19		
	5	2	2			(moist-wet, medium)	
10		2	2		4		
	6	3	2			Contains little f-c Sand	
		2	3		4		
15							
	7	4	5			Red-Brown Clayey SILT, little-some f-c Sand	
		5	3		10	(moist, stiff, ML)	
20							
	8	4	7			Brown-Gray f-c SAND, some-and Silt, trace	
		12	16		19	gravel (moist, firm, SM)	
25							
	9	12	15			(compact)	
		17	16		32		
	10	27	17			(moist-wet)	
30		19	15		36		
						BORING COMPLETE AT 30.0 FEET	No Free Standing Water Encountered at Boring Completion
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSFIED BY: Geologist

DRILLER: S. Wolkiewicz

DRILL RIG TYPE : Diedrich D-50

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

DATE:
STARTED 7/13/2011
FINISHED 7/14/2011
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-7
SURF. ELEV 599.0'
G.W. DEPTH See Notes

PROJECT: Proposed Medical Office Building
PROJ. NO.: BE-11-075
LOCATION: 4100 Sheridan Drive
Amherst, New York

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	5	8			Brown-Black f-c SAND and Silt, trace gravel,	
		19	24		27	trace brick, trace concrete (moist, FILL)	
	2	27	17			Black Organic Clayey SILT, trace sand, trace brick	
		7	6		24	(moist, FILL)	
5	3	5	7			Orange-Gray & Brown Silty CLAY, trace sand	
		9	8		16	(moist, v. stiff, CL)	
	4	4	4			Becomes Red-Brown (stiff)	
		6	6		10		
	5	5	5				
10		5	5		10		
	6	9	8			(v. stiff)	
		9	7		17		
15							
	7	3	7			Red-Brown f-c SAND and Silt, trace gravel	
		8	5		15	(moist, firm, SM)	
20							
	8	10	11			Brown-Gray f-c SAND and Clayey Silt, trace	
		9	8		20	gravel (moist, firm, SC-SM)	
25							
	9	20	22			Brown-Gray f-c SAND, some-and Silt, trace	
		31	29		53	gravel (moist, v. compact, SM)	
30							Driller noted "running
	10	9	21			Gray f-c GRAVEL and f-c Sand, trace-little Silt	sands" encountered at
		24	23		45	(wet, compact, GW-GM)	30 to 32 feet
35							
	11	40	50/.03		REF	Red-Brown SILT, little-some f-m Sand	
						(moist, v. compact, ML)	Free Standing Water
							Recorded at 20.0 Feet at
						BORING COMPLETE WITH SAMPLE SPOON	Boring Completion
40						REFUSAL AT 35.8 FEET	

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSFIED BY: Geologist

DRILLER: S. Wolkiewicz

DRILL RIG TYPE : Diedrich D-50

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

DATE:
STARTED 7/14/2011
FINISHED 7/15/2011
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-8
SURF. ELEV 597.5'
G.W. DEPTH See Notes

PROJECT: Proposed Medical Office Building
PROJ. NO.: BE-11-075
LOCATION: 4100 Sheridan Drive
Amherst, New York

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	4	8			Red-Brown & Black f-c SAND, some f-c Gravel,	
		9	9		17	little Silt, trace brick, trace concrete (moist, FILL)	
	2	6	6			Orange-Brown Silty CLAY, trace sand	
		6	6		12	(moist, stiff, CL)	
5	3	2	4				
		5	5		9		
	4	6	8			Red-Brown Clayey SILT, little-some f-c Sand,	
		7	9		15	trace gravel (moist, v. stiff, ML)	
	5	5	5				
10		5	6		10	(stiff)	
	6	7	8				
		5	6		13		
15							
	7	5	7			Red-Brown f-c SAND, some Silt, trace gravel	
		8	8		15	(moist, firm, SM)	
20							
	8	9	12				
		15	20		27		
25							Free standing water recorded at 8.4' on 7/15/11 at 0800 with Augers at 25 feet.
	9	25	50/.04		REF	Becomes Brown-Gray, contains "and" Silt	
30							
							Driller noted "Running Sands" Encountered at 30.0 Feet
35							
	10	35	50/.04		REF	Brown-Gray fine SAND and Silt, trace gravel	
						(moist, v. compact, SM)	REF = Sample Spoon Refusal
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSFIED BY: Geologist

DRILLER: S. Wolkiewicz

DRILL RIG TYPE : Diedrich D-50

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

DATE:
STARTED 7/14/2011
FINISHED 7/15/2011
SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-8
SURF. ELEV 597.5'
G.W. DEPTH See Notes

PROJECT: Proposed Medical Office Building
PROJ. NO.: BE-11-075
LOCATION: 4100 Sheridan Drive
Amherst, New York

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	11	33	30	50/.04	REF	Red-Brown Clayey SILT, some f-c Sand, trace gravel, trace shale fragments (moist, hard, ML)	
							NQ '2' Size Rock Core
45						Gray & White GYPSUM and Shale, soft to medium hard, sound, thinly bedded	Run #1: 43.0' to 48.0' REC = Approximately 50% RQD = 0%
50						BORING COMPLETE AT 48.0 FEET	Free Standing Water Encountered at 2.0 Feet After Coring
55							
60							
65							
70							
75							
80							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSFIED BY: Geologist

DRILLER: S. Wolkiewicz

DRILL RIG TYPE : Diedrich D-50

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

DATE:
STARTED 7/13/2011
FINISHED 7/13/2011
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-9
SURF. ELEV 597.6'
G.W. DEPTH See Notes

PROJECT: Proposed Medical Office Building
PROJ. NO.: BE-11-075
LOCATION: 4100 Sheridan Drive
Amherst, New York

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	4	5			Black Clayey SILT, little-trace sand	
		3	2		8	(moist, FILL)	
	2	3	3				
		3	4		6		
5	3	5	5			Red-Brown Silty CLAY, trace sand	
		10	10		15	(moist, stiff, CL)	
	4	8	10				
		12	10		22	(v. stiff)	
	5	4	6				
10		6	7		12	(stiff)	
	6	5	6				
		7	7		13	(moist-wet)	
15							
	7	3	7			Red-Brown Clayey SILT, little-some f-c Sand,	
		9	10		16	trace gravel (moist, v. stiff, ML)	
20							
	8	5	9			Red-Brown Silty CLAY, trace sand, occasional	
		9	10		18	silt partings and seams (moist, v. stiff, CL)	
25							
	9	9	12			Brown-Gray f-c SAND and Silt, trace gravel	
		14	15		26	(moist, firm, SM)	
	10	15	15			Gray f-c SAND, little Fine Gravel, trace-little Silt	
30		21	19		36	(wet, compact, SW-SM)	
						BORING COMPLETE AT 30.0 FEET	Free Standing Water Recorded at 16.0 Feet at Boring Completion
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSFIED BY: Geologist

DRILLER: S. Wolkiewicz

DRILL RIG TYPE : Diedrich D-50

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

DATE:
STARTED 7/12/2011
FINISHED 7/12/2011
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-10
SURF. ELEV 598.7'
G.W. DEPTH See Notes

PROJECT: Proposed Medical Office Building
PROJ. NO.: BE-11-075
LOCATION: 4100 Sheridan Drive
Amherst, New York

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	4	5			Brown-Gray f-c SAND and Concrete Fragments,	
		6	6		11	little Silt, trace brick, trace wood (moist, FILL)	
	2	5	5			Brown-Black Silty CLAY, trace sand, trace	
		4	6		9	organics (moist, FILL)	
5	3	2	2			Brown & Orange Brown Mottled Silty CLAY,	
		3	5		5	trace sand (moist, medium, CL)	
	4	2	5				
		5	4		10	Becomes Red-Brown (stiff)	
	5	5	7				
10		8	5		15	Contains occasional Silt partings and seams	
	6	7	9			Red-Brown Clayey SILT, little-some f-c Sand	
		10	13		19	(moist, v. stiff, ML)	
15							
	7	4	7			Becomese Brown-Gray (stiff)	
		8	7		15		
20							
	8	8	8			Brown-Gray f-c SAND and Silt, little f-c Gravel	
		9	7		17	(moist, firm, SM)	
25							
	9	11	11				
		13	12		24		
30						Brown Silty CLAY, trace sand, occasional	
	10	9	9			Silt partings (moist, v. stiff, CL)	
		11	10		20		
						BORING COMPLETE AT 32.0 FEET	No Free Standing Water Encountered at Boring Completion
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSFIED BY: Geologist

DRILLER: S. Wolkiewicz

DRILL RIG TYPE : Diedrich D-50

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

DATE:
STARTED 7/13/2011
FINISHED 7/13/2011
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-11
SURF. ELEV 598.9'
G.W. DEPTH See Notes

PROJECT: Proposed Medical Office Building
PROJ. NO.: BE-11-075
LOCATION: 4100 Sheridan Drive
Amherst, New York

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	6	7			Brown SILT, some f-c Sand, trace gravel, trace	
		5	3		12	wood (moist, FILL)	
	2	5	3			Contains trace brick, trace asphalt fragments	
		3	3		6		
5	3	4	4			Brown Silty CLAY, trace sand (moist, stiff, CL)	
		6	7		10		
	4	6	7				
		8	8		15		
	5	5	4			Becomes Red-Brown, contains occasional	
10		6	9		10	Silt seams	
	6	7	8			(v. stiff)	
		8	5		16		
15							
	7	6	6			Brown-Gray Clayey SILT, little f-c Sand	
		5	6		11	(moist, stiff, ML)	
20							
	8	7	4				
		5	12		9		
25							
	9	2	2			Brown-Gray f-c SAND and Clayey Silt, trace	
		5	7		7	gravel (moist, loose, SC-SM)	
	10	14	23			Brown-Gray Fine SAND, some Silt	
30		30	49		53	(moist, v. compact, SM)	
						BORING COMPLETE AT 30.0 FEET	No Free Standing Water Encountered at Boring Completion
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSFIED BY: Geologist

DRILLER: S. Wolkiewicz

DRILL RIG TYPE : Diedrich D-50

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

DATE:
STARTED 7/12/2011
FINISHED 7/12/2011
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-12
SURF. ELEV 598.1'
G.W. DEPTH See Notes

PROJECT: Proposed Medical Office Building
PROJ. NO.: BE-11-075
LOCATION: 4100 Sheridan Drive
Amherst, New York

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	8	6			Brown-Black Clayey SILT, little f-c Sand, trace	
		5	5		11	gravel, trace brick (moist, FILL)	
	2	2	3				
		3	4		6	Becomes Black, contains "and" organics	
5	3	2	2			Orange-Brown Silty CLAY, trace sand	
		4	7		6	(moist, FILL)	
	4	5	6			Orange-Brown Silty CLAY, trace sand	
		6	6		12	(moist, stiff, CL)	
	5	5	5				
10		5	5		10	Becomes Red-Brown	
	6	8	10				
		9	11		19	(v. stiff)	
15							
	7	2	5				
		5	8		10	(stiff)	
20							
	8	6	8			Red-Brown Clayey SILT, some-and f-c Sand,	
		7	12		15	trace gravel (moist, stiff, ML)	
25							
	9	12	15			(hard)	
		17	19		32		
30							No Recovery Sample #10
	10	50/.02			REF	BORING COMPLETE WITH SPOON AND AUGER REFUSAL AT 30.2 FEET	
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSFIED BY: Geologist

DRILLER: S. Wolkiewicz

DRILL RIG TYPE : Diedrich D-50

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

DATE:
STARTED 7/11/2011
FINISHED 7/12/2011
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-13
SURF. ELEV 598.3'
G.W. DEPTH See Notes

PROJECT: Proposed Medical Office Building
PROJ. NO.: BE-11-075
LOCATION: 4100 Sheridan Drive
Amherst, New York

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	6	8			Brown-Black SILT, little-some f-c Sand, trace	
		7	5		15	gravel, trace concrete (moist, fill)	
	2	17	50/.02		REF		
5	3	7	7			Orange-Brown Clayey SILT, trace sand	
		5	7		12	(moist, stiff, ML)	
	4	12	10				
		11	9		21	(v. stiff)	
	5	4	7			Red-Brown Silty CLAY, trace sand	
10		6	7		13	(moist, stiff, CL)	
	6	9	7				
		8	6		15		
15	7	2	2			(medium)	
		3	7		5		
20	8	12	14			Red-Brown f-c SAND and Silt, trace	
		15	41		29	gravel (moist, firm, SM)	
25	9	7	9				
		15	17		24		
30	10	20	21			(compact)	
		18	17		39		
35	11	24	25				
		22	21		47		
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSFIED BY: Geologist

DRILLER: S. Wolkiewicz

DRILL RIG TYPE : Diedrich D-50

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

DATE:
STARTED 7/11/2011
FINISHED 7/12/2011
SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-13
SURF. ELEV 598.3'
G.W. DEPTH See Notes

PROJECT: Proposed Medical Office Building
PROJ. NO.: BE-11-075
LOCATION: 4100 Sheridan Drive
Amherst, New York

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	12	12	15			(firm)	
		14	12		29		
45						(v. compact)	NQ '2' Size Rock Core
	13	17	50/.03		REF		
						Gray SHALE Rock, medium hard, sound, thinly bedded to bedded, contains occasional gypsum seams	Run #1: 45.8' to 50.8' REC = 82% RQD = 50%
50							
						BORING COMPLETE AT 50.8 FEET	No Free Standing Water Encountered at completion of overburden drilling. Free Standing Water Recorded at 23.5 Feet At 0730 on 7-12-11 With augers at 45.8 Feet Free Standing Water Recorded at 5.2 Feet After Coring
55							
60							
65							
70							
75							
80							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSFIED BY: Geologist

DRILLER: S. Wolkiewicz

DRILL RIG TYPE : Diedrich D-50

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

APPENDIX B
FILL MATERIAL AND EARTHWORK RECOMMENDATIONS

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

APPENDIX B

FILL MATERIAL AND EARTHWORK RECOMMENDATIONS

I. Material Recommendations

A. Structural Fill

Structural Fill should consist of a crusher run stone, free of clay, organics and friable or deleterious particles. As a minimum, the crusher run stone should meet the requirements of New York State Department of Transportation, Standard Specifications, Item 304.12 – Type 2 Subbase, with the following gradation requirements.

Sieve Size Distribution	Percent Finer by Weight
2 inch	100
¼ inch	25-60
No. 40	5-40
No. 200	0-10

B. Subbase Stone

The subbase stone course placed as the aggregate course beneath the slab-on-grade construction should conform to the same material requirements as Structural Fill as stated above.

C. Suitable Granular Fill

Suitable soil material, well graded from coarse to fine, and classified as GW, GP, GM, SW, SP and SM soils using the Unified Soil Classification System (ASTM D-2487) and having no more than 85 percent by weight material passing the No. 4 sieve, no more than 20 percent by weight material passing the No. 200 sieve and which is generally free of particles greater than 6 inches, will be acceptable as Suitable Granular Fill. It should also be free of topsoil, asphalt, concrete rubble, wood, debris, clay and other deleterious materials. Suitable Granular Fill can be used as foundation backfill and as subgrade fill to raise site grades beneath slab-on-grade and pavement construction.

Material meeting the requirements of New York State Department of Transportation, Standard Specifications, Item 203.07 – Select Granular Fill or Item 203.20 Select Granular Subgrade is acceptable for use as Suitable Granular Fill.

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

II. Placement and Compaction Requirements

All controlled fill placed beneath foundations, slab-on-grade construction, and beneath utilities should be compacted to a minimum of 95 percent of the maximum dry density as measured by the modified Proctor test (ASTM D1557). Fill placed in non-loaded grass areas can be compacted to a minimum of 90 percent of the maximum dry density (ASTM D1557).

Placement of fill should not exceed a maximum loose lift thickness of 6 to 9 inches with the exception of subbase courses beneath slab-on-grade and pavement construction, which can be placed in a single lift not exceeding 12 inches. The loose lift thickness should be reduced in conjunction with the compaction equipment used so that the required density is attained.

Fill should have a moisture content within two percent of the optimum moisture content prior to compaction. Subgrades should be properly drained and protected from moisture and frost. Placement of fill on frozen subgrades is not acceptable. It is recommended that all fill placement and compaction be monitored and tested by a representative of Empire Geo-Services, Inc.

III. Quality Assurance Testing

The following minimum laboratory and field quality assurance testing frequencies are recommended to confirm fill material quality and post placement and compaction conditions. These minimum frequencies are based on generally uniform material properties and placement conditions. Should material properties vary or conditions at the time of placement vary (i.e. moisture content, placement and compaction, procedures or equipment, etc.) Then additional testing is recommended. Additional testing, which may be necessary, should be determined by qualified geotechnical personnel, based on evaluation of the actual fill material and construction conditions.

A. Laboratory Testing of Material Properties

- Moisture content (ASTM D-2216) - 1 test per 4,000 cubic yards or no less than 2 tests per each material type.

- Grain Size Analysis (ASTM D-422) - 1 test per 4,000 cubic yards or no less than 2 tests per each material type.

- Liquid and Plastic Limits (ASTM D-4318) 1 test per 4,000 cubic yards or no less than 2 tests per each material type. Liquid and Plastic Limit testing is necessary only if appropriate, based on material composition (i.e. clayey or silty soils).

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

- Modified Proctor Moisture Density Relationship (ASTM D-1557) 1 test per 4,000 cubic yards or no less than 1 test per each material type. A maximum/minimum density relationship (ASTM D-4253 and ASTM D-4254) may be an appropriate substitute for ASTM D-1557 depending on material gradation.

B. Field In-Place Moisture/Density Testing (ASTM D-3017 and ASTM D-2922)

- Backfilling along trenches and foundation walls - 1 test per 50 lineal feet per lift.

- Backfilling Isolated Excavations (i.e. column foundations, manholes, etc.) 1 test per lift.

- Filling in open areas for slab-on-grade and pavement construction - 1 test per 2,500 square feet per lift.

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

APPENDIX C
GEOTECHNICAL REPORT LIMITATIONS

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)

GEOTECHNICAL REPORT LIMITATIONS

Empire Geo-Services, Inc. (Empire) has endeavored to meet the generally accepted standard of care for the services completed, and in doing so is obliged to advise the geotechnical report user of our report limitations. Empire believes that providing information about the report preparation and limitations is essential to help the user reduce geotechnical-related delays, cost over-runs, and other problems that can develop during the design and construction process. Empire would be pleased to answer any questions regarding the following limitations and use of our report to assist the user in assessing risks and planning for site development and construction.

PROJECT SPECIFIC FACTORS: The conclusions and recommendations provided in our geotechnical report were prepared based on project specific factors described in the report, such as size, loading, and intended use of structures; general configuration of structures, roadways, and parking lots; existing and proposed site grading; and any other pertinent project information. Changes to the project details may alter the factors considered in development of the report conclusions and recommendations. *Accordingly, Empire cannot accept responsibility for problems which may develop if we are not consulted regarding any changes to the project specific factors that were assumed during the report preparation.*

SUBSURFACE CONDITIONS: The site exploration investigated subsurface conditions only at discrete test locations. Empire has used judgement to infer subsurface conditions between the discrete test locations, and on this basis the conclusions and recommendations in our geotechnical report were developed. It should be understood that the overall subsurface conditions inferred by Empire may vary from those revealed during construction, and these variations may impact on the assumptions made in developing the report conclusions and recommendations. *For this reason, Empire should be retained during construction to confirm that conditions are as expected, and to refine our conclusions and recommendations in the event that conditions are encountered that were not disclosed during the site exploration program.*

USE OF GEOTECHNICAL REPORT: Unless indicated otherwise, our geotechnical report has been prepared for the use of our client for specific application to the site and project conditions described in the report. *Without consulting with Empire, our geotechnical report should not be applied by any party to other sites or for any uses other than those originally intended.*

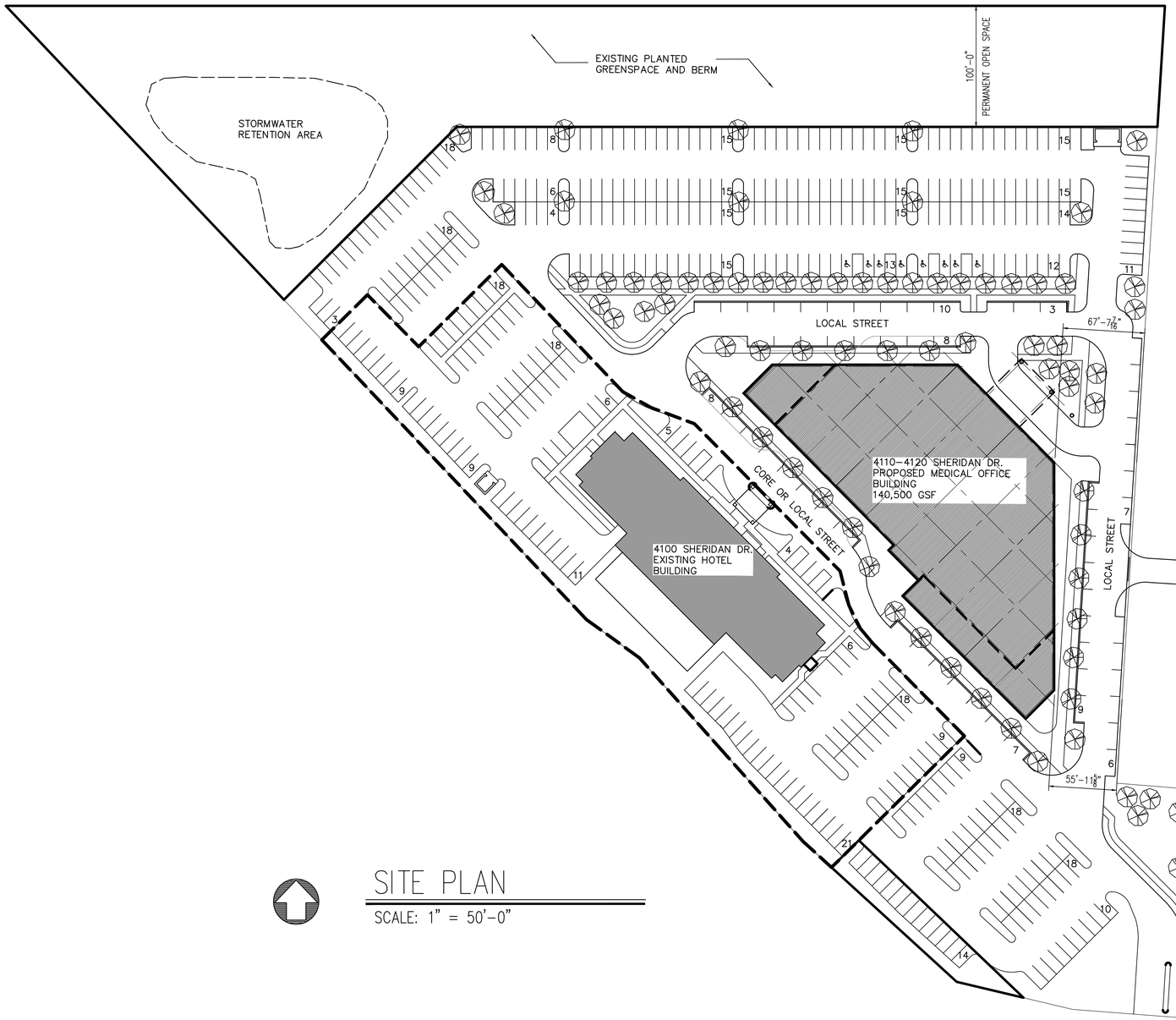
CHANGES IN SITE CONDITIONS: Surface and subsurface conditions are subject to change at a project site subsequent to preparation of the geotechnical report. Changes may include, but are not limited to, floods, earthquakes, groundwater fluctuations, and construction activities at the site and/or adjoining properties. *Empire should be informed of any such changes to determine if additional investigative and/or evaluation work is warranted.*

MISINTERPRETATION OF REPORT: The conclusions and recommendations contained in our geotechnical report are subject to misinterpretation. *To limit this possibility, Empire should review project plans and specifications relative to geotechnical issues to confirm that the recommendations contained in our report have been properly interpreted and applied.*

Subsurface exploration logs and other report data are also subject to misinterpretation by others if they are separated from the geotechnical report. This often occurs when copies of logs are given to contractors during the bid preparation process. *To minimize the potential for misinterpretation, the subsurface logs should not be separated from our geotechnical report and the use of excerpted or incomplete portions of the report should be avoided.*

OTHER LIMITATIONS: Geotechnical engineering is less exact than other design disciplines, as it is based partly on judgement and opinion. For this reason, our geotechnical report may include clauses that identify the limits of Empire's responsibility, or that may describe other limitations specific to a project. These clauses are intended to help all parties recognize their responsibilities and to assist them in assessing risks and decision making. Empire would be pleased to discuss these clauses and to answer any questions that may arise.

Attachment: Z-2022-07_application_092222 (26078 : Z-2022-07)



SITE PLAN

SCALE: 1" = 50'-0"

4100 SHERIDAN DR AND 4110-4120 SHERIDAN DR. SITE
DEVELOPMENT AREAS

TOTAL SITE AREA 458,195 SF 10.52 ACRES

AREA TO BE REZONED FROM GB TO DC-5 (PORTION OF 4110-4120 SHERIDAN DR.) 110,616 SF 6.27 ACRES

ZONING DISTRICT

EXISTING ZONING DISTRICT GB (GENERAL BUSINESS)

PROPOSED ZONING DISTRICT DC-5 (DEEP CORRIDOR 5)

BUILDING INFORMATION

BUILDING HEIGHT 65 FT MAX (MEASURED FROM FINISHED. GRADE)

STORIES 4 FLOORS

4100 SHERIDAN DR. AND 4110-4120 SHERIDAN DR. SITE
PARKING REQUIREMENTS

EXISTING HOTEL (4100 SHERIDAN DR.)
REQUIRES 134 SPACES

PROPOSED MEDICAL OFFICE BUILDING (4110-4120 SHERIDAN DR.)
TOTAL BUILDING AREA 140,500 SF

PARKING SPACES REQUIRED:

MULTI-STORY MULTI TENANT GROSS SF x .75
140,500SF x .75 = 105,375SF
105,375SF/1000SF = 105.375
MEDICAL: 105.375 x 3.5 = 369 SPACES
OFFICE: 105.375 x 2.5 = 264 SPACES

MULTI-STORY SINGLE TENANT GROSS SF x .80
140,500SF x .80 = 112400SF
112400SF/1000SF = 112.4
MEDICAL: 112.4 x 3.5 = 394 SPACES (*over)
OFFICE: 112.4 x 2.5 = 281 SPACES

TOTAL SPACES SHOWN = 373 (8 HC)

4110-4120 SHERIDAN DR SITE
OUTDOOR AMENITY SPACE

OUTDOOR AMENITY SPACE REQUIRED
5%

LOT : 225,815 SF x .05 = 11290.75 SF

Kideney Architects

Kideney Architects, P.C.
ARCHITECTS | PLANNERS
INTERIORS | LANDSCAPE DESIGN
143 Genesee Street
Buffalo, New York 14203
716.249.3837 | kideney.com

SHERIDAN COMMONS
4110-4120 Sheridan Dr.
Amherst, NY

Concept Site Plan

SCALE: AS NOTED	
DRAWN BY: GCU	
CHECKED BY: GCU	NO. DATE / REVISIONS:
PROJECT NO. 2022005	DATE: JUNE 21, 2022

SP01
DRAWING NO.

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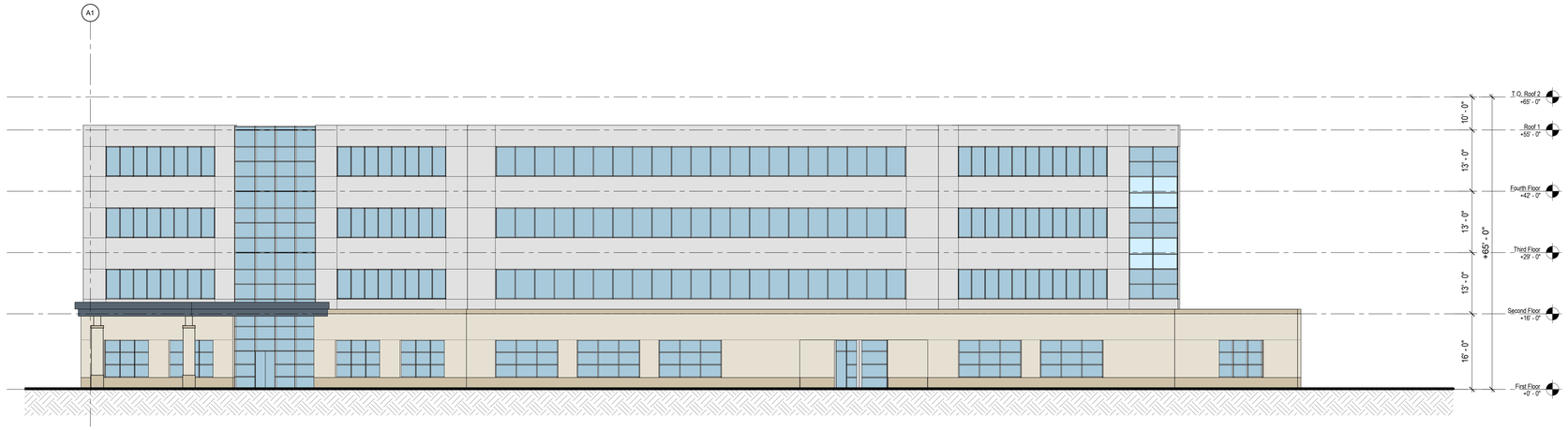
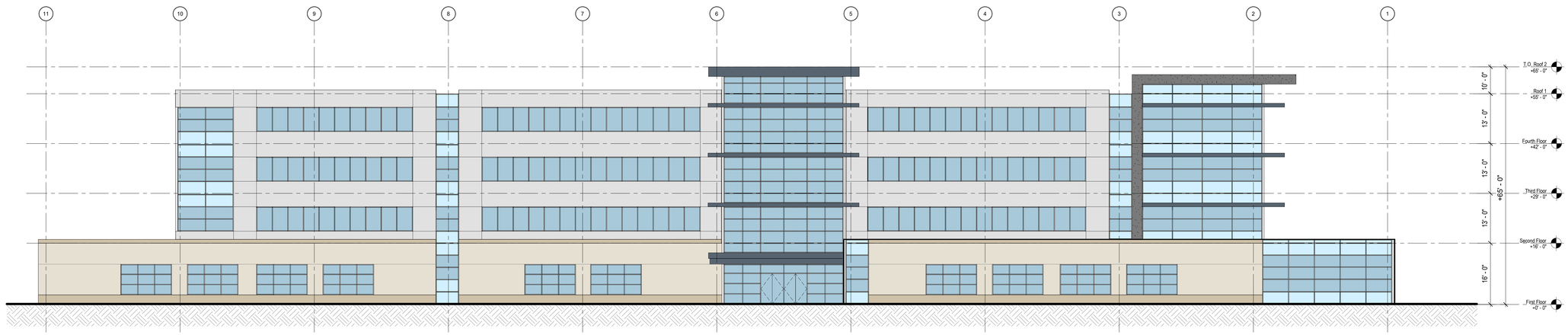
Attachment: Z-2022-07_drawings_092222 (26078 : Z-2022-07)



NORTH ELEVATION

SCALE: 3/32" = 1'-0"

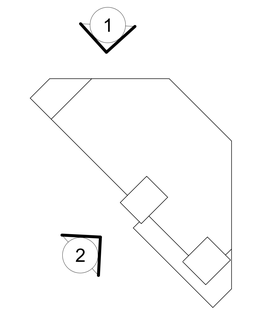
1 A201



SOUTH-WEST ELEVATION

SCALE: 3/32" = 1'-0"

2 A201



KEY PLAN

NTS

Kideney Architects

Kideney Architects, P.C.
ARCHITECTS | PLANNERS
INTERIORS | LANDSCAPE DESIGN
143 Genesee Street
Buffalo, New York 14203
716.249.3837 | kideney.com

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STAMP AND SIGNATURE

CONSULTANT

SHERIDAN COMMONS

4110-4120 SHERIDAN DR.
AMHERST, NY

CONCEPT

ELEVATIONS

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No.	DATE	DESCRIPTION
REVISIONS:		

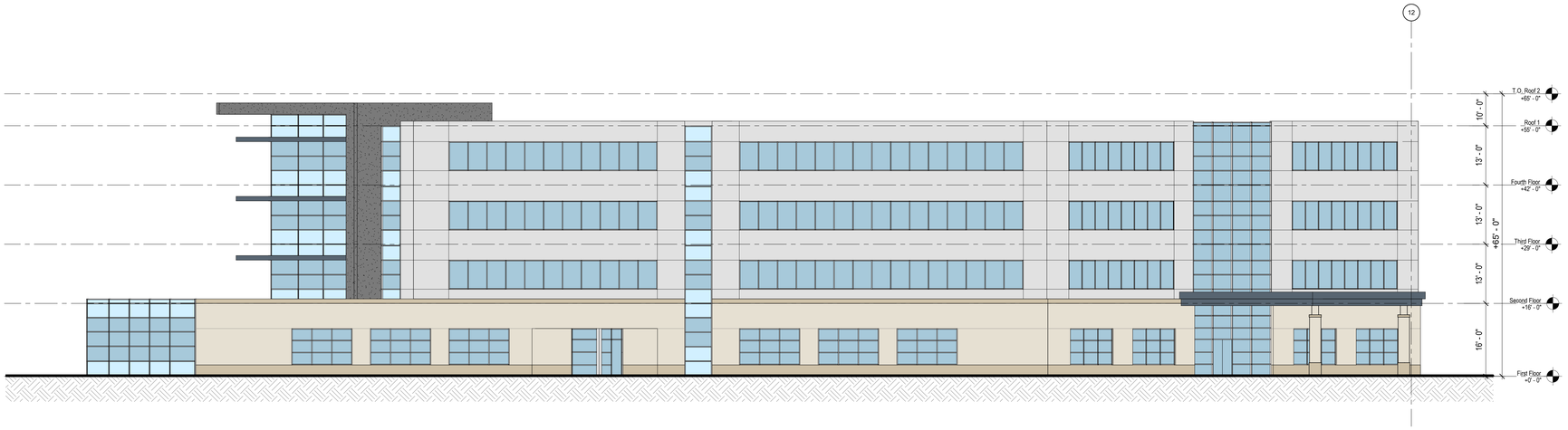
CHECKED BY: GCU	DRAWN BY: HS
KA PROJECT NO: 2022005.00	DATE: 06/21/2022
CLIENT PROJECT NO: -	

A201

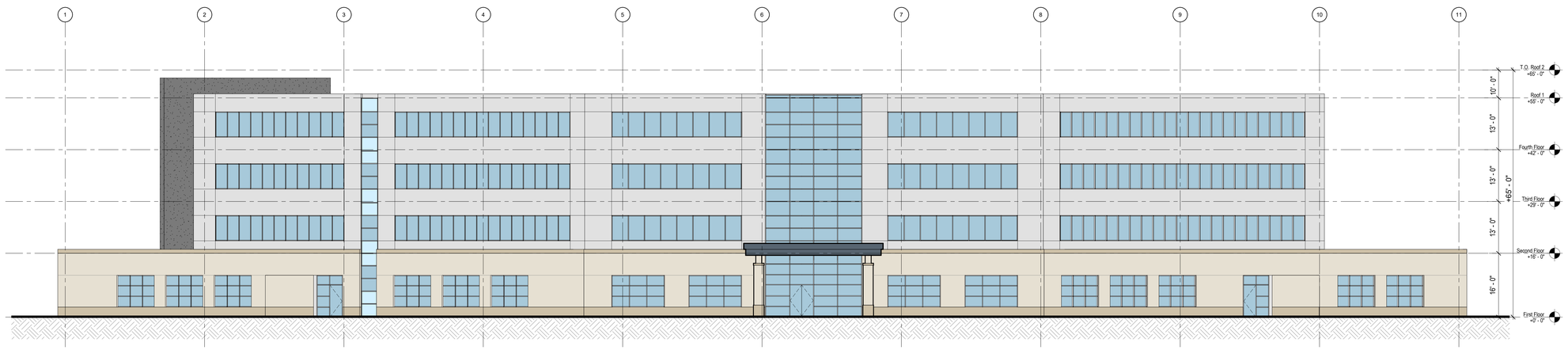
DRAWING NO.

6/23/2022 2:14:53 PM

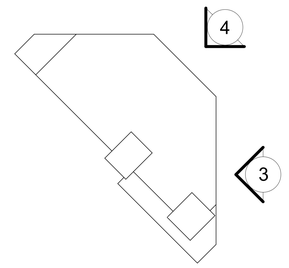
Attachment: Z-2022-07 drawings, 092222 (26078 : Z-2022-07)



EAST ELEVATION
SCALE: 3/32" = 1'-0"
3
A202



NORTH-EAST ELEVATION
SCALE: 3/32" = 1'-0"
4
A202



KEY PLAN
NTS
N

Kideney Architects

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ELEVATIONS 2

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No.	DATE	DESCRIPTION

REVISIONS

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CHECKED BY:	DRAWN BY:
2022005.00	06/21/2022
KA PROJECT NO.	DATE:
-	
CLIENT PROJECT NO.	

A202
DRAWING NO.

Attachment: Z-2022-07_drawings_092222 (26078 : Z-2022-07)

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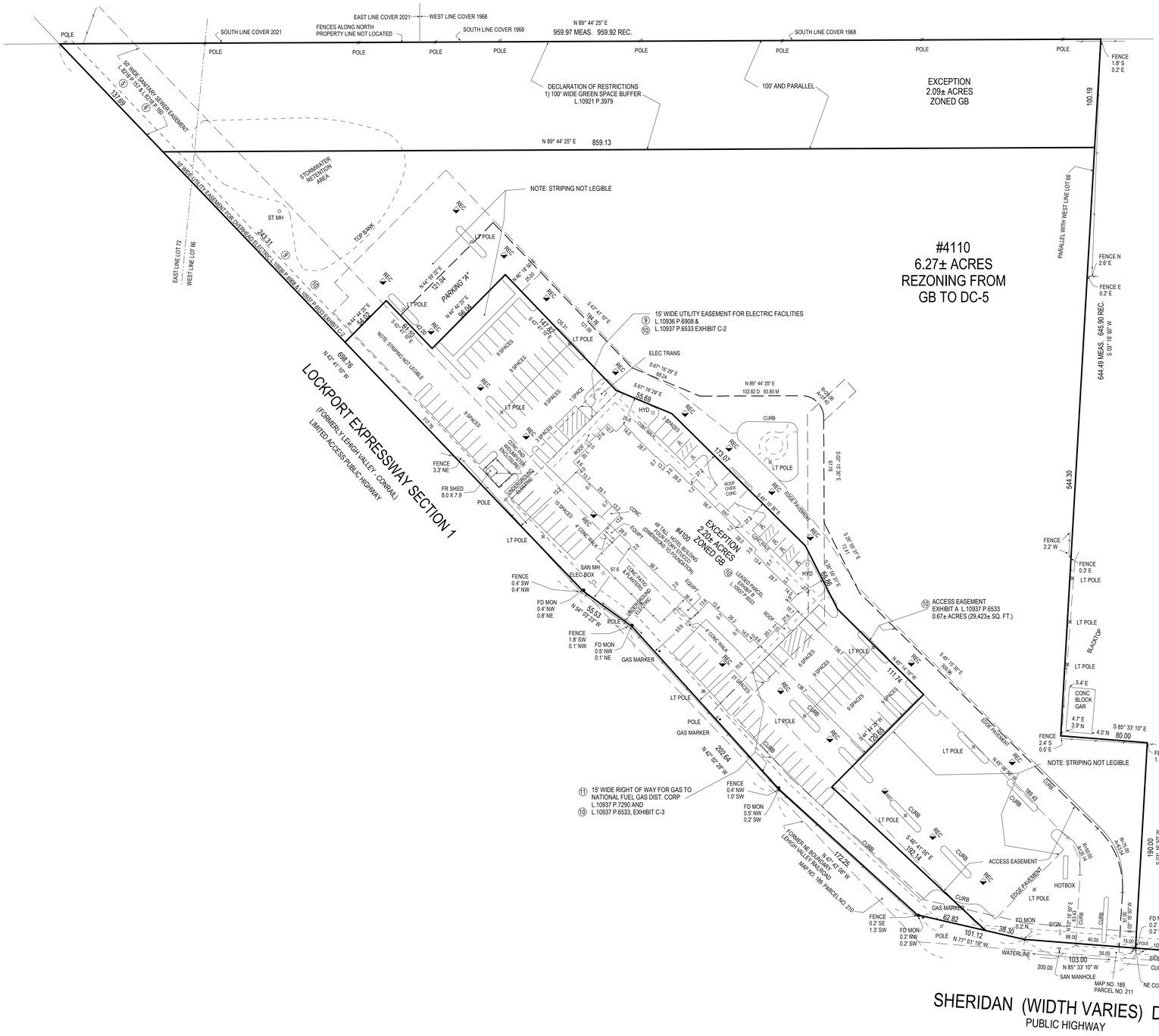
EAST LINE COVER 2021
WEST LINE COVER 1968
FENCES ALONG NORTH PROPERTY LINE NOT LOCATED
SOUTH LINE COVER 2021
SOUTH LINE COVER 1968
N 89° 44' 25" E
959.97 MEAS. 959.92 REC.
50' WIDE SANITARY SEWER EASEMENT L.6479 P.101 & L.6768 P.160
137.69
DECLARATION OF RESTRICTIONS
1) 100' WIDE GREEN SPACE BUFFER
L.10921 P.3979
100' AND PARALLEL
EXCEPTION
2.09± ACRES
ZONED GB
N 89° 44' 25" E 859.13
100.19
FENCE 1.8' S 0.2' E
10' WIDE UTILITY EASEMENT FOR OVERHEAD ELECTRIC - LIBER 6768 L. 10937 P.6533 EXHIBIT C-2
STORMWATER RETENTION AREA
ST MH
TOP BANK
243.31
EAST LINE LOT 72
WEST LINE LOT 66
NOTE: STRIPING NOT LEGIBLE
#4110
6.27± ACRES
REZONING FROM
GB TO DC-5
PARALLEL WITH WEST LINE LOT 66
FENCE N 2.6' E
FENCE E 0.2' E
644.49 MEAS. 645.90 REC.
S 03° 16' 50" W
544.30
PARKING "A"
N 44° 58' 22" E 124.04
N 44° 44' 25" E 56.04
S 44° 58' 48" W 39.02
S 45° 01' 38" E 42.06
N 44° 18' 49" E 25.00
S 43° 41' 10" E 147.40
S 43° 41' 10" E 10.00
S 43° 41' 10" E 184.76
15' WIDE UTILITY EASEMENT FOR ELECTRIC FACILITIES
⑨ L.10936 P.6908 &
⑩ L.10937 P.6533 EXHIBIT C-2
LT POLE
ELEC TRANS
S 67° 16' 28" E 59.74
S 67° 16' 28" E 55.69
N 89° 44' 25" E 102.82 D 93.85 M
POLE
P.O.B. #4110
HYD
CURB
LT POLE
S 45° 55' 37" E 172.07
S 39° 55' 37" E 57.24
S 45° 55' 37" E 55.86
S 45° 55' 37" E 39.58
N 45° 14' 55" W 111.74
S 44° 44' 25" E 120.65
N 45° 19' 54" W 189.43
S 46° 41' 05" E 192.14
N 43° 41' 05" W 172.25
FORMERLY LEHIGH VALLEY RAILROAD MAP NO. 189, PARCEL NO. 210
LOCKPORT EXPRESSWAY SECTION 1
(FORMERLY LEHIGH VALLEY - CONRAIL)
LIMITED ACCESS PUBLIC HIGHWAY
698.16
N 43° 41' 05" W
377.78
FENCE 3.3' NE
FR SHED 8.0 X 7.9
POLE
LT POLE
SAN MH
ELEC BOX
FENCE 0.4' SW 0.4' NW
FD MON 0.4' NW 0.8' NE
N 24° 03' 23" W 55.53
FENCE 1.8' SW 0.1' NW
FD MON 0.5' NW 0.1' NE
GAS MARKER
POLE
LT POLE
GAS MARKER
202.64
N 43° 02' 29" W
⑪ 15' WIDE RIGHT OF WAY FOR GAS TO NATIONAL FUEL GAS DIST. CORP L.10937 P.7290 AND ⑩ L.10937 P.6533, EXHIBIT C-3
FENCE 0.4' NW 1.0' SW
FD MON 0.5' NW 0.2' SW
FORMERLY LEHIGH VALLEY RAILROAD MAP NO. 189, PARCEL NO. 210
172.25
N 43° 41' 05" W
FENCE 0.2' SE 1.3' SW
FD MON 0.2' NW 0.2' SW
POLE
101.12
N 77° 01' 19" W
WATERLINE
62.82
38.30
FD MON 0.2' N
SIGN
N 67° 16' 28" E 63.43
S 67° 16' 28" E 88.00
40.00
15.00
POLE
10.00
FD MON 0.2' S 0.2' W
20' WIDE SANITARY SEWER EASEMENT
SIDEWALK
CURB
ORIGINAL R.O.W. AS 100' WIDE
MAP NO. 190, PARCEL NO. 212
NE CORNER MAP NO. 189, PARCEL NO. 211
103.00
N 85° 33' 10" W
200.00
SAN MANHOLE
MAP NO. 189, PARCEL NO. 211
190.00
S 03° 16' 50" W
FENCE 2.2' W
FENCE 0.3' E
LT POLE
LT POLE
BLACKTOP
LT POLE
5.4' E
CONC BLOCK GAR
4.7' E 3.9' N
4.0' N
S 85° 33' 10" E 80.00
FENCE 2.4' S 0.5' E
FENCE 1.1' S
NOTE: STRIPING NOT LEGIBLE
HOTBOX
LT POLE
ACCESS EASEMENT
EXHIBIT A L.10937 P.6533
0.67± ACRES (29,423± SQ. FT.)
⑩ ACCESS EASEMENT
EXHIBIT A L.10937 P.6533
0.67± ACRES (29,423± SQ. FT.)
EXCEPTION
2.20± ACRES
ZONED GB
#4100 48' TALL HOTEL BUILDING (DIMENSIONS IN FT. ELEVATION)
LEASED PARCEL EXHIBIT B L.6533
ROOF
CONC WALK
EQUIP
UNDERGROUND ELECTRIC
CONC PATIO AWNING
CONC
EDGE PAVEMENT
ROCK CURB
CONC BLOCK
HC
SHED
ENCLOSURE
CONCRETE PAD
UNDERGROUND ELECTRIC ENCLOSURE
CONCRETE PAD
CONCRETE PAD
CONCRETE PAD

DRAFT (9/22/22)
TOWN OF AMHERST
PLANNING BOARD
ZONING RESOLUTION
Z-2022-07

PETITIONER

Sheridan Commons, LLC
c/o Sean Hopkins
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221

PROPERTY LOCATION

4110-4120 Sheridan Drive

WHEREAS the Town of Amherst Planning Board on Thursday, September 22, 2022 held a public hearing on the proposed rezoning of land from General Business (GB) to Deep Corridor District 5, and

WHEREAS the Planning Board has reviewed plans and other materials regarding the rezoning proposal, and

WHEREAS the materials and plans have been referred to the Town's various review agencies, and

WHEREAS in accordance with Section 8-3-5 of the Zoning Ordinance the Planning Board finds that:

A. The proposed zoning and development plan **is** generally consistent with the policies of the Comprehensive Plan and the Zoning Ordinance.

B. The proposal is consistent with the Conceptual Land Use Plan which shows "Commercial/Mixed-Use" land use in this area of the Town.

C. The proposal **is** consistent with Section 3.3.2, "Commercial and Mixed Use" because the subject parcel is large, located directly adjacent to a major commercial corridor and is in close proximity to single family residential uses as is common amongst suburban corridors appropriate for mixed use development.

D. There are adequate services and utilities available or proposed to be made available in the construction of the development.

E. The proposal is compatible with the present zoning and conforming uses of nearby property and with the character of the neighborhood.

F. The subject property is suitable for uses permitted by the current versus the proposed district however, the Bicentennial Comprehensive Plan designates this subject area as appropriate for mixed use zoning districts.

Attachment: Z-2022-07_draft resolution_092222 (26078 : Z-2022-07)

DRAFT (9/22/22)
TOWN OF AMHERST
PLANNING BOARD
ZONING RESOLUTION
Z-2022-07

PETITIONER	PROPERTY LOCATION
Sheridan Commons, LLC	4110-4120 Sheridan Drive

G. The proposed change does tend to improve the balance of uses, or meet**s** a specific demand in the Town.

H. Review by the US Army Corps of Engineers under Section 404 of the Clean Water Act may be waived because the parcel is developed.

WHEREAS pursuant to Local Law #3-82, as amended, the Planning Board recommends that the Town Board determine that the requirements of SEQR are complete and that the subject proposal is not expected to have a significant adverse effect on the environment.

NOW THEREFORE BE IT RESOLVED that the Planning Board recommends to the Town Board in accordance with Section 8-3-4 of the Zoning Ordinance, that the rezoning request be approved subject to the following conditions:

1. Maintain 100 buffer on entire north property line including the retention pond and existing woods & provide supplemental landscaping.
2. No building foundations constructed closer than _____ feet to the north property line.
3. No building foundations constructed closer than _____ feet to the east property line.
4. Any buildings constructed on the site be limited to 65 feet in height.

The foregoing resolution was adopted by the Town of Amherst Planning Board, _____; moved by - _____; seconded by - _____; ayes _, noes _; absent - ____.

_____ _____
Robert J. Gilmour, Planning Board Chair Date

TV/ac
X:\Current_Planning\Files\Rezonings\2022\Z-2022-07_(4110-4120_Sheridan_Dr)_2022\Z-2022-07_draft resolution_092222.doc
cc: Town Clerk
Commissioner of Building
Highway Superintendent
Town Engineer
Traffic/Safety Coordinator
Sheridan Commons LLC, c/o Sean Hopkins, Esq., 5500 Main St., Suite 343, Williamsville, NY 14221
Chris Wood, Carmina Wood Design, 487 Main Street, Suite 500, Buffalo, NY 14203

Attachment: Z-2022-07_draft resolution_092222 (26078 : Z-2022-07)

Amherst Planning Board
5583 Main Street
Williamsville, NY 14221

Meeting: 09/22/22 06:30 PM
Department: Planning
Category: Rezoning and Relief from Conditions of Rezoning
Prepared By: Bryan Fadel
Initiator: Dan Howard
Sponsors:
DOC ID: 26077 B

TABLED

PLANNING BOARD ITEM (ID # 26077)

Request to Remove a Declaration of Restrictions Imposed as Part of a Rezoning Decision, Z-1996-32A

Property located at 4110-4120 Sheridan Drive
Sheridan Commons LLC, Petitioner

September 22, 2022
No comments were heard on this proposal.

Ms. Penberthy moved to adjourn the proposal at the petitioners request. The motion was seconded by Mr. Chmiel and carried. Ayes 5, Noes 0, Absent 2 (Kahn, Raffaele).

ATTACHMENTS:

- Z-1996-32A_application_092222 (PDF)
- Z-1996-32A_drawings_092222(PDF)
- Z-1996-32_A_draft resolution_092222 (PDF)

RESULT:	**ADJOURNED [UNANIMOUS]**	**Next: 10/20/2022 6:30 PM**
MOVER:	Brittany Lee Penberthy, Board Member	
SECONDER:	Michael Chmiel, Board Member	
AYES:	Gilmour, Chmiel, Gill, Giuliani, Penberthy	
ABSENT:	Joseph P. Raffaele Jr., Carrie H. Kahn	

Application to Remove Declaration of Restrictions Imposed in Connection with Rezoning Decision [Z-1996-32A]
4110-4120 Sheridan Drive
Applicant: Sheridan Commons LLC

Prepared By: Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221
Tel: 510-4338
E-mail: shopkins@hsmlegal.com

TOWN OF AMHERST PLANNING DEPARTMENT

Application for Rezoning

For Official Use

File #: Z-1996-32A **Acreage** 6.27 Acres **Fee $** $1,215.00

Address Verified by Assessor's Office _____ VERIFIED BY DATE

Application Received by Planning Department _____ ACCEPTED BY DATE

Materials Checked by Zoning Enforcement Officer _____ CHECKED BY DATE

Materials & Fee Paid to Town Clerk _____ ACCEPTED BY DATE

		Fill In Applicable Fees
2 ACRES OR LESS	**$1,250.**	_____
2 – 20 ACRES **$1,250 + $250/acre or fraction thereof over 2 acres** (fractions of an acre to be counted as 1 acre)		_____
21 – 30 ACRES **$5,700 + $150/acre or fraction thereof over 21 acres** (fractions of an acre to be counted as 1 acre)		_____
OVER 30 ACRES **$6,900 +$75/acre or fraction thereof over 30 acres** (fractions of an acre to be counted as 1 acre)		_____
Request for Relief of / Change to Conditions of Zoning Approval	**$1,200.**	$1,200
AFFIDAVIT FEE FOR PUBLIC HEARING	**$15.**	$15.00
	TOTAL FEE:	$ 1,215.00

RECEIVED JUL 18 2022 TOWN OF AMHERST PLANNING DEPT.

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

TO BE COMPLETED BY APPLICANT

1. **Petitioner:** Name: Sheridan Commons LLC

Address: c/o Sean Hopkins, Esq., Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, New York 14221
City State Zip Code

Phone: 510-4338 Fax:

E Mail shopkins@hsmlegal.com

2. **The undersigned hereby petitions the Honorable Town Board to rezone the following described property**

From: GB District

To: DC-5 District

3. **Street address of land to be rezoned:** (must be verified by Town Assessor's Office)

4110-4120 Sheridan Drive

SBL #: SBL No. 68.09-5-1.21

4. **Area of land to be rezoned** (in acres): 6.27 Acres

5. **Owner of Land:**

Name: Sheridan Commons LLC c/o Sean Hopkins, Esq.

Address: 5500 Main Street, Suite 343, Williamsville, NY 14221

Telephone: 716.510-4338

6. **Representative** (Architect, Engineer, Landscape Architect, Surveyor or Attorney):

Name: Sean W. Hopkins, Esq.

Address: 5500 Main Street, Suite 343
Williamsville, New York 14221
Tel: 716.510-4338 - E-mail: shopkins@hsmlegal.com
City State Zip Code

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

7. **Petitioner's interest in property** [Note: Authorization Letter of the Property Owner attached as Exhibit "1" of this Rezoning Application.]

_____ Option to purchase

__X__ Owner

_____ Other (explain)

8. **The following are all others having an interest in this application and join herein with the petitioner named above:** (describe extent of interest; attach sheets as needed)

Not Applicable.

9. **Attach Survey and Legal description of land to be rezoned. The Survey must be prepared by a New York State Licensed Land Surveyor.** Legal description of property to be rezoned from GB to DC-5 is attached as Exhibit "3" and a reduced size copy of the Survey of the Project Site is attached as Exhibit "4". Full size copy of the Survey is also attached.

10. **Said property has the following deed restrictions or Covenants:** (attach copy) - Copy of the Declaration of Restrictions recorded on September 18, 1997 is attached as Exhibit as Exhibit "7".

Liber 10921 Page 3979

[Note: The Applicant is seeking to remove the Declaration of Restrictions simultaneously with seeking to amend the zoning classification of the Project Site from GB to DC-5.]

11. **Information on proposed project:**

A. Description of the character of the proposed development:

See Exhibit 5.

B. Rationale for rezoning request:

1. Why was this site chosen?

See Exhibit 5.

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

2. Why cannot land be used with the existing zoning?

See Exhibit 5.

3. How will this rezoning impact surrounding properties?

See Exhibit 5.

4. How will this rezoning impact the school system?

See Exhibit 5.

12. Quantitative Data:

A. Total # of dwelling units: Not Applicable

B. Distribution of dwelling units by type: Not Applicable

C. Gross Residential Density per acre: Not Applicable

D. Total amount of Open Space: 2.09 Acres

E. Proposed Non-Residential Floor Area: 140,500 sq. ft.

[Note: A reduced size copy of the Concept Site Plan [Drawing C-100] for the proposed project prepared by Kideney Architects is provided at Exhibit "8" and a full size copy is also attached.]

13. Development Schedule:

Start: To be Determined

Finish: To be Determined

Stages (# of): 1

14. If any portion of the proposed development is planned to be sold or leased, please describe:

The office space will be leased to tenants.

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

15. Open Space ownership and maintenance provisions (if applicable):

Greenspace and landscaping will be privately owned and maintained.

16. Basis for Findings (Sec. 8-3-5 of the Town Zoning Code) (Attach sheets and supplemental materials as necessary.)

A. The proposed zoning and development plan must be generally consistent with the policies of the Comprehensive Plan and the Town Zoning Ordinance.

1. State in detail why the proposed zoning is consistent with the adopted Town of Amherst Bicentennial Comprehensive Plan. Cite specific sections, maps, and/or figures in the plan that support the proposed zoning at this location (The Comprehensive Plan document is available at the Planning Department, Town Clerk's Office, Amherst libraries, or at www.amherst.ny.us). Add sheets as needed.

See Exhibit 6.

2. Pursuant to NYS Town Law Section 272a(11), "all Town land use regulations must be in accordance with a comprehensive plan adopted pursuant to this Section." The Town Board adopted the Comprehensive Plan pursuant to NYS Town Law 272 on January 2, 2007. If the rezoning is approved, the Town Board may require the Plan to be amended, as applicable.

Cite all text, map, and / or figures that must be amended to support the proposed zoning at this location (attach pages as necessary) and provide detailed suggested amendments.

See Exhibit 6.

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

3. State why the proposed zoning is consistent with intent and objectives (Sec. 1-2-2) of the Zoning Ordinance:

See Exhibit 6.

B. Adequate Services and Utilities are available or are proposed to be made available with the construction of the development:

1. Sanitary Sewer
   Yes.
2. Storm Sewer/Drainage
   Yes.
3. Water
   Yes.
4. Other Yes.

C. Compatibility with the present zoning and conforming uses of nearby property and with the character of the neighborhood:

See Exhibit 6.

D. Suitability of the subject property for uses permitted by the current versus the proposed district:

See Exhibit 6.

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

E. Whether the proposed change tends to improve the balance of uses, or meets a specific demand in the Town:

See Exhibit 6.

17. The petitioner encloses herewith the sum of $ 1,215.00 to pay the fee, and consents to the placement of a sign(s) at the described location identifying this request for a period of time to be determined by the Town Clerk.

18. The undersigned certifies that all information required to be disclosed pursuant to Section 809 of the General Municipal Law (see below) is as follows:

The undersigned swears or affirms that all statements made herein are true, that all drawings submitted correctly show the situation involved in this petition.

[Note: Authorization Letter of Property Owner signed attached as Exhibit "1".]

Counsel for Petitioner
Signature of Petitioner

Subscribed and sworn to before me this 18th day of July, 2022

Notary Public, Erie County, New York

MARIANNE BRAUTLACHT
Notary Public, State of New York
Qualified in Erie County
My Commission Expires 01/14/20

N.Y.S. General Municipal Law - Section 809 Disclosure in certain applications:

1. Every application, petition or request submitted for a variance, amendment, change of zoning, approval of a plat, exemption from a plat or official map, license or permit, pursuant to the provision of any ordinance, local law, rule or regulation constituting the zoning and planning regulations of a municipality shall state the name, residence and the nature and extent of the interest of any state office or any office or employee of such municipality or of a municipality of which such municipality is a part, in the person, partnership or association making such application, petition or request (hereinafter called the applicant) to the extent known to such applicant.

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

2. For the purpose of this section an officer or employee shall be deemed to have an interest in the applicant when he, his spouse, or their brothers, sisters, parents, children, grandchildren, or the spouse of any of them

   (a) is the applicant, or
   (b) is an officer, director, partner or employee of the applicant, or
   (c) legally or beneficially owns or controls stock of a corporate applicant or is a member of a partnership or association applicant, or
   (d) is a party to an agreement with such an applicant, express or implied, whereby he may receive any payment or other benefit, whether or not for services rendered, dependent or contingent upon the favorable approval of such applicant, petition or request.

3. In the county of Nassau the provisions of subdivisions one and two of this section shall also apply to a party officer. "Party Officer" shall mean any person holding any position or office, whether by election, appointment or otherwise, in any party as defined by subdivision four or section two of the election law.

4. Ownership of less than five per cent of the stock of a corporation whose stock is listed on the New York or American Stock Exchanges shall not constitute an interest for the purposes of this section.

5. A person who knowingly and intentionally violates this section shall be guilty of a misdemeanor.

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

Exhibit 1 - Authorization Form Signed by Property Owner

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

AUTHORIZATION

Sheridan Commons LLC, as the record owner of property located in the Town of Amherst located at 4110-4120 Sheridan Drive [SBL No. 68.09-5-1.21] (the "Project Site"), hereby authorizes, the law firm of Hopkins Sorgi & McCarthy PLLC, to seek all required approvals and permits from the Town of Amherst and other involved governmental agencies relative to the development of the Project Site including but not limited to an amendment of the zoning classification of the Project Site from GB to DC-5 and for relief of a zoning condition from the Town Board, Site Plan Approval by the Planning Board and any required area variances needed from the Zoning Board of Appeals.

Date: June 23, 2022

SHERIDAN COMMONS LLC

Benjamin Obletz

STATE OF NEW YORK)
ss.:
COUNTY OF ERIE)

On this 23rd day of June, 2022, before me, the undersigned, a notary public in and for said state, personally appeared Benjamin Obletz, personally known to me or proved to me on the basis of satisfactory evidence to the be the individual whose name is subscribed to within this instrument and acknowledged to me that he/she executed the same in his/her capacity, and that by his/her signature on the instrument, the individual or the person upon behalf of which the individual acted, executed the instrument.

Brenda Kislack

Notary Public

Brenda Kislack
NOTARY PUBLIC, STATE OF NEW YORK
Registration No. 02KI6321069
Qualified in Niagara County
Commission Expires March 16, 2023

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

Exhibit 2 - Part 1 of the Full Environmental Assessment Form Prepared Pursuant to the State Environmental Quality Review Act ("SEQRA") with Attached Page 5[a]

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

Full Environmental Assessment Form
Part 1 - Project and Setting

Prepared By: Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221
Tel: 510-4338
E-mail: shopkins@hsmlegal.com

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project: Proposed Medical Office Project		
Project Location (describe, and attach a general location map): 4110-4120 Sheridan Drive [SBL No. 68.09-1-5-1.21] - Town of Amherst - Erie County		
Brief Description of Proposed Action (include purpose or need): The proposed project consists of a proposed office project consisting of a 4-story medical office building consisting of 140,500 sq. ft. and and related site improvements. The proposed action includes an amendment of the zoning classification of 6.27 acres of 4110-4120 Sheridan Drive ("Project Site") from GB to DC-5 and a request to remove a Declaration of Restrictions imposed in connection with a rezoning approved by the Town Board in 1996. The proposed action has been defined broadly to include all required discretionary approvals required from the municipal boards of the Town of Amherst and involved agencies as well as the construction of the medical office building and all related site improvements including parking spaces, access aisles, landscaping, lighting, water and sanitary sewer lines as well as utility connections. The heavily vegetated Permanent Open Space along the northern edge the Project Site will remain undisturbed [approximately 2.09] acres will not be disturbed and will remain zoned GB. Given that the proposed project ("action") will not result in any potentially significant adverse environmental impacts, the issuance of a negative declaration pursuant to SEQRA is appropriate. The action is a Type I action pursuant to SEQRA (6 NYCRR Part 617.4) since it includes a commercial building with a size of more than 100,000 sq. ft.		
Name of Applicant/Sponsor: Sheridan Commons LLC c/o Sean Hopkins, Esq.	Telephone: 716.510-4338 E-Mail: shopkins@hsmlegal.com	
Address: 5500 Main Street, Suite 343		
City/PO: Williamsville	State: NY	Zip Code: 14221
Project Contact (if not same as sponsor; give name and title/role):	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:
Property Owner (if not same as sponsor): Sheridan Commons LLC c/o Sean Hopkins, Esq.	Telephone: 716.510-4338 E-Mail: shopkins@hsmlegal.com	
Address: 5500 Main Street, Suite 343		
City/PO: Williamsville	State: NY	Zip Code: 14221

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PLANNING DEPT.

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees ☑Yes ☐No	Town Board - Rezoning and	July 18, 2022
b. City, Town or Village Planning Board or Commission ☑Yes ☐No	Planning Board - Site Plan Approval	To be Determined
c. City, Town or Village Zoning Board of Appeals ☐Yes ☑No		
d. Other local agencies ☑Yes ☐No	Building Dept - Building Permit; Eng. Dept. - Stormwater Per. & DSCA; AIDA - Potential PILOT	To be Determined
e. County agencies ☑Yes ☐No	ECWA - Water and RPZ	To be Determined
f. Regional agencies ☐Yes ☑No		
g. State agencies ☑Yes ☐No	NYSDEC - SPDES and DSCA	To be Determined
h. Federal agencies ☐Yes ☑No		

i. Coastal Resources.

i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐Yes ☑No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☑Yes ☐No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☑Yes ☐No

If Yes, identify the plan(s):

NYS Heritage Areas:West Erie Canal Corridor

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes ☑No

If Yes, identify the plan(s):

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
General Business District ("GB")

b. Is the use permitted or allowed by a special or conditional use permit? ☐ Yes ☑ No

c. Is a zoning change requested as part of the proposed action? ☑ Yes ☐ No
If Yes,
i. What is the proposed new zoning for the site? Deep Corridor 5 ("DC-5")

C.4. Existing community services.

a. In what school district is the project site located? Sweet Home Central School District

b. What police or other public protection forces serve the project site?
Town of Amherst Police Department

c. Which fire protection and emergency medical services serve the project site?
Volunteer Fire Department

d. What parks serve the project site?
There are various Town parks located in relative close proximity to the Project Site.

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)? Office Space.

b. a. Total acreage of the site of the proposed action? 8.36 acres
b. Total acreage to be physically disturbed? 6.27 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 8.36 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % _____ Units: _____

d. Is the proposed action a subdivision, or does it include a subdivision? ☐ Yes ☑ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
ii. Is a cluster/conservation layout proposed? ☐ Yes ☐ No
iii. Number of lots proposed? _____
iv. Minimum and maximum proposed lot sizes? Minimum _____ Maximum _____

e. Will the proposed action be constructed in multiple phases? ☐ Yes ☑ No
i. If No, anticipated period of construction: _____ months
ii. If Yes:
- Total number of phases anticipated _____
- Anticipated commencement date of phase 1 (including demolition) _____ month _____ year
- Anticipated completion date of final phase _____ month _____ year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases: _____

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

f. Does the project include new residential uses? ☐Yes ☑No
If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase				
At completion of all phases				

g. Does the proposed action include new non-residential construction (including expansions)? ☑Yes ☐No
If Yes,
i. Total number of structures 1
ii. Dimensions (in feet) of largest proposed structure: 65 ft. height; TBD width; and TBD length
iii. Approximate extent of building space to be heated or cooled: 140,500 square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? [Existing stormwater facility location on the northwest portion of the Project Site will be utilized for stormwater management purposes.] ☐Yes ☑No
If Yes,
i. Purpose of the impoundment:
ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☐Other specify:
iii. If other than water, identify the type of impounded/contained liquids and their source.
iv. Approximate size of the proposed impoundment. Volume: _____ million gallons; surface area: _____ acres
v. Dimensions of the proposed dam or impounding structure: _____ height; _____ length
vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐Yes ☑No
If Yes:
i .What is the purpose of the excavation or dredging?
ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?
- Volume (specify tons or cubic yards):
- Over what duration of time?

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.

iv. Will there be onsite dewatering or processing of excavated materials? ☐Yes ☐No
If yes, describe.

v. What is the total area to be dredged or excavated? _____ acres
vi. What is the maximum area to be worked at any one time? _____ acres
vii. What would be the maximum depth of excavation or dredging? _____ feet
viii. Will the excavation require blasting? ☐Yes ☐No
ix. Summarize site reclamation goals and plan:

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☐Yes ☑No
If Yes:
i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description):

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ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

iii. Will the proposed action cause or result in disturbance to bottom sediments? ☐Yes ☐No
If Yes, describe:

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☑No
If Yes:

- acres of aquatic vegetation proposed to be removed:
- expected acreage of aquatic vegetation remaining after project completion:
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access):
- proposed method of plant removal:
- if chemical/herbicide treatment will be used, specify product(s):

v. Describe any proposed reclamation/mitigation following disturbance:

c. Will the proposed action use, or create a new demand for water? ☑Yes ☐No
If Yes:

i. Total anticipated water usage/demand per day: 14,500 gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑Yes ☐No
If Yes:

- Name of district or service area: ECWA Consolidated Water District
- Does the existing public water supply have capacity to serve the proposal? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No
- Do existing lines serve the project site? ☑Yes ☐No

iii. Will line extension within an existing district be necessary to supply the project? ☐Yes ☑No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project:
- Source(s) of supply for the district:

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐Yes ☐No
If, Yes:

- Applicant/sponsor for new district:
- Date application submitted or anticipated:
- Proposed source(s) of supply for new district:

v. If a public water supply will not be used, describe plans to provide water supply for the project:

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑Yes ☐No
If Yes:

i. Total anticipated liquid waste generation per day: 14,500 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each):
Sanitary wastewater.

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑Yes ☐No
If Yes:

- Name of wastewater treatment plant to be used: Town of Amherst Wastewater Treatment Plant
- Name of district: Town of Amherst Consolidated Sanitary Sewer District
- Does the existing wastewater treatment plant have capacity to serve the project? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No

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- Do existing sewer lines serve the project site? ☑Yes ☐No
- Will a line extension within an existing district be necessary to serve the project? ☐Yes ☑No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☑No

If Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

_____

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑Yes ☐No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or _____ acres (impervious surface)

_____ Square feet or _____ acres (parcel size)

ii. Describe types of new point sources. _____

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

- If to surface waters, identify receiving water bodies or wetlands: _____
- Will stormwater runoff flow to adjacent properties? ☐Yes ☑No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☐Yes ☑No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☑No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:

- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

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h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? [Note: A Traffic Impact Study is being prepared by SRF Associates for the purpose of evaluating the potential traffic impacts for the proposed project.] ☐Yes ☑No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐Morning ☐Evening ☐Weekend ☐Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): _____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☑Yes ☐No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: To be Determined

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other): National Grid

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐Yes ☑No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 7:00 a.m. to 7:00 p.m.
- Saturday: 7:00 a.m. to 5:00 p.m.
- Sunday: As Needed
- Holidays: Not Applicable

ii. During Operations:

- Monday - Friday: 7:00 a.m. to 7:00 p.m.
- Saturday: 7:00 a.m. to 5:00 p.m.
- Sunday: To be Determined
- Holidays: To be Determined

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m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

There will be temporary and unavoidable short-term noise impacts resulting from the use of construction equipment during the construction of the proposed medical office project.

ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☑ No

Describe: _____

n. Will the proposed action have outdoor lighting? ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

On-site lighting will comply with the Town's stringent lighting standards and a Photometric Plan will be required in connection with the Site Plan Application review process for the development of the Project Site.

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☑ No

Describe: _____

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☑ Yes ☐ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures: _____

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored _____

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally, describe the proposed storage facilities: _____

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☑ Yes ☐ No

If Yes:

i. Describe proposed treatment(s):

Use of pesticides may occur in connection with maintenance of greenspace and landscaping but will only be utilized if applied by licensed applicator.

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☑ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☐ Yes ☑ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: _____ tons per _____ (unit of time)
- Operation : _____ tons per _____ (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: _____
- Operation: _____

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: _____
- Operation: _____

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s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☑ Yes ☐ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: The future medical tenant(s) may generate hazardous medical waste that will be properly disposed of any required by the NYS Department of Health requirements.

ii. Generally describe processes or activities involving hazardous wastes or constituents: See above.

iii. Specify amount to be handled or generated TBD tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: Not applicable.

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☑ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility: _____

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☑ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)
☐ Forest ☐ Agriculture ☐ Aquatic ☑ Other (specify): Motor Service and I-290

ii. If mix of uses, generally describe:

There are a wide assortment of land uses in the vicinity of Project with various zoning classifications.

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	0	4.9	4.9
• Forested	2.09	2.09	0
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	6.27	0	(6.27)
• Agricultural (includes active orchards, field, greenhouse etc.)	0	0	0
• Surface water features (lakes, ponds, streams, rivers, etc.)	0	0	0
• Wetlands (freshwater or tidal)	0	0	0
• Non-vegetated (bare rock, earth or fill)	0	0	0
• Other Describe: Greenspace and Landscaping	0	1.37	1.37

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c. Is the project site presently used by members of the community for public recreation? ☐Yes ☑No
i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☐Yes ☐No
If Yes,
i. Identify Facilities:

e. Does the project site contain an existing dam? ☐Yes ☑No
If Yes:
i. Dimensions of the dam and impoundment:
- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____
iii. Provide date and summarize results of last inspection:

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐Yes ☑No
If Yes:
i. Has the facility been formally closed? ☐Yes ☐No
- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:

iii. Describe any development constraints due to the prior solid waste activities: _____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐Yes ☑No
If Yes:
i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐Yes ☑No
If Yes:
i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐Yes ☐No

☐ Yes – Spills Incidents database — Provide DEC ID number(s): _____
☐ Yes – Environmental Site Remediation database — Provide DEC ID number(s): _____
☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures: _____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☑Yes ☐No
If yes, provide DEC ID number(s): C915291

iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):
The Project Sponsor is not aware of status of the above referenced site relative to the NYSDEC Environmental Site Remediation database.

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v. Is the project site subject to an institutional control limiting property uses? ☐Yes ☐No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐Yes ☐No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? >5 ft. feet

b. Are there bedrock outcroppings on the project site? ☐Yes ☑No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____%

c. Predominant soil type(s) present on project site: _____ _____%
_____ _____%
_____ _____%

d. What is the average depth to the water table on the project site? Average: _____ feet

e. Drainage status of project site soils: ☐ Well Drained: _____% of site
☐ Moderately Well Drained: _____% of site
☐ Poorly Drained _____% of site

f. Approximate proportion of proposed action site with slopes: ☑ 0-10%: 100 % of site
☐ 10-15%: _____% of site
☐ 15% or greater: _____% of site

g. Are there any unique geologic features on the project site? ☐Yes ☑No
If Yes, describe: _____

h. Surface water features.

i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☐Yes ☑No

ii. Do any wetlands or other waterbodies adjoin the project site? [There are no an wetlands subject to the jurisdiction of either the NYSDEC or USACE on the Project Site.] ☑Yes ☐No
If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.

iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑Yes ☐No

iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name _____ Approximate Size _____
- Wetland No. (if regulated by DEC) _____

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐Yes ☑No
If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐Yes ☑No

j. Is the project site in the 100-year Floodplain? ☐Yes ☑No

k. Is the project site in the 500-year Floodplain? ☐Yes ☑No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐Yes ☑No
If Yes:

i. Name of aquifer: _____

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m. Identify the predominant wildlife species that occupy or use the project site:
Typical suburban species

n. Does the project site contain a designated significant natural community? ☐Yes ☑No
If Yes:
i. Describe the habitat/community (composition, function, and basis for designation):
ii. Source(s) of description or evaluation:
iii. Extent of community/habitat:
- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐Yes ☑No
If Yes:
i. Species and listing (endangered or threatened):

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☐Yes ☑No
If Yes:
i. Species and listing:

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐Yes ☑No
If yes, give a brief description of how the proposed action may affect that use:

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐Yes ☑No
If Yes, provide county plus district name/number:

b. Are agricultural lands consisting of highly productive soils present? ☐Yes ☑No
i. If Yes: acreage(s) on project site?
ii. Source(s) of soil rating(s):

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐Yes ☑No
If Yes:
i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature
ii. Provide brief description of landmark, including values behind designation and approximate size/extent:

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐Yes ☑No
If Yes:
i. CEA name:
ii. Basis for designation:
iii. Designating agency and date:

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e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? ☐ Yes ☑ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: _____

iii. Brief description of attributes on which listing is based:

_____

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☐ Yes ☑ No

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s): _____

ii. Basis for identification: _____

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☐ Yes ☑ No

If Yes:

i. Identify resource: _____

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.): _____

iii. Distance between project and resource: _____ miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation: _____

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name Sheridan Commons LLC Date July 18, 2022

Signature _____ Title Attorney for Project Sponsor

PRINT FORM

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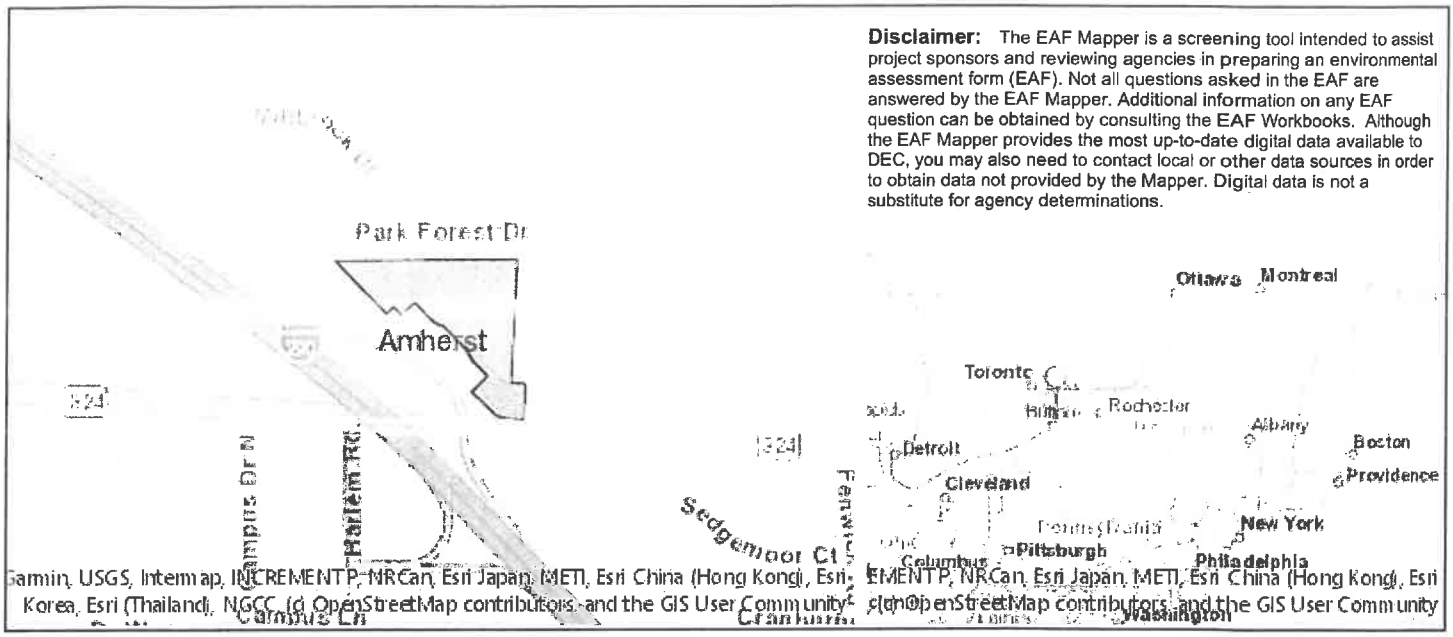
EAF Mapper Summary Report



B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Yes - Digital mapping data are not available for all Special Planning Districts. Refer to EAF Workbook.
C.2.b. [Special Planning District - Name]	NYS Heritage Areas:West Erie Canal Corridor
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	Yes
E.1.h.iii [Within 2,000' of DEC Remediation Site - DEC ID]	C915291
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	No
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	No
E.2.k. [500 Year Floodplain]	No
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	No

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E.2.o. [Endangered or Threatened Species]	No
E.2.p. [Rare Plants or Animals]	No
E.3.a. [Agricultural District]	No
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.3.f. [Archeological Sites]	No
E.3.i. [Designated River Corridor]	No

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Rezoning of 4110-4120 Sheridan Drive and
Removal of Declaration of Restrictions
TOWN OF AMHERST ATTACHMENT
State Environmental Quality Review
ENVIRONMENTAL ASSESSMENT FORM

1. For each applicable category of proposed new structures, including additions to existing structures, provide the following information for all soil types on the project site (*according to Soil Survey of Erie County, NY; Table 11, Building Site Development, pp 294-305):*

Soil Name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Odessa Silt Loam	Severe	Severe	Severe	Severe	Moderate
Schoharie Silt Loam	Moderate	Moderate	Moderate	Moderate	Moderate

2. If the Soil survey indicates either "severe" or "moderate" suitability for the proposed types of construction, a geotechnical and hydrological analysis based on one test per 3.5 acres of project area must be provided (per Town Board resolution, 3/17/03, amended 6/16/03).

   x Geotechnical report attached _____ Not applicable

   [Note: Three copies of the Geotechnical Report have been submitted to the Planning Department].

3. Is your property located: On Youngs Road between Dodge and Klein Roads? □ Yes x No
   On Wehrle Dr. between Spindrift Dr. and Oakwood Rd? □ Yes x No

   If so, the property may be within an area of the Town that is affected by a moratorium on connections to the sanitary sewer system.

4. Are there alternative locations on the site for this project? □ Yes x No

5. Location and size of real property owned by petitioner within one (1) mile of subject proposal:

   Not Applicable.

6. Are you aware of current or future plans or intentions by others in the Town of Amherst to develop property within 1000± ft. of the present project request: □ Yes ☒ No
   Describe: Not Applicable.

   (Potential environmental impacts from adjacent or nearby projects undergoing the approval process will receive a coordinated environmental review to determine cumulative effects on common receivers (e.g. traffic and drainage corridors) and other relevant environmental concerns.)

7. Maximum number of vehicular trips to be generated per peak hour upon completion of project TBD
   Source: Traffic Impact Study being prepared by SRF Associates and will be submitted upon completion.

8. Will blasting occur during construction? □ Yes ☒ No

9. Does the project propose to connect and be tributary to the public sanitary sewer system? ☒ Yes □ No

10. Proposed net additional gallons per day (gpd) of sanitary sewer discharge upon completion of project:
    14,500 average flow 58,000 gpd peak flow.

    (Average flows of 2,500 gpd or greater will require an Engineer's Report that includes a detailed downstream sewer capacity analysis and the identification of and commitment to required I/I offset work during peak wastewater flow conditions.)

11. Based on the Town's *2011 Reconnaissance Level Survey of Historic Resources,* is your property 'blue-rated' for historic significance? □ Yes ☒ No

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

Exhibit 3 – Legal Description of Property to be Rezoned from GB to DC-5

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

EXHIBIT 3 OF APPLICATION TO REMOVE DECLARATION OF RESTRICTIONS IMPOSED IN CONNECTION WITH REZONING DECISION

LEGAL DESCRIPTION OF PORTION OF 4110-4120

PORTION OF 4110-4120 SHERIDAN DRIVE:

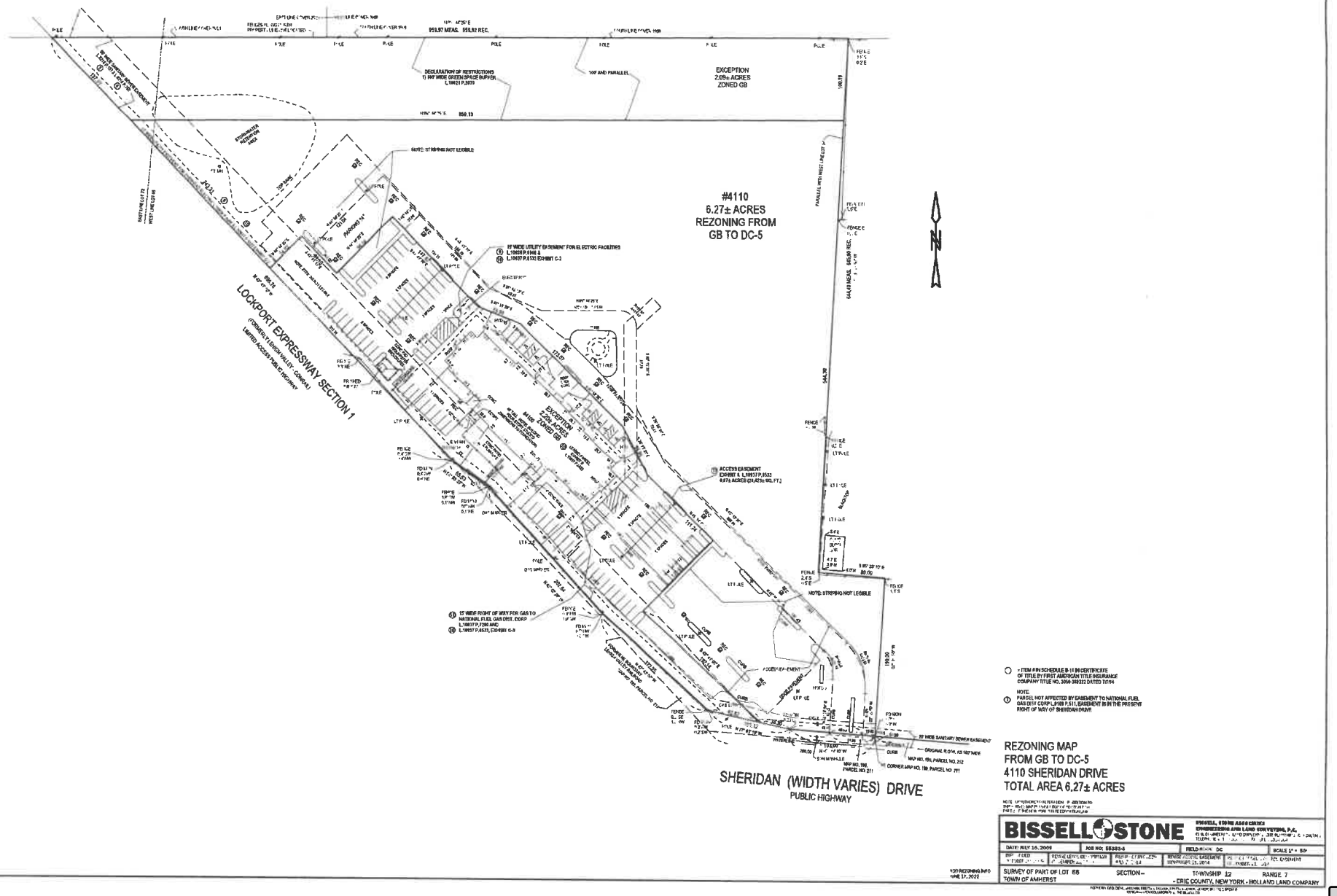
ALL THAT TRACT OR PARCEL OF LAND, SITUATE IN THE TOWN OF AMHERST, COUNTY OF ERIE AND STATE OF NEW YORK, BEING PART OF LOT NOS. 72 AND 66, TOWNSHIP 12, RANGE 7 OF THE HOLLAND LAND COMPANY'S SURVEY, MORE PARTICULARLY BOUNDED AND DESCRIBED AS FOLLOWS:

Commencing at a point which is the following courses and distances from the intersection of the northerly line of Sheridan Drive, as a 100 foot highway and the former northeast boundary of the Lehigh Valley Railroad right of way; (a) running thence easterly along the northerly line of Sheridan Drive as a 100 foot highway, a distance of 200 feet to a point; thence (b) north 03° 16' 50" east a distance of 10 feet to the beginning of the parcel herein described; thence north 85° 33' 10" west, and along the northerly boundary of said Sheridan Drive, a distance of 103.00 feet to a point; thence north 77° 01' 19" west, and along the northerly boundary of said Sheridan Drive, a distance of 38.30 feet to a point; thence north 46° 41' 05" west a distance of 192.14 feet to a point; thence north 44° 44' 25"" east a distance of 120.65 feet to a point; thence north 45° 14' 15" west a distance of 111.74 feet to a point; thence north 26° 55' 31"" west a distance of 65.86 feet to a point; thence north 45° 15' 35" west a distance of 173.07 feet to a point; thence north 67° 16' 29"" west a distance of 55.69 feet to a point; thence north 43° 41' 10" west a distance of 147.82 feet to a point; thence south 44° 44' 25"" west a distance of 96.04 feet to a point; thence north 43° 41' 10"" west a distance of 61.10 feet to a point; thence south 44° 44' 25"" west a distance of 54.02 feet to a point; thence north 43° 41' 10" west a distance of 243.31 feet to a point; thence north 89° 44' 25"" east a distance of 859.13 feet to a point; thence south 03° 16' 50" west a distance of 544.30 feet to a point; thence south 85° 33' 10" east a distance of 80.00 feet to a point; thence south 03° 16' 50" west a distance of 190.00 feet to the point and place of beginning and containing 6.27 acres, more or less.

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

Exhibit 4 – Reduced Size Copy of Survey Prepared by Bissell Stone Associates [Full Size Copy also Attached]

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)



Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

Exhibit 5 – Responses to Questions 11A & 11B of the Rezoning Application

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

EXHIBIT 5

RESPONSES TO QUESTION 11 OF APPLICATION TO REMOVE DECLARATION OF RESTRICTIONS IMPOSED IN CONNECTION WITH A REZONING DECISION

DEVELOPMENT OF 4100-4220 SHERIDAN DRIVE

Question 11(A): Description of the character of the proposed development:

Response to Question 11(A): The proposed project will be upscale in character and will feature a four-story building on the property at 4100-4120 Sheridan Drive ("Project Site"). The Petitioner is seeking to remove a Declaration of Restrictions imposed by the Town Board on July 7, 1997 in connection with a rezoning of the parcel that then consisted of 4100 Sheridan Drive, which includes the existing parcel at 4100-4120 Sheridan Drive from Commercial Services District ("CS") to General Business District ("GB"). A copy of correspondence issued by the Town Clerk's Office on July 10, 1997 setting forth the zoning conditions imposed by the Town Board on July 7, 1997 is attached as **Exhibit "9"** and a copy of the Declaration of Restrictions as recorded at the Erie County Clerk's Office in accordance with the rezoning decision of the Town Board on September 18, 1997 is attached as **Exhibit "7"**.

Condition No. 3 as imposed by the Town Board on July 7, 1997 stated as follows: "Any office buildings to be constructed on this site will be to a maximum height of 48 feet, including the stair and utility towers." The Petitioner is seeking to construct a four-story upscale office building on the Project Site with a height of up to 65 ft. Color Conceptual Elevation Plans [Drawing A201 and A202] as prepared by Kideney Architects are attached as **Exhibit "10"** of this Application.

The proposed project will be consistent with the character of the existing hotel on the Project Site and surrounding land uses in the vicinity that include automotive dealerships directly

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

to east of the Project Site and a used automotive dealership on the south side of Sheridan Drive in the vicinity of the Project Site. Landscaping will be provided pursuant to a Landscape Plan to be prepared by a licensed landscape architect during the Site Plan Application review stage of the project and the landscaping will feature numerous trees, bushes and shrubs.

Question 11(B)(1): Rationale for rezoning request: 1. What was this site chosen?

Response to Question 11(B)(1): The Project Site is an appropriate location for the proposed project given the character and scale of nearby land uses. It is also important to mention that the Project Site is designated as appropriate for "Suburban Center" development per Figure 6-A of the Comprehensive Plan. A color copy of Figure 6-A is attached as **Exhibit "9"**.

Question 11(B)(2): Why cannot land be used with the existing zoning?

Response to Question 11(B)(2): Not applicable. A response to Questions 11(B)(2) is included within Exhibit "5" of the Rezoning Application and supporting documentation simultaneously filed in connection with the proposed project.

Question 11(B)(3): How will this rezoning impact surrounding properties?

Response to Question 11(B)(3): The proposed project will not result in any significant adverse impacts on surrounding properties. As mentioned previously, the vegetated 100 ft. of Permanent Open Space located on the northern portion of the Project Site zoned GB will remain undisturbed.

Question 11(B)(4): How will this rezoning impact the school system?

Response to Question 11(B)(4): The proposed project will result in positive fiscal impacts for the Sweet Home Central School District since it will result in substantial annual school taxes revenues without any demand for educational services.

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

Exhibit 6 – Responses to Questions 16A, 16B, 16D & 16E of the Rezoning Application

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

EXHIBIT 6

RESPONSES TO QUESTION 16 OF APPLICATION TO REMOVE DECLARATION OF RESTRICTIONS

4100-4120 SHERIDAN DRIVE FROM GB TO DC-5

Question 16(A)(1): **State in detail why the proposed zoning is consistent with the adopted Town of Amherst Bicentennial Comprehensive Plan. Cite specific sections, maps and/or figures in the plan that support the proposed zoning at this location.**

Response to Question 16(A)(1): The request to amend the remove the Declaration of Restrictions imposed by the Town Board on July 7, 1997 being requested to accommodate the proposed development of a portion of 4100-4120 Sheridan Drive (the "***Project Site***") is consistent with the adopted Bicentennial Comprehensive Plan. The Town of Amherst adopted the Bicentennial Comprehensive Plan in January of 2007 after completing a lengthy planning process that included numerous public meetings and public hearings involving the Comprehensive Plan Advisory Committee, the Planning Board and the Town Board.[1] In December of 2020, the Town Board most recently adopted amendments to the Bicentennial Comprehensive Plan. The Comprehensive Plan is intended to guide future growth and redevelopment in the Town.

Figure 6-A of the adopted Bicentennial Comprehensive Plan is the titled Commercial and Mixed-Use Designations and it depicts the Project Site as being designated as "Suburban Center".

[1] A copy of the resolution adopted by the Town Board on January 2, 2007 for the purpose of adopting the Bicentennial Comprehensive Plan pursuant to Town Law Section 272-a is included at the beginning of the Comprehensive Plan. This resolution recites the lengthy planning history that incorporated numerous opportunities for public input as well as a coordinated environmental review pursuant to SEQRA that involved the preparation a Generic EIS and the issuance of a Findings Statement.

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

The Project Site is located within the University Place geographic location per Figure 6-A of the Comprehensive Plan. A copy of Figure 6 of the Comprehensive Plan is provided at **Exhibit "10"**.

Question 16(A)(2): Cite all text, map, and/or figures that must be amended to support the proposed zoning at this location and provide detailed suggested amendments.

Response to Question 16(A)(2): The proposed project does not require an amendment to the Bicentennial Comprehensive Plan.

Question 16(A)(3): State why the proposed zoning is consistent with intent and objectives (Sec. 1-2-2) of the Zoning Ordinance:

Response to Question 16(A)(3): Section 1-2-1 of the Zoning Code is titled "Purpose" and it states as follows:

> *"The purpose of this Zoning Ordinance and the intent of the legislative authority in its adoption is to promote the environment of the town and its public health, safety, convenience, comfort, prosperity and the general welfare by regulating the use of buildings, other structures and land for residences, open space, public facilities, business, services, industry or other purposes; by regulating and restricting the bulk, height, design, building coverage and location of structures; by regulating and limiting population density; and for the aforesaid purposes, to divide the land within the limits of the town into districts of such number and dimensions generally consistent with the policies of the Comprehensive Plan and to provide procedures for the administration and amendment of said Zoning Ordinance."*

The proposed project is consistent with the "Purpose" of the Zoning Code. Section 1-2-2 of the Zoning Code sets forth the objectives of the Zoning Code. This section of the Zoning Code lists thirteen objectives that are discussed below as follows:

A. To protect the character and values of residential, institutional and public uses, business, commercial and manufacturing uses and to insure their orderly and beneficial development;

Response: The proposed project will be consistent with the objective of protecting the character and value of existing land uses. The requested removal of the Declaration

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

of Restrictions will allow the Project Site to be utilized as an upscale four-story office building project, which represents orderly and beneficial development.

B. To provide adequate open spaces for light, air and outdoor uses to include public, common and private open space areas;

Response: The proposed project will not be inconsistent with this objective.

C. To prevent overcrowding of land;

Response: The proposed project will not result in the overcrowding of land. The project is consistent with the type of development designated as appropriate for the Project Site per Figure 6-A of the adopted Comprehensive Plan.

D. To prevent excessive concentration of population and to prevent spare and uncoordinated development;

Response: The proposed project will not result in excessive concentration of population and represents an example of coordinated development. The project will require Site Plan Approval from the Planning Board.

E. To regulate and control the location and spacing of buildings on the lot and in relation to the surrounding property generally consistent with the policies of the Comprehensive Plan.

Response: The responses to the Questions in this **Exhibit "6"** of the Application set forth the reasons the proposed rezoning is consistent with the policies of the Comprehensive Plan.

F. To protect persons and property from damage and injury due to fire or flood;

Response: The Site Plan Application review process will trigger the need for an Engineer's Report and SWPPP prepared by a licensed engineer to be prepared for review and approval by the Town's Engineering Department. The proposed project will not increase the likelihood of damage and injury due to fire and flood. The proposed four-story office building will be constructed per the stringent requirements of the NYS Building Code including the fire safety standards contained therein.

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

G. To preserve and protect significant natural features and vegetation, thereby preventing ecological damage and visual blight which occur when those features or vegetation are eliminated or substantially altered to serve development purposes only.

Response: The proposed project will not be inconsistent with this objective. There are not significant natural features located on the previously disturbed portion of the Project Site to be developed.

H. To assure that structure and land use arrangements are aesthetically harmonious with nearby areas and structures.

Response: The development of the Project Site in a manner generally consistent with the Concept Site Plan [Drawing SP01] prepared by Kideney Architects will be aesthetically harmonious with nearby areas and structures. Color Conceptual Elevation Plans depicting a proposed four-story office building as prepared by Kideney Architects are attached as **Exhibit "11"**.

I. To regulate the location of buildings and intensity of uses in relation to streets according to plans so as to cause the least interference with and be damaged least by traffic movements and hence result in lessened street congestion and improved public safety.

Response: The proposed project will utilize the existing driveway onto Sheridan Drive, which is the only available access to the roadway network in the vicinity of the Project Site.

J. To establish zoning patterns that insure economical extensions for sewers, water supply waste disposal and other public utilities, as well as development of recreation, schools and other public facilities;

Response: The Project Site has access to sanitary sewer and water lines as well as necessary public utilities to service the proposed project.

K. To guide the future development of the town so as to being the gradual conformity of land, structures and uses generally consistent with the policies of the Comprehensive Plan.

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

Response: The proposed project is consistent with this objective since the development of the Project Site in manner generally consistent with the attached Concept Site Plan prepared by Kideney Architects is consistent the policies contained in the Comprehensive Plan.

L. To accomplish the specific intents and goals set forth in the introduction to the respective sections.

Response: The proposed project will be consistent with this objective.

M. To protect the community from visual pollution resulting from the unregulated use of signs and other advertising devices.

Response: The proposed project will not be inconsistent with this objective.

Question 16(C): Compatibility with the present zoning and conforming uses of nearby property and with the character of the neighborhood:

Response to Question 16(C): The proposed project will be compatible with the present zoning and conforming uses of nearby properties and the character of the neighborhood.

Question 16(D): Suitability of the subject property for uses permitted by the current versus the proposed district:

Response to Question 16(D): Not applicable.

Question 16(E): Whether the proposed change tends to improve the balance of uses, or meets a specific demand in the Town:

Response to Question 16(D): The proposed project will have positive impacts on the balance of uses in the Town by providing a high quality office building designed for occupancy by medical users. It is important to mention that the Petitioner will be required to present the architectural plans for the proposed project to the Town's Design Advisory Board for its issuance of a recommendation to the Planning Board in connection with the future Site Plan Application review process.

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

Exhibit 7 – Copy of Declaration of Restrictions as Recorded at the Erie County Clerk's Office on September 18, 1997

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

IS IS NOT
A BILL

Erie County Clerk's Office
County Clerk's Recording Page

Control # 199709180935

Index DEED LIBER

Book 10921 Page 3979

No. Pages 0004

Instrument DECL RSTRCT COV
Date : 9/18/1997
Time : 3:18:23

Return To:

BOX 243

4100 SHERIDAN DRIVE LLC

COUNTY	$	17.00
	$	.00
COE	$	5.00
	$	.00
	$	.00
	$	.00
	$	.00
	$	.00
	$	.00
Total:	$	22.00

MORTGAGE TAX

Serial #

City/Town	$	.00
S.M.A.	$	.00
Trans. Auth.	$	.00
Total	$	.00

STATE OF NEW YORK
Erie County Clerk's Office

WARNING - THIS SHEET CONSTITUTES THE CLERKS ENDORSEMENT, REQUIRED BY SECTION 316-A(5) OF THE REAL PROPERTY LAW OF THE STATE OF NEW YORK DO NOT DETACH

DAVID J SWARTS
County Clerk

TRANSFER TAX

Transfer Tax	$	.00
Amount	$	.00
Transfer Tax #		

D109213979

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

Box 243

DECLARATION OF RESTRICTIONS

WHEREAS, 4100 SHERIDAN DRIVE, L.L.C. is the sole owner of property referred to herein in Exhibit A, attached hereto and made a part hereof. Said parcel being situated in the Town of Amherst, County of Erie and State of New York, and being identified as 4100 SHERIDAN DRIVE, L.L.C., and

WHEREAS, 4100 SHERIDAN DRIVE, L.L.C. is the successor in interest to 428 CO., INC. and now holds legal title to the property described in Exhibit A, and

WHEREAS, the Town of Amherst approved the rezoning of said property and adopted a resolution approving said rezoning at their meeting on July 7, 1997 subject to the following restrictions:

1. Maintenance of a 100 foot wide green-space buffer along the entire northerly line of the property, including the retention of existing woods. The developer will provide additional fill-in trees or other suitable landscaping within the buffer area.

2. No building foundation will be constructed closer than 175 feet to the northerly property line, nor will any building foundation be constructed closer than 75 feet from the eastern property line.

3. Any office buildings to be constructed on this site will be to a maximum height of 48 feet, including the stair and utility towers.

4. Hotel construction will be located along the westerly property line and will set back a minimum of 330 feet from the said northerly property line.

5. The height of the hotel shall be restricted to a maximum overall height of 55 feet including the stair and utility towers.

The above restrictions shall be binding on 4100 SHERIDAN DRIVE, L.L.C., their successors and assigns and shall run with the land except that the above-described descriptions can be changed, modified or eliminated only by majority vote of the Town Board of Amherst, New York.

4100 SHERIDAN DRIVE, L.L.C.

By: _____
Stephen S. Obletz, General Manager

@ 935

779-3

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

STATE OF NEW YORK)
) SS.:
COUNTY OF ERIE)

On this 11th day of September, 1997, before me personally came STEPHEN S. OBLETZ, to me known, who, being by me duly sworn, did depose and say that he is the General Manager of 4100 SHERIDAN DRIVE, L.L.C., the Limited Liability Company described in and which executed the above instrument; and that he signed his name thereto as and for the act of said Limited Liability Company.

Notary Public

ANTHONY J. RENALDO
Notary Public, State of New York
Qualified in Erie County
My Commission Expires 9/13/98 1997

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

renaldo.ms\miscellaneous\declaration.41

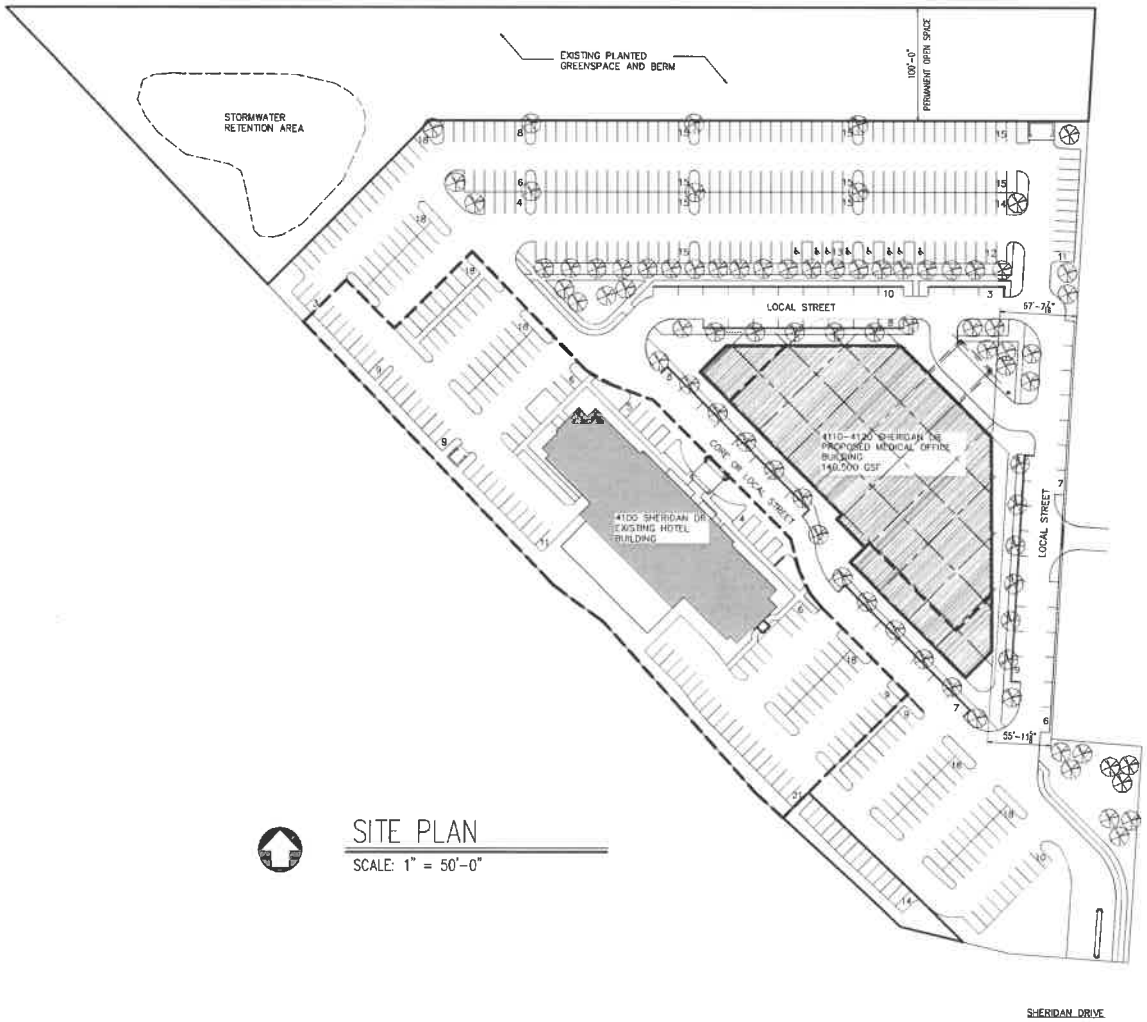
EXHIBIT A

Commencing at the intersection of the northerly line of Sheridan Drive as a 100 foot highway and the northeast boundary of the 100 foot wide Lehigh Valley Railroad right of way: running thence easterly along the northerly line of Sheridan Drive, 200 feet: running thence northerly parallel with the west line of Lot No. 66, 200.00 feet: running thence westerly parallel with the northerly line of Sheridan Drive 80.00 feet to a point: running thence northerly parallel with the west line of Lot No. 66, 645.90 feet: running thence westerly at an inside angle of 86° 22', 959.92 feet to a point in the said northeast bounds of the Lehigh Valley Railroad right of way which is distant 1146.70 feet northwest from the point of beginning: running thence southeasterly along the said northeasterly boundary of the Lehigh Valley Railroad right of way 1146.70 feet to the point or place of beginnng.

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

Exhibit 8 – Concept Site Plan [Drawing SP01] as Prepared by Kideney Architects [Full Size Copy also Attached]

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)



SITE PLAN

SCALE: 1" = 50'-0"

4100 SHERIDAN DR AND 4110-4120 SHERIDAN DR. SITE
DEVELOPMENT AREAS

TOTAL SITE AREA 458,195 SF 10.52 ACRES

AREA TO BE REZONED FROM GB TO DC-5 (PORTION OF 4110-4120 SHERIDAN DR.) 119,618 SF 6.27 ACRES

ZONING DISTRICT

EXISTING ZONING DISTRICT GB (GENERAL BUSINESS)

PROPOSED ZONING DISTRICT DC-5 (DEEP CORRIDOR 5)

BUILDING INFORMATION

BUILDING HEIGHT 85 FT MAX (MEASURED FROM FINISHED GRADE)

STORIES 4 FLOORS

4100 SHERIDAN DR. AND 4110-4120 SHERIDAN DR. SITE
PARKING REQUIREMENTS

EXISTING HOTEL (4100 SHERIDAN DR.) REQUIRES 134 SPACES

PROPOSED MEDICAL OFFICE BUILDING (4110-4120 SHERIDAN DR.)
TOTAL BUILDING AREA 140,500 SF

PARKING SPACES REQUIRED:

MULTI-STORY MULTI TENANT GROSS SF x .75
140,500SF x .75 = 105,375SF
105,375SF/1000SF = 105.375
MEDICAL: 105.375 x 3.5 = 369 SPACES
OFFICE: 105.375 x 2.5 = 264 SPACES

MULTI-STORY SINGLE TENANT GROSS SF x .80
140,500SF x .80 = 112400SF
112400SF/1000SF = 112.4
MEDICAL: 112.4 x 3.5 = 394 SPACES (*new)
OFFICE: 112.4 x 2.5 = 281 SPACES

TOTAL SPACES SHOWN = 373 (8 HC)

4110-4120 SHERIDAN DR SITE
OUTDOOR AMENITY SPACE

OUTDOOR AMENITY SPACE REQUIRED:
5%

LOT : 225,815 SF x .05 = 11290.75 SF

Kideney Architects
Kideney Architects, P.C.
ARCHITECTS | PLANNERS
INTERIORS LANDSCAPE DESIGN
143 Genesee Street
Buffalo, New York 14203
716.249.3610 | kideneyarch.com

SHERIDAN COMMONS
4110-4120 Sheridan Dr.
Amherst, NY

Concept Site Plan

AS NOTED	
GCU	
GCU	KS DMR
2022005	JUNE 21, 2022

SP01

WARNING
COPYRIGHT 1996 KIDENEY ARCHITECT PC

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Exhibit 9 – Correspondence of Town Clerk's Office dated July 10, 1997

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

TOWN OF AMHERST

ERIE COUNTY, NEW YORK

5583 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221
716-631-7045
FAX 716-631-7152

LINDA M. WEISSER
Deputy Town Clerk

DANIEL A. LONGO
Town Clerk

July 10, 1997

428 Co., Inc.
4500 Harlem Road
Amherst, New York 14226

Gentlemen:

The Amherst Town Board, at their meeting held July 7, 1997, approved your request to rezone property at 4100 Sheridan Drive from CS to GB. This approval was granted subject to the following conditions:

1. Maintenance of a 100 foot wide green-space buffer along the entire northerly line of the property, including the retention of existing woods. The developer will provide additional fill-in trees or other suitable landscaping within the buffer area.

2. No building foundation will be constructed closer than 175 feet to the northerly property line, nor will any building foundation be constructed closer than 75 feet from the eastern property line.

3. Any office buildings to be constructed on this site will be to a maximum height of 48 feet, including the stair and utility towers.

4. Hotel construction will be located along the westerly property line and will be set back a minimum of 330 feet from the said northerly property line.

5. The height of the hotel shall be restricted to a maximum overall height of 55 feet including the stair and utility towers.

Thank you for your continued interest in our community.

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

Printed on Recycled Paper

Very truly yours,

Daniel A. Longo
Town Clerk

DAL:lw

cc: Assessor
Building
Planning
Supervisor
Councilmember's Office
Town Attorney
Anthony J. Renaldo, Attorney.

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

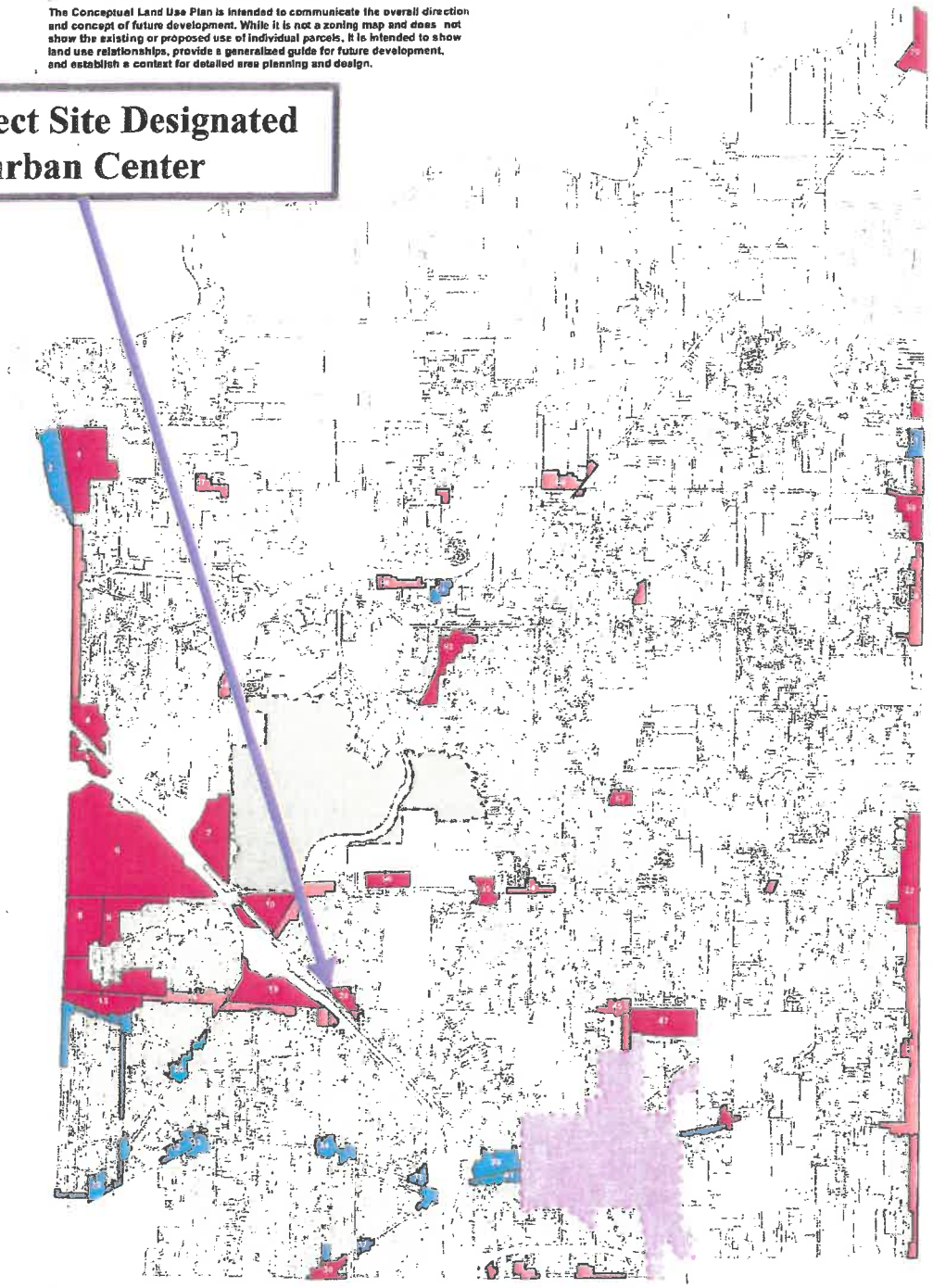
Exhibit 10: Color Copy of Figure 6-A of the Comprehensive Plan

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

Town of Amherst
Bicentennial
Comprehensive Plan

The Conceptual Land Use Plan is intended to communicate the overall direction and concept of future development. While it is not a zoning map and does not show the existing or proposed use of individual parcels, it is intended to show land use relationships, provide a generalized guide for future development, and establish a context for detailed area planning and design.

Project Site Designated Suburban Center



Wegmans (NFB)
Walgreens (NFB)
NFB / Ellicott Creek Strip
Home Depot (NFB)
Innkeepers Lane
Consumer Square / Ridge Lea
University Place
Boulevard Mall
Wegmans (Alberta)
Golden Triangle
Maple / Amherst Manor
Walmart (Sheridan)
Northtown Plaza
NFB Strip
Eggert Strip
Eggert / Bailey
Bailey Strip
Sheridan / Millersport Strip
Northtown Auto (Sheridan)
Sheridan / Sunrise - North Side
Sheridan / Sunrise - South Side
Sheridan / Harlem - West Side
Sheridan / Harlem - East Side
Sheridan / Getzville Strip
Millersport / Arcade
Six Corners
Bailey / Grover Cleveland
Bailey Live-Work
Main / Bailey
University Plaza
Kenmore Avenue
Eggertsville (Main / Eggert - West Side)
Eggertsville (Main / Eggert - East Side)
Snyder (Main / Harlem)
Harlem Strip
Harlem / Kensington
Kensington / Saratoga
Main / Kensington
West of Village - North of Main
West of Village - South of Main (West Side)
West of Village - South of Main (East Side)
Wehrle / South Forest
Wehrle / South Union
Wehrle / Cayuga
Sheridan / Hopkins
Evans Strip
Williamsville Place
Main Strip
Main / Youngs
Transit / Wehrle
Transit from Main to Maple
Transit / Maple
Maple / Ayer
Maple Strip
Maple / North Forest
Gun Club
Clearfield Plaza
Transit / Casey
Transit / North French
Transit / Dodge
Swormville
Hopkins / Dodge
Getzville Plaza
Sweet Home / Skinnersville
Campbell / Dodge
Dodge Strip
Sweet Home / North French
Campbell / North French
Crosspointe
Transit / Millersport
Transit Strip

FIGURE 6-A

Suburban Center
Suburban Corridor
Traditional Areas
Village of Williamsville
University at Buffalo

SOURCE NOTES:

Original Source Data Provided by the Town of Amherst Information Technology Department, URS Corporation and Wallace Roberts & Todd, LLC

Map Compiled by the Town of Amherst Planning Department

Date: December 2020

0 0.2 0.4 0.6 0.8 1
Miles

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

Exhibit 11: Color Conceptual Elevation Plans [Drawing A201 and A202] as Prepared by Kideney Architects [11" x 17"]

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Full Environmental Assessment Form
Part 1 - Project and Setting

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Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project: Proposed Medical Office Project		
Project Location (describe, and attach a general location map): 4110-4120 Sheridan Drive [SBL No. 68.09-1-5-1.21] - Town of Amherst - Erie County		
Brief Description of Proposed Action (include purpose or need): The proposed project consists of a proposed office project consisting of a 4-story medical office building consisting of 140,500 sq. ft. and and related site improvements. The proposed action includes an amendment of the zoning classification of 6.27 acres of 4110-4120 Sheridan Drive ("Project Site") from GB to DC-5 and a request to remove a Declaration of Restrictions imposed in connection with a rezoning approved by the Town Board in 1996. The proposed action has been defined broadly to include all required discretionary approvals required from the municipal boards of the Town of Amherst and involved agencies as well as the construction of the medical office building and all related site improvements including parking spaces, access aisles, landscaping, lighting, water and sanitary sewer lines as well as utility connections. The heavily vegetated Permanent Open Space along the northern edge the Project Site will remain undisturbed [approximately 2.09] acres will not be disturbed and will remain zoned GB. Given that the proposed project ("action") will not result in any potentially significant adverse environmental impacts, the issuance of a negative declaration pursuant to SEQRA is appropriate. The action is a Type I action pursuant to SEQRA (6 NYCRR Part 617.4) since it includes a commercial building with a size of more than 100,000 sq. ft.		
Name of Applicant/Sponsor: Sheridan Commons LLC c/o Sean Hopkins, Esq.	Telephone: 716.510-4338 E-Mail: shopkins@hsmlegal.com	
Address: 5500 Main Street, Suite 343		
City/PO: Williamsville	State: NY	Zip Code: 14221
Project Contact (if not same as sponsor; give name and title/role):	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:
Property Owner (if not same as sponsor): Sheridan Commons LLC c/o Sean Hopkins, Esq.	Telephone: 716.510-4338 E-Mail: shopkins@hsmlegal.com	
Address: 5500 Main Street, Suite 343		
City/PO: Williamsville	State: NY	Zip Code: 14221

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B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees ☑Yes ☐No	Town Board - Rezoning and	July 18, 2022
b. City, Town or Village Planning Board or Commission ☑Yes ☐No	Planning Board - Site Plan Approval	To be Determined
c. City, Town or Village Zoning Board of Appeals ☐Yes ☑No		
d. Other local agencies ☑Yes ☐No	Building Dept - Building Permit; Eng. Dept. - Stormwater Per. & DSCA; AIDA - Potential PILOT	To be Determined
e. County agencies ☑Yes ☐No	ECWA - Water and RPZ	To be Determined
f. Regional agencies ☐Yes ☑No		
g. State agencies ☑Yes ☐No	NYSDEC - SPDES and DSCA	To be Determined
h. Federal agencies ☐Yes ☑No		

i. Coastal Resources.
i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐Yes ☑No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☑Yes ☐No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☑Yes ☐No

If Yes, identify the plan(s):
NYS Heritage Areas:West Erie Canal Corridor

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes ☑No

If Yes, identify the plan(s):

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C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
General Business District ("GB")

b. Is the use permitted or allowed by a special or conditional use permit? ☐ Yes ☑ No

c. Is a zoning change requested as part of the proposed action? ☑ Yes ☐ No
If Yes,
i. What is the proposed new zoning for the site? Deep Corridor 5 ("DC-5")

C.4. Existing community services.

a. In what school district is the project site located? Sweet Home Central School District

b. What police or other public protection forces serve the project site?
Town of Amherst Police Department

c. Which fire protection and emergency medical services serve the project site?
Volunteer Fire Department

d. What parks serve the project site?
There are various Town parks located in relative close proximity to the Project Site.

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)? Office Space.

b. a. Total acreage of the site of the proposed action? 8.36 acres
b. Total acreage to be physically disturbed? 6.27 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 8.36 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % _____ Units: _____

d. Is the proposed action a subdivision, or does it include a subdivision? ☐ Yes ☑ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
ii. Is a cluster/conservation layout proposed? ☐ Yes ☐ No
iii. Number of lots proposed? _____
iv. Minimum and maximum proposed lot sizes? Minimum _____ Maximum _____

e. Will the proposed action be constructed in multiple phases? ☐ Yes ☑ No
i. If No, anticipated period of construction: _____ months
ii. If Yes:
- Total number of phases anticipated _____
- Anticipated commencement date of phase 1 (including demolition) _____ month _____ year
- Anticipated completion date of final phase _____ month _____year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases: _____

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f. Does the project include new residential uses? ☐Yes ☑No

If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase				
At completion of all phases				

g. Does the proposed action include new non-residential construction (including expansions)? ☑Yes ☐No

If Yes,

i. Total number of structures 1

ii. Dimensions (in feet) of largest proposed structure: 65 ft. height; TBD width; and TBD length

iii. Approximate extent of building space to be heated or cooled: 140,500 square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? [Existing stormwater facility location on the northwest portion of the Project Site will be utilized for stormwater management purposes.] ☐Yes ☑No

If Yes,

i. Purpose of the impoundment:

ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☐Other specify:

iii. If other than water, identify the type of impounded/contained liquids and their source.

iv. Approximate size of the proposed impoundment. Volume: _____ million gallons; surface area: _____ acres

v. Dimensions of the proposed dam or impounding structure: _____ height; _____ length

vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐Yes ☑No

If Yes:

i .What is the purpose of the excavation or dredging?

ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?

- Volume (specify tons or cubic yards):
- Over what duration of time?

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.

iv. Will there be onsite dewatering or processing of excavated materials? ☐Yes ☐No

If yes, describe.

v. What is the total area to be dredged or excavated? _____ acres

vi. What is the maximum area to be worked at any one time? _____ acres

vii. What would be the maximum depth of excavation or dredging? _____ feet

viii. Will the excavation require blasting? ☐Yes ☐No

ix. Summarize site reclamation goals and plan:

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☐Yes ☑No

If Yes:

i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description):

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ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

iii. Will the proposed action cause or result in disturbance to bottom sediments? ☐Yes ☐No
If Yes, describe:

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☑No
If Yes:

- acres of aquatic vegetation proposed to be removed:
- expected acreage of aquatic vegetation remaining after project completion:
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access):
- proposed method of plant removal:
- if chemical/herbicide treatment will be used, specify product(s):

v. Describe any proposed reclamation/mitigation following disturbance:

c. Will the proposed action use, or create a new demand for water? ☑Yes ☐No
If Yes:

i. Total anticipated water usage/demand per day: 14,500 gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑Yes ☐No
If Yes:

- Name of district or service area: ECWA Consolidated Water District
- Does the existing public water supply have capacity to serve the proposal? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No
- Do existing lines serve the project site? ☑Yes ☐No

iii. Will line extension within an existing district be necessary to supply the project? ☐Yes ☑No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project:
- Source(s) of supply for the district:

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐Yes ☐No
If, Yes:

- Applicant/sponsor for new district:
- Date application submitted or anticipated:
- Proposed source(s) of supply for new district:

v. If a public water supply will not be used, describe plans to provide water supply for the project:

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑Yes ☐No
If Yes:

i. Total anticipated liquid waste generation per day: 14,500 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each):
Sanitary wastewater.

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑Yes ☐No
If Yes:

- Name of wastewater treatment plant to be used: Town of Amherst Wastewater Treatment Plant
- Name of district: Town of Amherst Consolidated Sanitary Sewer District
- Does the existing wastewater treatment plant have capacity to serve the project? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No

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- Do existing sewer lines serve the project site? ☑Yes ☐No
- Will a line extension within an existing district be necessary to serve the project? ☐Yes ☑No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☑No

If Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑Yes ☐No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or _____ acres (impervious surface)

_____ Square feet or _____ acres (parcel size)

ii. Describe types of new point sources. _____

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

- If to surface waters, identify receiving water bodies or wetlands: _____
- Will stormwater runoff flow to adjacent properties? ☐Yes ☑No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☐Yes ☑No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☑No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:

- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

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h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? [Note: A Traffic Impact Study is being prepared by SRF Associates for the purpose of evaluating the potential traffic impacts for the proposed project.] ☐Yes ☑No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐Weekend
☐ Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): _____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☑Yes ☐No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: _____
To be Determined

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):
National Grid

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐Yes ☑No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 7:00 a.m. to 7:00 p.m.
- Saturday: 7:00 a.m. to 5:00 p.m.
- Sunday: As Needed
- Holidays: Not Applicable

ii. During Operations:

- Monday - Friday: 7:00 a.m. to 7:00 p.m.
- Saturday: 7:00 a.m. to 5:00 p.m.
- Sunday: To be Determined
- Holidays: To be Determined

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m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

There will be temporary and unavoidable short-term noise impacts resulting from the use of construction equipment during the construction of the proposed medical office project.

ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☑ No

Describe: _____

n. Will the proposed action have outdoor lighting? ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

On-site lighting will comply with the Town's stringent lighting standards and a Photometric Plan will be required in connection with the Site Plan Application review process for the development of the Project Site.

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☑ No

Describe: _____

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☑ Yes ☐ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures: _____

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored _____

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally, describe the proposed storage facilities: _____

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☑ Yes ☐ No

If Yes:

i. Describe proposed treatment(s):

Use of pesticides may occur in connection with maintenance of greenspace and landscaping but will only be utilized if applied by licensed applicator.

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☑ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☐ Yes ☑ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: _____ tons per _____ (unit of time)
- Operation : _____ tons per _____ (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: _____
- Operation: _____

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: _____
- Operation: _____

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s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☑ Yes ☐ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

The future medical tenant(s) may generate hazardous medical waste that will be properly disposed of any required by the NYS Department of Health requirements.

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

See above.

iii. Specify amount to be handled or generated TBD tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

Not applicable.

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☑ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☑ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)
☐ Forest ☐ Agriculture ☐ Aquatic ☑ Other (specify): Motor Service and I-290

ii. If mix of uses, generally describe:

There are a wide assortment of land uses in the vicinity of Project with various zoning classifications.

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	0	4.9	4.9
• Forested	2.09	2.09	0
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	6.27	0	(6.27)
• Agricultural (includes active orchards, field, greenhouse etc.)	0	0	0
• Surface water features (lakes, ponds, streams, rivers, etc.)	0	0	0
• Wetlands (freshwater or tidal)	0	0	0
• Non-vegetated (bare rock, earth or fill)	0	0	0
• Other Describe: Greenspace and Landscaping	0	1.37	1.37

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c. Is the project site presently used by members of the community for public recreation? ☐Yes ☑No
i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☐Yes ☐No
If Yes,
i. Identify Facilities:

e. Does the project site contain an existing dam? ☐Yes ☑No
If Yes:
i. Dimensions of the dam and impoundment:
- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____
iii. Provide date and summarize results of last inspection:

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐Yes ☑No
If Yes:
i. Has the facility been formally closed? ☐Yes ☐ No
- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:

iii. Describe any development constraints due to the prior solid waste activities: _____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐Yes ☑No
If Yes:
i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐Yes ☑ No
If Yes:
i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐Yes ☐No
☐ Yes – Spills Incidents database — Provide DEC ID number(s): _____
☐ Yes – Environmental Site Remediation database — Provide DEC ID number(s): _____
☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures: _____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☑Yes ☐No
If yes, provide DEC ID number(s): C915291

iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):
The Project Sponsor is not aware of status of the above referenced site relative to the NYSDEC Environmental Site Remediation database.

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v. Is the project site subject to an institutional control limiting property uses? ☐Yes ☐No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐Yes ☐No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? >5 ft. feet

b. Are there bedrock outcroppings on the project site? ☐Yes ☑No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____%

c. Predominant soil type(s) present on project site: _____ _____%
_____ _____%
_____ _____%

d. What is the average depth to the water table on the project site? Average: _____ feet

e. Drainage status of project site soils: ☐ Well Drained: _____% of site
☐ Moderately Well Drained: _____% of site
☐ Poorly Drained _____% of site

f. Approximate proportion of proposed action site with slopes: ☑ 0-10%: 100 % of site
☐ 10-15%: _____% of site
☐ 15% or greater: _____% of site

g. Are there any unique geologic features on the project site? ☐Yes ☑No
If Yes, describe: _____

h. Surface water features.

i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☐Yes ☑No

ii. Do any wetlands or other waterbodies adjoin the project site? [There are no an wetlands subject to the jurisdiction of either the NYSDEC or USACE on the Project Site.] ☑Yes ☐No

If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.

iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑Yes ☐No

iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name _____ Approximate Size _____
- Wetland No. (if regulated by DEC) _____

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐Yes ☑No

If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐Yes ☑No

j. Is the project site in the 100-year Floodplain? ☐Yes ☑No

k. Is the project site in the 500-year Floodplain? ☐Yes ☑No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐Yes ☑No
If Yes:

i. Name of aquifer: _____

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

m. Identify the predominant wildlife species that occupy or use the project site:
Typical suburban species

n. Does the project site contain a designated significant natural community? ☐Yes ☑No
If Yes:
i. Describe the habitat/community (composition, function, and basis for designation):
ii. Source(s) of description or evaluation:
iii. Extent of community/habitat:
- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐Yes ☑No
If Yes:
i. Species and listing (endangered or threatened):

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☐Yes ☑No
If Yes:
i. Species and listing:

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐Yes ☑No
If yes, give a brief description of how the proposed action may affect that use:

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐Yes ☑No
If Yes, provide county plus district name/number:

b. Are agricultural lands consisting of highly productive soils present? ☐Yes ☑No
i. If Yes: acreage(s) on project site?
ii. Source(s) of soil rating(s):

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐Yes ☑No
If Yes:
i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature
ii. Provide brief description of landmark, including values behind designation and approximate size/extent:

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐Yes ☑No
If Yes:
i. CEA name:
ii. Basis for designation:
iii. Designating agency and date:

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? ☐ Yes ☑ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: _____

iii. Brief description of attributes on which listing is based:

_____

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☐ Yes ☑ No

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s): _____

ii. Basis for identification: _____

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☐ Yes ☑ No

If Yes:

i. Identify resource: _____

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.): _____

iii. Distance between project and resource: _____ miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation: _____

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

I certify that the information provided is true to the best of my knowledge.

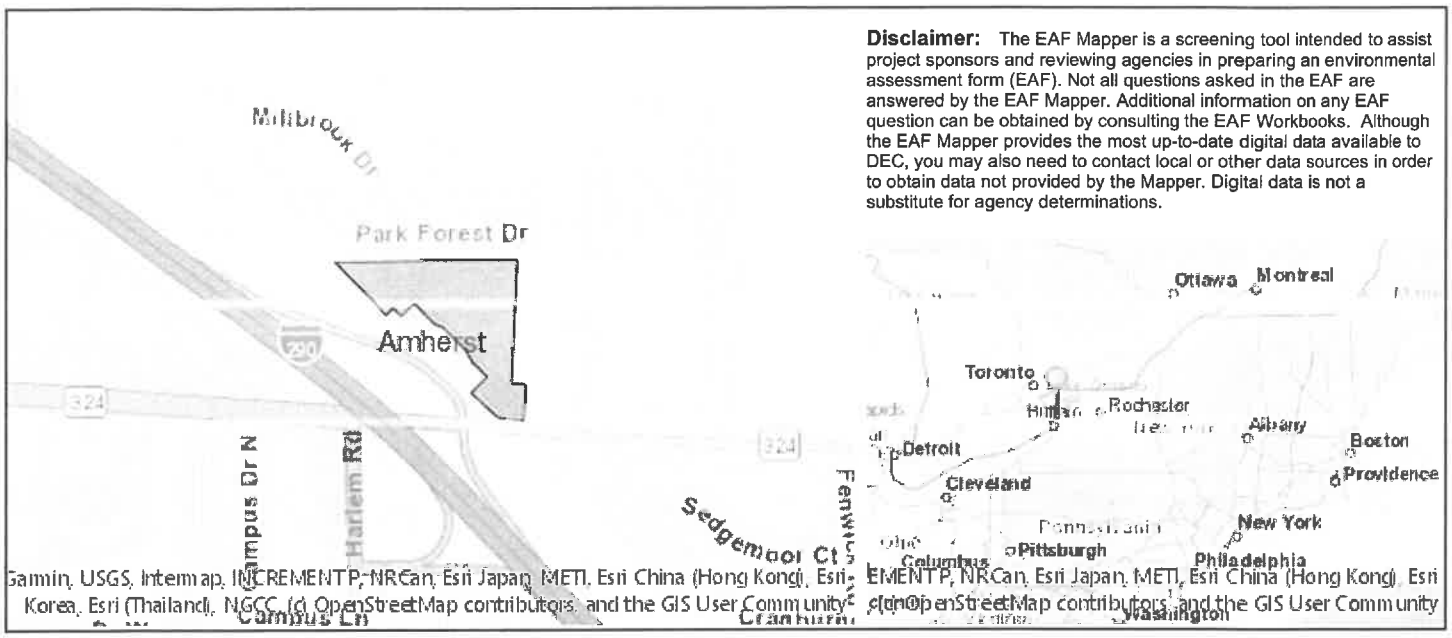
Applicant/Sponsor Name Sheridan Commons LLC Date July 18, 2022

Signature _____ Title Attorney for Project Sponsor

PRINT FORM

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

EAF Mapper Summary Report



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.

B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Yes - Digital mapping data are not available for all Special Planning Districts. Refer to EAF Workbook.
C.2.b. [Special Planning District - Name]	NYS Heritage Areas:West Erie Canal Corridor
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	Yes
E.1.h.iii [Within 2,000' of DEC Remediation Site - DEC ID]	C915291
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	No
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	No
E.2.k. [500 Year Floodplain]	No
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	No

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

E.2.o. [Endangered or Threatened Species]	No
E.2.p. [Rare Plants or Animals]	No
E.3.a. [Agricultural District]	No
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.3.f. [Archeological Sites]	No
E.3.i. [Designated River Corridor]	No

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)

Rezoning of 4110-4120 Sheridan Drive and
Removal of Declaration of Restrictions
TOWN OF AMHERST ATTACHMENT
State Environmental Quality Review
ENVIRONMENTAL ASSESSMENT FORM

1. For each applicable category of proposed new structures, including additions to existing structures, provide the following information for all soil types on the project site (*according to Soil Survey of Erie County, NY; Table 11, Building Site Development, pp 294-305):*

Soil Name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Odessa Silt Loam	Severe	Severe	Severe	Severe	Moderate
Schoharie Silt Loam	Moderate	Moderate	Moderate	Moderate	Moderate

2. If the Soil survey indicates either "severe" or "moderate" suitability for the proposed types of construction, a geotechnical and hydrological analysis based on one test per 3.5 acres of project area must be provided (per Town Board resolution, 3/17/03, amended 6/16/03).

   _x_ Geotechnical report attached _____ Not applicable

   [Note: Three copies of the Geotechnical Report have been submitted to the Planning Department].

3. Is your property located: On Youngs Road between Dodge and Klein Roads? □ Yes x No
   On Wehrle Dr. between Spindrift Dr. and Oakwood Rd? □ Yes x No

   If so, the property may be within an area of the Town that is affected by a moratorium on connections to the sanitary sewer system.

4. Are there alternative locations on the site for this project? □ Yes x No

5. Location and size of real property owned by petitioner within one (1) mile of subject proposal:

   Not Applicable.

6. Are you aware of current or future plans or intentions by others in the Town of Amherst to develop property within 1000± ft. of the present project request: □ Yes ☒ No
   Describe: Not Applicable.

   (Potential environmental impacts from adjacent or nearby projects undergoing the approval process will receive a coordinated environmental review to determine cumulative effects on common receivers (e.g. traffic and drainage corridors) and other relevant environmental concerns.)

7. Maximum number of vehicular trips to be generated per peak hour upon completion of project TBD
   Source: Traffic Impact Study being prepared by SRF Associates and will be submitted upon completion.

8. Will blasting occur during construction? □ Yes ☒ No

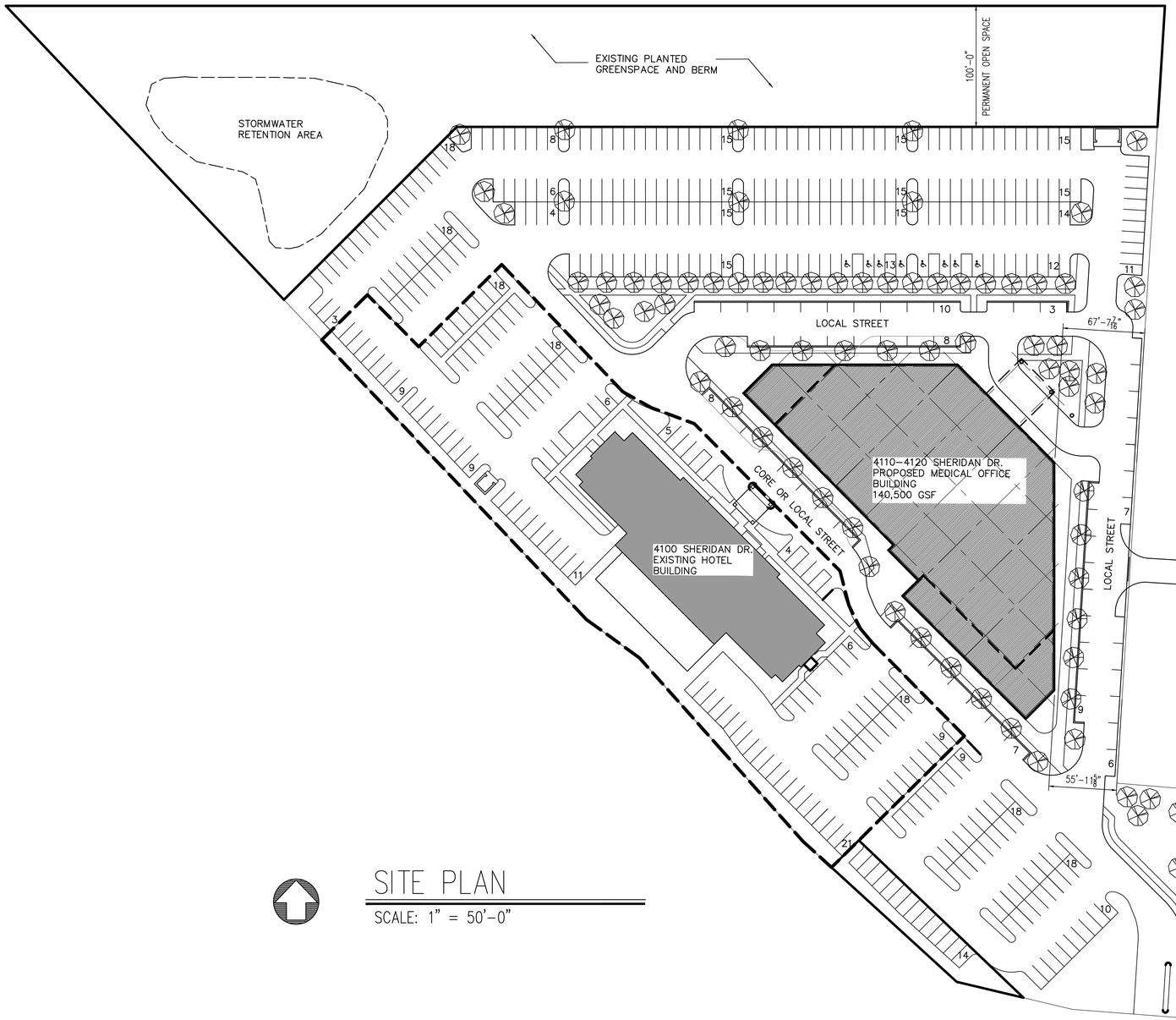
9. Does the project propose to connect and be tributary to the public sanitary sewer system? ☒ Yes □ No

10. Proposed net additional gallons per day (gpd) of sanitary sewer discharge upon completion of project:
    14,500 average flow 58,000 gpd peak flow.

    (Average flows of 2,500 gpd or greater will require an Engineer's Report that includes a detailed downstream sewer capacity analysis and the identification of and commitment to required I/I offset work during peak wastewater flow conditions.)

11. Based on the Town's *2011 Reconnaissance Level Survey of Historic Resources,* is your property 'blue-rated' for historic significance? □ Yes ☒ No

Attachment: Z-1996-32A_application_092222 (26077 : Z-1996-32A)



SITE PLAN

SCALE: 1" = 50'-0"

4100 SHERIDAN DR AND 4110-4120 SHERIDAN DR. SITE
DEVELOPMENT AREAS

TOTAL SITE AREA	458,195 SF 10.52 ACRES
AREA TO BE REZONED FROM GB TO DC-5 (PORTION OF 4110-4120 SHERIDAN DR.)	110,616 SF 6.27 ACRES
ZONING DISTRICT	
EXISTING ZONING DISTRICT	GB (GENERAL BUSINESS)
PROPOSED ZONING DISTRICT	DC-5 (DEEP CORRIDOR 5)
BUILDING INFORMATION	
BUILDING HEIGHT	65 FT MAX (MEASURED FROM FINISHED. GRADE)
STORIES	4 FLOORS

4100 SHERIDAN DR. AND 4110-4120 SHERIDAN DR. SITE
PARKING REQUIREMENTS

EXISTING HOTEL (4100 SHERIDAN DR.)
REQUIRES 134 SPACES

PROPOSED MEDICAL OFFICE BUILDING (4110-4120 SHERIDAN DR.)
TOTAL BUILDING AREA 140,500 SF

PARKING SPACES REQUIRED:

MULTI-STORY MULTI TENANT GROSS SF x .75
140,500SF x .75 = 105,375SF
105,375SF/1000SF = 105.375
MEDICAL: 105.375 x 3.5 = 369 SPACES
OFFICE: 105.375 x 2.5 = 264 SPACES

MULTI-STORY SINGLE TENANT GROSS SF x .80
140,500SF x .80 = 112400SF
112400SF/1000SF = 112.4
MEDICAL: 112.4 x 3.5 = 394 SPACES (*over)
OFFICE: 112.4 x 2.5 = 281 SPACES

TOTAL SPACES SHOWN = 373 (8 HC)

4110-4120 SHERIDAN DR SITE
OUTDOOR AMENITY SPACE

OUTDOOR AMENITY SPACE REQUIRED
5%

LOT : 225,815 SF x .05 = 11290.75 SF

Kideney Architects

Kideney Architects, P.C.
ARCHITECTS | PLANNERS
INTERIORS | LANDSCAPE DESIGN
143 Genesee Street
Buffalo, New York 14203
716.249.3837 | kideney.com

SHERIDAN COMMONS

4110-4120 Sheridan Dr.
Amherst, NY

Concept Site Plan

AS NOTED (SCALE:)	
GCU (DRAWN BY:)	
GCU (CHECKED BY:)	NO. DATE (REVISIONS:)
2022005 (PROJECT NO.)	JUNE 21, 2022 (DATE:)

SP01
DRAWING NO.

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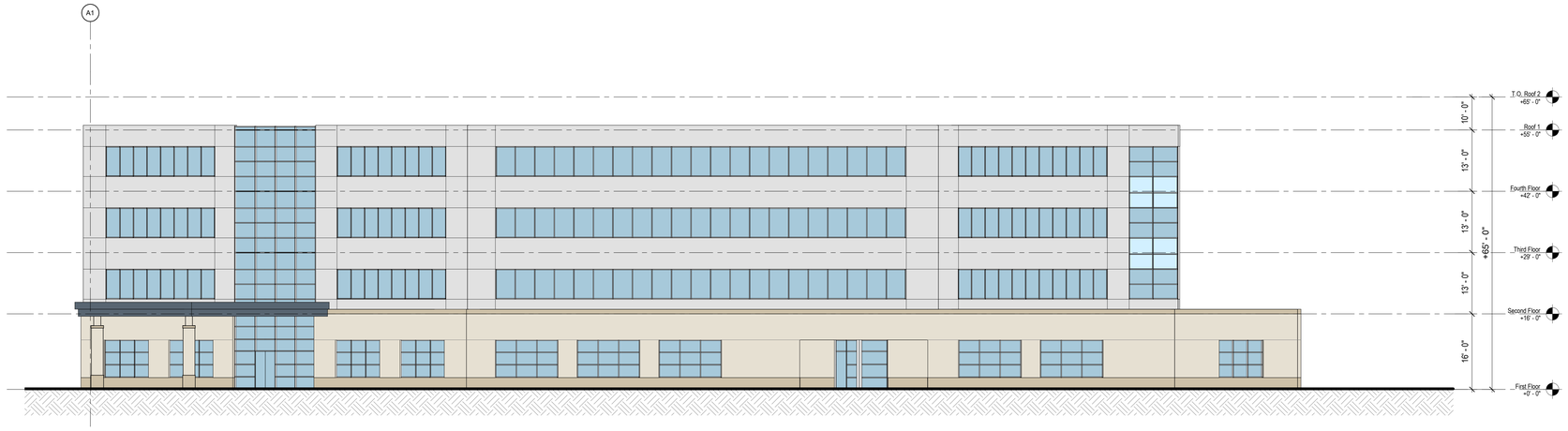
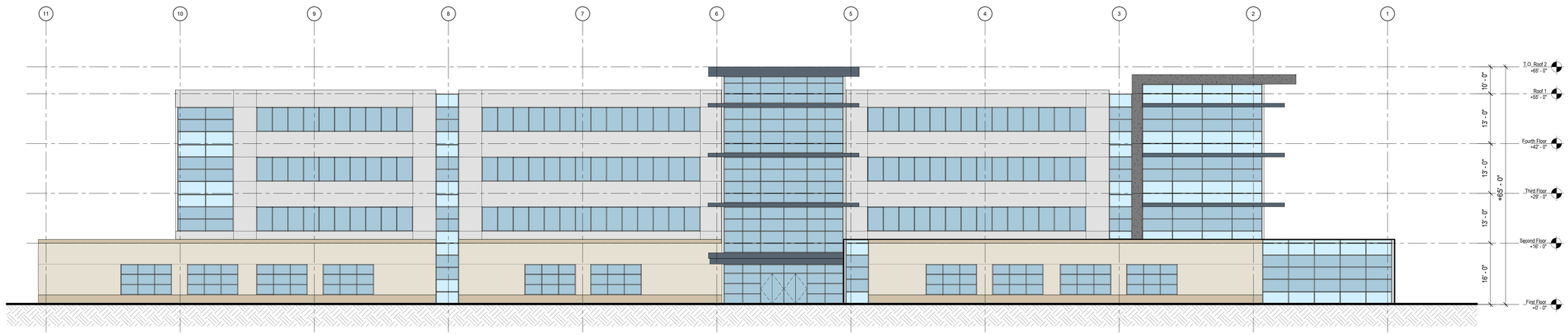
Attachment: Z-1996-32A drawings 092222 (26077 : Z-1996-32A)



NORTH ELEVATION

SCALE: 3/32" = 1'-0"

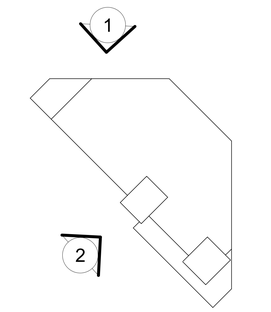
1 A201



SOUTH-WEST ELEVATION

SCALE: 3/32" = 1'-0"

2 A201



KEY PLAN

NTS

N

Kideney Architects

Kideney Architects, P.C.
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INTERIORS | LANDSCAPE DESIGN
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Buffalo, New York 14203
716.249.3837 | kideney.com

NOT FOR CONSTRUCTION

STAMP AND SIGNATURE

CONSULTANT

SHERIDAN COMMONS

4110-4120 SHERIDAN DR.
AMHERST, NY

CONCEPT

ELEVATIONS

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No.	DATE	DESCRIPTION
REVISIONS:		

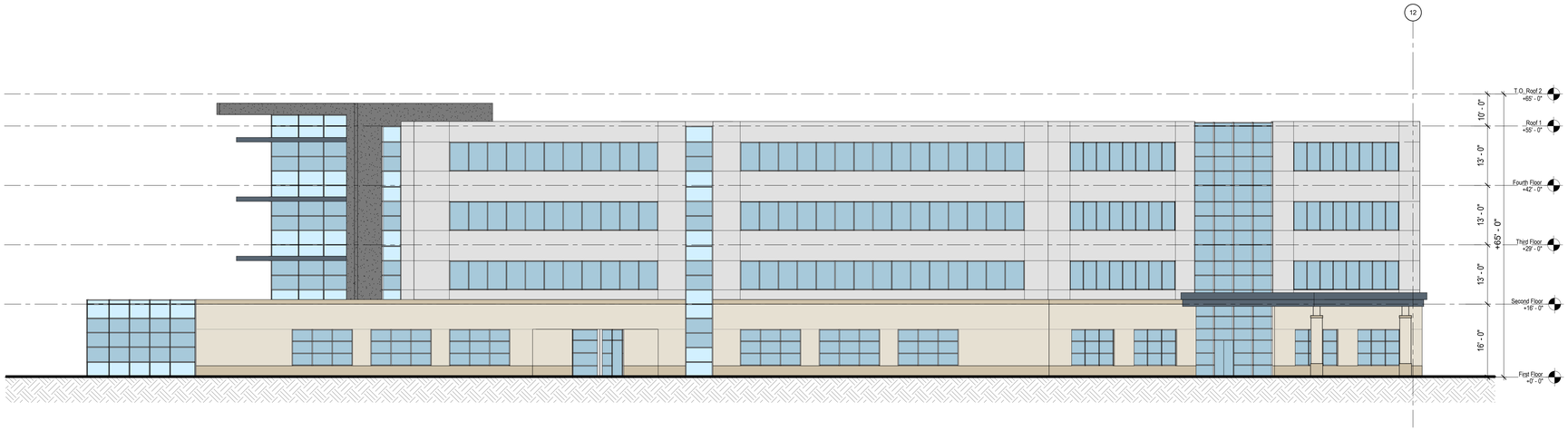
CHECKED BY: GCU	DRAWN BY: HS
KA PROJECT NO: 2022005.00	DATE: 06/21/2022
CLIENT PROJECT NO: -	

A201

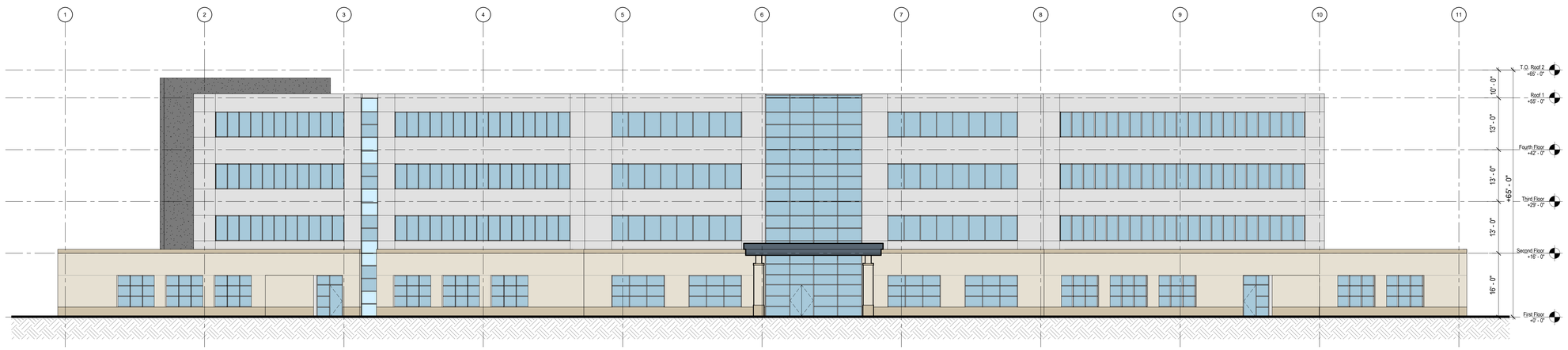
DRAWING NO.

Attachment: Z-1396-324_drawings_032222 (26077 : Z-1396-324)

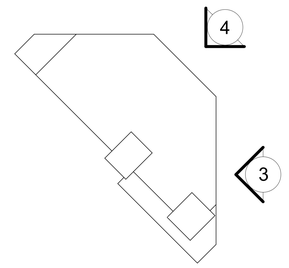
6/23/2022 2:14:53 PM



EAST ELEVATION
SCALE: 3/32" = 1'-0"
3
A202



NORTH-EAST ELEVATION
SCALE: 3/32" = 1'-0"
4
A202



KEY PLAN
NTS
N

Kideney Architects

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CONSULTANT

SHERIDAN COMMONS

4110-4120 SHERIDAN DR.
AMHERST, NY

CONCEPT

ELEVATIONS 2

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No.	DATE	DESCRIPTION

REVISIONS

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CHECKED BY:	DRAWN BY:
2022005.00	06/21/2022
KA PROJECT NO.	DATE
-	
CLIENT PROJECT NO.	

A202
DRAWING NO.

Attachment: Z-1996-32A_drawings_092222 (26077 : Z-1996-32A)

6/23/2022 2:15:42 PM

DRAFT (9/9/22)
TOWN OF AMHERST
PLANNING BOARD
ZONING RESOLUTION
Z-1996-32A

PETITIONER

Sheridan Commons, LLC
c/o Sean Hopkins
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221

PROPERTY LOCATION

4110-4120 Sheridan Drive

WHEREAS the Town of Amherst Planning Board on Thursday, September 22, 2022 held a public hearing on the Request to remove a Declaration of Restrictions imposed as part of a rezoning decision, and

WHEREAS the Planning Board has reviewed plans and other materials regarding the rezoning proposal, and

WHEREAS the materials and plans have been referred to the Town's various review agencies, and

WHEREAS in accordance with Section 8-3-5 of the Zoning Ordinance the Planning Board finds that:

A. The proposed zoning and development plan is generally consistent with the policies of the Comprehensive Plan and the Zoning Ordinance.

B. There are adequate services and utilities available or proposed to be made available in the construction of the development.

C. The proposal is compatible with the present zoning and conforming uses of nearby property and with the character of the neighborhood.

D. The proposed change does tend to improve the balance of uses, or meets a specific demand in the Town.

WHEREAS pursuant to Local Law #3-82, as amended, the Planning Board recommends that the Town Board determine that the requirements of SEQR are complete and that the subject proposal is not expected to have a significant adverse effect on the environment.

NOW THEREFORE BE IT RESOLVED that the Planning Board recommends to the Town Board in accordance with Section 8-3-4 of the Zoning Ordinance, that the relief of a deed restriction imposed by a zoning decision be **approved** subject to the following conditions:

Attachment: Z-1996-32_A_draft resolution_092222 (26077 : Z-1996-32A)

DRAFT (9/9/22)
TOWN OF AMHERST
PLANNING BOARD
ZONING RESOLUTION
Z-1996-32A

PETITIONER	PROPERTY LOCATION
Sheridan Commons, LLC	4110-4120 Sheridan Drive

1. That the other 4 conditions of original zoning approval addressing the vegetative buffer, increased setbacks from the north and east property boundaries, and the height of the existing hotel, remain intact.

The foregoing resolution was adopted by the Town of Amherst Planning Board, _____; moved by - _____; seconded by - _____; ayes _, noes _; absent - ____.

_____ _____
Robert J. Gilmour, Planning Board Chair Date

TV/ac
X:\Current_Planning\Files\Rezonings\1996\Z-1996-32_A_(4110-4120_Sheridan_Dr)_2022\Z-1996-32_A_draft resolution_092222.doc
Cc: Town Clerk
Commissioner of Building
Highway Superintendent
Town Engineer
Traffic/Safety Coordinator
Sheridan Commons LLC, c/o Sean Hopkins, Esq., 5500 Main St., Suite 343, Williamsville, NY 14221
Chris Wood, Carmina Wood Design, 487 Main Street, Suite 500, Buffalo, NY 14203

Attachment: Z-1996-32_A_draft resolution_092222 (26077 : Z-1996-32A)

Amherst Planning Board
5583 Main Street
Williamsville, NY 14221

ADOPTED

Meeting: 09/22/22 06:30 PM
Department: Planning
Category: Miscellaneous
Prepared By: Amy Carrato
Initiator: Dan Howard
Sponsors:
DOC ID: 26192

PLANNING BOARD ITEM (ID # 26192)

The Amherst Urban Renewal Agency's Boulevard Central District Urban Renewal Plan, SR-2022-05

Town of Amherst, Petitioner

The Boulevard Central District Urban Renewal Plan provides a framework for the potential revitalization and redevelopment of various properties located in what the Town Board, as the Amherst Urban Renewal Agency (AURA), has designated as an Urban Renewal Area in accordance with Article 15 of the General Municipal Laws of New York State.

Brian Kulpa, Town Supervisor, explained the proposal and was available to answer questions from the Board.

No further comments were heard on this proposal. The hearing was closed.

Following discussion, Ms. Penberthy moved to approve the request based on the resolution. The motion was seconded by Mr. Giuliani and carried. Ayes 5, Noes 0, Absent 2 (Kahn, Raffaele).

ATTACHMENTS:

- SR-2022-05_Draft Urban Renewal Plan_092222 (PDF)
- SR-2022-05_draft_ Resoultion 9-22-22 (PDF)
- SR-2022-05 signed resolution 092222 (PDF)

RESULT:	**APPROVED [UNANIMOUS]**
MOVER:	Brittany Lee Penberthy, Board Member
SECONDER:	Dal Giuliani, Board Member
AYES:	Gilmour, Chmiel, Gill, Giuliani, Penberthy
ABSENT:	Joseph P. Raffaele Jr., Carrie H. Kahn

Town of Amherst

BOULEVARD CENTRAL DISTRICT URBAN RENEWAL PLAN

Created by the Town of Amherst Urban Renewal Agency ("AURA")
Amherst, NY

DRAFT
August 29, 2022

Attachment: SR-2022-05_Draft Urban Renewal Plan_092222 (26192 : Boulevard Mall Urban Renewal Plan, SR-2022-05)

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DRAFT

Attachment: SR-2022-05_Draft Urban Renewal Plan_092222 (26192 : Boulevard Mall Urban Renewal Plan, SR-2022-05)

1. EXTENT AND PURPOSE OF THE BOULEVARD CENTRAL DISTRICT URBAN RENEWAL PLAN

This Town of Amherst Boulevard Central District Urban Renewal Plan (the "Plan") provides a framework for the potential revitalization and redevelopment of various properties located in what the Town Board, as the Urban Renewal Agency (the "Agency" or "AURA"), has designated as an Urban Renewal Area in accordance with Article 15 of the General Municipal Laws of New York State by resolution dated June 27, 2022. The Boulevard Central District Urban Renewal Area (the "Urban Renewal Area") is within a larger area designated by the Town as the Boulevard Central District. The boundaries of the Urban Renewal Area are described in Exhibit A and shown on Map 1: Boulevard Central District Urban Renewal Area (Exhibit B). The Urban Renewal Area includes approximately 194.9 acres with 60 properties.

This Plan puts particular focus on addressing the Boulevard Mall and immediately adjacent properties, which the Agency has determined to be the main driver of economic underdevelopment, underutilization, stagnation, and blight. This focus includes approximately 62 acres and 8 properties as shown in Exhibit B.

The Town envisions the Boulevard Mall site being transformed incrementally into a walkable, mixed-use, transit-oriented development serving contemporary retail commercial demands while creating a new, thriving "center" for the local community and the greater region. Establishing this Boulevard Central District Urban Renewal Area provides the foundation for this vision to come to fruition.

The provisions of this Urban Renewal Plan, described in the following sections, are based on the requirements for a redevelopment plan set forth in Article 15 of the General Municipal Laws of New York State. In enacting Article 15, the State Legislature stated:

> *There exist in many municipalities within this state residential, non-residential, commercial, industrial or vacant areas, and combinations thereof, which are slum or blighted, or which are becoming slum or blighted areas because of substandard, insanitary, deteriorated or deteriorating conditions, factors, and characteristics, with or without tangible physical blight. The existence of such areas constitutes a serious and growing menace, is injurious to the public safety, health, morals and welfare, contributes increasingly to the spread of crime, juvenile delinquency and disease, necessitates excessive and disproportionate expenditures of public funds for all forms of public service and constitutes a negative influence on adjacent properties impairing their economic soundness and stability, thereby threatening the source of public revenues.*[1]

The Town of Amherst Town Board, in 1) creating the Town of Amherst Urban Renewal Agency, 2) designating the Urban Renewal Area, and 3) formulating a Plan for this Urban Renewal Area, is taking steps that will stem the decline of the Boulevard Central District, and by revitalizing and redeveloping the Urban Renewal Area, will return the Boulevard Central District to its place as a leading commercial and residential corridor in the Town and region.

[1] N.Y. Gen. Mun. Law § 501 (McKinney).

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2. DESCRIPTION OF THE BOULEVARD CENTRAL DISTRICT URBAN RENEWAL AREA

The boundaries of the Urban Renewal Area established by the Town are described in Exhibit A and shown in Exhibit B. The Urban Renewal Area includes approximately 194.9 acres with 60 properties in need of redevelopment. The focus in the Boulevard Mall area includes approximately 62 acres and 8 properties.

Located on the western boundary of the Town, the Boulevard Mall has long served as a local and regional commercial center for the Town. The Mall is located in the southeastern corner of the intersection of Niagara Falls Boulevard and Maple Road. It is essentially a large block bordered by Niagara Falls Boulevard on the west, Alberta Drive on the east, Maple Road on the north, and Almeda Avenue on the south. Opened in 1962 as the first indoor shopping center in the Buffalo area, the Mall thrived along with the Town largely due to its location near strong residential neighborhoods, access to a major inter-county arterial, the University at Buffalo North Campus, and proximity to the Canadian border, helping the Boulevard Mall become the central point of a thriving commercial corridor.

Like similar properties regionally and nationally, changing demographics and shopping habits have posed financial challenges for commercial enterprises, setting the stage for revitalization of the Mall and surrounding areas. The Western New York Region is currently seeing vacancy rates for retail space of over 20%. While big box retailers like Walmart, Target, Tops and Wegmans have held steady, many of the retail locations that depend on in line retailers of both national and local types have experienced major challenges. Most new retail development is being constructed with standalone structures. Other regional malls such as the Walden Galleria in the Town of Cheektowaga, the Eastern Hills Mall in the Town of Clarence, and the McKinley Mall in the Town of Hamburg have all had little investment, have been recently sold at auctions for drastically lower Assessed Values, or have been defaulting on loans.

Several anchor stores at the Boulevard Mall are closed and many well-known stores have left. Some have moved just down the street to newer, more updated open-air spaces while others are completely leaving the area. As a result, the Mall is faced with rising vacancy rates, and more marginal stores. The vast surface parking lots that surround the Mall, containing little to no landscaping, were constructed to accommodate a fully occupied, auto-oriented, regional mall destination. These now sit nearly empty at many times of the day.

The Urban Renewal Area is located within the Town's only federally designated Opportunity Zone which is coterminous with U.S. Census Bureau Tract 92, on the western portion of Town. This area of Town is also known as the Boulevard Central District ("BCD"), an approximately 1,260-acre triangular area bounded by Niagara Falls Boulevard (US Route 62) on the west, the Interstate (I-290) on the north and east, and Sheridan Drive (NYS Route 324) on the south (including some parcels directly south of Sheridan) as shown in Exhibit C.

Emblematic of the decline in the BCD are the assessed valuations and vacancy rates for the affected properties. From 2009 to today, the Assessed Value of the mall property has decreased from $61,281,200 in 2009 to $18,286,812 in 2022. This is a $40,958,492 reduction of 62.37%. The Equalized Full Market Value has decreased from $61,281,200 in 2009 to $24,711,908 in 2022. Reductions have been a result of the vacancies and loss of anchor retailers such as Sears, Macy Men's, Buy Buy Baby, plus many in line retailers. It is anticipated that current owners under Tax Certiorari Agreements will request additional reductions. These reductions all impact the Taxable Assessed Values in the Town of Amherst, Sweet Home Schools, and Erie County, which creates increased tax rates with less taxable value to spread the Tax Levy against.

Total revenue from current rents and leases within the mall decreased from $15,070,346 in 2016 to $4,265,297 in 2019, a 71.6% decline. In 2018 the mall was approximately 74.6% occupied, but in 2020 that had decreased by 7.1% to approximately 69.3% occupied.

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A. The Boulevard Central District Action Plan

Recognizing the arising need, revitalization of the BCD has been under consideration for some time by the Town. The Town and the Boulevard Central District have seen a great deal of development and investment over the past few decades as they continued to grow. In recent years though, the Town has undergone a fundamental transition from a growing community to one that is mature and largely built out, resulting in more redevelopment of blighted and underutilized properties rather than new greenfield development. Although the BCD has become the Town's largest concentrated commercial area and contains some very economically successful development sites, it also contains many large "big box" stores and strip plazas that are aging and underutilized. It also contains the large parcel that houses the Boulevard Mall, which has recently been experiencing significant decline.

The BCD today exhibits characteristics typical of suburban development found throughout New York and the surrounding Western New York region. Commercial areas such as this have been developed with primarily single-use office or retail uses surrounded by large surface parking lots. A sparse network of street thoroughfares (including Niagara Falls Boulevard, Maple Road, Sweet Home Road, Bailey Avenue, and Sheridan Drive) carry all of the area traffic. As changing market trends of online shopping, new technologies, and work-from-home options have emerged, this area has begun to deteriorate and impact the Town's tax base due to the need for less physical office and retail space.

There is a growing consensus around transforming the built environment through redevelopment of existing commercial areas and street redesign to better serve community needs and improve safety as well as economic outcomes. To be proactive, the Town focused revitalization goals and efforts within the BCD. To support these efforts, the Town created the Boulevard Central District Action Plan (the "Action Plan").

This Urban Renewal Plan builds on the Boulevard Central District Action Plan, prepared by the Town in cooperation with neighborhood stakeholders. The Action Plan, which includes the Urban Renewal Area, was evaluated under the New York State Environmental Quality Review Act (SEQRA) for environmental impacts. The Town Board prepared a Generic Environmental Impact Statement (GEIS) that evaluated a projected growth scenario and the cumulative environmental impacts of that growth over a 20-year period. The Town Board approved the GEIS and the Findings Statement in January 2020. As one of the first steps in implementing the Action Plan, most commercial properties within the BCD were recently rezoned applying the Town's new Mixed-Use Zoning Districts. This replaced the single use-based provisions with a more form-based zoning approach, and an important foundational step in the area's potential revitalization.

3. RELATIONSHIP TO COMMUNITY GOALS AND OBJECTIVES

This Urban Renewal Plan, which will be administered by the Town of Amherst Urban Renewal Agency (hereinafter, the "Agency") lays out the rationale and process for the area's revitalization, including the potential acquisition of Urban Renewal Area properties or their improvement through agreements with parcel owners. The Plan's goal is the redevelopment of these properties for the purposes of the elimination of slum and blight, to benefit low and/or moderate income residents living in or near the Urban Renewal Area, and the redevelopment of underutilized parcels through an overall land use strategy consistent with the housing, economic, and community development strategies of the Town's Bicentennial Comprehensive Plan and the Town's Community Development Block Group (CDBG) Program.

The Town's 2020-2024 Five-Year Consolidated Plan for Community Development has designated Census Tract 92, within which the Urban Renewal Area is located, as a Target Area for Community Development Block Grant

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investments. Majority of the Urban Renewal Area also falls within Block Group 4 of Census Tract 92, which is designed by HUD as a Low-to-Moderate Income (LMI) Area, based on having 71% of its population considered Low-to-Moderate Income. HUD's LMI Areas are eligible for a larger amount of community investment activities within CDBG funding regulations in order to improve neighborhoods and housing serving LMI Populations.

This Plan is in line with the Town's Comprehensive Plan's Vision Statement which states that the Town should *"in carefully managing growth, balance the benefits of economic development with the need to maintain livability and preserve community character."*[2] The Vision Statement notes the Town's exceptional quality of life was tied to three factors, one of these is Community Character, and specifically recognizes the that the Town should "*revitalize older neighborhoods and commercial corridors while accommodating quality new development*."[3]

This Urban Renewal Plan carries forward one of the Comprehensive Plan's Key Initiatives to achieve the Vision: *"Revitalization: To become a model for effective reinvestment and revitalization of older neighborhoods and commercial areas, though creative use of investment incentives targeted toward revitalization."*[4] The following are various goals and objectives of the Plan regarding land use and development, housing and neighborhoods, and economic development:

A. Land Use and Development

Goal: An interconnected mix of land uses that includes revitalized older neighborhoods and commercial centers and corridors, quality new development, vibrant activity centers, agriculture, and green spaces throughout the community.

Objectives:

- Promote the development/revitalization of walkable higher density, mixed-use centers surrounded by lower density development
- Implement context-sensitive zoning and incentives to improve the quality and appearance of non-residential development
- Encourage revitalization and reinvestment in older neighborhoods and commercial corridors in Amherst
- Target capital improvements to leverage private investment and enhance community appearance
- Establish a town-wide network of parks, open spaces, and greenway corridors
- Improve the predictability and consistency of the development review and decision-making process

B. Economic Development

Goal: A Town with a strong tax base and ample economic opportunities for a diverse base of employers and employees, housed in attractive, state-of-the-art commercial developments in convenient and accessible locations.

Objectives:

- Maintain Amherst's strong tax base
- Attract more high-paying jobs to the Town
- Ensure that economic development and redevelopment respect the character and quality of life of Amherst's residential communities

[2] TOWN OF AMHERST BICENTENNIAL COMPREHENSIVE PLAN, at 2-5.
[3] TOWN OF AMHERST BICENTENNIAL COMPREHENSIVE PLAN, at 2-3.
[4] TOWN OF AMHERST BICENTENNIAL COMPREHENSIVE PLAN, at 2-6.

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- Capitalize on the presence of the University at Buffalo to leverage University-related economic development opportunities
- Build partnerships with development agencies, private industry, and educational and research institutions to promote economic development in Amherst and throughout the region

C. Housing and Neighborhoods

Goals: Have decent and affordable housing choices available to all residents and have healthy and diverse neighborhoods, including conserved and revitalized older parts of Amherst.

Objectives:

- Ensure the availability of housing that is affordable to all socioeconomic groups in Amherst
- Promote a diverse housing stock, with higher density housing focused in mixed-use activity centers
- Implement a coordinated program to conserve and revitalize Amherst's neighborhoods

The Comprehensive Plan also includes the Boulevard Central District (BCD) as a Focal Planning Area (see Exhibit D) and identifies several key issues and opportunities for the BCD's planning efforts such as:

- Employ mixed-use zoning and financial incentives to foster predictable development review and encourage investment.
- Redevelop aging traditional plazas and big box retail sites emblematic of suburban retail development through the early 21st century.
- Re-imagine a declining suburban mall (Boulevard Mall) into a new mixed-use center with buildings of varying scales, walkable streets and open spaces that serve as hubs of activity and vibrancy for the area.
- Introduce new street connections to provide more ways to circulate, and encourage 'complete street' treatments to enhance mobility.
- Expand market rate and mixed income residential offerings to support future neighborhood vibrancy and a base for area workforce and commercial markets.
- Several major highways traverse the BCD and play a key role in defining its identity. Major arterials such as Niagara Falls Boulevard, Sheridan Drive and Maple Road serve important transportation functions, but their design, physical size and design speeds make them inhospitable to bicycle or pedestrian travel. If the BCD is to transform from an automobile-oriented area to a walkable live, work, and shop destination, measures to transform segments of these major highways are necessary.
- The Niagara Frontier Transportation Authority (NFTA) is planning a future light rail or bus rapid transit extension corridor that will traverse the BCD. The corridor will connect the three University at Buffalo campuses, downtown Buffalo and the Buffalo waterfront.
- The future transit corridor has three planned enhanced transit stops identified within the BCD. The corridor and stops will feature improved multi-modal transportation mobility and support mixed use centers by allowing greater connectivity within and outside of the BCD.

The Agency, utilizing the powers granted by General Municipal Law Article 15, and acting through the employees and members of the Agency, will use its planning and land disposition expertise to acquire and thereafter dispose of the properties in an appropriate fashion consistent with the identified needs of the area and Town as a whole for better housing, commercial services, recreational facilities, employment opportunities, and the removal of blighting influences that presently discourage investment in properties and further the deterioration of surrounding neighborhoods. Use of CDBG funds, other grants, and Town capital improvements will be coordinated for the property acquisition, improvement, and disposition activities of the Agency.

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4. PROPOSED LAND USES

The Action Plan shows how various opportunity sites in the BCD, including the Boulevard Mall, could redevelop according to the provisions in the Town's new Mixed-Use Zoning Districts and Design Guidelines. The Mixed-Use Districts establish standards for a transformation, setting rules for a network of pedestrian-oriented streets; building uses, height and placement; public open spaces; parking location; transparency of facades; and other standards that can deliver the walkable mixed-use environment desired. The recent rezoning to the Mixed-Use Districts in the BCD, the Urban Renewal Area, and on the Mall site as shown in Exhibit E aims to create an environment with smaller, walkable blocks to provide interconnectivity among residents, businesses, and surrounding areas.

The Boulevard Mall itself is an opportunity for walkable, transit-oriented development that can become the vital mixed-use hub of the BCD (see Exhibit F). In many ways, the mall site is the centerpiece of the Boulevard Central District. The mall also fronts the location of a possible enhanced transit line envisioned along Niagara Falls Boulevard, turning east on to Maple Road, and heading north to the University at Buffalo North Campus. This presents a unique opportunity to build upon future enhanced mobility and provide access to current and future users and residents of the site and surrounding neighborhoods. The Boulevard Mall site can become an anchor, serving as an economic catalyst not only for the BCD and Amherst, but also for the Western New York region over many years to come.

The following describes the various types of land uses that are envisioned in the future on the Boulevard Mall site and within the Urban Renewal Area:

a. A primary objective of this Urban Renewal Plan includes the inspection, rehabilitation, demolition, or replacement of existing structures in the Boulevard Central District Urban Renewal Area, including the acquisition and disposal of those properties. New land uses must comply with the Town's Master Site Plan of the site and Zoning Ordinance of the Town of Amherst.

b. The redevelopment of the area offers many opportunities. To guide specific development of the site, the Agency will formulate a Master Site Plan which will specify proposed land uses, public street rights of way, public spaces and facilities, and essential utilities, as shown in Exhibits G & H. These include a purposeful mix of commercial, retail, restaurant, office, residential, and open space uses along with new public streets to create smaller, walkable blocks.

c. Potential land uses, which are not limited to those discussed in this Plan, shall be in conformance with the Town of Amherst Zoning Ordinance and as shown on Map 3: Zoning (Exhibit E) which exhibits the existing zoning currently within the Urban Renewal Area. Zoning may be changed or amended in the future within this Urban Renewal Area.

5. PROPOSED LAND ACQUISITION

A. Proposed Land Acquisition

Land Acquisition proposed within the Urban Renewal Area will be determined as needed and will start with the Boulevard Mall property and some adjacent parcels. As such, any proposed land acquisition will be approved by the Agency in accordance with General Municipal Law § 506 and, to the extent necessary, the Eminent Domain Procedure Law. It is anticipated that the Boulevard Mall property and adjacent parcels will be acquired pursuant to the Eminent Domain Procedure Law.

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B. Standards for Acquisition

Real property or any interest in real property may be acquired on the basis of current inspections. The Agency determines that deficiencies exist which 1) create hazards to the community; and/or 2) cause a blighting influence on the surrounding neighborhood; and/or 3) render the property as severely underutilized; and/or 4) otherwise hinder the completion of goals of the Urban Renewal Program, the Agency, and/or this Plan.

C. Methods of Acquisition

The Agency may acquire real property or any interest therein by gift, grant, devise, purchase, condemnation, or by any other process allowable pursuant to Articles 15 of the General Municipal Law.

D. Post Acquisition

Upon the acquisition of real property, the Agency may undertake any of the following activities:

1. Deconstruct or demolish any structure on the property;
2. Sell the property subject to rehabilitation in accordance with this plan;
3. Rehabilitate any structure(s) on the property and sell such rehabilitated structures for use in accordance with this plan;
4. Sell the property subject to development correcting underutilization;
5. Develop underutilized properties, allowing them to function at the peak of their economic and community potential;
6. With regards to vacant properties without structures, sell said property to an adjacent land owner, subdivide the property for sale to multiple adjacent land owners, or sell the property subject to redevelopment in accordance with this plan;
7. Sell, lease for a term not exceeding ninety-nine years, or otherwise dispose any real property by any method permissible pursuant to Article 15of the General Municipal law.

6. PROPERTY DISPOSITION

A. Property Disposition and Redevelopment

The Town is authorized to dispose of acquired property, in whole or in part, by sale, lease, exchange, or other appropriate means for redevelopment for uses and purposes specified in this Plan. For property identified for acquisition in this Plan, the Agency proposes to enter into an agreement with an eligible sponsor (a "Funding, Disposition, and Redevelopment Agreement"), as determined following the procedures set forth below, prior to acquisition, that will govern the funding of the acquisition, the disposition of the property, as well as the property's redevelopment in accordance with this plan.

The Agency may dispose of any land it has acquired by any method authorized by General Municipal Law § 507, on such terms and conditions as the Agency considers in the best interests of the Town. It is anticipated that a Funding, Disposition, and Redevelopment Agreement may be entered into prior to land acquisition.

B. Rules and Procedures for Determining Qualified and Eligible Sponsors

The Agency shall evaluate any developers who declare their intent, following a public solicitation, to become a qualified and eligible sponsor for purposes of this Plan. The Agency shall designate said developers as qualified and eligible based on the following criteria, none of which is dispositive, but each may be given appropriate weight in the Agency's sole discretion:

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- The Developer's willingness to enter into an acceptable Funding, Disposition, and Redevelopment Agreement, which includes offsetting municipal costs for land acquisition referenced herein
- The Developer's capabilities to develop or redevelop property in accordance with the land-use provisions and other requirements specified in this Plan
- The Developer's willingness to generally comply with the Town's Master Site Plan of the Urban Renewal Area
- The Developer's financial capabilities
- The Developer's experience with similar redevelopment projects, including mixed-use projects of similar size and scope
- Proposed project timeframes
- Support for use of local labor
- Other criteria the Agency determine to be relevant, consistent with this Plan

C. Deed Restrictions

The disposition of any real property shall include all deed restrictions and covenants deemed appropriate by the Agency in order to carry out the public purpose of this Plan.

D. Reverter Clauses

All purchase agreements, leases, deeds, and option agreements pertaining to property shall contain a reverter clause whereby tide to or control of the development area shall automatically revert back to the Agency if the agreed upon re-planning, and/or clearing, and/or rehabilitation, and/or restoration, and/or renewing, and/or conservation, and/or improvement, and/or reconstruction, and/or redevelopment does not occur within the time frame stipulated in said purchase agreements, lease, deed, or option agreement. Said reverter clauses at the option of the Agency may be made subject to any financing approved by the Agency.

E. Extensions of Time

The Agency shall have authority to grant extensions on any purchase, lease, or option agreement where such a request is directed in writing to the Agency for its consideration.

7. PROPOSED PUBLIC, SEMI-PUBLIC, PRIVATE, OR COMMUNITY FACILITIES OR UTILITIES

Included in the Boulevard Central District Urban Renewal Area may be areas designated for park lands, public facilities and/or other necessary utilities. The Agency will work with developers, the NFTA, and other agencies as deemed necessary to provide desired public properties and facilities to reach their full operating potential.

8. PROPOSED METHODS AND TECHNIQUES OF URBAN RENEWAL

The methods and techniques of Urban Renewal proposed for use within this Plan include but are not limited to:

a. Acquisition of largely vacant, underutilized, deteriorated, and/or unproductive properties by the Town of Amherst or the Urban Renewal Agency, for disposition to qualified developers, development, or redevelopment entities that will further the planned redevelopment strategies that are part of this Urban Renewal Plan and the adopted Master Site Plan.

b. The Master Site Plan will guide the re-planning of development areas, parcels, and/or subdivision patterns for public and/or private uses within the area, including provisions for pedestrian, vehicular and service access from the area or adjacent public rights-of-way.

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c. The planning, sitting, design, and construction of new public amenities within the area in a manner designed to enhance pedestrian enjoyment and increase the attractiveness of the area for both public use and private investment in new uses and structures.

d. The deconstruction or demolition of some existing structures within the area in order to correct substandard conditions and enable planning for redevelopment in accordance with the Plan.

e. The disposition of area development sites by sale or lease, and, subject to development standards incorporated in binding disposition agreements, to qualified public or private development entities for developments which carry out the provisions of this Plan.

f. The construction of new buildings, subject to design review by the Agency and the Town's Design Guidelines as maintained by the Town Design Advisory Board, and in accordance with this Plan.

g. The planning, design, and construction of utility and other infrastructure adjustments, connections, and replacements as needed.

h. The preservation and restoration of key architectural properties that have a viable public or private use, and which are consistent with the redevelopment objectives in this Plan.

i. Actions designed to implement provisions and objectives of the plan through: 1) adjustments or amendments to the Town's Zoning; 2) concentrated enforcements of the existing code within the Urban Renewal Area; 3) identification and referral of properties to the Agency for purpose of acquisition and 4) cooperation and coordination between various Town Departments and the Agency with regards to the monitoring and management of Agency owned properties.

j. The coordination with the Town of Amherst and/or the developer(s) for the remediation of brownfields for the sites that have potential use for economic development.

9. CODE & ORDINANCE CHANGES TO IMPLEMENT THE PLAN

New ordinances, provisions, or amendments to existing codes may occur to effectuate the Urban Renewal Plan. It is anticipated that future redevelopment in the Urban Renewal Area and on the Boulevard Mall site will adhere to the Town's Zoning Ordinance, in particular to Section 5-A of that ordinance regarding Mixed-Use District provisions. The Town Board may also consider adopting specialized provisions for the Urban Renewal Area that will allow for flexibility in the review and approval of specific development projects noted herein.

10. DEVELOPMENT STANDARDS

In order to carry out the public purpose of the Urban Renewal Plan, all development of property originally disposed or transferred by the Agency (pursuant to Section 13 of this Plan) and within the Urban Renewal Area shall be in compliance with the standards set forth below. Development at the Boulevard Mall should also be in compliance with Town's Master Plan of the site. The Agency, in conjunction with other town boards and committees, shall review all proposals to ensure that these standards are met. Definitions shall be consistent with those contained in the Town of Amherst Zoning Ordinance and Town Design Guidelines except where otherwise noted in this Plan.

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A. Permitted Uses

Any building constructed in the project area shall contain one or more of the uses identified in Section 4 of this Plan.

B. Changes in Use

Changes in land use within the Urban Renewal Area may be reviewed and authorized by the Agency.

11. TIME SCHEDULE

The implementation of this Plan will begin upon its adoption by the Agency. It is proposed that property acquisition of the Mall will begin immediately. Acquisition of other properties in the Urban Renewal Area may subsequently follow. The overall redevelopment of the entire Urban Renewal Area is envisioned to be completed within a ten-year time period.

12. DURATION OF PLAN CONTROLS

The regulations, standards, and controls, contained in this Plan will be binding and effective by deed or lease upon all purchasers or lessees of land disposed of or transferred pursuant to this Plan, as well as their heirs or assigns for a period of fifteen (15) years from the date of approval of this Plan by the Town Board and Urban Renewal Agency of the Town of Amherst, New York.

13. CHANGES IN THE APPROVED PLAN

This Plan may be amended at any time by the Agency in accordance with the requirements of Article 15 of the New York General Municipal Law.

14. ACQUISITION OF AIR RIGHTS AND CONCOMITANT EASEMENTS OR OTHER RIGHTS OF USER NECESSARY FOR THE USE AND DEVELOPMENT OF SUCH AIR RIGHTS

The basic objectives of the Boulevard Central District Urban Renewal Plan include the acquisition, improvement, inspection, rehabilitation, demolition, disposal and/or deconstruction of existing structures. A statement of proposed acquisition of air rights is not necessary as it is not anticipated that the Agency will not acquire any air rights other than those air rights that come generally associated with the acquisition of any parcel of real property within the Urban Renewal Area. The Town will consider adoption of a Transferable Development Rights regulation if the opportunity presents itself to serve the community through such legislation.

15. PROPOSED PROGRAM OF CODE ENFORCEMENT

The Agency will cooperate and coordinate with the Town of Amherst Building Department and the Zoning Enforcement Officer in establishing a program of code enforcement within the Urban Renewal Area which includes but is not limited to:

A. The concentrated enforcement of the Town of Amherst Zoning Ordinance and applicable building codes within the Urban Renewal Area

B. The utilization of various Town Departments to assist the Agency with certain aspects of management of Agency-owned properties.

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EXHIBITS

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EXHIBIT A – Description of Urban Renewal Area

The Boulevard Central District Urban Renewal Area, as designated by the Town Board pursuant to General Municipal Law § 504, is located on the western portion of the Town and can be described as follows:

Beginning at the southeast corner of the intersection of Niagara Falls Boulevard and Maple Road, the Urban Renewal area extends approximately 2,085 feet east along the centerline line of Maple Road to the centerline of Bailey Avenue, then turns southerly along the centerline of Bailey Avenue for approximately 1,800 feet to the intersection of the centerline of Amsterdam Avenue and the centerline of Bailey Avenue, then turns westerly for 335 feet along the centerline of Amsterdam Avenue, then turns north approximately 60 feet to the south parcel line of a National Grid parcel (SBL- 54.03-1-12.1), then turns west along the National Grid parcel line for approximately 470 feet to the centerline of Alberta Drive, then turns southerly along Alberta Drive for approximately 2,060 feet to the intersection of the centerline of Alberta Drive and the centerline of Sheridan Drive, then turns easterly along Sheridan Drive for approximately 957 feet to the intersection of the centerline Sheridan Drive and the centerline of Bailey Avenue, then turns southerly along Bailey Avenue approximately 1,145 feet to the intersection of the centerline of Bailey Avenue and the centerline of Eggert Road, then turns north westerly along the centerline of Eggert Road for approximately 2,330 feet to the intersection of the centerline of Eggert Road and the centerline of Marion Road, then turns southerly along the centerline of Marion Road for approximately 160 feet, then turns westerly for approximately 275 feet along the southern parcel boundary of (925 Niagara Falls Boulevard SBL-67.39-5-1) to the centerline of Niagara Falls Boulevard, then turns northerly along Niagara Falls Boulevard for approximately 4,387 feet back to the intersection of the centerline of Niagara Falls Boulevard and the centerline of Maple Road (the beginning point).

The Urban Renewal Area totals approximately 194.9 acres and includes 60 parcels.

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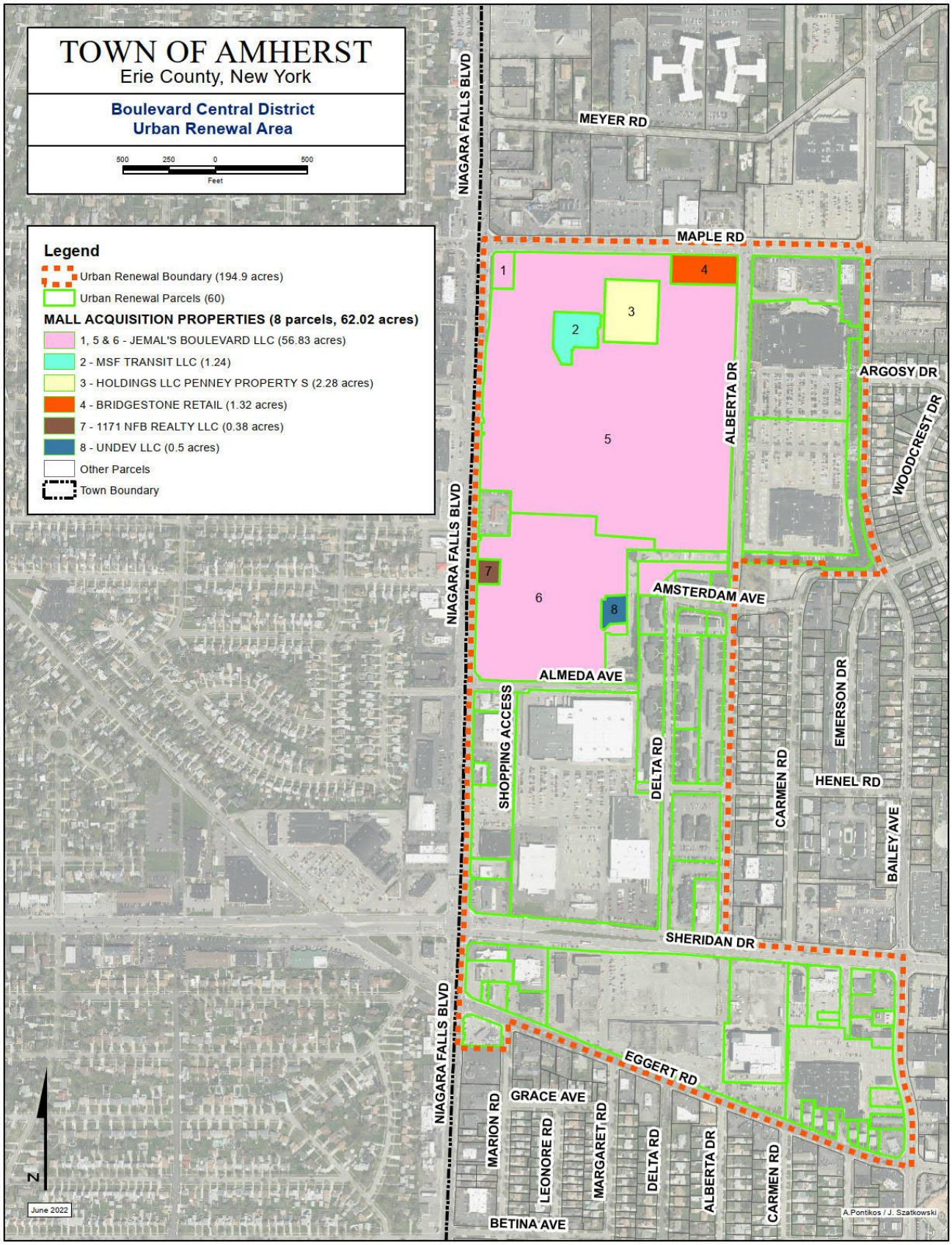
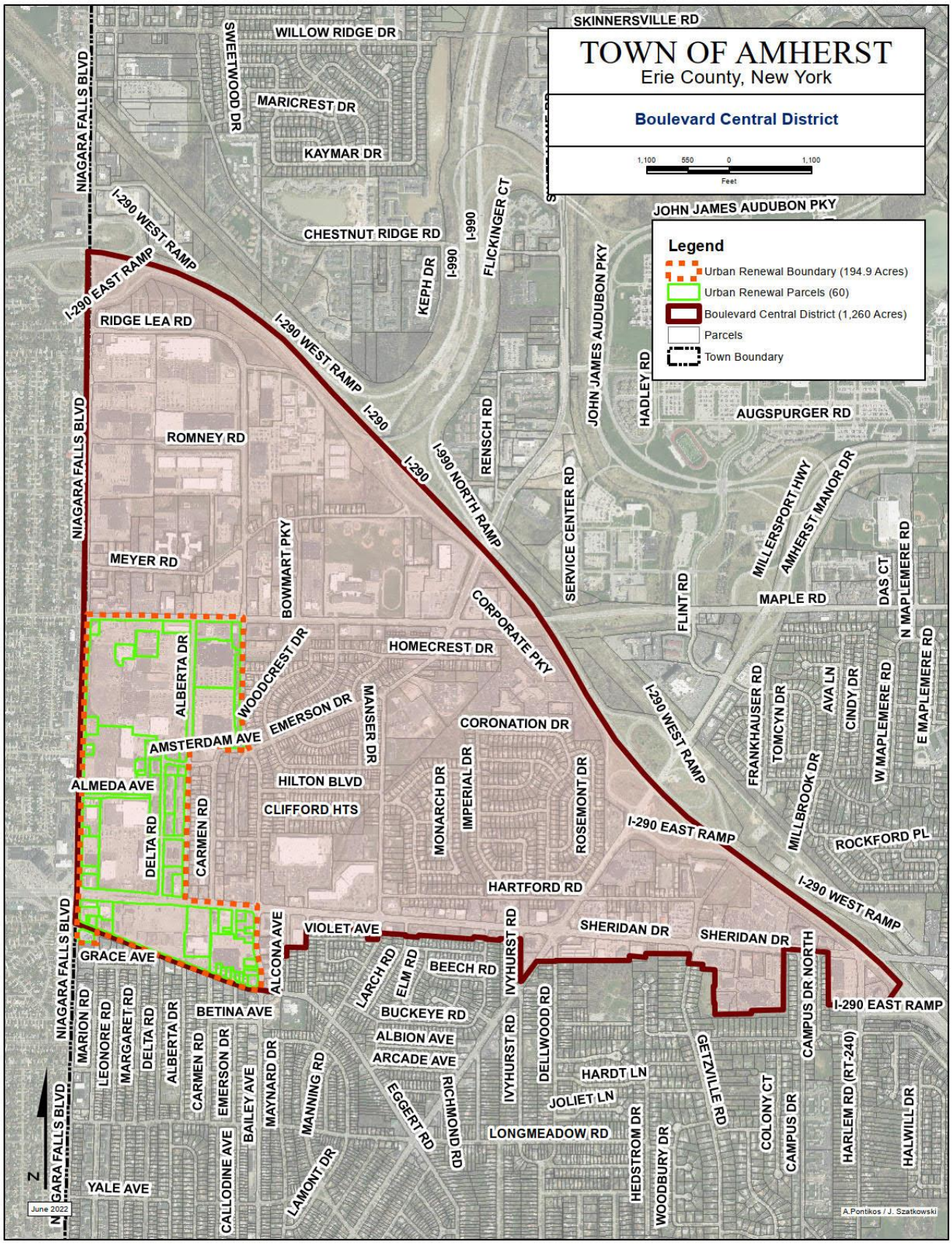
EXHIBIT B – Map 1: Boulevard Central District Urban Renewal Area



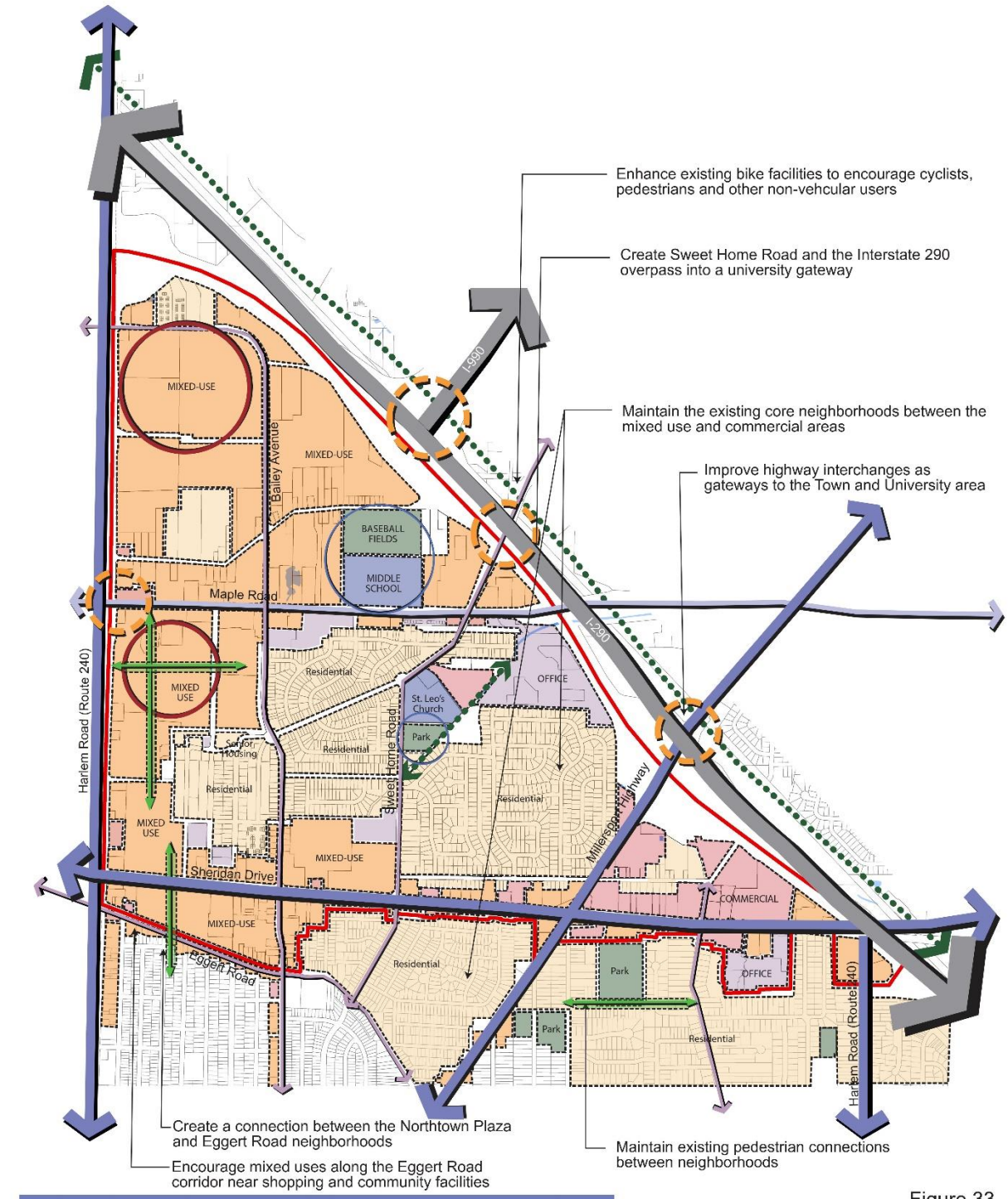
Attachment: SR-2022-05_Draft Urban Renewal Plan_092222 (26192 : Boulevard Mall Urban Renewal Plan, SR-2022-05)

Exhibit C – Map 2: Boulevard Central District



Attachment: SR-2022-05_Draft Urban Renewal Plan_092222 (26192 : Boulevard Mall Urban Renewal Plan, SR-2022-05)

Exhibit D – Figure 1: Boulevard Central District Focal Planning Area



Boulevard Central District Focal Planning Area - Concept Plan December 2020 Figure 33

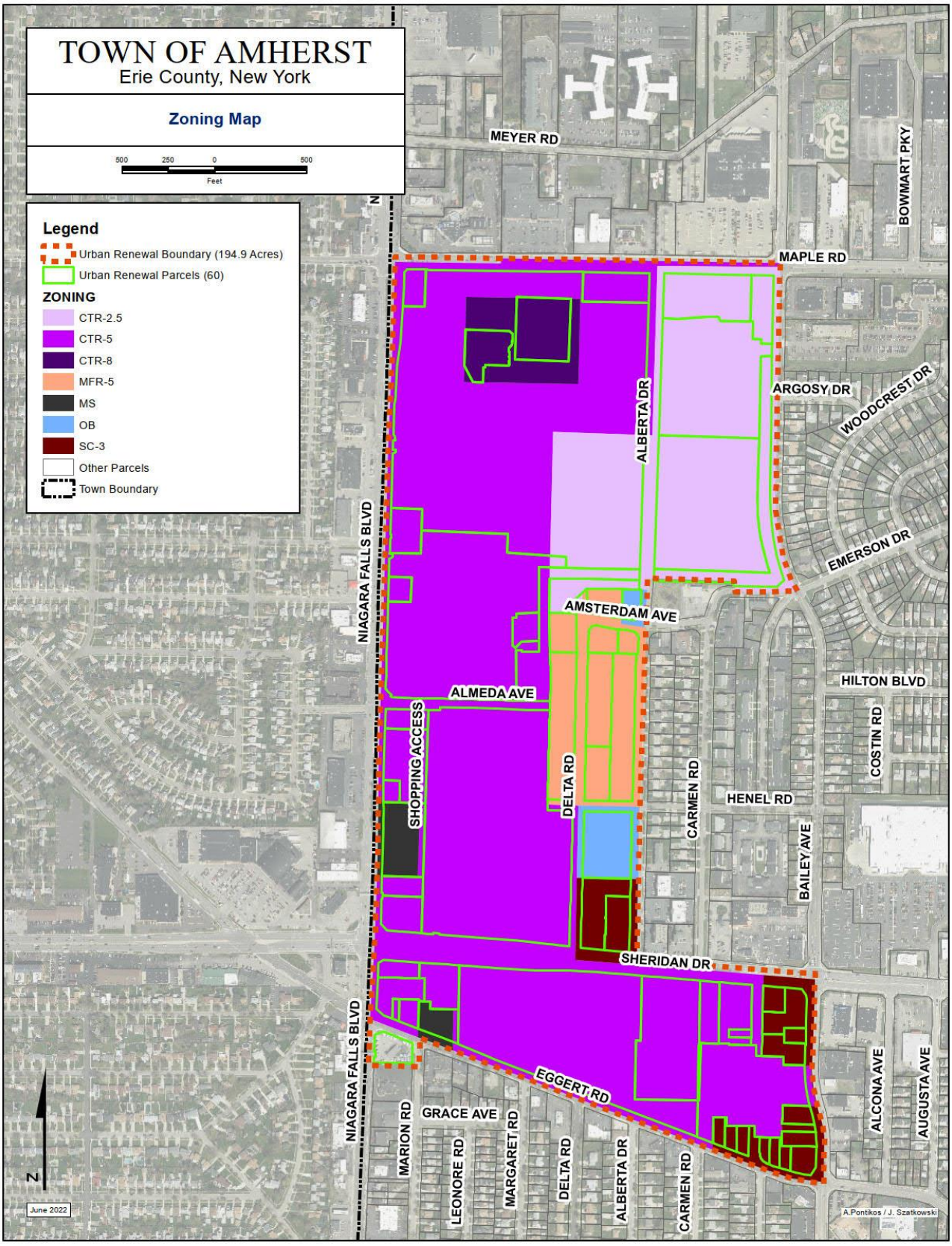
Town of Amherst Bicentennial Comprehensive Plan

LEGEND

- Expressway
- Major Arterial
- Minor Arterial
- Collector
- Neighborhood Connector
- Recreational Trail
- Boulevard Central District
- Institutional Use / Research / Office
- Stabilize and maintain existing residential fabric
- Business / Commercial Area
- School / Community College / University of Buffalo
- Park / Green Space
- Mixed-Use Development
- Gateway
- Neigborhood anchor / community service
- Regional commercial center

Attachment: SR-2022-05_Draft Urban Renewal Plan_092222 (26192 : Boulevard Mall Urban Renewal Plan, SR-2022-05)

Exhibit E – Map 3: Zoning



Attachment: SR-2022-05_Draft Urban Renewal Plan_092222 (26192 : Boulevard Mall Urban Renewal Plan, SR-2022-05)

Exhibit F – Figure 2: Possible Future Boulevard Mall Redevelopment Phases



Existing Mall Site



Intermediate Phase of Redevelopment Concept



Final Redevelopment Concept

Attachment: SR-2022-05_Draft Urban Renewal Plan_092222 (26192 : Boulevard Mall Urban Renewal Plan, SR-2022-05)

Exhibit G – Map 4: Town Comprehensive Plan Conceptual Land Use Plan

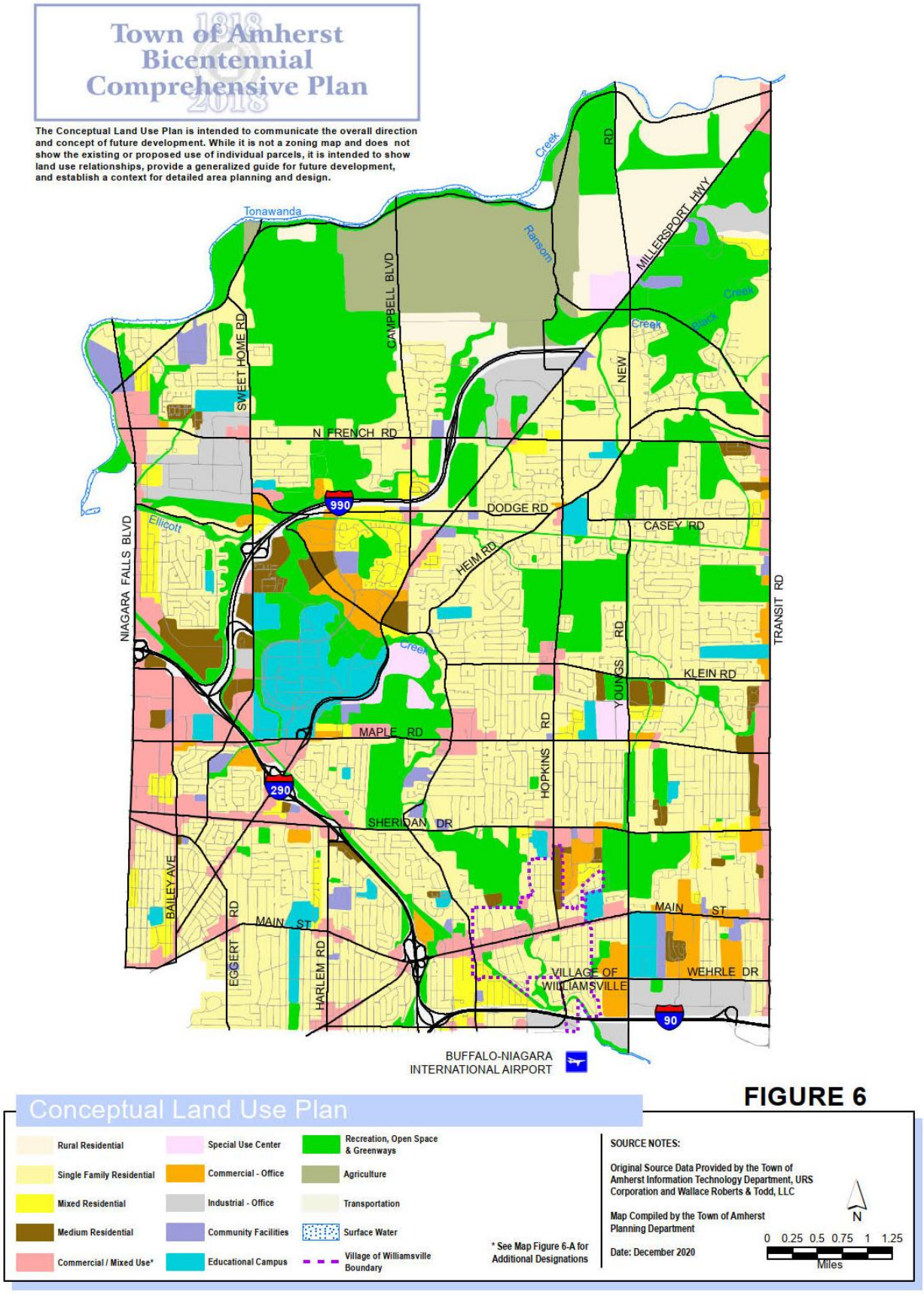
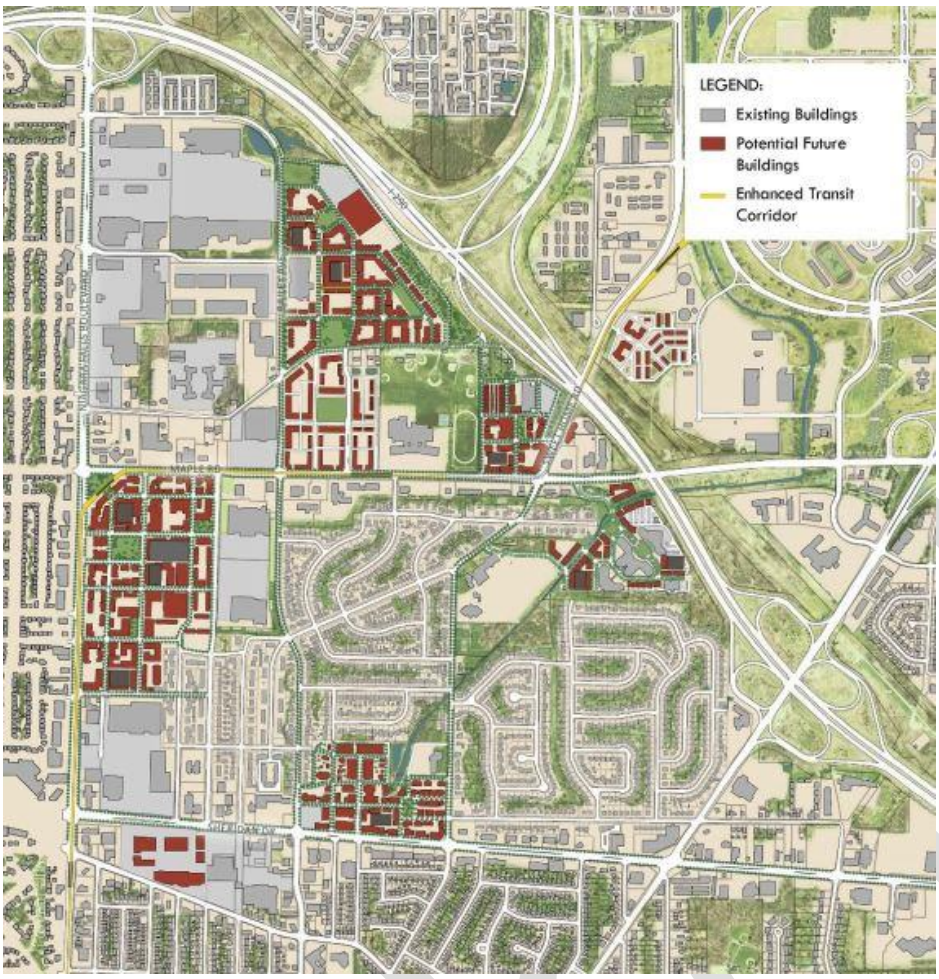


FIGURE 6

Attachment: SR-2022-05_Draft Urban Renewal Plan_092222 (26192 : Boulevard Mall Urban Renewal Plan, SR-2022-05)

Exhibit H – Figure 3: Action Plan Illustrative Images





Attachment: SR-2022-05_Draft Urban Renewal Plan_092222 (26192 : Boulevard Mall Urban Renewal Plan, SR-2022-05)

DRAFT (9/22/22)
TOWN OF AMHERST
PLANNING BOARD
BOULEVARD CENTRAL DISTRICT URBAN RENEWAL PLAN
SR-2022-05

PETITIONER
Town of Amherst
5583 Main Street
Williamsville, NY 14221

WHEREAS, pursuant to Article 15 of the New York General Municipal Law, the Town is authorized to undertake urban renewal programs for the redevelopment of substandard, underutilized, or insanitary areas that are having a blighting influence on the surrounding property; and

WHEREAS, on June 27, 2022, the Town Board took several actions in regards to Article 15 of the New York General Municipal Law:

A. Designated itself as the Amherst Urban Renewal Agency (AURA), as defined in §502(4) of the General Municipal Law, for the purposes of carrying out the functions vested in that office by Article 15 of the General Municipal Law

B. Pursuant to §504 of the General Municipal Law, designated the "Boulevard Central District Urban Renewal Area" as an area appropriate for urban renewal as defined in §502(3) of the General Municipal Law

C. Said designation was made because the site is underutilized and having a long-term deteriorating impact on the community, particularly the neighboring commercial properties

D. Directed AURA to prepare an Urban Renewal Plan, as that term is defined in §502(7) of the General Municipal Law, for the redevelopment of a portion of the Boulevard Central District Urban Renewal Area consisting of the Boulevard Mall property and nearby properties as determined by AURA, which shall conform to the Comprehensive Plan of the Town and the Boulevard Central District Action Plan

E. Submit the Urban Renewal Plan to the Town Planning Board, which, after a duly noticed public hearing, shall certify whether the Plan complies with §502(7) of the General Municipal Law; and

WHEREAS the Town of Amherst Planning Board on Thursday, September 22, 2022 held a public hearing on the proposed Boulevard Central District Urban Renewal Plan; and

WHEREAS the Planning Board has reviewed the proposed Boulevard Central District Urban Renewal Plan; and

Attachment: SR-2022-05_draft_ Resoultion 9-22-22 (26192 : Boulevard Mall Urban Renewal Plan, SR-2022-05)

DRAFT (9/22/22)
TOWN OF AMHERST
PLANNING BOARD
BOULEVARD CENTRAL DISTRICT URBAN RENEWAL PLAN
SR-2022-05

PETITIONER
Town of Amherst

WHEREAS the Planning Board finds that:

A. The Plan complies with §502(7) of the General Municipal Law and includes a discussion of the required elements set forth therein.

B. The Plan conforms with the finding made pursuant to §504 of the General Municipal Law

C. The Plan conforms to and is in furtherance of the Comprehensive Plan and is consistent with and in furtherance of the Town's objectives.

C. The subject area is suitable for uses permitted by the current land use designation and the current mixed-use zoning districts.

E. The proposed change does improve the balance of land uses, and does meet a specific demand in the Town.

NOW THEREFORE BE IT RESOLVED that the Planning Board certifies its unqualified approval of the Boulevard Central District Urban Renewal Plan to the Town Board in accordance with §505 of the New York General Municipal Law and finds that this resolution shall constitute the Planning Board's report to the Town Board as is required by Section 505(2) of the General Municipal Law.

The foregoing resolution was adopted by the Town of Amherst Planning Board, _____; moved by –; seconded by –; ayes – ; noes –.

_____ _____
Robert J. Gilmour, Planning Board Chair Date

KA/ac
X:\Current_Planning\Files\Special Requests\2022\SR-2022-05_(BCD_Urban _Renewal_Plan)\SR-2022-05_draft_ Resoultion 9-22-22.doc-
cc: Town Clerk
Commissioner of Building
Highway Superintendent
Town Engineer
Town Assessor
Town Attorney

Attachment: SR-2022-05_draft_ Resoultion 9-22-22 (26192 : Boulevard Mall Urban Renewal Plan, SR-2022-05)

TOWN OF AMHERST
PLANNING BOARD
BOULEVARD CENTRAL DISTRICT URBAN RENEWAL PLAN
SR-2022-05

PETITIONER
Town of Amherst
5583 Main Street
Williamsville, NY 14221

'22 SEP 29 PM4:1

WHEREAS, pursuant to Article 15 of the New York General Municipal Law, the Town is authorized to undertake urban renewal programs for the redevelopment of substandard, underutilized, or insanitary areas that are having a blighting influence on the surrounding property; and

WHEREAS, on June 27, 2022, the Town Board took several actions in regards to Article 15 of the New York General Municipal Law:

A. Designated itself as the Amherst Urban Renewal Agency (AURA), as defined in §502(4) of the General Municipal Law, for the purposes of carrying out the functions vested in that office by Article 15 of the General Municipal Law

B. Pursuant to §504 of the General Municipal Law, designated the "Boulevard Central District Urban Renewal Area" as an area appropriate for urban renewal as defined in §502(3) of the General Municipal Law

C. Said designation was made because the site is underutilized and having a long-term deteriorating impact on the community, particularly the neighboring commercial properties

D. Directed AURA to prepare an Urban Renewal Plan, as that term is defined in §502(7) of the General Municipal Law, for the redevelopment of a portion of the Boulevard Central District Urban Renewal Area consisting of the Boulevard Mall property and nearby properties as determined by AURA, which shall conform to the Comprehensive Plan of the Town and the Boulevard Central District Action Plan

E. Submit the Urban Renewal Plan to the Town Planning Board, which, after a duly noticed public hearing, shall certify whether the Plan complies with §502(7) of the General Municipal Law; and

WHEREAS the Town of Amherst Planning Board on Thursday, September 22, 2022 held a public hearing on the proposed Boulevard Central District Urban Renewal Plan; and

WHEREAS the Planning Board has reviewed the proposed Boulevard Central District Urban Renewal Plan; and

Attachment: SR-2022-05 signed resolution 092222 (26192 : Boulevard Mall Urban Renewal Plan, SR-2022-05)

TOWN OF AMHERST
PLANNING BOARD
BOULEVARD CENTRAL DISTRICT URBAN RENEWAL PLAN
SR-2022-05

PETITIONER
Town of Amherst

'22 SEP 29 PM4:1'

WHEREAS the Planning Board finds that:

A. The Plan complies with §502(7) of the General Municipal Law and includes a discussion of the required elements set forth therein.

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C. The Plan conforms to and is in furtherance of the Comprehensive Plan and is consistent with and in furtherance of the Town's objectives.

C. The subject area is suitable for uses permitted by the current land use designation and the current mixed-use zoning districts.

E. The proposed change does improve the balance of land uses, and does meet a specific demand in the Town.

NOW THEREFORE BE IT RESOLVED that the Planning Board certifies its unqualified approval of the Boulevard Central District Urban Renewal Plan to the Town Board in accordance with §505 of the New York General Municipal Law and finds that this resolution shall constitute the Planning Board's report to the Town Board as is required by Section 505(2) of the General Municipal Law.

The foregoing resolution was adopted by the Town of Amherst Planning Board, September 22, 2022; moved by Penberthy; seconded by Giuliani; ayes 5; noes 0; absent 2 (Kahn, Raffaele).

Robert J. Gilmour, Planning Board Chair

9-29-22
Date

KA/ac
X:\Current_Planning\Files\Special Requests\2022\SR-2022-05_(BCD_Urban _Renewal_Plan)\SR-2022-05_Resoultion 9-22-22.doc-
cc: Town Clerk
Commissioner of Building
Highway Superintendent
Town Engineer
Town Assessor
Town Attorney

Attachment: SR-2022-05 signed resolution 092222 (26192 : Boulevard Mall Urban Renewal Plan, SR-2022-05)

Amherst Planning Board
5583 Main Street
Williamsville, NY 14221

ADOPTED

Meeting: 09/22/22 06:30 PM
Department: Planning
Category: Miscellaneous
Prepared By: Bryan Fadel
Initiator: Dan Howard
Sponsors:
DOC ID: 26343

PLANNING BOARD ITEM (ID # 26343)

Request to Amend the Bicentennial Comprehensive Plan for 22.78± Acres of Land from Commercial Office to Medium Residential, BCPA-2022-05

Property located at 2360-2370 Wehrle Drive (portion)
Omni Smart Living, Petitioner

Proposal to amend the Towns Comprehensive Plan to recommend a land use that allows for the future development of a senior living community.

Jeffrey Palumbo, Esq., Block. Longo, LaMarca & Brzezinski, represented the petitioner, explained the proposal and was available to answer questions from the Board. Gary Palace, Omni Smart Living, was also present.

Bob Shaw, 162 Berkley Road; James O'Donnell, 81 Oakwood Drive; and Bob Reynolds, 142 Ferndale Road spoke in opposition of the proposal.

No further comments were heard on this proposal. The hearing was closed.

Following discussion, Ms. Penberthy moved to approve the request based on the resolution. The motion was seconded by Mr. Giuliani and carried. Ayes 5, Noes 0, Absent 2 (Kahn, Raffaele).

ATTACHMENTS:

- BCPA-2022-05_application_090822 (PDF)
- BCPA-2022-05_draft resolution_092222(DOC)
- BCPA-2022-05 signed resolution 092222 (PDF)

RESULT:	**APPROVED [UNANIMOUS]**
MOVER:	Brittany Lee Penberthy, Board Member
SECONDER:	Dal Giuliani, Board Member
AYES:	Gilmour, Chmiel, Gill, Giuliani, Penberthy
ABSENT:	Joseph P. Raffaele Jr., Carrie H. Kahn

TOWN OF AMHERST PLANNING DEPARTMENT

Request for Bicentennial Comprehensive Plan Amendment

For Official Use

File #: _____ **Acreage** _____ **Fee $** _____

Address Verified by Assessor's Office _____ VERIFIED BY DATE

Application Received by Planning Department _____ ACCEPTED BY DATE

Materials & Fee Paid to Town Clerk _____ ACCEPTED BY DATE

		Fill In Applicable Fees
COMPREHENSIVE PLAN AMMENDMENT	**$0***	_____
AFFIDAVIT FEE FOR PUBLIC HEARING	**$15**	_____

Fee schedule subject to change by future Town Board action

TOTAL FEE: $___

TO BE COMPLETED BY APPLICANT

Petitioner:

Name: Omni Smart Living

Address: 3305 Bainbridge Road

Solon (City) Ohio (State) 44139 (Zip Code\)

Phone: (440) 773-1934 Fax _____

Email: wlynch@omnismartliving.com

Attachment: BCPA-2022-05_application_090822 (26343 : Bcpa-2022-05)

Owner of Land (if different than above):

Name: Arista I, LLC

Address: 1330 Niagara Falls Boulevard

Tonawanda (City) NY (State) 14150 (Zip Code)

Phone: (716) 867-0700 Fax

E Mail: robertnuch@gmail.com

Representative (Architect, Engineer, Landscape Architect, Surveyor or Attorney):

Name: Jeffery D. Palumbo, Esq.

Address: 9276 Main Street, Suite 3

Clarence (City) NY (State) 14031 (Zip Code)

Phone: (716) 308-7211 Fax (716) 854-0059

E Mail: jpalumbo@blockandlongo.com

Petitioner's interest in property

- ☒ Option to purchase
- ☐ Owner
- ☐ Other (explain) _____

The following are all others having an interest in this application and join herein with the petitioner named above: (describe extent of interest; attach sheets as needed)

N/A

Street address(es) of land subject to Bicentennial Comprehensive Plan Amendment:

2360-2370 Wehrle Drive

SBL #(s): 81.02-2-12.1

INFORMATION ON REQUEST

1. **The undersigned hereby requests the Honorable Town Board to amend the following text sections of the Bicentennial Comprehensive Plan:**

   Section(s) #/page(s): N/A

Note: If the requested amendment does not involve a map change, skip #2 and #3.

Attachment: BCPA-2022-05_application_090822 (26343 : Bcpa-2022-05)

2. **The undersigned hereby requests the Honorable Town Board to amend the Conceptual Land Use Map (Figure 6) and/or Commercial and Mixed-Use Designations (Figure 6A) as follows:**

FROM:

- ☐ Rural Residential
- ☐ Single Family Residential
- ☐ Mixed Residential
- ☐ Medium Residential
- ☒ Commercial/ Mixed Use*
- ☐ Special Use Center
- ☐ Commercial-Office
- ☐ Industrial-Office
- ☐ Community Facilities
- ☐ Educational Campus
- ☐ Recreation, Open Space, & Greenways
- ☐ Agriculture
- ☐ Transportation

*Additional Designations in Figure 6-A:

- ☐ Suburban Center
- ☐ Suburban Corridor
- ☐ Traditional Areas

TO:

- ☐ Rural Residential
- ☐ Single Family Residential
- ☒ Mixed Residential
- ☐ Medium Residential
- ☐ Commercial/ Mixed Use*
- ☐ Special Use Center
- ☐ Commercial-Office
- ☐ Industrial-Office
- ☐ Community Facilities
- ☐ Educational Campus
- ☐ Recreation, Open Space, & Greenways
- ☐ Agriculture
- ☐ Transportation

*Additional Designations in Figure 6A:

- ☐ Suburban Center
- ☐ Suburban Corridor
- ☐ Traditional Areas

3. **Other Bicentennial Comprehensive Plan Map Amendments (if applicable):**

Figure # or Name: Figure 6 Conceptual Land Use Plan - Amend to mark relevant property to mixed residential.

4. **Information on prospective action (*to be provided in separate attachment*):**

A. Description of any prospective action:

B. Rationale for request of amendment:

1. How will the requested amendment to the Bicentennial Comprehensive Plan consistent with *Section 2.2 (Vison Statement)*?
2. How will the requested amendment to the Bicentennial Comprehensive Plan consistent with *Section 2.3 (Key Initiatives)*?

C. How is the requested amendment align with the defined policies in Sections;

1. *3.0 Land Use and Development?*
2. *4.0 Natural and Cultural Resources?*
3. *5.0 Economic Development?*
4. *6.0 Transportation?*
5. *7.0 Infrastructure?*
6. *8.0 Housing & Neighborhoods?*
7. *9.0 Community Facilities & Services?*

Attachment: BCPA-2022-05_application_090822 (26343 : Bcpa-2022-05)

SECTION 809 CERTIFICATION

The undersigned certifies that all information required to be disclosed pursuant to Section 809 of the General Municipal Law (see below) is as follows:

The undersigned swears or affirms that all statements made herein are true, that all drawings submitted correctly show the situation involved in this petition.

_____
Signature of Petitioner

Subscribed and sworn to before me this _____ *day of* August, *20*22

Notary Public, Erie County, New York _____

N.Y.S. General Municipal Law - Section 809 Disclosure in certain applications:

1. Every application, petition or request submitted for a variance, amendment, change of zoning, approval of a plat, exemption from a plat or official map, license or permit, pursuant to the provision of any ordinance, local law, rule or regulation constituting the zoning and planning regulations of a municipality shall state the name, residence and the nature and extent of the interest of any state office or any office or employee of such municipality or of a municipality of which such municipality is a part, in the person, partnership or association making such application, petition or request (hereinafter called the applicant) to the extent known to such applicant.

2. For the purpose of this section an officer or employee shall be deemed to have an interest in the applicant when he, his spouse, or their brothers, sisters, parents, children, grandchildren, or the spouse of any of them

   (a) is the applicant, or
   (b) is an officer, director, partner or employee of the applicant, or
   (c) legally or beneficially owns or controls stock of a corporate applicant or is a member of a partnership or association applicant, or
   (d) is a party to an agreement with such an applicant, express or implied, whereby he may receive any payment or other benefit, whether or not for services rendered, dependent or contingent upon the favorable approval of such applicant, petition or request.

3. In the county of Nassau the provisions of subdivisions one and two of this section shall also apply to a party officer. "Party Officer" shall mean any person holding any position or office, whether by election, appointment or otherwise, in any party as defined by subdivision four or section two of the election law.

4. Ownership of less than five per cent of the stock of a corporation whose stock is listed on the New York or American Stock Exchanges shall not constitute an interest for the purposes of this section.

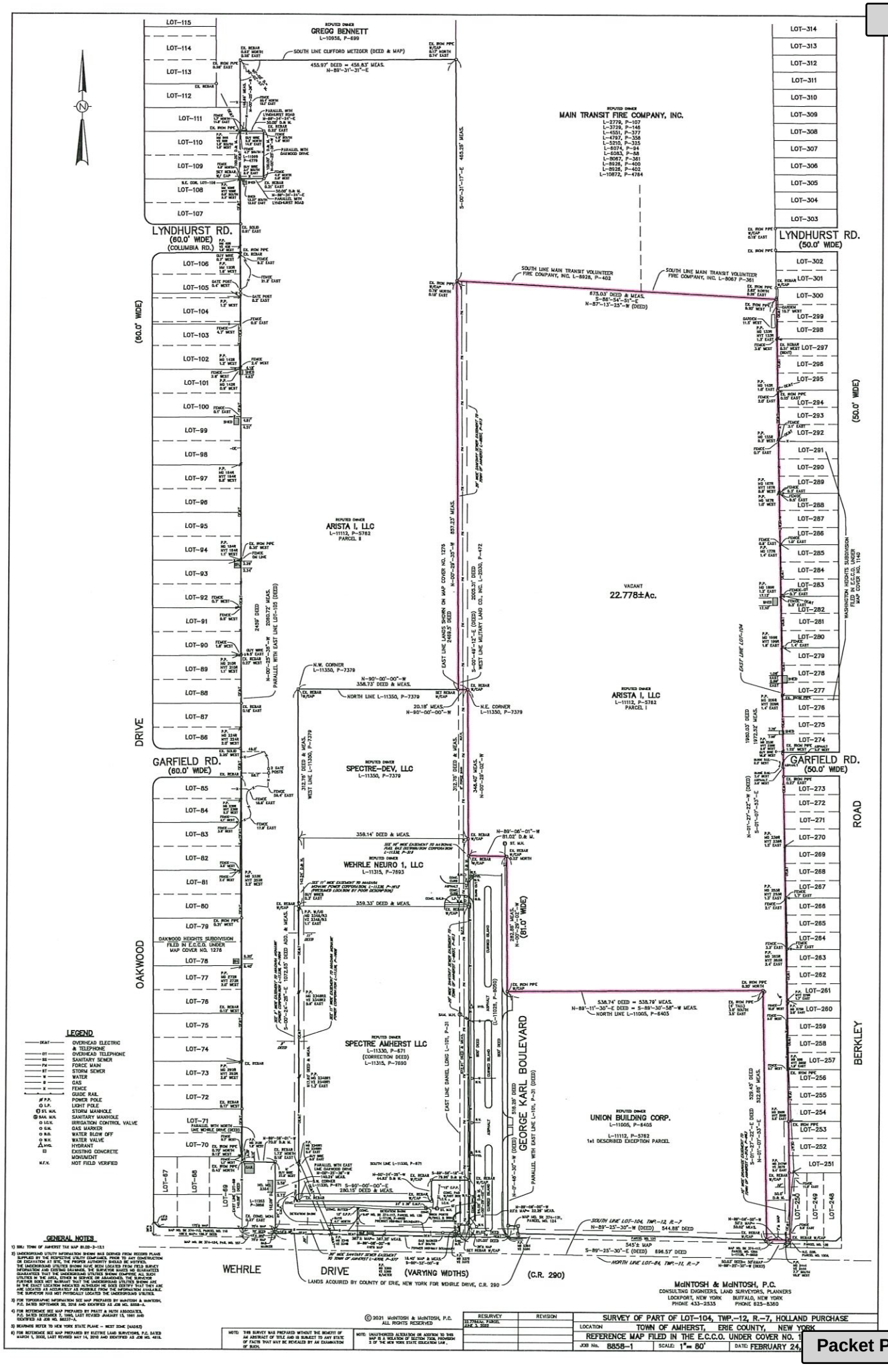
5. A person who knowingly and intentionally violates this section shall be guilty of a misdemeanor.

Town of Amherst Planning Department 5583 Main Street Williamsville New York 14221
(716) 631-7051; Fax: (716) 631-7153; Web: www.amherst.ny.us

Attachment: BCPA-2022-05_application_090822 (26343 : Bcpa-2022-05)

Survey and Legal Description

Attachment: BCPA-2022-05_application_090822 (26343 : Bcpa-2022-05)



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McINTOSH & McINTOSH, P.C.
CONSULTING ENGINEERS, LAND SURVEYORS, PLANNERS
LOCKPORT, NEW YORK PHONE 433-2535 BUFFALO, NEW YORK PHONE 825-8360

RESURVEY	REVISION
22.778±Ac. PARCEL, JUNE 3, 2022	

SURVEY OF PART OF LOT-104, TWP.-12, R.-7, HOLLAND PURCHASE
LOCATION TOWN OF AMHERST, ERIE COUNTY, NEW YORK
REFERENCE MAP FILED IN THE E.C.C.O. UNDER COVER NO. 1
JOB No. 8858-1 SCALE: 1" = 80' DATE: FEBRUARY 24,

NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE AND IS SUBJECT TO ANY STATE OF FACTS THAT MAY BE REVEALED BY AN EXAMINATION OF SUCH.

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS SURVEY MAP IS A VIOLATION OF SECTION 7209, SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

Attachment: BCPA-2022-05_application_090822 (26343 : Bcpa-2022-05)

(Suggested Description) 22.778± Acres

Job No. 8858-1

ALL THAT TRACT OR PARCEL OF LAND situate in the Town of Amherst, County of Erie, State of New York, and being part of Lot 104, Township 12, Range 7 of the Holland Land Company Survey (so-called), bounded and described as follows:

BEGINNING AT A POINT on the north line of Wehrle Drive at the northeast corner of Parcel No. 120A as shown on Map No. Sk 374-117 of lands conveyed to the County of Erie by deed recorded in the Erie County Clerk's Office in Liber 11136 of Deeds at Page 6650; said point being also on the east line of Lot 104;

RUNNING THENCE: N-89°-08'-00"-W, along the north line of Wehrle Drive as now laid out, a distance of 50.02 feet to a point;

RUNNING THENCE: N-01°-07'-53"-E, a distance of 522.68 feet to a point on the north line of lands conveyed to Union Building corp. by deed recorded in the Erie County Clerk's Office in Liber 10005 of Deeds at Page 6405;

RUNNING THENCE: S-89°-30'-58"-W, along the north line of said Union Building Corp. lands, a distance of 538.79 feet to a point on the east line of George Karl Boulevard;

RUNNING THENCE: N-00°-29'-02"-W, along the east line of George Karl Boulevard, a distance of 282.86 feet to a point;

RUNNING THENCE: N-89°-06'-01"-W, along the north line of George Karl Boulevard, a distance of 81.02 feet to a point;

RUNNING THENCE: N-00°-29'-02"-W, a distance of 348.40 feet to the northeast corner of lands conveyed to Spectre-Dev, LLC by deed recorded in the Erie County Clerk's Office in Liber 11350 of Deeds at Page 7379;

RUNNING THENCE: N-90°-00'-00"-W, along the north line of said Spectre-Dev, LLC lands, a distance of 20.18 feet a point;

RUNNING THENCE: N-00°-29'-35"-W, a distance of 857.23 feet to a point on the south line of lands conveyed to Main Transit Volunteer Fire Company, Inc. by deed recorded in the Erie County Clerk's Office in Liber 8926 of Deeds at Page 402;

Attachment: BCPA-2022-05_application_090822 (26343 : Bcpa-2022-05)

RUNNING THENCE: S-86°-54'-51"-E, along the south line of said Main Transit Volunteer Fire Company, Inc. lands and its extension westerly and along the south line of lands conveyed to Main Transit Volunteer Fire Company, Inc. by deed recorded in the Erie County Clerk's Office in Liber 8067 of Deeds at Page 361, a distance of 675.03 feet to a point on the east line of Lot 104;

RUNNING THENCE: S-01°-07'-53"-E, along the east line of Lot 104, a distance of 1972.52 feet to the POINT OR PLACE OF BEGINNING, containing 22.778 Acres, be the same, more or less.

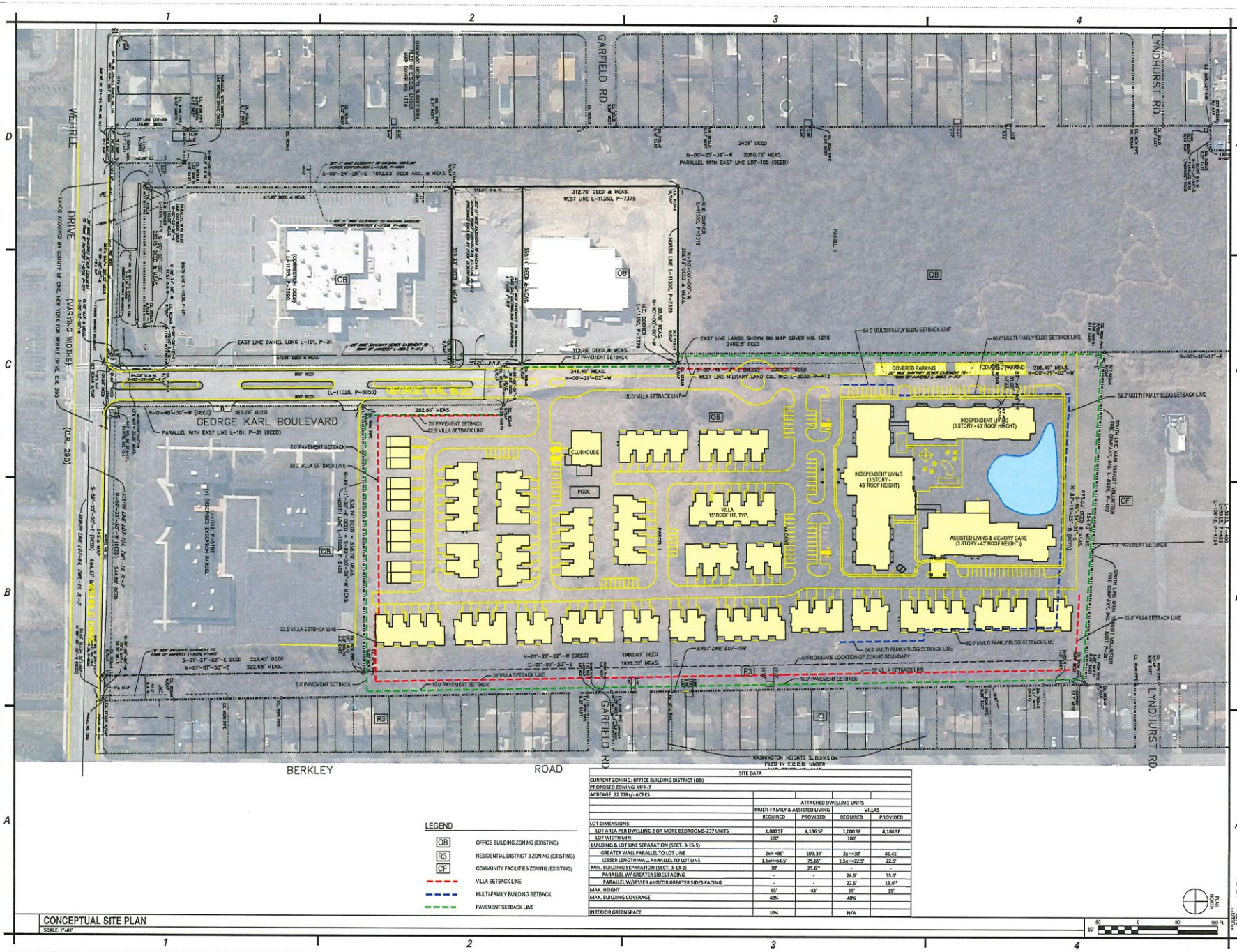
SUBJECT to easements, rights of way and restrictions of record.

BEING AND INTENDED TO BE a portion of lands conveyed to Arista I, LLC by deed recorded in the Erie County Clerk's Office in Liber 11112 of Deeds at Page 5762.

Attachment: BCPA-2022-05_application_090822 (26343 : Bcpa-2022-05)

Preliminary Site Plan

Attachment: BCPA-2022-05_application_090822 (26343 : Bcpa-2022-05)



CONCEPTUAL SITE PLAN
SCALE: 1"=80'

LEGEND

OB	OFFICE BUILDING ZONING (EXISTING)
R3	RESIDENTIAL DISTRICT 3 ZONING (EXISTING)
CF	COMMUNITY FACILITIES ZONING (EXISTING)
	VLLA SETBACK LINE
	MULTI-FAMILY BUILDING SETBACK
	PAVEMENT SETBACK LINE

SITE DATA

CURRENT ZONING: OFFICE BUILDING DISTRICT (OB)
PROPOSED ZONING: MFR-7
ACREAGE: 22.778+/- ACRES

	ATTACHED DWELLING UNITS			
	MULTI-FAMILY & ASSISTED LIVING		VILLAS	
	REQUIRED	PROVIDED	REQUIRED	PROVIDED
LOT DIMENSIONS:				
LOT AREA PER DWELLING 2 OR MORE BEDROOMS-237 UNITS	1,000 SF	4,186 SF	1,000 SF	4,186 SF
LOT WIDTH MIN.	100'		100'	
BUILDING & LOT LINE SEPARATION (SECT. 3-15-5)				
GREATER WALL PARALLEL TO LOT LINE	2xH =80'	109.39'	2xH=30'	46.41'
LESSER LENGTH WALL PARALLEL TO LOT LINE	1.5xH=64.5'	75.65'	1.5xH=22.5'	22.5'
MIN. BUILDING SEPARATION (SECT. 3-13-2)	30'	25.6'*		
PARALLEL W/ GREATER SIDES FACING	-	-	24.9'	35.0'
PARALLEL W/LESSER AND/OR GREATER SIDES FACING	-	-	22.5'	13.8'*
MAX. HEIGHT	65'	43'	65'	15'
MAX. BUILDING COVERAGE	40%		40%	
INTERIOR GREENSPACE	10%		N/A	

C&S COMPANIES®
C&S Engineers, Inc.
141 Elm St, Suite 100
Buffalo, New York 14203
Phone: 716-847-1630
Fax: 716-847-1454
www.cscos.com

PRELIMINARY
NOT FOR CONSTRUCTION

SENIOR CITIZEN COMPLEX
WEHRLE DRIVE & GEORGE KARL BLVD.
AMHERST, NEW YORK

OMNI SMART LIVING

MARK	DATE	DESCRIPTION
REVISIONS		

PROJECT NO: Z47.001.001
DATE: 8-19-2022
DRAWN BY: S. SCHIENER
DESIGNED BY:
CHECKED BY:

NO ALTERATION PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK EDUCATION LAW

REZONING EXHIBIT
CONCEPTUAL
SITE PLAN
OPTION 3

Copyr

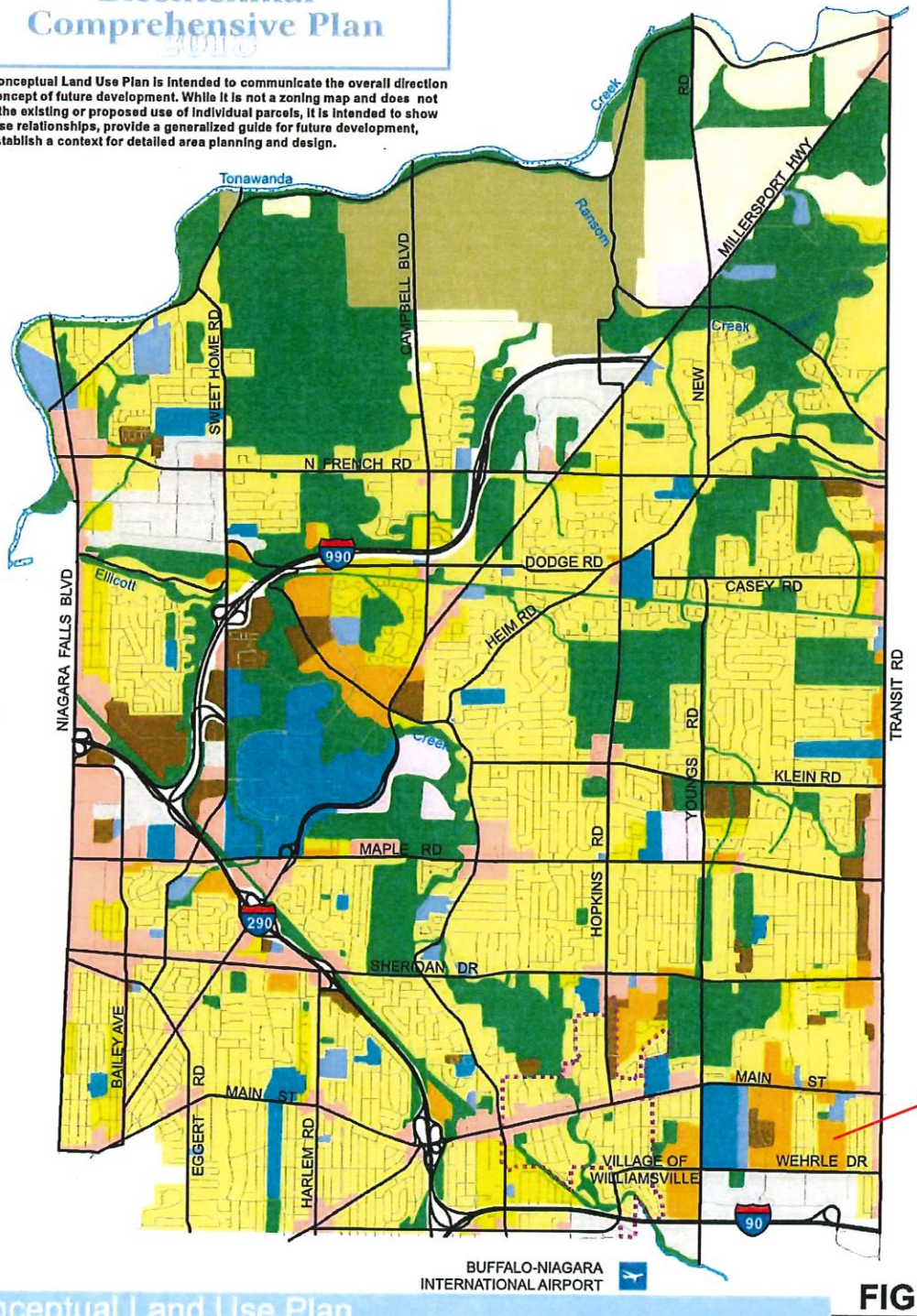
Attachment: BCPA-2022-05_application_090822 (26343 : Bcpa-2022-05)

Map Graphic
depicting requested Comprehensive Plan Change

Attachment: BCPA-2022-05_application_090822 (26343 : Bcpa-2022-05)

Town of Amherst Bicentennial Comprehensive Plan

The Conceptual Land Use Plan is intended to communicate the overall direction and concept of future development. While it is not a zoning map and does not show the existing or proposed use of individual parcels, it is intended to show land use relationships, provide a generalized guide for future development, and establish a context for detailed area planning and design.



Property Location

Requested Classification

Conceptual Land Use Plan

FIGURE 6

- Rural Residential
- Single Family Residential
- Mixed Residential
- Medium Residential
- Commercial / Mixed Use*
- Special Use Center
- Commercial - Office
- Industrial - Office
- Community Facilities
- Educational Campus
- Recreation, Open Space & Greenways
- Agriculture
- Transportation
- Surface Water
- Village of Williamsville Boundary

* See Map Figure 6-A for Form/Type Designation

SOURCE NOTES:

Original Source Data Provided by the Town of Amherst Information Technology Department, URS Corporation and Wallace Roberts & Todd, LLC

Map Compiled by the Town of Amherst Planning Department

Date: December 2017

N

0 0.2 0.4 0.6 0.8 1 Miles

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Comprehensive Plan Amendment Analysis

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Comprehensive Plan Amendment Analysis
2360 – 2370 Wehrle Drive

As set forth in the Town of Amherst Bicentennial Comprehensive Plan ("Plan") Amendment Application Form, Petitioner must provide information on the prospective action in relation to the Plan. The Application Form questions are outlined below in bold with Petitioner's response noted.

A. Description of any prospective action:

Petitioner's Response: Petitioner is proposing an adult living community with first class amenities. This community will consist of a combination of Independent Living, Assisted Living, Memory Care and Villas. It will provide housing for Amherst residents who no longer want the responsibility of maintaining a home but who would like to continue to reside in Amherst.

B. Rationale for request of amendment:

1. **How will the requested amendment to the Bicentennial Comprehensive Plan be consistent with *Section 2.2 (Vision Statement)*?**

Petitioner's Response: As noted, the requested amendment enhances the livability of the area in offering additional choices in lifestyle and having options that are not otherwise available. It also serves to enhance community character by removing commercial zoning and continuing investment in older neighborhoods. Further, the requested amendment and subsequent development meet a very high standard for quality development while respecting appropriate buffers in existing neighborhoods. Finally, the requested amendment is consistent with the shared direction as set forth in the "Plan" as it enhances the diverse economy of the town, strengthening the tax base and attraction to the community by carefully using vacant land with an infill development that will coexist with both the commercial and residential character of the area.

2. **How will the requested amendment to the Bicentennial Comprehensive Plan be consistent with Section 2.3 (key initiatives)**

Petitioner's Response: Regarding "aesthetic/community character" the requested amendment certainly does not detract, but rather adds to the renowned beauty, character and environmental quality of the Town. The "Plan" sets forth various initiatives designed to "raise the bar" in order to move further towards a position of excellence. By approving this senior housing development, the Town moves even closer to the goal. In every way the Petition provides Amherst seniors with a truly first class living community.

The requested amendment is also consistent with the "Education" key initiative. In other existing communities developed by Petitioner, residents "go back to college." They have teamed with local universities by providing residents with the ability to go back to school to learn about their passions and about new interests as well.

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Regarding the "Revitalization" initiative, this proposal injects new life into an older area of the Town by providing a diverse choice of retirement housing. The requested amendment coincides nicely with both the adjoining residential and commercial neighborhoods.

Lastly, the requested amendment is consistent with the "Governance" initiative. The resulting adult community does not introduce inconsistency or unfairness in zoning and land usage.

C. How is the requested amendment aligned with the defined policies in Sections:

1. *3.0 Land Use and Development?*

Petitioner's Response: The requested amendment adds new diverse housing and an investment to the established community and does so with a context-sensitive architectural and site design. Ultimately, the Properties call for residential dwellings and the requested amendment and development result in residential dwellings. Specifically, the requested amendment seeks to have the Properties classified as "Mixed Residential." Mixed residential is appropriate for residence along roads like Wehrle Drive and as a buffer to more traditional single-family neighborhoods. The Properties and Development perfectly capture Mixed Residential as set forth in the Comprehensive Plan.

2. *4.0 Natural and Cultural Resources?*

Petitioner's Response: The Development is adjacent to both residential and commercial neighborhoods. The adult community will provide buffering from neighboring parcels, preserving the status quo in terms of privacy and buffer, while also saving important natural vegetation through strategically limited clearing.

3. *5.0 Economic Development?*

Petitioner's Response: The proposed amendment balances economic growth and livability by providing Amherst adults with a diverse choice of housing alternatives. The development is not obtrusive to established neighboring residences. Buffering and landscaping will ensure that all neighbors are properly protected.

4. *6.0 Transportation?*

Petitioner's Response: As the property is currently zoned commercial, for office development, the proposed adult community will generate far less traffic, particularly at the peak hours. Typically, transportation is provided to residents for travel to various business and cultural establishments, reducing the need for individual car traffic.

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5. *7.0 Infrastructure*?

Petitioner's Response: The proposed amendment will not stress existing storm sewer or waste water service. The Properties are within the Town of Amherst Consolidated Sanitary Sewer District, so the development will not be on septic. Capacity exists for the number of units proposed. The development is anticipated to produce approximately 40,300 gallons per day.

6. *8.0 Housing & Neighborhoods*?

Petitioner's Response: The proposed amendment furthers the Comprehensive Plan objective to achieve a diversity of housing options. The Petitioner is also an experienced senior housing developer, which will ensure that the diverse housing option will be well managed and contribute to surrounding neighborhood's health and stability. While the proposed amendment changes the Comprehensive Plan conceptual land use plan, Figure 6, by making the Properties mixed residential, the change allows Amherst residents to remain in Amherst. As stated previously, Petitioner is well versed in respecting existing neighborhoods by appropriate buffering and landscaping.

7. **9.0 Community Facilities & Services?**

Petitioner's Response: The proposed community is very close to the Transit and Main Street corridors. By providing its residents with safe transportation, it is insured that nearby businesses, restaurants, movie theaters, etc. will be utilized by the community residents.

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Environmental Assessment Form

Attachment: BCPA-2022-05_application_090822 (26343 : Bcpa-2022-05)

Full Environmental Assessment Form
Part 1 - Project and Setting

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project:		
Project Location (describe, and attach a general location map): 2360-2370 Wehrle Drive, Amherst, New York		
Brief Description of Proposed Action (include purpose or need):		
Name of Applicant/Sponsor: Omni Smart Living	Telephone: (440) 773-1934 E-Mail: wlynch@omnismartliving.com	
Address: 33095 Bainbridge Road		
City/PO: Solon	State: Ohio	Zip Code: 44139
Project Contact (if not same as sponsor; give name and title/role): Jeffery D. Palumbo / Block, Longo, LaMarca & Brzezinski, P.C.	Telephone: (716) 317-0667 E-Mail: jpalumbo@blockandlongo.com	
Address: 9276 Main Street		
City/PO: Clarence	State: New York	Zip Code: 14031
Property Owner (if not same as sponsor): Arista I, LLC	Telephone: E-Mail:	
Address: 1330 Niagara Falls Boulevard		
City/PO: Tonawanda	State: New York	Zip Code: 14150

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B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees ☑Yes ☐No	Town of Amherst Town Board - Rezoning	08/2022
b. City, Town or Village Planning Board or Commission ☑Yes ☐No	Town of Amherst Planning Board - Site Plan Approval	TBD
c. City, Town or Village Zoning Board of Appeals ☑Yes ☐No	Town of Amherst Zoning Board of Appeals - Variances	TBD
d. Other local agencies ☑Yes ☐No	Erie County Water Authority -Watermain Extension & Approval of Backflow Prevention	TBD
e. County agencies ☐Yes ☐No		
f. Regional agencies ☐Yes ☐No		
g. State agencies ☐Yes ☐No	NYSDEC - SPDES Permit (Stormwater)	TBD
h. Federal agencies ☑Yes ☐No	Federal Aviation Admin. - Proximity to Buffalo Niagara Internation Airport	TBD

i. Coastal Resources.

i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐Yes ☑No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☑Yes ☐No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☑Yes ☐No

If Yes, identify the plan(s):

NYS Heritage Areas:West Erie Canal Corridor

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes ☑No

If Yes, identify the plan(s):

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C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
OB (Office Building District) and R-3 (Residential District 3)

b. Is the use permitted or allowed by a special or conditional use permit? ☐ Yes ☑ No

c. Is a zoning change requested as part of the proposed action? ☑ Yes ☐ No
If Yes,
i. What is the proposed new zoning for the site? MFR-7 (Multifamily Residential District 7)

C.4. Existing community services.

a. In what school district is the project site located? Williamsville Central School District

b. What police or other public protection forces serve the project site?
Town of Amherst Police Department

c. Which fire protection and emergency medical services serve the project site?
Main-Transit Fire Department

d. What parks serve the project site?
Island Park, Glen Park, Garrison Park, Dana Heights Park, Wehrle FAA Recreation Park

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)? Residential

b. a. Total acreage of the site of the proposed action? 22.778 +/- acres
b. Total acreage to be physically disturbed? 16.6 +/- acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 22.778 +/- acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % _____ Units: _____

d. Is the proposed action a subdivision, or does it include a subdivision? ☐ Yes ☑ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
ii. Is a cluster/conservation layout proposed? ☐ Yes ☑ No
iii. Number of lots proposed? _____
iv. Minimum and maximum proposed lot sizes? Minimum _____ Maximum _____

e. Will the proposed action be constructed in multiple phases? ☑ Yes ☐ No
i. If No, anticipated period of construction: _____ months
ii. If Yes:
- Total number of phases anticipated 2
- Anticipated commencement date of phase 1 (including demolition) 4 month 2023 year
- Anticipated completion date of final phase 12 month 2025 year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases: _____

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f. Does the project include new residential uses? ☑ Yes ☐ No

If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase				
At completion of all phases				

g. Does the proposed action include new non-residential construction (including expansions)? ☐ Yes ☑ No

If Yes,

i. Total number of structures _____

ii. Dimensions (in feet) of largest proposed structure: _____ height; _____ width; and _____ length

iii. Approximate extent of building space to be heated or cooled: _____ square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☑ Yes ☐ No

If Yes,

i. Purpose of the impoundment: Stormwater detention

ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☑ Other specify: stormwater runoff

iii. If other than water, identify the type of impounded/contained liquids and their source.

iv. Approximate size of the proposed impoundment. Volume: _____ million gallons; surface area: TBD acres

v. Dimensions of the proposed dam or impounding structure: _____ height; _____ length (Unknown at this time - TBD)

vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? ☐ Yes ☑ No
(Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite)

If Yes:

i .What is the purpose of the excavation or dredging? _____

ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?

- Volume (specify tons or cubic yards): _____
- Over what duration of time? _____

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.

iv. Will there be onsite dewatering or processing of excavated materials? ☐ Yes ☐ No
If yes, describe. _____

v. What is the total area to be dredged or excavated? _____ acres

vi. What is the maximum area to be worked at any one time? _____ acres

vii. What would be the maximum depth of excavation or dredging? _____ feet

viii. Will the excavation require blasting? ☐ Yes ☐ No

ix. Summarize site reclamation goals and plan: _____

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☐ Yes ☑ No

If Yes:

i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): _____

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ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

iii. Will the proposed action cause or result in disturbance to bottom sediments? ☐Yes ☐No
If Yes, describe:

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☐No
If Yes:

- acres of aquatic vegetation proposed to be removed:
- expected acreage of aquatic vegetation remaining after project completion:
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access):
- proposed method of plant removal:
- if chemical/herbicide treatment will be used, specify product(s):

v. Describe any proposed reclamation/mitigation following disturbance:

c. Will the proposed action use, or create a new demand for water? ☑Yes ☐No
If Yes:

i. Total anticipated water usage/demand per day: 40,340 gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑Yes ☐No
If Yes:

- Name of district or service area: Erie County Water Authority
- Does the existing public water supply have capacity to serve the proposal? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No
- Do existing lines serve the project site? ☐Yes ☑No

iii. Will line extension within an existing district be necessary to supply the project? ☑Yes ☐No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project: line extension along George Karl Blvd. which is to be extended (approx. 400 feet +/-)
- Source(s) of supply for the district: Erie County Water Authority

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐Yes ☑No
If, Yes:

- Applicant/sponsor for new district:
- Date application submitted or anticipated:
- Proposed source(s) of supply for new district:

v. If a public water supply will not be used, describe plans to provide water supply for the project:

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑Yes ☐No
If Yes:

i. Total anticipated liquid waste generation per day: 40,340 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each): sanitary wastewater

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑Yes ☐No
If Yes:

- Name of wastewater treatment plant to be used: Town of Amherst Wastewater Treatment Plant
- Name of district: Town of Amherst
- Does the existing wastewater treatment plant have capacity to serve the project? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No

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- Do existing sewer lines serve the project site? ☑ Yes ☐ No
- Will a line extension within an existing district be necessary to serve the project? ☑ Yes ☐ No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: line extension along George Karl Blvd. which is to be extended (approx. 400 feet +/-)

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐ Yes ☑ No

If Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑ Yes ☐ No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or 13.6 acres (impervious surface)

_____ Square feet or 22.8 acres (parcel size)

ii. Describe types of new point sources. Stormwater discharge from project site which will either tie into municipal storm sewer system on George Karl Blvd. or discharge to a stormwater injection well.

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

on-site stormwater management facilities

- If to surface waters, identify receiving water bodies or wetlands: Eventually connects to Ellicott Creek
- Will stormwater runoff flow to adjacent properties? ☐ Yes ☑ No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☑ Yes ☐ No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐ Yes ☑ No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐ Yes ☑ No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐ Yes ☐ No

ii. In addition to emissions as calculated in the application, the project will generate:

- _____ Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____ Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____ Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____ Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____ Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____ Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

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h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? ☐Yes ☑No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☑Weekend
☐ Randomly between hours of _____ to _____. (Not specified in ITE Trip Generation Manual)

ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): _____

iii. Parking spaces: Existing 0 Proposed 329 Net increase/decrease 329

iv. Does the proposed action include any shared use parking? ☐Yes ☑No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:
extension of George Karl Blvd. by approximately 400 feet +/-

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☑Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☑Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☑Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☑Yes ☐No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: _____
Unknown at this time

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):
via grid/local utility

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐Yes ☑No

l. Hours of operation. Answer all items which apply.

i. During Construction:
- Monday - Friday: 7am - 6pm
- Saturday: 7am - 6pm
- Sunday: N/A
- Holidays: N/A

ii. During Operations:
- Monday - Friday: 24/7 facility
- Saturday: 24/7 facility
- Sunday: 24/7 facility
- Holidays: 24/7 facility

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m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

The use of construction equipment and construction activities for this project will result in unavoidable noise impacts during daytime hours.

ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☑ No

Describe:

n. Will the proposed action have outdoor lighting? ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

New street lighting, exterior building lighting and pole mounted lighting to comply with the Town of Amherst's Town Code.

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☑ No

Describe:

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures:

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally, describe the proposed storage facilities:

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☐ Yes ☑ No

If Yes:

i. Describe proposed treatment(s):

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☐ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☑ Yes ☐ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: to be determined tons per _____ (unit of time)
- Operation : to be determined tons per _____ (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: Recycling of salvageable construction items.
- Operation: Recycling programs by use.

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: Via agreement with waste disposal company.
- Operation: Via agreement with waste disposal company.

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s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☑ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)
☐ Forest ☐ Agriculture ☐ Aquatic ☑ Other (specify): Community Facility (Fire Department)

ii. If mix of uses, generally describe:

residential subdivisions to the east and west of the parcel, commercial properties to the west and south of the parcel, fire department to the north of the parcel.

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	0	13.6	+13.6
• Forested	11.6	0	-11.6
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	11.178		-11.178
• Agricultural (includes active orchards, field, greenhouse etc.)			
• Surface water features (lakes, ponds, streams, rivers, etc.)		0.50	+0.50
• Wetlands (freshwater or tidal)			
• Non-vegetated (bare rock, earth or fill)			
• Other Describe: Lawn/Landscaping	0	8.678	+8.678

Attachment: BCPA-2022-05_application_090822 (26343 : Bcpa-2022-05)

c. Is the project site presently used by members of the community for public recreation? ☐Yes ☑No
i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☐Yes ☑No
If Yes,
i. Identify Facilities:

_____
_____

e. Does the project site contain an existing dam? ☐Yes ☑No
If Yes:
i. Dimensions of the dam and impoundment:

- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____
iii. Provide date and summarize results of last inspection:

_____
_____

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐Yes ☑No
If Yes:
i. Has the facility been formally closed? ☐Yes ☐ No

- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:

_____
_____

iii. Describe any development constraints due to the prior solid waste activities: _____

_____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐Yes ☑No
If Yes:
i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:

_____
_____

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐Yes ☑ No
If Yes:
i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐Yes ☐No

☐ Yes – Spills Incidents database — Provide DEC ID number(s): _____
☐ Yes – Environmental Site Remediation database — Provide DEC ID number(s): _____
☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures: _____

_____
_____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐Yes ☑No
If yes, provide DEC ID number(s): _____
iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):

_____
_____

Attachment: BCPA-2022-05_application_090822 (26343 : Bcpa-2022-05)

v. Is the project site subject to an institutional control limiting property uses? ☐ Yes ☑ No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐ Yes ☐ No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? 1.5 to 3.5 feet

b. Are there bedrock outcroppings on the project site? ☐ Yes ☑ No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____ %

c. Predominant soil type(s) present on project site:

Wassaic silt loam	95 %
Farmington channery loam	3.9 %
Ovid silt loam	1.2 %

d. What is the average depth to the water table on the project site? Average: >10 feet

e. Drainage status of project site soils:

☑ Well Drained:	3.9 % of site
☑ Moderately Well Drained:	95 % of site
☑ Poorly Drained	1.2 % of site

f. Approximate proportion of proposed action site with slopes:

☑ 0-10%:	100 % of site
☐ 10-15%:	% of site
☐ 15% or greater:	% of site

g. Are there any unique geologic features on the project site? ☐ Yes ☑ No
If Yes, describe: _____

h. Surface water features.

i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☐ Yes ☑ No

ii. Do any wetlands or other waterbodies adjoin the project site? ☐ Yes ☑ No

If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.

iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☐ Yes ☑ No

iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name _____ Approximate Size _____
- Wetland No. (if regulated by DEC) _____

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐ Yes ☑ No

If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐ Yes ☑ No

j. Is the project site in the 100-year Floodplain? ☐ Yes ☑ No

k. Is the project site in the 500-year Floodplain? ☐ Yes ☑ No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐ Yes ☑ No
If Yes:

i. Name of aquifer: _____

Attachment: BCPA-2022-05_application_090822 (26343 : Bcpa-2022-05)

m. Identify the predominant wildlife species that occupy or use the project site:

White tailed deer	raccoon	squirrel
eastern chipmunk	skunk	woodchuck
field mice	common garter snake	red fox

n. Does the project site contain a designated significant natural community? ☐Yes ☑No

If Yes:

i. Describe the habitat/community (composition, function, and basis for designation): _____

ii. Source(s) of description or evaluation: _____

iii. Extent of community/habitat:

- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐Yes ☑No

If Yes:

i. Species and listing (endangered or threatened): _____

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☐Yes ☑No

If Yes:

i. Species and listing: _____

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐Yes ☑No

If yes, give a brief description of how the proposed action may affect that use: _____

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐Yes ☑No

If Yes, provide county plus district name/number: _____

b. Are agricultural lands consisting of highly productive soils present? ☐Yes ☑No

i. If Yes: acreage(s) on project site? _____

ii. Source(s) of soil rating(s): _____

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐Yes ☑No

If Yes:

i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature

ii. Provide brief description of landmark, including values behind designation and approximate size/extent: _____

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐Yes ☑No

If Yes:

i. CEA name: _____

ii. Basis for designation: _____

iii. Designating agency and date: _____

Attachment: BCPA-2022-05_application_090822 (26343 : Bcpa-2022-05)

e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? ☐ Yes ☑ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: _____

iii. Brief description of attributes on which listing is based:

_____

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☑ Yes ☐ No

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s): _____

ii. Basis for identification: _____

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☐ Yes ☑ No

If Yes:

i. Identify resource: _____

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.): _____

iii. Distance between project and resource: _____ miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation: _____

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name _____ Date _____

Signature _____ Title _____

PRINT FORM

Attachment: BCPA-2022-05_application_090822 (26343 : Bcpa-2022-05)

EAF Mapper Summary Report

Wednesday, August 17, 2022 1:04 PM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.



B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Yes - Digital mapping data are not available for all Special Planning Districts. Refer to EAF Workbook.
C.2.b. [Special Planning District - Name]	NYS Heritage Areas:West Erie Canal Corridor
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	No
E.2.h.ii [Surface Water Features]	No
E.2.h.iii [Surface Water Features]	No
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	No
E.2.k. [500 Year Floodplain]	No
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	No
E.2.o. [Endangered or Threatened Species]	No
E.2.p. [Rare Plants or Animals]	No

Attachment: BCPA-2022-05_application_090822 (26343 : Bcpa-2022-05)

E.3.a. [Agricultural District]	No
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.3.f. [Archeological Sites]	Yes
E.3.i. [Designated River Corridor]	No

Attachment: BCPA-2022-05_application_090822 (26343 : Bcpa-2022-05)

Town Environmental Assessment Form Addendum

Attachment: BCPA-2022-05_application_090822 (26343 : Bcpa-2022-05)

TOWN OF AMHERST
State Environmental Quality Review
ENVIRONMENTAL ASSESSMENT FORM
-- ADDENDUM --

1. For each applicable category of proposed new structures, including additions to existing structures, provide the following information for all soil types on the project site (*according to Soil Survey of Erie County, NY; Table 11, Building Site Development, pp 294-305):*

Soil Name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Wassaic Silt Loam	Severe	Moderate	Severe	Moderate	Moderate
Farmington Channery Loan	Severe	Severe	Severe	Severe	Severe
Ovid Silt Loam	Severe	Severe	Severe	Severe	Severe

2. If the Soil survey indicates either "severe" or "moderate" suitability for the proposed types of construction, a geotechnical and hydrological analysis based on one test per 3.5 acres of project area must be provided (per Town Board resolution, 3/17/03, amended 6/16/03).

   X Geotechnical report attached _____ Not applicable

3. Is your property located: On Youngs Road between Dodge and Klein Roads? ☐ Yes ☒ No
   On Wehrle Dr. between Spindrift Dr. and Oakwood Rd? ☐ Yes ☒ No

   If so, the property may be within an area of the Town that is affected by a moratorium on connections to the sanitary sewer system.

4. Are there alternative locations on the site for this project? ☐ Yes ☒ No

5. Location and size of real property owned by petitioner within one (1) mile of subject proposal:
   N/A

6. Are you aware of current or future plans or intentions by others in the Town of Amherst to develop property within 1000± ft. of the present project request: ☐ Yes ☒ No

   Describe _____

   (Potential environmental impacts from adjacent or nearby projects undergoing the approval process will receive a coordinated environmental review to determine cumulative effects on common receivers (e.g. traffic and drainage corridors) and other relevant environmental concerns.)

7. Maximum number of vehicular trips to be generated per peak hour upon completion of project _____
   Source: 178 (Saturday peak) ITE Trip generation Manual

8. Will blasting occur during construction? ☐ Yes ☒ No (TBD - Depending on Rock Hardness)

9. Does the project propose to connect and be tributary to the public sanitary sewer system? ☒ Yes ☐ No

10. Proposed net additional gallons per day (gpd) of sanitary sewer discharge upon completion of project:
    40,340 average flow 161,360 peak flow.

    (Average flows of 2,500 gpd or greater will require an Engineer's Report that includes a detailed downstream sewer capacity analysis and the identification of and commitment to required I/I offset work during peak wastewater flow conditions.)

11. Based on the Town's *2011 Reconnaissance Level Survey of Historic Resources,* is your property 'blue-rated' for historic significance? ☐ Yes ☒ No

Attachment: BCPA-2022-05_application_090822 (26343 : Bcpa-2022-05)

Owner Authorization

Attachment: BCPA-2022-05_application_090822 (26343 : Bcpa-2022-05)

AUTHORIZATION

Robert Nuchereno, Managing Member of ARISTA I, LLC, record property owner of 2360-2370 Wehrle Drive, SBL No. 81.02-2-12.1 in the Town of Amherst, hereby authorizes Block, Longo, LaMarca & Brzezinski, P.C. to file any and all applications along with any necessary supporting documentation, with the Town of Amherst in connection with the approvals sought for the above referenced property.

ARISTA I, LLC

By: _____
Robert Nuchereno, Managing Member

Dated: 8-22-22

Attachment: BCPA-2022-05_application_090822 (26343 : Bcpa-2022-05)

DRAFT (9/22/22)
TOWN OF AMHERST
PLANNING BOARD
COMPREHENSIVE PLAN AMENDMENT
BCPA-2022-05

PETITIONER

Omni Smart Living
3305 Bainbridge Road
Solon, OH 44139

PROPERTY LOCATION

2360-2370 Wehrle Drive (portion)

WHEREAS the Town of Amherst Planning Board on Thursday, September 22, 2022 held a public hearing on the proposed amendment to the Bicentennial Comprehensive Plan to **mixed residential or medium residential** land use, and

WHEREAS the Planning Board has reviewed the Town of Amherst Bicentennial Comprehensive Plan, and

WHEREAS the Planning Board has reviewed plans and other materials regarding the proposal, and

WHEREAS the materials and plans have been referred to the Town's various review agencies, and

WHEREAS the Planning Board finds that:

A. The proposed request is generally consistent with the following sections of the Comprehensive Plan and the Zoning Ordinance:
- 3.0 Land Use and Development
- 4.0 Natural and Cultural Resources
- 5.0 Economic Development
- 6.0 Transportation

B. The subject property is suitable for uses permitted by the proposed land use designation.

C. The proposed change improves the balance of land uses, and meets a specific demand in the Town.

D. The land surrounding the subject request is comprised of single-family housing, office buildings and a fire department developed according to the requirements of the R-3, OB and CF districts respectively.

NOW THEREFORE BE IT RESOLVED that the Planning Board recommends to the Town Board in accordance with New York State Town Law §272-a Subsection 4, that the request to amend the Bicentennial Comprehensive Plan for the area depicted in the attached map be approved.

Attachment: BCPA-2022-05_draft resolution_092222 (26343 : Bcpa-2022-05)

DRAFT (9/22/22)
TOWN OF AMHERST
PLANNING BOARD
COMPREHENSIVE PLAN AMENDMENT
BCPA-2022-05

PETITIONER	PROPERTY LOCATION
Omni Smart Living	2360-2370 Wehrle Drive (portion)

The foregoing resolution was adopted by the Town of Amherst Planning Board, _____; moved by –; seconded by –; ayes – ; noes –.

_____ _____
Robert J. Gilmour, Planning Board Chair Date

SM/ac
X:\Current_Planning\Files\Bicentennail Comp Plan Amends\2022\BCPA-2022-05_(2360-2370_Wehrle_Dr)_2022\BCPA-2022-05_draft resolution_092222.doc-
cc: Town Clerk
Commissioner of Building
Highway Superintendent
Town Engineer
Traffic/Safety Coordinator
Omni Smart Living, 3305 Bainbridge Road, Solon, OH 44139
Jeff Palumbo, 9276 Main Street, Suite 3, Clarence, NY 14031

Attachment: BCPA-2022-05_draft resolution_092222 (26343 : Bcpa-2022-05)

TOWN OF AMHERST
PLANNING BOARD
COMPREHENSIVE PLAN AMENDMENT
BCPA-2022-05

PETITIONER

Omni Smart Living
33095 Bainbridge Road
Solon, OH 44139

PROPERTY LOCATION

2360-2370 Wehrle Drive (portion)

'22 SEP 29 PM4:1

WHEREAS the Town of Amherst Planning Board on Thursday, September 22, 2022 held a public hearing on the proposed amendment to the Bicentennial Comprehensive Plan to medium residential land use for the area north of a line extending east/west from the existing office buildings on the west side of George Karl Boulevard and south of the Community Facility and Recreation Open Space & Greenway land uses shown on Figure 6 of the Bicentennial Comprehensive Plan, and

WHEREAS the Planning Board has reviewed the Town of Amherst Bicentennial Comprehensive Plan, and

WHEREAS the Planning Board has reviewed plans and other materials regarding the proposal, and

WHEREAS the materials and plans have been referred to the Town's various review agencies, and

WHEREAS the Planning Board finds that:

A. The proposed request is generally consistent with the following sections of the Comprehensive Plan and the Zoning Ordinance:
- 3.0 Land Use and Development
- 4.0 Natural and Cultural Resources
- 5.0 Economic Development
- 6.0 Transportation

B. The subject property is suitable for uses permitted by the proposed land use designation.

C. The proposed change improves the balance of land uses, and meets a specific demand in the Town.

D. The land surrounding the subject request is comprised of single-family housing, office buildings and a fire department developed according to the requirements of the R-3, OB and CF districts respectively.

Attachment: BCPA-2022-05 signed resolution 092222 (26343 : Bcpa-2022-05)

TOWN OF AMHERST
PLANNING BOARD
COMPREHENSIVE PLAN AMENDMENT
BCPA-2022-05

PETITIONER

Omni Smart Living

PROPERTY LOCATION

2360-2370 Wehrle Drive (portion)

'22 SEP 29 PM4:1

NOW THEREFORE BE IT RESOLVED that the Planning Board recommends to the Town Board in accordance with New York State Town Law §272-a Subsection 4, that the request to amend the Bicentennial Comprehensive Plan for the area depicted in the attached map be approved.

The foregoing resolution was adopted by the Town of Amherst Planning Board, September 22, 2022; moved by Penberthy; seconded by Giuliani; ayes 5; noes 0; absent 2 (Kahn, Raffaele).

Robert J. Gilmour, Planning Board Chair

9-29-22
Date

Attachment: BCPA-2022-05 signed resolution 092222 (26343 : Bcpa-2022-05)

SM/ac
X:\Current_Planning\Files\Bicentennail Comp Plan Amends\2022\BCPA-2022-05_(2360-2370_Wehrle_Dr)_2022\BCPA-2022-05_resolution_092222.doc-
cc: Town Clerk
Commissioner of Building
Highway Superintendent
Town Engineer
Traffic/Safety Coordinator
Jeffrey Palumbo, Block, Longo LaMarca & Brzezinski, 9276 Main St., Ste. 3, Clarence, NY 14031